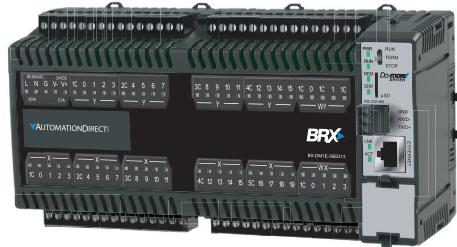


# BRX Micro PLC Overview

The BRX platform is a very versatile modular Micro PLC system that combines powerful features in a compact, standalone footprint. The BRX platform is designed to be used as a standalone controller or can be expanded using a wide variety of expansion modules that easily snap onto the side of any BRX Micro PLC Unit (MPU) creating a sturdy and rugged PLC platform.



**Largest MPU with  
36 I/O built in**

14 different configurations from  
which to choose



**Mid-range MPU with  
18 I/O built in**

14 different configurations from  
which to choose



**Smaller MPU with  
10 I/O built in**

8 different configurations from  
which to choose



**Smallest MPU with  
No built-in I/O**

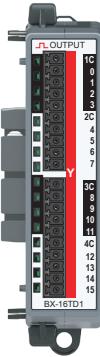
2 configurations from which  
to choose

## Discrete Input Modules



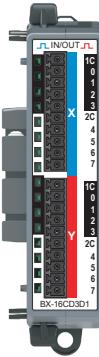
Thirteen (13) discrete input modules are available in various DC and AC voltage ranges. Available in 8, 12, 16 and 32 I/O point modules.

## Discrete Output Modules



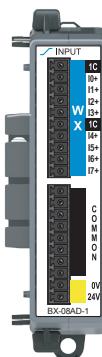
Eighteen (18) discrete output modules are available in DC sinking, DC sourcing, AC voltage and Relay type outputs. Available in 5, 8, 12, 16 and 32 I/O point modules.

## Discrete Combo Input/Output Modules



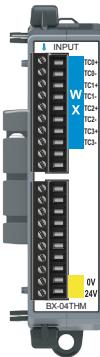
Six (6) discrete input/output combo modules are available with DC sink/source inputs and sink/source/relay outputs. Available in 8, 12 and 16 I/O point modules.

## Analog Input Modules



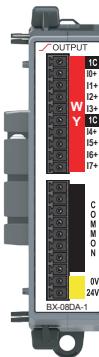
Nine (9) analog input modules are available, with current or voltage inputs. Available with 4, 8 and 16 inputs.

## Temperature Input Modules



Six (6) temperature input modules are available, with thermocouple, RTD, thermistor or universal inputs. The thermocouple modules can also be configured for millivolt-level voltage inputs. The RTD module can also be configured for resistance inputs.

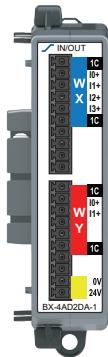
## Analog Output Modules



Six (6) analog output modules are available, with current or voltage outputs. Available with 4 and 8 outputs.

# BRX Micro PLC Overview

## Analog Combo Input/ Output Modules



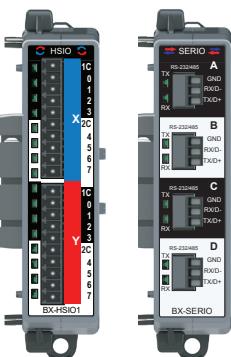
Six (6) analog input/output combo modules are available, with voltage inputs/voltage outputs, current sinking inputs/current sourcing outputs and universal inputs/outputs.

## Active Filling Module

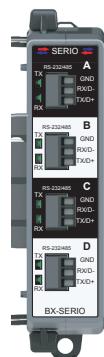


One (1) active filling module is available, which can be configured to reserve physical and address space for any other module.

## Motion Control and Communications Modules



Three (3) high-speed I/O modules are available, with 8-point sinking/sourcing inputs and a choice of 8-point sinking, sourcing or sinking/sourcing outputs. Switching frequencies of up to 250kHz or up to 2MHz are available.



Three (3) serial communications modules are available, with RS-232, RS-422 and RS-485 serial ports.

## BRX Pluggable Option Modules (POM)

All BRX Do-more! CPUs have a built-in slot for a user-selected Pluggable Option Module (POM). The POM option slot can be

used to add a serial port, Ethernet port, USB port or any other POM modules that are available.



**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  
(Any CPU)



**BX-P-ECOMEX**  
Ethernet Port  
(DM1E CPU Only)



**BX-P-USB-B**  
USB Type B Port

## BRX Remote I/O Controllers

BRX Remote I/O Controllers allow up to eight discrete, analog or temperature I/O expansion modules to be remotely connected per controller.

Do-more! Ethernet Remote I/O, Host Ethernet Remote I/O, Modbus RTU and Modbus TCP protocols are available.



**BX-DMIO-M**



**BX-EBC100-M**



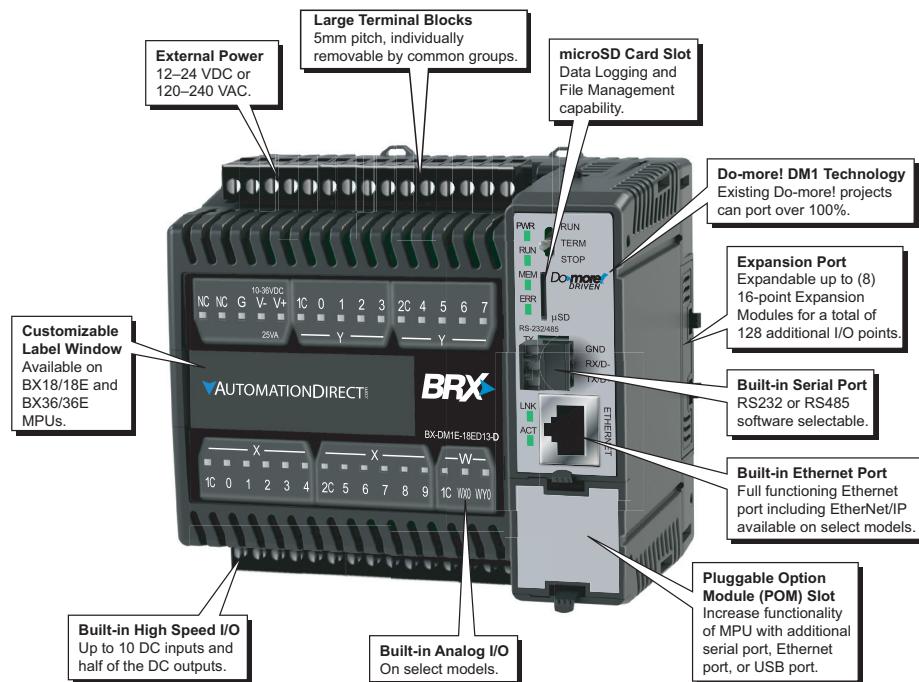
**BX-MBIO-M**

# 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.



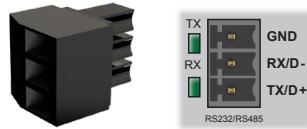
## 2 Year Warranty

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) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out) 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 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+

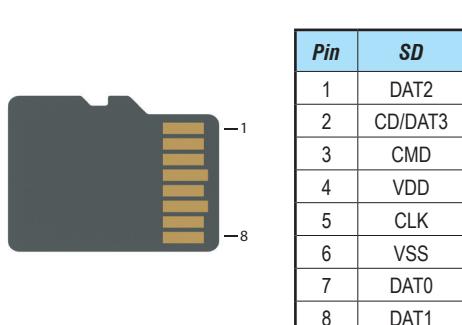
\*When using RS-485 a termination resistor is available and is software selectable.

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
<b>ERR</b>	Red	SD Card Installed and Not Mounted
	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 (ADATA microSDHC 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 # <a href="#">MICSD-16G</a>



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 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)**

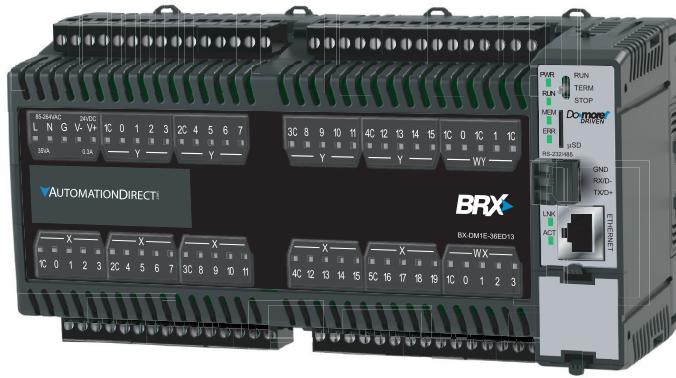
BX 36 MPUs					
Part Number	Price	External Power	Discrete Input	Discrete Output	Expansion Modules
<a href="#"><u>BX-DM1-36ED1</u></a>	\$448.00	120–240 VAC		8 High-speed 8 Standard DC Sinking	
<a href="#"><u>BX-DM1-36ED1-D</u></a>	\$429.00	12–24 VDC		8 High-speed 8 Standard DC Sourcing	
<a href="#"><u>BX-DM1-36ED2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

# BX 36E MPUs

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

### Features

- All units have 4 analog inputs and 2 analog outputs (current/voltage software selectable per channel)
- All units have built-in Ethernet port, 10/100 Mbps
- 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 up to 250kHz
- Support for 8 additional expansion modules
- Onboard RS-232/485 port with removable 3-Pin connector
- microSD card slot



**BX 36E Micro PLC Unit (MPU)**

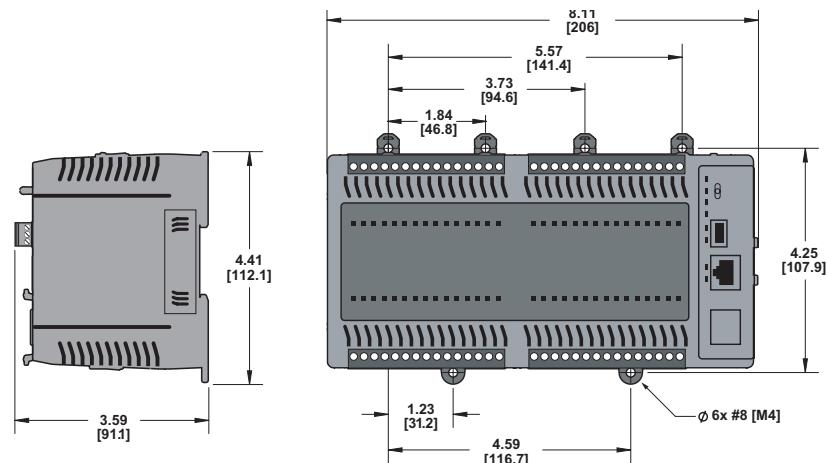
(Built-in Analog and Ethernet port)

BX 36E MPUs							
Part Number	Price	External Power	Discrete Inputs	Discrete Output	Analog		Expansion Modules
					Input	Output	
<a href="#">BX-DM1E-36ED13</a>	\$626.00	120–240 VAC			8 High-Speed 8 Standard DC Sinking		
<a href="#">BX-DM1E-36ED13-D</a>	\$600.00	12–24 VDC			8 High-Speed 8 Standard DC Sourcing		
<a href="#">BX-DM1E-36ED23</a>	\$626.00	120–240 VAC	10 High-speed 10 Standard DC Sinking or Sourcing	16 Form A Relay	4 Current or Voltage	2 Current or Voltage	8
<a href="#">BX-DM1E-36ED23-D</a>	\$590.00	12–24 VDC					
<a href="#">BX-DM1E-36ER3</a>	\$620.00	120–240 VAC					
<a href="#">BX-DM1E-36ER3-D</a>	\$580.00	12–24 VDC					
<a href="#">BX-DM1E-36AR3</a>	\$623.00	120–240 VAC	20 Standard AC				

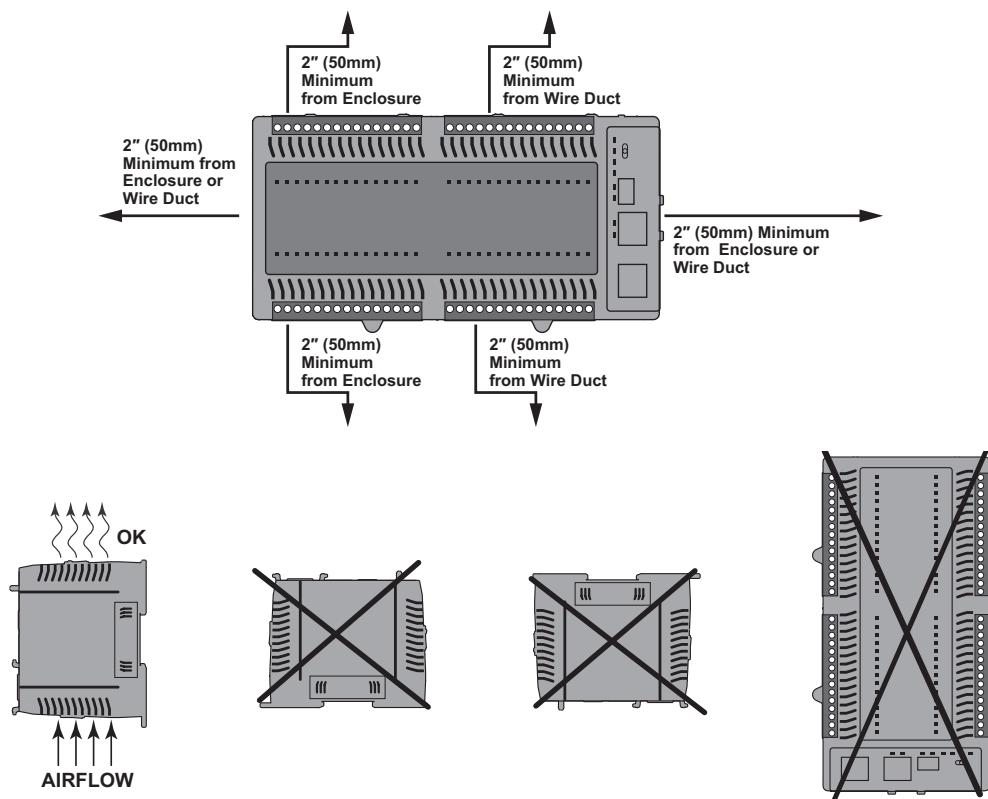
Built-in Ethernet Specifications	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
Port Status LED	LED is solid when network LINK is established. LED flashes when port is active (ACT).
Supported Protocols	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
Cable Recommendation	C5E-STxx-xx from <a href="#">AutomationDirect.com</a>
Port Type	RJ45, Category 5, 10/100 BASE-T, Auto Crossover

# 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

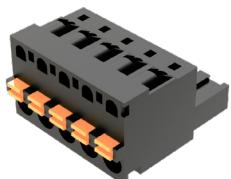
4 outputs each with an isolated common. For example, inputs X0–X3 are grouped with a common terminal. The groups are isolated such that a single 5-pin connector can be removed without affecting another group of I/O or the external power source.



[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	<a href="#">BX-RTB36</a>	<a href="#">BX-RTB36-1</a>
<b>Price</b>	\$52.00	\$52.00
<b>Connector Type</b>	Screw Type-90-degree	Spring Clamp Type-180-degree
<b>Wire Exit</b>	180-degree	180-degree
<b>Pitch</b>	5.0 mm	5.0 mm
<b>Screw Size</b>	M2.5	N/A
<b>Screw Torque</b>	< 3.98 lb·in [0.45 N·m]	N/A
<b>Screwdriver Blade Width</b>	3.5 mm	3.5 mm
<b>Wire Gauge (Single Wire)</b>	28–12 AWG	28–14 AWG
<b>Wire Gauge (Dual Wire)</b>	28–16 AWG (Dual wire ferrule required)	
<b>Wire Strip Length</b>	0.3 in [7.5 mm]	0.37 in [9.5 mm]
<b>Equiv. Dinkle P/N</b>	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
<a href="#">BX-DM1-36ED1</a>	Feedthrough	<a href="#">ZL-RTB20</a> (Standard) OR <a href="#">ZL-RTB20-1</a> (Compact)	4	<a href="#">ZL-BX-CBL15</a> <a href="#">ZL-BX-CBL15-1</a> <a href="#">ZL-BX-CBL15-2</a>	4
<a href="#">BX-DM1-36ED1-D</a>					
<a href="#">BX-DM1-36ED2</a>					
<a href="#">BX-DM1-36ED2-D</a>					
<a href="#">BX-DM1-36ER**</a>					
<a href="#">BX-DM1-36ER-D**</a>					
<a href="#">BX-DM1-36AR**</a>					
<a href="#">BX-DM1E-36ED13</a>					
<a href="#">BX-DM1E-36ED13-D</a>					
<a href="#">BX-DM1E-36ED23</a>					
<a href="#">BX-DM1E-36ED23-D</a>					
<a href="#">BX-DM1E-36ER3**</a>					
<a href="#">BX-DM1E-36ER3-D**</a>					
<a href="#">BX-DM1E-36AR3**</a>					

\* 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	<u>ZL-RTB20</u> (Maximum of 4 needed)	<u>ZL-RTB20-1</u> (Maximum of 4 needed)
<b>Number of positions</b>	20 screw terminals, 2 rows	24 screw terminals, 3 rows
<b>Screwdriver Width</b>	1/8 in [3.8 mm] maximum	
<b>Screw Torque</b>	4.4 lb-in [0.5 N·m]	4.4 lb-in [0.5 N·m]



**ZL-RTB20**



**ZL-RTB20-1**



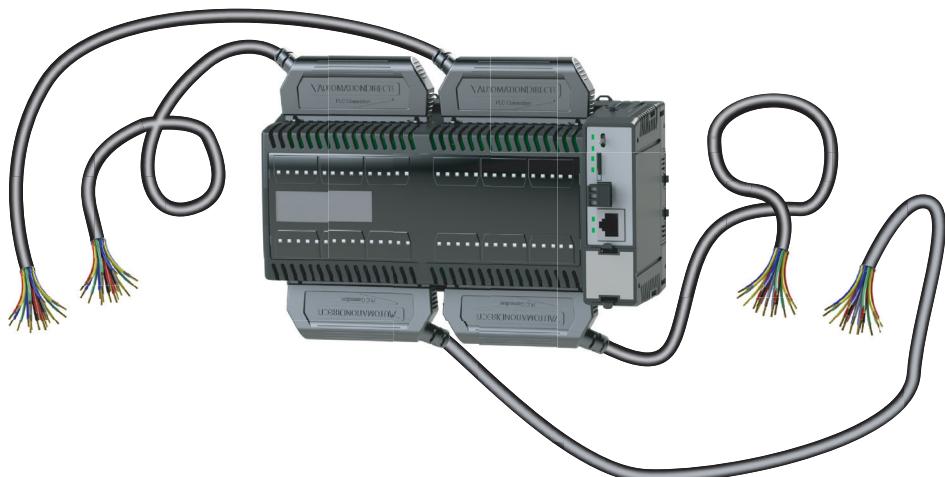
# Wiring Solutions

## ZIPLink System Examples

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



BX 36 MPU with ZIPLink pigtail cables installed.



# BX 36/36E MPUs

**BX-DM1-36ED1**

**\$448.00**

## BRX MPU with Do-more! DM1 technology

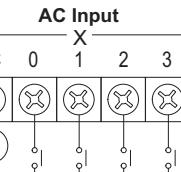
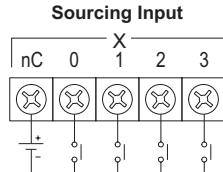
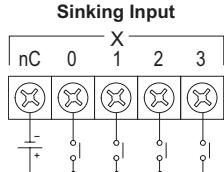
- 120VAC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sinking

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	438g [15.5 oz]

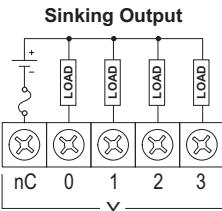
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19)
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

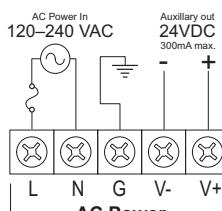
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 36/36E MPUs

## BX-DM1-36ED2

**\$449.00**

### BRX MPU with Do-more! DM1 technology

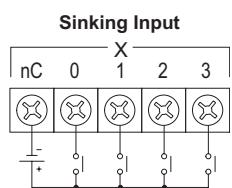
- 120VAC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sourcing

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	439g [15.5 oz]

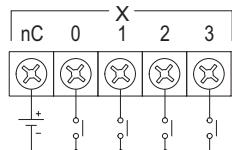
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19)
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

### I/O Wiring

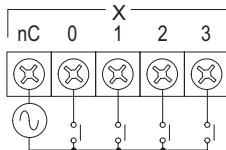
#### Discrete Input Wiring



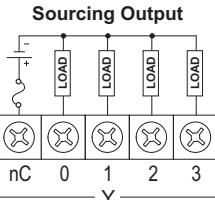
#### Sourcing Input



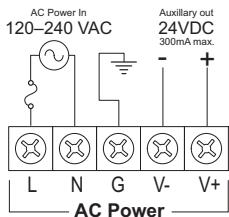
#### AC Input



### Discrete Output Wiring



### Supply Power Wiring



# BX 36/36E MPUs

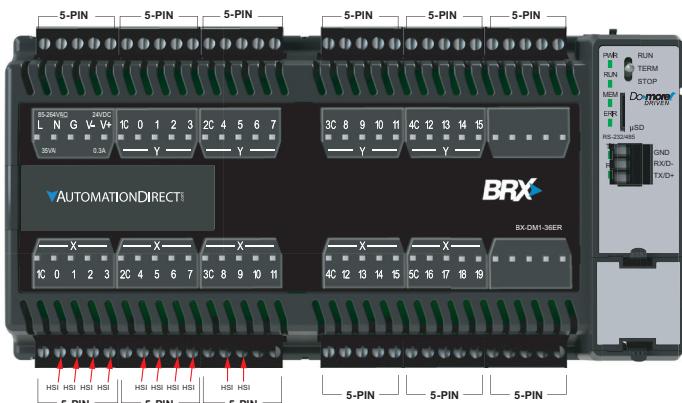
## BX-DM1-36ER

**\$444.00**

### BRX MPU with Do-more! DM1 technology

- 120VAC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, relay

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	488g [17.2 oz]



### I/O Terminal Blocks sold separately.

(See Removable Terminal Block Specifications Table on BX 36/36E MPU Accessories page.)

### Discrete Input Specifications

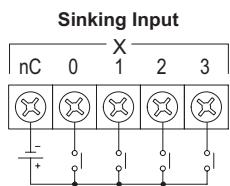
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19)
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

### Discrete Output Specifications

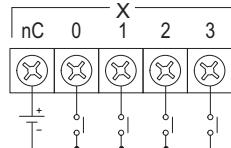
<b>Output Type</b>	Relay Form A (SPST)
<b>Total Outputs per Module</b>	16 Relay
<b>Commons</b>	4 (4 points/common) Isolated
<b>Maximum current per common</b>	8A
<b>Nominal Voltage Ratings</b>	12–48 VDC, 24–240 VAC
<b>Operating Voltage Range</b>	5–60 VDC, 5–264 VAC
<b>Maximum Voltage</b>	60VDC, 264VAC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

### I/O Wiring

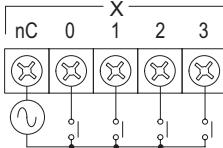
#### Discrete Input Wiring



#### Sourcing Input

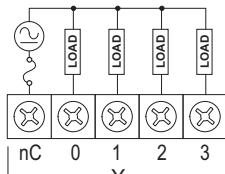


#### AC Input

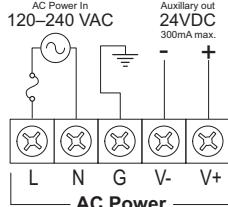


### Discrete Output Wiring

#### Relay Output



### Supply Power Wiring



# BX 36/36E MPUs

## BX-DM1-36AR

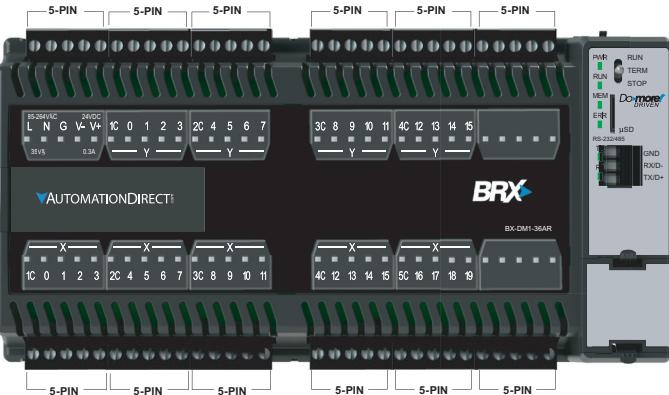
**\$440.00**

### BRX MPU with Do-more! DM1 technology

- 120VAC required; serial port; microSD slot
- Discrete input: 20-point, AC
- Discrete output: 16-point, relay

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	490g [17.3 oz]

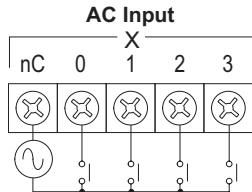
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Total Inputs per Module</b>	20 Total – 20 Standard (X0...X19)
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264 VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Input Impedance</b>	15kΩ
<b>ON Voltage Level</b>	> 85 VAC
<b>OFF Voltage Level</b>	< 40VAC
<b>Status Indicators</b>	Logic Side, Green



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

## I/O Wiring

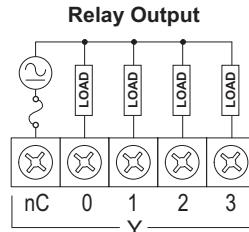
### Discrete Input Wiring



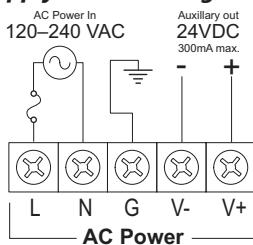
### Discrete Output Specifications

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

### Discrete Output Wiring



### Supply Power Wiring



# BX 36/36E MPUs

**BX-DM1-36ED1-D**    **\$429.00**

## BRX MPU with Do-more! DM1 technology

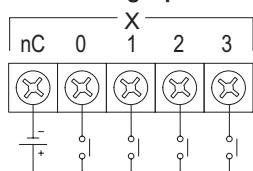
- 24VDC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sinking

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	410g [14.5 oz]

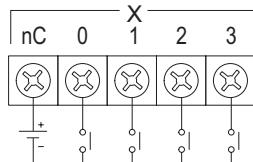
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19)
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

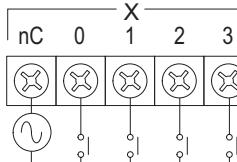
### Discrete Input Wiring



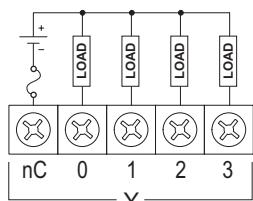
### Sourcing Input



### AC Input

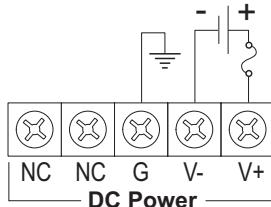


### Discrete Output Wiring Sinking Output



### Supply Power Wiring

Class 2 or LPS User Supplied Power    DC Power In 12–24VDC



# BX 36/36E MPUs

**BX-DM1-36ED2-D** \$428.00

## BRX MPU with Do-more! DM1 technology

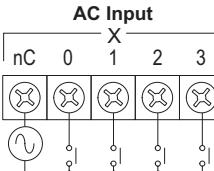
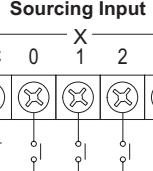
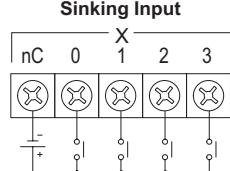
- 24VDC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sourcing

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	410g [14.5 oz]

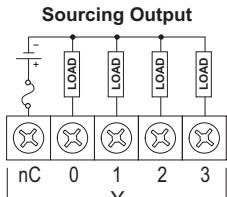
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

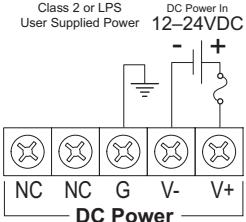
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 36/36E MPUs

## BX-DM1-36ER-D

\$391.00

### BRX MPU with Do-more! DM1 technology

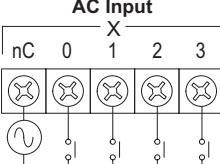
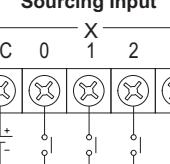
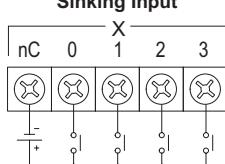
- 24VDC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, relay

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	458g [16.2 oz]

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19)
<b>Commons</b>	*All inputs may be used as standard inputs
<b>Nominal Voltage Rating</b>	5 (4 points/common) Isolated
<b>Input Voltage Range</b>	12–24 VAC/DC
<b>Maximum Voltage</b>	9–30 VAC/DC
<b>DC Frequency</b>	30 VAC/DC
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	0–250kHz - High Speed
<b>Input Impedance</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Current (typical)</b>	3kΩ @ 24VDC
<b>Maximum Input Current</b>	6mA @ 24 VAC/DC
<b>Maximum OFF Current</b>	12mA @ 30 VAC/DC
<b>ON Voltage Level</b>	2.0 mA
<b>OFF Voltage Level</b>	> 9.0 VAC/VDC
<b>Status Indicators</b>	< 2.0 VAC/VDC
	Logic Side, Green

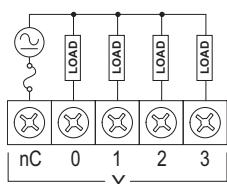
### I/O Wiring

#### Discrete Input Wiring

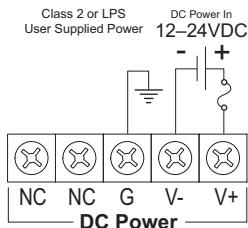


#### Discrete Output Wiring

#### Relay Output



#### Supply Power Wiring



# BX 36/36E MPUs

BX-DM1E-36ED13

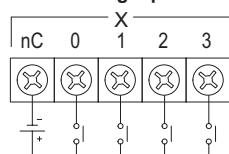
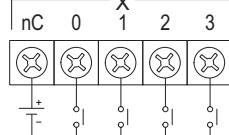
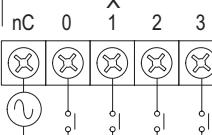
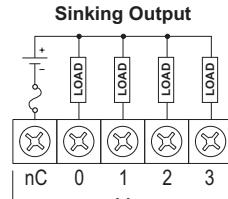
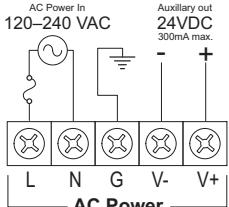
\$626.00

**BRX MPU with Do-more! DM1 technology**

- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, sink/source
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, sinking
- Analog output: 2-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	450g [15.9 oz]

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

**I/O Wiring****Discrete Input Wiring****Sourcing Input****AC Input****Discrete Output Wiring****Supply Power Wiring**

# BX 36/36E MPUs

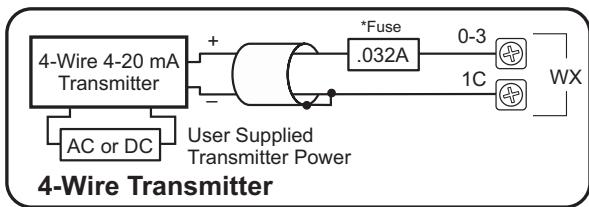
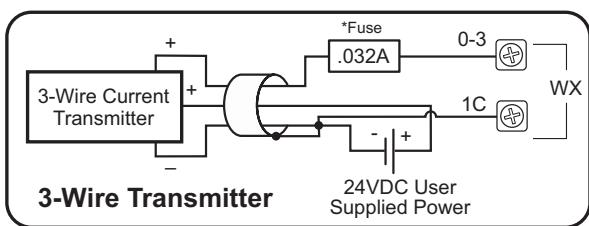
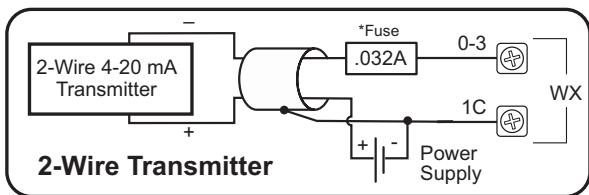
## Analog Input Specifications

<b>Inputs per Module</b>	4
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0-10 V, 0-5 V
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , 4-20 mA
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	
<b>Voltage Modes</b>	100k $\Omega$
<b>Input Impedance</b>	
<b>Current Modes</b>	249 $\Omega$

## Analog Output Specifications

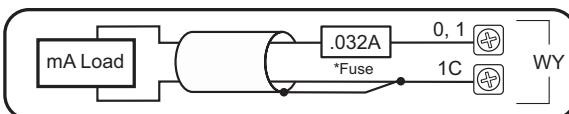
<b>Outputs per Module</b>	2
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0-10 V, 0-5 V
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , 4-20 mA
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

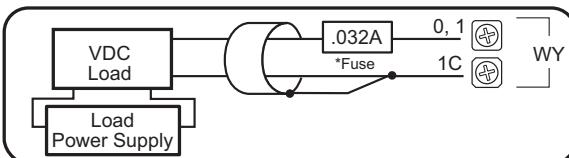


## Analog Output Wiring

### Current Source Output

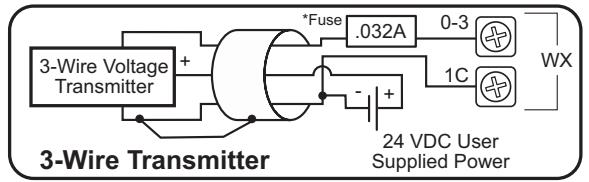
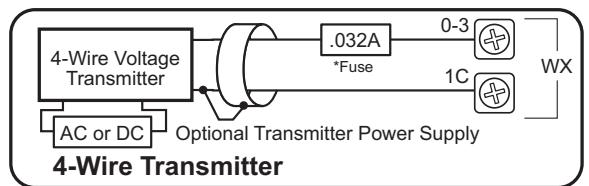


### Voltage Output



\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



# BX 36/36E MPUs

BX-DM1E-36ED23

\$626.00

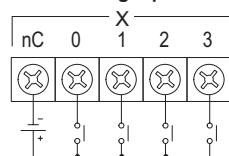
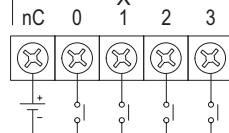
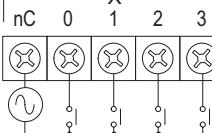
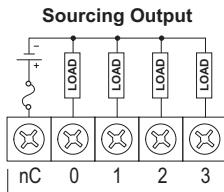
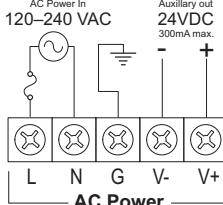
**BRX MPU with Do-more! DM1 technology**

- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, sink/source
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, sourcing
- Analog output: 2-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	454g [16oz]

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

**Discrete Input Wiring**

**Sourcing Input**

**AC Input**

**Discrete Output Wiring**

**Supply Power Wiring**


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

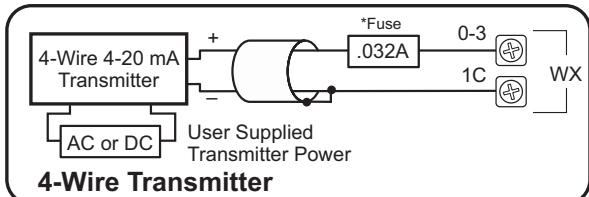
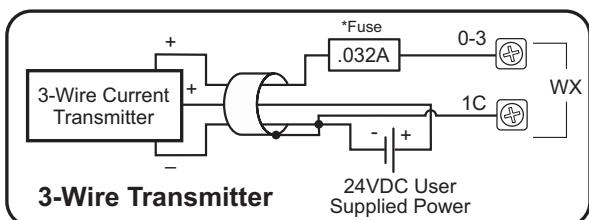
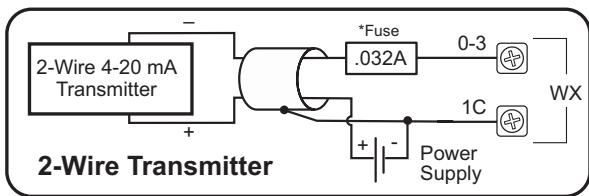
Discrete Output Specifications	
<b>Output Type</b>	Sourcing
<b>Total Outputs per Module</b>	16 Total – 8 High Speed (Y0...Y7)* 8 Standard (Y8...Y15) *All outputs may be used as standard outputs
<b>Commons</b>	4 (4 points/common) Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage Rating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

# BX 36/36E MPUs

Analog Input Specifications	
Inputs per Module	4
Input Voltage Range	Software Selectable $\pm 10V$ , $\pm 5V$ , 0-10 V, 0-5 V
Input Current Range	Software Selectable $\pm 20mA$ , 4-20 mA
Resolution	16 bit @ $\pm 10V$ , $\pm 20mA$
Conversion Time	1.2 ms
Input Impedance	100k $\Omega$
Voltage Modes	
Input Impedance	249 $\Omega$
Current Modes	

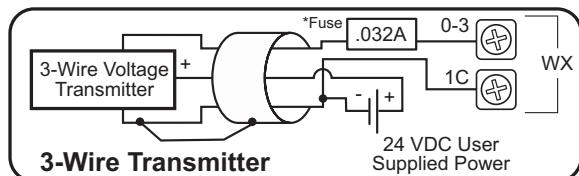
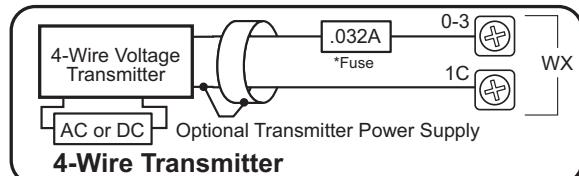
Analog Output Specifications	
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10V$ , $\pm 5V$ , 0-10 V, 0-5 V
Minimum Voltage Load	
Impedance	1k $\Omega$
Output Current Range	Software Selectable $\pm 20mA$ , 4-20 mA
Maximum Current Load	
Impedance	500 $\Omega$
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

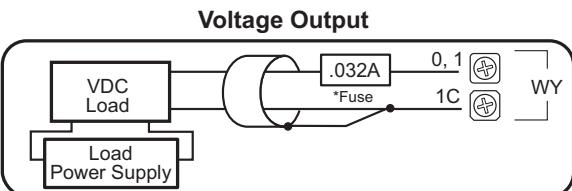
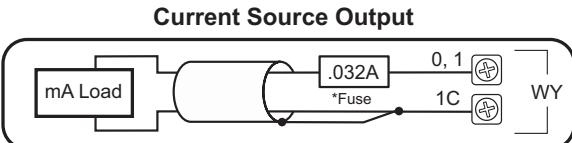


\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



## Analog Output Wiring



# BX 36/36E MPUs

## BX-DM1E-36ER3

**\$620.00**

### BRX MPU with Do-more! DM1 technology

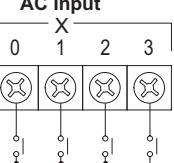
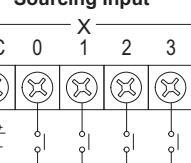
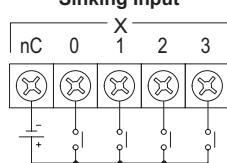
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, sink/source
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, relay
- Analog output: 2-channel, current / voltage

<b>CPU Specifications</b>	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 expansion modules max
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	504g [17.8 oz]

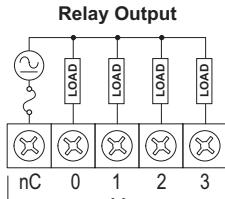
<b>Discrete Input Specifications</b>	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0..X9)* 10 Standard (X10..X19) *All inputs may be used as standard inputs
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

### I/O Wiring

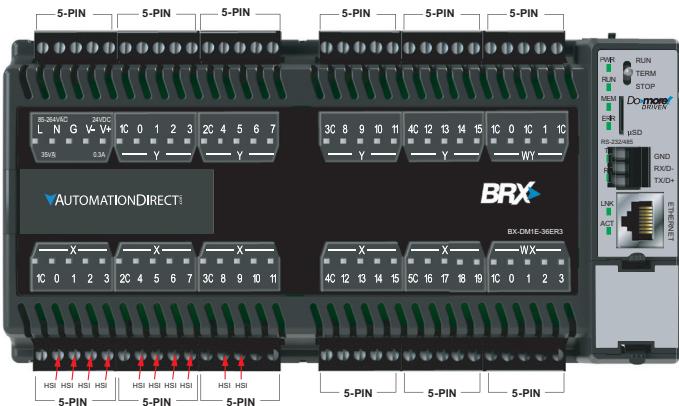
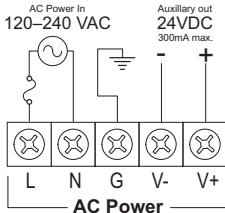
#### Discrete Input Wiring



#### Discrete Output Wiring



#### 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

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

# BX 36/36E MPUs

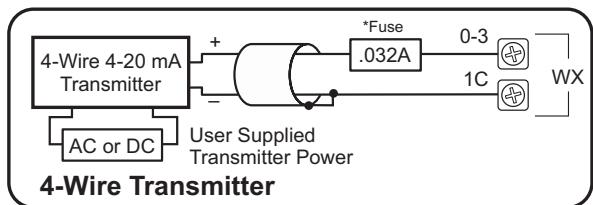
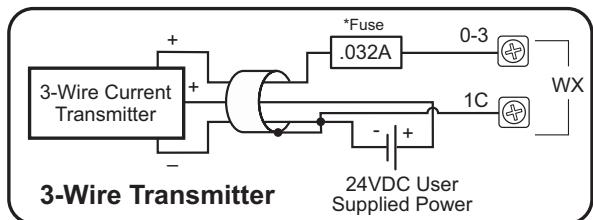
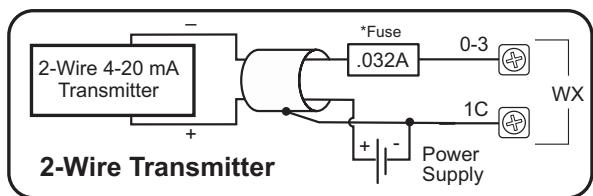
## Analog Input Specifications

<b>Inputs per Module</b>	4
<b>Input Voltage Range</b>	Software Selectable ±10V, ±5V, 0–10 V, 0–5 V
<b>Input Current Range</b>	Software Selectable ±20mA, 4–20 mA
<b>Resolution</b>	16 bit @ ± 10V, ± 20mA
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100kΩ
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249Ω
<b>Current Modes</b>	

## Analog Output Specifications

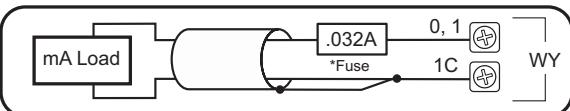
<b>Outputs per Module</b>	2
<b>Output Voltage Range</b>	Software Selectable ±10V, ±5V, 0–10 V, 0–5 V
<b>Minimum Voltage Load Impedance</b>	1kΩ
<b>Output Current Range</b>	Software Selectable ±20mA, 4–20 mA
<b>Maximum Current Load Impedance</b>	500Ω
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ ± 10V, ± 20mA

### Analog Current Sinking Input Circuits

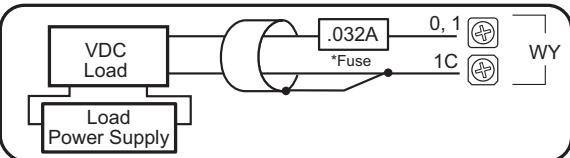


### Analog Output Wiring

#### Current Source Output

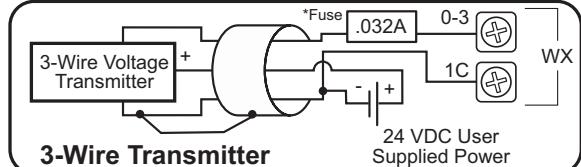
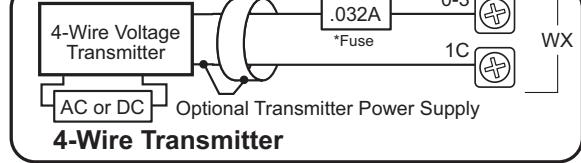


#### Voltage Output



\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

### Analog Voltage Input Circuits



# BX 36/36E MPUs

## BX-DM1E-36AR3

**\$623.00**

### BRX MPU with Do-more! DM1 technology

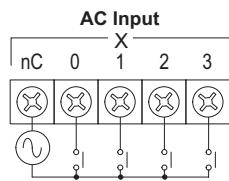
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, AC
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, relay
- Analog output: 2-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 expansion modules max
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	504g [17.8 oz]

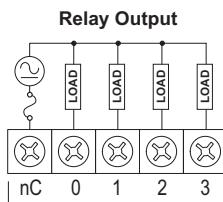
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Total Inputs per Module</b>	20 Total – 20 Standard (X0...X19)
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264 VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Input Impedance</b>	15kΩ
<b>ON Voltage Level</b>	> 85 VAC
<b>OFF Voltage Level</b>	< 40 VAC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

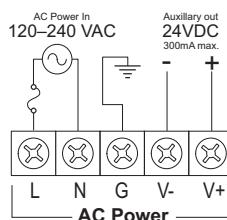
### Discrete Input Wiring



### Relay Output Wiring

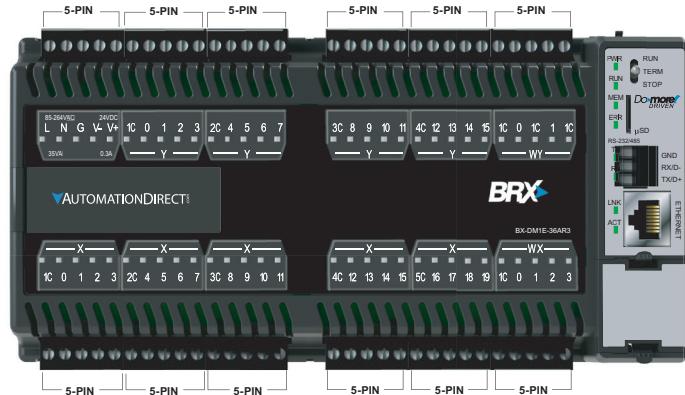


### Supply Power Wiring



BRX - Programmable Controller

tBRX-25



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

### Discrete Output Specifications

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

# BX 36/36E MPUs

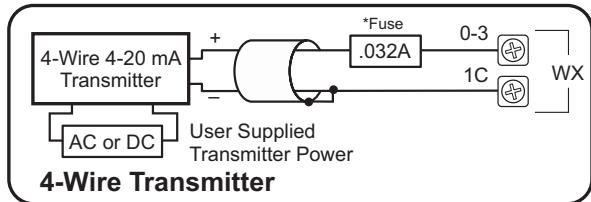
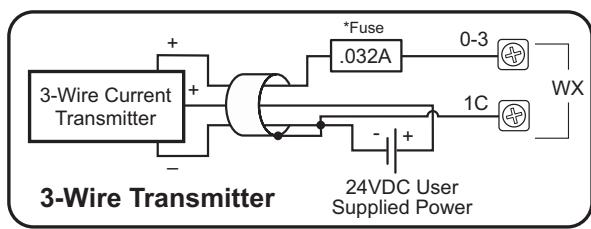
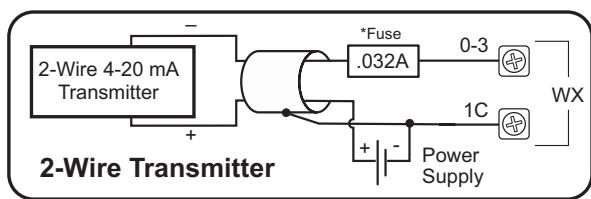
## Analog Input Specifications

<b>Inputs per Module</b>	4
<b>Input Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance Current Modes</b>	249 $\Omega$

## Analog Output Specifications

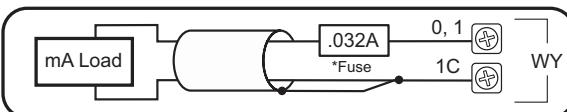
<b>Outputs per Module</b>	2
<b>Output Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$

### Analog Current Sinking Input Circuits

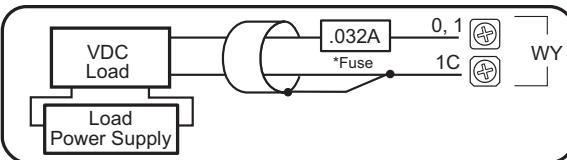


### Analog Output Wiring

#### Current Source Output

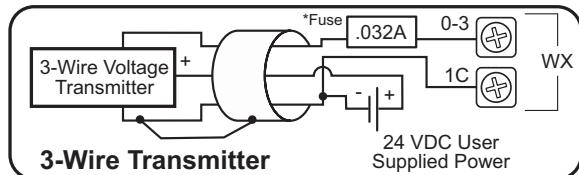
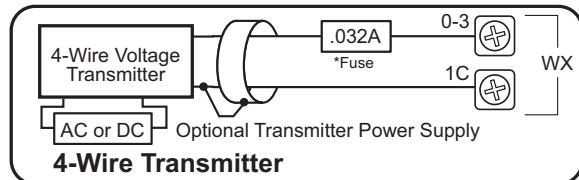


#### Voltage Output



\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

### Analog Voltage Input Circuits



# BX 36/36E MPUs

**BX-DM1E-36ED13-D \$600.00**

## BRX MPU with Do-more! DM1 technology

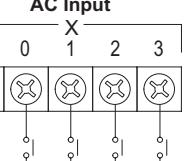
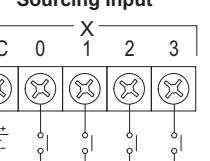
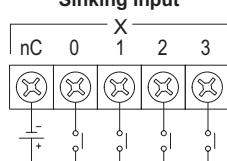
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, sink/source
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, sinking
- Analog output: 2-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 expansion modules max
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	422g [14.9 oz]

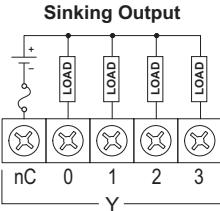
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

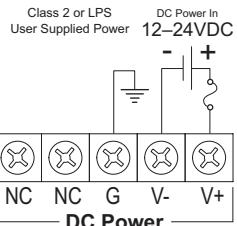
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 36/36E MPUs

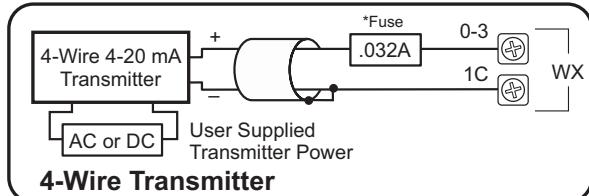
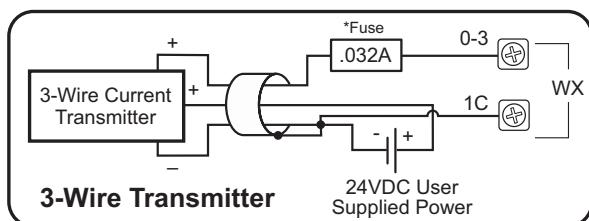
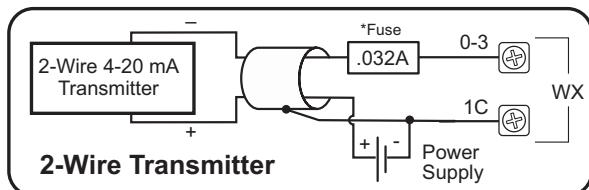
## Analog Input Specifications

<b>Inputs per Module</b>	4
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Output Specifications

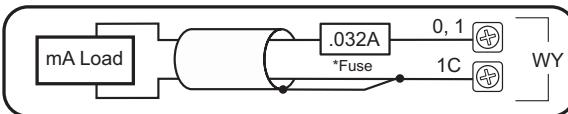
<b>Outputs per Module</b>	2
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

### Analog Current Sinking Input Circuits

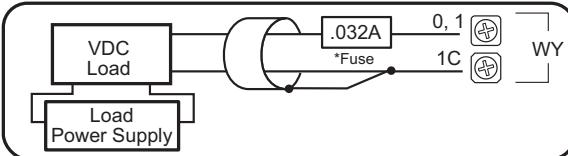


### Analog Output Wiring

#### Current Source Output

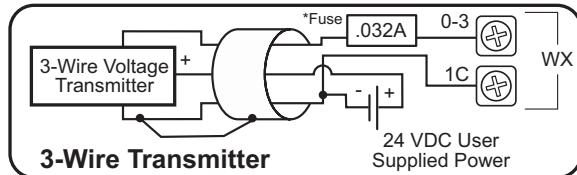
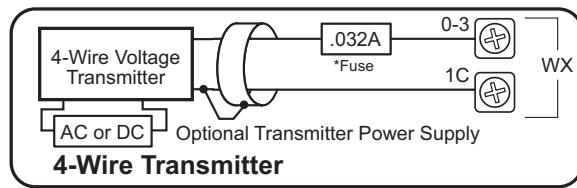


#### Voltage Output



\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

### Analog Voltage Input Circuits



# BX 36/36E MPUs

**BX-DM1E-36ED23-D \$590.00**

## BRX MPU with Do-more! DM1 technology

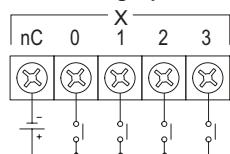
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, sink/source
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, sourcing
- Analog output: 2-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 expansion modules max
<b>Real Time Clock Accuracy</b>	$\pm 2.6$ s per day typical at 25°C $\pm 8$ s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	421g [14.9 oz]

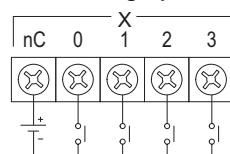
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs.
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

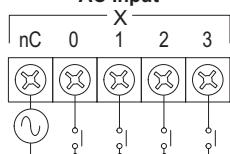
### Discrete Input Wiring



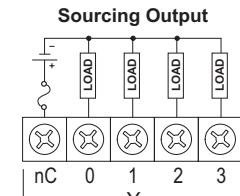
### Sourcing Input



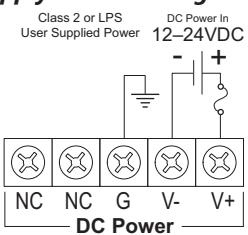
### AC Input



### Discrete Output Wiring



### Supply Power Wiring



# BX 36/36E MPUs

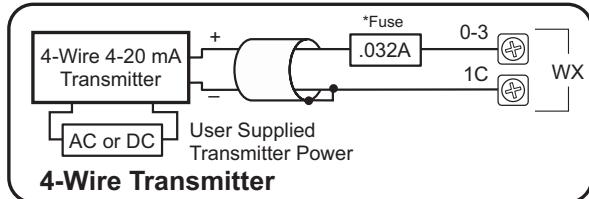
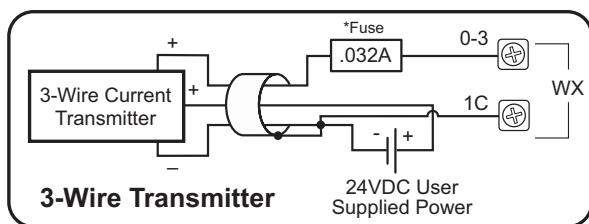
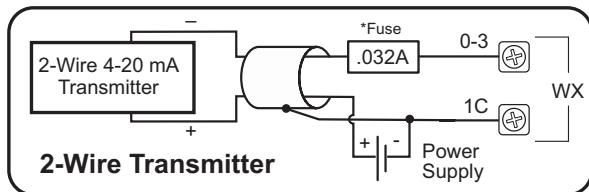
## Analog Input Specifications

<b>Inputs per Module</b>	4
<b>Input Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance Current Modes</b>	249 $\Omega$

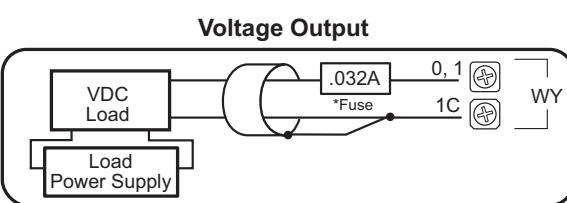
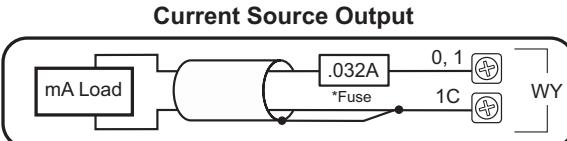
## Analog Output Specifications

<b>Outputs per Module</b>	2
<b>Output Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$

### Analog Current Sinking Input Circuits

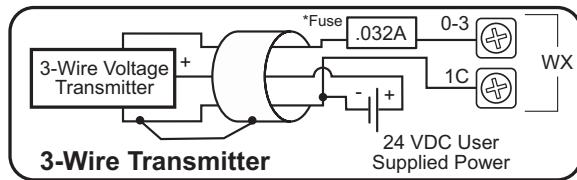
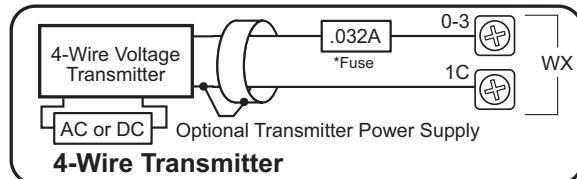


### Analog Output Wiring



\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

### Analog Voltage Input Circuits



# BX 36/36E MPUs

**BX-DM1E-36ER3-D \$580.00**

## BRX MPU with Do-more! DM1 technology

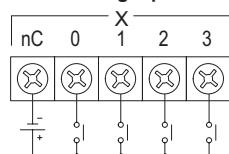
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 20-point, sink/source
- Analog input: 4-channel, current / voltage
- Discrete output: 16-point, relay
- Analog output: 2-channel, current / voltage

<b>CPU Specifications</b>	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 expansion modules max
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	474g [16.7 oz]

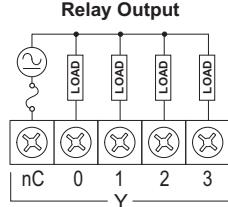
<b>Discrete Input Specifications</b>	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
<b>Commons</b>	5 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

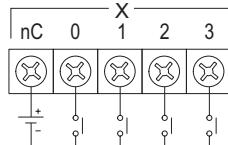
### Discrete Input Wiring



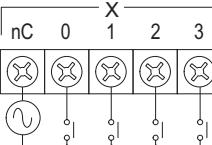
### Discrete Output Wiring



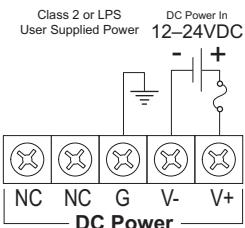
### Sourcing Input



### AC Input



### Supply Power Wiring



# BX 36/36E MPUs

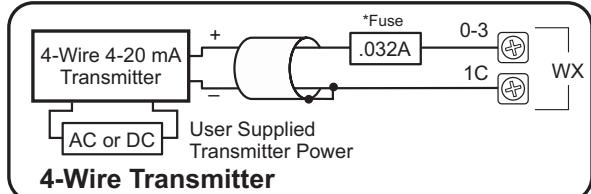
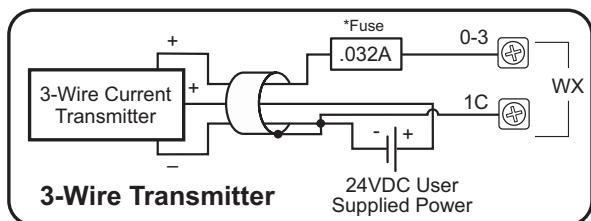
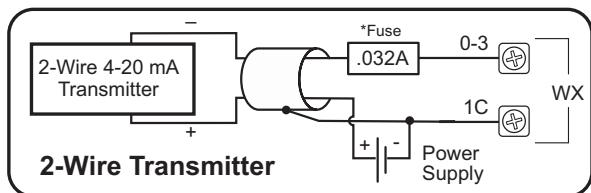
## Analog Input Specifications

<b>Inputs per Module</b>	4
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	
<b>Voltage Modes</b>	100k $\Omega$
<b>Input Impedance</b>	
<b>Current Modes</b>	249 $\Omega$

## Analog Output Specifications

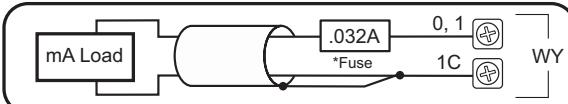
<b>Outputs per Module</b>	2
<b>Operating Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

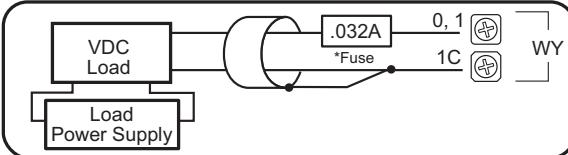


## Analog Output Wiring

### Current Source Output

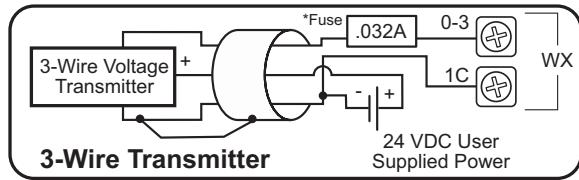
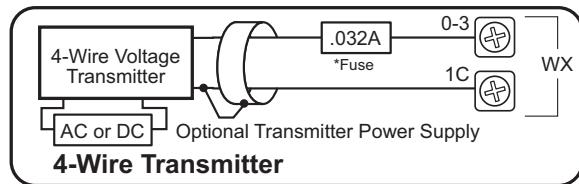


### Voltage Output



\*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



# BX 18 MPUs

## 18 Discrete I/O Points: 10 Input, 8 Output

### Features

- Models with DC inputs have:
  - 10 high-speed inputs rated up to 250kHz
  - can accept 12–24 nominal voltage, 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 4 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 18 Micro PLC Unit (MPU)**  
(No Built-in Analog or Ethernet port)

BX 18 MPUs					
Part Number	Price	External Power	Discrete Input	Discrete Output	Expansion Modules
<a href="#"><b>BX-DM1-18ED1</b></a>	\$388.00	120–240 VAC	10 High-speed DC Sinking or Sourcing	4 High-Speed 4 Standard DC Sinking	8, as long as the MPU power budget is not exceeded
<a href="#"><b>BX-DM1-18ED1-D</b></a>	\$357.00	12–24 VDC		4 High-Speed 4 Standard DC Sourcing	
<a href="#"><b>BX-DM1-18ED2</b></a>	\$388.00	120–240 VAC		8 Form A Relay	
<a href="#"><b>BX-DM1-18ED2-D</b></a>	\$351.00	12–24 VDC			
<a href="#"><b>BX-DM1-18ER</b></a>	\$374.00	120–240 VAC			
<a href="#"><b>BX-DM1-18ER-D</b></a>	\$329.00	12–24 VDC			
<a href="#"><b>BX-DM1-18AR</b></a>	\$365.00	120–240 VAC	10 Standard AC		

# BX 18E MPUs

## 18 Discrete I/O Points: 10 Inputs, 8 Outputs

### Features

- All units have 1 analog input and 1 analog output (current/voltage software selectable)
- All units have built-in Ethernet port, 10/100 Mbps
- Models with DC input have:
  - 10 high-speed inputs rated 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 4 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 18E Micro PLC Unit (MPU)**

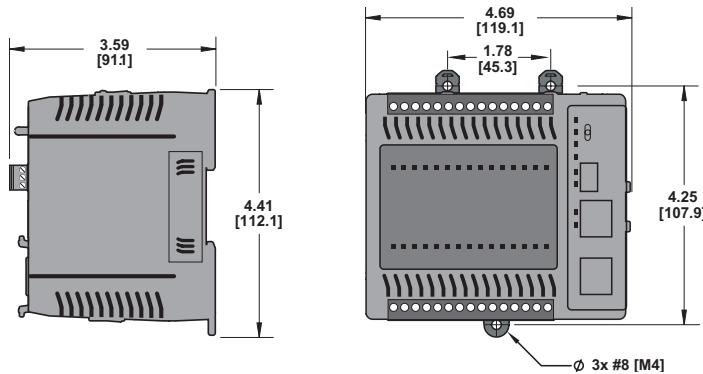
(Built-in Analog and Ethernet port)

BX 18E MPUs							
Part Number	Price	External Power	Discrete Inputs	Discrete Output	Analog		Expansion Modules
					Input	Output	
<a href="#">BX-DM1E-18ED13</a>	\$503.00	120–240 VAC	10 High-Speed DC Sinking or Sourcing	4 High-Speed 4 Standard DC sinking	1 Current or Voltage	1 Current or Voltage	8, as long as the MPU power budget is not exceeded
<a href="#">BX-DM1E-18ED13-D</a>	\$476.00	12–24 VDC		4 High-Speed 4 Standard DC sourcing			
<a href="#">BX-DM1E-18ED23</a>	\$502.00	120–240 VAC		8 Form A relay			
<a href="#">BX-DM1E-18ED23-D</a>	\$469.00	12–24 VDC					
<a href="#">BX-DM1E-18ER3</a>	\$495.00	120–240 VAC					
<a href="#">BX-DM1E-18ER3-D</a>	\$469.00	12–24 VDC					
<a href="#">BX-DM1E-18AR3</a>	\$483.00	120–240 VAC	10 Standard AC				

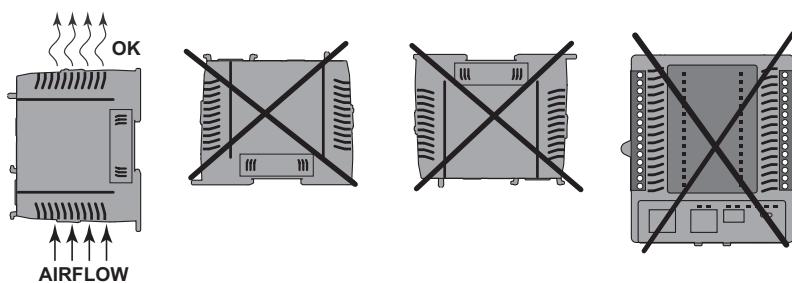
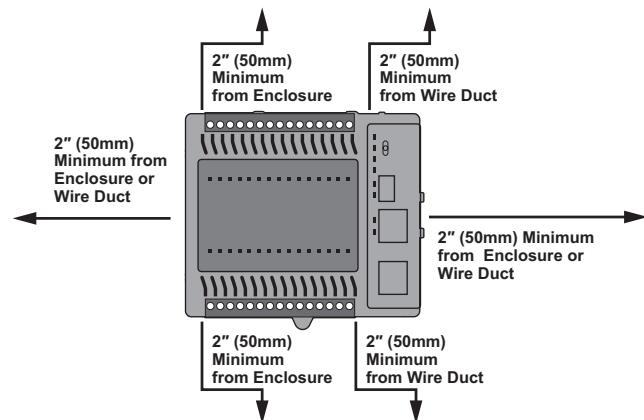
Built-in Ethernet Specifications	
<b>Port Name</b>	ETHERNET
<b>Description</b>	Standard transformer isolated Ethernet port with built-in surge protection.
<b>Transfer Rate</b>	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
<b>Port Status LED</b>	LED is solid when network LINK is established. LED flashes 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
	28784, UDP 502, TCP User-defined, TCP User-defined 123, TCP 25, TCP 1883, TCP 8883, TCP 80, TCP 443, TCP 80, TCP 21, TCP 44818, TCP 44818, TCP 67,68, UCP 28784, UDP
<b>Cable Recommendation</b>	C5E-STxxx-xx from AutomationDirect.com
<b>Port Type</b>	RJ45, Category 5, 10/100 BASE-T, Auto Crossover

# BX 18/18E MPUs

## Dimensions, inches[mm]



## Clearances and Mounting Restrictions



# BX 18/18E MPUs Accessories

## BX 18/18E MPU Wiring Termination Selection

The BX 18/18E MPUs ship with no predefined wiring termination option. This enables you to select the

termination type that best suits your application. Several wiring options are available, including removable screw

terminal connectors, removable spring clamp terminal connectors and pre-wired ZIPLink cable solutions.

## Terminal Block Connectors

The terminal block connectors are provided in kits and can be ordered as a single part number. Each kit contains all the terminal block connectors required (6 pieces): (3) 5-pin 5mm terminal blocks, (2) 6-pin 5mm terminal blocks, and (1) 3-pin 5mm terminal block.

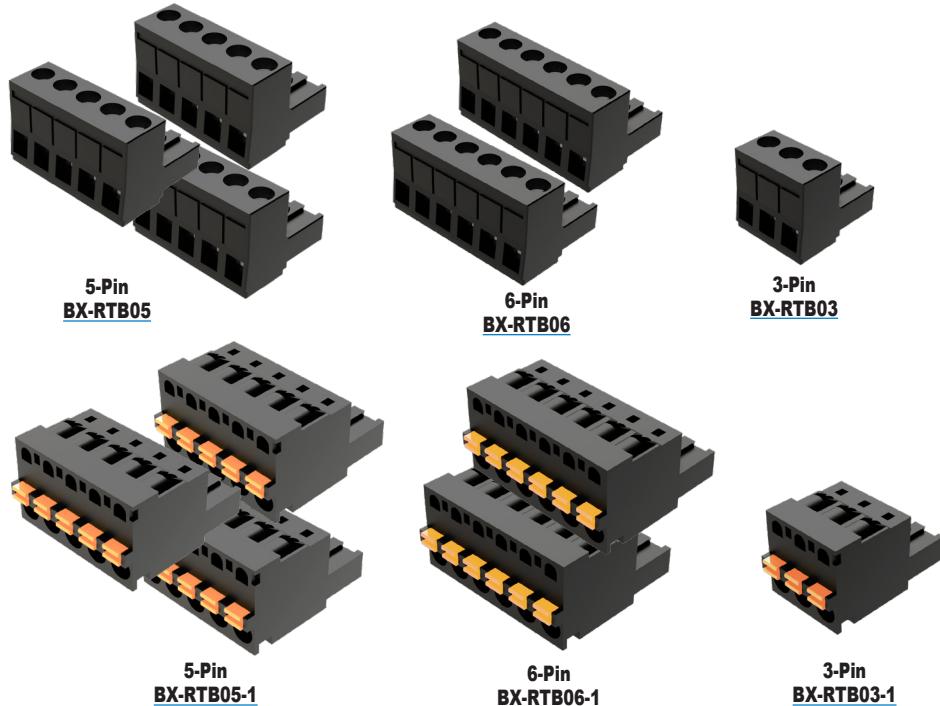
The BX 18/18E MPUs terminals are

configured into groups of 5 inputs and 4 outputs each with an isolated common. For example, inputs X0–X4 are grouped with their common terminal. On the BX 18E MPU, the analogs are grouped as 3 terminals consisting of 1 input, 1 output and a shared isolated analog common. The I/O termination groups are isolated

such that a single group connector can be removed without affecting other groups of I/O or the external power source.

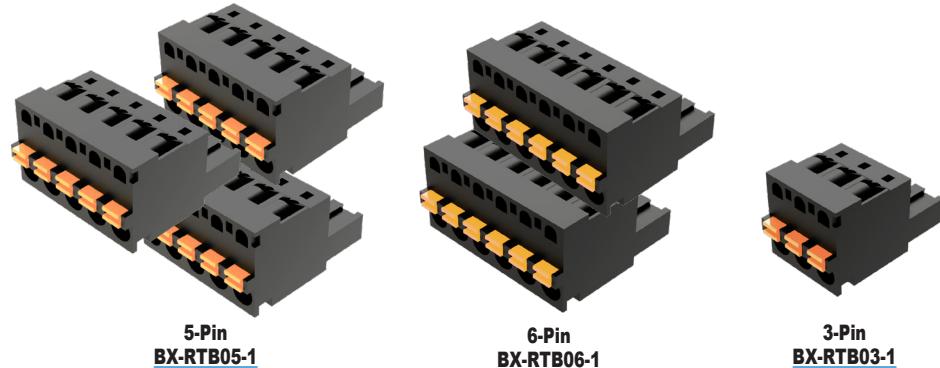
### BX-RTB18 Screw Terminal Block Kit

This terminal block kit includes (6 pieces): (3) 5-pin 5mm terminal blocks (BX-RTB05), (2) 6-pin 5mm terminal blocks (BX-RTB06), and (1) 3-pin 5mm terminal block (BX-RTB03). These are 90-degree screw terminal blocks. Wire is 180-degree pass through.



### BX-RTB18-1 Spring Terminal Block Kit

This terminal block kit includes (6 pieces): (3) 5-pin 5mm terminal blocks (BX-RTB05-1), (2) 6-pin 5mm terminal blocks (BX-RTB06-1), and (1) 3-pin 5mm terminal block (BX-RTB03-1). These are 180-degree spring clamp wire terminal blocks.



Removable Terminal Block Specifications		Replacement 6-Pin		
Part Number	BX-RTB18	BX-RTB18-1	BX-RTB06	BX-RTB06-1
Price (pkg)	\$37.00	\$37.00	\$11.00	\$9.75
Connector Type	Screw Type-90-degree	Spring Clamp Type-180-degree	Screw Type-90-degree	Spring Clamp Type-180-degree
Wire Exit	180-degree	180-degree	180-degree	180-degree
Pitch	5.0 mm	5.0 mm	5.0 mm	5.0 mm
Screw Size	M2.5	N/A	M2.5	N/A
Recommended Screw Torque	< 3.98 lb-in [0.45 N·m]	N/A	< 3.98 lb-in [0.45 N·m]	N/A
Screwdriver Blade Width	3.5 mm	3.5 mm	3.5 mm	3.5 mm
Wire Gauge (Single Wire)	28–12 AWG	28–14 AWG	28–12 AWG	28–14 AWG
Wire Gauge (Dual Wire)	28–16 AWG	28–16 AWG (Dual wire ferrule required)	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]	0.3 in [7.5 mm]	0.37 in [9.5 mm]
Equiv. Dinkle P/N	5ESDV-0nP-BK*	5ESDSR-0nP-BK*	5ESDV-06P-BK	5ESDSR-06P-BK

\* Replace n with: (3) 3-terminal, (5) 5-terminal or (6) for 6-terminal.



# 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. Prewired cables keep installation clean and efficient, using less space at a fraction of the cost of standard terminal blocks. **ZIPLink**

prewired cables can connect directly to a **ZIPLink** remote terminal block module or with the pigtail option, allowing for a convenient solution to wire the BRX platform to third-party devices. For the BX 18/18E MPUs, two (2) cables and two (2) **ZIPLink** feedthrough modules are needed to connect to all the onboard wiring termination points.

Two (2) feedthrough module options are 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 18/18E ZIPLink Selector					
MPU Part Number	Component Type	Module Part Number	Max Quantity Needed	Cable Part Number*	Max Quantity Needed
<u><a href="#">BX-DM1-18ED1</a></u>	Feedthrough	<u><a href="#">ZL-RTB20</a></u> (Standard) OR <u><a href="#">ZL-RTB20-1</a></u> (Compact)	2	<u><a href="#">ZL-BX-CBL15</a></u> <u><a href="#">ZL-BX-CBL15-1</a></u> <u><a href="#">ZL-BX-CBL15-2</a></u>	2
<u><a href="#">BX-DM1-18ED1-D</a></u>					
<u><a href="#">BX-DM1-18ED2</a></u>					
<u><a href="#">BX-DM1-18ED2-D</a></u>					
<u><a href="#">BX-DM1-18ER**</a></u>					
<u><a href="#">BX-DM1-18ER-D**</a></u>					
<u><a href="#">BX-DM1-18AR**</a></u>					
<u><a href="#">BX-DM1E-18ED13</a></u>					
<u><a href="#">BX-DM1E-18ED13-D</a></u>					
<u><a href="#">BX-DM1E-18ED23</a></u>					
<u><a href="#">BX-DM1E-18ED23-D</a></u>					
<u><a href="#">BX-DM1E-18ER3**</a></u>					
<u><a href="#">BX-DM1E-18ER3-D**</a></u>					
<u><a href="#">BX-DM1E-18AR3**</a></u>					

\* 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 prewired cables allow for fast and easy connection of field wiring and remote I/O to the BRX platform.

The prewired cable is 0.5 meter in length. Pigtail cables are used to connect the BRX platform directly to third-party devices, reducing your wiring time and cost.

The pigtail cable is 1 meter in length.



Pre-wired ZIPLink Cable



ZIPLink Pigtail Cable

## ZIPLink Remote 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	<u>ZL-RTB20</u> (Maximum of 4 needed)	<u>ZL-RTB20-1</u> (Maximum of 4 needed)
<b>Number of Positions</b>	20 screw terminals, 2 rows	24 screw terminals, 3 rows
<b>Screwdriver Width</b>	1/8 in [3.8 mm] maximum	
<b>Screw Torque</b>	4.4 lb·in [0.5 N·m]	4.4 lb·in [0.5 N·m]



ZL-RTB20



ZL-RTB20-1

# BX 18/18E MPUs

BX-DM1-18ED1

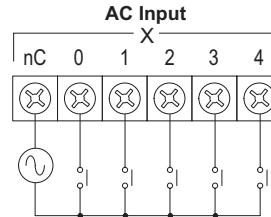
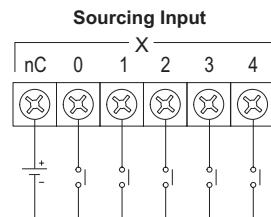
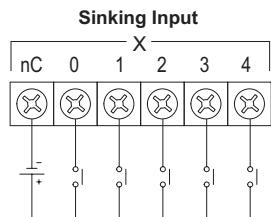
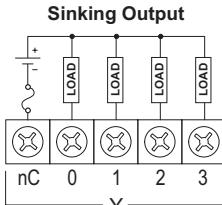
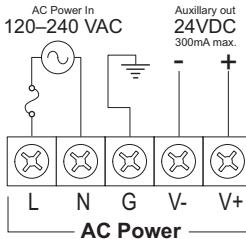
\$388.00

**BRX MPU with Do-more! DM1 technology**

- 120VAC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, sinking

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	291g [10.3 oz]

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
	* All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

**I/O Wiring****Discrete Input Wiring****Discrete Output Wiring****Supply Power Wiring**

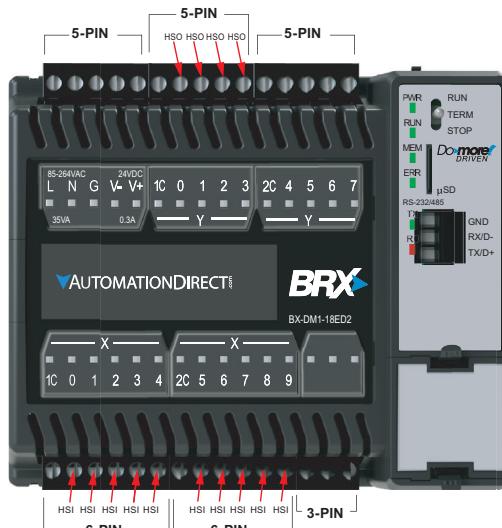
# BX 18/18E MPUs

**BX-DM1-18ED2 \$388.00**

## BRX MPU with Do-more! DM1 technology

- 120VAC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, sourcing.

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	291g [10.3 oz]



## I/O Terminal Blocks sold separately.

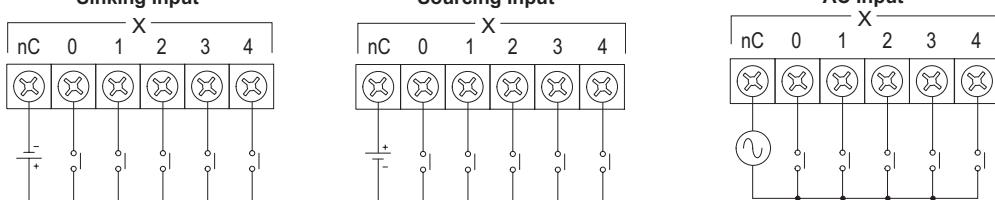
(See [Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page](#).)

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
	* All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12-24 VAC/DC
<b>Input Voltage Range</b>	9-30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0-250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47-63 Hz (60-240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

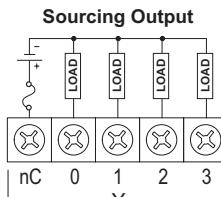
Discrete Output Specifications	
<b>Output Type</b>	Sourcing
<b>Total Outputs per Module</b>	8 Total – 4 High Speed (Y0...Y3)* 4 Standard (Y4...Y7) *All outputs may be used as standard outputs
<b>Commons</b>	2 (4 points/common) Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage Rating</b>	12-24 VDC
<b>Operating Voltage Range</b>	5-36 VDC
<b>Maximum Voltage</b>	36VDC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	0.5 A per output, no derating over temperature range
<b>Maximum Leakage Current</b>	10µA
<b>Maximum Switching Frequency</b>	1m cable      250kHz 10m cable      100kHz
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

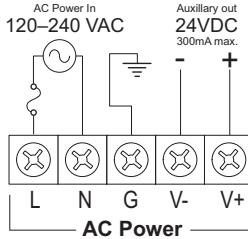
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

**BX-DM1-18ER \$374.00**

## BRX MPU with Do-more! DM1 technology

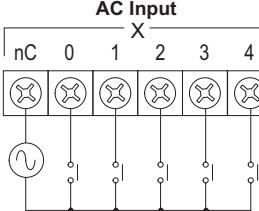
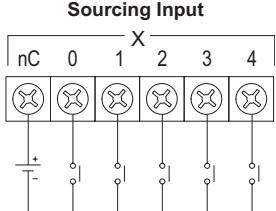
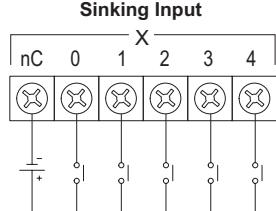
- 120VAC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, relay

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	314g [11.1 oz]

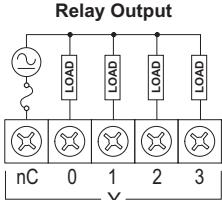
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
<b>Commons</b>	* All inputs may be used as standard inputs.
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

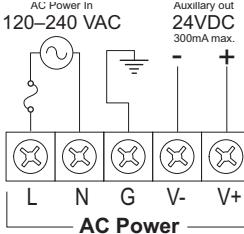
### Discrete Input Wiring



### Relay Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

**BX-DM1-18AR \$365.00**

## BRX MPU with Do-more! DM1 technology

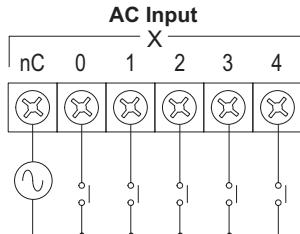
- 120VAC required; serial port; microSD slot
- Discrete input: 10-point, AC
- Discrete output: 8-point, relay.

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	316g [11.2 oz]

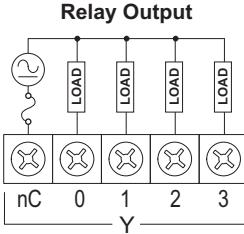
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Total Inputs per Module</b>	10 Standard
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264 VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Input Impedance</b>	15kΩ
<b>ON Voltage Level</b>	> 85 VAC
<b>OFF Voltage Level</b>	< 40 VAC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

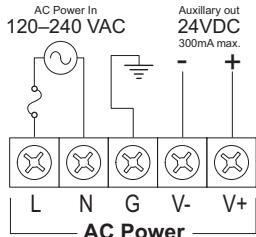
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

**BX-DM1-18ED1-D**    **\$357.00**

## BRX MPU with Do-more! DM1 technology

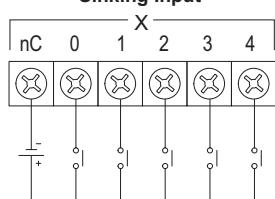
- 24VDC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, sinking

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	261g [9.2 oz]

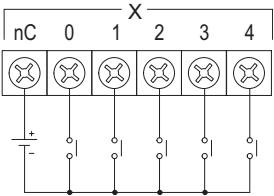
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed * * All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

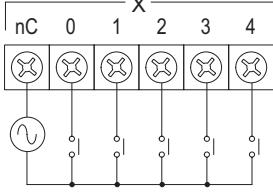
### Discrete Input Wiring



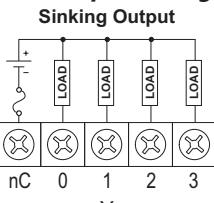
### Sourcing Input



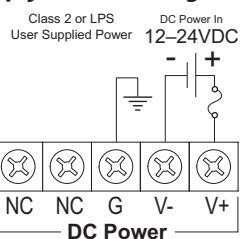
### AC Input



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

[BX-DM1-18ED2-D](#)

\$351.00

## BRX MPU with Do-more! DM1 technology

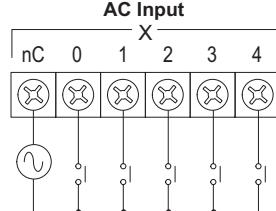
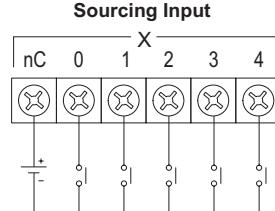
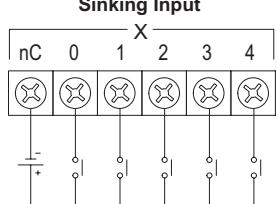
- 24VDC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, sourcing

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	261g [9.2 oz]

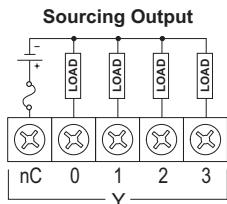
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

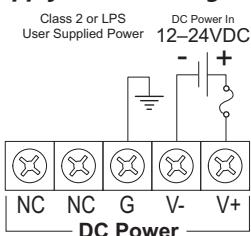
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

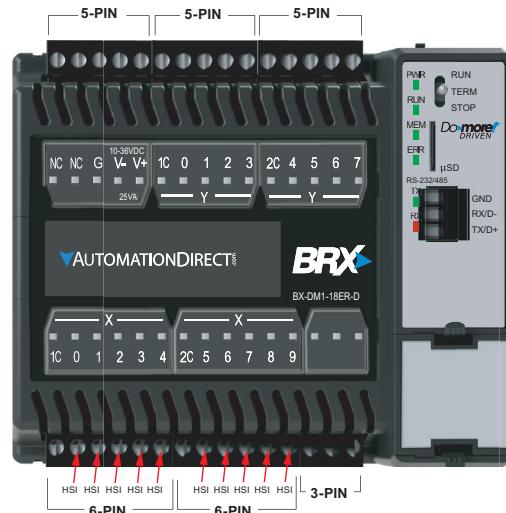
**BX-DM1-18ER-D**

**\$329.00**

## BRX MPU with Do-more! DM1 technology

- 24VDC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, relay

<b>CPU Specifications</b>	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	286g [10.1 oz]



**I/O Terminal Blocks sold separately.**  
(See Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page.)

## Discrete Input Specifications

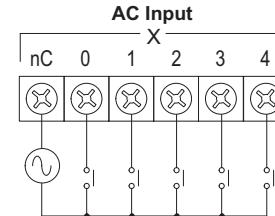
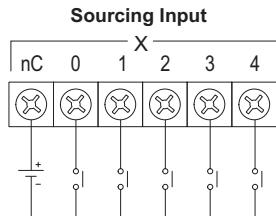
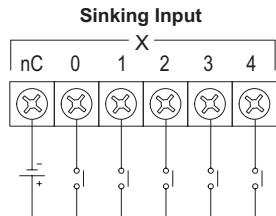
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed * * All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250KHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## Discrete Output Specifications

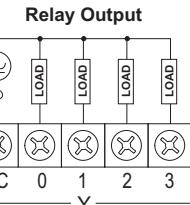
<b>Output Type</b>	Relay Form A (SPST)
<b>Total Outputs per Module</b>	8 Relay
<b>Commons</b>	2 (4 points/common) Isolated
<b>Maximum current per common</b>	8A
<b>Nominal Voltage Ratings</b>	12–48 VDC, 24–240 VAC
<b>Operating Voltage Range</b>	5–60 VDC, 5–264 VAC
<b>Maximum Voltage</b>	60VDC, 264VAC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

## I/O Wiring

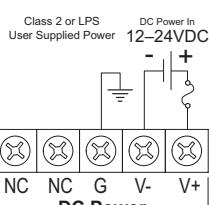
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

BX-DM1E-18ED13

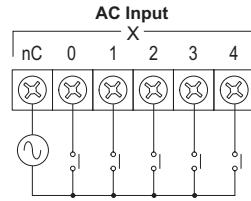
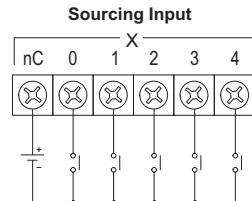
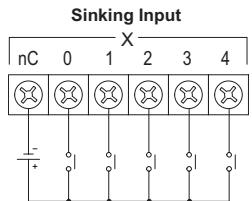
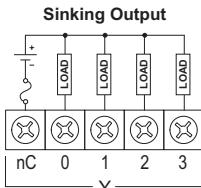
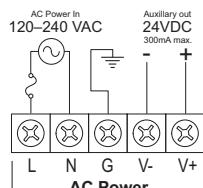
\$503.00

**BRX MPU with Do-more! DM1 technology**

- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, sinking
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 expansion modules max
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	299g [10.6 oz]

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
<b>Commons</b>	* All inputs may be used as standard inputs.
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

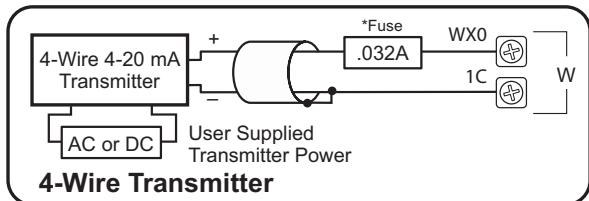
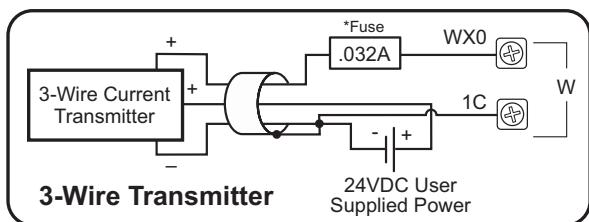
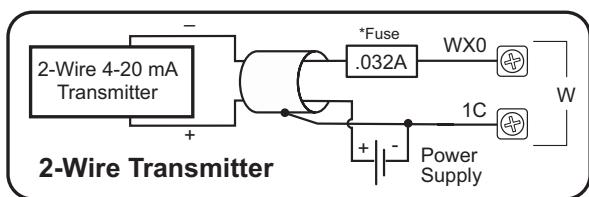
**I/O Wiring****Discrete Input Wiring****Discrete Output Wiring****Supply Power Wiring**

# BX 18/18E MPUs

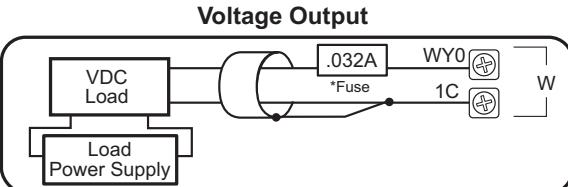
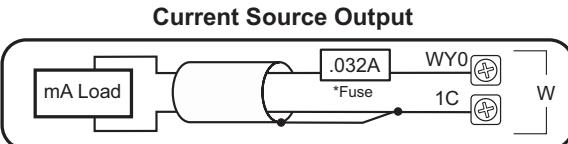
Analog Input Specifications	
Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
Input Current Range	Software Selectable $\pm 20mA$ , 4–20 mA
Resolution	16 bit @ $\pm 10V$ , $\pm 20mA$
Conversion Time	1.2 ms
Input Impedance	100k $\Omega$
Voltage Modes	
Input Impedance	249 $\Omega$
Current Modes	

Analog Output Specifications	
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
Minimum Voltage Load Impedance	1k $\Omega$
Output Current Range	Software Selectable $\pm 20mA$ , 4–20 mA
Maximum Current Load Impedance	500 $\Omega$
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

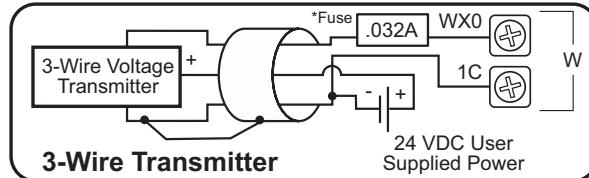
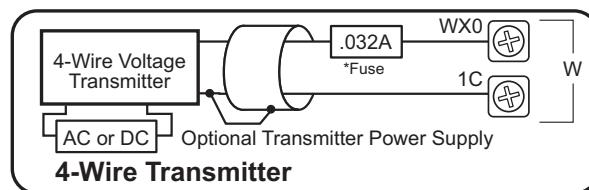


## Analog Output Wiring



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



# BX 18/18E MPUs

**BX-DM1E-18ED23**

**\$502.00**

## BRX MPU with Do-more! DM1 technology

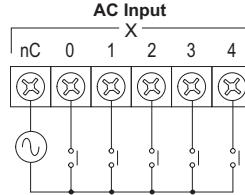
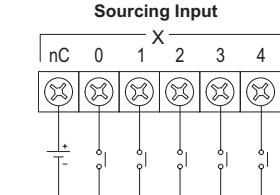
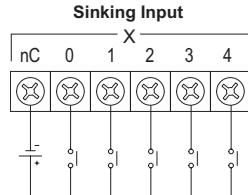
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, sourcing
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	299g [10.6 oz]

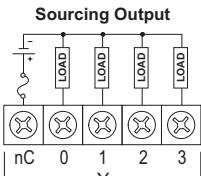
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
	* All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

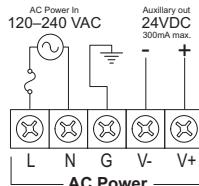
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



**I/O Terminal Blocks sold separately.**  
(See Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page.)

## Discrete Output Specifications

<b>Output Type</b>	Sourcing
<b>Total Outputs per Module</b>	8 Total – 4 High Speed (Y0...Y3)* 4 Standard (Y4...Y7) *All outputs may be used as standard outputs
<b>Commons</b>	2 (4 points/common) Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage Rating</b>	12–24 VDC
<b>Operating Voltage Range</b>	5–36 VDC
<b>Maximum Voltage</b>	36VDC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	0.5 A per output, no derating over temperature range
<b>Maximum Leakage Current</b>	10µA
<b>Maximum Switching Frequency</b>	1m cable 10m cable
<b>Status Indicators</b>	Logic Side, Green

# BX 18/18E MPUs

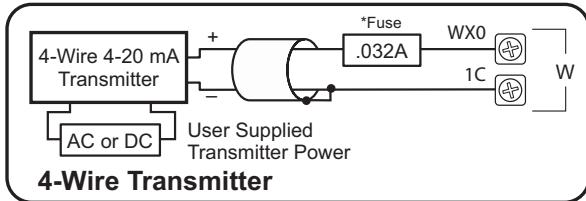
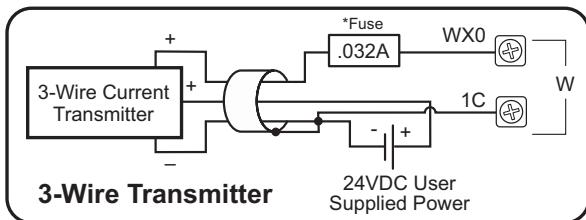
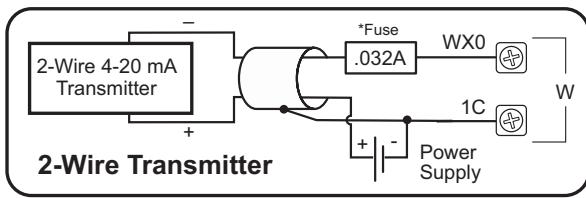
## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Input Impedance Current Modes</b>	249 $\Omega$

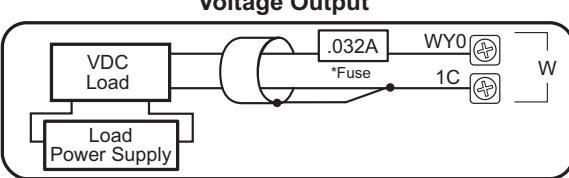
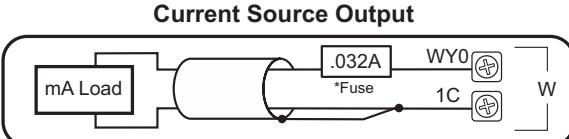
## Analog Output Specifications

<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$

### Analog Current Sinking Input Circuits

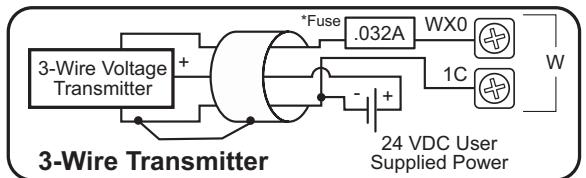
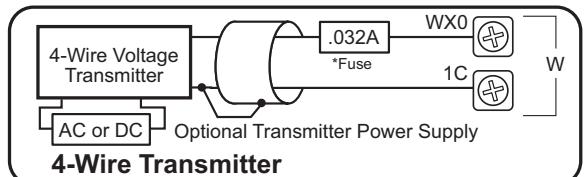


### Analog Output Wiring



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

### Analog Voltage Input Circuits



# BX 18/18E MPUs

**BX-DM1E-18ER3**

**\$495.00**

## BRX MPU with Do-more! DM1 technology

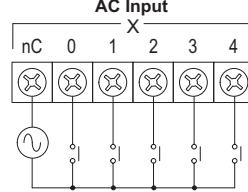
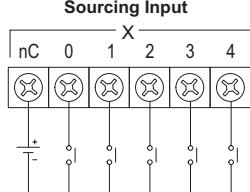
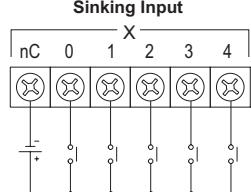
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, relay
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	324g [11.4 oz]

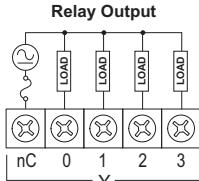
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed * * All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

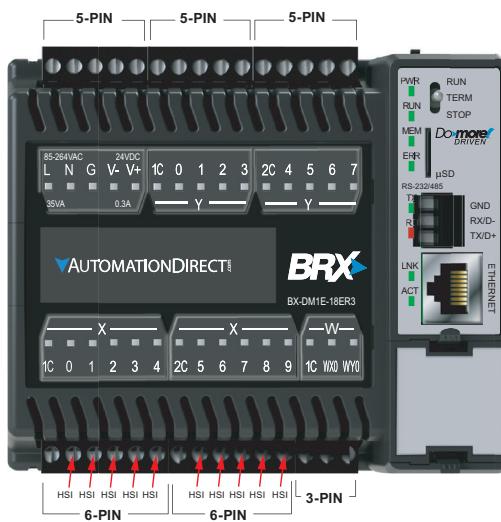
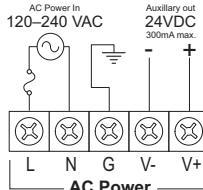
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



**I/O Terminal Blocks sold separately.**  
(See Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page.)

# BX 18/18E MPUs

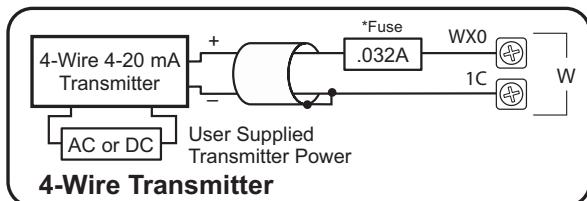
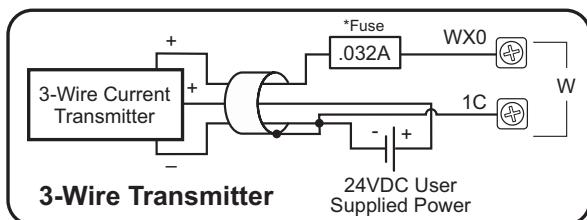
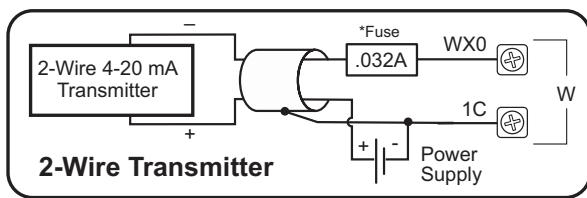
## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Output Specifications

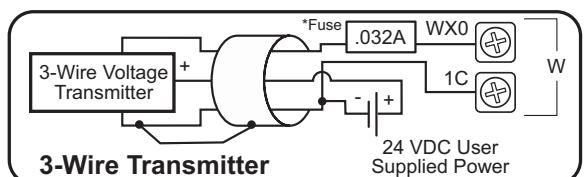
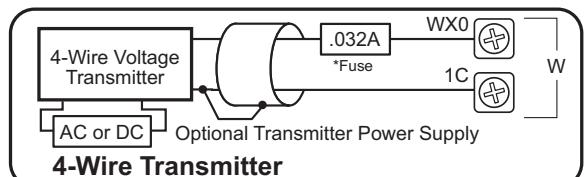
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

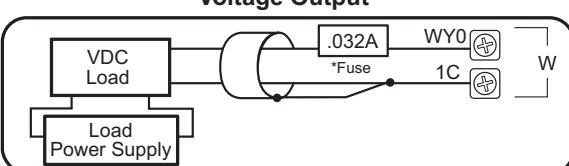
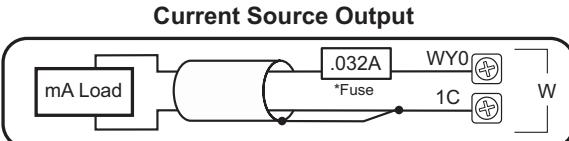


\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



## Analog Output Wiring



# BX 18/18E MPUs

**BX-DM1E-18AR3**

**\$483.00**

## BRX MPU with Do-more! DM1 technology

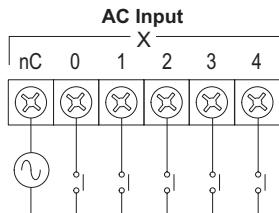
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, AC
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, relay
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	324g [11.4 oz]

Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Total Inputs per Module</b>	10 Standard
<b>Commons</b>	2 (5 points/common) Isolated
<b>Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264 VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Input Impedance</b>	15kΩ
<b>ON Voltage Level</b>	> 85 VAC
<b>OFF Voltage Level</b>	< 40 VAC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

### Discrete Input Wiring

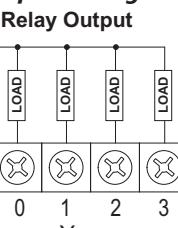


**I/O Terminal Blocks sold separately.**  
(See Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page.)

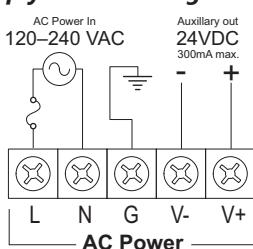
### Discrete Output Specifications

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

### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

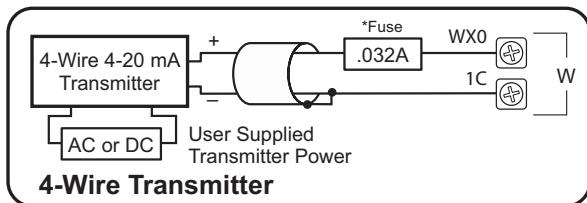
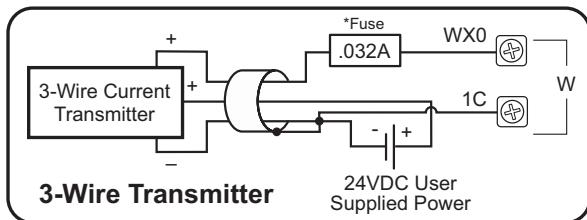
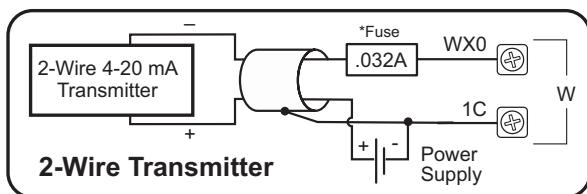
## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Output Specifications

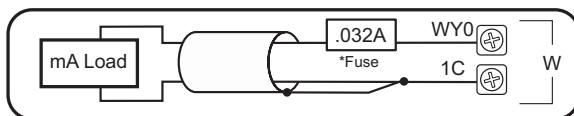
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

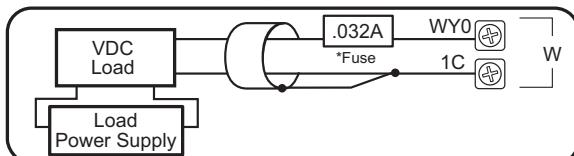


## Analog Output Wiring

### Current Source Output

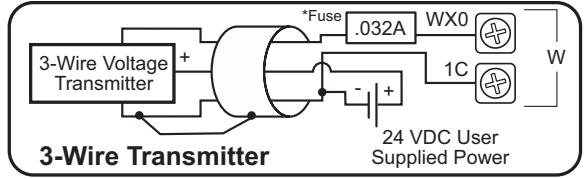
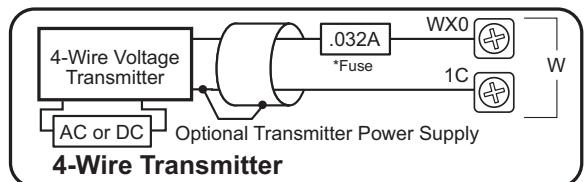


### Voltage Output



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



# BX 18/18E MPUs

**BX-DM1E-18ED13-D \$476.00**

## BRX MPU with Do-more! DM1 technology

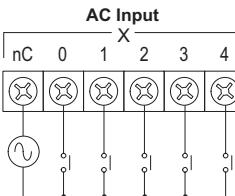
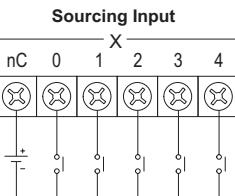
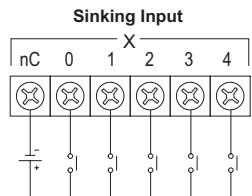
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, sinking
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	269g [9.5 oz]

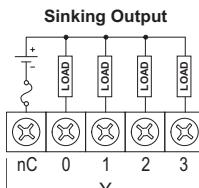
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
	* All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

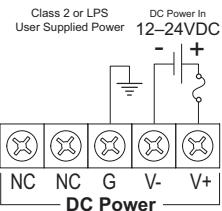
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

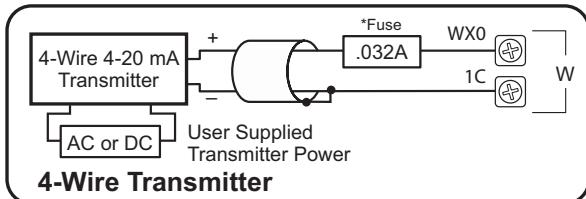
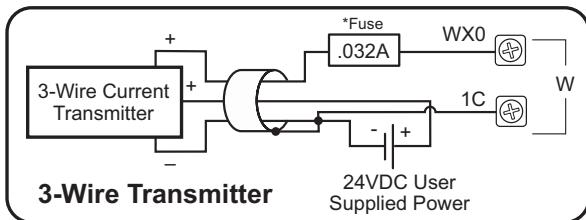
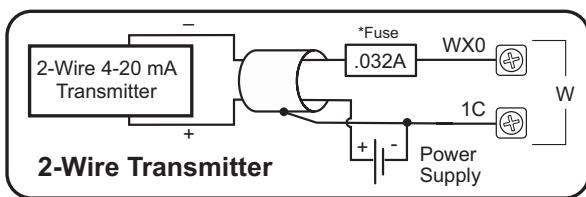
## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Output Specifications

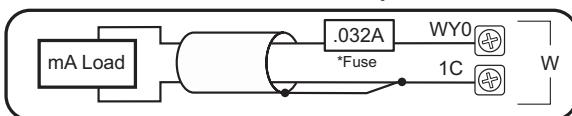
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$

## Analog Current Sinking Input Circuits

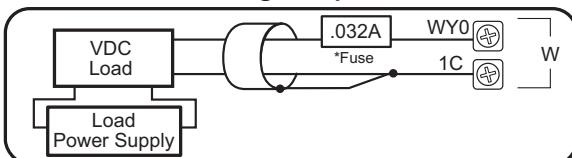


## Analog Output Wiring

### Current Source Output

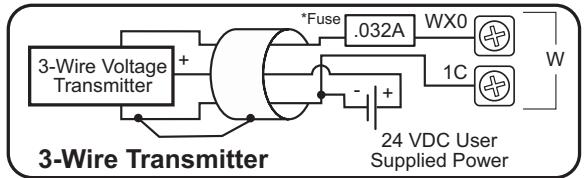
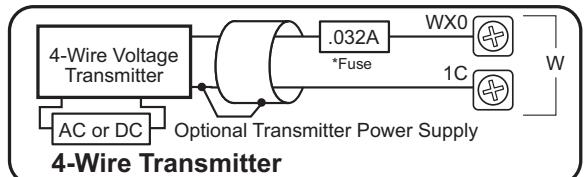


### Voltage Output



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



# BX 18/18E MPUs

**BX-DM1E-18ED23-D \$469.00**

## BRX MPU with Do-more! DM1 technology

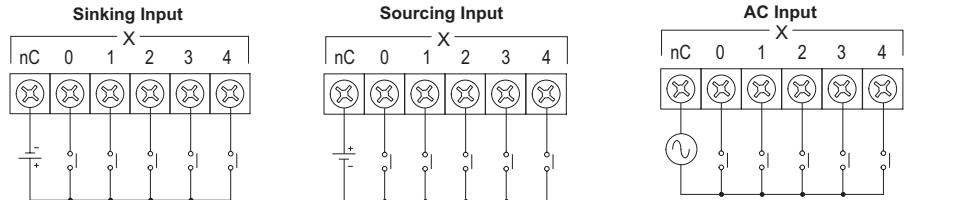
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, sourcing
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	269g [9.5 oz]

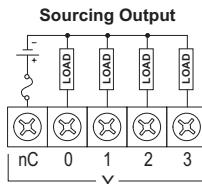
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed *
	* All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

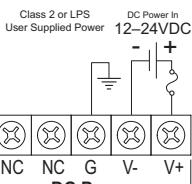
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

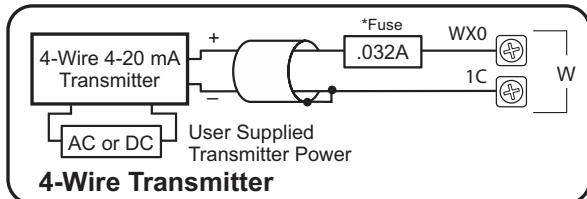
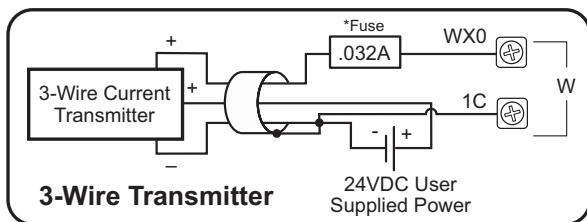
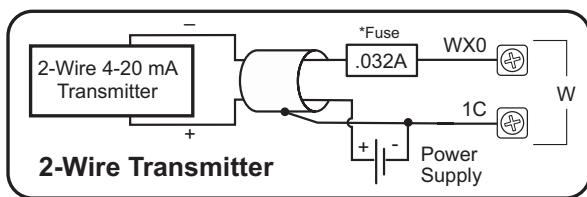
## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , $0-10 V$ , $0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , $4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Output Specifications

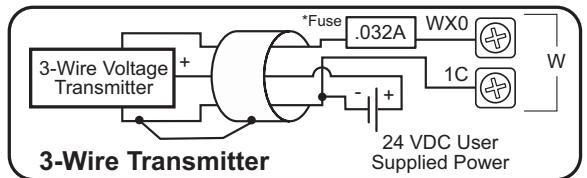
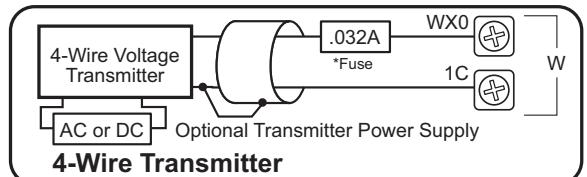
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , $0-10 V$ , $0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , $4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Current Sinking Input Circuits

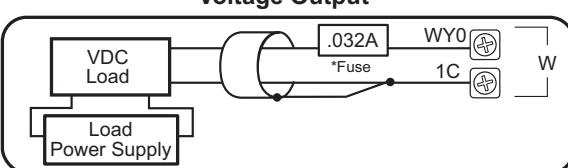
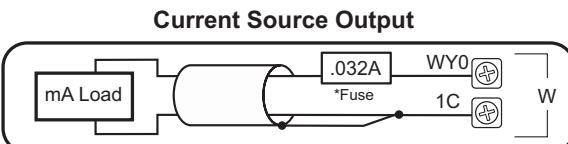


\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



## Analog Output Wiring



# BX 18/18E MPUs

**BX-DM1E-18ER3-D \$469.00**

## BRX MPU with Do-more! DM1 technology

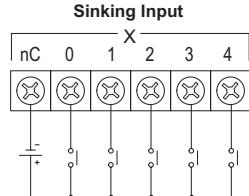
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, relay
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>Custom Label Window Size</b>	0.75" x 2.25" [19mm x 57.2 mm]
<b>MPU Weight</b>	295g [10.4 oz]

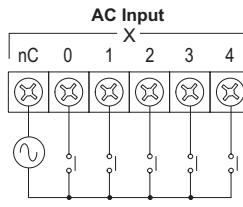
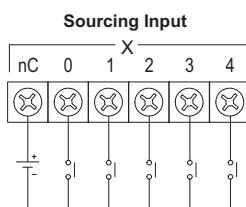
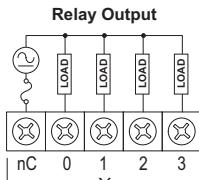
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	10 High Speed * * All inputs may be used as standard inputs.
<b>Commons</b>	2 (5 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

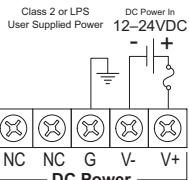
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring



# BX 18/18E MPUs

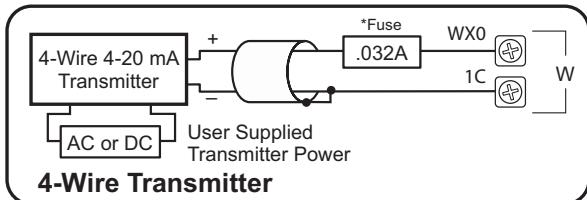
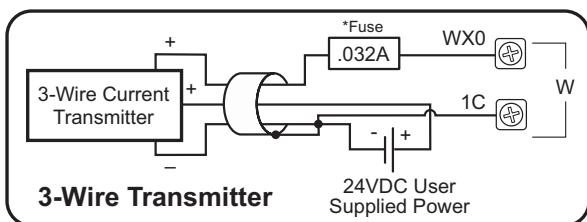
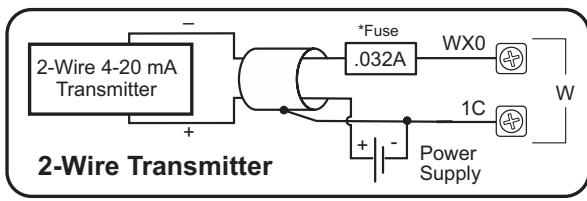
## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

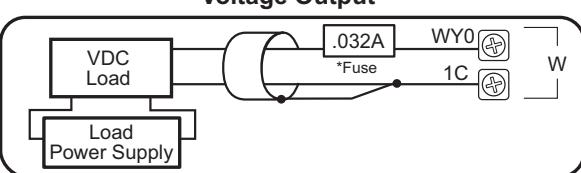
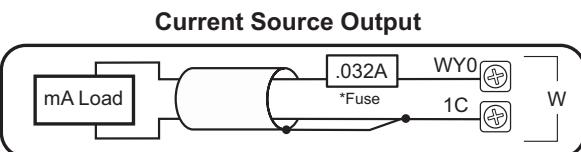
## Analog Output Specifications

<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , 0–10 V, 0–5 V
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , 4–20 mA
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

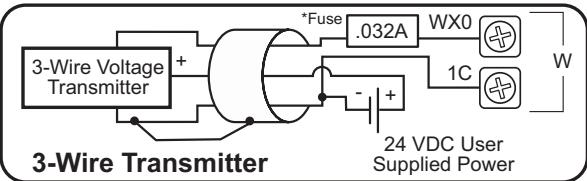
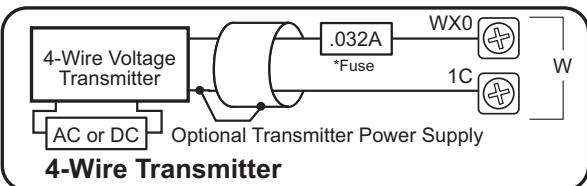
## Analog Current Sinking Input Circuits



## Analog Output Wiring



## Analog Voltage Input Circuits

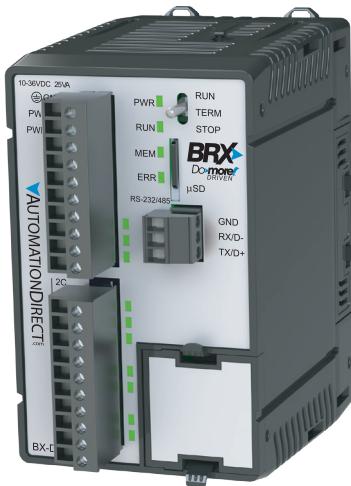


# BX 10 MPUs

## 10 Discrete I/O Points: 6 Inputs, 4 Outputs

### Features

- All units are externally powered by a nominal 12–24 VDC
- Models with DC inputs have:
  - 6 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 2 high speed outputs 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 10 Micro PLC Unit (MPU)**  
**(No Built-in Analog or Ethernet port)**

BX 10 MPUs					
Part Number	Price	External Power	Discrete Input	Discrete Output	Expansion Modules
<a href="#">BX-DM1-10ED1-D</a>	\$332.00	12–24 VDC	6 High-Speed, Sinking or Sourcing	2 High-Speed 2 Standard DC Sinking	8, as long as the MPU power budget is not exceeded
<a href="#">BX-DM1-10ED2-D</a>	\$332.00			2 High-Speed 2 Standard DC Sourcing	
<a href="#">BX-DM1-10ER-D</a>	\$325.00		6 Standard AC	4 Form A Relay	
<a href="#">BX-DM1-10AR-D</a>	\$213.00				

# BX 10E MPUs

## 10 Discrete I/O Points: 6 Inputs, 4 Outputs

### Features

- All units are externally powered by a nominal 12–24 VDC
- All units have a built-in RJ-45 Ethernet port, 10/100 Mbps
- Models with DC inputs have:
  - 6 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
- All units have 1 analog input (current/voltage software selectable)
- Output types available are DC sinking, DC sourcing, and relay
- Models with DC outputs have 2 high speed outputs 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 10E Micro PLC Unit (MPU)**

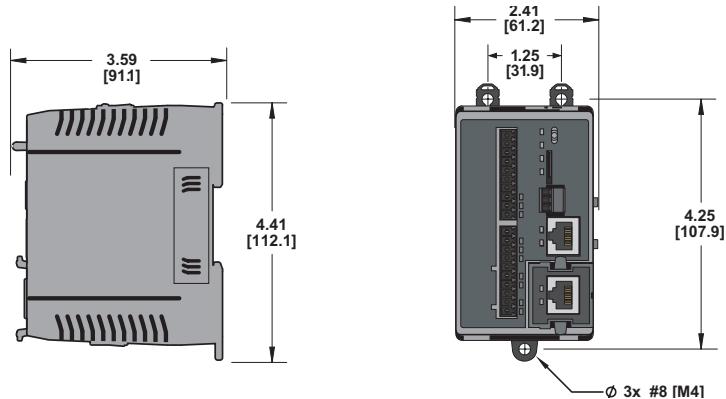
(Built-in Analog and Ethernet port)

Part Number	Price	External Power	Discrete Inputs	Discrete Output	Analog		Expansion Modules
					Input	Output	
<a href="#">BX-DM1E-10ED13-D</a>	\$405.00	12–24 VDC	6 High-Speed, Sinking or Sourcing	2 High-Speed 2 Standard DC Sinking	1 Current or Voltage	1 Current or Voltage	8, as long as the MPU power budget is not exceeded
<a href="#">BX-DM1E-10ED23-D</a>	\$404.00			2 High-Speed 2 Standard DC Sourcing			
<a href="#">BX-DM1E-10ER3-D</a>	\$420.00		6 Standard AC	4 Form A Relay			
<a href="#">BX-DM1E-10AR3-D</a>	\$411.00						

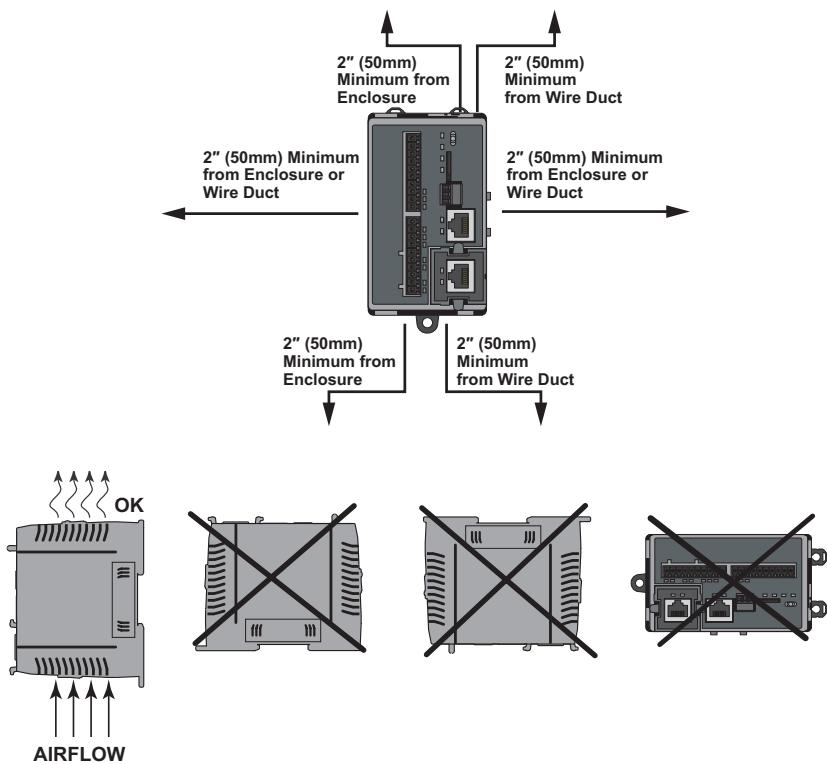
Built-in Ethernet Specifications	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
Port Status LED	LED is solid when network LINK is established. LED flashes when port is active (ACT).
Supported Protocols	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
Cable Recommendation	C5E-STxx-xx from AutomationDirect.com
Port Type	RJ45, Category 5, 10/100 BASE-T, Auto Crossover

# BX 10/10E MPUs

## Dimensions, inches[mm]



## Clearances and Mounting Restrictions



# BX 10/10E MPUs Accessories

## BX 10/10E MPU Wiring Termination Selection

The BX 10/10E MPUs ship without wiring terminals. This enables you to select the termination solution that best fits your

application. Several wiring options are available, including removable screw terminal connectors

removable spring clamp terminal connectors and prewired **ZIPLink** cable solutions.

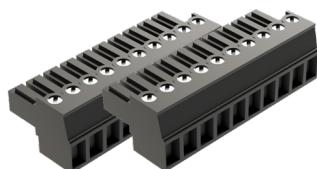
### Terminal Block Connectors

The terminal block connectors are provided in kits and can be easily ordered as a single part number to receive all the terminal block connectors needed. Each

kit for the BX 10/10E MPU comes with two (2) 10-pin 3.8 mm terminal blocks. On the BX 10/10E MPUs the terminals are organized into groups consisting of

#### [BX-RTB10](#) Screw Terminal Block Kit

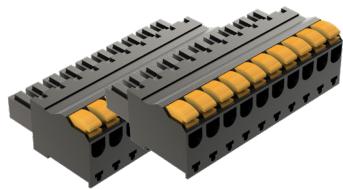
This terminal block kit includes 2 10-pin 3.8 mm terminal blocks ([BX-RTB10](#)). These are 90-degree screw terminal blocks. Wire is 180-degree pass through.



[BX-RTB10](#)

#### [BX-RTB10-1](#) Screw Terminal Block Kit

This terminal block kit includes 2 10-pin 3.8 mm terminal blocks ([BX-RTB10-1](#)). These are 90-degree screw terminal blocks. Wire is 180-degree pass through.

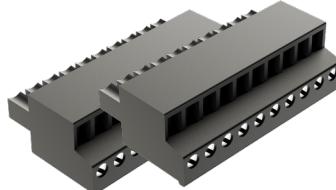


[BX-RTB10-1](#)

3 inputs with an isolated common and 2 outputs with an isolated common. For example, inputs X0-X2 are in a group with their common terminal.

#### [BX-RTB10-2](#) Screw Terminal Block Kit

This terminal block kit includes (2) 10-pin 3.8 mm terminal blocks ([BX-RTB10-2](#)). These are 180-degree screw terminal blocks. Wire is 180-degree pass through.



[BX-RTB10-2](#)

Removable Terminal Block Specifications			
Part Number	<u><a href="#">BX-RTB10</a></u>	<u><a href="#">BX-RTB10-1</a></u>	<u><a href="#">BX-RTB10-2</a></u>
<b>Price (pkg)</b>	\$22.50	\$25.00	\$23.50
<b>Connector Type</b>	Screw Type-90-degree	Spring Clamp Type-180-degree	Screw Type-180-degree
<b>Wire Exit</b>	180-degree	180-degree	180-degree
<b>Pitch</b>	3.81 mm	3.81 mm	3.81 mm
<b>Screw Size</b>	M2	N/A	M2
<b>Recommended Screw Torque</b>	<1.77 lb-in [0.2 N·m]	N/A	<1.77 lb-in [0.2 N·m]
<b>Screwdriver Blade Width</b>	2.5 mm	2.5 mm	2.5 mm
<b>Wire Gauge (Single Wire)</b>	28–16 AWG	28–18 AWG	30–16 AWG
<b>Wire Gauge (Dual Wire)</b>	28–16 AWG	30–20 AWG (Dual Wire Ferrule Required)	30–18 AWG
<b>Wire Strip Length</b>	0.24 in [6mm]	0.35 in [9mm]	0.26 in [6.5 mm]
<b>Equiv. Dinkle part #</b>	EC381V-10P-BK	ESC381V-10-BK	EC381F-10P-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. It's as simple as plugging in a cable connector at either end or terminating wires at only one end. Prewired cables keep installation clean and efficient, using less space at a fraction of the cost of standard terminal blocks. ZIPLink prewired cables can connect

directly to a ZIPLink remote terminal block module, or with the pigtail option they can allow for a convenient solution to wire the BRX platform to third-party devices. For the BX 10/10E MPUs, one cable and one feedthrough module is needed to connect to all the onboard wiring termination points.

Two feedthrough module options are available, the ZL-RTB20 and the ZL-RTB20-1. The ZL-RTB20 is a standard feedthrough terminal module and the ZL-RTB20-1 is a compact feedthrough terminal block module having a compact footprint taking up less space in the control cabinet.

BX 10/10E ZIPLink Selector				
MPU Part Number	Component Type	Module Part Number	Cable Part Number*	Max Quantity Needed
<a href="#"><u>BX-DM1-10ED1-D</u></a>	Feedthrough	<a href="#"><u>ZL-RTB20</u></a> (Standard) OR <a href="#"><u>ZL-RTB20-1</u></a> (Compact)	<a href="#"><u>ZL-BX-CBL20</u></a> <a href="#"><u>ZL-BX-CBL20-1</u></a> <a href="#"><u>ZL-BX-CBL20-2</u></a>	1
<a href="#"><u>BX-DM1-10ED2-D</u></a>				
<a href="#"><u>BX-DM1-10ER-D**</u></a>				
<a href="#"><u>BX-DM1-10AR-D**</u></a>				
<a href="#"><u>BX-DM1E-10ED13-D</u></a>				
<a href="#"><u>BX-DM1E-10ED23-D</u></a>				
<a href="#"><u>BX-DM1E-10ER3-D**</u></a>				
<a href="#"><u>BX-DM1E-10AR3-D**</u></a>				

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

Available pigtail cables: [ZL-BX-CBL20-1P](#) = 1.0 m, [ZL-BX-CBL20-2P](#) = 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 prewired cables allow for fast and easy connection of field wiring to the BRX platform. The prewired

cable is 0.5 meter in length. Pigtail cables are used to connect the BRX platform directly to third-party devices, reducing

your wiring time and cost. The pigtail cable is 1 meter in length.



Pre-wired ZIPLink Cable



ZIPLink Pigtail Cable

## ZIPLink Remote Feedthrough Modules

Remote 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

# BX 10/10E MPUs

**BX-DM1-10ED1-D**    \$332.00

## BRX MPU with Do-more! DM1 technology

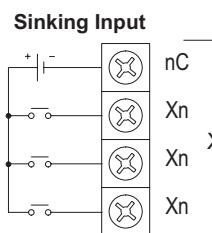
- 24VDC required; serial port; microSD slot
- Discrete input: 6-point, sink/source
- Discrete output: 4-point, sinking

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>MPU Weight</b>	169g [6oz]

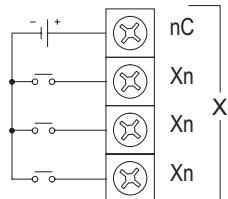
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	6 High Speed (All Inputs may be used as standard Inputs)
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	12-24 VAC/DC
<b>Input Voltage Range</b>	9-30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0-250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47-63 Hz (60-240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Minimum ON Current</b>	5.0 mA (9V required to guarantee ON state)
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

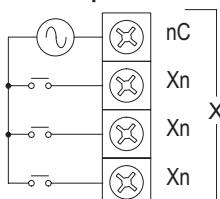
### Discrete Input Wiring



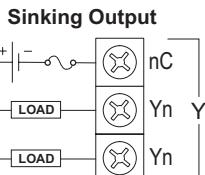
### Sourcing Input



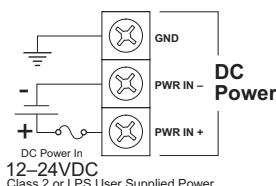
### AC Input



### Discrete Output Wiring



### Supply Power Wiring



# BX 10/10E MPUs

[BX-DM1-10ED2-D](#)

\$332.00

## BRX MPU with Do-more! DM1 technology

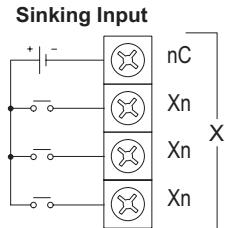
- 24VDC required; serial port; microSD slot
- Discrete input: 6-point, sink/source
- Discrete output: 4-point, sourcing

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>MPU Weight</b>	169g [6oz]

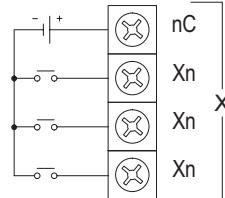
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	6 High Speed (All Inputs may be used as standard Inputs)
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Minimum ON Current</b>	5.0 mA (9V required to guarantee ON state)
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/DC
<b>OFF Voltage Level</b>	< 2.0 VAC/DC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

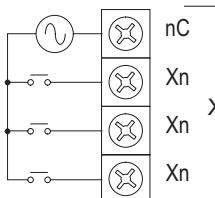
### Discrete Input Wiring



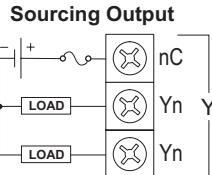
### Sourcing Input



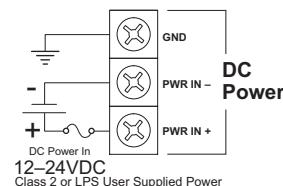
### AC Input



### Discrete Output Wiring



### Supply Power Wiring



# BX 10/10E MPUs

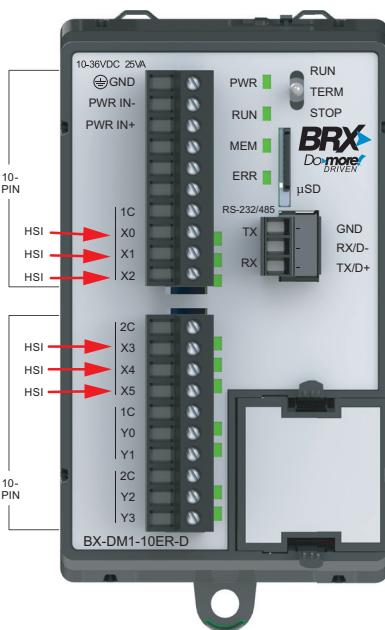
BX-DM1-10ER-D

\$325.00

**BRX MPU with Do-more! DM1 technology**

- 24VDC required; serial port; microSD slot
- Discrete input: 6-point, sink/source
- Discrete output: 4-point, relay

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>MPU Weight</b>	181g [6.4 oz]



I/O Terminal Blocks sold separately.  
(See Removable Terminal Block Specifications Table on BX 10/10E MPU Accessories page.)

## Discrete Input Specifications

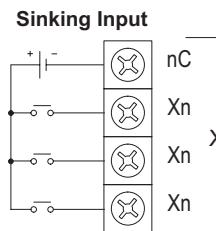
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	6 High Speed (All Inputs may be used as standard Inputs)
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>	0–250kHz - High Speed
<b>Minimum Pulse Width</b>	0.5 µs - High Speed
<b>AC Frequency</b>	47–63 Hz (60–240Hz filter must be set in software for AC operation)
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	6mA @ 24 VAC/DC
<b>Maximum Input Current</b>	12mA @ 30 VAC/DC
<b>Minimum ON Current</b>	5.0 mA (9V required to guarantee ON state)
<b>Maximum OFF Current</b>	2.0 mA
<b>ON Voltage Level</b>	> 9.0 VAC/VDC
<b>OFF Voltage Level</b>	< 2.0 VAC/VDC
<b>Status Indicators</b>	Logic Side, Green

## Discrete Output Specifications

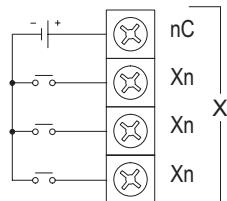
<b>Output Type</b>	Relay Form A (SPST)
<b>Total Outputs per Module</b>	4 Relay
<b>Commons</b>	2 (2 points/common) Isolated
<b>Maximum current per common</b>	4A
<b>Nominal Voltage Ratings</b>	12–48 VDC, 24–240 VAC
<b>Operating Voltage Range</b>	5–60 VDC, 5–264 VAC
<b>Maximum Voltage</b>	60VDC, 264VAC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

## I/O Wiring

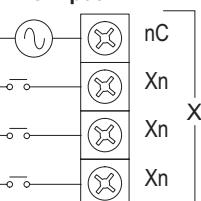
### Discrete Input Wiring



### Sourcing Input

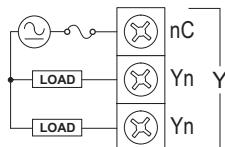


### AC Input

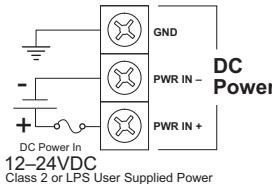


### Discrete Output Wiring

#### Relay Output



### Supply Power Wiring



# BX 10/10E MPUs

[BX-DM1-10AR-D](#)

**\$213.00**

## BRX MPU with Do-more! DM1 technology

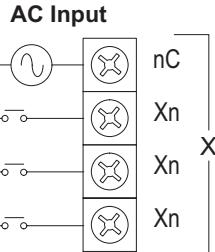
- 24VDC required; serial port; microSD slot
- Discrete input: 6-point, AC
- Discrete output: 4-point, relay

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>MPU Weight</b>	186g [6.6 oz]

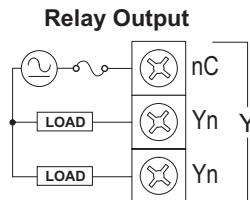
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Total Inputs per Module</b>	6 Standard
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264 VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Input Impedance</b>	15kΩ
<b>ON Voltage Level</b>	> 85 VAC
<b>OFF Voltage Level</b>	< 40 VAC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

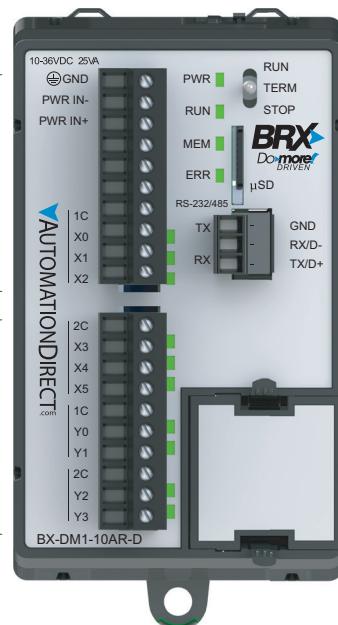
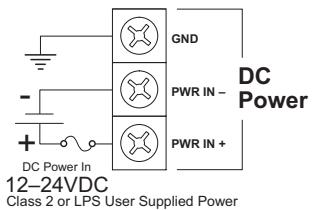
### Discrete Input Wiring



### Relay Output Wiring



### Supply Power Wiring



**I/O Terminal Blocks sold separately.**  
(See Removable Terminal Block Specifications Table  
on BX 10/10E MPU Accessories page.)

### Discrete Output Specifications

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

# BX 10/10E MPUs

**BX-DM1E-10ED13-D \$405.00**

## BRX MPU with Do-more! DM1 technology

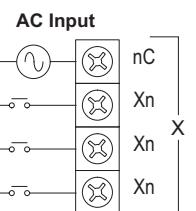
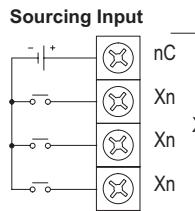
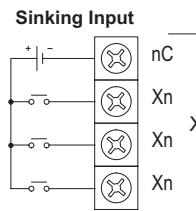
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 6-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 4-point, sinking
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>MPU Weight</b>	169g [6oz]

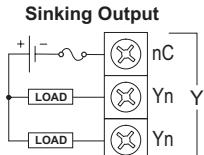
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	6 High Speed (All inputs may be used as standard inputs.)
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30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

## I/O Wiring

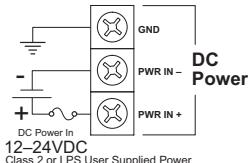
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring

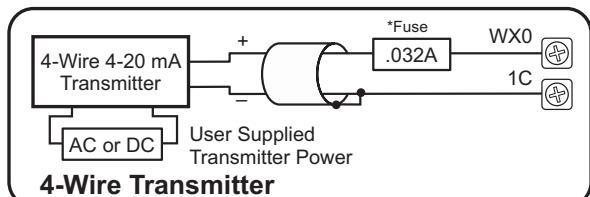
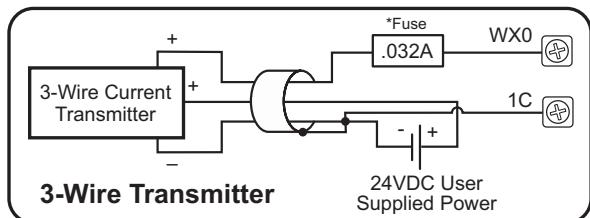
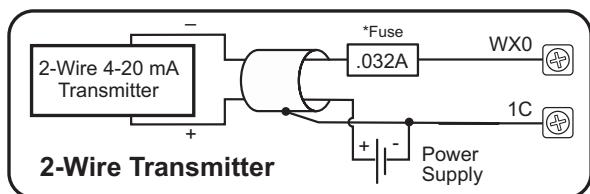


# BX 10/10E MPUs

## Analog Input Specifications

<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , $0-10 V$ , $0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , $4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	
<b>Voltage Modes</b>	100 $\Omega$
<b>Input Impedance</b>	
<b>Current Modes</b>	249 $\Omega$

## Analog Current Sinking Input Circuits

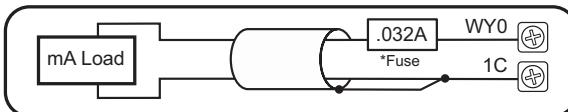


## Analog Output Specifications

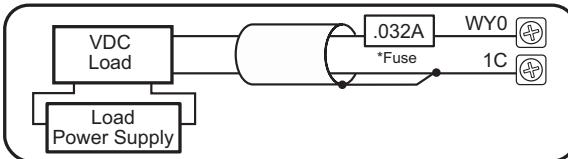
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , $0-10 V$ , $0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , $4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Output Wiring

### Current Source Output

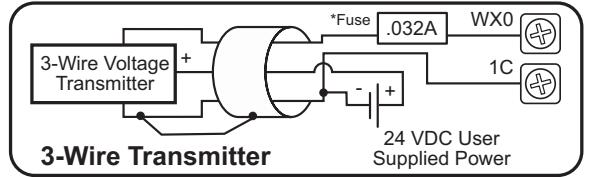
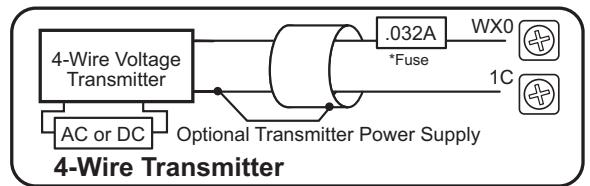


### Voltage Output



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits



# BX 10/10E MPUs

**BX-DM1E-10ED23-D \$404.00**

## BRX MPU with Do-more! DM1 technology

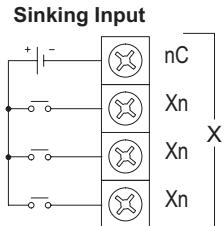
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 6-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 4-point, sourcing
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>MPU Weight</b>	174g [6.1 oz]

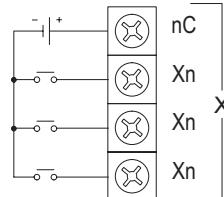
Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	6 High Speed (All inputs may be used as standard inputs.)
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30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

## I/O Wiring

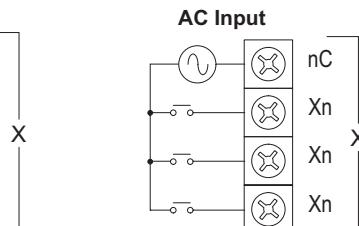
### Discrete Input Wiring



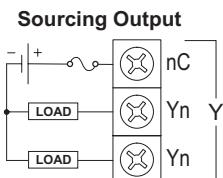
### Sourcing Input



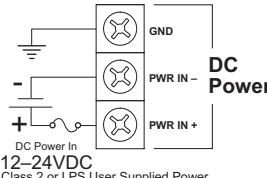
### AC Input



### Discrete Output Wiring



### Supply Power Wiring

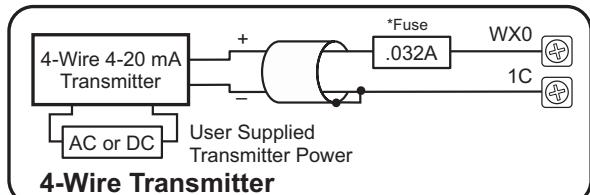
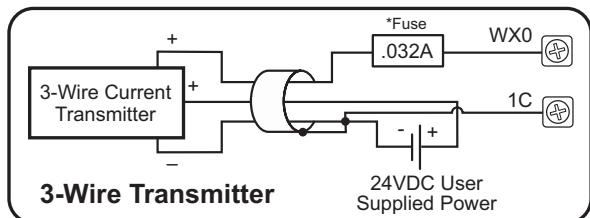
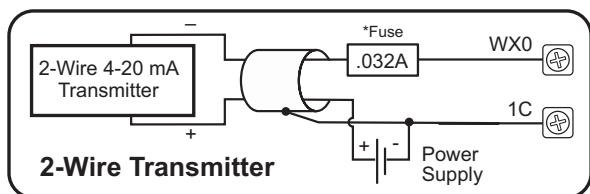


# BX 10/10E MPUs

## Analog Input Specifications

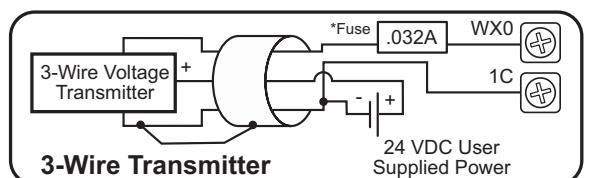
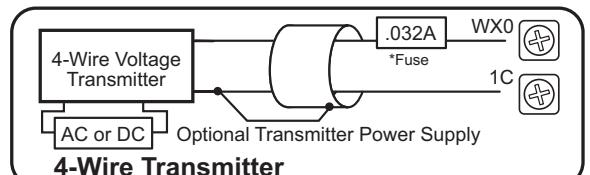
<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , $0-10 V$ , $0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA$ , $4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Current Sinking Input Circuits



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits

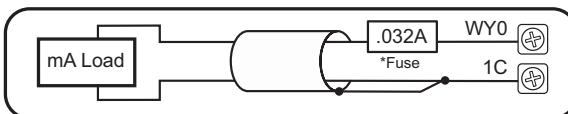


## Analog Output Specifications

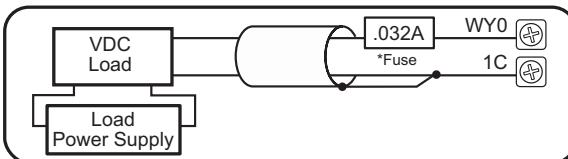
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V$ , $\pm 5V$ , $0-10 V$ , $0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA$ , $4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V$ , $\pm 20mA$

## Analog Output Wiring

### Current Source Output



### Voltage Output



# BX 10/10E MPUs

**BX-DM1E-10ER3-D \$420.00**

## BRX MPU with Do-more! DM1 technology

- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 6-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 4-point, relay
- Analog output: 1-channel, current / voltage

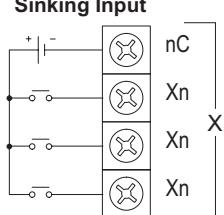
CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	BX-PGM-CBL
<b>MPU Weight</b>	190g [6.7 oz]

## Discrete Input Specifications

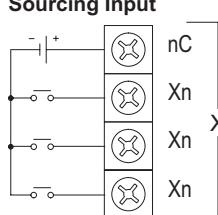
<b>Input Type</b>	Sink/Source
<b>Total Inputs per Module</b>	6 High Speed *
	* All inputs may be used as standard inputs.
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	12–24 VAC/DC
<b>Input Voltage Range</b>	9–30 VAC/DC
<b>Maximum Voltage</b>	30 VAC/DC
<b>DC Frequency</b>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

## I/O Wiring

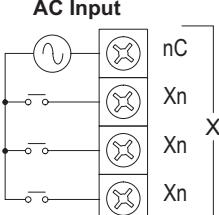
### Discrete Input Wiring



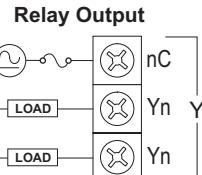
### Sourcing Input



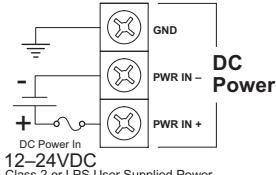
### AC Input



### Discrete Output Wiring



### Supply Power Wiring

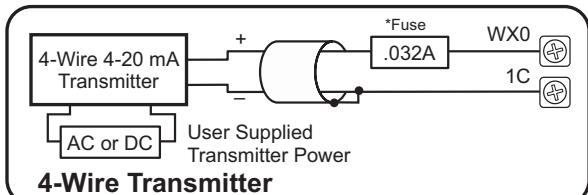
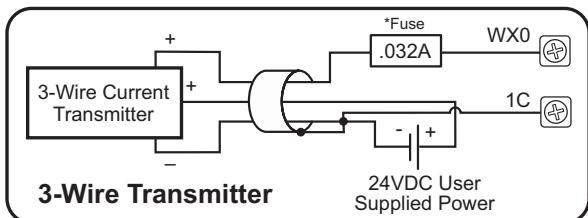
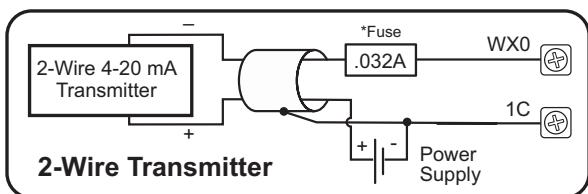


# BX 10/10E MPUs

## Analog Input Specifications

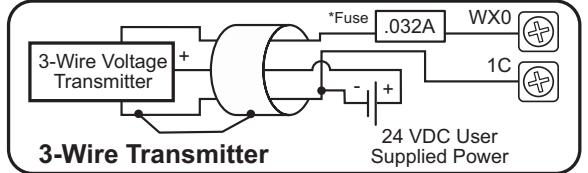
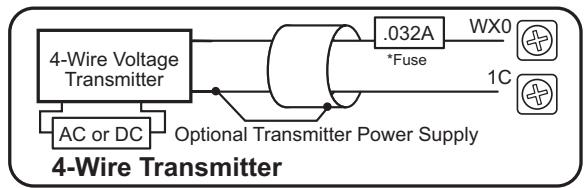
<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Current Sinking Input Circuits



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

## Analog Voltage Input Circuits

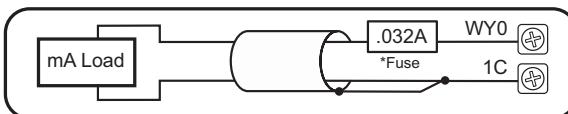


## Analog Output Specifications

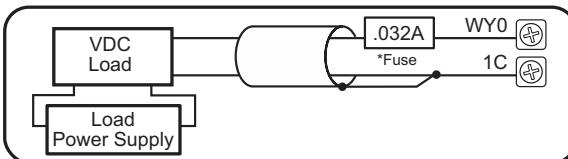
<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$

## Analog Output Wiring

### Current Source Output



### Voltage Output



# BX 10/10E MPUs

**BX-DM1E-10AR3-D \$411.00**

## BRX MPU with Do-more! DM1 technology

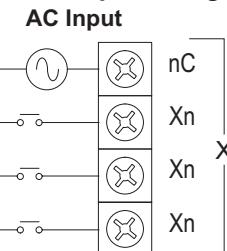
- 24VDC required; serial port; Ethernet port; microSD slot
- Discrete input: 6-point, AC
- Analog input: 1-channel, current / voltage
- Discrete output: 4-point, relay
- Analog output: 1-channel, current / voltage

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Serial Port</b>	RS-232/485 3-Pin, Software selectable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>MPU Weight</b>	181g [6.4 oz]

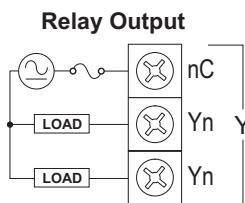
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Total Inputs per Module</b>	6 Standard
<b>Commons</b>	2 (3 points/common) Isolated
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264 VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Input Impedance</b>	15kΩ
<b>ON Voltage Level</b>	> 85 VAC
<b>OFF Voltage Level</b>	< 40 VAC
<b>Status Indicators</b>	Logic Side, Green

## I/O Wiring

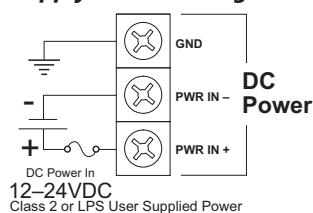
### Discrete Input Wiring



### Discrete Output Wiring



### Supply Power Wiring

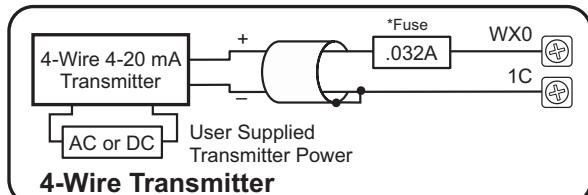
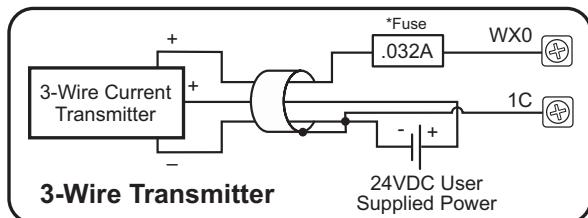
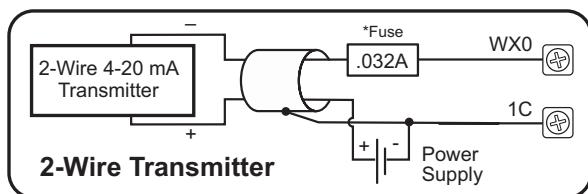


# BX 10/10E MPUs

## Analog Input Specifications

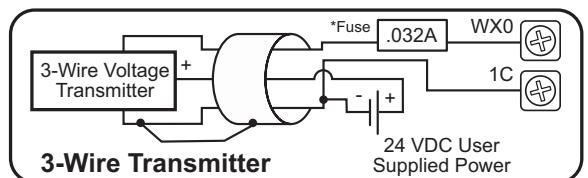
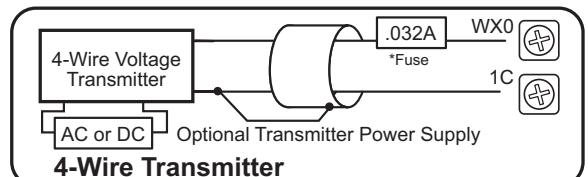
<b>Inputs per Module</b>	1
<b>Input Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Input Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$
<b>Conversion Time</b>	1.2 ms
<b>Input Impedance</b>	100k $\Omega$
<b>Voltage Modes</b>	
<b>Input Impedance</b>	249 $\Omega$
<b>Current Modes</b>	

## Analog Current Sinking Input Circuits



\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

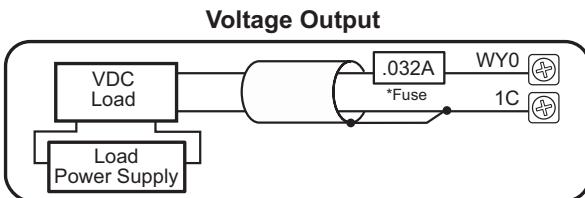
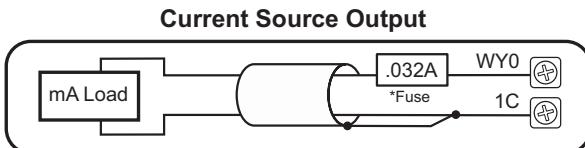
## Analog Voltage Input Circuits



## Analog Output Specifications

<b>Outputs per Module</b>	1
<b>Output Voltage Range</b>	Software Selectable $\pm 10V, \pm 5V, 0-10 V, 0-5 V$
<b>Minimum Voltage Load Impedance</b>	1k $\Omega$
<b>Output Current Range</b>	Software Selectable $\pm 20mA, 4-20 mA$
<b>Maximum Current Load Impedance</b>	500 $\Omega$
<b>Conversion Time</b>	< 1ms
<b>Resolution</b>	16 bit @ $\pm 10V, \pm 20mA$

## Analog Output Wiring



# BX ME MPUs

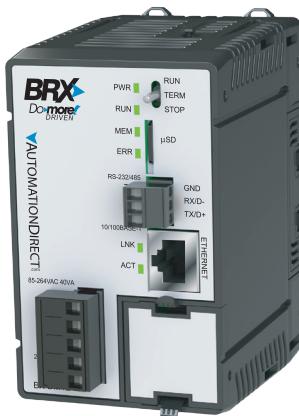
## Overview

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



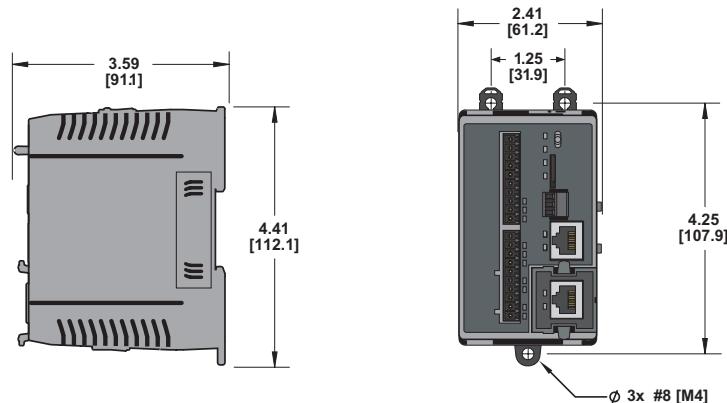
**BX-DM1E-M-D Micro PLC Unit (MPU)**  
12-24 VDC

BX ME MPUs							
Part Number	Price	External Power	Discrete Input	Discrete Output	Analog		Expansion Modules
					Input	Output	
<a href="#">BX-DM1E-M</a>	\$380.00	120-240 VAC	N/A	N/A	N/A	N/A	8
<a href="#">BX-DM1E-M-D</a>	\$369.00	12-24 VDC					

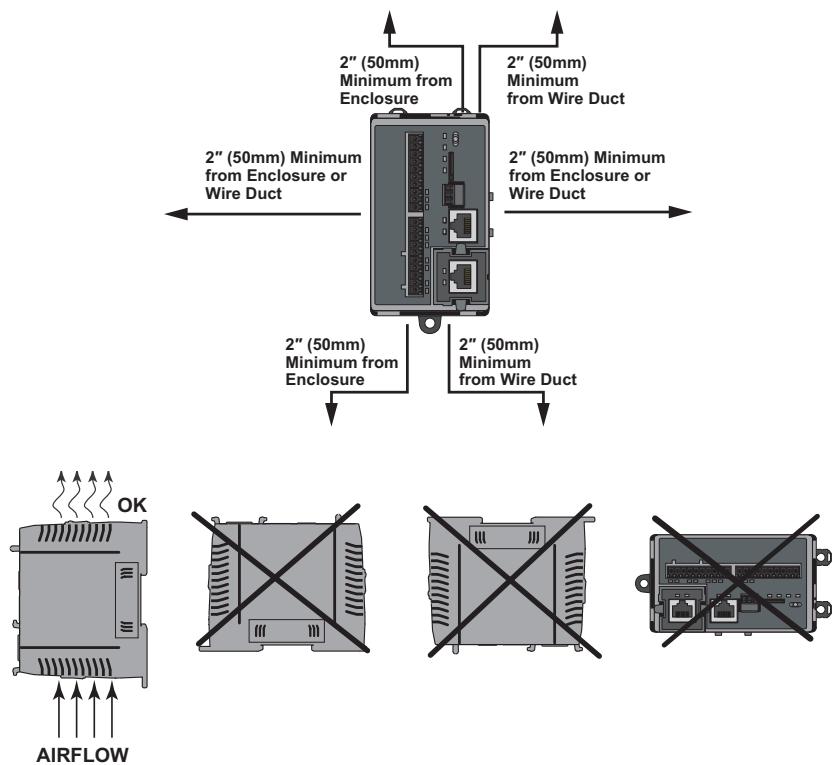
Built-in Ethernet Specifications (BX-DM1E-M-D Only)																																					
<b>Port Name</b>	ETHERNET																																				
<b>Description</b>	Standard transformer isolated Ethernet port with built-in surge protection.																																				
<b>Transfer Rate</b>	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>	<table border="1"> <tr> <td></td><td>Port:</td></tr> <tr> <td>Do-more! Protocol</td><td>28784, UDP</td></tr> <tr> <td>Modbus TCP</td><td>502, TCP</td></tr> <tr> <td>TCP/IP</td><td>User-defined, TCP</td></tr> <tr> <td>Custom Protocol</td><td>User-defined</td></tr> <tr> <td>SNTP (Time Server)</td><td>123, TCP</td></tr> <tr> <td>SMTP (Email)</td><td>25, TCP</td></tr> <tr> <td>MQTT</td><td>1883, TCP</td></tr> <tr> <td>MQTTS</td><td>8883, TCP</td></tr> <tr> <td>HTTP</td><td>80, TCP</td></tr> <tr> <td>HTTPS</td><td>443, TCP</td></tr> <tr> <td>Embedded Web Server: HTTP (Unsecure)</td><td>80, TCP</td></tr> <tr> <td>FTP (Client)</td><td>21, TCP</td></tr> <tr> <td>EtherNet/IP: Explicit Messaging (Scanner, Adapter)</td><td>44818, TCP</td></tr> <tr> <td>EtherNet/IP: Implicit Messaging (Scanner, Adapter) (requires Do-more! Designer version 2.10 or later)</td><td>44818, TCP</td></tr> <tr> <td>DHCP</td><td>67,68, UCP</td></tr> <tr> <td>Ethernet Remote I/O</td><td>28784, UDP</td></tr> <tr> <td>programming and monitoring</td><td></td></tr> </table>		Port:	Do-more! Protocol	28784, UDP	Modbus TCP	502, TCP	TCP/IP	User-defined, TCP	Custom Protocol	User-defined	SNTP (Time Server)	123, TCP	SMTP (Email)	25, TCP	MQTT	1883, TCP	MQTTS	8883, TCP	HTTP	80, TCP	HTTPS	443, TCP	Embedded Web Server: HTTP (Unsecure)	80, TCP	FTP (Client)	21, TCP	EtherNet/IP: Explicit Messaging (Scanner, Adapter)	44818, TCP	EtherNet/IP: Implicit Messaging (Scanner, Adapter) (requires Do-more! Designer version 2.10 or later)	44818, TCP	DHCP	67,68, UCP	Ethernet Remote I/O	28784, UDP	programming and monitoring	
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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																																				

# 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

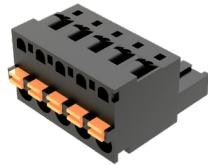
replacement connector specifications are listed in the 2 charts below. Also listed in the tables are an optional spring

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	BX-RTB05 (included with unit)	BX-RTB05-1	BX-RTB05-2
Price (each)	\$9.00	\$7.50	\$8.50
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	28-14 AWG
Wire Gauge (Two wire)	28-16 AWG	28-16 AWG (Dual Wire Ferrule Required)	28-16 AWG (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	BX-RTB03	BX-RTB03-1	BX-RTB03-2
Price (each)	\$5.75	\$5.25	\$4.75
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 (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

# BX ME MPUs

**BX-DM1E-M**      \$380.00

## BRX MPU with Do-more! DM1 technology

- 120VAC required
- Serial port , RS-232/485 with 3-Pin removable connector
- Ethernet port, 10/100 Mbps
- microSD slot
- No on-board I/O

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Serial Port</b>	RS-232/RS-485 software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>MPU Weight</b>	202g [7.1 oz]

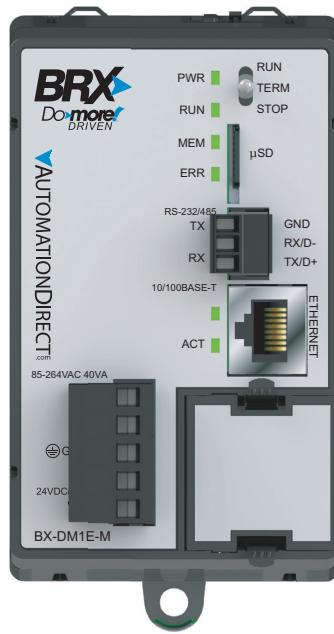
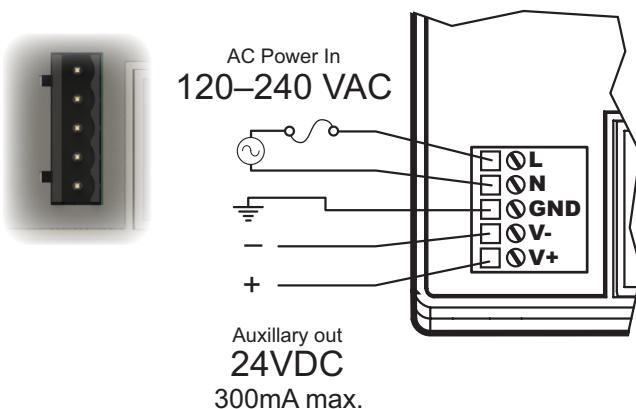
Power Supply Specifications	
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range (Tolerance)</b>	85-264 VAC
<b>Rated Operating Frequency</b>	47–63 Hz
<b>Maximum Input Power</b>	40VA
<b>Cold Start Inrush Current</b>	1.5 A, 2ms
<b>Maximum Inrush Current (Hot Start)</b>	1.5 A, 2ms
<b>Internal Input Fuse Protection</b>	Micro fuse 250V, 2A Non-replaceable
<b>Heat Dissipation</b>	8W Max
<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
<b>Replacement Connector</b>	ADC Part # <a href="#">BX-RTB05</a>

## Input Wiring

Pin	Connection
1	L
2	N
3	GND
4	V-
5	V+



Removable Connector Included  
ADC Part # [BX-RTB05](#)



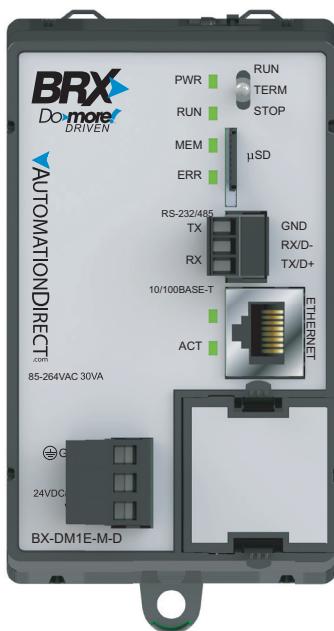
# BX ME MPUs

**BX-DM1E-M-D**      \$369.00

**BRX MPU with Do-more! DM1 technology**

- 24VDC required
- Serial port, RS-232/485 with removable 3-Pin connector
- Ethernet port, 10/100 Mbps
- microSD slot
- No on-board I/O

CPU Specifications	
<b>Program Memory Type</b>	FLASH memory
<b>User Data Memory Type</b>	Battery-backed RAM, user configurable
<b>Ethernet Port</b>	RJ-45, 10/100 Mbps
<b>Serial Port</b>	RS-232/RS-485 software selectable
<b>Pluggable Option Module</b>	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
<b>Data Logging/File Management</b>	microSD card slot (32G max)
<b>Expansion Modules</b>	8 max, as long as the MPU power budget is not exceeded
<b>Real Time Clock Accuracy</b>	±2.6 s per day typical at 25°C ±8s per day max at 60°C
<b>Programming Software</b>	Do-more! Designer – Ver. 2.0 or higher
<b>Programming Cable Options</b>	<a href="#">BX-PGM-CBL</a>
<b>MPU Weight</b>	171g [6 oz]



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
<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>Heat Dissipation</b>	3.2 W Max
<b>Voltage Withstand (dielectric)</b>	1500VAC Power Inputs to Ground applied for 1 minute
<b>Replacement Connector</b>	ADC Part # <a href="#">BX-RTB03</a>

## Input Wiring

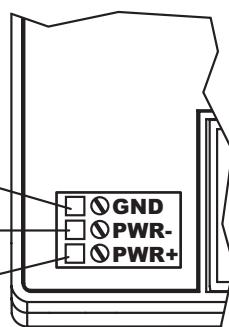
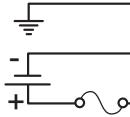
Pin	Connection
1	GND
2	PWR -
3	PWR +



Removable Connector Included  
ADC Part # [BX-RTB03](#)

Class 2 or LPS  
User Supplied Power

DC Power In  
12-24 VDC



# BRX Discrete Expansion Modules

## Overview

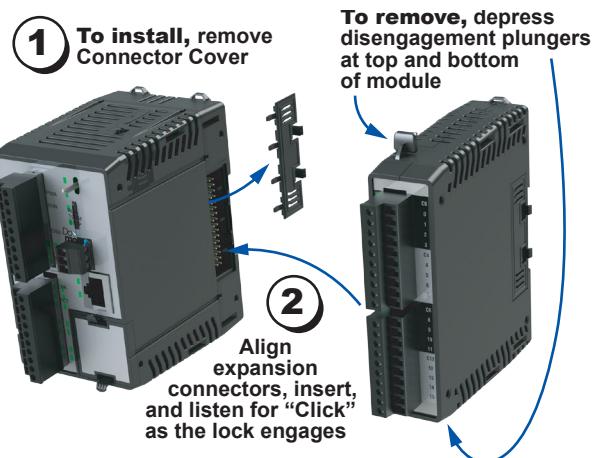
One of the unique features of the BRX platform is its ability to expand its capability to fit your application solution. One of the ways the BRX platform can do this is by using expansion modules that conveniently "snap-on" to the side of any BRX MPU. Once the expansion module has been snapped in place and is added to the project, it instantly adds I/O to the MPU with little to no additional setup required.

The expansion modules give you the ability to add discrete I/O as needed and are identified as an input module, output module or combination input/output module. On the front panel of the discrete I/O

expansion modules, a color scheme and a symbol are used to denote the module type.

Most modules are available in 5, 8, 12 or 16 point variations consisting of sink/source DC inputs/outputs, AC inputs/outputs, relay outputs and combination modules. Some are available with 32 points.

The modules ship without wiring terminals. This allows you to select the termination style that best fits your application. Several wiring options are available, including screw terminal connectors, spring clamp terminal connectors and pre-wired ZIPLink cable solutions.



### Hot-Swapping Information

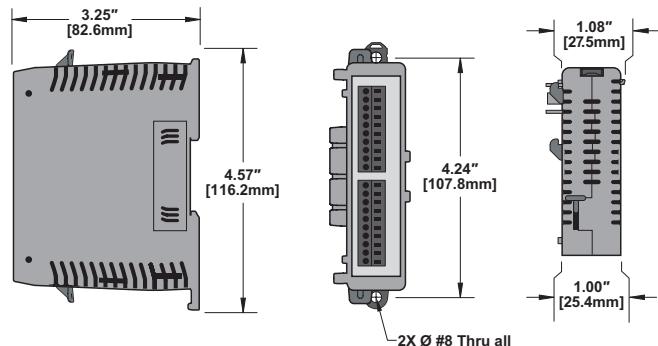
Note: This device cannot be Hot Swapped.

## General Specifications

All BRX discrete expansion modules have the same general specifications 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>Noise Immunity</b>	NEMA ICS3-304
<b>EU Directive</b>	See the "EU Directive" topic in the Help File
<b>Agency Approvals</b>	UL 61010-2 - UL File # E185989 Canada and USA CE Compliant EN61131-2

## Dimensions, inches[mm]

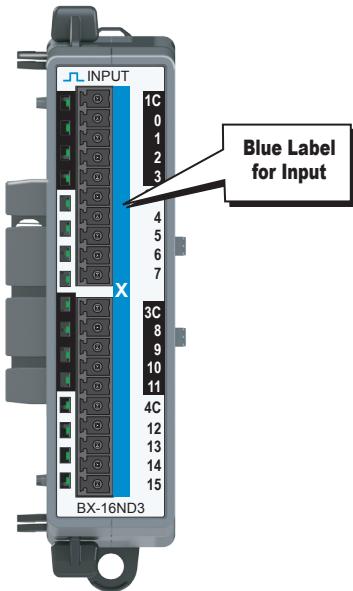


**NOTE:** When removing an expansion module make sure there is room for the module to slide away from the system. Failure to do so will result in difficulty in removing the module.

# BRX Discrete Expansion Modules

## Discrete Input Modules

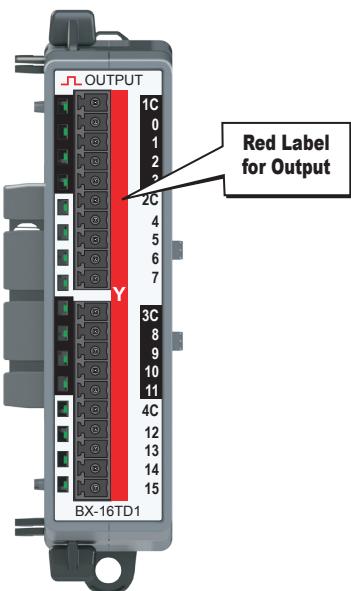
Thirteen (13) discrete input modules are available in various DC and AC voltage ranges. Input module faceplates have a blue terminal bar and symbol  for easy distinction from other module types.



Discrete Input Modules			
Part Number	Points	Input Type	Price
<a href="#">BX-08NF3</a>	8	3 – 5 VDC Sink / Source	\$51.00
<a href="#">BX-08ND3</a>		12 – 24 VDC Sink / Source	\$52.00
<a href="#">BX-08NB</a>		24VAC	\$52.00
<a href="#">BX-08NA</a>		120VAC	\$56.00
<a href="#">BX-08SIM</a>		Simulator	\$68.00
<a href="#">BX-12ND3</a>	12	12 – 24 VDC Sink / Source	\$69.00
<a href="#">BX-12NB</a>		24VAC	\$54.00
<a href="#">BX-12NA</a>		120VAC	\$73.00
<a href="#">BX-16NF3</a>	16	3-5 VDC Sink/Source	\$73.00
<a href="#">BX-16ND3</a>		12 – 24 VDC Sink / Source	\$75.00
<a href="#">BX-16NB</a>		24VAC	\$65.00
<a href="#">BX-16NA</a>		120VAC	\$81.00
<a href="#">BX-32ND3</a>	32	12 – 24 VDC Sink / Source	\$148.00

## Discrete Output Modules

Eighteen (18) discrete output modules are available in DC sinking, DC sourcing, AC voltage and Relay type outputs. Output module faceplates have a red terminal bar and symbol  for easy distinction from other module types.

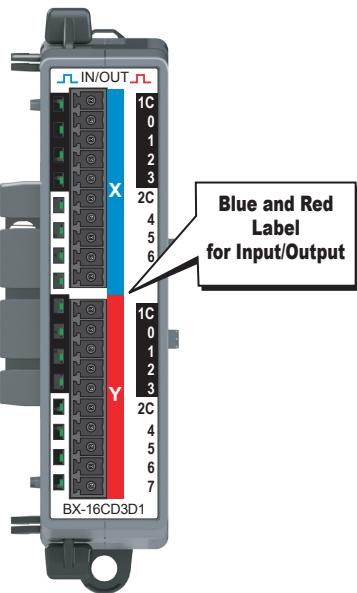


Discrete Output Modules			
Part Number	Points	Output Type	Price
<a href="#">BX-05TRS</a>	5	Relay Form C (SPDT)	\$73.00
<a href="#">BX-05TRS-1</a>		Relay Form C (SPDT)	\$90.00
<a href="#">BX-08TD1</a>	8	12 – 24 VDC Sinking	\$63.00
<a href="#">BX-08TD2</a>		12 – 24 VDC Sourcing	\$67.00
<a href="#">BX-08TR</a>		Relay Form A (SPST)	\$73.00
<a href="#">BX-08TA</a>		120 – 240 VAC Triac	\$117.00
<a href="#">BX-08TRZ</a>		Relay Form A (SPST), no surge suppression	\$82.00
<a href="#">BX-12TD1</a>	12	12 – 24 VDC Sinking	\$98.00
<a href="#">BX-12TD2</a>		12 – 24 VDC Sourcing	\$90.00
<a href="#">BX-12TR</a>		Relay Form A (SPST)	\$98.00
<a href="#">BX-12TA</a>		120 – 240 VAC Triac	\$137.00
<a href="#">BX-16TD1</a>	16	12 – 24 VDC Sinking	\$105.00
<a href="#">BX-16TD2</a>		12 – 24 VDC Sourcing	\$105.00
<a href="#">BX-16TF2</a>		3-5 VDC Sourcing	\$98.00
<a href="#">BX-16TR</a>		Relay Form A (SPST)	\$111.00
<a href="#">BX-16TRZ</a>		Relay Form A (SPST), no surge suppression	\$118.00
<a href="#">BX-32TD1</a>	32	12 – 24 VDC Sinking	\$150.00
<a href="#">BX-32TD2</a>		12 – 24 VDC Sourcing	\$149.00

# BRX Discrete Expansion Modules

## Discrete Combo Input / Output Modules

Six discrete input/output combo modules are available with DC sink/source inputs and sink/source/relay outputs. The Input/Output faceplate terminal bar is in blue and red, making it easy to distinguish between inputs and outputs and from other module types.

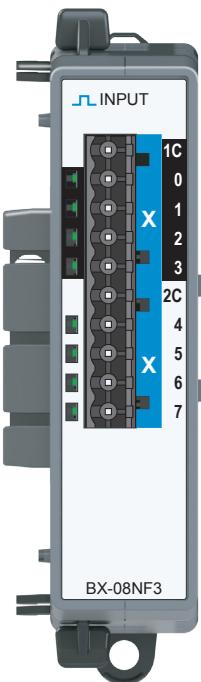


Part Number	Points		Input Type	Output Type	Price	
	Input	Output				
<a href="#">BX-08CD3R</a>	4	4	12-24 VDC Sink / Source	Relay Form A (SPST)	\$73.00	
<a href="#">BX-12CD3D1</a>	8	4		12-24 VDC Sinking	\$73.00	
<a href="#">BX-12CD3D2</a>				12-24 VDC Sourcing	\$73.00	
<a href="#">BX-16CD3D1</a>	8	8		12-24 VDC Sinking	\$90.00	
<a href="#">BX-16CD3D2</a>				12-24 VDC Sourcing	\$97.00	
<a href="#">BX-16CF3F2</a>				3-5 VDC Sink/Source	\$82.00	

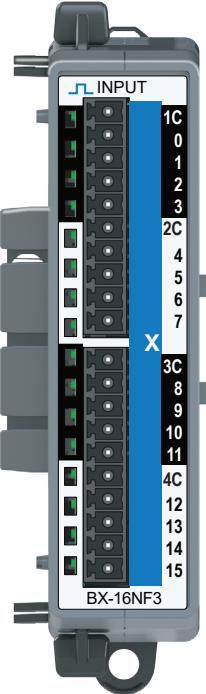
Expansion Module Support by Controller	
Controller Type	# Expansion Modules
<b>BX-DM1E-M</b>	8
<b>BX-DM1-10</b>	8
<b>BX-DM1E-10</b>	8
<b>BX-DM1-18</b>	8
<b>BX-DM1E-18</b>	8
<b>BX-DM1-36</b>	8
<b>BX-DM1E-36</b>	8
<b>BX-DMIO*</b>	8
<b>BX-EBC100*</b>	8
<b>BX-MBIO*</b>	8

\* Remote I/O controllers do not support Motion Control and Communications Modules.

# BX-xxNF3 Sinking/Sourcing 3–5 VDC Input Module

**BX-08NF3**

\$51.00

Input Module  
8-pt, 3-5 VDC**BX-16NF3**

\$73.00

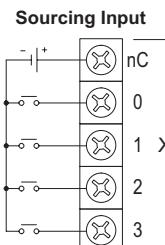
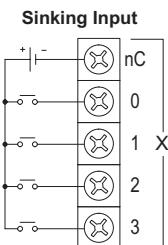
Input Module  
16-pt, 3-5 VDCTerminal Blocks  
Sold Separately

We recommend using prewired ZIPLink cables and connection modules. If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.

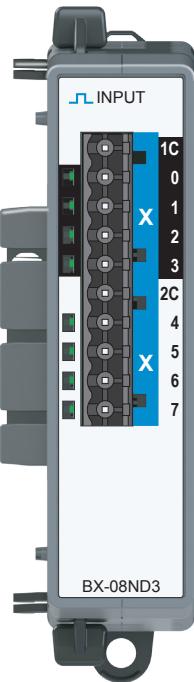
Discrete Input Specifications		
	BX-08NF3	BX-16NF3
<b>Input Type</b>	Sink/Source	
<b>Inputs per Module</b>	8	16
<b>Commons</b>	2 (4 points/common) Isolated	4 (4 points/common) Isolated
<b>Nominal Voltage Rating</b>	3–5 VDC	
<b>Input Voltage Range</b>	2–6 VDC	
<b>Maximum Voltage</b>	6VDC	
<b>Input Impedance</b>	870Ω @ 5VDC	
<b>Input Current (typical)</b>	6mA @ 5VDC	
<b>Maximum Input Current</b>	8mA @ 6VDC	
<b>ON Voltage Level</b>	> 2.0 VDC	
<b>OFF Voltage Level</b>	< 0.8 VDC	
<b>Minimum ON Current</b>	1.2 mA (2V required-guarantee ON state)	
<b>Maximum OFF Current</b>	0.5 mA	
<b>OFF-ON Response</b>	2ms	
<b>ON-OFF Response</b>	2ms	
<b>Status Indicators</b>	Logic Side, Green	

**IMPORTANT!****Hot-Swapping Information**

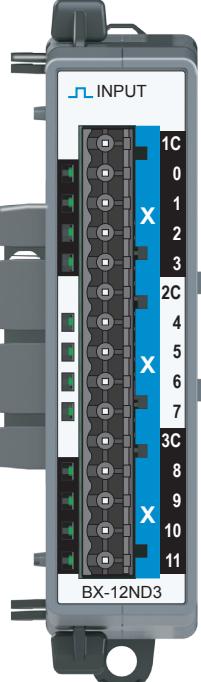
Note: This device cannot be Hot Swapped.

**Discrete Input Wiring**

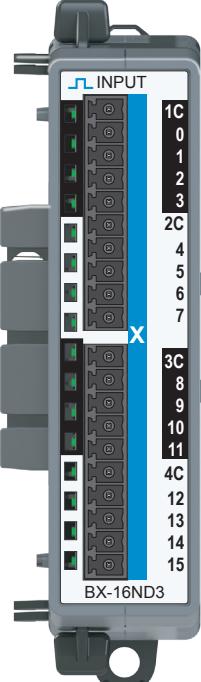
# BX-xxND3 Sinking/Sourcing 12–24 VDC Input Modules

**BX-08ND3 \$52.00**

Input Module  
8-pt, 12–24 VDC  
Sink/Source  
Terminal Blocks or  
ZIPLink Cable  
Sold Separately

**BX-12ND3 \$69.00**

Input Module  
12-pt, 12–24 VDC  
Sink/Source  
Terminal Blocks or  
ZIPLink Cable  
Sold Separately

**BX-16ND3 \$75.00**

Input Module  
16-pt, 12–24 VDC  
Sink/Source  
Terminal Blocks or  
ZIPLink Cable  
Sold Separately

**BX-32ND3 \$148.00**

Input Module  
32-pt, 12–24 VDC  
Sink/Source  
ZIPLink Cable  
Sold Separately

Discrete Input Specifications				
	<b>BX-08ND3</b>	<b>BX-12ND3</b>	<b>BX-16ND3</b>	<b>BX-32ND3</b>
<b>Input Type</b>	Sink/Source			
<b>Inputs per Module</b>	8	12	16	32
<b>Commons (Isolated)</b>	2	3	4	4
<b>Points per Common</b>	4	4	4	8
<b>Nominal Voltage Range*</b>	12–24 VDC			
<b>Input Voltage Range*</b>	9–30 VDC			
<b>Maximum Voltage</b>	30VDC			
<b>Input Impedance</b>	3kΩ @ 24VDC		8kΩ @ 24VDC	
<b>Input Current (typical)</b>	8mA @ 24VDC		3mA @ 24VDC	
<b>Maximum Input Current</b>	12mA @ 30VDC		6mA @ 30VDC	
<b>ON Voltage Level</b>	> 9.0 VDC			
<b>OFF Voltage Level</b>	< 2.0 VDC			
<b>OFF-ON Response</b>	2ms			
<b>ON-OFF Response</b>	2ms			
<b>Status Indicators</b>	Logic Side, Green (32-point module has 16 LEDs for half of inputs, switchable via A/B switch)			

\* Class 2 or LPS Power Supply required.

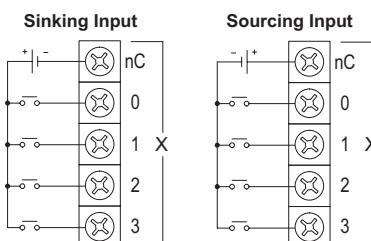


We recommend using prewired ZIPLink cables and connection modules. If you wish to hand-wire your module, a removable terminal block is available. See Wiring Termination Selection for all options.



**NOTE:** 32-point modules are not compatible with terminal block connectors and require ZIPLink cables.

## Discrete Input Wiring



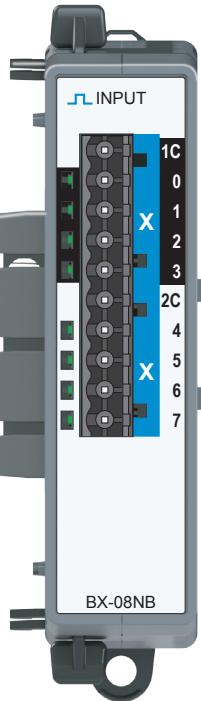
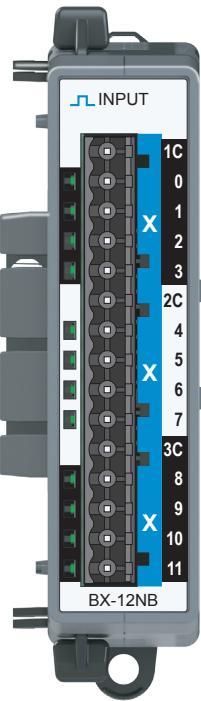
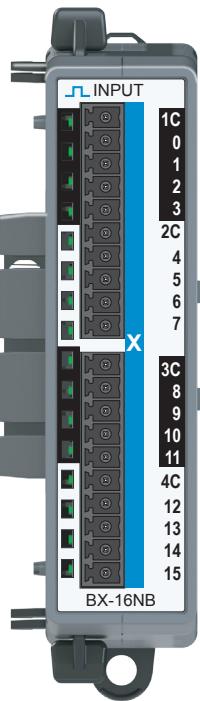
## IMPORTANT!



## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

# BX-xxNB 12-24 VAC Input Modules

**BX-08NB \$52.00**Input Module  
8-pt, 12-24 VAC**BX-12NB \$54.00**Input Module  
12-pt, 12-24 VAC**BX-16NB \$65.00**Input Module  
16-pt, 12-24 VAC

**Terminal Blocks  
Sold Separately**

We recommend using prewired ZIPLink cables and connection modules.  
If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!



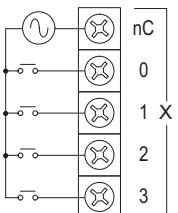
## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

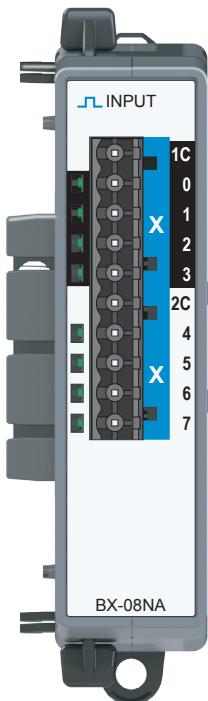
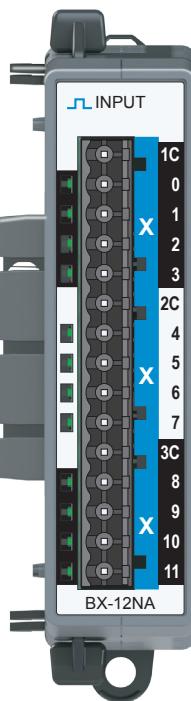
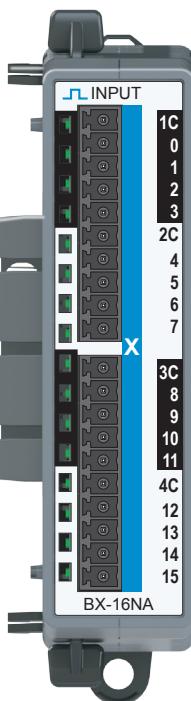
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Inputs per Module</b>	<u><a href="#">BX-08NB</a></u> 8
	<u><a href="#">BX-12NB</a></u> 12
	<u><a href="#">BX-16NB</a></u> 16
<b>Commons</b>	<u><a href="#">BX-08NB</a></u> 2 (4pts / common) Isolated
	<u><a href="#">BX-12NB</a></u> 3 (4pts / common) Isolated
	<u><a href="#">BX-16NB</a></u> 4 (4pts / common) Isolated
<b>Nominal Voltage Rating</b>	12-24 VAC
<b>Input Voltage Range</b>	9-30 VAC
<b>Maximum Voltage</b>	30VAC RMS
<b>AC Frequency</b>	47-63 Hz
<b>Input Impedance</b>	3kΩ @ 24VAC
<b>Input Current (typical)</b>	8mA @ 24VAC
<b>Maximum Input Current</b>	12mA @ 30VAC
<b>ON Voltage Level</b>	> 9.0 VAC
<b>OFF Voltage Level</b>	< 2.0 VAC
<b>Minimum ON Current</b>	5.0 mA (9V required-guarantee ON state)
<b>Maximum OFF Current</b>	2.0 mA
<b>OFF-ON Response</b>	10ms
<b>ON-OFF Response</b>	10ms
<b>Status Indicators</b>	Logic Side, Green

## Discrete Input Wiring

### AC Input



# BX-xxNA 120–240 VAC Input Modules

**BX-08NA \$56.00**Input Module  
8-pt, 120–240 VAC**BX-12NA \$73.00**Input Module  
12-pt, 120–240 VAC**BX-16NA \$81.00**Input Module  
16-pt, 120–240 VAC

**Terminal Blocks  
Sold Separately**

We recommend using prewired ZIPLink cables and connection modules.  
If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!



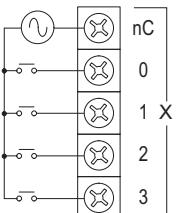
## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

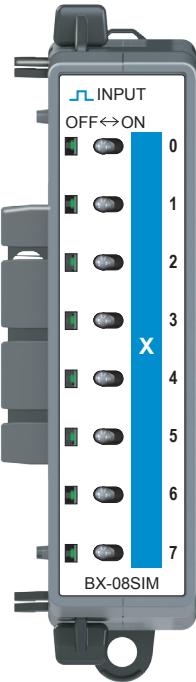
Discrete Input Specifications	
<b>Input Type</b>	AC
<b>Inputs per Module</b>	<b>BX-08NA</b> 8
	<b>BX-12NA</b> 12
	<b>BX-16NA</b> 16
<b>Commons</b>	<b>BX-08NA</b> 2 (4pts / common) Isolated
	<b>BX-12NA</b> 3 (4pts / common) Isolated
	<b>BX-16NA</b> 4 (4pts / common) Isolated
<b>Nominal Voltage Rating</b>	120–240 VAC
<b>Input Voltage Range</b>	85–264 VAC
<b>Maximum Voltage</b>	264VAC RMS
<b>AC Frequency</b>	47–63 Hz
<b>Input Impedance</b>	15kΩ
<b>Input Current (typical)</b>	9mA @ 120VAC, 13mA @ 220VAC
<b>Maximum Input Current</b>	14mA @ 120VAC, 20mA @ 220VAC
<b>ON Voltage Level</b>	> 85VAC
<b>OFF Voltage Level</b>	< 40VAC
<b>Maximum OFF Current</b>	2.5 mA
<b>OFF-ON Response</b>	10ms
<b>ON-OFF Response</b>	10ms
<b>Status Indicators</b>	Logic Side, Green

## Discrete Input Wiring

### AC Input



# BX-08SIM Simulator Input Module



[BX-08SIM](#) \$68.00

Input Module 8-pt,  
Simulator

## Discrete Input Specifications

<i>Input Type</i>	Simulator
<i>Inputs per Module</i>	8
<i>Status Indicators</i>	Logic Side, Green

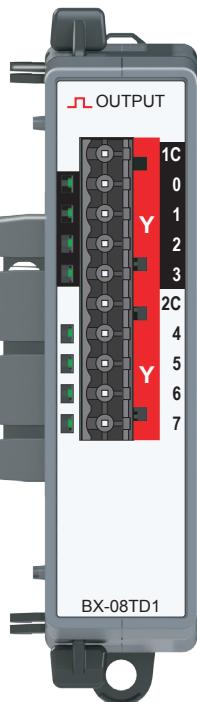
## IMPORTANT!



## Hot-Swapping Information

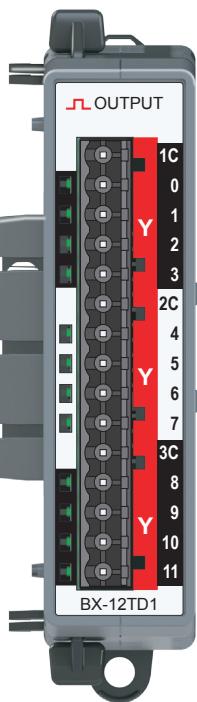
Note: This device cannot be Hot Swapped.

# BX-xxTD1 Sinking 12–24 VDC Output Modules

**BX-08TD1 \$63.00**

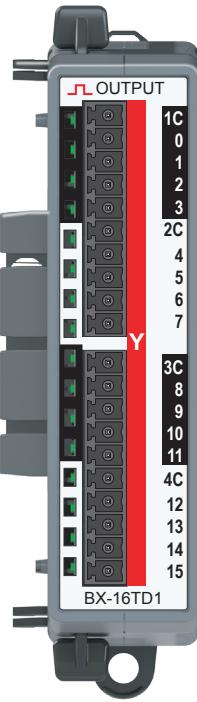
Output Module 8-pt,  
12–24 VDC, Sinking

Terminal Blocks or  
ZIPLink Cable  
Sold Separately

**BX-12TD1 \$98.00**

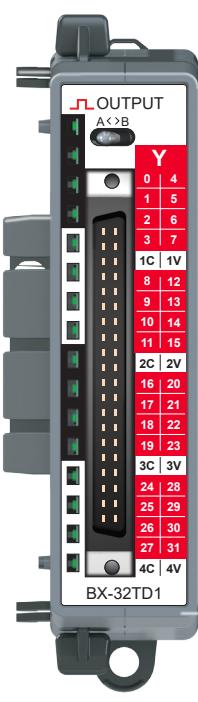
Output Module 12-pt,  
12–24 VDC, Sinking

Terminal Blocks or  
ZIPLink Cable  
Sold Separately

**BX-16TD1 \$105.00**

Output Module 16-pt,  
12–24 VDC, Sinking

Terminal Blocks or  
ZIPLink Cable  
Sold Separately

**BX-32TD1 \$150.00**

Output Module 32-pt,  
12–24 VDC, Sinking

ZIPLink Cable  
Sold Separately

## Discrete Output Specifications

	<b>BX-08TD1</b>	<b>BX-12TD1</b>	<b>BX-16TD1</b>	<b>BX-32TD1</b>
<b>Output Type</b>	Sinking			
<b>Outputs per Module</b>	8	12	16	32
<b>Commons (Isolated)</b>	2	3	4	4
<b>Points per Common</b>	4	4	4	8
<b>Maximum Current per Common</b>	2A			
<b>Nominal Voltage Range*</b>	12–24 VDC			
<b>Operating Voltage Range*</b>	5–36 VDC			
<b>Maximum Voltage</b>	36VDC			
<b>Minimum Output Current</b>	0.1 mA @ 24VDC			
<b>Maximum Output (Load) Current</b>	0.5 A per output, no derating over temperature range			
<b>Maximum Inrush Current</b>	5A for 50ms			
<b>Maximum Leakage Current</b>	10µA			
<b>ON Voltage Drop</b>	0.05 VDC			
<b>OFF-ON Response</b>	< 5ms			
<b>ON-OFF Response</b>	< 2ms			
<b>Overcurrent Protection</b>	N/A			
<b>Fuse Type</b>	User-supplied external fuse			
<b>Status Indicators</b>	Logic Side, Green (32-point module has 16 LEDs for half of inputs, switchable via A/B switch)			

\* Class 2 or LPS Power Supply required.

## IMPORTANT!



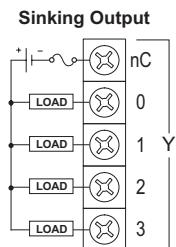
## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

# BX-xxTD1 Sinking 12–24 VDC Output Modules, continued

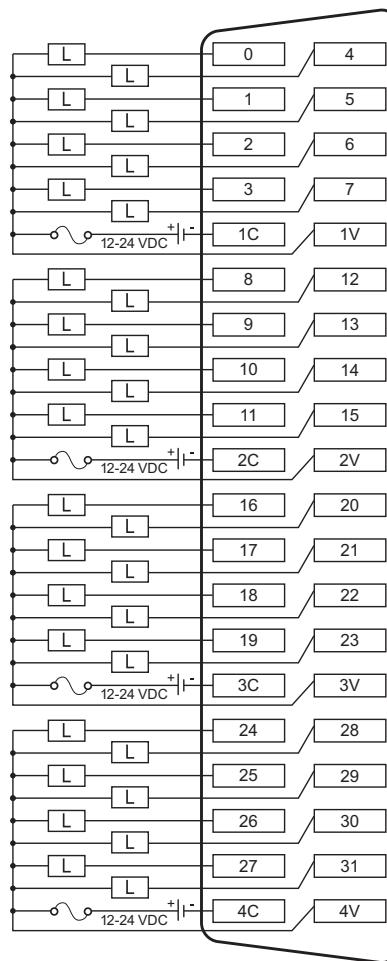
## **Discrete Output Wiring**

### [BX-08TD1 / BX-12TD1 / BX-16TD1](#)



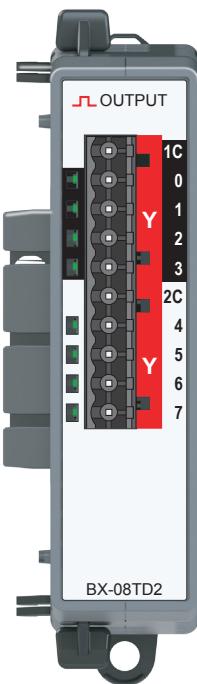
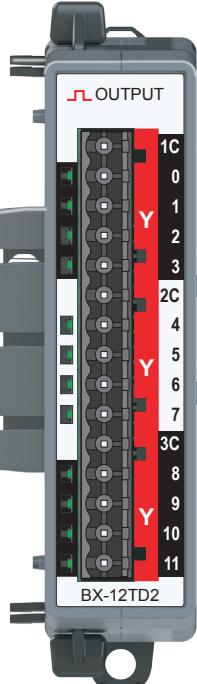
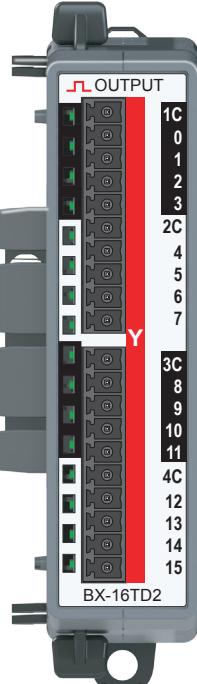
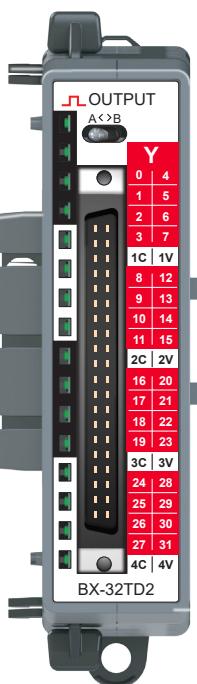
We recommend using prewired ZIPLink cables and connection modules. If you wish to hand-wire your module, a removable terminal block is available. See [Wiring Termination Selection](#) for all options.

### [BX-32TD1](#)



**NOTE:** 32-point modules are not compatible with terminal block connectors and require ZIPLink cables.

# BX-xxTD2 Sourcing 12-24 VDC Output Modules

**BX-08TD2 \$67.00**Output Module 8-pt,  
12-24 VDC, SourcingTerminal Blocks or  
ZIPLink Cable  
Sold Separately**BX-12TD2 \$90.00**Output Module 12-pt,  
12-24 VDC, SourcingTerminal Blocks or  
ZIPLink Cable  
Sold Separately**BX-16TD2 \$105.00**Output Module 16-pt,  
12-24 VDC, SourcingTerminal Blocks or  
ZIPLink Cable  
Sold Separately**BX-32TD2 \$149.00**Output Module 32-pt,  
12-24 VDC, SourcingZIPLink Cable  
Sold Separately

## Discrete Output Specifications

	<b>BX-08TD2</b>	<b>BX-12TD2</b>	<b>BX-16TD2</b>	<b>BX-32TD2</b>
<b>Output Type</b>	Sourcing			
<b>Outputs per Module</b>	8	12	16	32
<b>Commons (Isolated)</b>	2	3	4	4
<b>Points per Common</b>	4	4	4	8
<b>Maximum Current per Common</b>	2A			
<b>Nominal Voltage Range*</b>	12-24 VDC			
<b>Operating Voltage Range*</b>	5-36 VDC			
<b>Maximum Voltage</b>	36VDC			
<b>Minimum Output Current</b>	0.1 mA @ 24VDC			
<b>Maximum Output (Load) Current</b>	0.5 A per output, no derating over temperature range			
<b>Maximum Inrush Current</b>	5A for 50ms			
<b>Maximum Leakage Current</b>	10µA			
<b>ON Voltage Drop</b>	0.05 VDC			
<b>OFF-ON Response</b>	< 5ms			
<b>ON-OFF Response</b>	< 2ms			
<b>Overcurrent Protection</b>	N/A			
<b>Fuse Type</b>	User-supplied external fuse			
<b>Status Indicators</b>	Logic Side, Green (32-point module has 16 LEDs for half of inputs, switchable via A/B switch)			

\* Class 2 or LPS Power Supply required.

## IMPORTANT!



## Hot-Swapping Information

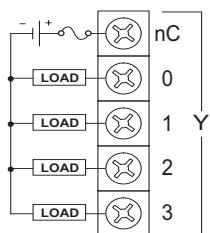
Note: This device cannot be Hot Swapped.

# BX-xxTD2 Sourcing 12–24 VDC Output Modules, continued

## **Discrete Output Wiring**

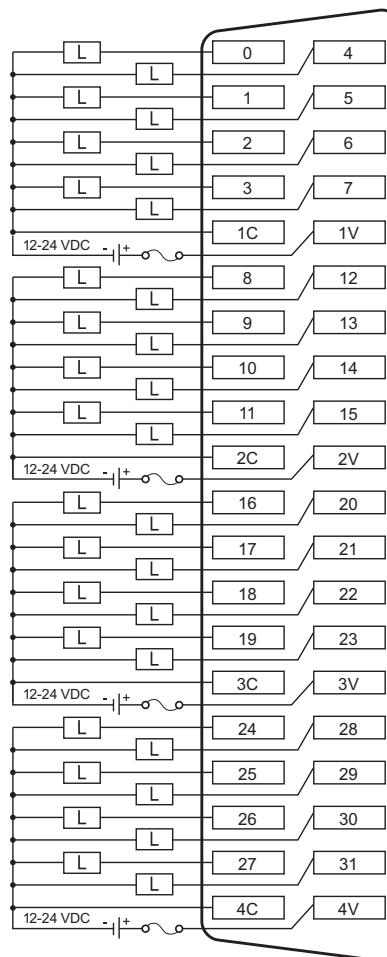
### [BX-08TD2 / BX-12TD2 / BX-16TD2](#)

#### Sourcing Output



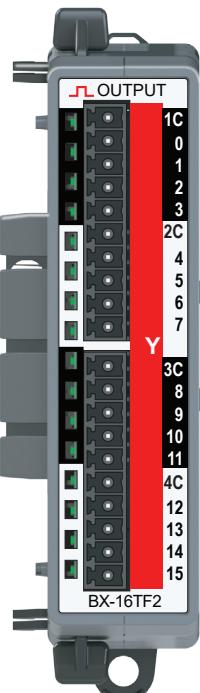
We recommend using prewired ZIPLink cables and connection modules. If you wish to hand-wire your module, a removable terminal block is available. See [Wiring Termination Selection](#) for all options.

### [BX-32TD2](#)



**NOTE:** 32-point modules are not compatible with terminal block connectors and require ZIPLink cables.

# BX-16TF2 Sourcing 3–5 VDC Output Module



Terminal Blocks  
Sold Separately

**BX-16TF2 \$98.00**

Output Module 16-pt,  
3–5 VDC Sourcing

Discrete Output Specifications	
<b>Output Type</b>	Sourcing
<b>Outputs per Module</b>	16
<b>Commons</b>	4
<b>Maximum Current per Common</b>	96mA
<b>Power Supply</b>	Internal +5VDC
<b>Peak Voltage</b>	5.5 VDC
<b>Minimum Output Current</b>	0 µA
<b>Maximum Output Current</b>	24mA per output, no derating over temperature range
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.05 VDC
<b>ON-OFF Response</b>	<2ms
<b>OFF-ON Response</b>	<5ms
<b>Fuses, Overcurrent Protection</b>	N/A
<b>Backplane Power Consumption</b>	0.9 W
<b>Status Indicators</b>	Logic Side, Green
<b>Software Version Required</b>	Do-more! Designer version 2.8 or later

We recommend using prewired ZIPLink cables and connection modules.<sup>v</sup>  
If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.



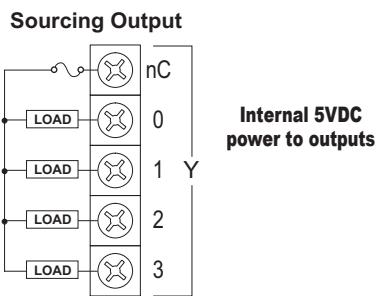
## IMPORTANT!

### Hot-Swapping Information

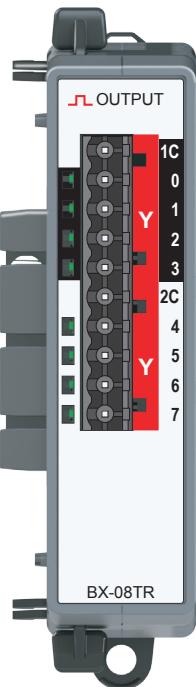
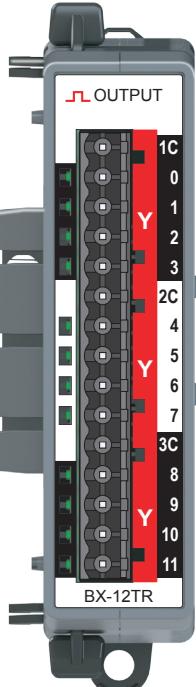
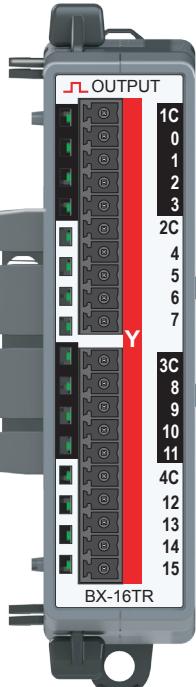
Note: This device cannot be Hot Swapped.



### Discrete Output Wiring Diagram



# BX-xxTR Relay Output Modules

**BX-08TR \$73.00**Output Module 8-pt,  
Relay Form A (SPST)**BX-12TR \$98.00**Output Module 12-pt,  
Relay Form A (SPST)**BX-16TR \$111.00**Output Module 16-pt,  
Relay Form A (SPST)

**Terminal Blocks  
Sold Separately**

We recommend using prewired ZIPLink cables and connection modules. If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



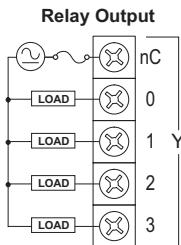
## IMPORTANT!



## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

## Relay Output Wiring Diagram

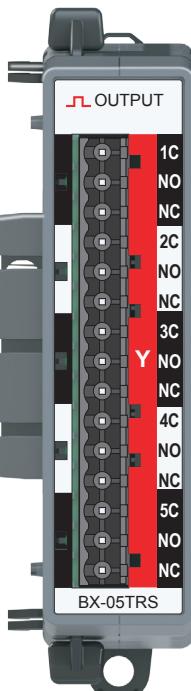


Discrete Output Specifications	
<b>Output Type</b>	Relay, Form A (SPST)
<b>Outputs per Module</b>	<b>BX-08TR</b> 8
	<b>BX-12TR</b> 12
	<b>BX-16TR</b> 16
<b>Commons</b>	<b>BX-08TR</b> 2 (4pts / common) Isolated
	<b>BX-12TR</b> 3 (4pts / common) Isolated
	<b>BX-16TR</b> 4 (4pts / common) Isolated
<b>Maximum Current per Common</b>	8A
<b>Nominal Voltage</b>	12-48 VDC 24-240 VAC
<b>Operating Voltage Range</b>	5-60 VDC, 5-264 VAC
<b>Maximum Voltage</b>	60VDC, 264VAC
<b>Minimum Output Current</b>	0.1 mA 24VDC
<b>Maximum Output Current</b>	2A
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	1µA(DC) 300µA (AC) due to RC snubber circuit
<b>ON Voltage Drop</b>	> 0.2 Vmax
<b>Fuses, Overcurrent Protection</b>	N/A
<b>Maximum Switching Frequency</b>	10Hz
<b>Relay Cycle Life</b>	
<b>Mechanical Endurance</b>	5 Million Operations
<b>Electrical Endurance</b>	120,000 Operations
<b>Status Indicators</b>	Logic Side, Green



**NOTE:** When using relay expansion modules, adding more than 32 relay points requires you to perform a power budget calculation. See Appendix B in the Hardware Manual for more information.

# BX-05TRS Relay Output Module



Terminal Blocks  
Sold Separately

**BX-05TRS \$73.00**

Output Module 5-pt,  
Relay Form B (SPDT)

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## Discrete Output Specifications

<b>Output Type</b>	Relay, Form B (SPDT)
<b>Outputs per Module</b>	5
<b>Commons</b>	5 Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage</b>	12–48 VDC 24–240 VAC
<b>Operating Voltage Range</b>	5–60 VDC, 5–264 VAC
<b>Maximum Voltage</b>	60VDC, 264VAC
<b>Minimum Output Current</b>	0.1 mA 24VDC
<b>Maximum Output Current</b>	2A
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	1µA(DC) 300µA (AC) due to RC snubber circuit
<b>ON Voltage Drop</b>	> 0.2 Vmax
<b>ON-OFF Response</b>	<10ms
<b>OFF-ON Response</b>	<10ms
<b>Fuses, Overcurrent Protection</b>	N/A
<b>Maximum Switching Frequency</b>	10Hz
<b>Relay Cycle Life</b>	
<b>Mechanical Endurance</b>	10 Million Operations
<b>Electrical Endurance</b>	50,000 Operations
<b>Status Indicators</b>	Logic Side, Green

### IMPORTANT!

### Hot-Swapping Information

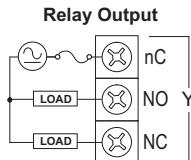


Note: This device cannot be Hot Swapped.

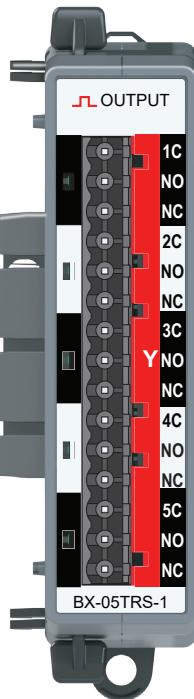


**NOTE:** When using relay expansion modules, adding more than 32 relay points requires you to perform a power budget calculation. See Appendix B in the Hardware Manual for more information.

### Relay Output Wiring Diagram



# BX-05TRS-1 Relay Output Module



Terminal Blocks  
Sold Separately

**BX-05TRS-1 \$90.00**

Output Module 5-pt,  
Relay Form C (SPDT)

Discrete Output Specifications	
<b>Output Type</b>	Relay, Form C (SPDT)
<b>Outputs per Module</b>	5
<b>Commons</b>	5 Isolated
<b>Maximum Current per Common</b>	8A
<b>Nominal Voltage Range</b>	5–48 VDC, 24–240 VAC
<b>Operating Voltage Range</b>	5–120 VDC, 18–264 VAC
<b>Peak Voltage</b>	120VDC, 264VAC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	
@30VDC Resistive Load	8A
@50VDC Resistive Load	3A
@120VDC Resistive Load	0.5 A
@120VAC Resistive Load	8A
@240VAC Resistive Load	5A
@120VAC Inductive 0.4 Power Factor	5A
@240VAC Inductive 0.4 Power Factor	2A
<b>Maximum Inrush Current</b>	15A for 50ms
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.2 Vmax
<b>ON-OFF Response</b>	<10ms
<b>OFF-ON Response</b>	<10ms
<b>Fuse Type</b>	N/A
<b>Maximum Switching Frequency</b>	10Hz
<b>Relay Cycle Life</b>	
<b>Mechanical Endurance</b>	5 Million Operations
<b>Electrical Endurance</b>	120,000 Operations
<b>Status Indicators</b>	Logic Side, Green
<b>Software Version Required</b>	Do-more! Designer version 2.8 or later



**NOTE:** This device does not support  
ZIPLink Wiring Systems

## IMPORTANT!

### Hot-Swapping Information

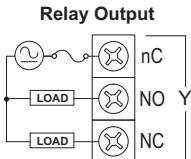


Note: This device cannot be Hot Swapped.

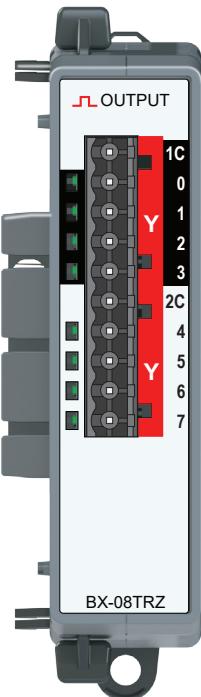


**NOTE:** When using relay expansion modules, adding more than 32 relay points requires you to perform a power budget calculation. See Appendix B in the Hardware Manual for more information.

### Relay Output Wiring Diagram

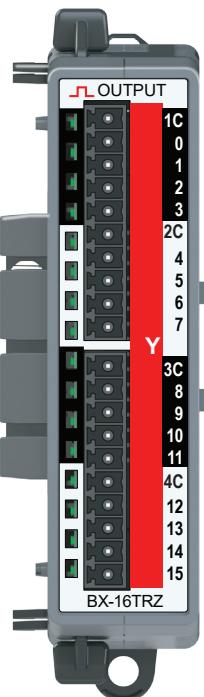


# BX-xxTRZ Relay Output Module



**BX-08TRZ \$82.00**

Output Module 8-pt,  
Relay Form A (SPST)  
No surge suppression



**BX-16TRZ \$118.00**

Output Module 16-pt,  
Relay Form A (SPST)  
No surge suppression

Discrete Output Specifications		
	<b>BX-08TRZ</b>	<b>BX-16TRZ</b>
<b>Input Type</b>	Relay, Form A (SPST)	
<b>Inputs per Module</b>	8	16
<b>Commons</b>	2 (4 points/common) Isolated	4 (4 points/common) Isolated
<b>Maximum Current per Common</b>	8A	
<b>Nominal Voltage Range</b>	5–48 VDC, 24–240 VAC	
<b>Operating Voltage Range</b>	5–60 VDC, 18–264 VAC	
<b>Maximum Voltage</b>	60VDC, 264VAC	
<b>Minimum Output Current</b>	0.1 mA @ 24VDC	
<b>Maximum Output Current</b>	2A	
<b>Maximum Inrush Current</b>	5A for 50ms	
<b>Maximum Leakage Current</b>	1nA	
<b>ON Voltage Drop</b>	0.2 Vmax	
<b>Relay Cycle Life</b>		
<b>Mechanical Endurance</b>	5 Million Operations	
<b>Electrical Endurance</b>	120,000 Operations	
<b>Status Indicators</b>	Logic Side, Green	
<b>Software Version Required</b>	Do-more! Designer version 2.8 or later	

Terminal Blocks or ZIPLink  
Cable  
Sold Separately



We recommend using prewired ZIPLink cables and connection modules.  
If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.

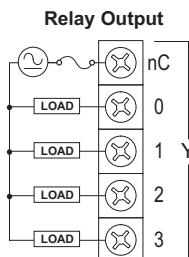
## IMPORTANT!



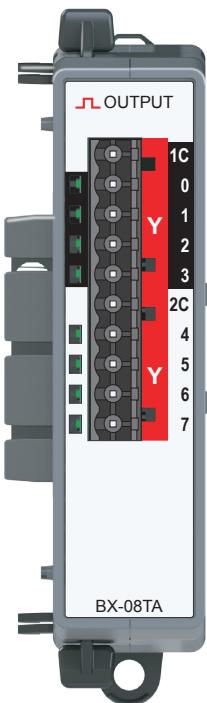
## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

## Relay Output Wiring Diagram

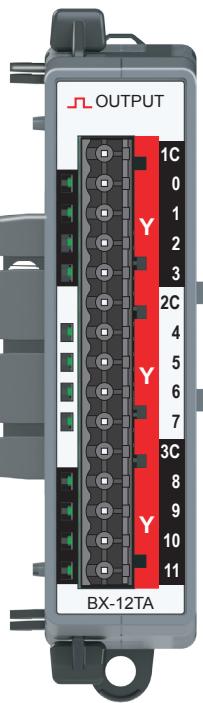


# BX-xxTA 120–240 VAC Output Modules



**BX-08TA** \$117.00

Output Module  
8-pt, 120–240 VAC



**BX-12TA** \$137.00

Output Module  
12-pt, 120–240 VAC

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.



Terminal Blocks  
Sold Separately

## IMPORTANT!

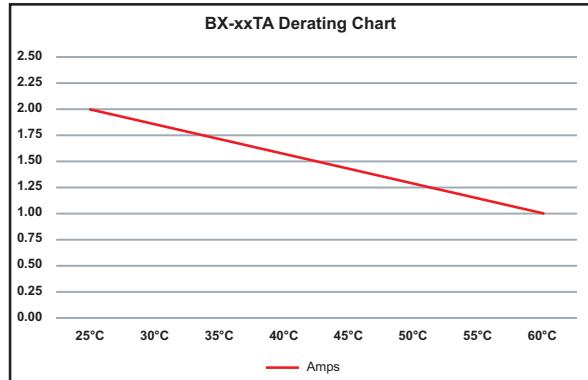
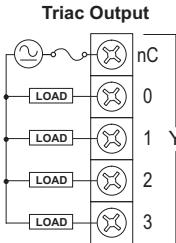


### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Discrete Output Specifications	
<b>Output Type</b>	Triac
<b>Outputs per Module</b>	<u><a href="#">BX-08TA</a></u> 8 <u><a href="#">BX-12TA</a></u> 12
<b>Commons</b>	<u><a href="#">BX-08TA</a></u> 2 (4 points/common) Isolated <u><a href="#">BX-12TA</a></u> 3 (4 points/common) Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage</b>	120–240 VAC
<b>Operating Voltage Range</b>	5–264 VAC
<b>Maximum Voltage</b>	264VAC
<b>Maximum Output Current</b>	0.5 A across temp range
<b>Current Derating</b>	Linear by Common: 2A @ 25°C - 1A @ 60°C
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	1µA
<b>ON Voltage Drop</b>	2.5 Vmax
<b>ON-OFF Response</b>	<10ms
<b>OFF-ON Response</b>	<10ms
<b>Fuses</b>	N/A
<b>Status Indicators</b>	Logic Side, Green

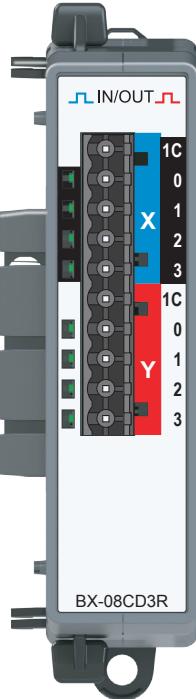
### Triac Output Wiring Diagram



# BX-08CD3R Combination DC Input/Relay Output Module

The BX-08CD3R Combination DC Input/Relay Output Expansion Module provides a total of eight (8) points; four (4) 12-24

VDC sink/source inputs and four (4) Form A (SPST) relay outputs.



Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Inputs per Module</b>	4
<b>Nominal Voltage Rating</b>	12-24 VDC
<b>Input Voltage Range</b>	9-30 VDC
<b>Maximum Voltage</b>	30VDC
<b>Commons</b>	1 (4 points/common)
<b>Input Current (typical)</b>	8mA @ 24VDC
<b>Maximum Input Current</b>	12mA @ 30VDC
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>ON Voltage Level</b>	> 9.0 VDC
<b>OFF Voltage Level</b>	< 2.0 VDC
<b>Minimum ON Current</b>	5.0 mA (9V required-guarantee ON state)
<b>Maximum OFF Current</b>	2.0 mA
<b>OFF-ON Response</b>	2ms
<b>ON-OFF Response</b>	2ms
<b>Status Indicators</b>	Logic Side, Green

**BX-08CD3R \$73.00**

Combination Discrete Module  
Input: 8-pt, 12-24 VDC, Sink/Source,  
Output: 4-pt, Relay Form A (SPST)



We recommend using prewired ZIPLink cables and connection modules.  
If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.

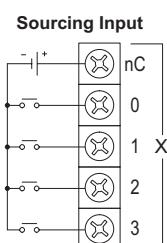
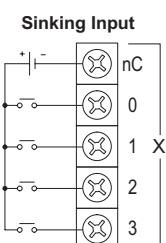
## IMPORTANT!



## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

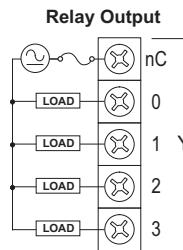
### Input Wiring Diagrams



# BX-08CD3R Combination

## DC Input/Relay Output Module, continued

Discrete Output Specifications	
<b>Output Type</b>	Relay, Form A (SPST)
<b>Outputs per Module</b>	4
<b>Commons</b>	1 (4 points/common)
<b>Maximum Current per Common</b>	8A
<b>Nominal Voltage</b>	12–48 VDC, 24–240 VAC
<b>Operating Voltage Range</b>	5–60 VDC, 5–264 VAC
<b>Maximum Voltage</b>	60VDC, 264VAC
<b>Minimum Output Current</b>	0.1 mA @24VAC/DC
<b>Maximum Output Current</b>	2A
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	1µA
<b>ON Voltage Drop</b>	0.2 Vmax
<b>ON-OFF Response</b>	<10ms
<b>OFF-ON Response</b>	<10ms
<b>Fuses</b>	N/A
<b>Maximum Switching Frequency</b>	10Hz
<b>Relay Cycle Life</b>	
<b>Mechanical Endurance</b>	5 Million Operations
<b>Electrical Endurance</b>	120,000 Operations
<b>Status Indicators</b>	Logic Side, Green

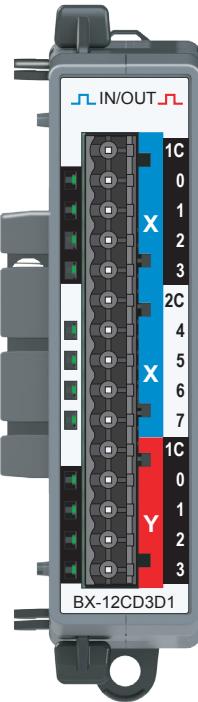
**Relay Output Wiring Diagram**

# BX-xxCD3D1 Combination DC Input/DC Output Modules

The BX-xxCD3D1 Combination DC Input/Sourcing Output Expansion Modules

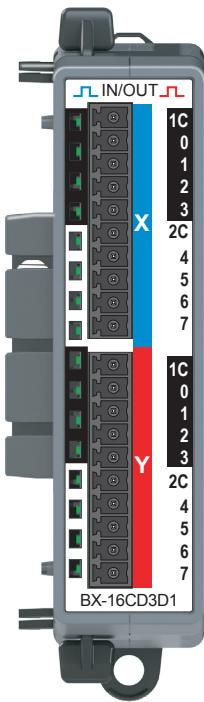
provides a total of twelve (12) or sixteen (16) points; eight (8) 12–24 VDC sink/

source inputs and either four (4) or eight (8) 12–24 VDC sinking outputs.



**BX-12CD3D1 \$73.00**

Combination Discrete Module  
Input: 8-pt, 12–24 VDC, Sink/Source,  
Output: 4-pt, 6–24 VDC, Sinking



**BX-16CD3D1 \$90.00**

Combination Discrete Module  
Input: 8-pt, 12–24 VDC, Sink/Source,  
Output: 8-pt, 6–24 VDC, Sinking

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.



## IMPORTANT!



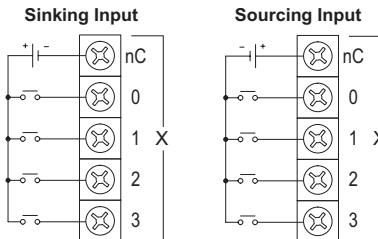
### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

#### Discrete Input Specifications

<i>Input Type</i>		Sink/Source
<i>Inputs per Module</i>		8
<i>Commons</i>	<u><a href="#">BX-12CD3D1</a></u>	2 (4 points/common) Isolated
	<u><a href="#">BX-16CD3D1</a></u>	2 (4 points/common) Isolated
<i>Nominal Voltage Rating</i>		12–24 VDC
<i>Input Voltage Range</i>		9–30 VDC
<i>Maximum Voltage</i>		30VDC
<i>Input Impedance</i>		3kΩ @ 24VDC
<i>Input Current (typical)</i>		8mA @ 24VDC
<i>Maximum Input Current</i>		12mA @ 30VDC
<i>ON Voltage Level</i>		> 9.0 VDC
<i>OFF Voltage Level</i>		< 2.0 VDC
<i>Minimum ON Current</i>		5.0 mA (9V required-guarantee ON state)
<i>Maximum OFF Current</i>		2.0 mA
<i>OFF-ON Response</i>		2ms
<i>ON-OFF Response</i>		2ms
<i>Status Indicators</i>		Logic Side, Green

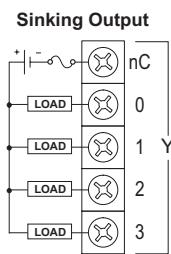
#### Input Wiring Diagram



# BX-xxCD3D1 Combination DC Input/ DC Output Modules, continued

Discrete Output Specifications	
<b>Output Type</b>	Sinking
<b>Outputs per Module</b>	<u><a href="#">BX-12CD3D1</a></u> 4
	<u><a href="#">BX-16CD3D1</a></u> 8
<b>Commons</b>	<u><a href="#">BX-12CD3D1</a></u> 1 (4 points/common)
	<u><a href="#">BX-16CD3D1</a></u> 2 (4 points/common) Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage</b>	12-24 VDC
<b>Operating Voltage Range</b>	5-36 VDC
<b>Maximum Voltage</b>	36VDC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	0.5 A per output, no derating over temperature range
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.05 VDC
<b>Fuses, Overcurrent Protection</b>	N/A
<b>Status Indicators</b>	Logic Side, Green
<b>OFF-ON Response</b>	< 5ms
<b>ON-OFF Response</b>	< 2ms
<b>Status Indicators</b>	Logic Side, Green

## Output Wiring Diagram

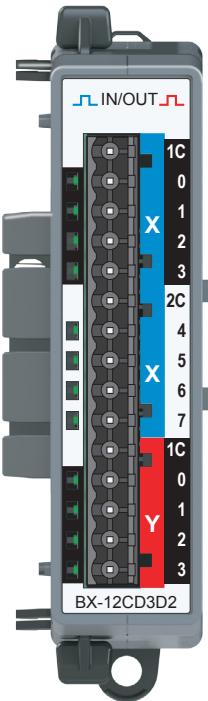


# BX-xxCD3D2 Combination DC Input/DC Output Modules

The BX-xxCD3D2 Combination Input/Output Expansion Modules provide a

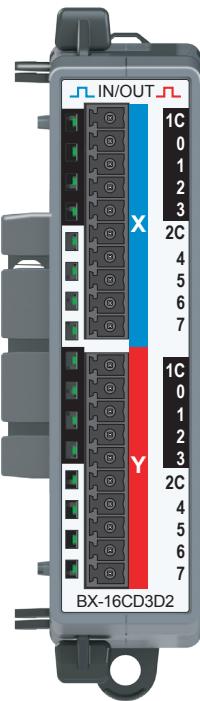
total of twelve (12) or sixteen (16) points: eight (8) 12–24 VDC sink/source inputs

and either four (4) or eight (8) 12–24 VDC sourcing outputs.



**BX-12CD3D2 \$73.00**

Combination Discrete Module  
Input: 8-pt, 12–24 VDC, Sink/Source  
Output: 4-pt, 12–24 VDC, Sourcing



**BX-16CD3D2 \$97.00**

Combination Discrete Module  
Input: 8-pt, 12–24 VDC, Sink/Source,  
Output: 8-pt, 12–24 VDC, Sourcing

We recommend using prewired ZIPLink cables and

connection modules.  
If you wish to hand-wire your module, a removable  
terminal block is available. See Wiring Solutions sec-  
tion for all options.



Terminal Blocks  
Sold Separately

## IMPORTANT!

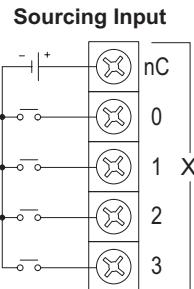
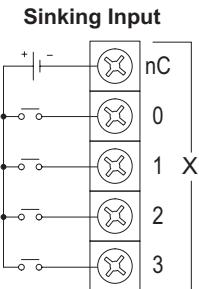


### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Inputs per Module</b>	8
<b>Commons</b>	<b>BX-12CD3D2</b> <b>BX-16CD3D2</b>
<b>Nominal Voltage Rating</b>	12–24 VDC
<b>Input Voltage Range</b>	9–30 VDC
<b>Maximum Voltage</b>	30VDC
<b>Input Impedance</b>	3kΩ @ 24VDC
<b>Input Current (typical)</b>	8mA @ 24VDC
<b>Maximum Input Current</b>	12mA @ 30VDC
<b>ON Voltage Level</b>	> 9.0 VDC
<b>OFF Voltage Level</b>	< 2.0 VDC
<b>Minimum ON Current</b>	5.0 mA (9V required-guarantee ON state)
<b>Maximum OFF Current</b>	2.0 mA
<b>OFF-ON Response</b>	2ms
<b>ON-OFF Response</b>	2ms
<b>Status Indicators</b>	Logic Side, Green

### Input Wiring Diagram

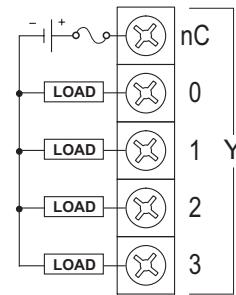


# BX-xxCD3D2 Combination DC Input/DC Output Modules

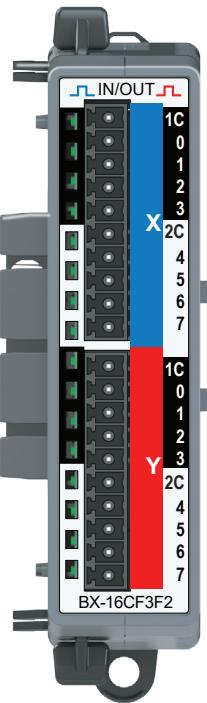
Discrete Output Specifications	
<b>Output Type</b>	Sourcing
<b>Outputs per Module</b>	<b>BX-12CD3D2</b> 4
	<b>BX-16CD3D2</b> 8
<b>Commons</b>	<b>BX-12CD3D2</b> 1 (4 points/common)
	<b>BX-16CD3D2</b> 2 (4 points/common) Isolated
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage</b>	12-24 VDC
<b>Operating Voltage Range</b>	5-36 VDC
<b>Maximum Voltage</b>	36VDC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	0.5 A per output, no derating over temperature range
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.05 VDC
<b>Fuses, Overcurrent Protection</b>	N/A
<b>OFF-ON Response</b>	< 5ms
<b>ON-OFF Response</b>	< 2ms
<b>Status Indicators</b>	Logic Side, Green

## Output Wiring Diagram

### Sourcing Output



# BX-16CF3F2 Combination DC Input/ DC Sourcing Output Module



**BX-16CF3F2 \$82.00**

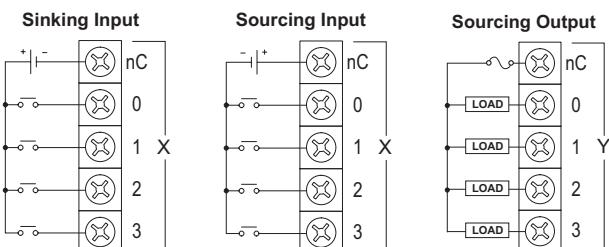
Combination Discrete Module  
Input: 8-pt, 3–5 VDC, Sink/Source  
Output: 8-pt, 3–5 VDC, Sourcing

#### Terminal Blocks Sold Separately



We recommend using prewired ZIPLink cables and connection modules.  
If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.

#### Input & Output Wiring Diagrams



Internal 5VDC power to outputs

Module Specifications	
<b>Heat Dissipation</b>	1.5 W Max
<b>Backplane Power Consumption</b>	1.0 W Max
<b>Status Indicators</b>	Logic Side, Green
<b>Software Version Required</b>	Do-more! Designer version 2.8 or later

Discrete Input Specifications	
<b>Input Type</b>	Sink/Source
<b>Inputs per Module</b>	8
<b>Nominal Voltage Range</b>	3–5 VDC
<b>Input Voltage Range</b>	2–6 VDC
<b>Maximum Voltage</b>	6VDC
<b>Commons</b>	2 (4 points/common)
<b>Input Impedance</b>	870Ω @ 5VDC
<b>Input Current (typical)</b>	6mA @ 5VDC
<b>Maximum Input Current</b>	8mA @ 6VDC
<b>ON Voltage Level</b>	> 2.0 VDC
<b>OFF Voltage Level</b>	< 0.8 VDC
<b>Minimum ON Current</b>	1.2 mA (2.0 V required to guarantee ON state)
<b>Maximum OFF Current</b>	0.5 mA
<b>OFF-ON Response</b>	2ms
<b>ON-OFF Response</b>	2ms

Discrete Output Specifications	
<b>Output Type</b>	Sourcing
<b>Outputs per Module</b>	8
<b>Commons</b>	2 (4 points/common)
<b>Maximum Current per Common</b>	96mA
<b>Power Supply</b>	Internal +5VDC
<b>Peak Voltage</b>	5.5 VDC
<b>Minimum Output Current</b>	0µA
<b>Maximum Output Current</b>	24mA per output, no derating over temperature range
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.05 VDC
<b>Fuse Type</b>	N/A
<b>OFF-ON Response</b>	< 5ms
<b>ON-OFF Response</b>	< 2ms

#### IMPORTANT!



#### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

# BRX Analog Expansion Modules

## Overview

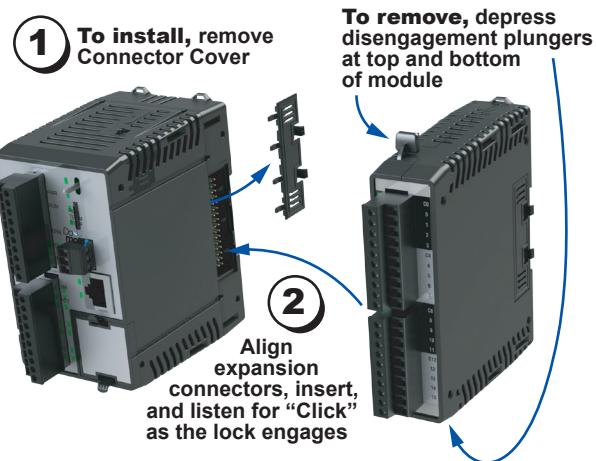
One of the unique features of the BRX platform is its ability to expand its capability to fit your application solution. One of the ways the BRX platform can do this is by using expansion modules that conveniently "snap-on" to the side of any BRX MPU. Once the expansion module has been snapped in place and is added to the project, it instantly adds I/O to the MPU with little to no additional setup required.

The analog expansion modules give you the ability to add analog I/O as needed and are identified as an analog input module, temperature input module, or analog output module. On the front panel of the analog I/O expansion modules, a color scheme and a

symbol are used to denote the module type.

Analog modules are available with current inputs or outputs, unipolar/bipolar voltage inputs or outputs, thermocouple inputs, RTD inputs and thermistor inputs. Input/output combination modules are also available.

With the exception of temperature input modules, the modules ship without wiring terminals. This allows you to select the termination style that best fits your application. Several wiring options are available, including screw terminal connectors, spring clamp terminal connectors and pre-wired ZIPLink cable solutions.



## Hot-Swapping Information

Note: This device cannot be Hot Swapped.

## General Specifications

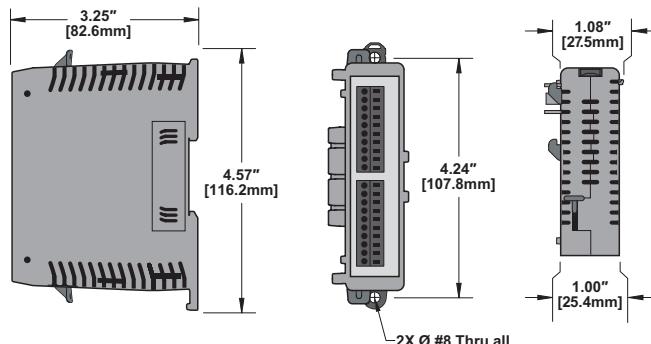
All BRX analog input and output modules and temperature input modules have the same general specifications listed in the table below.

General Specifications	
<b>Storage Temperature</b>	-20° to 70°C [-4° to 158°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>Noise Immunity</b>	NEMA ICS3-304
<b>EU Directive</b>	See the "EU Directive" topic in the BRX Help File
<b>Agency Approvals (unless otherwise noted on individual module specifications)</b>	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)

Operating Temperature Range		
Operating Temperature	0° to 45°C [32° to 113°F]	0° to 60°C [32° to 140°F]
Module	Module Revision*	
<u><a href="#">BX-08AD-1</a></u>	Rev A (Prior to May 2018)	Rev B (After May 2018)
<u><a href="#">BX-08AD-2B</a></u>		
<u><a href="#">BX-04THM</a></u>		
<u><a href="#">BX-08DA-1</a></u>		
<u><a href="#">BX-08DA-2B</a></u>	Rev B (Prior to May 2018)	Rev C (After May 2018)
<b>All other Analog and Temperature Expansion Module part numbers</b>	N/A	Rev A (After May 2018)

\* Module Revision can be found in the last letter (last or second-to-last character) of the module serial number.

## Dimensions



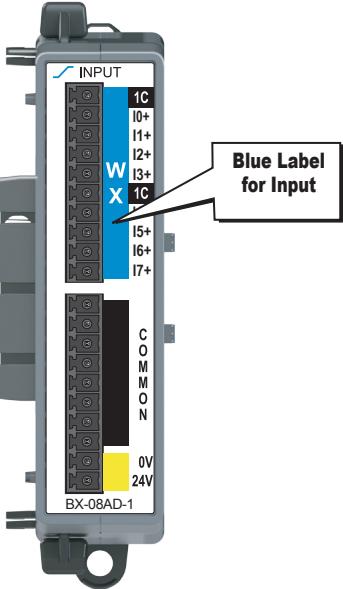
**NOTE:** When removing an expansion module, make sure there is room for the module to slide away from the system. Failure to do so will result in difficulty removing the module.



# BRX Analog Expansion Modules

## Analog Input Modules

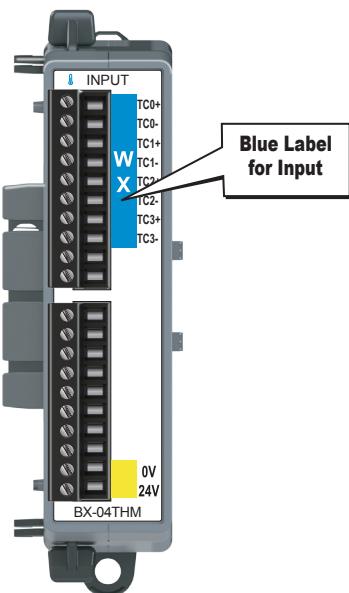
Nine (9) analog input modules are available, with current or voltage inputs. Analog input module faceplates have a blue terminal bar to distinguish them as inputs, with symbols  or  to signify current or voltage, respectively.



Analog Input Modules				
Part Number	Points	Input Type	Resolution	Price
<a href="#">BX-04ADM-1</a>	4	Current Sink 0–20 mA, 4–20 mA	14-bit	\$182.00
<a href="#">BX-04AD-1</a>	4	Current Sink 0–20 mA, 4–20 mA	16-bit	\$230.00
<a href="#">BX-08AD-1</a>	8			\$255.00
<a href="#">BX-16AD-1</a>	16			\$363.00
<a href="#">BX-04AD-2B</a>	4	Voltage ±10VDC, ±5VDC, 0–5 VDC, 0–10 VDC	16-bit	\$230.00
<a href="#">BX-08AD-2B</a>	8			\$255.00
<a href="#">BX-16AD-2B</a>	16			\$363.00
<a href="#">BX-04AD-3</a>	4	Current Sink 0–20mA, 4–20mA Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	16-bit	\$193.00
<a href="#">BX-08AD-3</a>	8			\$225.00

## Temperature Input Module

Six (6) temperature input modules are available, with thermocouple, RTD, and/or thermistor inputs. The thermocouple input modules can also be configured for millivolt-level voltage inputs, and the RTD input module can also be configured for resistance input. Temperature module faceplates have a blue terminal bar to distinguish them as inputs, and  symbol to signify temperature.

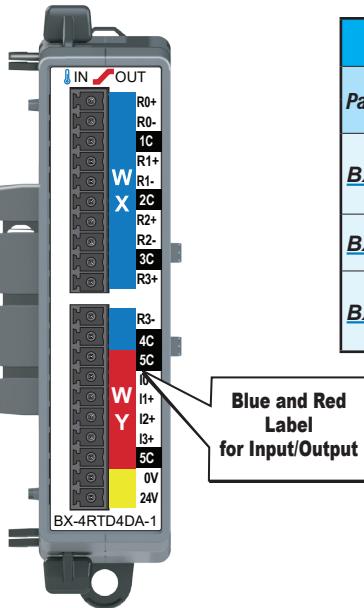


Temperature Input Modules			
Part Number	Points	Input Type	Price
<a href="#">BX-04THM</a>	4	Thermocouple	\$241.00
<a href="#">BX-08THM</a>	8	Thermocouple	\$269.00
<a href="#">BX-06RTD</a>	6	RTD	\$255.00
<a href="#">BX-08NTC</a>	8	Thermistor	\$269.00
<a href="#">BX-04UT</a>	4	Universal Temperature (Thermocouple, RTD, Thermistor supported)	\$223.00
<a href="#">BX-08UT</a>	6	Universal Temperature (Thermocouple, RTD, Thermistor supported)	\$248.00

# BRX Analog Expansion Modules

## Temperature/Analog Combo Module

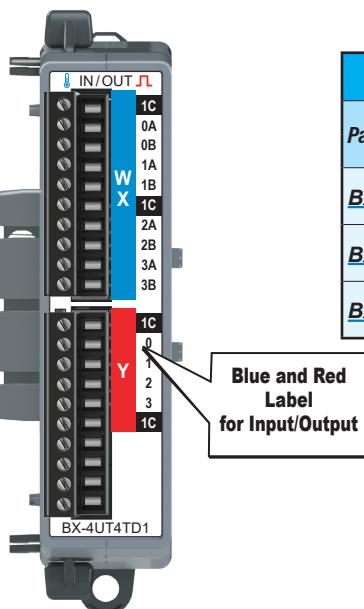
Three (3) combination modules are available, with thermocouple, RTD or universal temperature inputs and current sourcing outputs. The thermocouple input modules can also be configured for millivolt-level voltage inputs, and the RTD input module can also be configured for resistance input. The Input/Output faceplate terminal bar is in blue and red, making it easy to distinguish between inputs and outputs, and the  and  symbols signify temperature and current, respectively.



Temperature Input / Analog Output Combo Modules					
Part Number	Points		Input Type	Output Type	Price
	Input	Output			
<a href="#">BX-4RTD4DA-1</a>	4	4	Resistance Temperature Detector (RTD)	Current Source 0–20mA, 4–20mA	\$472.00
<a href="#">BX-4THM4DA-1</a>	4	4	Thermocouple	Current Source 0–20mA, 4–20mA	\$472.00
<a href="#">BX-4UT4DA-3</a>	4	4	Universal Temperature	Current Source: 0–20mA, 4–20mA Voltage: ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	\$436.00

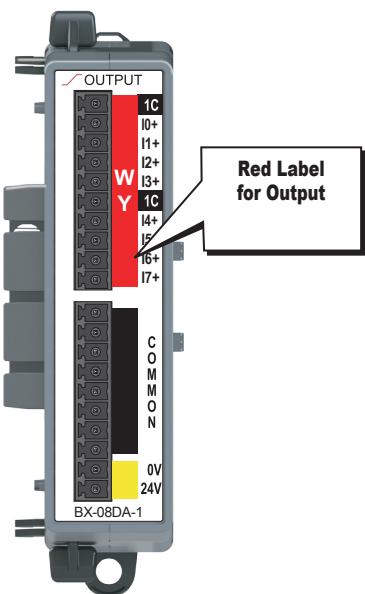
## Temperature/Discrete Combo Module

Three (3) combination modules are available with universal temperature inputs and DC sinking, sourcing or relay outputs. The thermocouple inputs can also be configured for millivolt-level voltage inputs, and the RTD inputs can also be configured for resistance input. The Input/Output faceplate terminal bar is in blue and red, making it easy to distinguish between inputs and outputs, and the  and  symbols signify temperature and discrete signals, respectively.



Temperature Input / Discrete Output Combo Modules					
Part Number	Points		Input Type	Output Type	Price
	Input	Output			
<a href="#">BX-4UT4TD1</a>	4	4	Universal Temperature	12–24 VDC Sinking	\$248.00
<a href="#">BX-4UT4TD2</a>	4	4		12–24 VDC Sourcing	\$248.00
<a href="#">BX-4UT4TR</a>	4	4		Relay Form A (SPST)	\$248.00

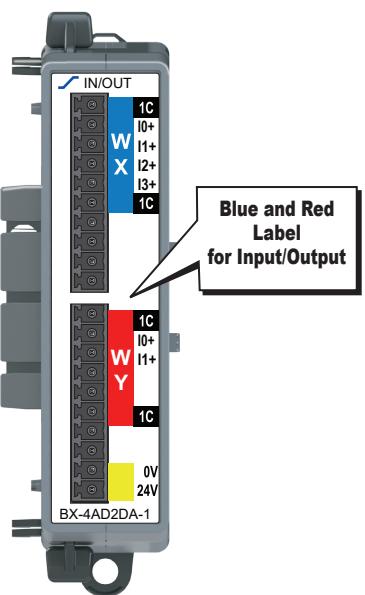
# BRX Analog Expansion Modules



## Analog Output Modules

Six (6) analog output modules are available, in current and voltage outputs. Analog output module faceplates have a red terminal bar to distinguish them as outputs, with symbols or to signify current or voltage, respectively.

Analog Output Modules			
Part Number	Points	Output Type	Price
<a href="#">BX-04DA-1</a>	4	Current Source 0-20 mA, 4-20 mA	\$269.00
<a href="#">BX-08DA-1</a>	8		\$350.00
<a href="#">BX-04DA-2B</a>	4	Voltage $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , 0-5 VDC, 0-10 VDC	\$269.00
<a href="#">BX-08DA-2B</a>	8		\$350.00
<a href="#">BX-04DA-3</a>	4	Current Source 0-20mA, 4-20mA Voltage $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , 0-5VDC, 0-10VDC	\$244.00
<a href="#">BX-08DA-3</a>	8		\$311.00



## Analog Combo Input / Output Modules

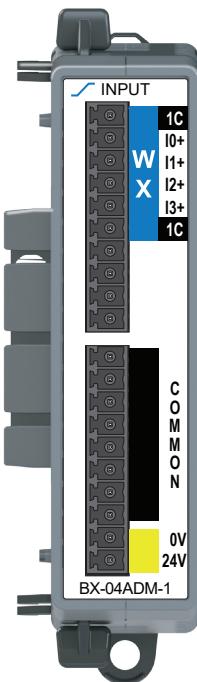
Six (6) analog input/output combo modules are available with current or voltage inputs and outputs. The Input/Output faceplate terminal bar is in blue and red, making it easy to distinguish between inputs and outputs. Symbols and signify current and voltage, respectively.

Analog Combo Input / Output Modules					
Part Number	Points		Input Type	Output Type	Price
	Input	Output			
<a href="#">BX-2AD2DA-1</a>	2	2	Current Sink 0-20mA, 4-20mA	Current Source 0-20mA, 4-20mA	\$309.00
<a href="#">BX-4AD2DA-1</a>	4	2			\$378.00
<a href="#">BX-2AD2DA-2B</a>	2	2	Voltage $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , 0-5VDC, 0-10VDC	Voltage $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , 0-5VDC, 0-10VDC	\$309.00
<a href="#">BX-4AD2DA-2B</a>	4	2			\$378.00
<a href="#">BX-2AD2DA-3</a>	2	2	Current Source 0-20mA, 4-20mA Voltage $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , 0-5VDC, 0-10VDC	Current Source 0-20mA, 4-20mA Voltage $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , 0-5VDC, 0-10VDC	\$284.00
<a href="#">BX-4AD4DA-3</a>	4	4			\$349.00

Expansion Module Support by Controller	
Controller Type	# Expansion Modules
<a href="#">BX-DM1E-M</a>	8
<a href="#">BX-DM1-10</a>	8
<a href="#">BX-DM1E-10</a>	8
<a href="#">BX-DM1-18</a>	8
<a href="#">BX-DM1E-18</a>	8
<a href="#">BX-DM1-36</a>	8
<a href="#">BX-DM1E-36</a>	8
<a href="#">BX-DMIO*</a>	8
<a href="#">BX-EBC100*</a>	8
<a href="#">BX-MBIO*</a>	8

\* Remote I/O controllers do not support Motion Control and Communications Modules.

# BX-04ADM-1 Analog Current Sinking Input



**BX-04ADM-1 \$182.00**

Input Module 4-pt, 14-bit,  
Analog Current Sinking

**Terminal Blocks Sold Separately**

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



Analog Current Sinking Input Specifications	
<b>Inputs per Module</b>	4
<b>Commons</b>	1
<b>Module Signal Input Range</b>	0–20mA, 4–20mA (Default)
<b>Signal Resolution</b>	14-bit
<b>Resolution Value of LSB</b>	See Data Range Specifications table
<b>Input Impedance</b>	125Ω±0.1%, 1/10th watt
<b>All Channel Update Rate</b>	45ms
<b>Over Current Circuit Detection Time</b>	< 1second
<b>Maximum Continuous Overload</b>	±28mA
<b>Sample Duration Time</b>	5µs per channel
<b>Hardware Filter Characteristics</b>	Low Pass 1st order, -3dB @ 144Hz
<b>Conversion Method</b>	Successive approximation
<b>Linearity Error (end to end)</b>	±0.09% of range
<b>Input Stability and Repeatability</b>	±0.035% of range (after 10 min. warmup)
<b>Full Scale Calibration Error</b>	±0.1% of range
<b>Offset Calibration Error</b>	±0.1% of range
<b>Accuracy vs. Temperature</b>	±35PPM / °C maximum
<b>Maximum Inaccuracy</b>	0.1% of range (incl. Temperature Drift)
<b>Maximum Crosstalk</b>	-96dB, 1 LSB
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second
<b>Channel to Channel Isolation</b>	None
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended
<b>Backplane Power Consumption</b>	0.1 W
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%) 25mA
<b>Heat Dissipation</b>	0.8 W
<b>Weight</b>	98g [3.5 oz]
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.3 or later

Data Range Specifications			
Selection	Description	Raw Counts	µA Per Count
0–20mA	Unipolar 0–20mA	0–16383	1.22
4–20mA	Unipolar 4–20mA	0–16383	0.977

**IMPORTANT!**

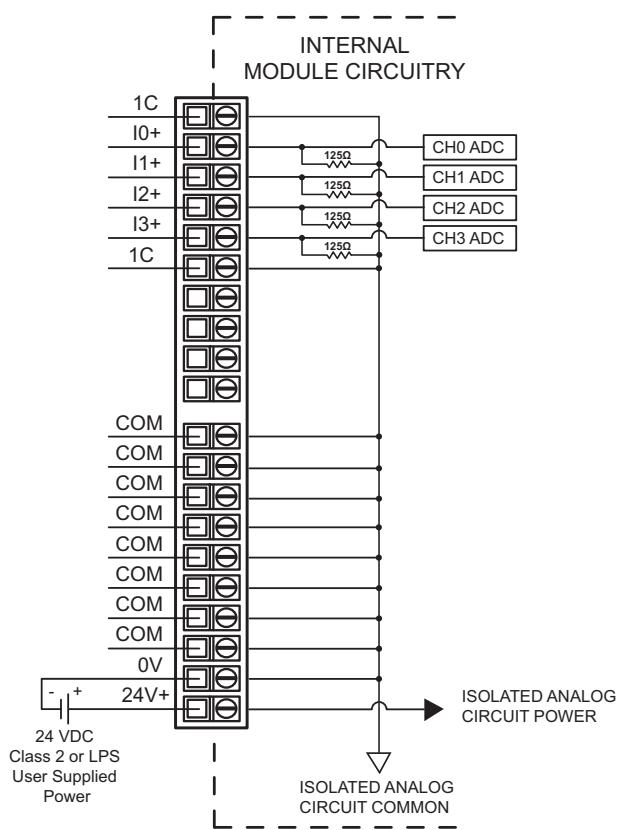


**Hot-Swapping Information**

Note: This device cannot be Hot Swapped.

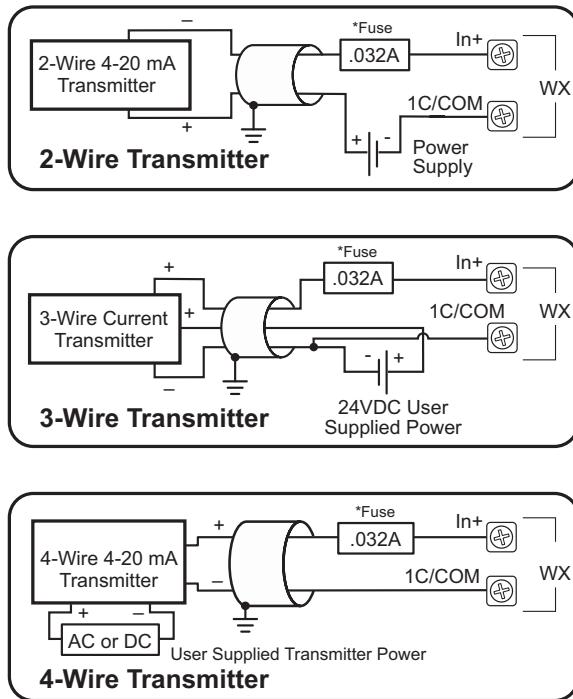
# BX-04ADM-1 Analog Current Sinking Input, continued

## Analog Current Sinking Input Wiring



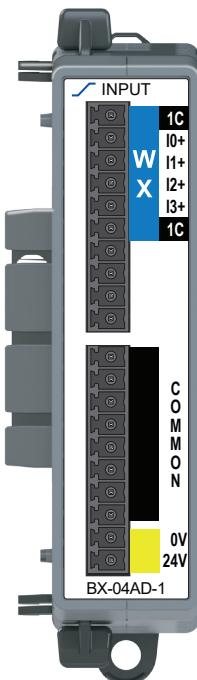
## Analog Current Sinking Input Circuits

\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

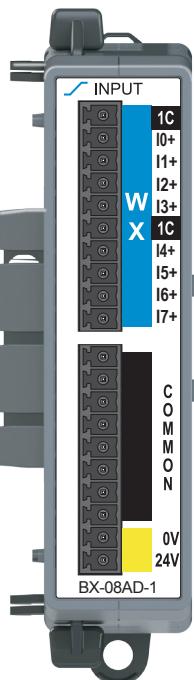


**NOTE:** Shield should be connected only at one end, to ground at the source device.

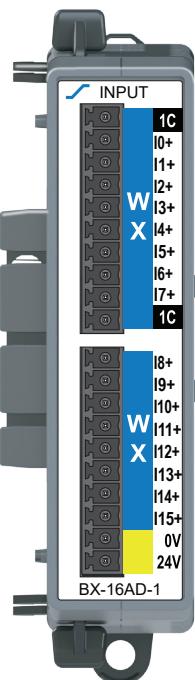
# BX-xxAD-1 Analog Current Sinking Input

**BX-04AD-1**

\$230.00

Input Module 4-pt,  
Analog Current Sinking**BX-08AD-1**

\$255.00

Input Module 8-pt,  
Analog Current Sinking**BX-16AD-1**

\$363.00

Input Module 16-pt,  
Analog Current Sinking

Terminal Blocks Sold Separately

Analog Current Sinking Input Specifications			
Specification	BX-04AD-1	BX-08AD-1	BX-16AD-1
<b>Inputs per Module</b>	4	8	16
<b>Commons</b>		1	
<b>Module Signal Input Range</b>	0–20mA, 4–20mA (Default)		
<b>Signal Resolution</b>	16-bit, 15-bit (Default)		
<b>Resolution Value of LSB</b>	See Data Range Specifications table		
<b>Input Impedance</b>	125Ω±0.1%, 1/10th watt	256Ω±0.1%, 1/10th watt	
<b>All Channel Update Rate</b>	45ms	80ms	
<b>Over Current Circuit Detection Time</b>	< 1second		NA
<b>Maximum Continuous Overload</b>	±28mA		
<b>Sample Duration Time</b>	5µs per channel	100µs per channel	
<b>Hardware Filter Characteristics</b>	Low Pass 1st order, -3dB @ 144Hz	Low Pass 2nd order, -3dB @ 15kHz	
<b>Conversion Method</b>	Successive approximation		
<b>Linearity Error (end to end)</b>	±0.09% of range		
<b>Input Stability and Repeatability (after 10 min. warmup)</b>	±0.035% of range	±0.05% of range	
<b>Full Scale Calibration Error</b>	±0.1% of range		
<b>Offset Calibration Error</b>	±0.1% of range		
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum		
<b>Maximum Inaccuracy</b>	0.1% of range (incl. Temperature Drift)		
<b>Maximum Crosstalk</b>	-96dB, 1 LSB	-90dB, 1 LSB	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second		
<b>Channel to Channel Isolation</b>	None		
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended		
<b>Backplane Power Consumption</b>	0.1 W	0.3 W	
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%)		
	25mA	75mA	
<b>Heat Dissipation</b>	0.8 W	2.5 W	2W
<b>Weight</b>	98g [3.5 oz]		110g [3.9 oz]
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.3 or later	2.1 or later	2.6 or later

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

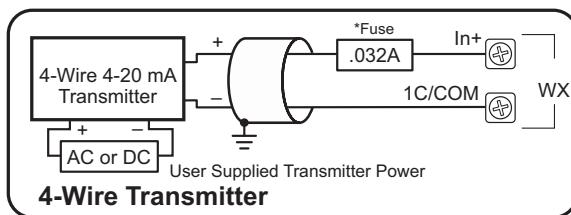
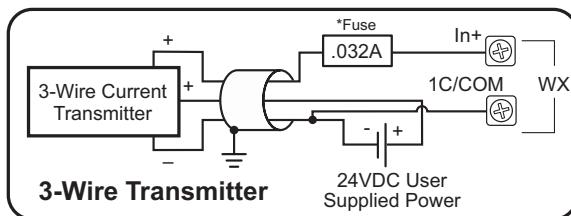
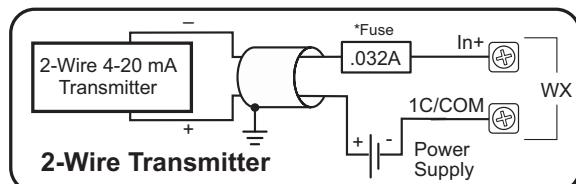
# BX-xxAD-1 Analog Current Sinking Input

Data Range Specifications							
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default)			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting*	µA Per Count	Raw Counts	Casting*	µA Per Count
<b>0-20 mA</b>	Unipolar 0-20 mA	0-32767	-	0.61	0-65535	WXn:U	0.31
<b>4-20 mA</b>	Unipolar 4-20 mA	0-32767	-	0.49	0-65535	WXn:U	0.24

\* For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

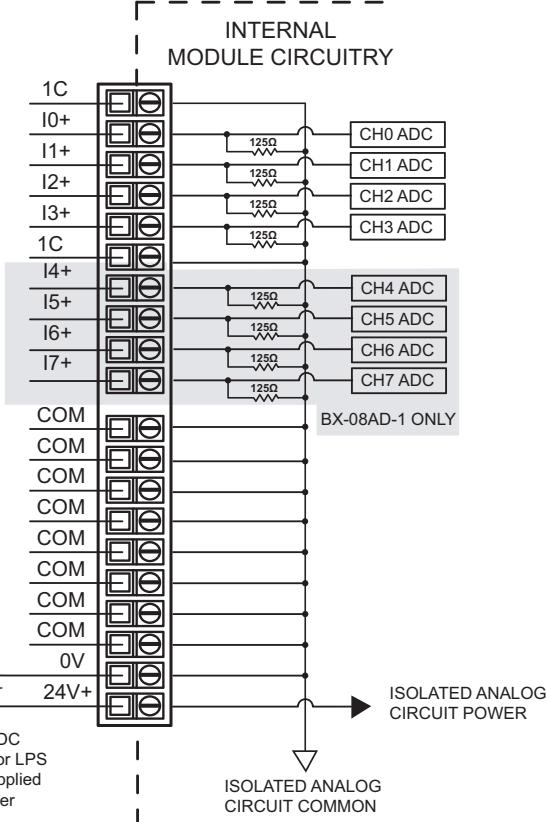
## Analog Current Sinking Input Circuits

\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

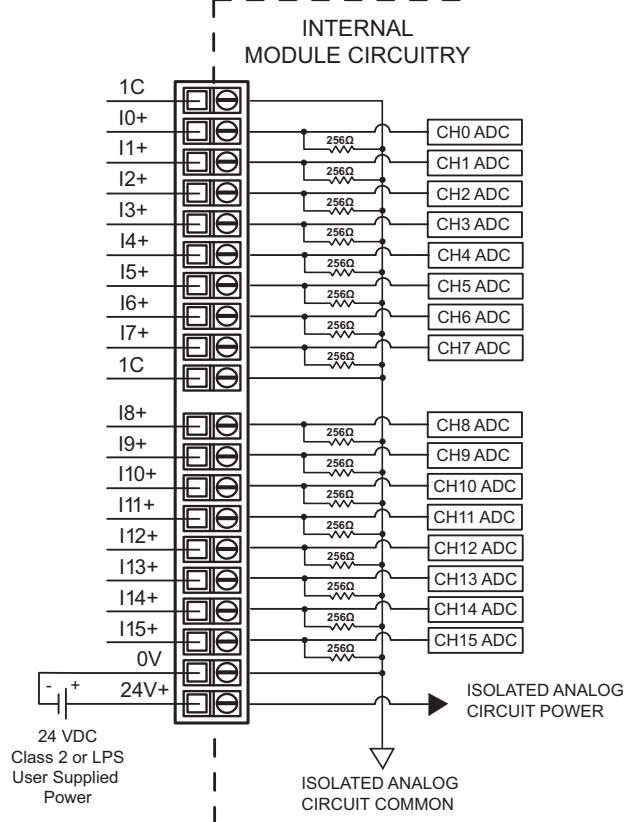


## Analog Current Sinking Input Wiring

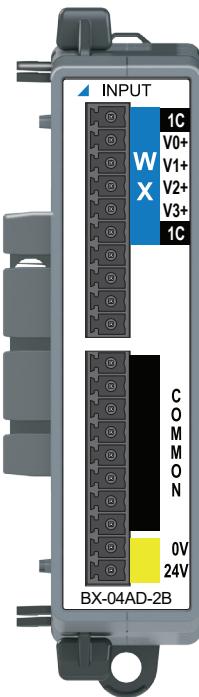
### BX-04AD-1 / BX-08AD-1



### BX-16AD-1

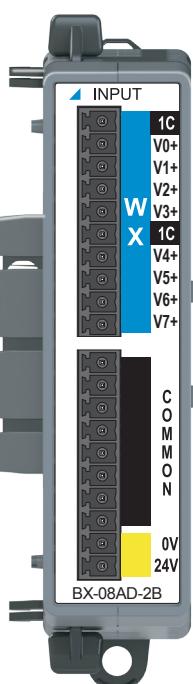


# BX-xxAD-2B Analog Voltage Input



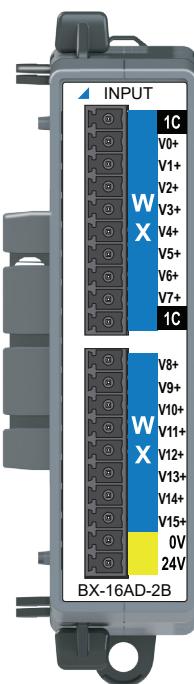
**BX-04AD-2B**  
**\$230.00**

Input Module 4-pt,  
Analog Voltage



**BX-08AD-2B**  
**\$255.00**

Input Module 8-pt,  
Analog Voltage



**BX-16AD-2B**  
**\$363.00**

Input Module 16-pt,  
Analog Voltage

Terminal Blocks Sold Separately

Analog Voltage Input Specifications		
Specification	BX-04AD-2B	BX-08AD-2B
Inputs per Module	4	8
Commons	1	
Module Signal Input Range	±10 VDC, ±5 VDC, 0–5 VDC, 0–10 VDC (default)	
Signal Resolution	16-bit, 15-bit (Default)	
Resolution Value of LSB	See Data Range Specifications table	
Input Impedance	>10MΩ	>1MΩ
All Channel Update Rate	45ms	100ms
Sample Duration Time	5µs per channel	100µs per channel
Hardware Filter Characteristics	Low Pass 2nd order, -3dB @ 15kHz	
Conversion Method	Successive Approximation	
Accuracy vs. Temperature	±25PPM / °C maximum	
Maximum Inaccuracy	0.15% of full range (over temp)	
Linearity Error (end to end)	±0.03%	±0.09%
Input Stability and Repeatability	±0.06% of range (after 10 min. warmup)	
Full Scale Calibration Error	±0.08% of range	±0.1% of range
Offset Calibration Error	±0.08% of range	±0.1% of range
Maximum Crosstalk	-96dB, 1 LSB	-90dB, 1 LSB
Channel to Backplane Isolation	1800VAC applied for one second	
Channel to Channel Isolation	None	
Loop Fusing (External)	Fast-acting 0.032A recommended	
Backplane Power Consumption	0.1 W	0.3 W
External DC Power Required	Class 2 or LPS power supply 24VDC (±20%)	
	25mA	75mA
Heat Dissipation	0.8 W	1W
Weight	98g [3.5 oz]	110g [3.9 oz]
Software Version Required (Do-more! Designer Programming Software)	2.3 or later	2.1 or later
		2.6 or later

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!

### Hot-Swapping Information



Note: This device cannot be Hot Swapped.

# BX-xxAD-2B Analog Voltage Input

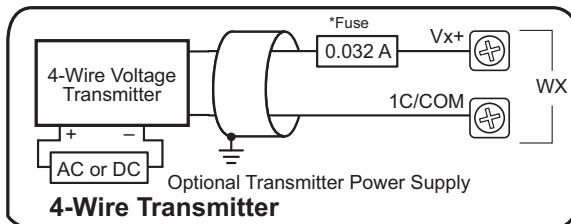
Data Range Specifications							
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default) <sup>1</sup>			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting <sup>2</sup>	µV Per Count	Raw Counts	Casting <sup>2</sup>	µV Per Count
0-10V	Unipolar 10VDC	0-32767	-	305	0-65535	WXn:U	152
0-5V	Unipolar 5VDC	0-32767	-	152	0-65535	WXn:U	76
±10V	Bipolar 10VDC	-	-	-	-32768 to 32767	-	305
±5V	Bipolar 5VDC	-	-	-	-32768 to 32767	-	152

1. Bipolar ranges default to 16-bit resolution.

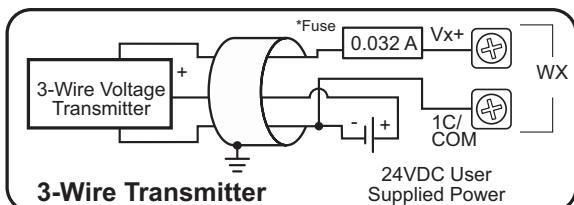
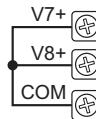
2. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

## Analog Voltage Input Circuits

\*An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.



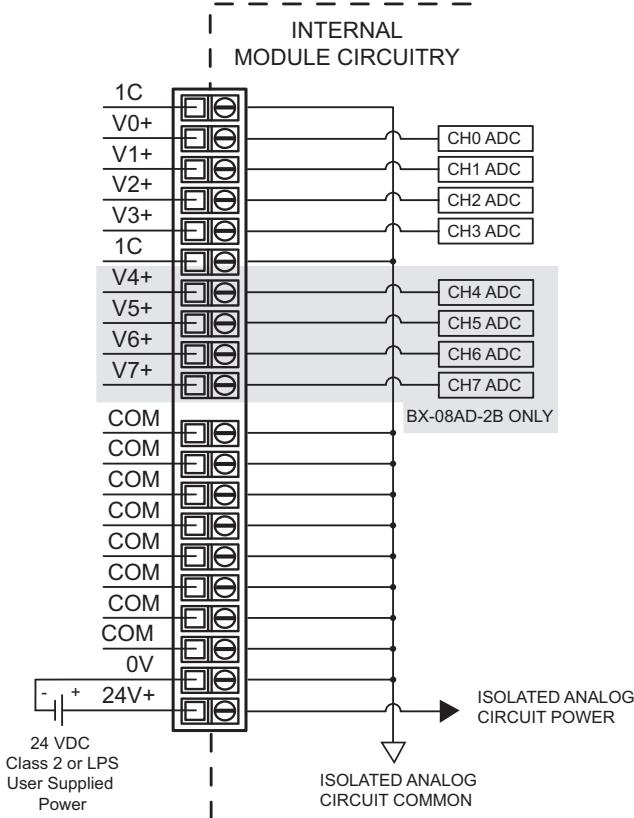
NOTE: For maximum accuracy, jumper unused inputs to common.



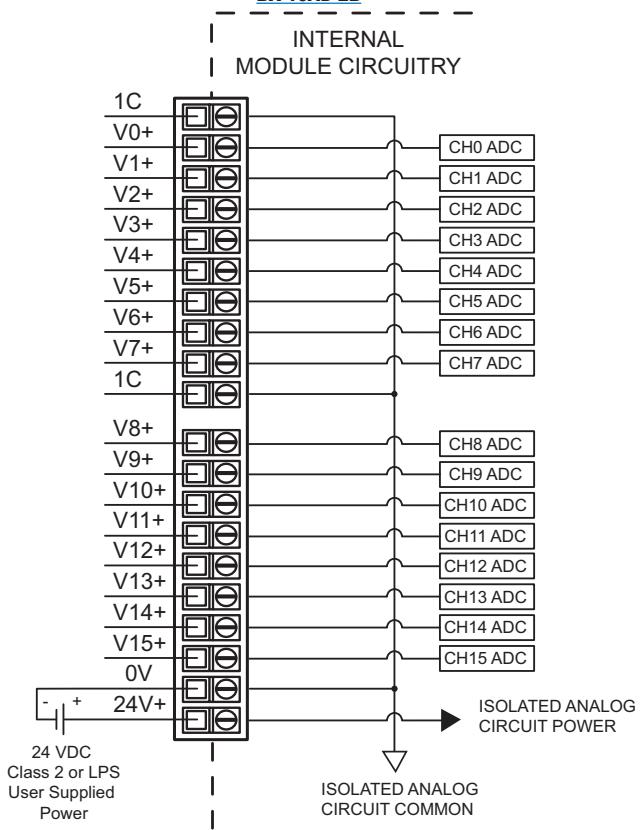
NOTE: Shield should be connected only at one end, to ground at the source device.

## Analog Voltage Input Wiring

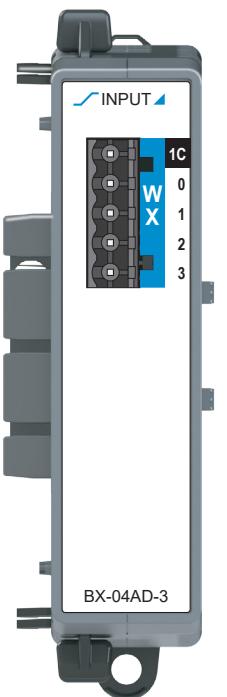
### BX-04AD-2B / BX-08AD-2B



### BX-16AD-2B



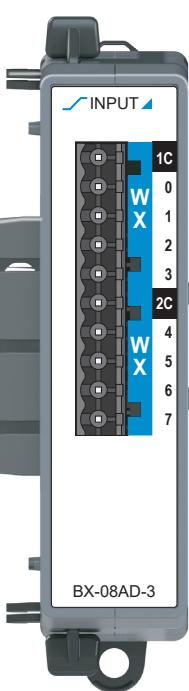
# BX-xxAD-3 Universal Analog Input



**BX-04AD-3**  
**\$193.00**

Analog Input Expansion Module  
4-ch,  $\pm 20\text{mA}$  or  
 $\pm 10\text{V}$ , 16-bit\*

**NOTE:** BX-04AD-3 does not support ZIPLink Wiring Systems



**BX-08AD-3**  
**\$225.00**

Analog Input Expansion Module  
8-ch,  $\pm 20\text{mA}$  or  
 $\pm 10\text{V}$ , 16-bit\*



Terminal Blocks or ZIPLink Cables Sold Separately  
We recommend using prewired ZIPLink cables and connection modules for the BX-08AD-3.  
A removable terminal block is available for either module.  
See Wiring Solutions section for all options.

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

### Universal Current/Voltage Sinking Input Specifications

	<b>BX-04AD-3</b>	<b>BX-08AD-3</b>
<b>Inputs per Module</b>	4	8
<b>Commons</b>	1	2
<b>Module Signal Input Range</b>	$0\text{-}20\text{mA}$ , $4\text{-}20\text{mA}$ , $\pm 10\text{VDC}$ , $\pm 5\text{VDC}$ , $0\text{-}5\text{VDC}$ (Default), $0\text{-}10\text{VDC}$	
<b>Signal Resolution</b>	16-bit at $\pm 10\text{V}$ or $\pm 20\text{mA}$ *	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Input Impedance</b>	<b>Current Input</b> $249\Omega \pm 0.1\%$ , 1/10th watt <b>Voltage Input</b> $100k\Omega$	
<b>All Channel Update Rate</b>	1.2 ms	
<b>Over Current Circuit Detection Time</b>	< 1 second	
<b>Maximum Continuous Overload</b>	$\pm 40\text{mA}$ current mode, $\pm 20\text{V}$ voltage mode	
<b>Sample Duration Time</b>	1.2 ms	
<b>Hardware Filter Characteristics</b>	Active Low Pass, $-3\text{dB}$ @ 1kHz	
<b>Conversion Method</b>	Delta Sigma	
<b>Linearity Error (end to end)</b>	$\pm 0.1\%$ of HW Full Scale (65 counts)	
<b>Input Stability and Repeatability (after 10 min. warmup)</b>	$\pm 0.02\%$ of HW Full Scale (13 counts)	
<b>Full Scale Calibration Error</b>	$\pm 0.1\%$ of HW Full Scale (65 counts)	
<b>Offset Calibration Error</b>	$\pm 0.05\%$ of HW Full Scale (32 counts)	
<b>Accuracy vs. Temperature</b>	$\pm 25\text{PPM} / ^\circ\text{C}$ maximum	
<b>Maximum Inaccuracy</b>	$\pm 0.2\%$ of HW Full Scale (130 counts)	
<b>Maximum Crosstalk</b>	1 count	
<b>Channel to Backplane Isolation</b>	1500VAC applied for one second, 1C to 2C	
<b>Channel to Channel Isolation</b>	None	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	
<b>Backplane Power Consumption (Max)</b>	1.5 W	2.5 W
<b>Heat Dissipation</b>	2.25 W	3.25 W
<b>Weight</b>	98g [3.5 oz]	
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA	
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.7 or later	

\* 16-bit resolution is only available when a bipolar input range is selected.

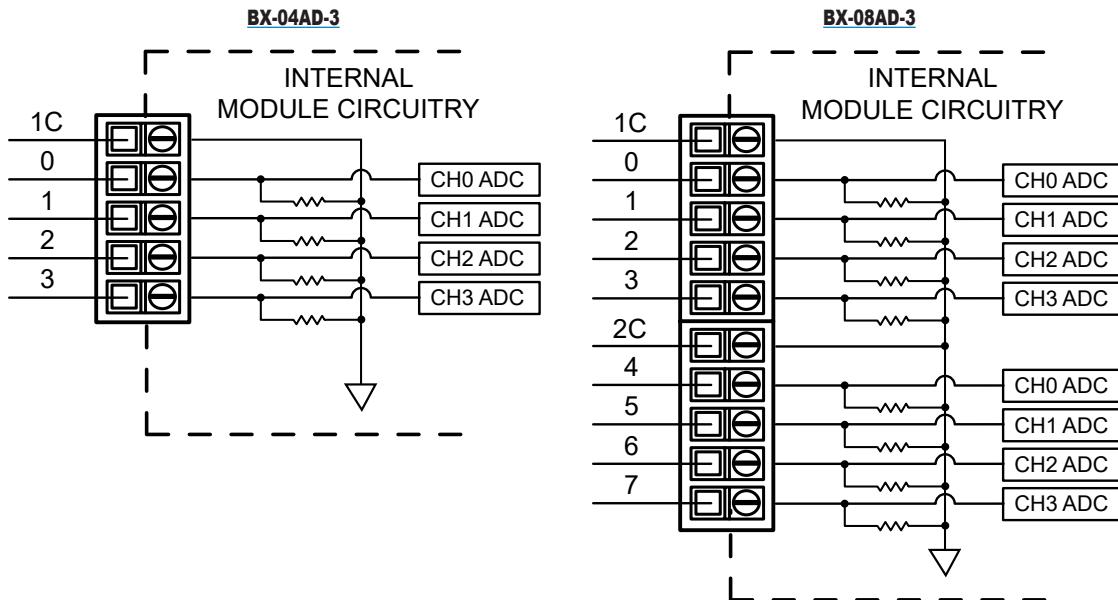
### Data Range Specifications

<b>Selection</b>	<b>Description</b>	<b>Raw Counts</b>	<b>Casting<sup>1</sup></b>	<b>Per Count</b>
<b>-20-20mA</b>	bipolar -20-20mA	-32768 to 32767	-	$0.61\text{ }\mu\text{A}$
<b>4-20mA</b>	unipolar 4-20mA	6553-32767	-	$0.61\text{ }\mu\text{A}$
<b>0-10V</b>	unipolar 10VDC	0-32767	-	$305\text{ }\mu\text{V}$
<b>0-5V</b>	unipolar 5VDC	0-32767	-	$305\text{ }\mu\text{V}$
<b><math>\pm 10\text{V}</math></b>	bipolar 10VDC	-32768 to 32767	-	$305\text{ }\mu\text{V}$
<b><math>\pm 5\text{V}</math></b>	bipolar 5VDC	-32768 to 32767	-	$305\text{ }\mu\text{V}$

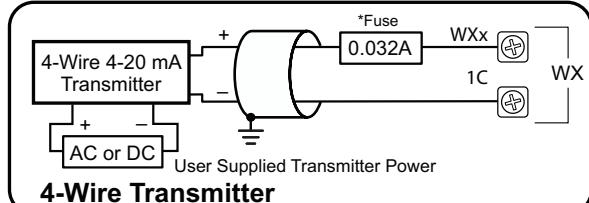
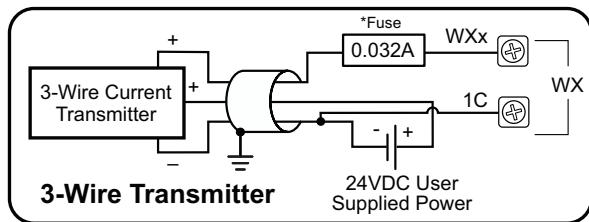
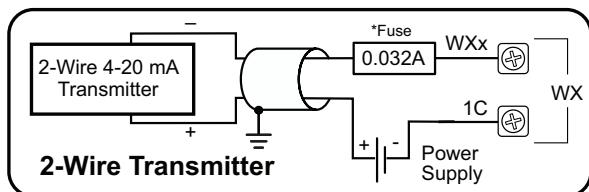
1. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

# BX-xxAD-3 Universal Analog Input, continued

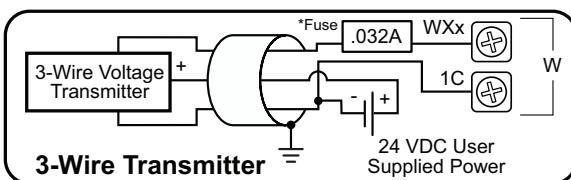
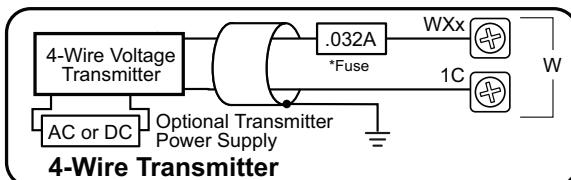
## Analog Current/Voltage Input Wiring



## Analog Current Sinking Input Circuits



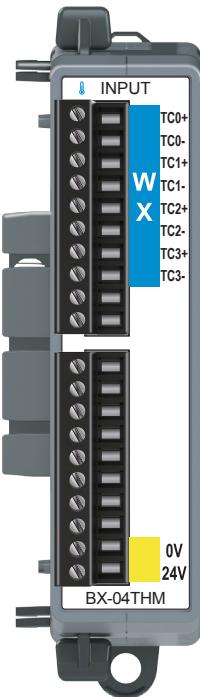
## Analog Voltage Input Circuits



**NOTE:** Shield should be connected only at one end, to ground at the source device.

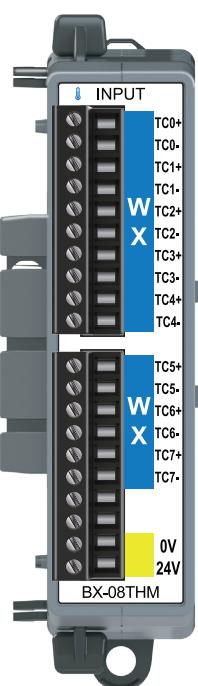
\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

# BX-xxTHM Thermocouple Input



**BX-04THM**  
**\$241.00**

Input Module 4-pt,  
Thermocouple



**BX-08THM**  
**\$269.00**

Input Module 8-pt,  
Thermocouple

**BX-RTB10 Terminal Blocks Included.**  
The **BX-RTB10-1** or **BX-RTB10-2**  
(purchased separately)  
can also be used.



**NOTE:** This device does not support  
ZIPLink Wiring Systems

Thermocouple Input Specifications		
	<b>BX-04THM</b>	<b>BX-08THM</b>
<b>Input Channels</b>	4 Differential	8 Differential
<b>Commons</b>	0	
<b>Input Impedance</b>	Rev. B2 or lower: >5MΩ Rev. B3 or higher: >1MΩ	Rev. A1: >5MΩ Rev. A2 or higher: >1MΩ
<b>Resolution</b>	16-bit, 0.1°C (C or F) See Data Range Specifications table	
<b>Thermocouple Input Ranges</b>	Type J: -190° to 760°C [-310° to 1400°F] (default) Type E: -210° to 1000°C [-346° to 1832°F] Type K: -150° to 1372°C [-238° to 2502°F] Type R: 65° to 1768°C [149° to 3214°F] Type S: 65° to 1768°C [149° to 3214°F] Type T: -230° to 400°C [-382° to 752°F] Type B: 529° to 1820°C [984° to 3308°F] Type N: -70° to 1300°C [-94° to 2372°F] Type C: 65° to 2320°C [149° to 4208°F]	
<b>Cold Junction Compensation</b>	Automatic	
<b>Thermocouple Linearization</b>	Automatic	
<b>Accuracy vs. Temperature</b>	±50PPM per °C (maximum)	
<b>Maximum Inaccuracy–Temperature</b>	±3°C maximum (excluding thermocouple error) (including temperature drift)	
<b>Linear Voltage Input Ranges</b>	0–39mV ±39mV ±78mV 0–156mV ±156mV 0–1.25 V	
<b>Maximum Inaccuracy–Voltage</b>	0.06% @ 25°C, 0.10% @ 0–60°C	
<b>All Channel Update Rate</b>	1.08 s	2.16 s
<b>Sample Duration Time</b>	270ms	
<b>Open Circuit Detection Time</b>	Within 2s	
<b>Maximum Ratings</b>	Fault protected inputs to ±50V	
<b>Common Mode Range</b>	0.6 V (@ 16-bit Resolution)	
<b>Common Mode Rejection</b>	100dB @ DC and 130dB @ 60Hz	
<b>Conversion Method</b>	Sigma-Delta	
<b>Backplane Power Consumption</b>	0.1 W	
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%) 25mA	
<b>Heat Dissipation</b>	0.8 W	
<b>Weight</b>	98g [3.5 oz]	
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.1 or later	2.3 or later

## IMPORTANT!

### Hot-Swapping Information

Note: This device cannot be Hot Swapped.



# BX-xxTHM Thermocouple Input, continued

Data Range Specifications							
Selection	Description	Enable 16-bit: Unchecked (Default) <sup>1</sup> (15-bit Resolution)			Enable 16-bit: Checked (16-bit Resolution)		
		Raw Counts	Casting <sup>2</sup>	µV Per Count	Raw Counts <sup>3</sup>	Casting <sup>2</sup>	µV Per Count
Type J	Type J	-	-		°C: °F:	-1900 to 7600 -3100 to 14000	-
Type K	Type K	-	-		°C: °F:	-1500 to 13720 -2380 to 25020	-
Type E	Type E	-	-		°C: °F:	-2100 to 10000 -3460 to 18320	-
Type R	Type R	-	-		°C: °F:	650 to 17680 1490 to 32140	-
Type S	Type S	-	-		°C: °F:	650 to 17680 1490 to 32140	-
Type T	Type T	-	-		°C: °F:	-2300 to 4000 -380 to 7520	-
Type B	Type B	-	-		°C: °F:	5290 to 18200 9840 to 33080	WXn:U
Type N	Type N	-	-		°C: °F:	-700 to 13000 -940 to 23720	-
Type C	Type C	-	-		°C: °F:	650 to 23200 1490 to 42080	WXn:U
0–39 mVDC	Unipolar 39 mVDC	0–32767	-	1.2	0–65535	WXn:U	0.6
± 39 mVDC	Bipolar 39 mVDC	-	-		-32768 to 32767	-	1.2
± 78 mVDC	Bipolar 78 mVDC	-	-		-32768 to 32767	-	2.4
0–156 mVDC	Unipolar 156 mVDC	0–32767	-	4.8	0–65535	WXn:U	2.4
± 156 mVDC	Bipolar 156 mVDC	-	-		-32768 to 32767	-	4.8
0–1.25 VDC	Unipolar 1.25 VDC	0–32767	-	38.1	0–65535	WXn:U	19.1

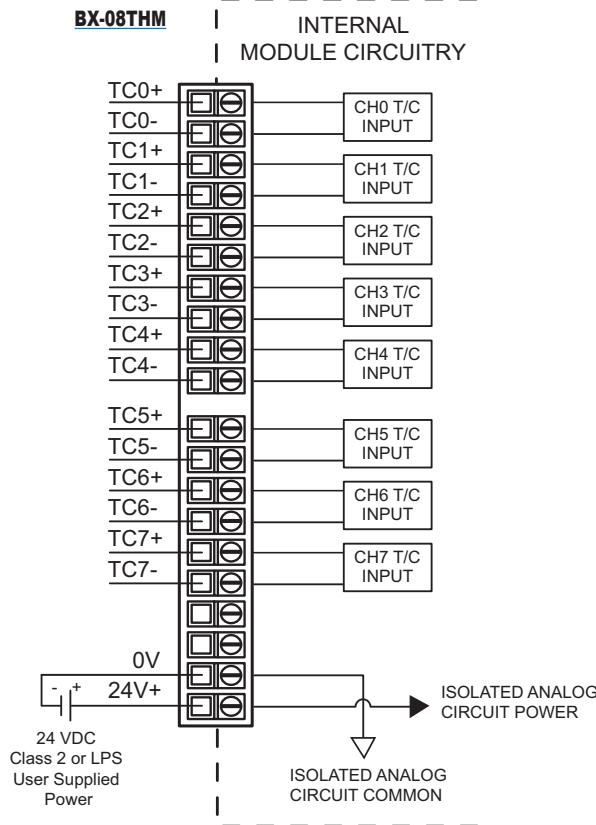
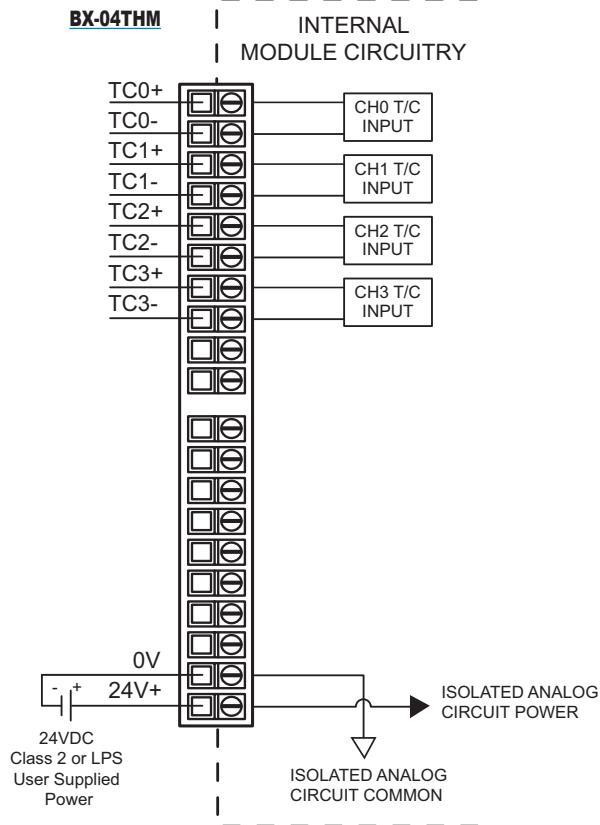
1. Thermocouple and bipolar ranges default to 16-bit resolution.

2. For more information on Casting refer to Help topic DMD0309 in the Do-more! Designer Software.

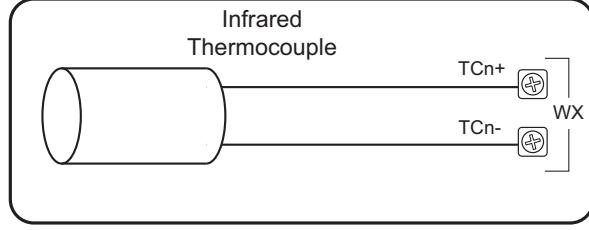
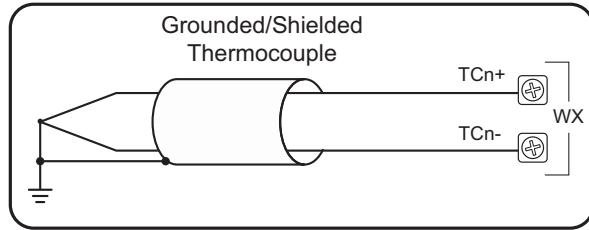
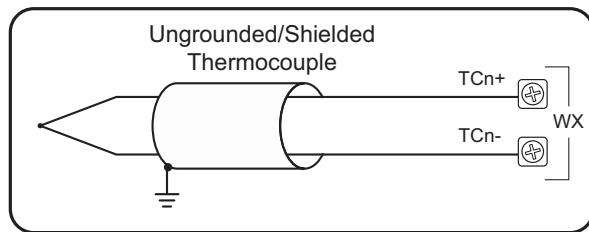
3. Temperatures have one implied decimal place (e.g., raw count of -1900 is -190.0°).

# BX-xxTHM Thermocouple Input, continued

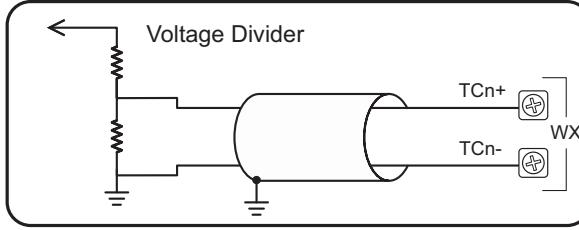
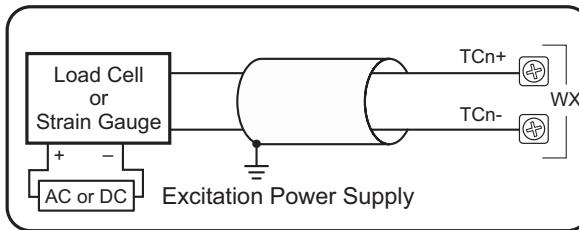
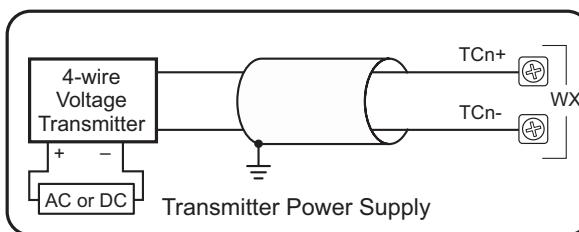
## Analog Thermocouple/Voltage Input Wiring



## Thermocouple Input Circuits



## Analog Voltage Input Circuits



**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.

**NOTE:** Shield should be connected only at one end, to ground at the source device.

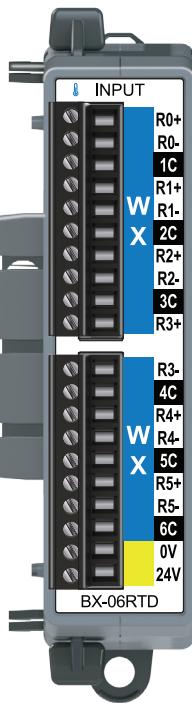
For maximum accuracy, jumper unused inputs.



**NOTE:** With grounded thermocouples, take precautions to prevent having a voltage potential between thermocouple tips.



# BX-06RTD Resistance Temperature Detector Input



**BX-RTB10 Terminal Blocks Included.**  
The **BX-RTB10-1** or **BX-RTB10-2** (purchased separately) can also be used.

**BX-06RTD \$255.00**

Input Module 6-pt,  
Resistance Temperature Detector



**NOTE:** This device does not support ZIPLink Wiring Systems

<b>RTD Input Specifications</b>	
<b>Input Channels</b>	6 Differential
<b>Commons</b>	6
<b>Resolution</b>	16-bit, 0.1°(C or F) (up to 100Hz filter) See Data Range Specifications table
<b>Input Ranges (RTD Types)</b>	Pt100: -200° to 850°C [-328° to 1562°F] (default) Pt1000: -200° to 595°C [-328° to 1103°F] JPt100: -100° to 450°C [-148° to 842°F] 10Ω Cu: -200° to 260°C [-328° to 500°F] ±3°C 25Ω Cu: -200° to 260°C [-328° to 500°F] ±3°C 120Ω Ni: -80° to 260°C [-112° to 500°F]
<b>Resistance Input Ranges</b>	0-10,000 Ω 0-6,250 Ω 0-3,125 Ω 0-1,562.5 Ω 0-781.2 Ω 0-390.6 Ω 0-195.3 Ω
<b>Excitation Current</b>	210µA
<b>RTD Linearization</b>	Automatic
<b>Accuracy vs. Temperature</b>	±10PPM per °C (maximum)
<b>Full Scale Calibration</b>	±1°C
<b>Offset Calibration Error</b>	±1°C, ±3°C for 10Ω/25Ω Cu.
<b>Maximum Inaccuracy</b>	±1°C, ±3°C for 10Ω/25Ω Cu. maximum (excluding RTD error) (including temperature drift)
<b>Warmup Time</b>	2 minutes for ±0.2% repeatability
<b>All Channel Update Rate</b>	210ms + 170ms x (number of active channels) @470Hz 210ms + 750ms x (number of active channels) @16.7 Hz
<b>Filter Characteristics</b>	Digital filter cutoff frequencies: 16.7 Hz, 470Hz
<b>Sample Duration Time</b>	Dependent on digital filter settings: 120ms@16.7 Hz, 4ms@470Hz
<b>Open Circuit Detection Time</b>	Positive full-scale reading within 2s
<b>Maximum Ratings</b>	Fault protected inputs to ±50V
<b>Max. Common Mode Voltage</b>	5VDC
<b>Common Mode Rejection</b>	90dB @ DC and 100dB @ 50/60Hz
<b>Conversion Method</b>	Sigma-Delta
<b>Backplane Power Consumption</b>	0.1 W
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%) 25mA
<b>Heat Dissipation</b>	0.8 W
<b>Weight</b>	96g [3.4 oz]
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.3 or later

## IMPORTANT!

### Hot-Swapping Information

Note: This device cannot be Hot Swapped.



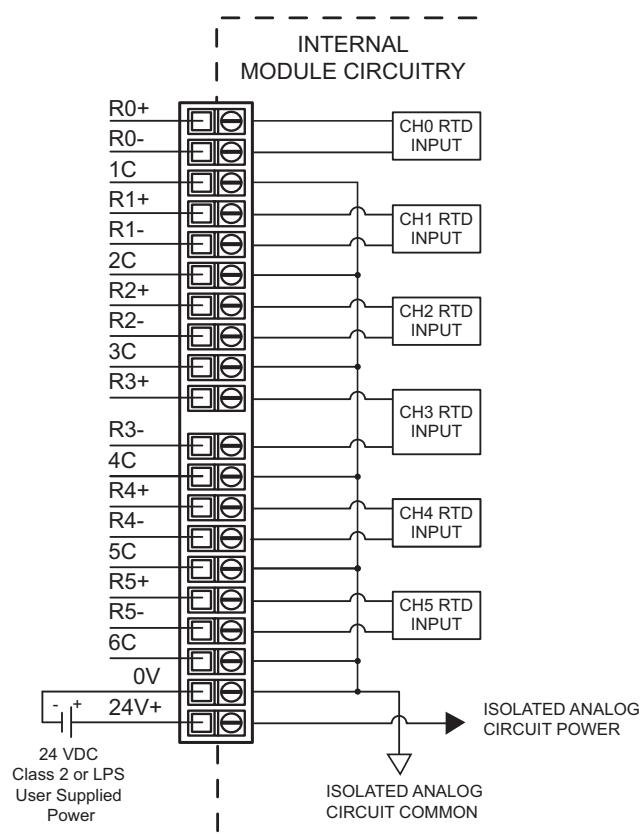
# BX-06RTD Resistance Temperature Detector Input, continued

Data Range Specifications					
Selection	Description	Raw Counts <sup>1</sup>			
Pt100	Pt100 Platinum RTD	°C:	-2000 to 8500	°F:	-3280 to 15620
Pt1000	Pt1000 Platinum RTD	°C:	-2000 to 5950	°F:	-3280 to 11030
JPt100	JPt100 Platinum RTD	°C:	-1000 to 4500	°F:	-1480 to 8420
10Ω Cu	10Ω Copper RTD	°C:	-2000 to 2600	°F:	-3280 to 5000
25Ω Cu	25Ω Copper RTD	°C:	-2000 to 2600	°F:	-3280 to 5000
120Ω Ni	120Ω Nickel RTD	°C:	-800 to 2600	°F:	-1120 to 5000
0-10,000 Ω		0-10000			
0-6,250 Ω		0-6250			
0-3,125 Ω		0-3125			
0-1,562.5 Ω		0-15625 <sup>2</sup>			
0-781.2 Ω		0-7812 <sup>2</sup>			
0-390.6 Ω		0-3906 <sup>2</sup>			
0-195.3 Ω		0-1953 <sup>2</sup>			

1. Temperatures have one implied decimal place (e.g., raw count of -1900 is -190.0°).

2. Certain resistance ranges have one implied decimal place (e.g., raw count of 7812 is 781.2 Ω).

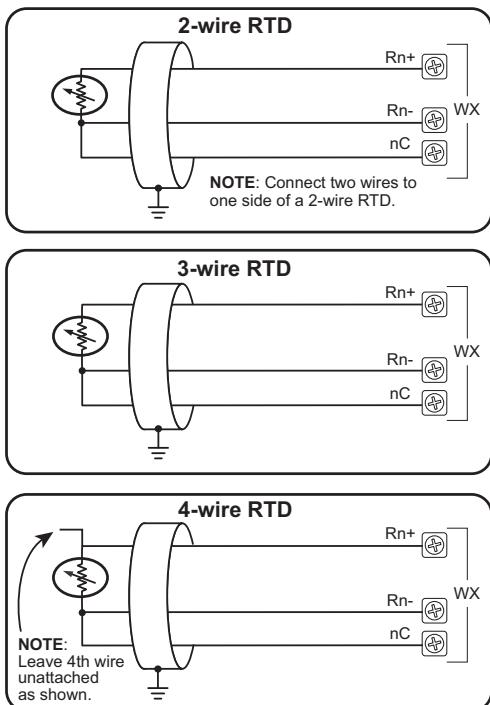
## Analog RTD/Resistance Input Wiring



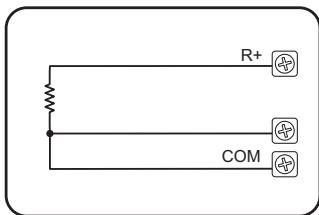
# BX-06RTD Resistance Temperature Detector Input, continued

## Analog RTD/Resistance Input Circuits

### RTD Input Circuits

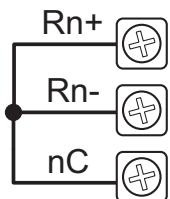


### Resistance Input

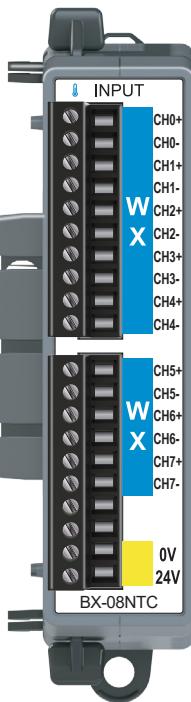


### Notes for maximum accuracy:

1. For 2-wire RTD, attach a third wire to module common.
2. R+, R-, and COM wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
3. Do not use cable shield as sensing wire.
4. When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
5. Jumper unused inputs to common.



# BX-08NTC Thermistor Input



**BX-RTB10 Terminal Blocks Included.**  
The **BX-RTB10-1** or **BX-RTB10-2** (purchased separately) can also be used.

**BX-08NTC** \$269.00

Input Module 8-pt,  
Thermistor



**NOTE:** This device does not support ZIPLink Wiring Systems

Thermistor Input Specifications	
<b>Input Channels</b>	8 Single-ended
<b>Commons</b>	0
<b>Resolution</b>	16-bit, $\pm 0.1^\circ\text{C}$ or $^\circ\text{F}$ (up to 100Hz filter) See Data Range Specifications table
<b>Thermistor Input Ranges</b>	2252: $-40^\circ$ to $150^\circ\text{C}$ [ $-40^\circ$ to $302^\circ\text{F}$ ] 10K-AN Type 3: $-40^\circ$ to $150^\circ\text{C}$ [ $-40^\circ$ to $302^\circ\text{F}$ ] 10K-CP Type 2: $-40^\circ$ to $150^\circ\text{C}$ [ $-40^\circ$ to $302^\circ\text{F}$ ] 5K: $-40^\circ$ to $150^\circ\text{C}$ [ $-40^\circ$ to $302^\circ\text{F}$ ] 3K: $-40^\circ$ to $150^\circ\text{C}$ [ $-40^\circ$ to $302^\circ\text{F}$ ] 1.8K: $-40^\circ$ to $150^\circ\text{C}$ [ $-40^\circ$ to $302^\circ\text{F}$ ]
<b>Thermistor Linearization</b>	Automatic
<b>Excitation Current (all ranges)</b>	$10\mu\text{A}$ to $210\mu\text{A}$ autoscaling
<b>Accuracy vs. Temperature</b>	$\pm 10\text{PPM}$ per $^\circ\text{C}$ (maximum)
<b>Full Scale Calibration</b>	$\pm 1^\circ\text{C}$
<b>Offset Calibration Error</b>	$\pm 1^\circ\text{C}$
<b>Linearity Error (end to end)</b>	Nonlinear
<b>Maximum Inaccuracy</b>	$1^\circ\text{C}$ @ $16.7\text{ Hz}$ , $2.5^\circ\text{C}$ @ $470\text{Hz}$
<b>Warm-up Time</b>	30 minutes for $\pm 1^\circ\text{C}$ Repeatability
<b>Sample Duration</b>	120ms @ $16.7\text{ Hz}$ , 4ms @ $470\text{Hz}$
<b>All Channel Update Rate</b>	2.2 s @ $16.7\text{ Hz}$
<b>Open Circuit Detection Time</b>	Within 2s @ $16.7\text{ Hz}$
<b>Common Mode Rejection</b>	100dB @ DC and 100dB @ 60Hz
<b>Absolute Maximum Ratings</b>	Fault protected inputs to $\pm 50\text{V}$
<b>Conversion Method</b>	Sigma-Delta
<b>Backplane Power Consumption</b>	0.1 W
<b>External DC Power Required</b>	Class 2 or LPS power supply $24\text{VDC}$ ( $\pm 20\%$ ) 25mA
<b>Heat Dissipation</b>	0.8 W
<b>Weight</b>	98g [3.5 oz]
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.3 or later

Data Range Specifications		
Selection	Description	Raw Counts <sup>1</sup>
<b>2252</b>	2252 $\Omega$ thermistor	
<b>10K-AN Type 3</b>	10k $\Omega$ Type 3 (AN) thermistor	
<b>10K-CP Type 2</b>	10k $\Omega$ Type 2 (CP) thermistor	
<b>5K</b>	5k $\Omega$ thermistor	$^\circ\text{C}$ : -400 to 1500 $^\circ\text{F}$ : -400 to 3020
<b>3K</b>	3k $\Omega$ thermistor	
<b>1.8K</b>	1.8 k $\Omega$ thermistor	

1. Temperatures have one implied decimal place (e.g., raw count of -400 is -40.0°).

## IMPORTANT!

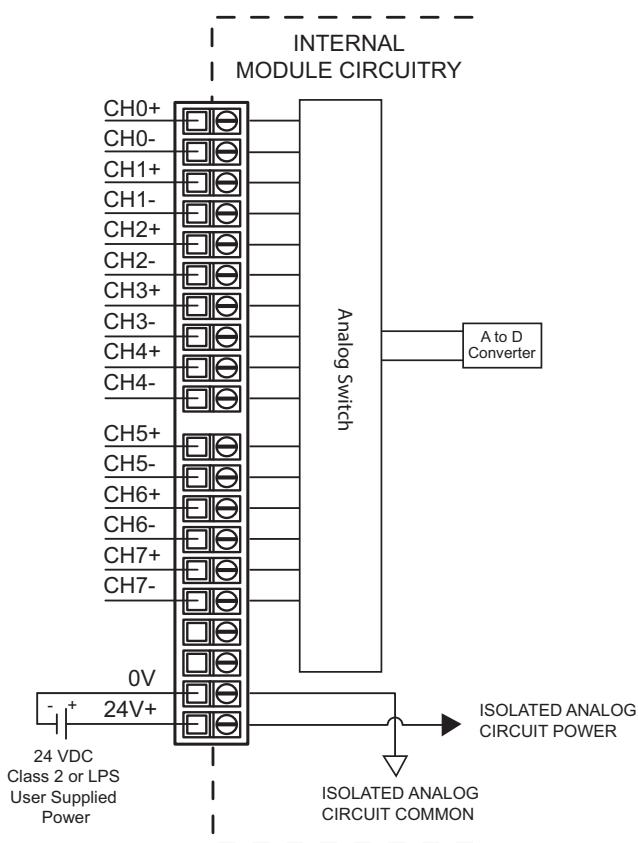
### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

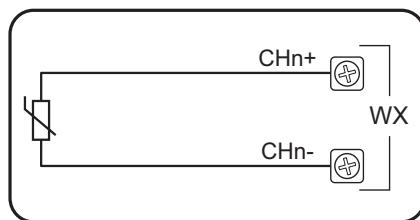


# BX-08NTC Thermistor Input, continued

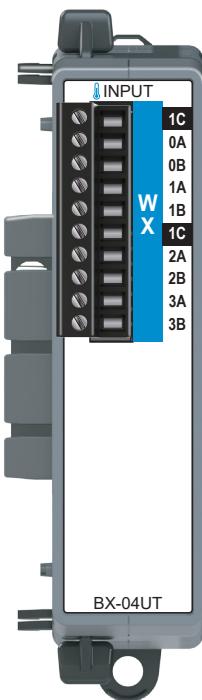
## **Thermistor Input Wiring**



## **Thermistor Input Circuits**

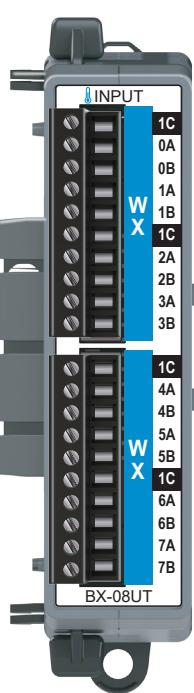


# BX-xxUT Universal Temperature Input



**BX-04UT**  
**\$223.00**

Temperature Input  
Expansion Module  
4-pt Universal  
Temperature Input



**BX-08UT**  
**\$248.00**

Temperature Input  
Expansion Module  
8-pt Universal  
Temperature Input

**BX-RTB10 Terminal Blocks Included.**  
The BX-RTB10-1 or BX-RTB10-2 (purchased  
separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Universal Temperature Input Specifications		
	<b>BX-04UT</b>	<b>BX-08UT</b>
<b>Input Channels</b>	4 Differential	8 Differential
<b>Commons</b>	1	
<b>Input Impedance</b>	>5MΩ	
<b>Resolution</b>	24-bit, 0.1°C (C or F) See Data Range Specifications table	
<b>All Channel Update Rate</b>	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)	2s max (8 thermocouples enabled) 1.4 s max (4RTD/NTX/mV enabled)
<b>Sample Duration Time</b>	175ms	
<b>Open Circuit Detection Time</b>	Within 5s	
<b>Maximum Ratings</b>	-0.3 V to +5.3 V, <15mA	
<b>Common Mode Range</b>	-0.3 V to +5.3 V	
<b>Common Mode Rejection</b>	100dB@DC, 130dB@60Hz	
<b>Conversion Method</b>	Sigma-Delta, 24-bit	
<b>Backplane Power Consumption</b>	1.5 W	
<b>Heat Dissipation</b>	1.5 W	
<b>Weight</b>	98g [3.5 oz]	
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA	
<b>Software Version Required</b>	Do-more! Designer 2.7 or later	
Thermocouple Parameters		
<b>Thermocouple Input Ranges</b>	Type J: -210° to 1200°C Type K: -265° to 1372°C Type E: -265° to 1000°C Type N: -265° to 1300°C Type R: -50° to 1768°C Type S: -50° to 1768°C Type B: 40° to 1820°C Type T: -265° to 400°C	[−346° to 2192°F] [−445° to 2502°F] [−445° to 1832°F] [−445° to 2372°F] [−58° to 3214°F] [−58° to 3214°F] [104° to 3308°F] [−445° to 752°F]
<b>Linear Voltage Input Ranges</b>	-31.25 to 31.25 mVDC -31.25 to 62.5 mVDC	-31.25 to 125mVDC 0 to 1.0 VDC
<b>Cold Junction Compensation</b>	Automatic	
<b>Thermocouple Linearization</b>	Automatic	
<b>Max. Inaccuracy—Thermocouple</b>	±(0.2°C + 3% of °C reading)	
<b>Maximum Inaccuracy—Voltage</b>	±250µV	
RTD/Thermistor Parameters		
<b>RTD Input Ranges (RTD Types)</b>	10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve: −200° to 850°C [−328° to 1562°F]	120Ω Ni N120 Nickel RTD 0.00672 Curve: −80° to 260°C [−112° to 500°F]
<b>Thermistor Input Ranges</b>	2.252 kΩ @ 25°C: 3 kΩ @ 25°C: 5 kΩ @ 25°C: 10k-AN Type 3 @ 25°C: 30 kΩ @ 25°C:	−40° to 150°C [−40° to 302°F] −40° to 150°C [−40° to 302°F]
<b>RTD Excitation Current</b>	RTD 10, 100, 120, 200: RTD 500: RTD 1000:	1mA 500µA 250µA
<b>Thermistor Excitation Current</b>	NTC 2.252k, NTC 3k: NTC 5k, NTC 10k: NTC 30k:	10µA 5µA 1µA
<b>Thermistor Linearization</b>	Automatic	
<b>Maximum Inaccuracy</b>	±0.2°C	

# BX-xxUT Universal Temperature Input, continued

Data Range Specifications			
Thermocouple Selection	Temperature Range	Resolution	
		WXn	RXn
Type J	-210 to 1200 °C -346 to 2192 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Type K	-265 to 1372 °C -445 to 2502 °F		
Type E	-265 to 1000 °C -445 to 1832 °F		
Type R	-50 to 1768 °C -58 to 3214 °F		
Type S	-50 to 1768 °C -58 to 3214 °F		
Type B	40 to 1820 °C 104 to 3308 °F <sup>3</sup>		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn <sup>2</sup>	RXn
-31.25 to 31.25 mVDC	Bipolar 31.25 mVDC	0.95 µV per count (-32768 to 32767)	User Scaled
-31.25 to 62.5 mVDC	Bipolar 62.5 mVDC	1.9 µV per count (-16384 to 32767)	
-31.25 to 125 mVDC	Bipolar 125 mVDC	3.8 µV per count (-8192 to 32767)	
0 to 1.0 VDC	Unipolar 1.0 VDC	30.5 µV per count (0 to 32767)	
RTD Selection	Temperature Range	WXn	RXn
10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve	-200 to 850 °C -328 to 1562 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
120Ω Ni N120 Nickel RTD 0.00672 Curve	-80 to 260 °C -112 to 500 °F		
Thermistor Selection	Temperature Range	WXn	RXn
Thermistor 2.252 kΩ @25°C	-40 to 150 °C -40 to 302 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

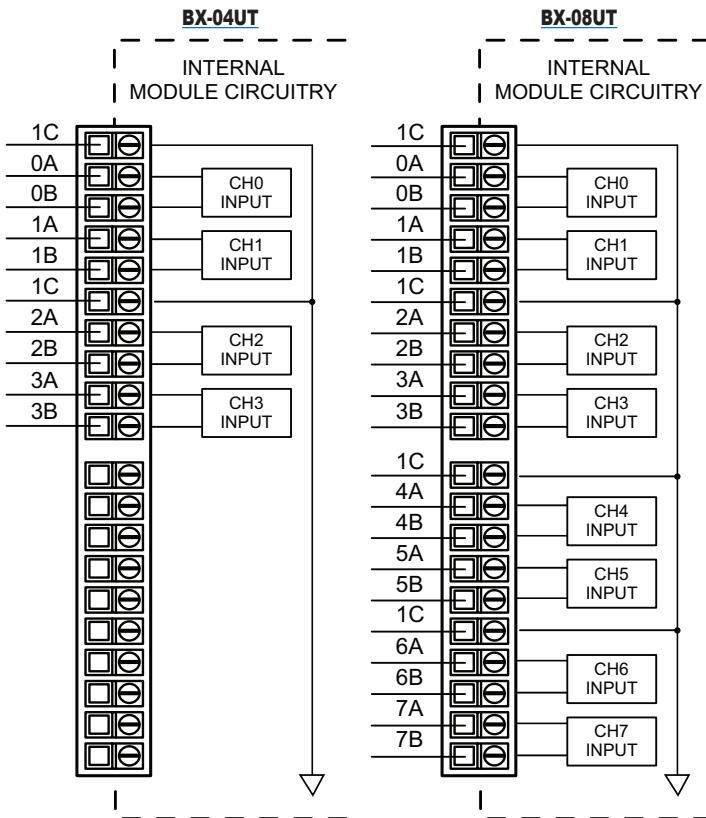
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

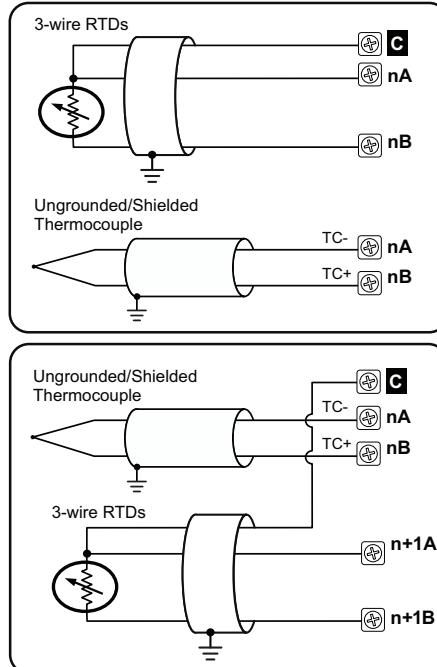
3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

# BX-xxUT Universal Temperature Input, continued

## Analog Thermocouple/Voltage Input Wiring

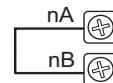


### Mixed Resistive and Thermocouple Sensors



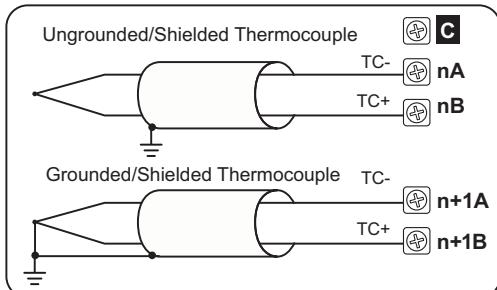
#### Notes for maximum accuracy:

1. All wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
2. Do not use cable shield as sensing wire.
3. When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
4. Jumper unused inputs.

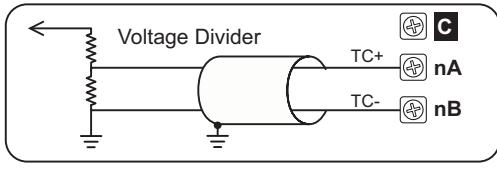
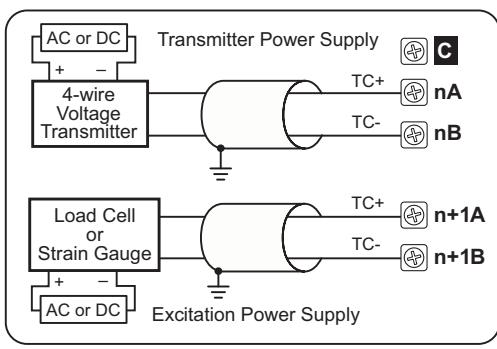


# BX-xxUT Universal Temperature Input, continued

## Thermocouple and Voltage Sensors



**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.

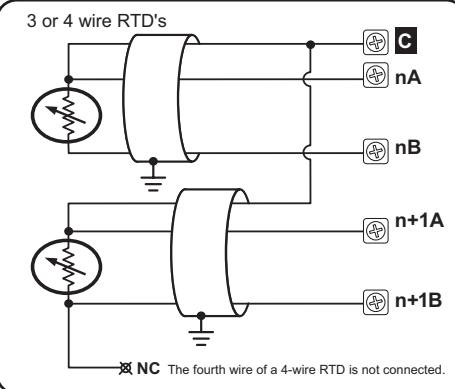
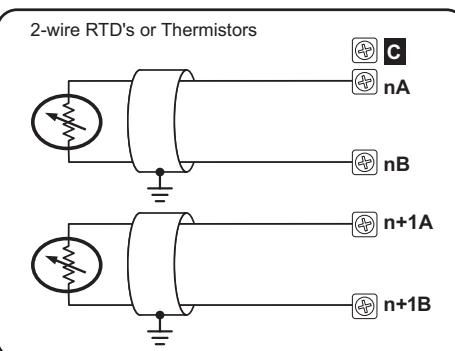


**NOTE:** Shield should be connected only at one end, to ground at the source device.

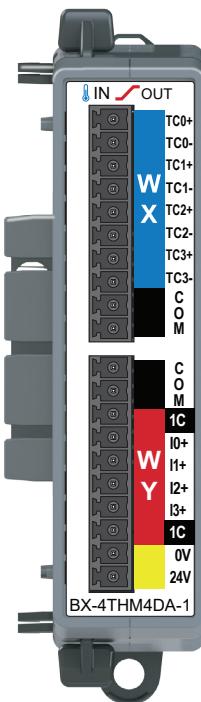
For maximum accuracy:  
Jumper unused inputs:



## Resistive and Thermistor Sensors



# BX-4THM4DA-1 Thermocouple In/Current Out



**BX-4THM4DA-1**  
**\$472.00**

Combination Analog Module  
Input: 4-pt Thermocouple  
Output: 4-pt, 0–20mA/4–20mA Current Sourcing

**BX-RTB10 Terminal Blocks Included.**  
The BX-RTB10-1 or BX-RTB10-2  
(purchased separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Thermocouple Input Specifications		
<b>Input Channels</b>	4 Differential	
<b>Commons</b>	NA	
<b>Resolution</b>	16-bit, 0.1°C (C or F) See Data Range Specifications table	
<b>Thermocouple Input Ranges</b>		
Type J: -190° to 760°C [-310° to 1400°F] (default)		
Type E: -210° to 1000°C [-346° to 1832°F]		
Type K: -150° to 1372°C [-238° to 2502°F]		
Type R: 65° to 1768°C [149° to 3214°F]		
Type S: 65° to 1768°C [149° to 3214°F]		
Type T: -230° to 400°C [-382° to 752°F]		
Type B: 529° to 1820°C [984° to 3308°F]		
Type N: -70° to 1300°C [-94° to 2372°F]		
Type C: 65° to 2320°C [149° to 4208°F]		
<b>Cold Junction Compensation</b>	Automatic	
<b>Thermocouple Linearization</b>	Automatic	
<b>Accuracy vs. Temperature</b>	±50PPM per °C (maximum)	
<b>Maximum Inaccuracy-Temperature</b>	±3°C maximum (excluding thermocouple error) (including temperature drift)	
<b>Linear Voltage Input Ranges</b>		
0–39mV	±39mV	
0–156mV	±156mV	
0–1.25 V	±78mV	
<b>Maximum Inaccuracy-Voltage</b>	0.06% @ 25°C, 0.10% @ 0–60°C	
<b>All Channel Update Rate</b>	1.6 s	
<b>Sample Duration Time</b>	270ms	
<b>Open Circuit Detection Time</b>	Within 2–10s	
<b>Maximum Ratings</b>	Fault protected inputs to ±50V	
<b>Common Mode Range</b>	0.6 V (@ 16-bit Resolution)	
<b>Common Mode Rejection</b>	100dB @ DC and 130dB @ 60Hz	
<b>Conversion Method</b>	Sigma-Delta	

Analog Current Sourcing Output Specifications		
<b>Outputs per Module</b>	4	
<b>Commons</b>	1	
<b>Module Signal Output Range</b>	0–20mA, 4–20mA (Default)	
<b>Signal Resolution</b>	16-bit, 15-bit (Default)	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Output Type</b>	Current Sourcing up to 20mA	
<b>Output Value in Fault Mode</b>	0mA in 0–20mA mode, 4mA in 4–20mA mode	
<b>Maximum Load Impedance</b>	700Ω	
<b>Maximum Capacitive Load</b>	1000pF	
<b>Allowed Load Type</b>	Grounded	
<b>Maximum Continuous Overload</b>	30mA	
<b>All Channel Update Rate</b>	2.5 ms per enabled channel	
<b>Maximum Inaccuracy</b>	±0.1% of range	
<b>Maximum Full Scale Calibration Error</b>	±0.08% of range	
<b>Maximum Offset Calibration Error</b>	±0.08% of range	
<b>Conversion Method</b>	Successive Approximation	
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum	
<b>Maximum Crosstalk</b>	+10µV	
<b>Linearity Error (end to end)</b>	±0.08% of range	
<b>Output Stability and Repeatability</b>	±0.03% of full range after 10 min. warmup (typical)	
<b>Output Ripple</b>	±0.03% of range/mA	
<b>Output Settling Time</b>	320µs	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	

# BX-4THM4DA-1 Thermocouple In/Current Out

Module General Specifications	
<b>Weight</b>	110g [3.9 oz]
<b>Heat Dissipation</b>	3.75 W Max
<b>Backplane Power Consumption</b>	0.3 W
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC ( $\pm 20\%$ ) 125mA
<b>Software Version Required</b>	Do-more! Designer version 2.6 or later

Selection	Description	Enable 16-bit: Unchecked (Default) <sup>1</sup> (15-bit Resolution)			Enable 16-bit: Checked (16-bit Resolution)		
		Raw Counts	Casting <sup>2</sup>	$\mu V$ Per Count	Raw Counts <sup>3</sup>	Casting <sup>2</sup>	$\mu V$ Per Count
Type J	Type J	-	-		°C: °F:	-1900 to 7600 -3100 to 14000	-
Type K	Type K	-	-		°C: °F:	-2100 to 10000 -3460 to 18320	-
Type E	Type E	-	-		°C: °F:	-1500 to 13720 -2380 to 25020	-
Type R	Type R	-	-		°C: °F:	650 to 17680 1490 to 32140	-
Type S	Type S	-	-		°C: °F:	650 to 17680 1490 to 32140	-
Type T	Type T	-	-		°C: °F:	-2300 to 4000 -380 to 7520	-
Type B	Type B	-	-		°C: °F:	5290 to 18200 9840 to 33080	WXn:U
Type N	Type N	-	-		°C: °F:	-700 to 13000 -940 to 23720	-
Type C	Type C	-	-		°C: °F:	650 to 23200 1490 to 42080	WXn:U
0-39 mVDC	Unipolar 39 mVDC	0-32767	-	1.2	0-65535	WXn:U	0.6
± 39 mVDC	Bipolar 39 mVDC	-	-		-32768 to 32767	-	1.2
± 78 mVDC	Bipolar 78 mVDC	-	-		-32768 to 32767	-	2.4
0-156 mVDC	Unipolar 156 mVDC	0-32767	-	4.8	0-65535	WXn:U	2.4
± 156 mVDC	Bipolar 156 mVDC	-	-		-32768 to 32767	-	4.8
0-1.25 VDC	Unipolar 1.25 VDC	0-32767	-	38.1	0-65535	WXn:U	19.1

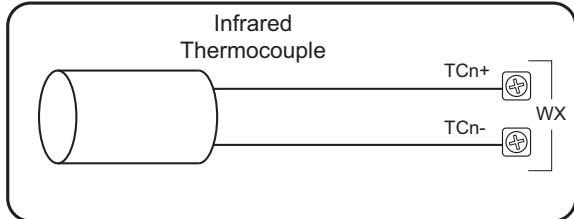
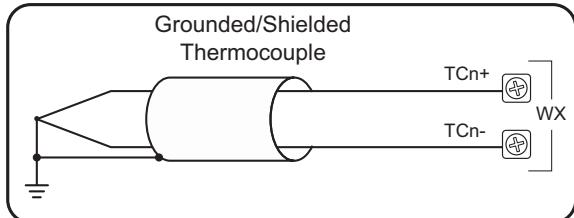
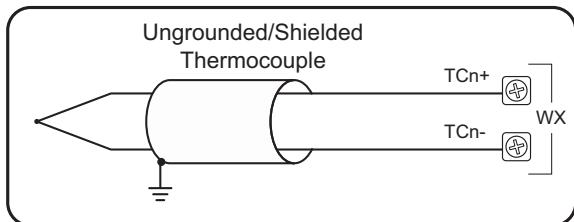
1. Thermocouple and bipolar ranges default to 16-bit resolution.

2. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

3. Temperatures have one implied decimal place (e.g., raw count of -1900 is -190.0°).

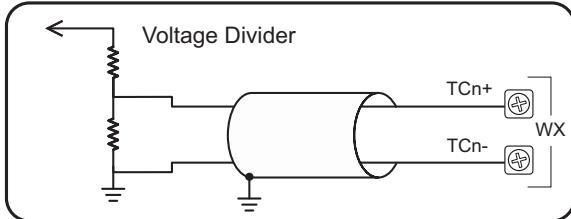
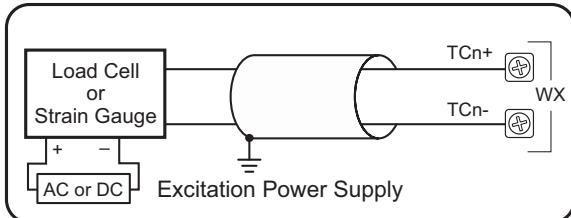
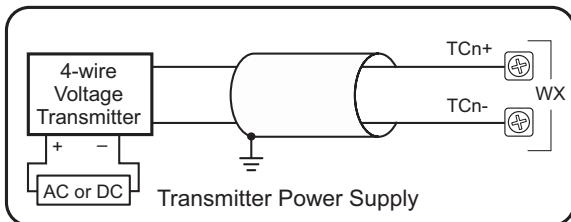
# BX-4THM4DA-1 Thermocouple In/Current Out

## Thermocouple Input Circuits



**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.

## Analog Voltage Input Circuits

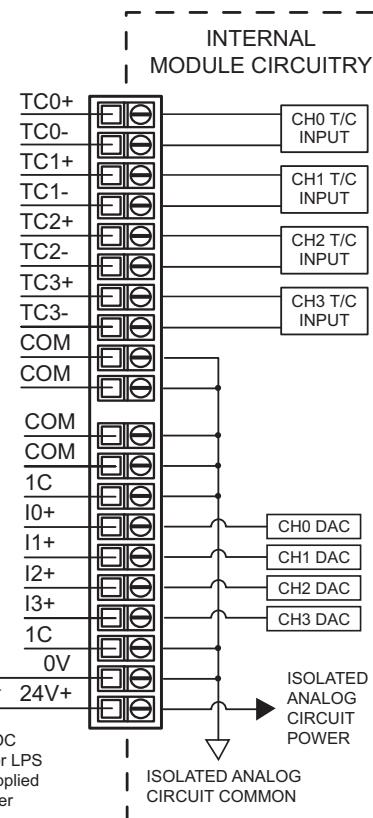


**NOTE:** Shield should be connected only at one end, to ground at the source device.

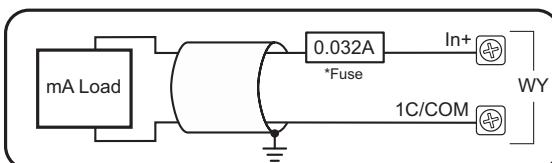
For maximum accuracy, jumper unused inputs.



## Analog Thermocouple/Voltage Input and Current Output Wiring



## Analog Current Source Output Circuit



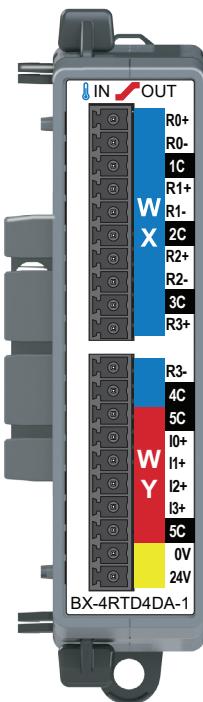
\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

**NOTE:** Shield should be connected only at one end, to ground at the source device.



**NOTE:** With grounded thermocouples, take precautions to prevent having a voltage potential between thermocouple tips. A voltage of 1.25 V or greater between tips will skew measurements.

# BX-4RTD4DA-1 RTD Input/Current Output



**BX-4RTD4DA-1**  
**\$472.00**

Combination Analog Module  
Input: 4-pt RTD  
Output: 4-pt, 0–20mA/4–20mA  
Current Sourcing

**BX-RTB10 Terminal Blocks Included.**  
The **BX-RTB10-1** or **BX-RTB10-2**  
(purchased separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



RTD Input Specifications		
<b>Input Channels</b>		4 Differential
<b>Commons</b>		4
<b>Resolution</b>		16-bit, 0.1°C (C or F) (up to 100Hz filter) See Data Range Specifications table
<b>Input Ranges (RTD Types)</b>	Pt100: -200° to 850°C [-328° to 1562°F] (default) Pt1000: -200° to 595°C [-328° to 1103°F] JPt100: -100° to 450°C [-148° to 842°F] 10Ω Cu: -200° to 260°C [-328° to 500°F] ±3°C 25Ω Cu: -200° to 260°C [-328° to 500°F] ±3°C 120Ω Ni: -80° to 260°C [-112° to 500°F]	
<b>Resistance Input Ranges</b>	0–10,000 Ω 0–6,250 Ω 0–3,125 Ω 0–1,562.5 Ω	0–781.2 Ω 0–390.6 Ω 0–195.3 Ω
<b>Excitation Current</b>	210µA	
<b>RTD Linearization</b>	Automatic	
<b>Accuracy vs. Temperature</b>	±10PPM per °C (maximum)	
<b>Full Scale Calibration</b>	±1°C	
<b>Offset Calibration Error</b>	±1°C, ±3°C for 10Ω/25Ω Cu. ±1°C, ±3°C for 10Ω/25Ω Cu. maximum (excluding RTD error) (including temperature drift)	
<b>Warmup Time</b>	2 minutes for ±0.2% repeatability	
<b>All Channel Update Rate</b>	Single channel sample duration times the number of enabled channels	
<b>Filter Characteristics</b>	Digital filter cutoff frequencies: 16Hz, 470Hz	
<b>Sample Duration Time</b>	Dependent on digital filter settings: 125ms@16Hz, 4ms@470Hz	
<b>Open Circuit Detection Time</b>	Positive full-scale reading within 2s	
<b>Maximum Ratings</b>	Fault protected inputs to ±50V	
<b>Max. Common Mode Voltage</b>	4VDC	
<b>Common Mode Rejection</b>	-90dB @ DC and -150dB @ 50/60Hz	
<b>Conversion Method</b>	Sigma-Delta	

Analog Current Sourcing Output Specifications	
<b>Outputs per Module</b>	4
<b>Commons</b>	1
<b>Module Signal Output Range</b>	0–20mA, 4–20mA (Default)
<b>Signal Resolution</b>	16-bit, 15-bit (Default)
<b>Resolution Value of LSB</b>	See Data Range Specifications table
<b>Output Type</b>	Current Sourcing up to 20mA
<b>Output Value in Fault Mode</b>	0mA in 0–20mA mode, 4mA in 4–20mA mode
<b>Maximum Load Impedance</b>	700Ω
<b>Maximum Capacitive Load</b>	1000pF
<b>Allowed Load Type</b>	Grounded
<b>Maximum Continuous Overload</b>	30mA
<b>All Channel Update Rate</b>	2.5 ms per enabled channel
<b>Maximum Inaccuracy</b>	±0.1% of range
<b>Maximum Full Scale Calibration Error</b>	±0.08% of range
<b>Maximum Offset Calibration Error</b>	±0.08% of range
<b>Conversion Method</b>	Successive Approximation
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum
<b>Maximum Crosstalk</b>	+10µV
<b>Linearity Error (end to end)</b>	±0.08% of range
<b>Output Stability and Repeatability</b>	±0.03% of full range after 10 min. warmup (typical)
<b>Output Ripple</b>	±0.03% of range/mA
<b>Output Settling Time</b>	320µs
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second
<b>Channel to Channel Isolation</b>	None
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended

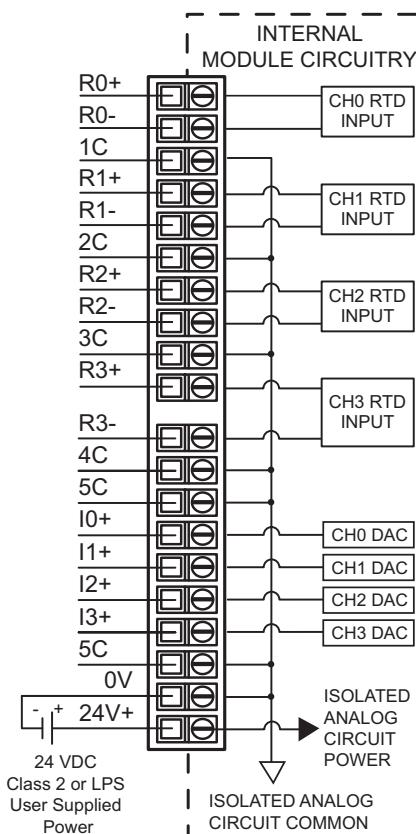
# BX-4RTD4DA-1 RTD Input/Current Output

Module General Specifications	
<b>Weight</b>	110g [3.9 oz]
<b>Heat Dissipation</b>	3W Max
<b>Backplane Power Consumption</b>	0.1 W
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC ( $\pm 20\%$ ) 125mA
<b>Software Version Required</b>	Do-more! Designer version 2.6 or later

Data Range Specifications					
Selection	Description	Raw Counts <sup>1</sup>			
Pt100	Pt100 Platinum RTD	°C:	-2000 to 8500	°F:	-3280 to 15620
Pt1000	Pt1000 Platinum RTD	°C:	-2000 to 5950	°F:	-3280 to 11030
JPt100	JPt100 Platinum RTD	°C:	-1000 to 4500	°F:	-1480 to 8420
10Ω Cu	10Ω Copper RTD	°C:	-2000 to 2600	°F:	-3280 to 5000
25Ω Cu	25Ω Copper RTD	°C:	-2000 to 2600	°F:	-3280 to 5000
120Ω Ni	120Ω Nickel RTD	°C:	-800 to 2600	°F:	-1120 to 5000
0–10,000 Ω		0–10000			
0–6,250 Ω		0–6250			
0–3,125 Ω		0–3125			
0–1,562.5 Ω		0–15625 <sup>2</sup>			
0–781.2 Ω		0–7812 <sup>2</sup>			
0–390.6 Ω		0–3906 <sup>2</sup>			
0–195.3 Ω		0–1953 <sup>2</sup>			

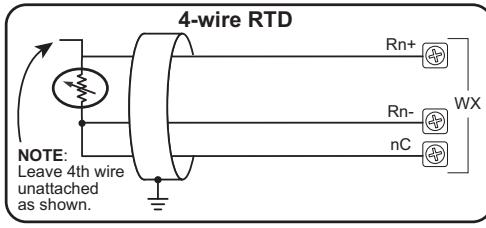
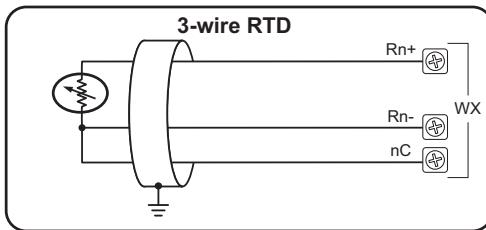
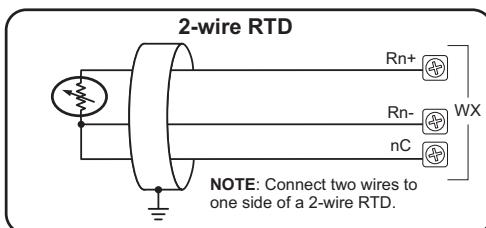
1. Temperatures have one implied decimal place (e.g., raw count of -1900 is -190.0°).  
 2. Certain resistance ranges have one implied decimal place (e.g., raw count of 7812 is 781.2 Ω).

## Analog RTD/Resistance Input Wiring

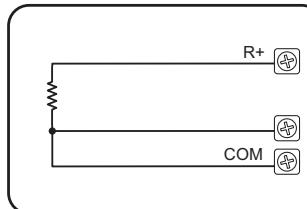


## Analog RTD/Resistance Input Circuits

### RTD Input Circuits

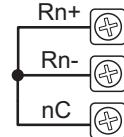


## Resistance Input

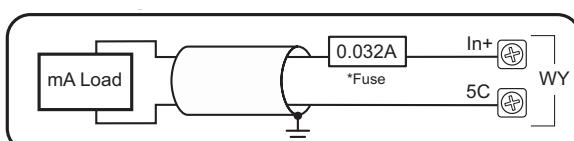


### Notes for maximum accuracy:

1. For 2-wire RTD, attach a third wire to module common.
2. R+, R-, and COM wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
3. Do not use cable shield as sensing wire.
4. When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
5. Jumper unused inputs to common.



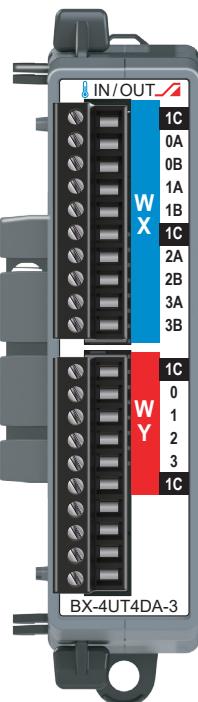
## Analog Current Source Output Circuit



\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

NOTE: Shield should be connected only at one end, to ground at the source device.

# BX-4UT4DA-3 Universal Temp. Input/Analog Output



**BX-4UT4DA-3**  
**\$436.00**

Universal Temperature Input/  
Analog Output Expansion Module  
4-pt Universal Temperature Input  
4-pt Universal Analog Output

**BX-RTB10 Terminal Blocks Included.**

The BX-RTB10-1 or BX-RTB10-2  
(purchased separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

**IMPORTANT!**



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

### Universal Temperature Input Specifications

<b>Input Channels</b>	4 Differential
<b>Commons</b>	1
<b>Input Impedance</b>	>5MΩ
<b>Resolution</b>	24-bit, 0.1°(C or F) See Data Range Specifications table
<b>All Channel Update Rate</b>	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)
<b>Sample Duration Time</b>	175ms
<b>Open Circuit Detection Time</b>	Within 5s
<b>Maximum Ratings</b>	-0.3 V to +5.3 V, <15mA
<b>Common Mode Range</b>	-0.3 V to +5.3 V
<b>Common Mode Rejection</b>	100dB@DC, 130dB@60Hz
<b>Conversion Method</b>	Sigma-Delta, 24-bit
<b>Thermocouple Parameters</b>	
<b>Thermocouple Input Ranges</b>	Type J: -210° to 1200°C [-346° to 2192°F]
	Type K: -265° to 1372°C [-445° to 2502°F]
	Type E: -265° to 1000°C [-445° to 1832°F]
	Type N: -265° to 1300°C [-445° to 2372°F]
	Type R: -50° to 1768°C [-58° to 3214°F]
	Type S: -50° to 1768°C [-58° to 3214°F]
	Type B: 40° to 1820°C [104° to 3308°F]
	Type T: -265° to 400°C [-445° to 752°F]
<b>Linear Voltage Input Ranges</b>	-31.25 to 31.25 mVDC -31.25 to 62.5 mVDC
<b>Cold Junction Compensation</b>	Automatic
<b>Thermocouple Linearization</b>	Automatic
<b>Maximum Inaccuracy—Thermocouple</b>	±(0.2°C + 3% of °C reading)
<b>Maximum Inaccuracy—Voltage</b>	±250µV
<b>RTD/Thermistor Parameters</b>	
<b>Input Ranges (RTD Types)</b>	10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve: -200° to 850°C [-328° to 1562°F]
	120Ω Ni N120 Nickel RTD 0.00672 Curve: -80° to 260°C [-112° to 500°F]
<b>Thermistor Input Ranges</b>	2.252 kΩ @ 25°C: -40° to 150°C [-40° to 302°F] 3 kΩ @ 25°C: -40° to 150°C [-40° to 302°F] 5 kΩ @ 25°C: -40° to 150°C [-40° to 302°F] 10k-AN Type 3 @ 25°C: -40° to 150°C [-40° to 302°F] 30 kΩ @ 25°C: -40° to 150°C [-40° to 302°F]
	RTD 10, 100, 120, 200: 1mA RTD 500: 500µA RTD 1000: 250µA
	NTC 2.252k, NTC 3k: 10µA NTC 5k, NTC 10k: 5µA NTC 30k: 1µA
<b>RTD/Thermistor Linearization</b>	Automatic
<b>Maximum Inaccuracy</b>	±0.2°C

# BX-4UT4DA-3 Universal Temp. Input/Analog Output

Analog Universal Current/Voltage Sinking Output Specifications	
	<b>BX-4UT4DA-3</b>
<b>Outputs per Module</b>	4
<b>Commons</b>	1
<b>Module Signal Output Range</b>	0–20mA, 4–20mA, ±20mA, ±10 VDC, ±5 VDC, 0–5 VDC (Default), 0–10 VDC
<b>Signal Resolution</b>	16-bit at ±10V or ±20mA
<b>Resolution Value of LSB</b>	See Data Range Specifications table
<b>Output Type</b>	Current Sinking/Sourcing up to 5V Voltage outputs sourcing/sinking at 10mA (example 10V @ 1kΩ load).
<b>Output Value in Fault Mode</b>	Current outputs ~0mA Voltage outputs 0V (Unipolar or Bipolar)
<b>Minimum Voltage Load Impedance</b>	1kΩ
<b>Maximum Current Load Impedance</b>	250Ω
<b>Allowed Load Type</b>	Grounded
<b>Maximum Continuous Overload</b>	Indefinitely
<b>All Channel Update Rate</b>	1.0 ms
<b>Maximum Inaccuracy</b>	±0.1% of HW full scale (65 counts)
<b>Maximum Full Scale Calibration Error</b>	±0.1% of HW full scale (65 counts)
<b>Conversion Method</b>	Amplified Divide-by-2 Resistor String
<b>Linearity Error (end to end)</b>	±0.1% of HW full scale (65 counts)
<b>Output Stability and Repeatability</b>	±0.02% of full range (12 counts) after 10 min. warmup (typical)
<b>Output Settling Time</b>	10μs
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second
<b>Channel to Channel Isolation</b>	None
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended

Module General Specifications	
<b>Weight</b>	98g [3.5 oz]
<b>Heat Dissipation</b>	2.5 W
<b>Backplane Power Consumption</b>	2.65 W
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA
<b>Software Version Required</b>	Do-more! Designer 2.7 or later

# BX-4UT4DA-3 Universal Temp. Input/Analog Output

Data Range Specifications			
Thermocouple Selection	Temperature Range	Resolution	
		WXn	RXn
Type J	-210 to 1200 °C -346 to 2192 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Type K	-265 to 1372 °C -445 to 2502 °F		
Type E	-265 to 1000 °C -445 to 1832 °F		
Type R	-50 to 1768 °C -58 to 3214 °F		
Type S	-50 to 1768 °C -58 to 3214 °F		
Type B	40 to 1820 °C 104 to 3308 °F <sup>3</sup>		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn <sup>2</sup>	RXn
-31.25 to 31.25 mVDC	Bipolar 31.25 mVDC	0.95 µV per count (-32768 to 32767)	User Scaled
-31.25 to 62.5 mVDC	Bipolar 62.5 mVDC	1.9 µV per count (-16384 to 32767)	
-31.25 to 125 mVDC	Bipolar 125 mVDC	3.8 µV per count (-8192 to 32767)	
0 to 1.0 VDC	Unipolar 1.0 VDC	30.5 µV per count (0 to 32767)	
RTD Selection	Temperature Range	WXn	RXn
10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve	-200 to 850 °C -328 to 1562 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
120Ω Ni N120 Nickel RTD 0.00672 Curve	-80 to 260 °C -112 to 500 °F		
Thermistor Selection	Temperature Range	WXn	RXn
Thermistor 2.252 kΩ @25°C	-40 to 150 °C -40 to 302 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

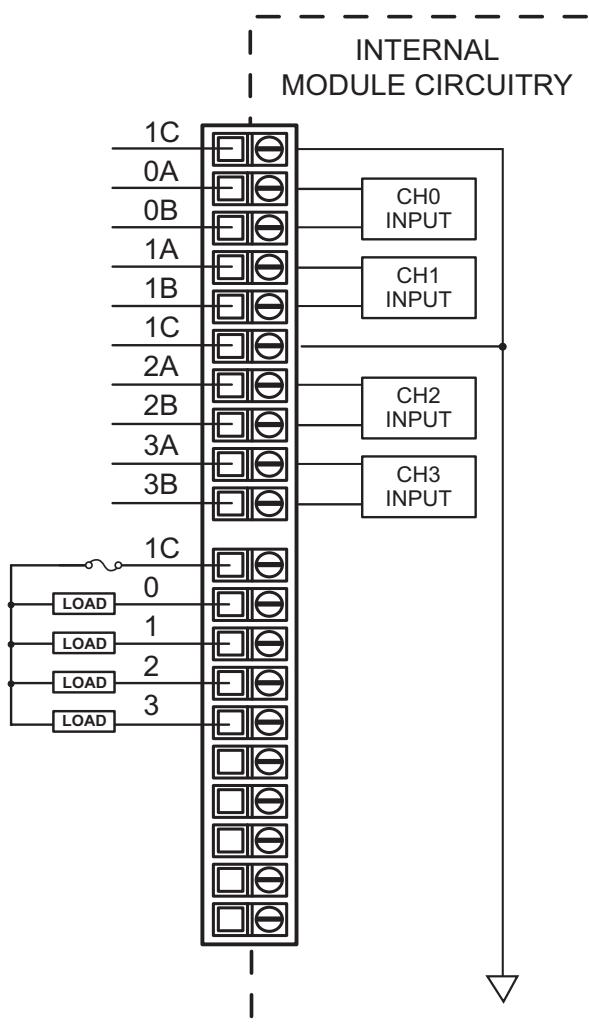
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

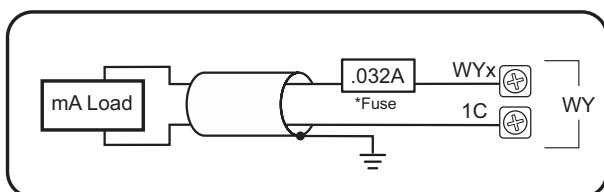
3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

# BX-4UT4DA-3 Universal Temp. Input/Analog Output

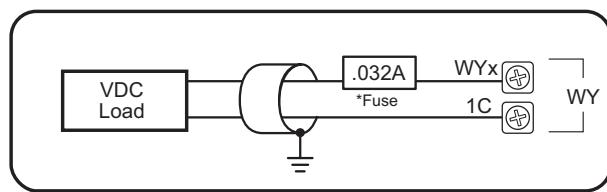
## **Universal Temp. Input/Analog Output Wiring**



**Analog Current Source Output Circuit**



**Analog Voltage Output Circuit**



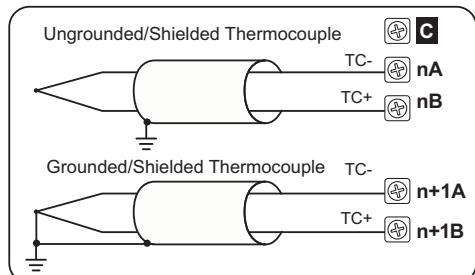
NOTE: Shield should be connected only at one end, to ground at the source device.

\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

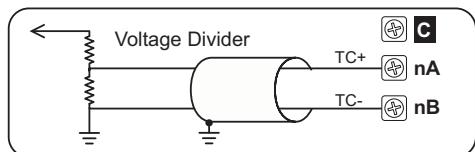
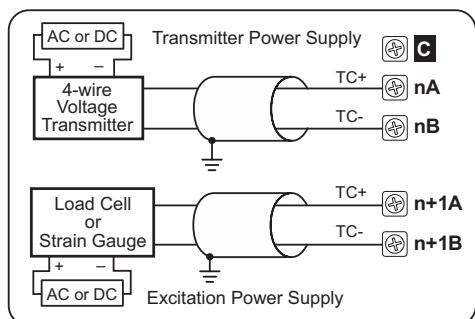
# BX-4UT4DA-3 Universal Temp. Input/Analog Output

## Universal Temperature Input Circuits

### Thermocouple and Voltage Sensors



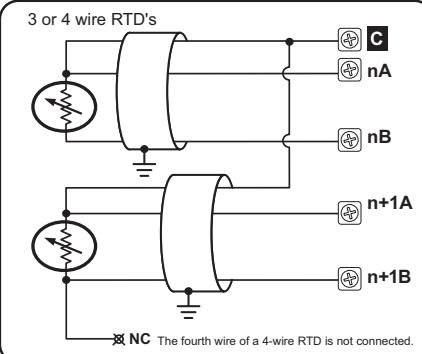
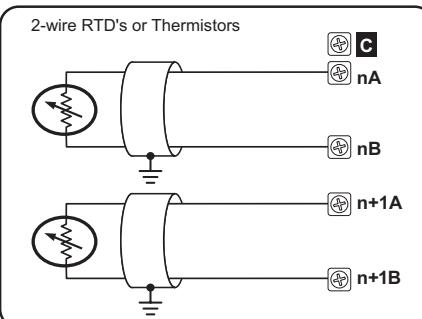
**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.



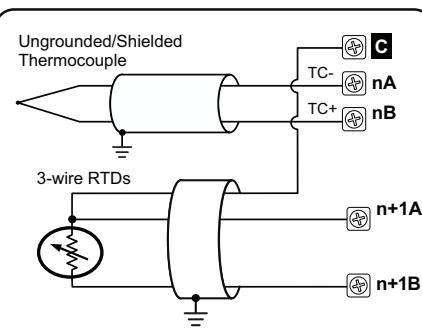
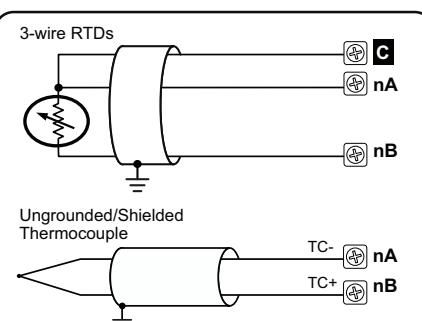
**NOTE:** Shield should be connected only at one end, to ground at the source device.

For maximum accuracy:  
Jumper unused inputs: TC+ TC-

### Resistive and Thermistor Sensors

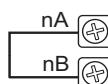


### Mixed Resistive and Thermocouple Sensors

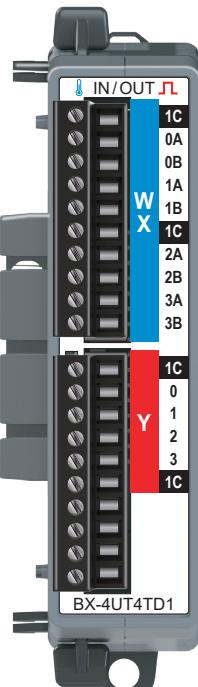


#### Notes for maximum accuracy:

- All wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
- Do not use cable shield as sensing wire.
- When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
- Jumper unused inputs.



# BX-4UT4TD1 Universal Temp. In/DC Sink Output



**BX-4UT4TD1**  
**\$248.00**

Universal Temperature Input/  
DC Sinking Output Expansion Module  
4-pt Universal Temperature Input  
4-pt DC Sinking Output

**BX-RTB10 Terminal Blocks Included.**  
The BX-RTB10-1 or BX-RTB10-2  
(purchased separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

#### Universal Temperature Input Specifications

Input Channels		4 Differential			
<b>Commons</b>		1			
<b>Input Impedance</b>		>5MΩ			
<b>Resolution</b>		24-bit, 0.1°C (C or F) See Data Range Specifications table			
<b>All Channel Update Rate</b>		1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)			
<b>Sample Duration Time</b>		175ms			
<b>Open Circuit Detection Time</b>		Within 5s			
<b>Maximum Ratings</b>		-0.3 V to +5.3 V, <15mA			
<b>Common Mode Range</b>		-0.3 V to +5.3 V			
<b>Common Mode Rejection</b>		100dB@DC, 130dB@60Hz			
<b>Conversion Method</b>		Sigma-Delta, 24-bit			
Thermocouple Parameters					
<b>Thermocouple Input Ranges</b>	Type J:	-210° to 1200°C	[-346° to 2192°F]		
	Type K:	-265° to 1372°C	[-445° to 2502°F]		
	Type E:	-265° to 1000°C	[-445° to 1832°F]		
	Type N:	-265° to 1300°C	[-445° to 2372°F]		
	Type R:	-50° to 1768°C	[ -58° to 3214°F]		
	Type S:	-50° to 1768°C	[ -58° to 3214°F]		
	Type B:	40° to 1820°C	[104° to 3308°F]		
	Type T:	-265° to 400°C	[-445° to 752°F]		
<b>Linear Voltage Input Ranges</b>		-31.25 to 31.25 mVDC	-31.25 to 125mVDC		
		-31.25 to 62.5 mVDC	0 to 1.0 VDC		
<b>Cold Junction Compensation</b>		Automatic			
<b>Thermocouple Linearization</b>		Automatic			
<b>Maximum Inaccuracy—Thermocouple</b>		±(0.2°C + 3% of °C reading)			
<b>Maximum Inaccuracy—Voltage</b>		±250µV			
RTD/Thermistor Parameters					
<b>Input Ranges (RTD Types)</b>	10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve: -200° to 850°C [-328° to 1562°F]				
	120Ω Ni N120 Nickel RTD 0.00672 Curve: -80° to 260°C [-112° to 500°F]				
<b>Thermistor Input Ranges</b>	2.252 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]			
	3 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]			
	5 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]			
	10k-AN Type 3 @ 25°C:	-40° to 150°C [-40° to 302°F]			
	30 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]			
<b>RTD Excitation Current</b>	RTD 10, 100, 120, 200:	1mA			
	RTD 500:	500µA			
	RTD 1000:	250µA			
<b>Thermistor Excitation Current</b>	NTC 2.252k, NTC 3k:	10µA			
	NTC 5k, NTC 10k:	5µA			
	NTC 30k:	1µA			
<b>RTD/Thermistor Linearization</b>		Automatic			
<b>Maximum Inaccuracy</b>		±0.2°C			

#### Module General Specifications

<b>Weight</b>	98g [3.5 oz]
<b>Heat Dissipation</b>	2.5 W
<b>Backplane Power Consumption</b>	2.5 W
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA
<b>Software Version Required</b>	Do-more! Designer 2.7 or later

# BX-4UT4TD1 Universal Temp. In/DC Sink Output

Voltage Sinking Output Specifications	
	<u>BX-4UT4TD1</u>
<b>Outputs per Module</b>	4
<b>Commons</b>	1
<b>Output Type</b>	Sinking
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage</b>	12-24VDC
<b>Operating Voltage Range</b>	5-36VDC
<b>Peak Voltage</b>	36VDC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	0.5 A per output, no derating over temperature range
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.05 VDC
<b>Fuses, Overcurrent Protection</b>	N/A
<b>OFF-ON Response</b>	<5ms
<b>ON-OFF Response</b>	<2ms
<b>Status Indicators</b>	Logic Side, Green

Data Range Specifications			
Thermocouple Selection	Temperature Range	Resolution	
		WXn	RXn
Type J	-210 to 1200 °C -346 to 2192 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Type K	-265 to 1372 °C -445 to 2502 °F		
Type E	-265 to 1000 °C -445 to 1832 °F		
Type R	-50 to 1768 °C -58 to 3214 °F		
Type S	-50 to 1768 °C -58 to 3214 °F		
Type B	40 to 1820 °C 104 to 3308 °F <sup>3</sup>		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn <sup>2</sup>	RXn
-31.25 to 31.25 mVDC	Bipolar 31.25 mVDC	0.95 µV per count (-32768 to 32767)	User Scaled
-31.25 to 62.5 mVDC	Bipolar 62.5 mVDC	1.9 µV per count (-16384 to 32767)	
-31.25 to 125 mVDC	Bipolar 125 mVDC	3.8 µV per count (-8192 to 32767)	
0 to 1.0 VDC	Unipolar 1.0 VDC	30.5 µV per count (0 to 32767)	
RTD Selection	Temperature Range	WXn	RXn
10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve	-200 to 850 °C -328 to 1562 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
120Ω Ni N120 Nickel RTD 0.00672 Curve	-80 to 260 °C -112 to 500 °F		
Thermistor Selection	Temperature Range	WXn	RXn
Thermistor 2.252 kΩ @25°C	-40 to 150 °C -40 to 302 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

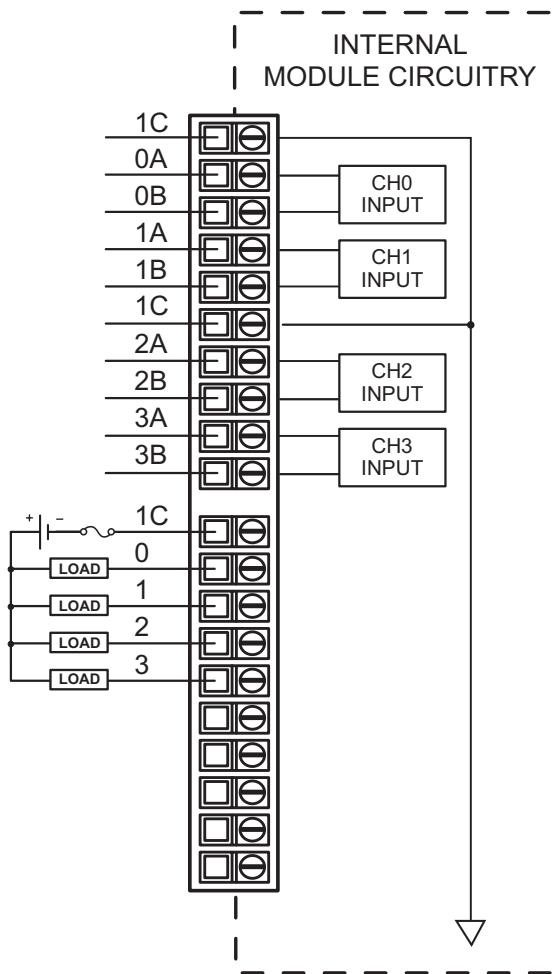
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

# BX-4UT4TD1 Universal Temp. In/DC Sink Output

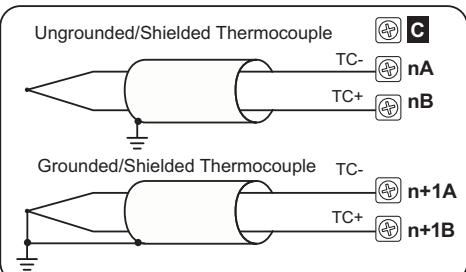
## *Universal Temperature Input/DC Sink Output Wiring*



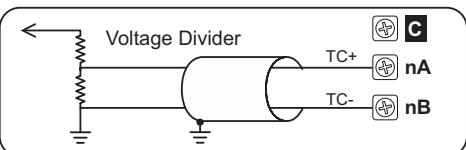
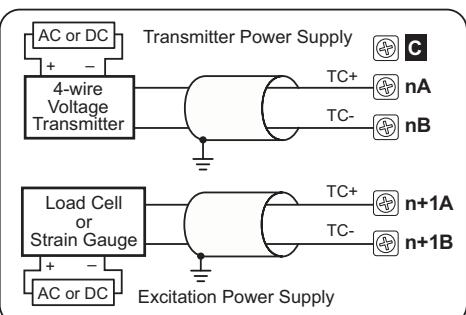
# BX-4UT4TD1 Universal Temp. In/DC Sink Output

## Universal Temperature Input Circuits

### Thermocouple and Voltage Sensors



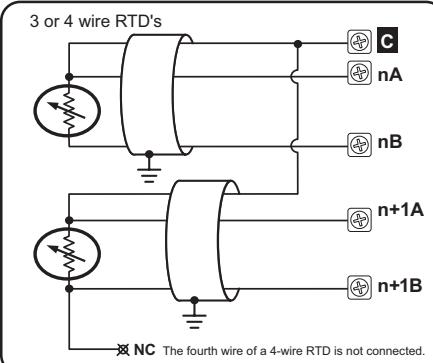
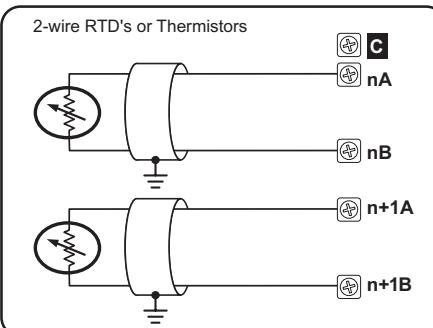
**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.



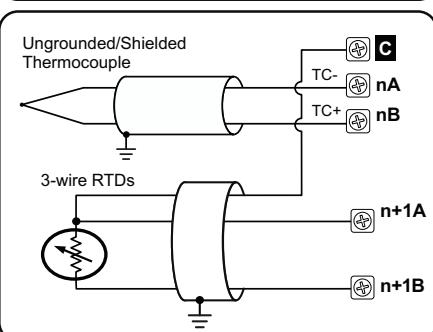
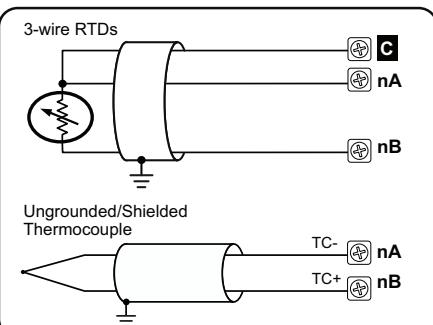
**NOTE:** Shield should be connected only at one end, to ground at the source device.

For maximum accuracy:  
Jumper unused inputs:  
TC+      TC-  
TC-      TC+

### Resistive and Thermistor Sensors

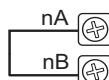


### Mixed Resistive and Thermocouple Sensors

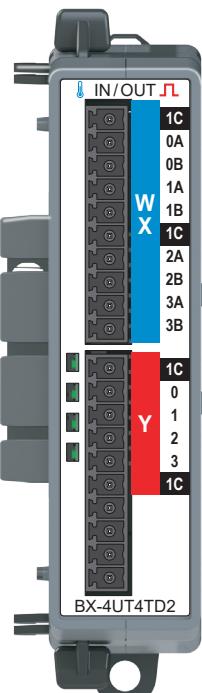


#### Notes for maximum accuracy:

- All wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
- Do not use cable shield as sensing wire.
- When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
- Jumper unused inputs.



# BX-4UT4TD2 Universal Temp. In/DC Source Output



**BX-4UT4TD2**  
**\$248.00**

Universal Temperature Input/  
DC Sourcing Output Expansion Module  
4-pt Universal Temperature Input  
4-pt DC Sourcing Output

**BX-RTB10 Terminal Blocks Included.**  
The BX-RTB10-1 or BX-RTB10-2  
(purchased separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

#### Universal Temperature Input Specifications

<b>Input Channels</b>	4 Differential
<b>Commons</b>	1
<b>Input Impedance</b>	>5MΩ
<b>Resolution</b>	24-bit, 0.1°C (C or F) See Data Range Specifications table
<b>All Channel Update Rate</b>	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)
<b>Sample Duration Time</b>	175ms
<b>Open Circuit Detection Time</b>	Within 5s
<b>Maximum Ratings</b>	-0.3 V to +5.3 V, <15mA
<b>Common Mode Range</b>	-0.3 V to +5.3 V
<b>Common Mode Rejection</b>	100dB@DC, 130dB@60Hz
<b>Conversion Method</b>	Sigma-Delta, 24-bit
<b>Thermocouple Parameters</b>	
<b>Thermocouple Input Ranges</b>	Type J: -210° to 1200°C [-346° to 2192°F]
	Type K: -265° to 1372°C [-445° to 2502°F]
	Type E: -265° to 1000°C [-445° to 1832°F]
	Type N: -265° to 1300°C [-445° to 2372°F]
	Type R: -50° to 1768°C [-58° to 3214°F]
	Type S: -50° to 1768°C [-58° to 3214°F]
	Type B: 40° to 1820°C [104° to 3308°F]
	Type T: -265° to 400°C [-445° to 752°F]
	<b>Linear Voltage Input Ranges</b>
-31.25 to 31.25 mVDC	
-31.25 to 62.5 mVDC	
-31.25 to 125mVDC	
0 to 1.0 VDC	
<b>Cold Junction Compensation</b>	
<b>Thermocouple Linearization</b>	
<b>Maximum Inaccuracy—Thermocouple</b>	
±(0.2°C + 3% of °C reading)	
<b>Maximum Inaccuracy—Voltage</b>	
±250µV	
<b>RTD/Thermistor Parameters</b>	
<b>Input Ranges (RTD Types)</b>	10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve: -200° to 850°C [-328° to 1562°F]
	120Ω Ni N120 Nickel RTD 0.00672 Curve: -80° to 260°C [-112° to 500°F]
<b>Thermistor Input Ranges</b>	2.252 kΩ @ 25°C: -40° to 150°C [-40° to 302°F] 3 kΩ @ 25°C: -40° to 150°C [-40° to 302°F] 5 kΩ @ 25°C: -40° to 150°C [-40° to 302°F] 10k-AN Type 3 @ 25°C: -40° to 150°C [-40° to 302°F] 30 kΩ @ 25°C: -40° to 150°C [-40° to 302°F]
	RTD 10, 100, 120, 200: 1mA
	RTD 500: 500µA
	RTD 1000: 250µA
	NTC 2.252k, NTC 3k: 10µA NTC 5k, NTC 10k: 5µA NTC 30k: 1µA
<b>RTD/Thermistor Linearization</b>	Automatic
<b>Maximum Inaccuracy</b>	±0.2°C

#### Module General Specifications

<b>Weight</b>	98g [3.5 oz]
<b>Heat Dissipation</b>	2.3 W
<b>Backplane Power Consumption</b>	2.5 W
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA
<b>Software Version Required</b>	Do-more! Designer 2.7 or later

# BX-4UT4TD2 Universal Temp. In/DC Source Output

Voltage Sourcing Output Specifications	
	BX-4UT4TD2
<b>Outputs per Module</b>	4
<b>Commons</b>	1
<b>Output Type</b>	Sourcing
<b>Maximum Current per Common</b>	2A
<b>Nominal Voltage</b>	12-24VDC
<b>Operating Voltage Range</b>	5-36VDC
<b>Peak Voltage</b>	36VDC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	0.5 A per output, no derating over temperature range
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	10µA
<b>ON Voltage Drop</b>	0.05 VDC
<b>Fuses, Overcurrent Protection</b>	N/A
<b>OFF-ON Response</b>	<5ms
<b>ON-OFF Response</b>	<2ms
<b>Status Indicators</b>	Logic Side, Green

Data Range Specifications			
Thermocouple Selection	Temperature Range	Resolution	
		WXn	RXn
Type J	-210 to 1200 °C -346 to 2192 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Type K	-265 to 1372 °C -445 to 2502 °F		
Type E	-265 to 1000 °C -445 to 1832 °F		
Type R	-50 to 1768 °C -58 to 3214 °F		
Type S	-50 to 1768 °C -58 to 3214 °F		
Type B	40 to 1820 °C 104 to 3308 °F <sup>3</sup>		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn <sup>2</sup>	RXn
-31.25 to 31.25 mVDC	Bipolar 31.25 mVDC	0.95 µV per count (-32768 to 32767)	User Scaled
-31.25 to 62.5 mVDC	Bipolar 62.5 mVDC	1.9 µV per count (-16384 to 32767)	
-31.25 to 125 mVDC	Bipolar 125 mVDC	3.8 µV per count (-8192 to 32767)	
0 to 1.0 VDC	Unipolar 1.0 VDC	30.5 µV per count (0 to 32767)	
RTD Selection	Temperature Range	WXn	RXn
10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve	-200 to 850 °C -328 to 1562 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
120Ω Ni N120 Nickel RTD 0.00672 Curve	-80 to 260 °C -112 to 500 °F		
Thermistor Selection	Temperature Range	WXn	RXn
Thermistor 2.252 kΩ @25°C Thermistor 3kΩ @25°C Thermistor 5kΩ @25°C Thermistor 10k-AN Type 3 @25°C Thermistor 30kΩ @25°C	-40 to 150 °C -40 to 302 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>

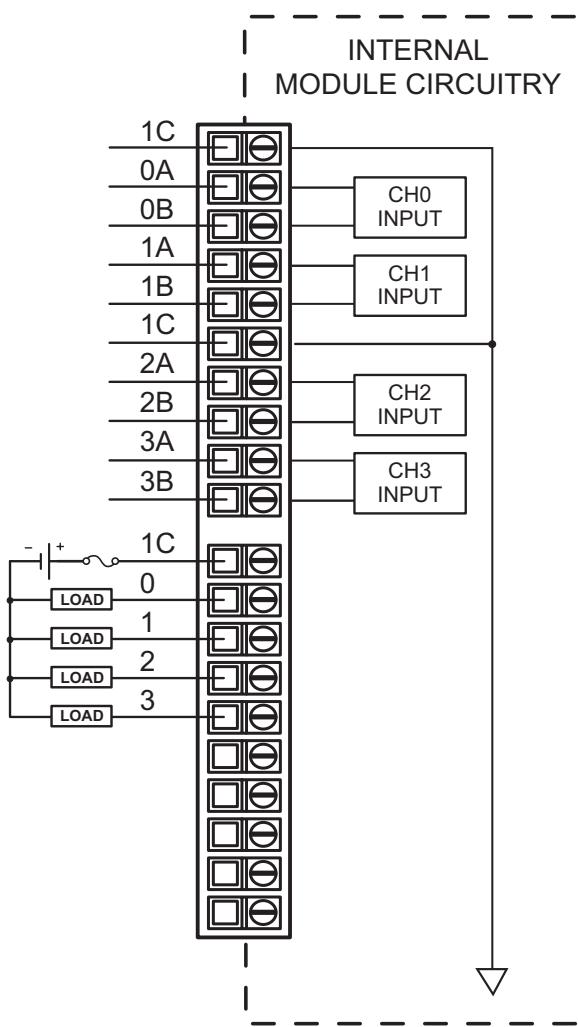
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

# BX-4UT4TD2 Universal Temp. In/DC Source Output

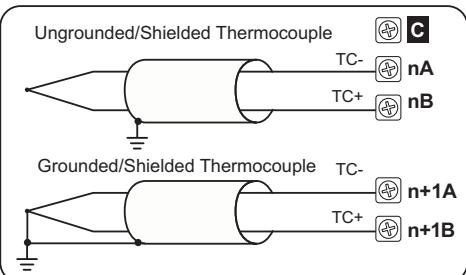
## ***Universal Temperature Input/DC Source Output Wiring***



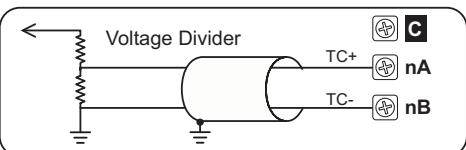
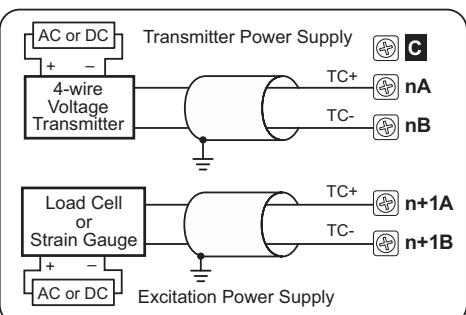
# BX-4UT4TD2 Universal Temp. In/DC Source Output

## Universal Temperature Input Circuits

### Thermocouple and Voltage Sensors



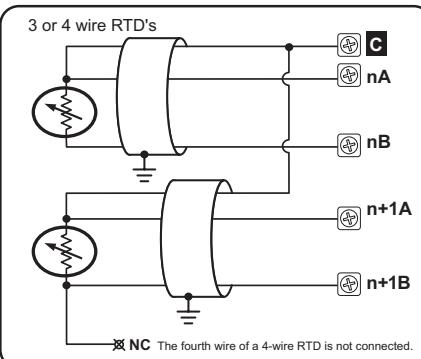
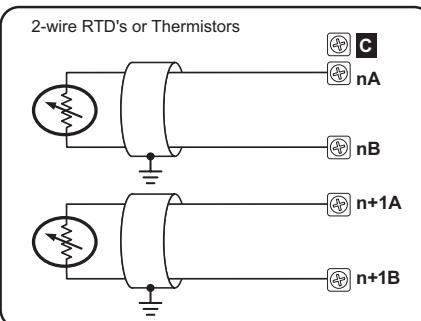
**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.



**NOTE:** Shield should be connected only at one end, to ground at the source device.

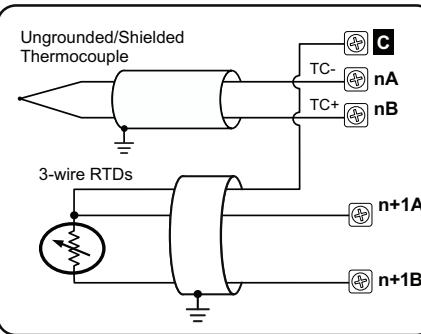
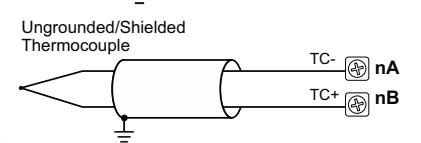
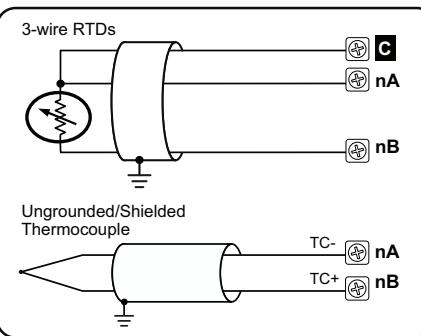
For maximum accuracy:  
Jumper unused inputs: TC+ to TC- and TC- to ground.

### Resistive and Thermistor Sensors



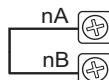
NC The fourth wire of a 4-wire RTD is not connected.

### Mixed Resistive and Thermocouple Sensors

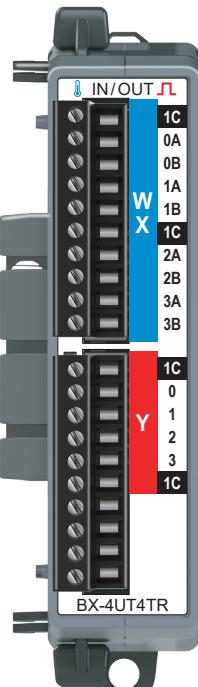


#### Notes for maximum accuracy:

1. All wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
2. Do not use cable shield as sensing wire.
3. When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
4. Jumper unused inputs.



# BX-4UT4TR Universal Temp. Input/ Relay Output



**BX-4UT4TR**  
**\$248.00**

Universal Temperature Input/  
Relay Output Expansion Module  
4-pt Universal Temperature Input  
4-pt Relay Form A (SPST) Output

**BX-RTB10 Terminal Blocks Included.**  
The BX-RTB10-1 or BX-RTB10-2  
(purchased separately) can also be used.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

#### Universal Temperature Input Specifications

<b>Input Channels</b>	4 Differential	
<b>Commons</b>	1	
<b>Input Impedance</b>	>5MΩ	
<b>Resolution</b>	24-bit, 0.1°C (C or F) See Data Range Specifications table	
<b>All Channel Update Rate</b>	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)	
<b>Sample Duration Time</b>	175ms	
<b>Open Circuit Detection Time</b>	Within 5s	
<b>Maximum Ratings</b>	-0.3 V to +5.3 V, <15mA	
<b>Common Mode Range</b>	-0.3 V to +5.3 V	
<b>Common Mode Rejection</b>	100dB@DC, 130dB@60Hz	
<b>Conversion Method</b>	Sigma-Delta, 24-bit	
<b>Thermocouple Parameters</b>		
<b>Thermocouple Input Ranges</b>	Type J:	-210° to 1200°C [-346° to 2192°F]
	Type K:	-265° to 1372°C [-445° to 2502°F]
	Type E:	-265° to 1000°C [-445° to 1832°F]
	Type N:	-265° to 1300°C [-445° to 2372°F]
	Type R:	-50° to 1768°C [-58° to 3214°F]
	Type S:	-50° to 1768°C [-58° to 3214°F]
	Type B:	40° to 1820°C [104° to 3308°F]
	Type T:	-265° to 400°C [-445° to 752°F]
<b>Linear Voltage Input Ranges</b>		-31.25 to 31.25 mVDC -31.25 to 62.5 mVDC
-31.25 to 125mVDC 0 to 1.0 VDC		
<b>Cold Junction Compensation</b>	Automatic	
<b>Thermocouple Linearization</b>	Automatic	
<b>Maximum Inaccuracy—Thermocouple</b>	±(0.2°C + 3% of °C reading)	
<b>Maximum Inaccuracy—Voltage</b>	±250µV	
<b>RTD/Thermistor Parameters</b>		
<b>Input Ranges (RTD Types)</b>	10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve: -200° to 850°C [-328° to 1562°F]	
	120Ω Ni N120 Nickel RTD 0.00672 Curve: -80° to 260°C [-112° to 500°F]	
<b>Thermistor Input Ranges</b>	2.252 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]
	3 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]
	5 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]
	10k-AN Type 3 @ 25°C:	-40° to 150°C [-40° to 302°F]
	30 kΩ @ 25°C:	-40° to 150°C [-40° to 302°F]
<b>RTD Excitation Current</b>	RTD 10, 100, 120, 200:	1mA
	RTD 500:	500µA
	RTD 1000:	250µA
<b>Thermistor Excitation Current</b>	NTC 2.252k, NTC 3k:	10µA
	NTC 5k, NTC 10k:	5µA
	NTC 30k:	1µA
<b>RTD/Thermistor Linearization</b>	Automatic	
<b>Maximum Inaccuracy</b>	±0.2°C	

#### Module General Specifications

<b>Weight</b>	98g [3.5 oz]
<b>Heat Dissipation</b>	3.6 W
<b>Backplane Power Consumption</b>	2.5 W
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA
<b>Software Version Required</b>	Do-more! Designer 2.7 or later

# BX-4UT4TR Universal Temp. Input/ Relay Output

Voltage Relay Output Specifications	
	BX-4UT4TR
<b>Outputs per Module</b>	4
<b>Commons</b>	1
<b>Maximum Current per Common</b>	8A
<b>Nominal Voltage</b>	5–48VDC, 24–240VAC
<b>Operating Voltage Range</b>	5–60VDC, 18–264VAC
<b>Peak Voltage</b>	60VDC, 264VAC
<b>Minimum Output Current</b>	0.1 mA @ 24VDC
<b>Maximum Output Current</b>	2A
<b>Maximum Inrush Current</b>	5A for 50ms
<b>Maximum Leakage Current</b>	1µA
<b>ON Voltage Drop</b>	0.2 V maximum
<b>Fuses, Overcurrent Protection</b>	N/A
<b>OFF-ON Response</b>	<10ms
<b>ON-OFF Response</b>	<10ms
<b>Relay Cycle Life</b>	
<b>Mechanical Endurance</b>	5 Million Operations
<b>Electrical Endurance</b>	120,000 Operations
<b>Status Indicators</b>	Logic Side, Green

Data Range Specifications			
Thermocouple Selection	Temperature Range	Resolution	
		WXn	RXn
Type J	-210 to 1200 °C -346 to 2192 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
Type K	-265 to 1372 °C -445 to 2502 °F		
Type E	-265 to 1000 °C -445 to 1832 °F		
Type R	-50 to 1768 °C -58 to 3214 °F		
Type S	-50 to 1768 °C -58 to 3214 °F		
Type B	40 to 1820 °C 104 to 3308 °F <sup>3</sup>		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn <sup>2</sup>	RXn
-31.25 to 31.25 mVDC	Bipolar 31.25 mVDC	0.95 µV per count (-32768 to 32767)	User Scaled
-31.25 to 62.5 mVDC	Bipolar 62.5 mVDC	1.9 µV per count (-16384 to 32767)	
-31.25 to 125 mVDC	Bipolar 125 mVDC	3.8 µV per count (-8192 to 32767)	
0 to 1.0 VDC	Unipolar 1.0 VDC	30.5 µV per count (0 to 32767)	
RTD Selection	Temperature Range	WXn	RXn
10, 50, 100, 200, 500, 1000Ω Pt Platinum RTD 0.00385 European Curve	-200 to 850 °C -328 to 1562 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>
120Ω Ni N120 Nickel RTD 0.00672 Curve	-80 to 260 °C -112 to 500 °F		
Thermistor Selection	Temperature Range	WXn	RXn
Thermistor 2.252 kΩ @25°C Thermistor 3kΩ @25°C Thermistor 5kΩ @25°C Thermistor 10k-AN Type 3 @25°C Thermistor 30kΩ @25°C	-40 to 150 °C -40 to 302 °F	Degrees x10 (One Implied Decimal) <sup>1</sup>	24-Bit Floating <sup>1</sup>

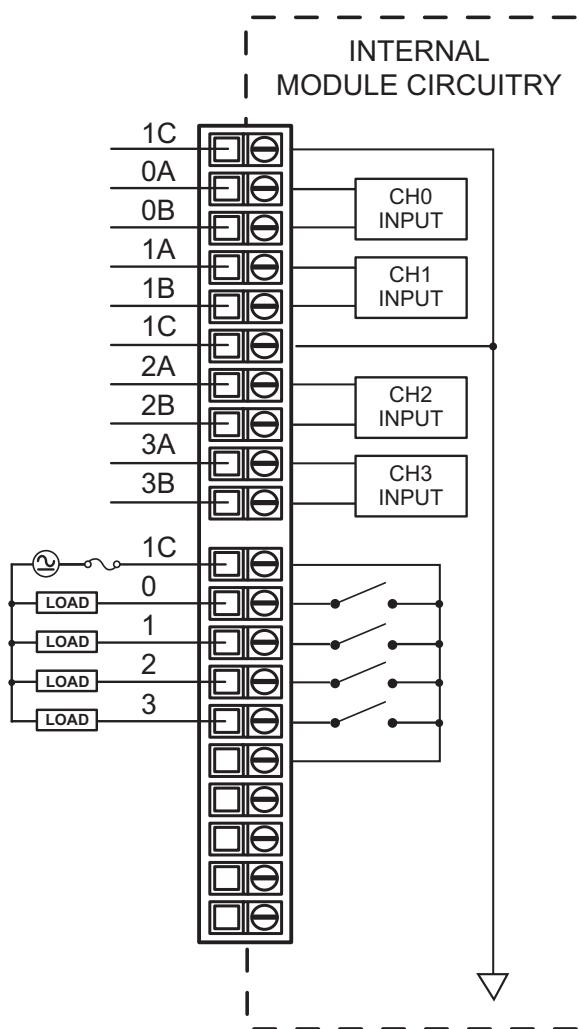
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

# BX-4UT4TR Universal Temp. Input/ Relay Output

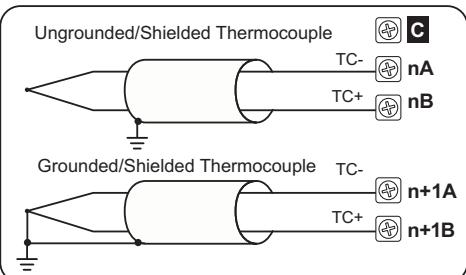
## Universal Temperature Input/Relay Output Wiring



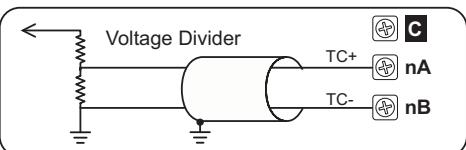
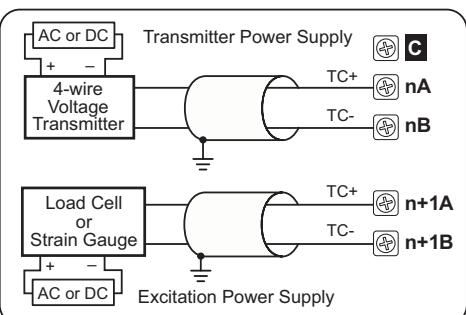
# BX-4UT4TR Universal Temp. Input/ Relay Output

## Universal Temperature Input Circuits

### Thermocouple and Voltage Sensors



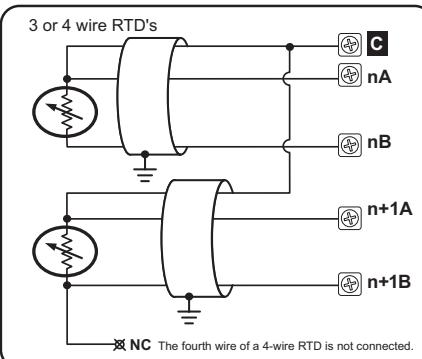
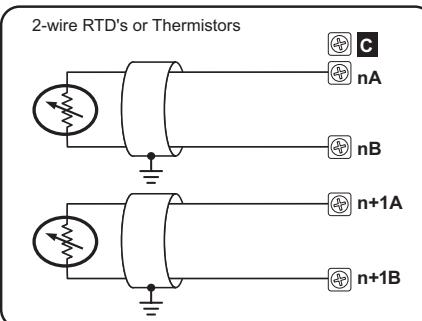
**NOTE:** Thermocouple extension wire and proper thermocouple terminal blocks must be used to extend thermocouples. AutomationDirect thermocouple wire is recommended.



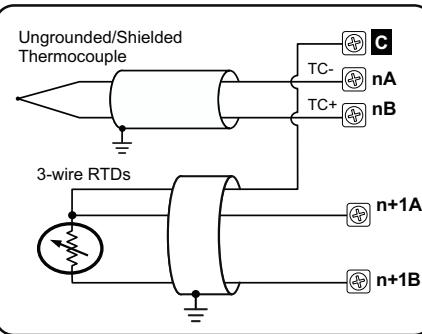
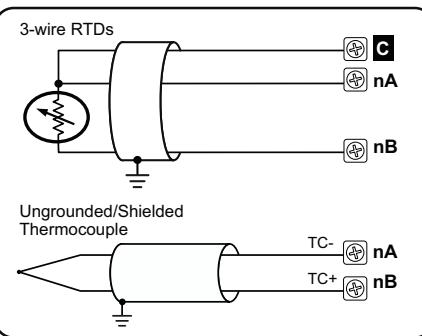
**NOTE:** Shield should be connected only at one end, to ground at the source device.

For maximum accuracy:  
Jumper unused inputs:  
TC+      TC-      TC+

### Resistive and Thermistor Sensors

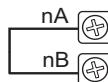


### Mixed Resistive and Thermocouple Sensors

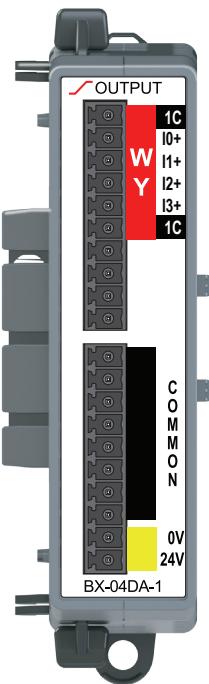


#### Notes for maximum accuracy:

- All wires to an RTD must be equal length and type. Refer to RTD manufacturer's recommendations.
- Do not use cable shield as sensing wire.
- When applicable, connect shield to RTD common only, otherwise connect to module common only. Do not connect shield to both ends.
- Jumper unused inputs.

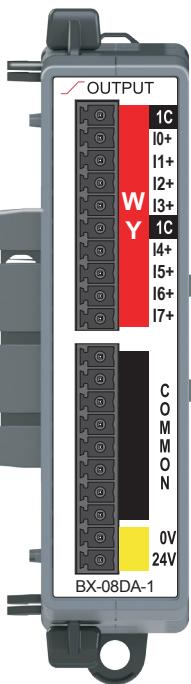


# BX-xxDA-1 Analog Current Source Output



**BX-04DA-1**  
\$269.00

Output Module 4-pt,  
Analog Current Source



**BX-08DA-1**  
\$350.00

Output Module 8-pt,  
Analog Current Source

## Terminal Blocks Sold Separately

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

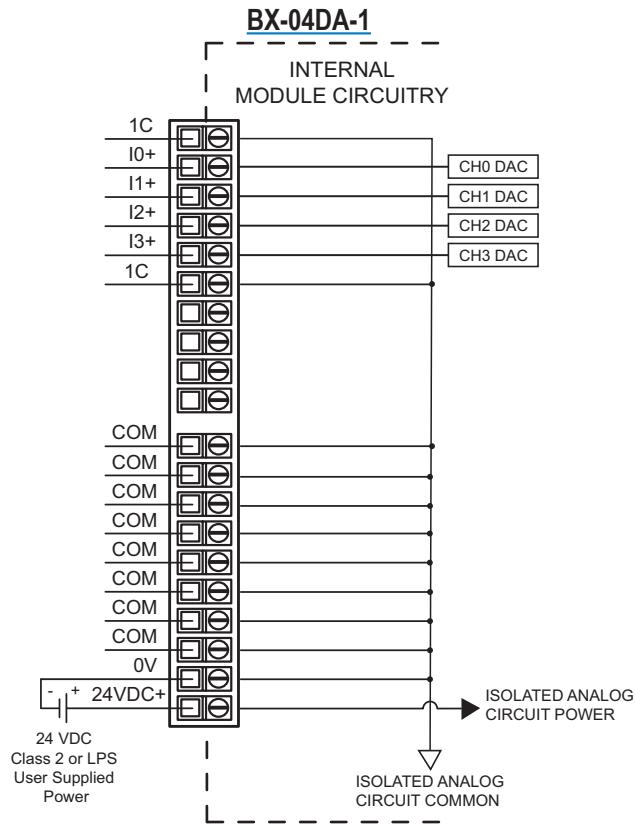
### Data Range Specifications

Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default)			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting*	µA Per Count	Raw Counts	Casting*	µA Per Count
0-20 mA	Unipolar 0-20 mA	0-32767	-	0.61	0-65535	WYn:U	0.31
4-20 mA	Unipolar 4-20 mA	0-32767	-	0.49	0-65535	WYn:U	0.24

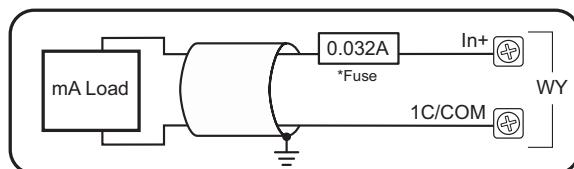
\* For more information on Casting refer to Help topic DMD0309 in the Do-more! Designer Software.

# BX-xxDA-1 Analog Current Source Output, continued

## Analog Current Source Output Wiring

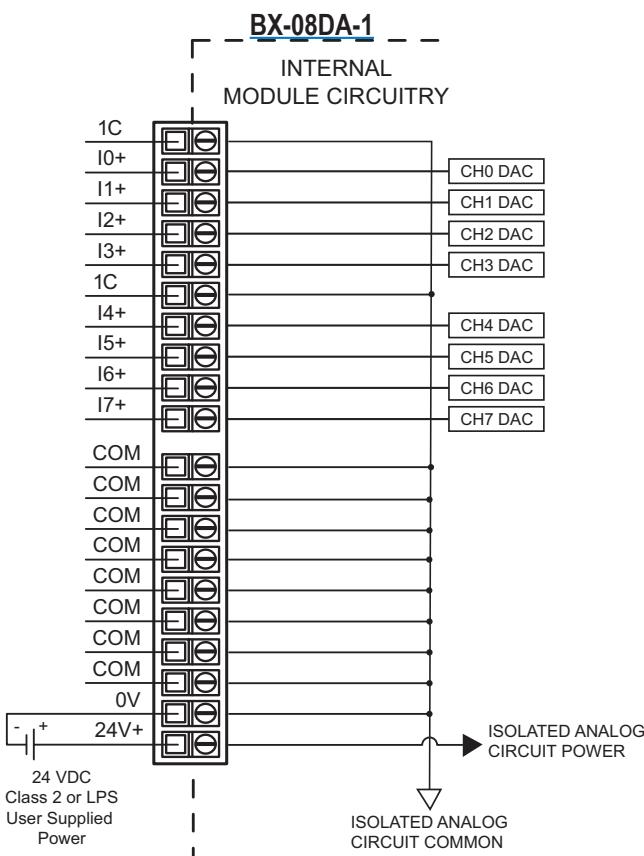


## Analog Current Source Output Circuit

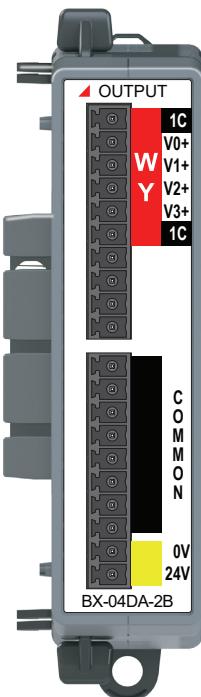


\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

**NOTE:** Shield should be connected only at one end, to ground at the source device.

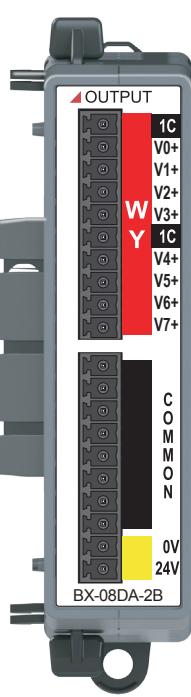


# BX-xxDA-2B Analog Voltage Output



**BX-04DA-2B**  
**\$269.00**

Output Module 4-pt,  
Analog Voltage



**BX-08DA-2B**  
**\$350.00**

Output Module 8-pt,  
Analog Voltage

## Terminal Blocks Sold Separately

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See Wiring Solutions section for all options.



## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Analog Voltage Output Specifications		
Specification	BX-04DA-2B	BX-08DA-2B
<b>Outputs per Module</b>	4	8
<b>Commons</b>	1	
<b>Module Signal Output Range</b>	±10 VDC, ±5 VDC, 0–5 VDC, 0–10 VDC (Default)	
<b>Signal Resolution</b>	16-bit, 15-bit (Default)	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Output Type</b>	Voltage outputs sourcing/sinking at 10mA (example 10V @ 1kΩ load).	
<b>Output Value in Fault Mode</b>	Voltage outputs 0V (Unipolar or Bipolar)	
<b>Minimum Load Impedance</b>	1kΩ	
<b>Maximum Capacitive Load</b>	1000pF	
<b>Allowed Load Type</b>	Grounded	
<b>Maximum Continuous Overload</b>	15mA	
<b>All Channel Update Rate</b>	3ms	
<b>Maximum Inaccuracy</b>	0.2% of range	
<b>Maximum Full Scale Calibration Error</b>	±0.08% of range	
<b>Maximum Offset Calibration Error</b>	±0.04% of range	
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum	
<b>Maximum Crosstalk</b>	+3µV	
<b>Linearity Error (end to end)</b>	±0.01% of range	
<b>Output Stability and Repeatability</b>	±0.02% of full range after 10 min. warmup (typical)	
<b>Output Ripple</b>	150 µV/mA	
<b>Output Settling Time</b>	200µs	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	
<b>Backplane Power Consumption</b>	0.1 W	
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%) 100mA	
<b>Heat Dissipation</b>	2.9 W	3.1 W
<b>Weight</b>	104g [3.7 oz]	
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.3 or later	2.1 or later

## Data Range Specifications

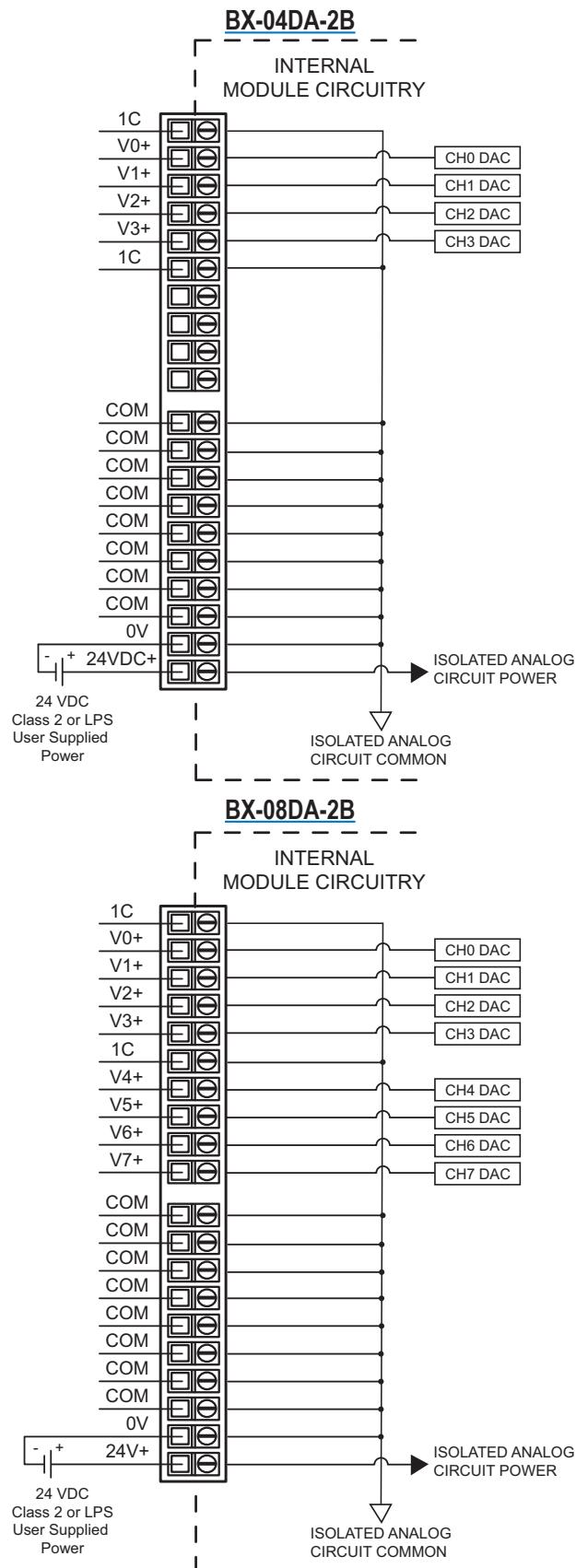
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default) <sup>1</sup>			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting <sup>2</sup>	µV Per Count	Raw Counts	Casting <sup>2</sup>	µV Per Count
<b>0–10V</b>	Unipolar 10VDC	0–32767	-	305	0–65535	WYn:U	152
<b>0–5V</b>	Unipolar 5VDC	0–32767	-	152	0–65535	WYn:U	76
<b>± 10V</b>	Bipolar 10VDC	-	-		-32768 to 32767	-	305
<b>± 5V</b>	Bipolar 5VDC	-	-		-32768 to 32767	-	152

1. Bipolar ranges default to 16-bit resolution.

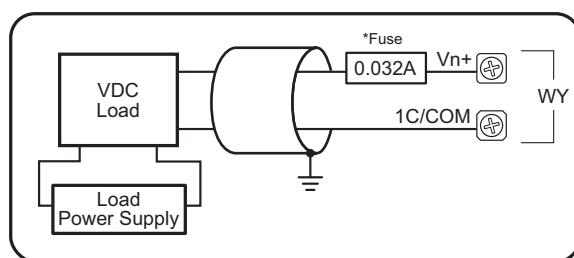
2. For more information on Casting refer to Help topic DMD0309 in the Do-more! Designer Software.

# BX-xxDA-2B Analog Voltage Output, continued

## Analog Voltage Output Wiring



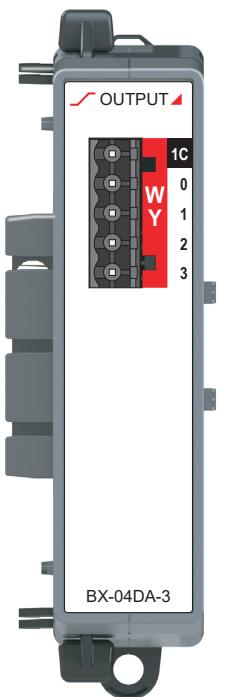
## Analog Voltage Output Circuits



\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

**NOTE:** Shield should be connected only at one end, to ground at the source device.

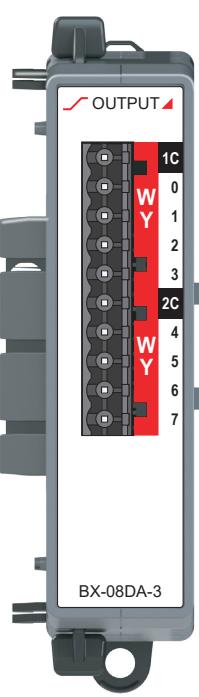
# BX-xxDA-3 Universal Analog Output



**BX-04DA-3**  
**\$244.00**

Analog Output Expansion Module  
4-ch, 0-20mA/4-20mA,  
±10 VDC, ±5 VDC,  
0-5 VDC, 0-10 VDC,  
16-bit\*

**NOTE:** BX-04DA-3 does not support ZIPLink Wiring Systems



**BX-08DA-3**  
**\$311.00**

Analog Output Expansion Module  
8-ch, 0-20mA/4-20mA,  
±10 VDC, ±5 VDC,  
0-5 VDC, 0-10 VDC,  
16-bit\*



Terminal Blocks or ZIPLink Cables Sold Separately

We recommend using prewired ZIPLink cables and connection modules for the BX-08DA-3.

A removable terminal block is available for either module. See Wiring Solutions section for all options.

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

### Analog Universal Current/Voltage Output Specifications

	<b>BX-04DA-3</b>	<b>BX-08DA-3</b>
<b>Outputs per Module</b>	4	8
<b>Commons</b>	1	2
<b>Module Signal Output Range</b>	0-20mA, 4-20mA, ±20mA, ±10 VDC, ±5 VDC, 0-5 VDC (Default), 0-10 VDC	
<b>Signal Resolution</b>	16-bit at ±10V or ±20mA*	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Output Type</b>	Current Sinking/Sourcing up to 5V Voltage outputs sourcing/sinking at 10mA (example 10V @ 1kΩ load).	
<b>Output Value in Fault Mode</b>	Current outputs ~0mA Voltage outputs 0V (Unipolar or Bipolar)	
<b>Minimum Voltage Load Impedance</b>	1kΩ	
<b>Maximum Current Load Impedance</b>	250Ω	
<b>Maximum Continuous Overload</b>	Indefinitely	
<b>All Channel Update Rate</b>	1.0 ms	
<b>Maximum Inaccuracy</b>	±0.1% of HW full scale (65 counts)	
<b>Maximum Full Scale Calibration Error</b>	±0.1% of HW full scale (65 counts)	
<b>Conversion Method</b>	Amplified Divide-by-2 Resistor String	
<b>Linearity Error (end to end)</b>	±0.1% of HW full scale (65 counts)	
<b>Output Stability and Repeatability</b>	±0.02% of HW full scale (12 counts) after 10 min. warmup (typical)	
<b>Output Settling Time</b>	10µs	
<b>Channel to Backplane Isolation</b>	1500VAC applied for one second, 1C to 2C	
<b>Channel to Channel Isolation</b>	None	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	
<b>Backplane Power Consumption (Max)</b>	2.4 W	5W
<b>Heat Dissipation</b>	2.25 W	5.5 W
<b>Weight</b>	98g [3.5 oz]	
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA	
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.7 or later	

\* 16-bit resolution is only available when a bipolar output range is selected.

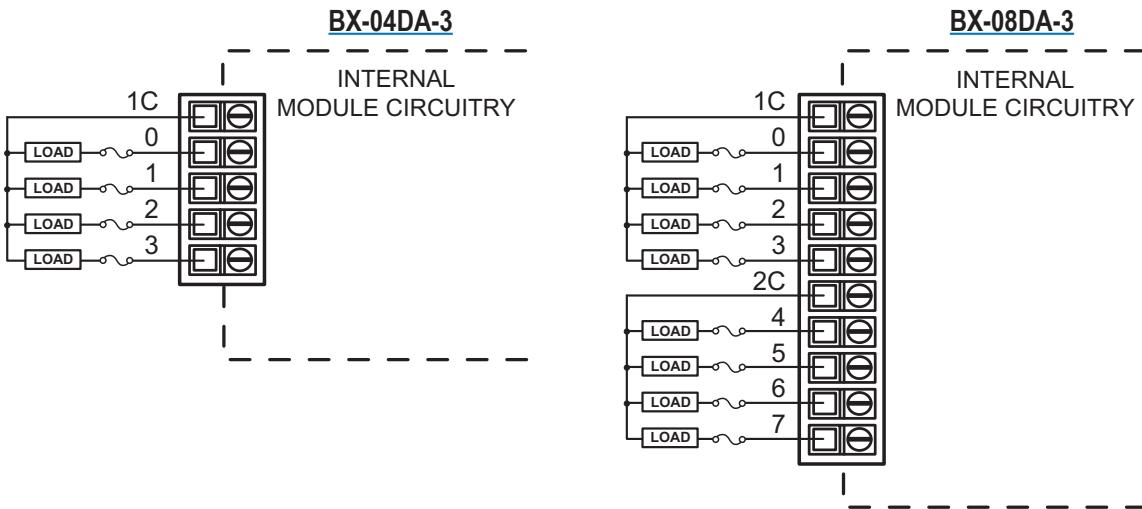
### Data Range Specifications

<b>Selection</b>	<b>Description</b>	<b>Raw Counts</b>	<b>Casting<sup>1</sup></b>	<b>Per Count</b>
<b>-20-20mA</b>	bipolar -20 to 20mA	-32768 to 32767	-	0.61 µA
<b>4-20mA</b>	unipolar 4-20mA	6553-32767	-	0.61 µA
<b>0-10V</b>	unipolar 10VDC	0-32767	-	305µV
<b>0-5V</b>	unipolar 5VDC	0-32767	-	153µV
<b>±10V</b>	bipolar 10VDC	-32768 to 32767	-	305µV
<b>±5V</b>	bipolar 5VDC	-32768 to 32767	-	153µV

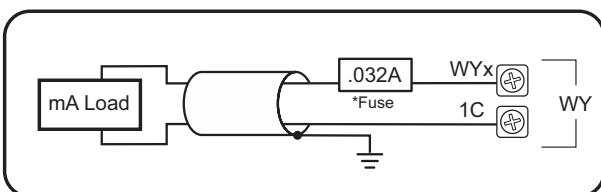
1. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

# BX-xxDA-3 Universal Analog Output, continued

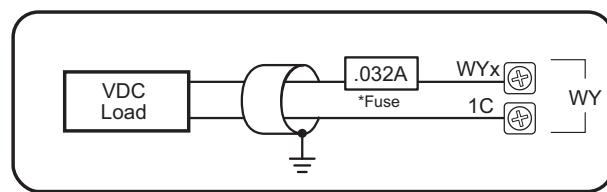
## Analog Current/Voltage Output Wiring



## Analog Current Source Output Circuits



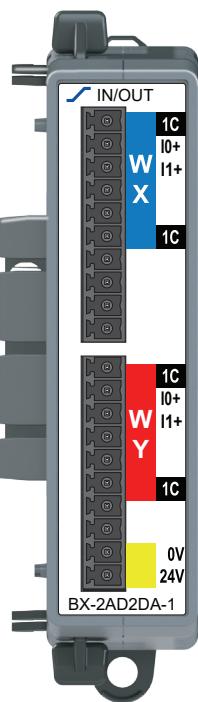
## Analog Voltage Output Circuits



NOTE: Shield should be connected only at one end, to ground at the source device.

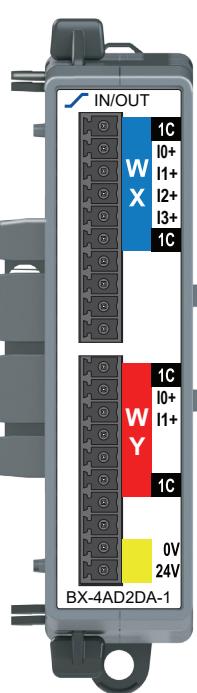
\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

# BX-xADxDA-1 Analog Combo Current I/O



**BX-2AD2DA-1**  
**\$309.00**

Combination Analog Module  
Input: 2-pt, 0–20mA/4–20mA  
Current Sinking  
Output: 2-pt, 0–20mA/  
4–20mA Current Sourcing



**BX-4AD2DA-1**  
**\$378.00**

Combination Analog Module  
Input: 4-pt, 0–20mA/4–20mA  
Current Sinking  
Output: 2-pt, 0–20mA/  
4–20mA Current Sourcing

Terminal Blocks or ZIPLink Cables Sold Separately

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Analog Current Sinking Input Specifications		
Specification	BX-2AD2DA-1	BX-4AD2DA-1
<b>Inputs per Module</b>	2	4
<b>Commons</b>		1
<b>Module Signal Input Range</b>	0–20mA, 4–20mA (Default)	
<b>Signal Resolution</b>	16-bit, 15-bit (Default)	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Input Impedance</b>	256Ω±0.1%, 1/10th watt	
<b>All Channel Update Rate</b>	30ms	45ms
<b>Maximum Continuous Overload</b>	±28mA	
<b>Sample Duration Time</b>	100µs per channel	
<b>Hardware Filter Characteristics</b>	Low Pass 2nd order, -3dB @ 15kHz	
<b>Conversion Method</b>	Successive Approximation	
<b>Linearity Error (end to end)</b>	±0.09% of range	
<b>Input Stability and Repeatability</b>	±0.05% of range (after 10 min. warmup)	
<b>Full Scale Calibration Error</b>	±0.1% of range	
<b>Offset Calibration Error</b>	±0.1% of range	
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum	
<b>Maximum Inaccuracy</b>	0.1% of range (incl. Temperature Drift)	
<b>Maximum Crosstalk</b>	-90dB, 1 LSB	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	

Analog Current Sourcing Output Specifications		
Specification	BX-2AD2DA-1	BX-4AD2DA-1
<b>Outputs per Module</b>	2	2
<b>Commons</b>		1
<b>Module Signal Output Range</b>	0–20mA, 4–20mA (Default)	
<b>Signal Resolution</b>	16-bit, 15-bit (Default)	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Output Type</b>	Current Sourcing up to 20mA	
<b>Output Value in Fault Mode</b>	0mA in 0–20mA mode, 4mA in 4–20mA mode	
<b>Maximum Load Impedance</b>	700Ω	
<b>Maximum Capacitive Load</b>	1000pF	
<b>Allowed Load Type</b>	Grounded	
<b>Maximum Continuous Overload</b>	30mA	
<b>All Channel Update Rate</b>	2.5 ms per enabled channel	
<b>Maximum Inaccuracy</b>	±0.1% of range	
<b>Max. Full Scale Calibration Error</b>	±0.08% of range	
<b>Maximum Offset Calibration Error</b>	±0.08% of range	
<b>Conversion Method</b>	Successive Approximation	
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum	
<b>Maximum Crosstalk</b>	+10µV	
<b>Linearity Error (end to end)</b>	±0.08% of range	
<b>Output Stability and Repeatability</b>	±0.03% of full range after 10 min. warmup (typical)	
<b>Output Ripple</b>	±0.03% of range/mA	
<b>Output Settling Time</b>	350µs	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	

Module General Specifications		
Specification	BX-2AD2DA-1	BX-4AD2DA-1
<b>Weight</b>	110g [3.9 oz]	
<b>Heat Dissipation</b>	3.75 W Max	
<b>Backplane Power Consumption</b>	0.3 W	
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%) 100mA	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	
<b>Software Version Required</b>	Do-more! Designer version 2.6 or later	

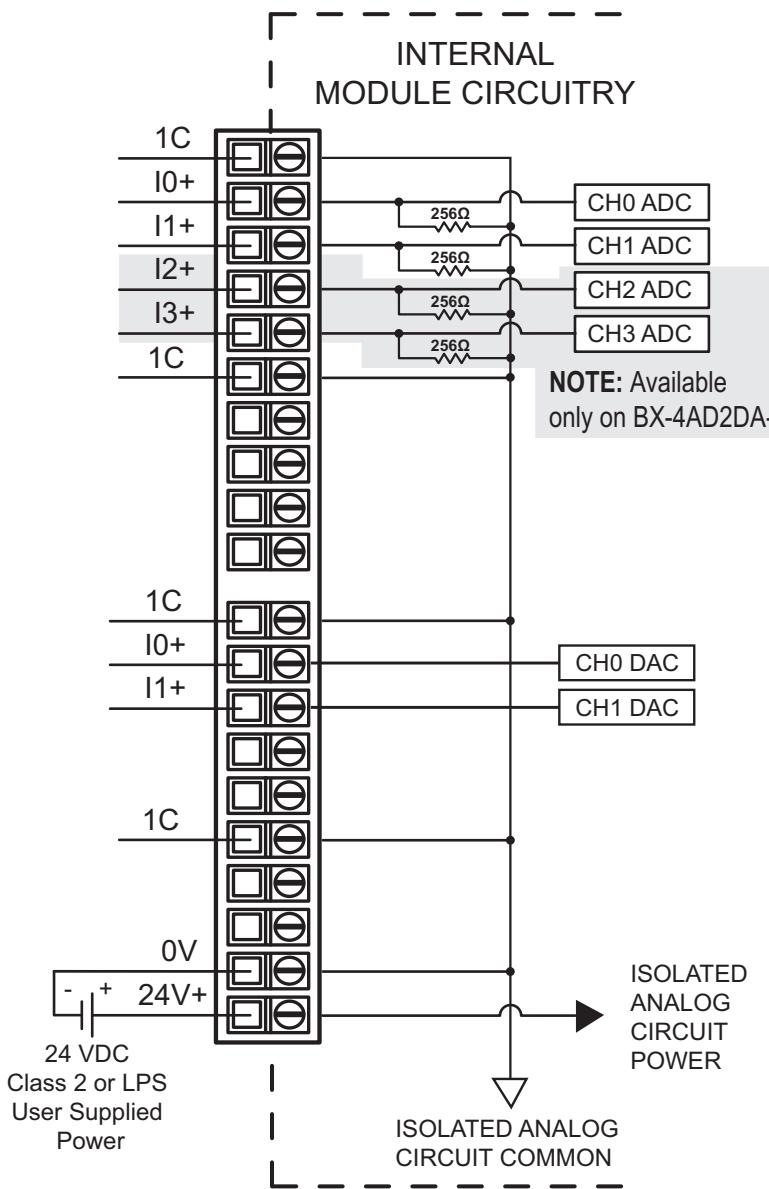
# BX-xADxDA-1 Analog Combo Current I/O

## Data Range Specifications

Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default)			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting*	µA Per Count	Raw Counts	Casting*	µA Per Count
0-20 mA	Unipolar 0-20 mA	0-32767	-	0.61	0-65535	WYn:U	0.31
4-20 mA	Unipolar 4-20 mA	0-32767	-	0.49	0-65535	WYn:U	0.24

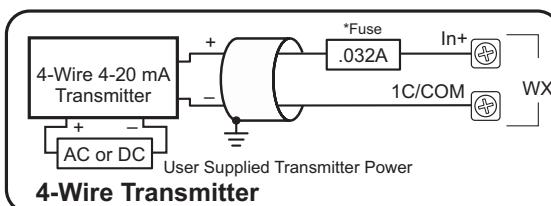
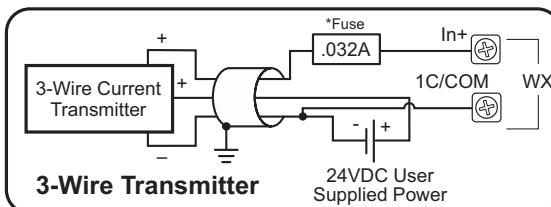
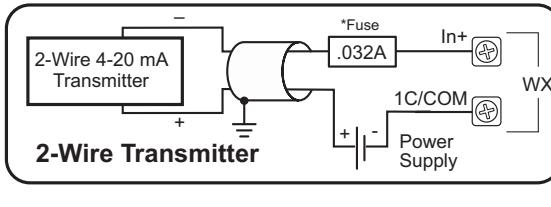
\* For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

## Analog Current Input/Output Wiring



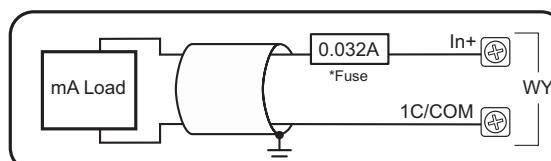
## Analog Current Sinking Input Circuits

\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.



NOTE: Shield should be connected only at one end, to ground at the source device.

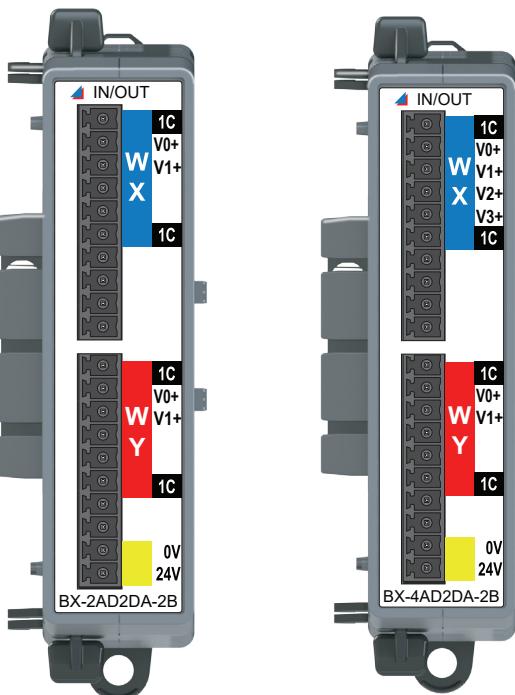
## Analog Current Source Output Circuit



\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

NOTE: Shield should be connected only at one end, to ground at the source device.

# BX-xADxDA-2B Analog Combo Voltage I/O



**BX-2AD2DA-2B**  
**\$309.00**

Combination Analog Module  
2 Channels In, 2 Channels Out  
±10 VDC, ±5 VDC,  
0–5 VDC, 0–10 VDC

**BX-4AD2DA-2B**  
**\$378.00**

Combination Analog Module  
4 Channels In, 2 Channels Out  
±10 VDC, ±5 VDC,  
0–5 VDC, 0–10 VDC

Terminal Blocks or ZIPLink Cables Sold Separately

We recommend using prewired ZIPLink cables and connection modules.

If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Solutions* section for all options.



## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

### Analog Voltage Input Specifications

Specification	BX-2AD2DA-2B	BX-4AD2DA-2B
<b>Inputs per Module</b>	2	4
<b>Commons</b>		1
<b>Module Signal Input Range</b>	±10 VDC, ±5 VDC, 0–5 VDC, 0–10 VDC (default)	
<b>Signal Resolution</b>	16-bit, 15 bit (Default)	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Input Impedance</b>	>1MΩ	
<b>All Channel Update Rate</b>	30ms	45ms
<b>Maximum Continuous Overload</b>	15mA	
<b>Sample Duration Time</b>	100μs per channel	
<b>Hardware Filter Characteristics</b>	Low Pass 2nd order, -3dB @ 15kHz	
<b>Conversion Method</b>	Successive Approximation	
<b>Accuracy vs. Temperature</b>	±25PPM/°C maximum	
<b>Maximum Inaccuracy</b>	0.15% of full range (over temp)	
<b>Linearity Error (end to end)</b>	±0.09% of range	
<b>Input Stability and Repeatability</b>	±0.06% of range (after 10 min. warmup)	
<b>Full Scale Calibration Error</b>	±0.1% of range	
<b>Offset Calibration Error</b>	±0.1% of range	
<b>Maximum Crosstalk</b>	-90dB, 1 LSB	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	

### Analog Voltage Output Specifications

Specification	BX-2AD2DA-2B	BX-4AD2DA-2B
<b>Outputs per Module</b>	2	2
<b>Commons</b>		1
<b>Module Signal Output Range</b>	±10 VDC, ±5 VDC, 0–5 VDC, 0–10 VDC (default)	
<b>Signal Resolution</b>	16-bit, 15-bit (Default)	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Output Type</b>	Voltage outputs sourcing/sinking at 10mA	
<b>Output Value in Fault Mode</b>	Voltage outputs 0V (unipolar or bipolar)	
<b>Maximum Load Impedance</b>	1kΩ	
<b>Maximum Capacitive Load</b>	1000pF	
<b>Allowed Load Type</b>	Grounded	
<b>Maximum Continuous Overload</b>	15mA	
<b>All Channel Update Rate</b>	2.5 ms per enabled channel	
<b>Maximum Inaccuracy</b>	±0.2% of range	
<b>Max. Full Scale Calibration Error</b>	±0.08% of range	
<b>Max. Offset Calibration Error</b>	±0.04% of range	
<b>Conversion Method</b>	Successive Approximation	
<b>Accuracy vs. Temperature</b>	±25PPM/°C maximum	
<b>Maximum Crosstalk</b>	+3µV	
<b>Linearity Error (end to end)</b>	±0.04% of range	
<b>Output Stability and Repeatability</b>	±0.03% of full range after 10 minute warmup (typical)	
<b>Output Ripple</b>	150µV/mA	
<b>Output Settling Time</b>	200µs	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	

### Module General Specifications

Specification	BX-2AD2DA-2B	BX-4AD2DA-2B
<b>Weight</b>	98g [3.4 oz]	
<b>Heat Dissipation</b>	0.3 W Max	
<b>Backplane Power Consumption</b>	0.1 W	0.3 W
<b>External DC Power Required</b>	Class 2 or LPS power supply 24VDC (±20%) 50mA	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	
<b>Software Version Required</b>	Do-more! Designer version 2.6 or later	

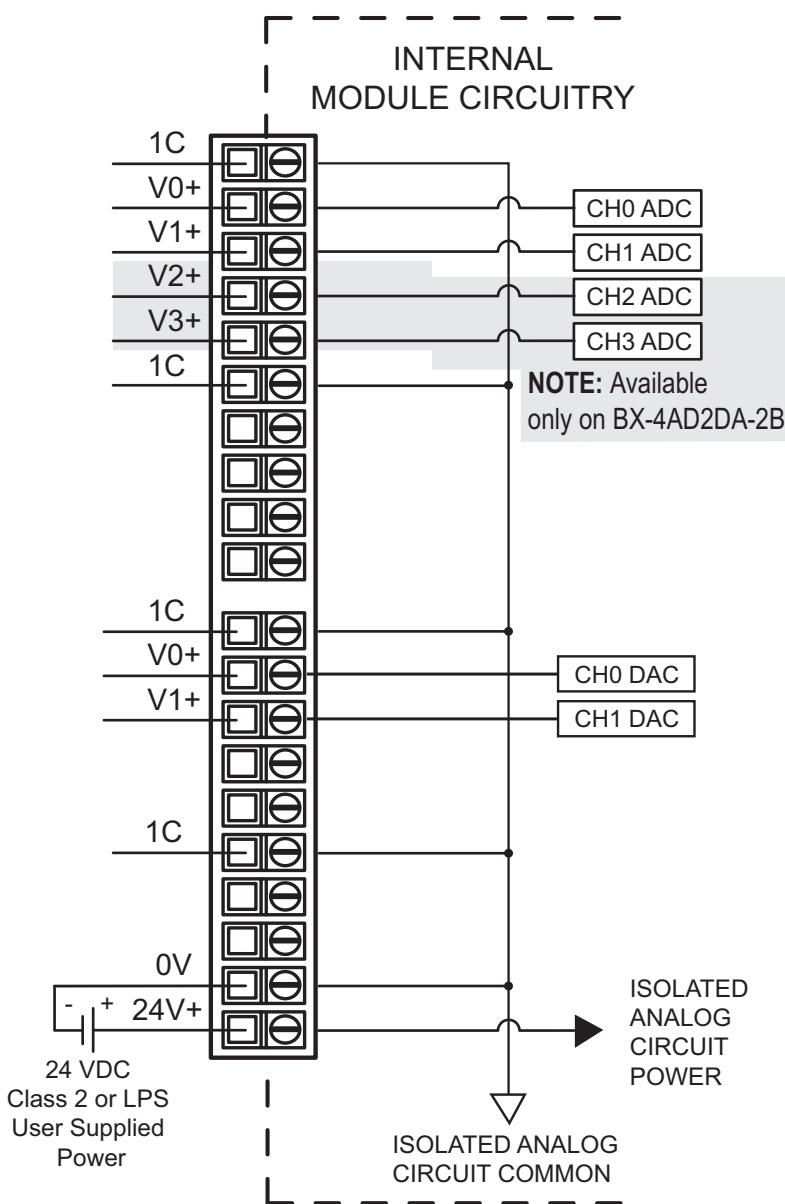
# BX-xADxDA-2B Analog Combo Voltage I/O

Data Range Specifications						
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default) <sup>1</sup>			Enable 16 bit Checked (16 bit Resolution)	
		Raw Counts	Casting <sup>2</sup>	µV Per Count	Raw Counts	Casting <sup>2</sup>
0-10V	Unipolar 10VDC	0-32767	-	305	0-65535	WYn:U
0-5V	Unipolar 5VDC	0-32767	-	152	0-65535	WYn:U
±10V	Bipolar 10VDC	-	-	-	-32768 to 32767	-
±5V	Bipolar 5VDC	-	-	-	-32768 to 32767	-

1. Bipolar ranges default to 16-bit resolution.

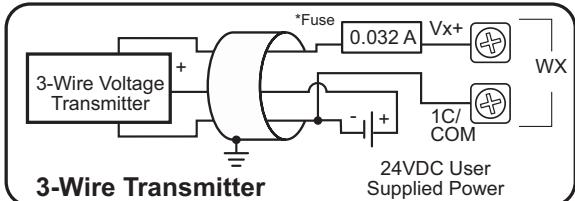
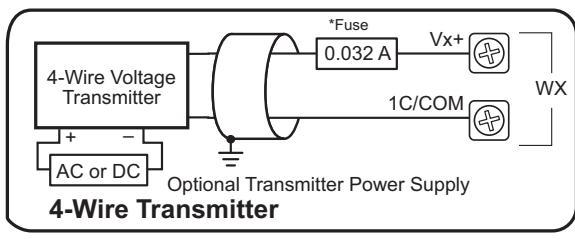
2. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

## Analog Voltage Input/Output Wiring

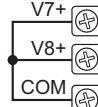


## Analog Voltage Input Circuits

\*An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

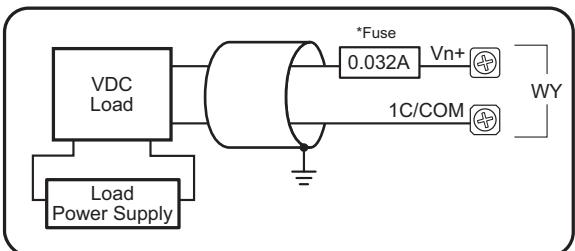


NOTE: For maximum accuracy, jumper unused inputs to common.



NOTE: Shield should be connected only at one end, to ground at the source device.

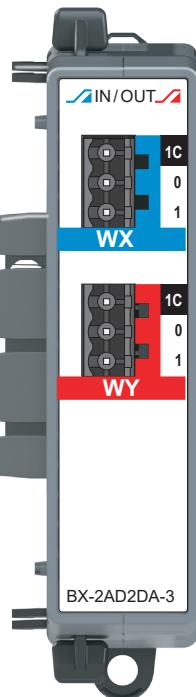
## Analog Voltage Output Circuit



\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

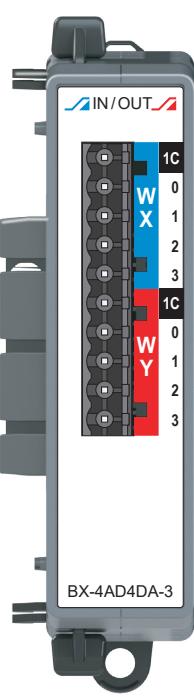
NOTE: Shield should be connected only at one end, to ground at the source device.

# BX-xADxDA-3 Universal Analog I/O



**BX-2AD2DA-3**  
**\$284.00**

Combination  
Analog Module  
2 Channels In,  
2 Channels Out  
0-20mA/4-20mA,  
Sink/Source  
±10 VDC, ±5 VDC,  
0-5 VDC, 0-10 VDC



**BX-4AD4DA-3**  
**\$349.00**

Combination  
Analog Module  
4 Channels In,  
4 Channels Out  
0-20mA/4-20mA,  
Sink/Source  
±10 VDC, ±5 VDC,  
0-5 VDC, 0-10 VDC

**NOTE:** BX-2AD2DA-3  
does not support **ZIPLINK**  
Link Wiring Systems



Terminal Blocks or ZIPLink Cables Sold Separately

We recommend using prewired ZIPLink cables and connection modules for the BX-4AD4DA-3.  
A removable terminal block is available for either module. See  
Wiring Solutions section for all options.

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be  
Hot Swapped.

Analog Universal Current/Voltage Input Specs		
	<b>BX-2AD2DA-3</b>	<b>BX-4AD4DA-3</b>
<b>Inputs per Module</b>	2	4
<b>Commons</b>		1
<b>Module Signal Input Range</b>	0-20mA, 4-20mA, ±20mA, ±10 VDC, ±5 VDC, 0-5 VDC (Default), 0-10 VDC	
<b>Signal Resolution</b>	16-bit at ±10V or ±20mA*	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Input Impedance</b>	Current Input: 249Ω, Voltage Input: 100kΩ	
<b>All Channel Update Rate</b>	1.2 ms	
<b>Over Current Circuit Detection Time</b>	< 1second	
<b>Maximum Continuous Overload</b>	±40mA current mode, ±20V voltage mode	
<b>Sample Duration Time</b>	1.2 ms	
<b>Hardware Filter Characteristics</b>	Active Low Pass, -3dB @ 1kHz	
<b>Conversion Method</b>	Delta Sigma	
<b>Linearity Error (end to end)</b>	±0.1% of HW full scale (65 counts)	
<b>Input Stability and Repeatability (after 10 min. warmup)</b>	±0.02% of HW full scale (13 counts)	
<b>Full Scale Calibration Error</b>	±0.1% of HW full scale (65 counts)	
<b>Offset Calibration Error</b>	±0.05% of HW full scale (32 counts)	
<b>Accuracy vs. Temperature</b>	±25PPM / °C maximum	
<b>Maximum Inaccuracy</b>	±0.2% of HW full scale (130 counts)	
<b>Maximum Crosstalk</b>	1 count	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	

\* 16-bit resolution is only available when a bipolar input range is selected.

Analog Universal Current/Voltage Output Specs		
	<b>BX-2AD2DA-3</b>	<b>BX-4AD4DA-3</b>
<b>Outputs per Module</b>	2	4
<b>Commons</b>		1
<b>Module Signal Output Range</b>	0-20mA, 4-20mA, ±20mA ±10VDC, ±5VDC, 0-5VDC (Default), 0-10VDC	
<b>Signal Resolution</b>	16-bit at ±10V or ±20mA*	
<b>Resolution Value of LSB</b>	See Data Range Specifications table	
<b>Output Type</b>	Current Sink/Source up to 5V Voltage Sink/Source at 10mA (e.g., 10V @ 1kΩ load).	
<b>Output Value in Fault Mode</b>	Current outputs ~0mA Voltage outputs 0V (Unipolar or Bipolar)	
<b>Minimum Load Impedance</b>	1kΩ	
<b>Maximum Current Load Impedance</b>	500Ω	
<b>Allowed Load Type</b>	Grounded	
<b>Maximum Continuous Overload</b>	Indefinitely	
<b>All Channel Update Rate</b>	1.0 ms	
<b>Maximum Inaccuracy</b>	±0.1% of HW full scale (65 counts)	
<b>Maximum Full Scale Calibration Error</b>	±0.1% of HW full scale (65 counts)	
<b>Conversion Method</b>	Amplified Divide-by-2 Resistor String	
<b>Linearity Error (end to end)</b>	±0.1% of HW full scale (65 counts)	
<b>Output Stability and Repeatability</b>	±0.02% of HW full scale (12 cts) after 10 min. warmup	
<b>Output Settling Time</b>	10μs	
<b>Channel to Backplane Isolation</b>	1800VAC applied for one second	
<b>Channel to Channel Isolation</b>	None	
<b>Loop Fusing (External)</b>	Fast-acting 0.032A recommended	

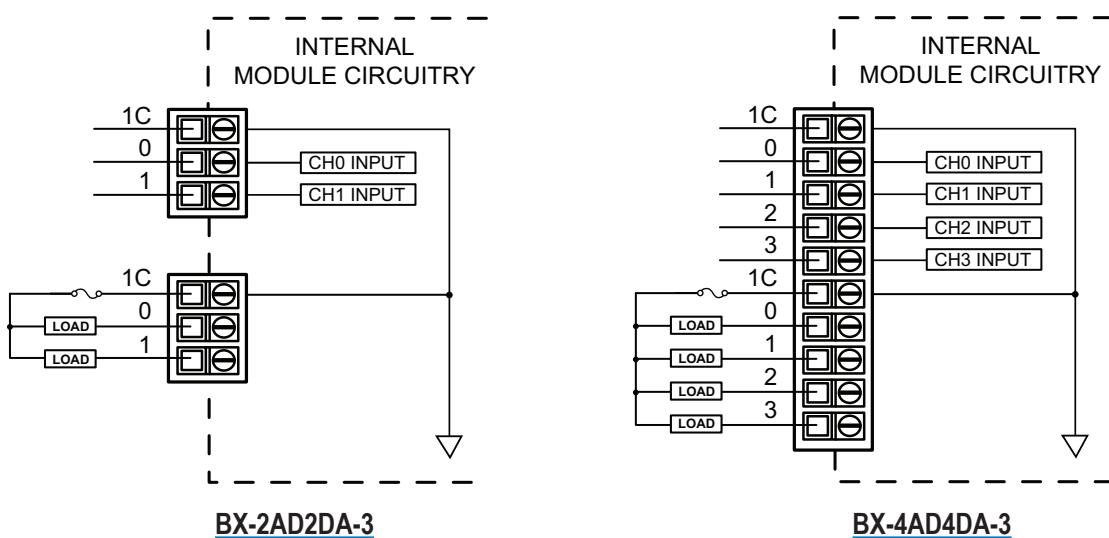
\* 16-bit resolution is only available when a bipolar output range is selected.

# BX-xADxDA-3 Universal Analog I/O, continued

Analog Universal Current/Voltage General Specs		
	<u><a href="#">BX-2AD2DA-3</a></u>	<u><a href="#">BX-4AD4DA-3</a></u>
<b>Backplane Power Consumption</b>	2.5 W	3.75 W
<b>Heat Dissipation</b>	2.5 W	4.0 W
<b>Weight</b>	98g [3.5 oz]	
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA	
<b>Software Version Required (Do-more! Designer Programming Software)</b>	2.7 or later	

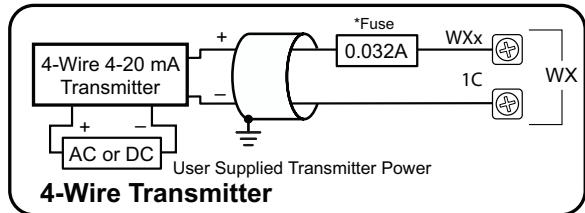
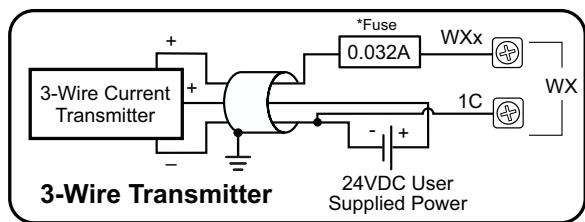
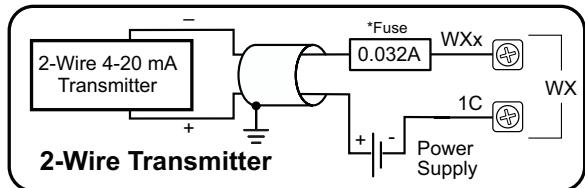
Data Range Specifications			
<b>Selection</b>	<b>Description</b>	<b>Raw Counts</b>	<b>Per Count</b>
<b>-20–20mA</b>	bipolar -20 to 20mA	-32768 to 32767	0.61 µA
<b>4–20mA</b>	unipolar 4–20mA	6553–32767	0.61 µA
<b>0–10V</b>	unipolar 10VDC	0–32767	305µV
<b>0–5V</b>	unipolar 5VDC	0–32767	153µV
<b>±10V</b>	bipolar 10VDC	-32768 to 32767	305µV
<b>±5V</b>	bipolar 5VDC	-32768 to 32767	153µV

## Analog Input/Output Wiring



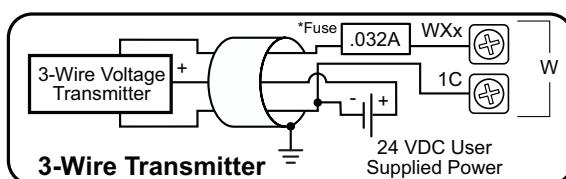
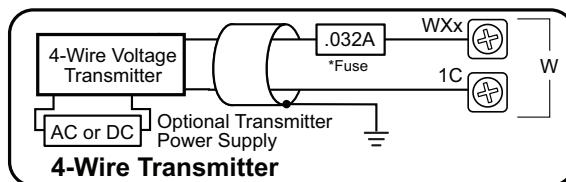
# BX-xADxDA-3 Universal Analog I/O, continued

## Analog Current Sinking Input Circuits

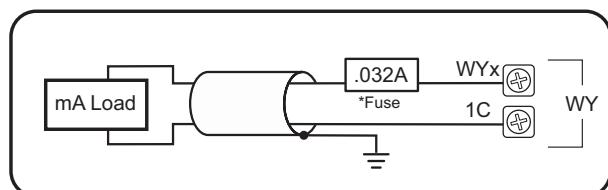


\*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

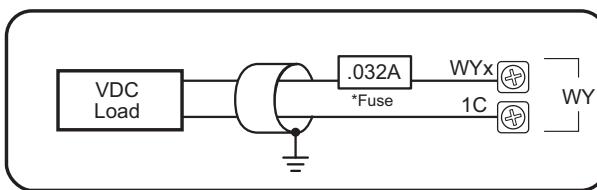
## Analog Voltage Input Circuits



## Analog Current Sourcing Output Circuits



## Analog Voltage Output Circuit



NOTE: Shield should be connected only at one end, to ground at the source device.

\*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

# BRX Motion Control, Communications and Specialty Expansion Modules

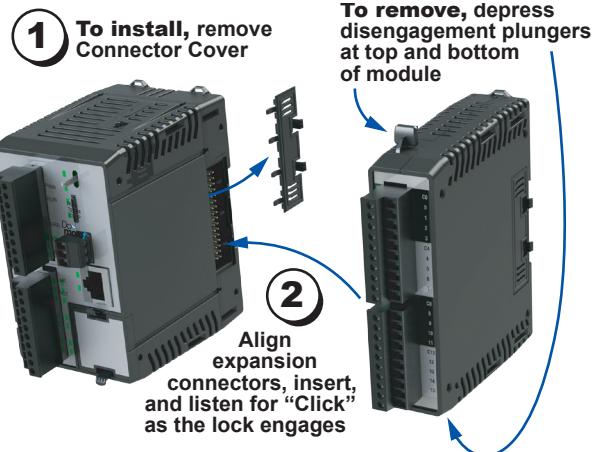
## Overview

One of the unique features of the BRX platform is its ability to expand its capability to fit your application solution. One of the ways the BRX platform can do this is by using expansion modules that conveniently "snap on" to the side of any BRX MPU. Once the expansion module has been snapped into place and is added to the project, it instantly adds I/O to the MPU with little to no additional setup required.

The specialty expansion modules give you the ability to add additional high-speed I/O or serial communications as needed. On the front panel of the expansion modules a color scheme and a symbol are used to denote the module type.

High-speed I/O modules have 8-point sinking/sourcing inputs and are available with 8-point sinking or sourcing outputs, all with switching frequencies up to 250kHz. The serial communications modules have 4 serial ports.

The high-speed I/O modules ship without wiring terminals. This allows you to select the termination style that best suits your application. Several wiring options are available, including screw terminal connectors and spring clamp terminal connectors. The serial communications modules ship with a terminal connector installed in each port.



### Hot-Swapping Information

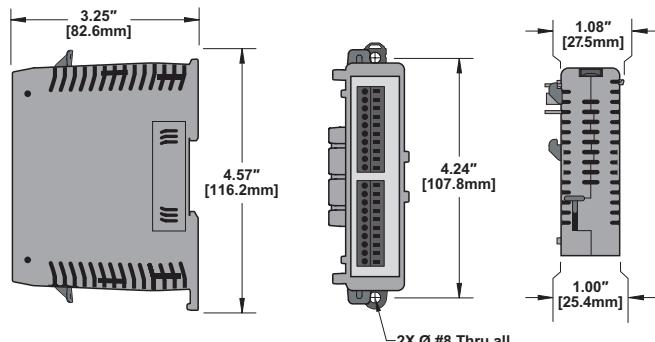
Note: This device cannot be Hot Swapped.

## General Specifications

All BRX high-speed input/output modules and serial communications modules have the same general specifications listed in the table below.

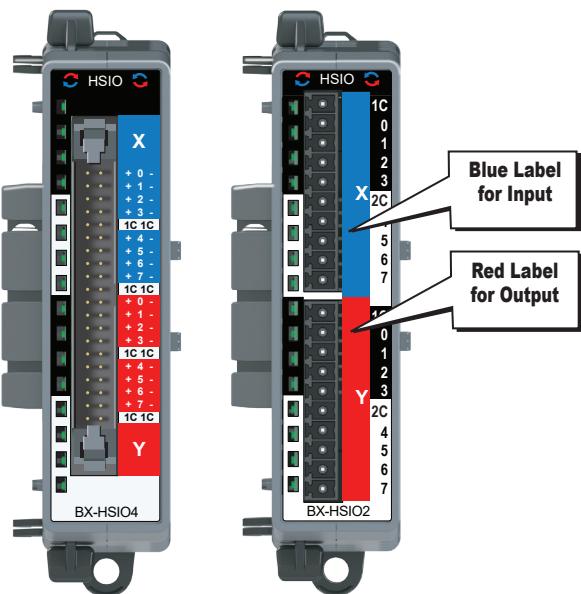
General Specifications	
<b>Operating Temperature</b>	0° to 60°C [32° to 140°F]
<b>Storage Temperature</b>	-20° to 85°C [-4° to 185°F]
<b>Humidity</b>	5% to 95% (non-condensing)
<b>Environmental Air</b>	No corrosive gases permitted
<b>Vibration</b>	IEC60068-2-6 (Test Fc)
<b>Shock</b>	IEC60068-2-27 (Test Ea)
<b>Enclosure Type</b>	Open Equipment
<b>Noise Immunity</b>	NEMA ICS3-304
<b>EU Directive</b>	See the "EU Directive" topic in the BRX Help File
<b>Agency Approvals</b>	UL 61010-2 File E185989, Canada and USA, CE Compliant EN61131-2

## Dimensions



**NOTE:** When removing an expansion module make sure there is room for the module to slide away from the system. Failure to do so will result in difficulty removing the module.

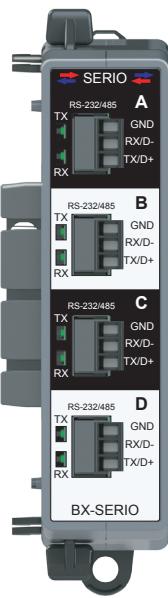
# BRX Motion Control, Communications and Specialty Expansion Modules



## High-speed Input/Output Modules

Three (3) high-speed input/output modules are available, with eight inputs and eight outputs each. High-speed I/O module faceplates have blue and red terminal bar sections to distinguish input and output terminals, respectively, and have the  symbol to signify high-speed I/O.

High-Speed Input/Output Modules					
Part Number	Input Points	Output Points	Output Type	Switching Speed	Price
<a href="#">BX-HSIO1</a>	8	8	12–24 VDC Sinking	Up to 250kHz	\$242.00
<a href="#">BX-HSIO2</a>	8	8	12–24 VDC Sourcing	Up to 250kHz	\$242.00
<a href="#">BX-HSIO4</a>	8	8	2.5–5 VDC Sinking/Sourcing	Up to 2MHz	\$274.00



## Serial Communications Module

Three (3) serial communications modules are available, with four serial ports each. Serial communications module faceplates have black and white terminal sections to distinguish serial terminals, and have the  symbol to signify serial I/O.

Serial Communications Module			
Part Number	Ports	Port Type	Price
<a href="#">BX-SERIO</a>	4	RS-232 / RS-485	\$219.00
<a href="#">BX-SERIO-2</a>	4	RS-232 with Flow Control	\$215.00
<a href="#">BX-SERIO-4</a>	4	RS-422	\$199.00

## Expansion Module Support by Controller

Controller Type	# Expansion Modules
<a href="#">BX-DM1E-M</a>	8
<a href="#">BX-DM1-10</a>	8
<a href="#">BX-DM1E-10</a>	8
<a href="#">BX-DM1-18</a>	8
<a href="#">BX-DM1E-18</a>	8
<a href="#">BX-DM1-36</a>	8
<a href="#">BX-DM1E-36</a>	8
<a href="#">BX-DMIO*</a>	8
<a href="#">BX-EBC100*</a>	8
<a href="#">BX-MBIO*</a>	8

\* Remote I/O controllers do not support Motion Control and Communications Modules.

# BRX Motion Control, Communications and Specialty Expansion Modules

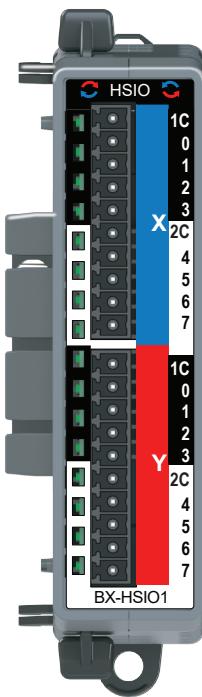


## Active Filling Module

One (1) active filling module is available. This module emulates other BRX modules in the I/O configuration of a BRX system. It is configured in software to emulate the address space of a specific BRX module. The filling module can be used to reserve address space so that addressing in subsequent modules does not change if a module is removed.

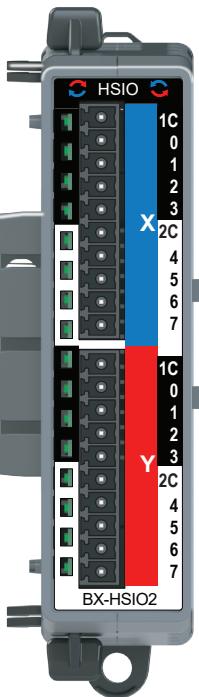
Active Filling Module	
Part Number	Price
<a href="#"><u>BX-APAD</u></a>	\$40.00

# BX-HSIO1/BX-HSIO2 High Speed I/O



**BX-HSIO1**  
**\$242.00**

8-pt Sinking/Sourcing Input,  
8-pt Sinking Output



**BX-HSIO2**  
**\$242.00**

8-pt Sinking/Sourcing Input,  
8-pt Sourcing Output

**Terminal Blocks Sold Separately.**

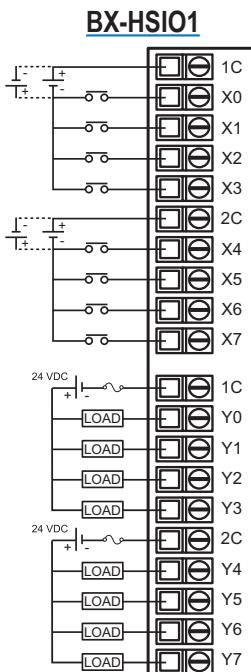


**NOTE:** This device does not support  
ZIPLink Wiring Systems

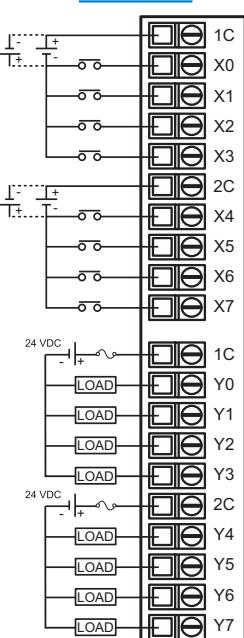


**NOTE:** Cannot be used in Remote I/O Bases.

## High-Speed Input/Output Wiring



**BX-HSIO2**



## High Speed Input/Output Specifications

Specification	BX-HSIO1	BX-HSIO2
<b>High Speed Input Specifications</b>		
<b>Type</b>	Sink/Source	
<b>Total Input Points per Module</b>	8	
<b>Commons</b>	2 (4 points/common) Isolated	
<b>Nominal Voltage Range*</b>	12–24 VDC	
<b>Input Voltage Range*</b>	9–30 VDC	
<b>Maximum Voltage</b>	30VDC	
<b>DC Frequency</b>	0–250 kHz	
<b>Minimum Pulse Width</b>	0.5 µs	
<b>Input Impedance</b>	3kΩ @ 24VDC	
<b>Input Current (typical)</b>	4mA @ 24VDC	
<b>Maximum Input Current</b>	8mA @ 30VDC	
<b>ON Voltage Level</b>	> 9.0 VDC	
<b>OFF Voltage Level</b>	< 2.0 VDC	
<b>Minimum ON Current</b>	3.0 mA (9V required to guarantee ON state)	
<b>Maximum OFF Current</b>	1.5 mA	
<b>Status Indicators</b>	Logic Side, Green	
<b>OFF to ON Response</b>	< 2µs	
<b>ON to OFF Response</b>	< 2µs	
<b>High Speed Output Specifications</b>		
<b>Type</b>	Sinking	Sourcing
<b>Total Output Points per Module</b>	8	
<b>Commons</b>	2 (4 points/common) Isolated	
<b>Maximum Current per Common</b>	2A	
<b>Nominal Voltage Range*</b>	12–24 VDC	
<b>Operating Voltage Range*</b>	5–36 VDC	
<b>Maximum Voltage</b>	36VDC	
<b>Minimum Output Current</b>	0.1 mA @ 24VDC	
<b>Maximum Load Current</b>	0.5 A per Output, No derating over temperature range	
<b>Maximum Inrush Current</b>	5A for 50ms	
<b>Maximum Leakage Current</b>	10µA	
<b>ON Voltage Drop</b>	0.5 VDC	
<b>Status Indicators</b>	Logic Side, Green	
<b>OFF to ON Response</b>	< 2µs	
<b>ON to OFF Response</b>	< 2µs	
<b>Maximum Switching Frequency</b>	250kHz (1m cable), 100kHz (10m cable)	
<b>Overcurrent, Short Circuit Protection and Short to Ground</b>	Protected by common group of 4 outputs. If tripped, Common terminal Red LED will be ON, others OFF. Self-Resetting.	
<b>Overcurrent Trip Level</b>	4A minimum, 8A maximum	
<b>Fuse Type</b>	User-supplied external fuse	
<b>General</b>		
<b>Backplane Power Consumption</b>	2.2 W	
<b>Heat Dissipation</b>	5.7 W	
<b>Weight</b>	85g [3oz]	
<b>Software Version Required</b>	Do-more! Designer v2.5 or later	

\* Class 2 or LPS Power Supply required.

**IMPORTANT!**



**Hot-Swapping Information**

Note: This device cannot be Hot Swapped.

# BX-HSIO1/BX-HSIO2 High Speed I/O, continued

High-speed Input Function													
	Functions Available	Inputs Required	User Selected Options										
			Reset Input	Capture	Inhibit	Rotary	Position Scaling <sup>1</sup>						
<i>Up Counter</i>	Up to 4	1	1 Input is used	1 Input is used	1 Input is used	N/A	(optional)						
<i>Down Counter</i>		1				(optional)							
<i>Quad Counter</i>		2											
<i>Bidirectional Counter</i>		2					(optional)						
<i>Up/Down Counter</i>		2											
<i>Edge Timer</i>		1					(optional)						
<i>Edge Timer (Duration)</i>		1											
<i>Dual Edge Timer</i>		2					N/A						
<i>Pulse Catch</i>		1	N/A	N/A	N/A								
<i>External Interrupt Triggers</i>													
<i>Event Trigger</i>	Up to 4	Available inputs	N/A										
<i>Timer Trigger</i>		N/A											
<i>Match Register</i>													
<i>Input Filters</i>	Able to filter all inputs												

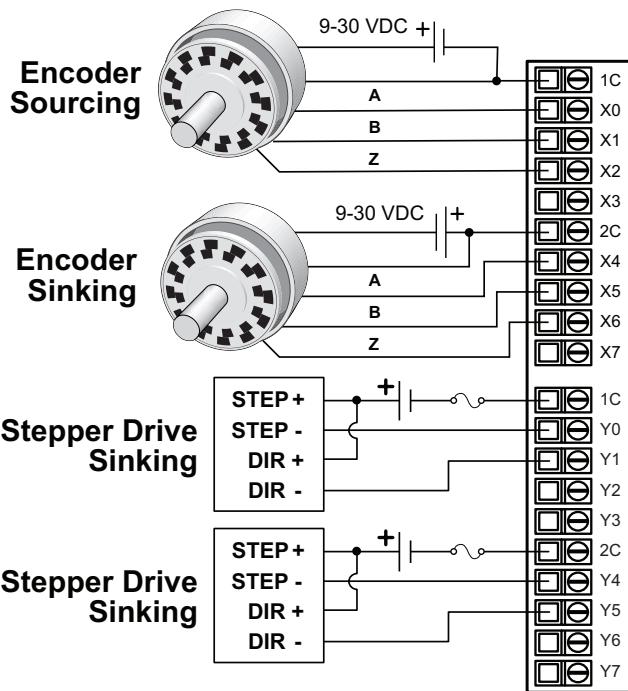
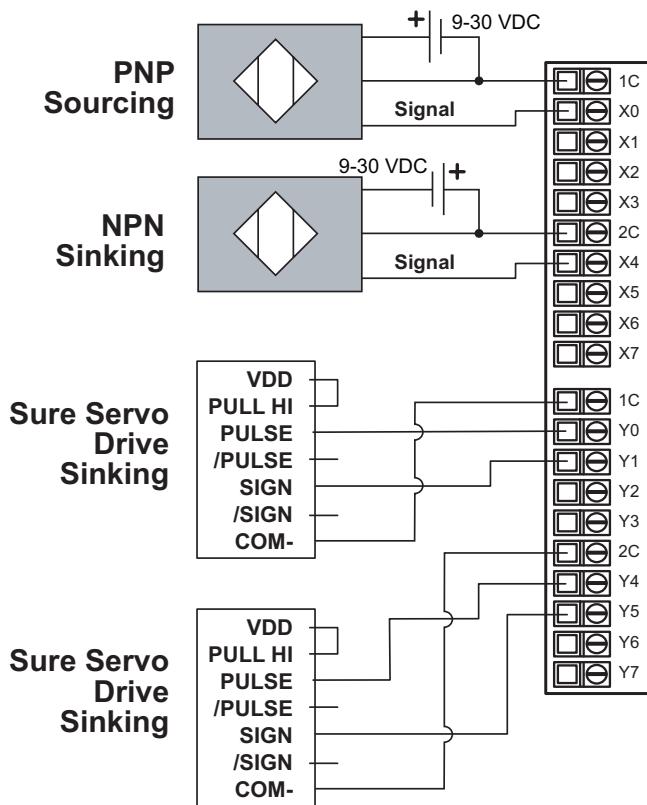
1. Only one scaling option can be used at any given time. If Position scaling is used, Rate scaling is not available (and vice versa).

Table Driven Outputs				
	Functions Available	Inputs Required	Outputs Required	Instructions
<i>Preset Table</i>	Up to 4	Reference to (one) Axis Position or (one) High-Speed Counter/Timer Accumulator	1	TDOPRESET
<i>Programmable Limit Switch</i>		Reference to (one) Axis Position or (one) High-Speed Counter/Timer Accumulator	1	TDOPLS

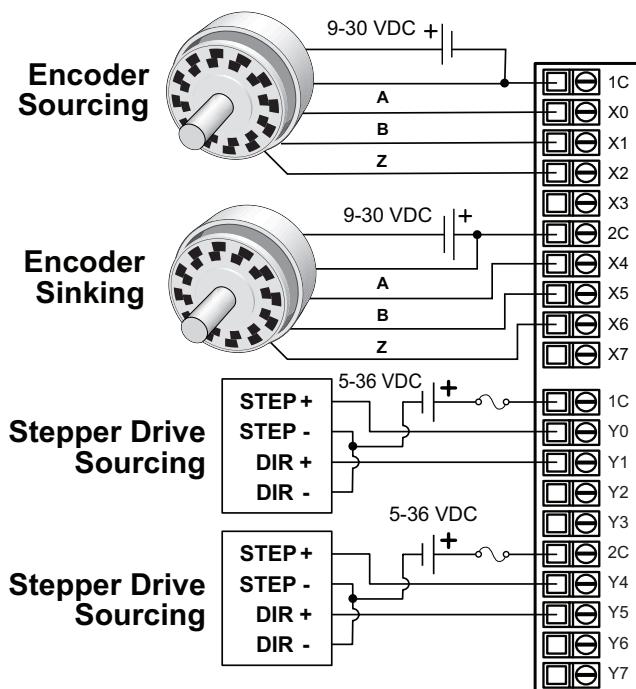
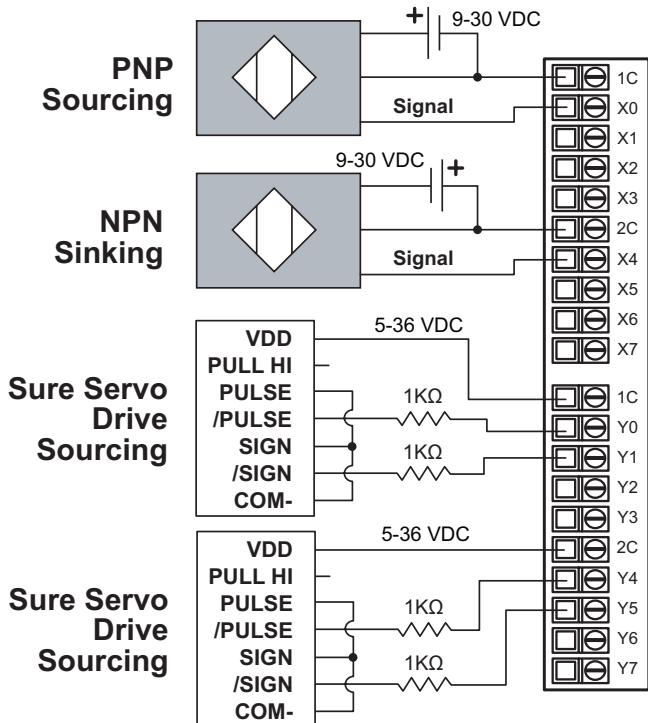
High-speed Output Function				
	Functions Available	Outputs Required	Profile/Instruction	
<i>Axis/Pulse Output</i>	Up to 4 (1 virtual and 3 axis)			
<i>Virtual Axis</i>	Up to 4	N/A	Trapezoid, Velocity, Electronic Camming, Electronic Gearing, Following, Homing	
<i>Step/Direction</i>	Up to 3	2		
<i>CW/CCW</i>				
<i>Quadrature</i>		1	N/A	
<i>Pulse Width Modulation (PWM)</i>	Up to 4			

# BX-HSIO1/BX-HSIO2 High Speed I/O, continued

## BX-HSIO1 High-Speed Input/Output Circuits

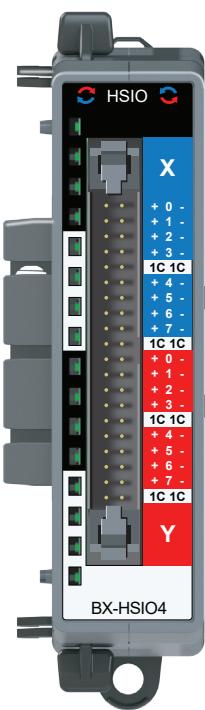


## BX-HSIO2 High-Speed Input/Output Circuits



Note: VDD = 24VDC – 1KΩ resistor is needed for servo to handle this voltage. The 1KΩ resistors are not needed if a 5VDC source is used.

# BX-HSIO4 High Speed Input/Output



**BX-HSIO4**  
**\$274.00**

8-pt Sinking/Sourcing Input,  
8-pt Sinking/Sourcing Output



**NOTE:** This device requires ZIPLink  
Wiring Systems



**NOTE:** Cannot be used in Remote  
I/O Bases.

High Speed Input/Output Specifications	
<i>High Speed Input Specifications</i>	
Type	High Speed TTL Differential or Single Ended
Total Input Points per Module	8
Commons	1
Nominal Voltage Range	5VDC
Input Voltage Range	-5.5 to 5.5 VDC
Maximum Voltage	5.5 VDC
DC Frequency	0-2 MHz
Minimum Pulse Width	125ns
Input Impedance	694Ω @ 5VDC
Input Current (typical)	±7mA @ 5VDC
Maximum Input Current	10mA @ 5.5 VDC
ON Voltage Level	> +2.5 VDC differential
OFF Voltage Level	< +1.0 VDC differential
Hysteresis	50mV typical
Status Indicators	Logic Side, Green
OFF to ON Response	<125ns
ON to OFF Response	<125ns
<i>High Speed Output Specifications</i>	
Type	High Speed TTL Differential
Total Output Points per Module	8
Commons	1
Maximum Current per Common	160mA
Power Supply	Internal +5VDC
Maximum Voltage	5.5 VDC
Minimum Output Current	1µA
Maximum Load Current	20mA per Output
Maximum Leakage Current	±20µA
Differential Output Voltage	>3.0 VDC
Status Indicators	Logic Side, Green
OFF to ON Response	<125ns
ON to OFF Response	<125ns
Maximum Switching Frequency	2MHz
Overcurrent, Short Circuit Protection and Short to Ground	Protected
Overcurrent Trip Level	150mA maximum
Fuse Type	User-supplied external fuse
<i>General</i>	
Backplane Power Consumption	2.6 W
Heat Dissipation	3.0 W
Weight	85g [3oz]
Software Version Required	Do-more! Designer v2.8 or later

\* Class 2 or LPS Power Supply required.

**IMPORTANT!**



**Hot-Swapping Information**

Note: This device cannot be Hot Swapped.

# BX-HSIO4 High Speed Input/Output, continued

## **ZIPLink Terminal Block Wiring Connections for BX-HSIO4**

Wiring Connections for ZL-RTB40 Terminal Block																				
MODULE	LABELS																		LEVEL	
<b>BX-HSIO4</b>	IN 0-	IN 1-	IN 2-	IN 3-	COM	IN 4-	IN 5-	IN 6-	IN 7-	COM	OUT 0-	OUT 1-	OUT 2-	OUT 3-	COM	OUT 4-	OUT 5-	OUT 6-	OUT 7-	COM
	IN 0+	IN 1+	IN 2+	IN 3+	COM	IN 4+	IN 5+	IN 6+	IN 7+	COM	OUT 0+	OUT 1+	OUT 2+	OUT 3+	COM	OUT 4+	OUT 5+	OUT 6+	OUT 7+	COM

TERMINAL BLOCK LABEL SHEET FOR ZIPLINK CABLE ZL-BX-CBL-40-xS

Wiring Connections for ZL-RTB40-1 Terminal Block																			
MODULE	LABELS																		LEVEL
<b>BX-HSIO4</b>	COM		COM		COM		COM		COM		COM		COM		COM		COM		UPPER
	IN 0-	IN 1-	IN 2-	IN 3-	IN 4-	IN 5-	IN 6-	IN 7-	OUT 0-	OUT 1-	OUT 2-	OUT 3-	OUT 4-	OUT 5-	OUT 6-	OUT 7-		MIDDLE	
	IN 0+	IN 1+	IN 2+	IN 3+	IN 4+	IN 5+	IN 6+	IN 7+	OUT 0+	OUT 1+	OUT 2+	OUT 3+	OUT 4+	OUT 5+	OUT 6+	OUT 7+		LOWER	

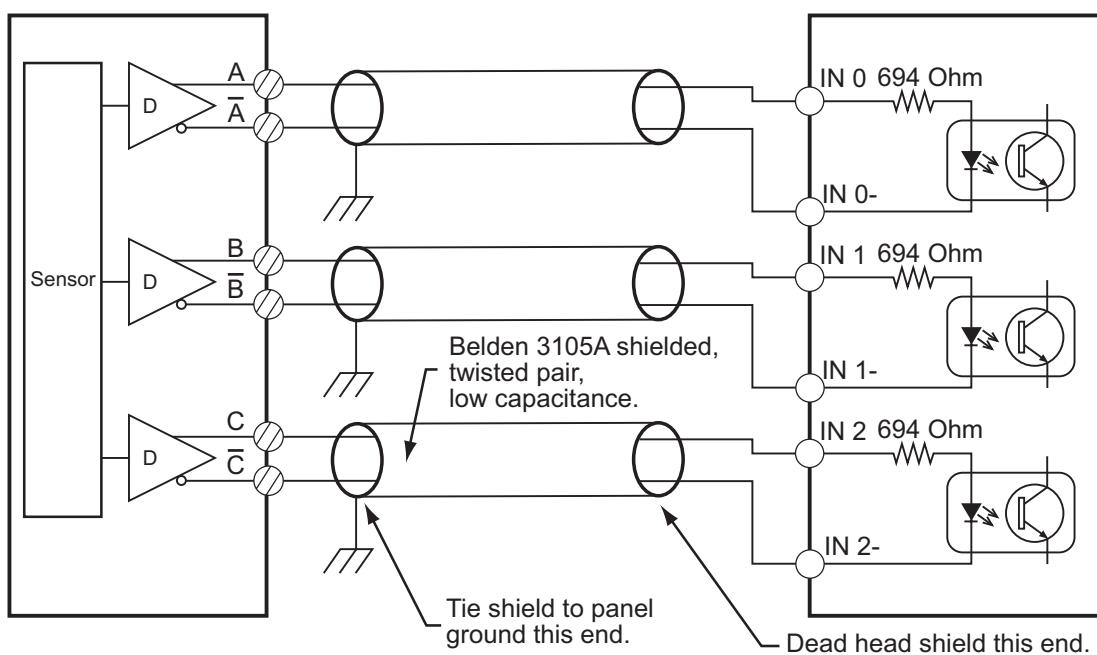
TERMINAL BLOCK LABEL SHEET FOR ZIPLINK CABLE ZL-BX-CBL-40-xS

## **Differential 5V Encoder Input to BX-HSIO4**

To prevent damage to 5V inputs,  
do not exceed 6.8V or 30 mA on inputs

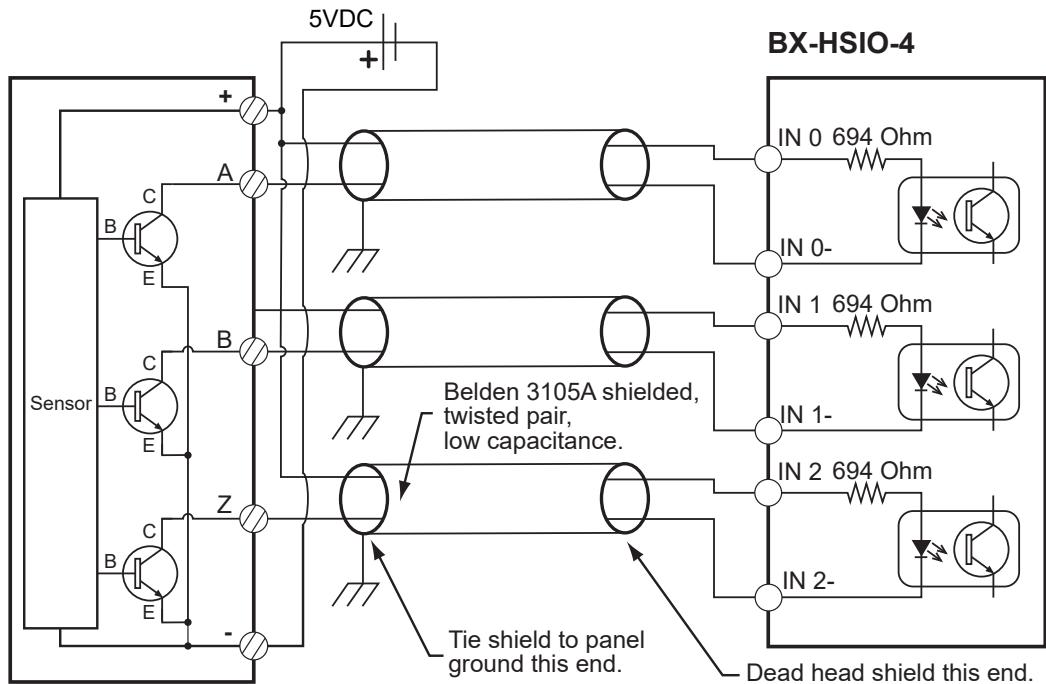
**Encoder with 5V  
Line Drivers**

**BX-HSIO-4**

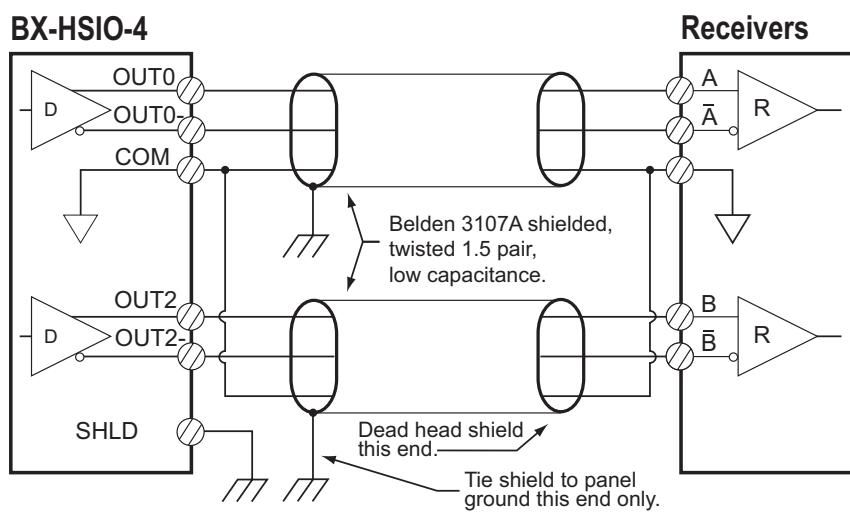


# BX-HSIO4 High Speed Input/Output, continued

## Single-Ended 5V Encoder Input to BX-HSIO4

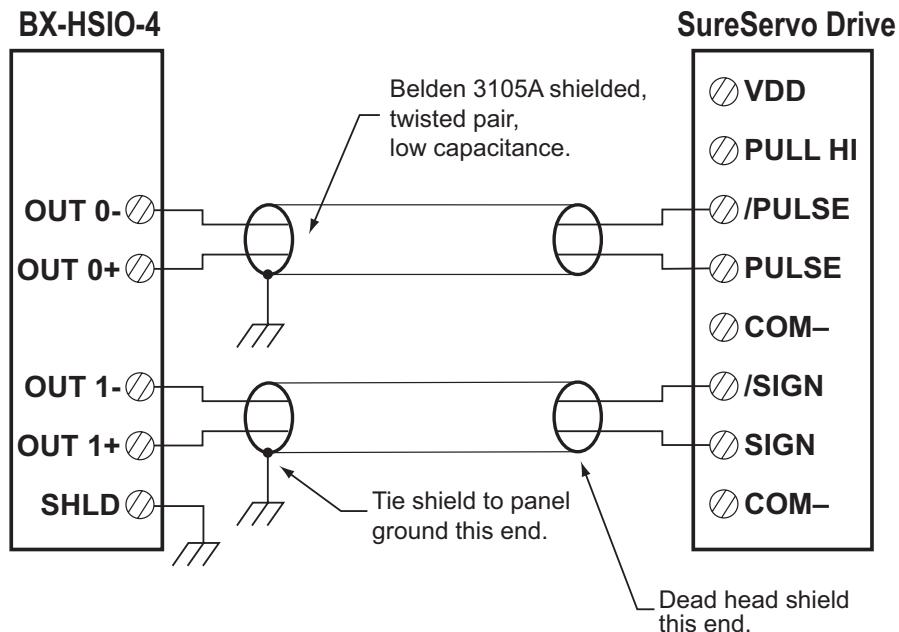


## Line Driver Pulse Output from BX-HSIO4

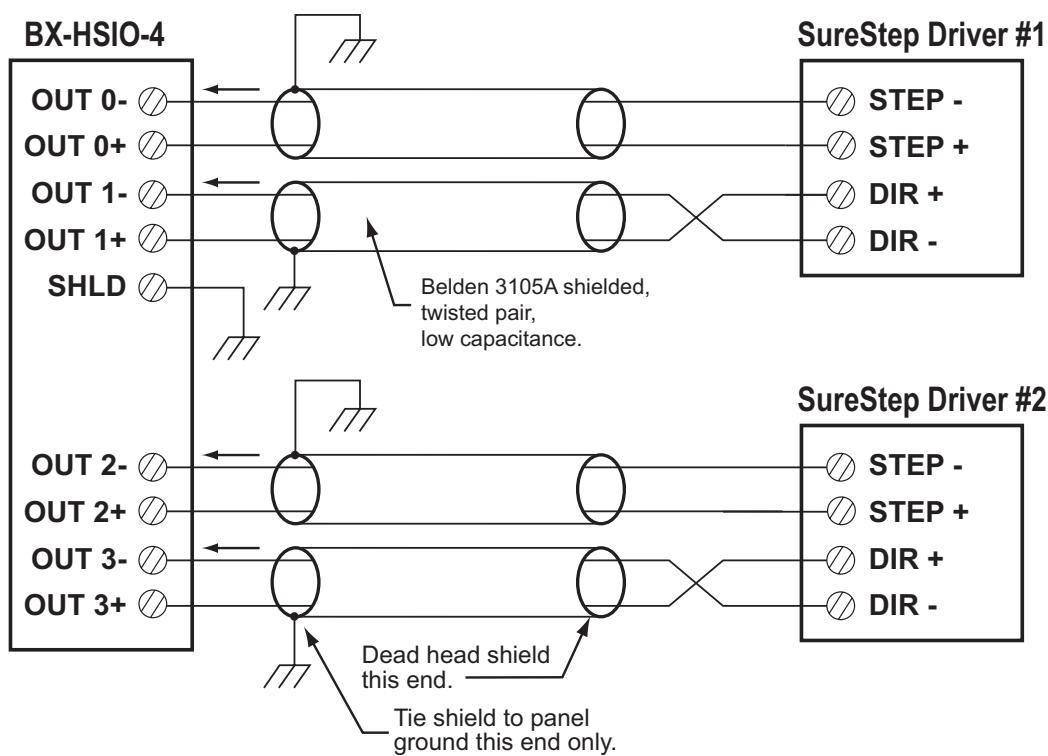


# BX-HSIO4 High Speed Input/Output, continued

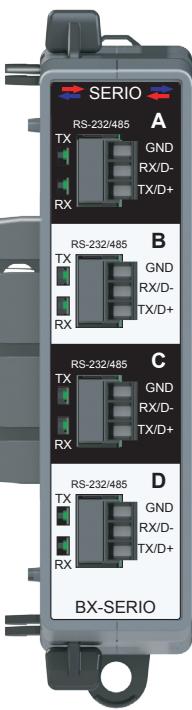
## BX-HSIO4 to SureServo



## BX-HSIO4 to SureStep



# BX-SERIO Serial Communications



**BX-SERIO**  
**\$219.00**

4 port, RS-232/RS-485

**Four (4) BX-RTB03S Terminal Blocks included.**



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



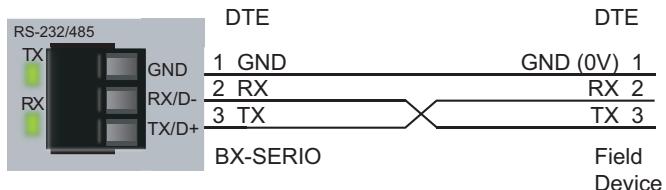
### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

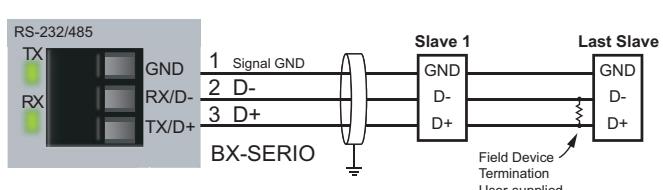
Serial Communications Specifications	
<b>Specification</b>	<b>BX-SERIO</b>
<b>Number of Ports</b>	Four RS-232/RS-485 serial ports
<b>Description</b>	Isolated serial port that can communicate via RS-232 or RS-485 (software selectable). Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more! Protocol (Slave)(Default) Modbus RTU (Master/Slave) K-Sequence (Slave) ASCII (In/Out) DMX512 (Master/Slave)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps
<b>Default Settings</b>	RS-232, 115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1, Termination resistor OFF
<b>Port Status LED</b>	Green LED illuminated when active (TX and RX)
<b>Port Type</b>	Removable 3-pin terminal strip 3.5 mm pitch
	<b>RS-232</b> <b>RS-485</b>
<b>Station Addresses</b>	N/A      1-247
<b>RX/D-</b>	Receive input (RX)      Transceiver low (D-)
<b>TX/D+</b>	Transmit output (TX)      Transceiver high (D+)
<b>GND</b>	Port Ground
<b>Input Impedance</b>	5kΩ      19kΩ
<b>Terminating Resistor</b>	N/A      120Ω, software selectable
<b>Maximum Load</b>	3kΩ, 1000pf      50 transceivers, 19kΩ each, 120Ω termination
<b>Output Short Circuit Protection</b>	±15mA      ±250mA, thermal shutdown protection
<b>Electrostatic Discharge Protection</b>	±1.5 kV per JESD22-C101      ±7kV per IEC 61000-4-2
<b>Electrical Fast Transient Protection</b>	±2kV per IEC 61000-4-4
<b>Min. Output Voltage</b>	±5V with 3kΩ load      Differential: 1.5 V with 60Ω load
<b>Fail Safe Inputs</b>	N/A      Logic high input state if inputs are unconnected
<b>Maximum Common Mode Voltage</b>	500 Vrms to Logic Ground
<b>Cable Requirements</b>	ADC# L19772-XXX      ADC# L19954-XXX
<b>Maximum Cable Distance</b>	30m [100ft]; 6m [20ft] rec'd max.      1000m [3280ft]
<b>Replacement Connector</b>	ADC Part # BX-RTB03S
<b>Backplane Power Consumption</b>	1.2 W
<b>Heat Dissipation</b>	1.2 W
<b>Weight</b>	85g [3oz]
<b>Software Version</b>	Do-more! Designer v2.5 or later

## BX-SERIO Field Wiring Diagrams

### RS-232



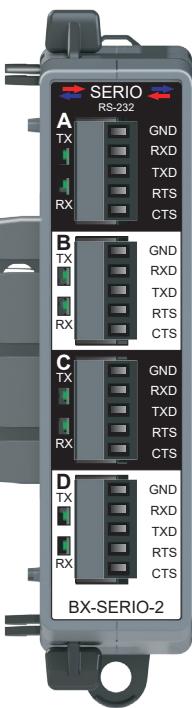
### RS-485\*



\*NOTE: Termination resistor is built-in and software selectable.

ADC # L19827-xxx or equivalent is recommended for RS-485 networks.

# BX-SERIO-2 Serial Communications



**BX-SERIO-2**  
**\$215.00**

4 port, RS-232 with Flow Control

**Four (4) BX-RTB05S Terminal Blocks included.**



**NOTE:** This device does not support ZIPLink Wiring Systems

Serial Communications Specifications	
<b>Specification</b>	<b>BX-SERIO-2</b>
<b>Number of Ports</b>	Four RS-232 Serial Ports
<b>Description</b>	Isolated serial port that can communicate via RS-232. Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more! Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps
<b>Default Settings</b>	RS-232, 115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
<b>Port Status LED</b>	Green LED illuminated when active (TXD and RXD)
<b>Port Type</b>	Removable 5-pin terminal strip 3.5 mm pitch
<b>RXD</b>	RS-232 Receive input
<b>TXD</b>	RS-232 Transmit output
<b>GND</b>	Logic Ground
<b>CTS</b>	RS-232 Clear to Send input
<b>RTS</b>	RS-232 Request to Send input
<b>Maximum Output Load (TXD/RTS)</b>	3kΩ, 1000pf
<b>Minimum Output Voltage Swing</b>	±5VDC
<b>Output Short Circuit Protection</b>	±15mA
<b>Cable Requirements</b>	ADC Part# L19853-XXX
<b>Maximum Cable Distance</b>	15m [50ft]; RS-232 has a 6m [20ft] recommended max.
<b>Replacement Connector</b>	ADC Part# BX-RTB05S
<b>Backplane Power Consumption</b>	2.0 W
<b>Heat Dissipation</b>	2.0 W
<b>Weight</b>	85g [3oz]
<b>Software Version</b>	Do-more! Designer v2.7 or later

## IMPORTANT!



### Hot-Swapping Information

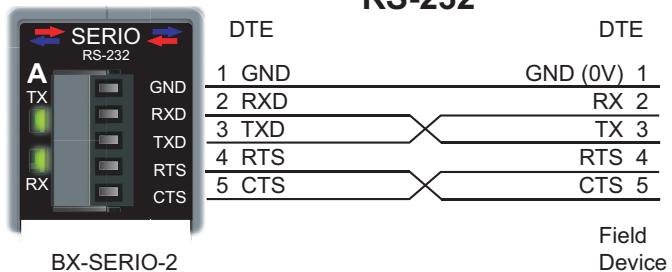
Note: This device cannot be Hot Swapped.



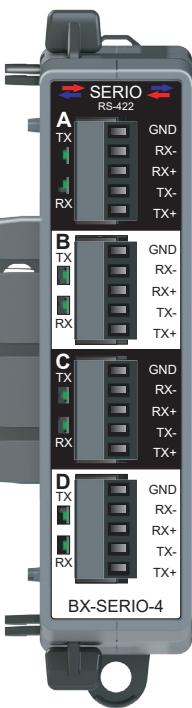
**NOTE:** Cannot be used in Remote I/O Bases.

## BX-SERIO-2 Field Wiring Diagram

### RS-232



# BX-SERIO-4 Serial Communications



**BX-SERIO-4**  
**\$199.00**

4 port, RS-422

Four (4) BX-RTB05S Terminal Blocks included.



**NOTE:** This device does not support ZIPLink Wiring Systems

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

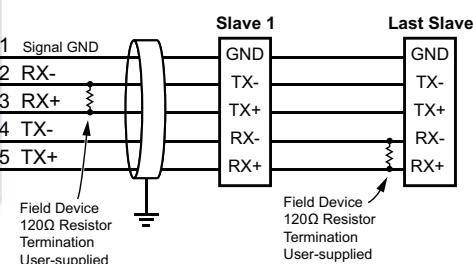
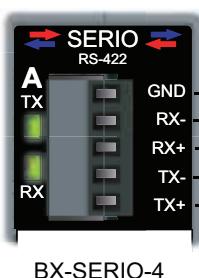


**NOTE:** Cannot be used in Remote I/O Bases.



**NOTE:** The BX-SERIO-4 supports point to point wiring only.  
Multi-Drop wiring is not supported.

## BX-SERIO-4 Field Wiring Diagram



## RS-422

# BX-APAD Active Filling



**BX-APAD**  
\$40.00

Active Filling

Active Filling Module Specifications	
<b>Description</b>	BRX active padding module, allows emulation of BRX modules in I/O configuration.
<b>Backplane Power Consumption</b>	0 W
<b>Heat Dissipation</b>	0 W
<b>Weight</b>	85g [3oz]
<b>Software Version</b>	Do-more! Designer v2.7 or later

This module emulates other BRX modules in the I/O configuration of a BRX system. It is configured in software to emulate the address space of a specific BRX module. The padding module can be used to reserve address space so that addressing in subsequent modules does not change if a module is removed. It also allows Intelligent module configurations and data structures to be emulated.



**NOTE:** Cannot be configured in Remote I/O Bases.

## IMPORTANT!



### Hot-Swapping Information

Note: This device cannot be Hot Swapped.

# BRX Wiring Termination Options

## Terminal Block Connectors

The terminal block connectors are provided in kits of multiple connectors that are ordered as a single part number. There are 2 different types of kits to choose from; one kit for the five (5), eight (8) and 12-point discrete, and one

kit for the analog modules and 16-point discrete modules. The five (5), eight (8) and 12-point discrete module kits each have (3) 5-pin 5mm connectors. The 8-point modules will use only 2 of the 5-pin connectors.

The five (5) and 12-point modules will use all three connectors. The analog and 16-point digital module kits include (2) 10-pin 3.81 mm connectors.

## Terminal Block Connectors, 5, 8 and 12-Point Discrete Modules

Terminal Block Kits for 5-point, 8-point and 12-point Expansion Modules



[BX-RTB08 \(Kit - 3 pieces\)](#)



[BX-RTB08-1 \(Kit - 3 pieces\)](#)



[BX-RTB08-2 \(Kit - 3 pieces\)](#)

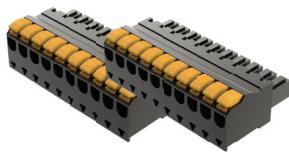
Terminal Block Specifications 5-, 8- & 12-Point Type			
Part Number Single Block Set of 3 Blocks	<u><a href="#">BX-RTB05</a></u> <u><a href="#">BX-RTB08</a></u>	<u><a href="#">BX-RTB05-1</a></u> <u><a href="#">BX-RTB08-1</a></u>	<u><a href="#">BX-RTB05-2</a></u> <u><a href="#">BX-RTB08-2</a></u>
<b>Price (Single Block)</b>	\$9.00	\$7.50	\$8.50
<b>Price (Kit)</b>	\$16.00	\$15.00	\$16.00
<b>Connector Type</b>	Screw Type - 90-degree	Spring Clamp Type - 180-degree	Screw Type - 180-degree
<b>Wire Exit</b>	180-degree	180-degree	180-degree
<b>Pitch</b>	5.0 mm	5.0 mm	5.0 mm
<b>Screw Size</b>	M2.5	N/A	M2.5
<b>Screw Torque Recommended</b>	< 3.98 lb·in [0.45 N·m]	N/A	< 3.98 lb·in [0.45 N·m]
<b>Screwdriver Blade Width</b>	3.5 mm	3.5 mm	3.5 mm
<b>Wire Gauge (Single Wire)</b>	28–12 AWG	28–14 AWG	28–12 AWG
<b>Wire Gauge (Dual Wire)</b>	28–16 AWG (Dual Wire Ferrule Required)	28–16 AWG (Dual Wire Ferrule Required)	28–16 AWG
<b>Wire Strip Length</b>	0.3 in [7.5 mm]	0.37 in [9.5 mm]	0.3 in [7.5 mm]
<b>Equiv. Dinkle P/N</b>	5ESDV-05P-BK	5ESDSR-05P-BK	5ESDF-05P-BK

## Terminal Block Connectors, Analog Modules and 16-Point Discrete Modules

Terminal Block Kits for Analog and 16-point Discrete Expansion Modules



[BX-RTB10 \(Kit - 2 pieces\)](#)



[BX-RTB10-1 \(Kit - 2 pieces\)](#)



[BX-RTB10-2 \(Kit - 2 pieces\)](#)

Terminal Block Specifications 16-Point Type			
Part Number	<u><a href="#">BX-RTB10</a></u>	<u><a href="#">BX-RTB10-1</a></u>	<u><a href="#">BX-RTB10-2</a></u>
<b>Price (Kit)</b>	\$22.50	\$25.00	\$23.50
<b>Connector Type</b>	Screw Type 90-degree	Spring Clamp Type 180-degree	Screw Type 180-degree
<b>Wire Exit</b>	180-degree	180-degree	180-degree
<b>Pitch</b>	3.81 mm	3.81 mm	3.81 mm
<b>Screw Size</b>	M2	N/A	M2
<b>Screw Torque Recommended</b>	<1.77 lb·in [0.2 N·m]	N/A	<1.77 lb·in [0.2 N·m]
<b>Screwdriver Blade Width</b>	2.5 mm	2.5 mm	2.5 mm
<b>Wire Gauge (Single Wire)</b>	28–16 AWG	26–18 AWG	30–16 AWG
<b>Wire Gauge (Dual Wire)</b>	28–18 AWG	30–20 AWG (Dual Wire Ferrule Required)	30–18 AWG
<b>Wire Strip Length</b>	0.24 in [6mm]	0.35 in [9mm]	0.26 in [6.5 mm]
<b>Equiv. Dinkle P/N</b>	EC381V-10P-BK	ESC381V-10-BK	EC381F-10P-BK



NOTE: [BX-RTB10](#) terminal blocks are included with Temperature Input modules.

# BRX Wiring Termination Options

## ZIPLink Wiring System

BRX expansion modules can be quickly connected to convenient ZIPLink remote terminal blocks for ease of wiring I/O devices. Your ZIPLink selection is dependent on the number of expansion module terminal points. The following tables list the connector options.



### 8-Point BRX Discrete Expansion Module ZIPLink Selector

Expansion Module Part No.	ZIPLink Module	ZIPLink Module Part No.	Qty Needed	ZIPLink Cable Part No.*	Qty Needed
<a href="#">BX-08ND3</a>	Feedthrough	<a href="#">ZL-RTB20</a> (Standard) OR <a href="#">ZL-RTB20-1</a> (Compact)	1	<a href="#">ZL-BXEM-CBL10</a> <a href="#">ZL-BXEM-CBL10-1</a> <a href="#">ZL-BXEM-CBL10-2</a>	1
<a href="#">BX-08NF3</a>					
<a href="#">BX-08NA</a>					
<a href="#">BX-08NB</a>					
<a href="#">BX-08TD1</a>					
<a href="#">BX-08TD2</a>					
<a href="#">BX-08TR**</a>					
<a href="#">BX-08TRZ**</a>					
<a href="#">BX-08TA</a>					
<a href="#">BX-08CD3R**</a>					

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

Available pigtail cables: [ZL-BXEM-CBL10-1P](#) = 1.0 m, [ZL-BXEM-CBL10-2P](#) = 2.0 m.

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

### 12 & 5-Point BRX Discrete Expansion Module ZIPLink Selector

Expansion Module Part No.	ZIPLink Module	ZIPLink Module Part No.	Qty Needed	ZIPLink Cable Part No.*	Qty Needed
<a href="#">BX-12ND3</a>	Feedthrough	<a href="#">ZL-RTB20</a> (Standard) OR <a href="#">ZL-RTB20-1</a> (Compact)	1	<a href="#">ZL-BXEM-CBL15</a> <a href="#">ZL-BXEM-CBL15-1</a> <a href="#">ZL-BXEM-CBL15-2</a>	1
<a href="#">BX-12NA</a>					
<a href="#">BX-12NB</a>					
<a href="#">BX-12TD1</a>					
<a href="#">BX-12TD2</a>					
<a href="#">BX-12TR**</a>					
<a href="#">BX-05TRS</a>					
<a href="#">BX-12TA</a>					
<a href="#">BX-12CD3D1</a>					
<a href="#">BX-12CD3D2</a>					

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

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

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

# BRX Wiring Termination Options

16-Point BRX Discrete Expansion Module ZIPLink Selector						
Expansion Module Part No.	ZIPLink Module	ZIPLink Module Part No.	Qty Needed	ZIPLink Cable Part No.*	Qty Needed	
<u>BX-16ND3</u>	Sensor	<u>ZL-LTB16-24-1</u>	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
	Feedthrough	<u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact)	1			
<u>BX-16NF3</u>	Feedthrough			<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16NA</u>	Feedthrough	<u>ZL-RRL16-24-1</u> , <u>ZL-RRL16W-24-1</u> , <u>ZL-RRL16F-24-1</u> ,	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16NB</u>	Feedthrough	<u>ZL-RRL16-24-2</u> , <u>ZL-RRL16W-24-2</u> , <u>ZL-RRL16F-24-2</u> ,	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16TD1</u>	Relay (Sourcing)	<u>ZL-RRL16-24-1</u> , <u>ZL-RRL16W-24-1</u> , <u>ZL-RRL16F-24-1</u> ,	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16TD2</u>	Relay (Sinking)	<u>ZL-RRL16-24-2</u> , <u>ZL-RRL16W-24-2</u> , <u>ZL-RRL16F-24-2</u> ,	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16TF2</u>	Feedthrough	<u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact)	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16TR**</u>	Feedthrough	<u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact)	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16TRZ**</u>						
<u>BX-16CD3D1</u>	Feedthrough	<u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact)	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	
<u>BX-16CD3D2</u>						
<u>BX-16CF3F2</u>	Feedthrough	<u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact)	1	<u>ZL-BXEM-CBL20</u> <u>ZL-BXEM-CBL20-1</u> <u>ZL-BXEM-CBL20-2</u>	1	

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

Available pigtail cables: ZL-BXEM-CBL20-1P = 1.0 m, ZL-BXEM-CBL20-2P = 2.0 m.

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

32-Point BRX Discrete Expansion Module ZIPLink Selector											
Expansion Module Part No.	ZIPLink Module	ZIPLink Module Part No.	Qty Needed	ZIPLink Cable Part No.*	Qty Needed						
<u>BX-32ND3</u>	Sensor	<u>ZL-LTB32-24-1</u>	1	<u>ZL-D24-CBL40</u> <u>ZL-D24-CBL40-1</u> <u>ZL-D24-CBL40-2</u>	1						
	Feedthrough	<u>ZL-RTB40</u> (Standard) OR <u>ZL-RTB40-1</u> (Compact)	1								
<u>BX-32TD1</u>	Feedthrough										
<u>BX-32TD2</u>	Feedthrough	<u>ZL-RTB40</u> (Standard) OR <u>ZL-RTB40-1</u> (Compact)	1	<u>ZL-D24-CBL40</u> <u>ZL-D24-CBL40-1</u> <u>ZL-D24-CBL40-2</u>	1						

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

Available pigtail cables: ZL-D24-CBL40-1P = 1.0 m, ZL-D24-CBL40-2P = 2.0 m.

Suffix -X indicates 45° cable connector angle. Non -X indicates 180° cable connector angle.

16-Point BRX High Speed Expansion Module ZIPLink Selector					
Expansion Module Part No.	ZIPLink Module	ZIPLink Module Part No.	Qty Needed	ZIPLink Cable Part No.*	Qty Needed
<u>BX-HS1O4</u>	Feedthrough	<u>ZL-RTB40</u> (Standard) OR <u>ZL-RTB40-1</u> (Compact)	1	<u>ZL-BX-CBL40-S</u> <u>ZL-BX-CBL40-1S</u>	1

# BRX Wiring Termination Options

BRX Analog and Temperature Expansion Module ZIPLink Selector					
Expansion Module Part No.	ZIPLink Module	ZIPLink Module Part No.	Qty Needed	ZIPLink Cable Part No. <sup>1</sup>	Qty Needed
<a href="#">BX-04ADM-1</a>	Feedthrough	<a href="#">ZL-RTB20</a> (Standard) OR <a href="#">ZL-RTB20-1</a> (Compact)	1	<a href="#">ZL-BXEM-CBL20</a> <a href="#">ZL-BXEM-CBL20-1</a> <a href="#">ZL-BXEM-CBL20-2</a>	1
<a href="#">BX-04AD-1</a>					
<a href="#">BX-08AD-1</a>					
<a href="#">BX-16AD-1</a>					
<a href="#">BX-04AD-2B</a>					
<a href="#">BX-08AD-2B</a>					
<a href="#">BX-16AD-2B</a>					
<a href="#">BX-04DA-1</a>					
<a href="#">BX-08DA-1</a>					
<a href="#">BX-04DA-2B</a>					
<a href="#">BX-08DA-2B</a>					
<a href="#">BX-2AD2DA-1</a>					
<a href="#">BX-4AD2DA-1</a>					
<a href="#">BX-2AD2DA-2B</a>					
<a href="#">BX-4AD2DA-2B</a>					
<a href="#">BX-08AD-3</a>					
<a href="#">BX-08DA-3</a>					
<a href="#">BX-2AD2DA-3</a>					
<a href="#">BX-4AD4DA-3</a>					
<a href="#">BX-04THM</a>	Temperature Input modules are not supported by the ZIPLink wiring system.				
<a href="#">BX-08THM</a>					
<a href="#">BX-06RTD</a>					
<a href="#">BX-08NTC</a>					
<a href="#">BX-04UT</a>					
<a href="#">BX-08UT</a>					
<a href="#">BX-4THM4DA-1</a>					
<a href="#">BX-4RTD4DA-1</a>					
<a href="#">BX-4UT4DA-3</a>					
<a href="#">BX-4UT4TD1</a>					
<a href="#">BX-4UT4TD2</a>					
<a href="#">BX-4UT4TR</a>					

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

Available pigtail cables: [ZL-BXEM-CBL20-1P](#) = 1.0 m, [ZL-BXEM-CBL20-2P](#) = 2.0 m.

# 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).



BRX Programmable Option Modules		
Expansion Module Part No.	Price	Description
<a href="#">BX-P-SER2-TERM</a>	\$80.00	Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection.
<a href="#">BX-P-SER2-TERMFC</a>	\$83.00	Non-isolated Serial port for communication via RS-232, with flow control. Includes ESD protection and built-in surge protection.
<a href="#">BX-P-SER4-TERM</a>	\$81.00	Non-isolated Serial port for communication via RS-485. Includes ESD protection and built-in surge protection.
<a href="#">BX-P-SER422-TERM</a>	\$83.00	Non-isolated Serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection.
<a href="#">BX-P-SER2-RJ12</a>	\$80.00	Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection.
<a href="#">BX-P-ECOMLT</a>	\$105.00	Standard transformer isolated Ethernet port (1 Mbps throughput max) with built-in surge protection.
<a href="#">BX-P-ECOMEX</a>	\$126.00	General-purpose standard transformer isolated Ethernet port (10/100 Mbps) with built-in surge protection.
<a href="#">BX-P-USB-B</a>	\$48.50	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 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.

	<a href="#">BX-P-SER2-TERM</a>	<a href="#">BX-P-SER2-TERMFC</a>	<a href="#">BX-P-SER4-TERM</a>	<a href="#">BX-P-SER422-TERM</a>	<a href="#">BX-P-SER2-RJ12</a>	<a href="#">BX-P-ECOMLT</a> *	<a href="#">BX-P-ECOMEX</a>	<a href="#">BX-P-USB-B</a>
<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	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	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

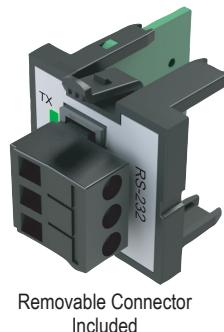
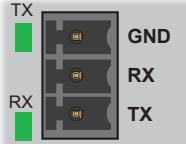
# BRX Pluggable Option Modules (POM)

## BX-P-SER2-TERM

**\$80.00**

The RS-232 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices,

Pinout	RS232
1	GND
2	RX
3	TX



Removable Connector  
Included

### BX-P-SER2-TERM Specifications

<b>Description</b>	Non-isolated Serial port that can communicate via RS-232. Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
<b>Default Settings</b>	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
<b>Port Status LED</b>	Green LED is illuminated when active for TXD and RXD
<b>Port Type</b>	Removable 3-pin terminal strip 3.5 mm pitch
<b>RS-232 TX</b>	RS-232 Transmit output
<b>RS-232 RX</b>	RS-232 Receive input
<b>RS-232 GND</b>	Logic ground
<b>RS-232 Maximum Output Load (TXD/RTS)</b>	3kΩ, 1000pf
<b>RS-232 Minimum Output Voltage Swing</b>	±5V
<b>RS-232 Output Short Circuit Protection</b>	±15mA
<b>Cable Requirements</b>	RS-232 use P/N L19772-XXX from automationdirect.com
<b>Maximum Distance</b>	30 meters [100 feet]; 6 meters [20 feet] recommended maximum
<b>Replacement Connector</b>	ADC Part # BX-RTB03S
<b>Hot Swappable</b>	Yes

## BX-RTB03S

**\$5.75**

Replacement removable connector.



**BX-RTB03S**

### BX-RTB03S Connector Specifications

Part Number	BX-RTB03S
Connector Type	Screw type
Wire Exit	90-degree
Pitch	3.5 mm
Screw Size	M2
Recommended Screw Torque	<1.77 lb·in [0.2 N·m]
Screwdriver Blade Width	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG
Wire Gauge (Two Wires)	28–16 AWG
Wire Strip Length	0.24 in [6mm]
Equiv. Dinkle part #	EC350V-03P-BK

# BRX Pluggable Option Modules (POM)

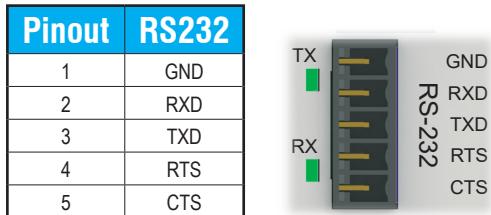
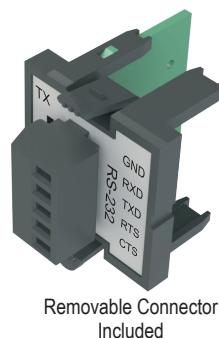
## BX-P-SER2-TERMFC

The RS-232 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices,

**\$83.00**

DirectLogic PLCs via K-Sequence protocol, as well as devices that send or receive non-sequenced ASCII strings or characters.

Pinout	RS232
1	GND
2	RXD
3	TXD
4	RTS
5	CTS

### BX-P-SER2-TERMFC Specifications

<b>Description</b>	Non-isolated Serial port that can communicate via RS-232. Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
<b>Default Settings</b>	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
<b>Port Status LED</b>	Green LED is illuminated when active for TXD and RXD
<b>Port Type</b>	Removable 5-pin terminal strip 3.5 mm pitch
<b>RS-232 TX</b>	RS-232 Transmit output
<b>RS-232 RX</b>	RS-232 Receive input
<b>RS-232 GND</b>	Logic ground
<b>RS-232 CTS</b>	RS-232 Clear to Send input
<b>RS-232 RTS</b>	RS-232 Request to Send input
<b>RS-232 Maximum Output Load (TXD/RTS)</b>	3kΩ, 1000pf
<b>RS-232 Minimum Output Voltage Swing</b>	±5V
<b>RS-232 Output Short Circuit Protection</b>	±15mA
<b>Cable Requirements</b>	RS-232 use P/N L19853-XXX from automationdirect.com
<b>Maximum Distance</b>	6 meters [20 foot] recommended maximum
<b>Replacement Connector</b>	ADC Part # <a href="#">BX-RTB05S</a>
<b>Hot Swappable</b>	Yes
<b>Software Version Required</b>	Do-more! Designer version 2.7 or later

## BX-RTB05S

**\$4.75**

Replacement removable connector.



### BX-RTB05S Connector Specifications

<b>Part Number</b>	BX-RTB05S
<b>Connector Type</b>	Screw type
<b>Wire Exit</b>	180-degree
<b>Pitch</b>	3.5 mm
<b>Screw Size</b>	M2
<b>Recommended Screw Torque</b>	<1.77 lb·in [0.2 N·m]
<b>Screwdriver Blade Width</b>	2.5 mm
<b>Wire Gauge (Single Wire)</b>	28–16 AWG
<b>Wire Gauge (Two Wires)</b>	28–16 AWG
<b>Wire Strip Length</b>	0.24 in [6mm]
<b>Equiv. Dinkle part #</b>	EC350V-05P-BK

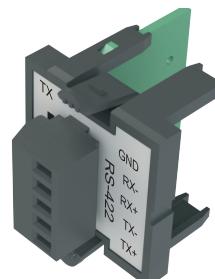
# BRX Pluggable Option Modules (POM)

## BX-P-SER422-TERM

The RS-422 POM can be connected to the Do-more! Designer programming software, Modbus RTU master devices, DirectLogic

**\$83.00**

PLCs via K-Sequence protocol, as well as devices that send or receive non-sequenced ASCII strings or characters.



Removable Connector  
Included

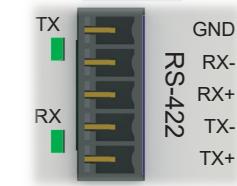
### BX-P-SER422-TERM Specifications

<b>Description</b>	Non-isolated Serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
<b>Default Settings</b>	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
<b>Port Status LED</b>	Green LED is illuminated when active for TXD and RXD
<b>Port Type</b>	Removable 5-pin terminal strip 3.5 mm pitch
<b>Station Addresses</b>	1–247
<b>TX-/RX-</b>	RS-422 Transceiver low
<b>TX+/RX+</b>	RS-422 Transceiver high
<b>GND</b>	Logic ground
<b>Input Impedance</b>	96kΩ
<b>Maximum Load</b>	50 transceivers, 19kΩ each, 120Ω termination
<b>Output Short Circuit Protection</b>	±250mA, thermal shutdown protection
<b>Minimum Differential Output Voltage</b>	2.0 VDC with 54Ω load
<b>Maximum Common Mode Voltage</b>	-7.5 to 12.5 VDC
<b>Fail Safe Inputs</b>	Logic high input state if inputs are unconnected
<b>Electrostatic Discharge Protection</b>	±15kV human body, ±6kV contact discharge per IEC61000-4-2
<b>Cable Requirements</b>	RS-422 use P/N L19853-XXX from automationdirect.com
<b>Maximum Distance</b>	1000 meters [3280 feet] recommended maximum
<b>Replacement Connector</b>	ADC Part # <u><a href="#">BX-RTB05S</a></u>
<b>Hot Swappable</b>	Yes
<b>Software Version Required</b>	Do-more! Designer version 2.7 or later

## BX-RTB05S

**\$4.75**

Replacement removable connector.



Pinout	RS422
1	GND
2	RX-
3	RX+
4	TX-
5	TX+

BX-RTB05S Connector Specifications	
<b>Part Number</b>	BX-RTB05S
<b>Connector Type</b>	Screw type
<b>Wire Exit</b>	180-degree
<b>Pitch</b>	3.5 mm
<b>Screw Size</b>	M2
<b>Recommended Screw Torque</b>	<1.77 lb·in [0.2 N·m]
<b>Screwdriver Blade Width</b>	2.5 mm
<b>Wire Gauge (Single Wire)</b>	28–16 AWG
<b>Wire Gauge (Two Wires)</b>	28–16 AWG
<b>Wire Strip Length</b>	0.24 in [6mm]
<b>Equiv. Dinkle part #</b>	EC350V-05P-BK

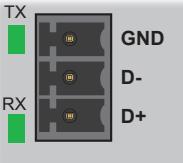
# BRX Pluggable Option Modules (POM)

## BX-P-SER4-TERM

**\$81.00**

The RS-485 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices, DirectLogic PLCs via K-Sequence protocol,

Pinout	RS485
1	GND
2	D-
3	D+




Removable Connector  
Included

### BX-P-SER4-TERM Specifications

<b>Description</b>	Non-isolated Serial port that can communicate via RS-485. Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (in & Out)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 baud
<b>Default Settings</b>	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1, Termination resistor OFF
<b>Port Status LED</b>	Green LED is illuminated when active for TXD and RXD
<b>Port Type</b>	Removable 3-pin terminal strip 3.5 mm pitch
<b>RS-485 Station Addresses</b>	1–247
<b>RS-485 D+</b>	RS-485 transceiver high
<b>RS-485 D-</b>	RS-485 transceiver low
<b>RS-485 GND</b>	Logic ground
<b>RS-485 Input Impedance</b>	19kΩ
<b>RS-485 Maximum Load</b>	50 transceivers, 19kΩ each, 120Ω termination
<b>RS-485 Output Short Circuit Protection</b>	±250mA, thermal shut-down protection
<b>RS-485 Electrostatic Discharge Protection</b>	±8kV per IEC1000-4-2
<b>RS-485 Electrical Fast Transient Protection</b>	±2kV per IEC1000-4-4
<b>RS-485 Minimum Differential Output Voltage</b>	1.5 V with 60Ω load
<b>RS-485 Fail Safe Inputs</b>	Logic high input state if inputs are unconnected
<b>RS-485 Maximum Common Mode Voltage</b>	-7.5 V to 12.5 V
<b>Cable Requirements</b>	RS-232 use P/N L19772-XXX from automationdirect.com
<b>Maximum Distance</b>	30 meters [100 feet]; 6 meters [20 foot] recommended maximum
<b>Replacement Connector</b>	ADC Part # <a href="#">BX-RTB03S</a>
<b>Hot Swappable</b>	Yes

## BX-RTB03S

**\$5.75**

Replacement removable connector.



[BX-RTB03S](#)

### BX-RTB03S Connector Specifications

<b>Part Number</b>	<a href="#">BX-RTB03S</a>
<b>Connector Type</b>	Screw type
<b>Wire Exit</b>	90-degree
<b>Pitch</b>	3.5 mm
<b>Screw Size</b>	M2
<b>Recommended Screw Torque</b>	<1.77 lb-in [0.2 N·m]
<b>Screwdriver Blade Width</b>	2.5 mm
<b>Wire Gauge (Single Wire)</b>	28–16 AWG
<b>Wire Gauge (Two Wires)</b>	28–16 AWG
<b>Wire Strip Length</b>	0.24 in [6mm]
<b>Equiv. Dinkle part #</b>	EC350V-03P-BK

# BRX Pluggable Option Modules (POM)

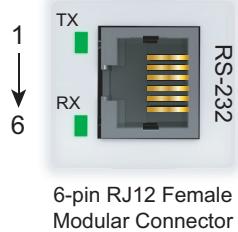
## BX-P-SER2-RJ12

**\$80.00**

The RS-232 RJ12 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices, DirectLogic PLCs via K-Sequence

protocol, as well as devices that send or receive non-sequenced ASCII strings or characters.

Pin #	Signal
1	0V Power (-) connection (GND)
2	5V Power (+) connection (220mA max)
3	RXD Receive Data (RS-232)
4	TXD Transmit Data (RS-232)
5	RTS Request to Send (RS-232)
6	CTS Clear to Send (RS-232)



## BX-P-SER2-RJ12 Specifications

<b>Description</b>	Non-isolated Serial port that can communicate via RS-232 Includes ESD protection and built-in surge protection.
<b>Supported Protocols</b>	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
<b>Default Settings</b>	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
<b>Port Status LED</b>	Green LED is illuminated when active for TXD and RXD
<b>Port Type</b>	RJ12 - 6P6C
<b>RS-232 Maximum Output Load (TXD/RTS)</b>	3kΩ, 1000pf
<b>RS-232 Minimum Output Voltage Swing</b>	±5V
<b>RS-232 Output Short Circuit Protection</b>	±15mA
<b>Cable Requirements</b>	RS-232 use P/N L19772-XXX from automationdirect.com
<b>Maximum Distance</b>	30 meters [100 feet]; 6 meters [20 foot] recommended maximum
<b>Replacement Connector</b>	N/A
<b>Hot Swappable</b>	Yes

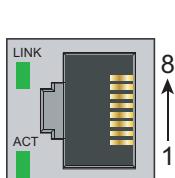
# BRX Pluggable Option Modules (POM)

## BX-P-ECOMLT

**\$105.00**

The Ethernet LT POM can be connected to the Do-more! Designer programming software or HMIs that support the Do-more!, Modbus, or K-sequence protocol. This POM functions only as a server device.

Pin #	Signal
1	TXD+ Transmit Data
2	TXD- Transmit Data
3	RXD+ Receive Data
4	N/C
5	N/C
6	RXD- Receive Data
7	N/C
8	N/C



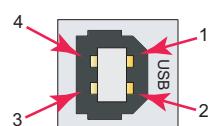
## BX-P-ECOMLT Specifications

<b>Description</b>	Standard transformer isolated Ethernet port with built-in surge protection.
<b>Transfer Rate</b>	1 Mbps throughput max
<b>Port Status LED</b>	LINK LED is solid when network is established. ACT LED flashes when port is active.
<b>Supported Protocols</b>	Do-more! Protocol (Server) Modbus TCP (Server) K-sequence (Server) Programming/Monitoring
<b>Cable Recommendation</b>	C5E-STxxx-xx from AutomationDirect.com
<b>Port Type</b>	RJ45, Category 5, Auto Crossover
<b>Ethernet Port Numbers:</b>	
<i>Do-more! Protocol</i>	28784, UDP
<i>Modbus</i>	502, TCP
<i>K-sequence</i>	28784, UDP
<i>Programming/Monitoring</i>	28784, UDP
<b>Hot Swappable</b>	Yes

## BX-P-USB-B      **\$48.50**

The USB POM can only be connected to the Do-more! Designer programming software.

Pin #	Signal
1	+5
2	-Data
3	+Data
4	GND



Mating face of USB type B female



## BX-P-USB-B Specifications

<b>Description</b>	USB Type B Port for programming.
<b>USB Specification Version</b>	USB 2.0
<b>Port Status LED</b>	LED flashes when port is active
<b>Cable Recommendation</b>	USB-CBL-ABxx from AutomationDirect.com
<b>Hot Swappable</b>	Yes

# BRX Pluggable Option Modules (POM)

**BX-P-ECOMEX**

**\$126.00**

The Ethernet EX POM provides a general-purpose Ethernet interface that can be connected to devices using a wide range of protocols.



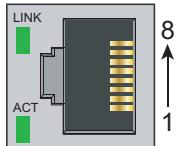
**NOTE:** This POM device must be used with a DM1E CPU and reside on a different subnet than the built-in Ethernet port.



## BX-P-ECOMEX Specifications

<b>Description</b>	Standard transformer isolated Ethernet port with built-in surge protection.		
<b>Transfer Rate</b>	10/100 Mbps		
<b>Port Status LED</b>	LINK LED is solid when network is established. ACT LED flashes when port is active.		
<b>Supported Protocols</b>	SMTP( Email) FTP (Client) Do-more! Ethernet I/O MQTT / MQTTS HTTP / HTTPS EtherNet/IP: Explicit Messaging (Scanner, Adapter) Implicit Messaging (Scanner, Adapter) SNTP (Time Server) TCP/IP (Raw Packet) Modbus TCP/IP (Client & Server) DHCP		
<b>Cable Recommendation</b>	C5E-STxxx-xx from AutomationDirect.com		
<b>Port Type</b>	RJ45, Category 5, Auto Crossover		
<b>Ethernet Port Numbers:</b>	Peerlink Do-more! Protocol (Client, Server) Modbus TCP (Client, Server) HOST Ethernet Protocol (Client, Server) EtherNet/IP: Explicit Messaging (Scanner, Adapter) Implicit Messaging (Scanner, Adapter) SMTP (Email) Ethernet Remote I/O HTTP, HTTPS Embedded Web Server: HTTP (Unsecure) MQTT, MQTTS SNTP (Time Server) TCP Raw Packet UDP Raw Packet FTP (Client)	28784 28784 502 28784 44818 44818 25 28784 80, 443 80 1883, 8883 123 User defined User defined 20, 21	UDP UDP TCP UDP TCP TCP TCP UDP TCP TCP TCP TCP TCP TCP TCP TCP
<b>Hot Swappable</b>	Yes		
<b>Software Version Required</b>	Do-more! Designer version 2.8 or later (version 2.10 or later required for EtherNet/IP Implicit Messaging)		

Pin #	Signal
1	TXD+ Transmit Data
2	TXD- Transmit Data
3	RXD+ Receive Data
4	N/C
5	N/C
6	RXD- Receive Data
7	N/C
8	N/C



# BRX Remote I/O Controllers

**Remote I/O expansion, up to 8 I/O expansion modules per controller**

## Features

- All units have built-in Ethernet port, 10/100 Mbps
- MBIO units have onboard RS-485 port with removable 3-Pin connector
- Support for 8 expansion modules
- AC and DC powered units available
- AC powered units include an integral 24VDC auxiliary output power supply
- Power connector and serial port connector included

**BX-DMIO-M****BX-EBC100-M****BX-MBIO-M**

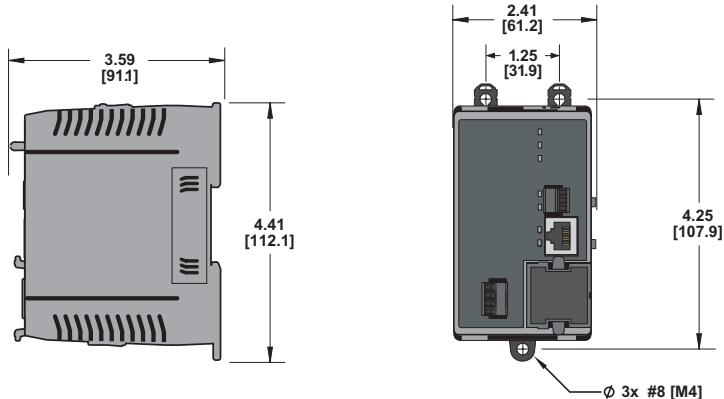
BRX Remote I/O Controllers					
Part Number	Price	External Power	Supported Protocols	Can Be Used With	Expansion Modules
<a href="#"><u>BX-DMIO-M</u></a>	\$232.00	120–240 VAC	Do-more! Ethernet Remote I/O Embedded Web Server: HTTP (Unsecure)	BX-DM1E MPUs H2-DM1E CPUs T1H-DM1E CPUs	8
<a href="#"><u>BX-DMIO-M-D</u></a>	\$205.00	12–24 VDC		BX-DM1E MPUs H2-DM1E CPUs T1H-DM1E CPUs	
<a href="#"><u>BX-EBC100-M</u></a>	\$341.00	120–240 VAC	Do-more! Ethernet Remote I/O Host Ethernet Remote I/O Modbus TCP Embedded Web Server: HTTP (Unsecure)	BX-DM1E MPUs H2-DM1E CPUs T1H-DM1E CPUs H2-ERM100s H4-ERM100s	8
<a href="#"><u>BX-EBC100-M-D</u></a>	\$318.00	12–24 VDC		BX-DM1E MPUs H2-DM1E CPUs T1H-DM1E CPUs H2-ERM100s H4-ERM100s	
<a href="#"><u>BX-MBIO-M</u></a>	\$324.00	120–240 VAC	Modbus RTU Modbus TCP Embedded Web Server: HTTP (Unsecure)	Modbus RTU Master Modbus TCP Client	8
<a href="#"><u>BX-MBIO-M-D</u></a>	\$300.00	12–24 VDC		Modbus RTU Master Modbus TCP Client	



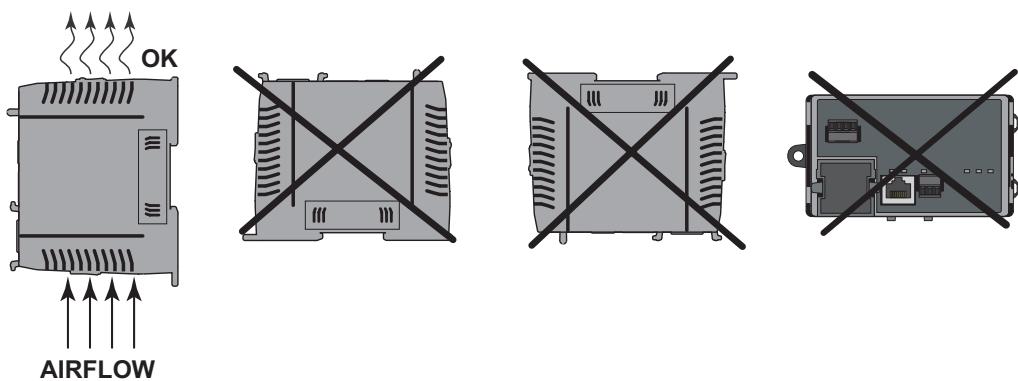
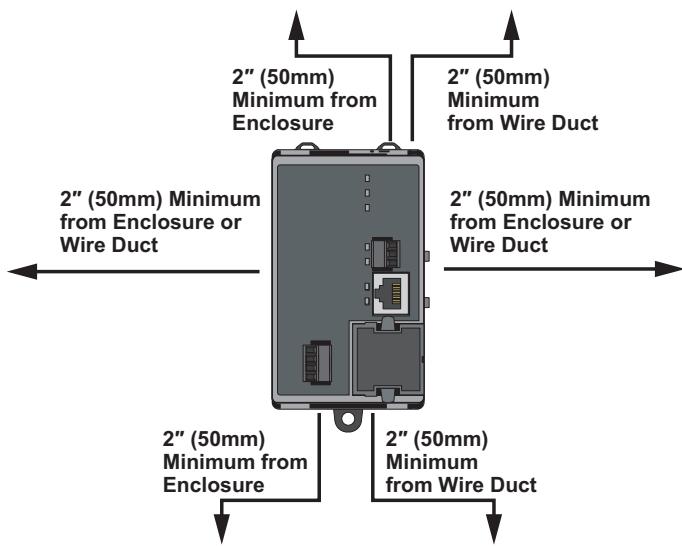
**NOTE:** Remote I/O controllers do not support Motion Control and Communications Modules.

# BRX Remote I/O Controllers

## Dimensions, inches[mm]



## Clearances and Mounting Restrictions



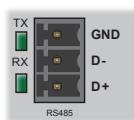
# BRX Remote I/O Controllers

## Port Specifications

Built-in Ethernet Specifications			
	BX-DMIO-M (-D)	BX-EBC100-M (-D)	BX-MBIO-M (-D)
<b>Port Type</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 (Server):</b>			
Do-more! Ethernet Remote I/O	X	X	-
HOST Ethernet Remote I/O	-	X	-
Modbus TCP	-	X	X
Embedded Web Server, HTTP (Unsecure)	X	X	X
<b>Cable Recommendation</b>	C5E-STxxx-xx from AutomationDirect.com		
<b>Port Type</b>	RJ45, Category 5, 10/100 BASE-T, Auto Crossover		
<b>Ethernet Port Numbers:</b>			
Do-more! Ethernet Expansion I/O (Server)	28784, UDP	28784, UDP	-
HOST Ethernet Remote I/O (Server)	-	28784, UDP	-
Modbus TCP (Server)	-	502, TCP	502, TCP
Embedded Web Server, HTTP (Unsecure)	80, TCP	80, TCP	80, TCP

BX-MBIO Built-in RS-485 Port Specifications	
<b>Port Name</b>	RS-RS-485 Serial Port
<b>Description</b>	Non-isolated serial port that can communicate via RS-485. Includes ESD protection and built-in surge protection. 120Ω Termination resistor is available (software selectable).
<b>Supported Protocols</b>	Modbus RTU (Slave)
<b>Data Rates</b>	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200
<b>Timeout</b>	Fixed at 800ms. Once the first character arrives, the controller waits 800ms for the entire request to arrive.
<b>Default Settings</b>	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-485 use L19827-XXX from AutomationDirect.com
<b>Replacement Connector</b>	ADC Part # BX-RTB03S

Removable connector included.



Pinout	RS485
1	GND
2	D-
3	D+

# BRX Remote I/O Controllers

## Power Supply Specifications

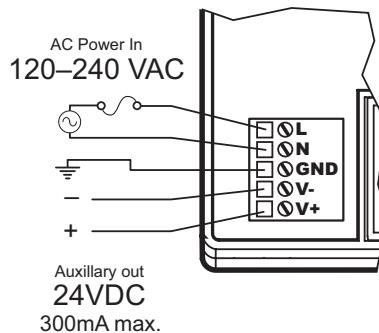
Power Supply Specifications		
	AC Models (-M)	DC Models (-M-D)
<b>Nominal Voltage Range</b>	120–240 VAC	12–24 VDC
<b>Input Voltage Range (Tolerance)</b>	85–264 VAC	10–36 VDC
<b>Rated Operating Frequency</b>	47–63 Hz	–
<b>Maximum Input Voltage Ripple</b>	–	< ±10%
<b>Maximum Input Power</b>	40VA	30W
<b>Cold Start Inrush Current</b>	1.5 A, 2ms	5A, 2ms
<b>Maximum Inrush Current (Hot Start)</b>	1.5 A, 2ms	5A, 2ms
<b>Internal Input Protection</b>	Micro fuse 250V, 2A Non-replaceable	Reverse polarity protection and undervoltage lockout via transistor circuit
<b>Heat Dissipation</b>	8W Max	5.5 W Max
<b>Isolated User 24VDC Output</b>	24VDC @ 0.3 A max, <1V P-P Ripple, Integrated self-resetting short circuit protection	None
<b>Voltage Withstand (dielectric)</b>	1500VAC Power Inputs to Ground applied for 1 minute 1500VAC Ground to 24VDC applied for 1 minute	1500VAC power Inputs to ground applied for 1 minute
<b>Replacement Connector</b>	ADC Part # BX-RTB05	ADC Part # BX-RTB03

## AC Input Power Wiring

Pin	Connection
1	L
2	N
3	GND
4	V-
5	V+



Removable Connector Included  
ADC Part # BX-RTB05

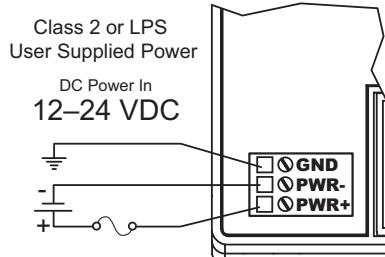


## DC Input Power Wiring

Pin	Connection
1	GND
2	PWR -
3	PWR +



Removable Connector Included  
ADC Part # BX-RTB03



# BRX Remote I/O Controller Accessories

## Replacement Terminal Block Connectors

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

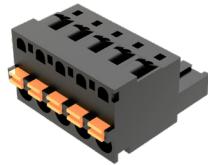
connector specifications are listed in the 2 charts below. Also listed in the tables are an optional spring clamp terminal

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

BRX Remote I/O AC Power Supply Connector Specifications			
Part Number	BX-RTB05 (included with unit)	BX-RTB05-1	BX-RTB05-2
<b>Price (each)</b>	\$9.00	\$7.50	\$8.50
<b>Connector Type</b>	Screw Type-90 deg	Spring Clamp Type-180 deg	Screw Type-180 deg
<b>Wire Exit</b>	180 deg	180 deg	180 deg
<b>Pitch</b>	5.0 mm	5.0 mm	5.0 mm
<b>Screw Size</b>	M2.5	N/A	M2.5
<b>Recommended Screw Torque</b>	< 3.98 lb·in [0.45 N·m]	N/A	< 3.98 lb·in [0.45 N·m]
<b>Screwdriver Blade Width</b>	3.5 mm	3.5 mm	3.5 mm
<b>Wire Gauge (Single wire)</b>	28-12 AWG	28-14 AWG	28-14 AWG
<b>Wire Gauge (Two wire)</b>	28-16 AWG	28-16 AWG (Dual Wire Ferrule Required)	28-16 AWG (Dual Wire Ferrule Required)
<b>Wire Strip Length</b>	0.3 in [7.5 mm]	0.37 in [9.5 mm]	0.37 in [9.5 mm]
<b>Equiv. Dinkle P/N</b>	5ESDV-05P-BK	5ESDSR-05P-BK	5ESDSR-05P-BK



BX-RTB05



BX-RTB05-1



BX-RTB05-2

BRX Remote I/O DC Power Supply Connector Specifications			
Part Number	BX-RTB03	BX-RTB03-1	BX-RTB03-2
<b>Price (each)</b>	\$5.75	\$5.25	\$4.75
<b>Connector Type</b>	Screw Type-90 deg	Spring Clamp Type-180 deg	Screw Type-180 deg
<b>Wire Exit</b>	180 deg	180 deg	180 deg
<b>Pitch</b>	5.0 mm	5.0 mm	5.0 mm
<b>Screw Size</b>	M2.5	N/A	M2.5
<b>Recommended Screw Torque</b>	< 3.98 lb·in [0.45 N·m]	N/A	< 3.98 lb·in [0.45 N·m]
<b>Screwdriver Blade Width</b>	3.5 mm	3.5 mm	3.5 mm
<b>Wire Gauge (Single wire)</b>	28-12 AWG	28-14 AWG	28-12 AWG
<b>Wire Gauge (Two wire)</b>	28-16 AWG	28-16 AWG (Dual Wire Ferrule Required)	28-16 AWG
<b>Wire Strip Length</b>	0.3 in [7.5 mm]	0.37 in [9.5 mm]	0.3 in [7.5 mm]
<b>Equiv. Dinkle P/N</b>	5ESDV-03P-BK	5ESDSR-03P-BK	5ESDF-03P



BX-RTB03



BX-RTB03-1



BX-RTB03-2

# 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 tagnames 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	
<a href="#"><u>D0-MC-BAT</u></a>	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.

