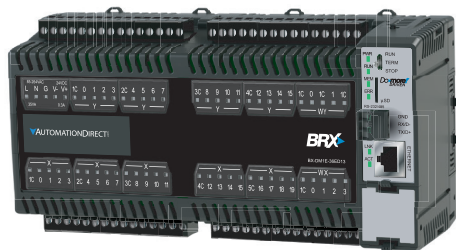


BRX Micro PLC Overview

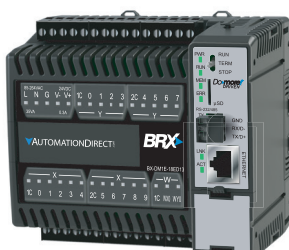
The BRX platform is a very versatile modular Micro PLC system that combines powerful features in a compact, standalone footprint. The BRX platform is designed to be used as a standalone controller or can be expanded using a wide variety of expansion modules that easily snap onto the side of any BRX Micro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

The foundation of the platform consists of four unique MPU form factors that provide for a strong system design to fit your application requirements while keeping the cost of the system to a minimum. Shown below are the four unique Micro PLC form factors.



**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**

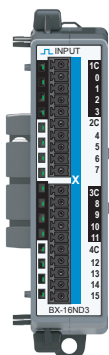
8 different configurations from
which to choose



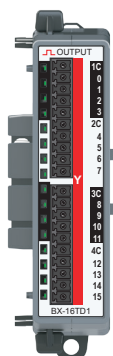
**Smallest MPU with
No built-in I/O**

2 configurations from which
to choose

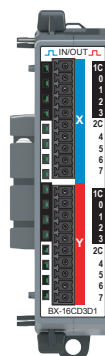
Discrete Input Modules



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.

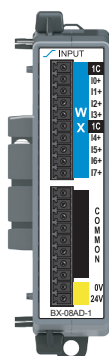


Eighteen (18) discrete output modules are available in DC sinking, DC sourcing, AC voltage and Relay type outputs. Available in 5, 8, 12, 16 and 32 I/O point modules.

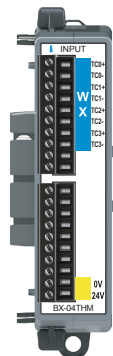


Six (6) discrete input/output combo modules are available with DC sink/source inputs and sink/source/relay outputs. Available in 8, 12 and 16 I/O point modules.

Analog Input Modules



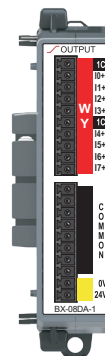
Nine (9) analog input modules are available, with current or voltage inputs. Available with 4, 8 and 16 inputs.



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.

Three (3) temperature input/analog output combination modules and three (3) temperature input/discrete output combination modules are available.

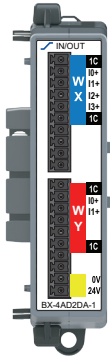
Analog Output Modules



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



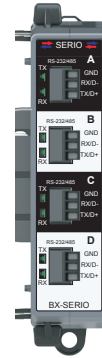
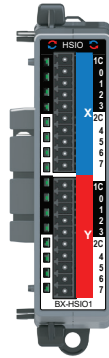
Six (6) analog input/output combo modules are available, with voltage inputs/voltage outputs, current sinking inputs/current sourcing outputs and universal inputs/outputs.

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



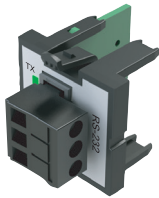
Three (3) high-speed I/O modules are available, with 8-point sinking/sourcing inputs and a choice of 8-point sinking, sourcing or sinking/sourcing outputs. Switching frequencies of up to 250kHz or up to 2MHz are available.

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

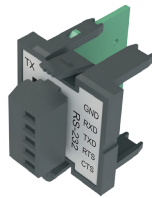
BRX Pluggable Option Modules (POM)

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.



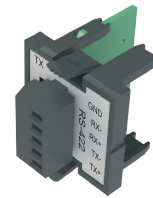
BRX-P-SER2-TERM
RS-232 Port



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



BRX-P-SER4-TERM
RS-485 Port



BRX-P-SER422-TERM
RS-422 Port



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



BRX-P-ECOMLT
Ethernet Port
(Any CPU)



BRX-P-ECOMEX
Ethernet Port
(DM1E CPU Only)



BRX-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.



BRX-DMIO-M



BRX-EB100-M



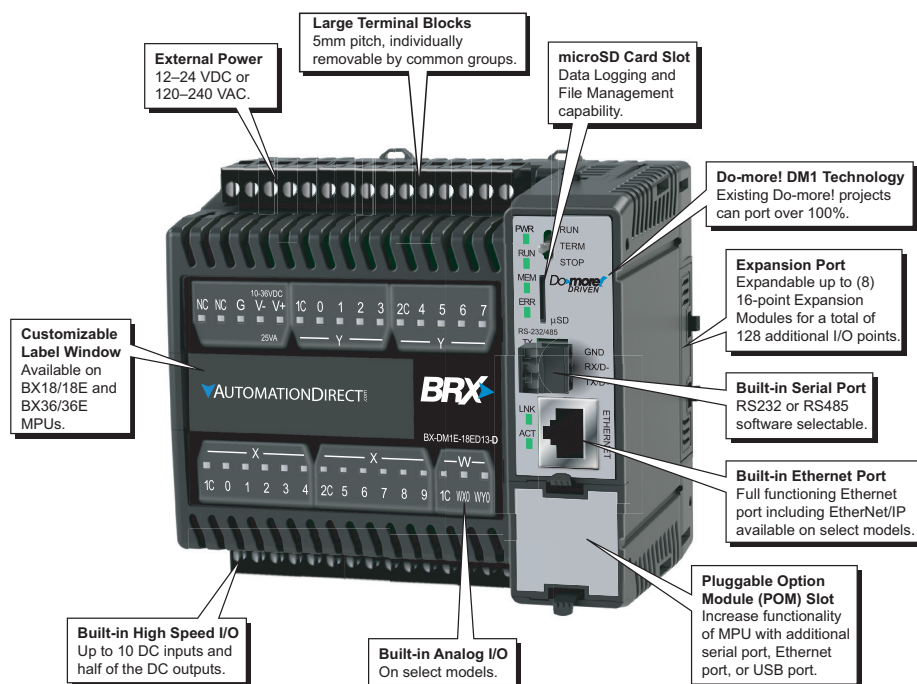
BRX-MBIO-M

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

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



2 Year Warranty

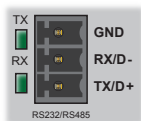
All BRX PLCs are covered under a 2- year warranty.

BRX Micro PLC Overview

Built-in RS-232/485 Port Specifications

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

Removable connector included.



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

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

CPU Status Indicators

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

CPU Mode Switch

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



microSD Specifications

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



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

AC Power Supply Specifications

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

DC Power Supply Specifications

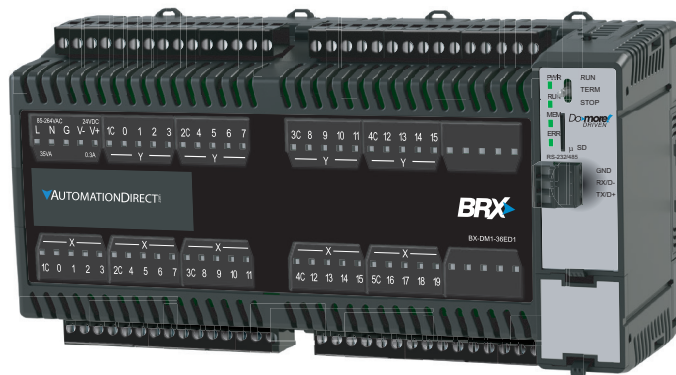
Nominal Voltage Rating	12-24 VDC
Input Voltage Range (Tolerance)	10-36 VDC
Maximum Input Voltage Ripple	<± 10%
Maximum Input Power	30W (14W for BX 10/10E MPUs)
Cold Start Inrush Current	5A, 2ms
Maximum Inrush Current (Hot Start)	5A, 2ms
Internal Input Protection	Reverse Polarity Protection and Undervoltage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

BX 36 MPUs

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

Features

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



BX 36 Micro PLC Unit (MPU)

(No Built-in Analog or Ethernet port)

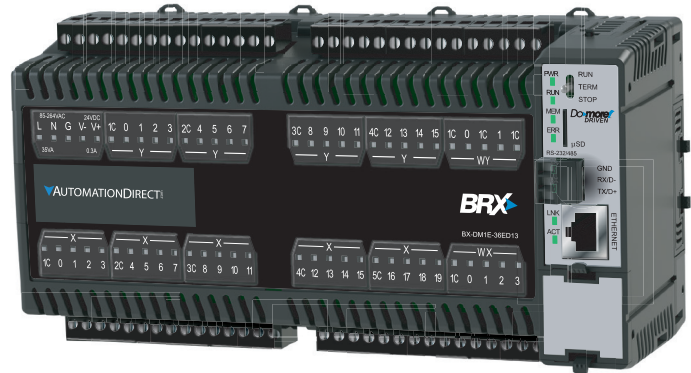
BX 36 MPUs						
Part Number	Price	External Power	Discrete Input	Discrete Output	Expansion Modules	
<u>BX-DM1-36ED1</u>	\$;0129,:	120–240 VAC	10 High-speed 10 Standard DC Sinking or Sourcing	8 High-speed 8 Standard DC Sinking	8, as long as the MPU power budget is not exceeded	
<u>BX-DM1-36ED1-D</u>	\$012a3:	12–24 VDC				
<u>BX-DM1-36ED2</u>	\$012a0:	120–240 VAC		8 High-speed 8 Standard DC Sourcing		
<u>BX-DM1-36ED2-D</u>	\$012a4:	12–24 VDC				
<u>BX-DM1-36ER</u>	\$012a1:	120–240 VAC		16 Form A Relay		
<u>BX-DM1-36ER-D</u>	\$012a5:	12–24 VDC				
<u>BX-DM1-36AR</u>	\$012a2:	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



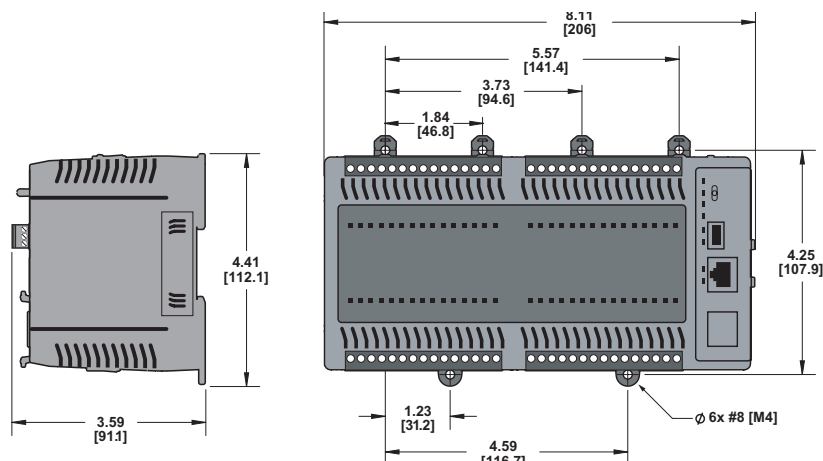
BX 36E Micro PLC Unit (MPU)
(Built-in Analog and Ethernet port)

BX 36E MPUs							
Part Number	Price	External Power	Discrete Inputs	Discrete Output	Analog		Expansion Modules
					Input	Output	
<u>BX-DM1E-36ED13</u>	\$012a6:	120–240 VAC	10 High-speed 10 Standard DC Sinking or Sourcing	8 High-Speed 8 Standard DC Sinking	4 Current or Voltage	2 Current or Voltage	8
<u>BX-DM1E-36ED13-D</u>	\$012aa:	12–24 VDC					
<u>BX-DM1E-36ED23</u>	\$012a7:	120–240 VAC					
<u>BX-DM1E-36ED23-D</u>	\$012ab:	12–24 VDC					
<u>BX-DM1E-36ER3</u>	\$012a8:	120–240 VAC					
<u>BX-DM1E-36ER3-D</u>	\$012ac:	12–24 VDC					
<u>BX-DM1E-36AR3</u>	\$012a9:	120–240 VAC	20 Standard AC	16 Form A Relay			

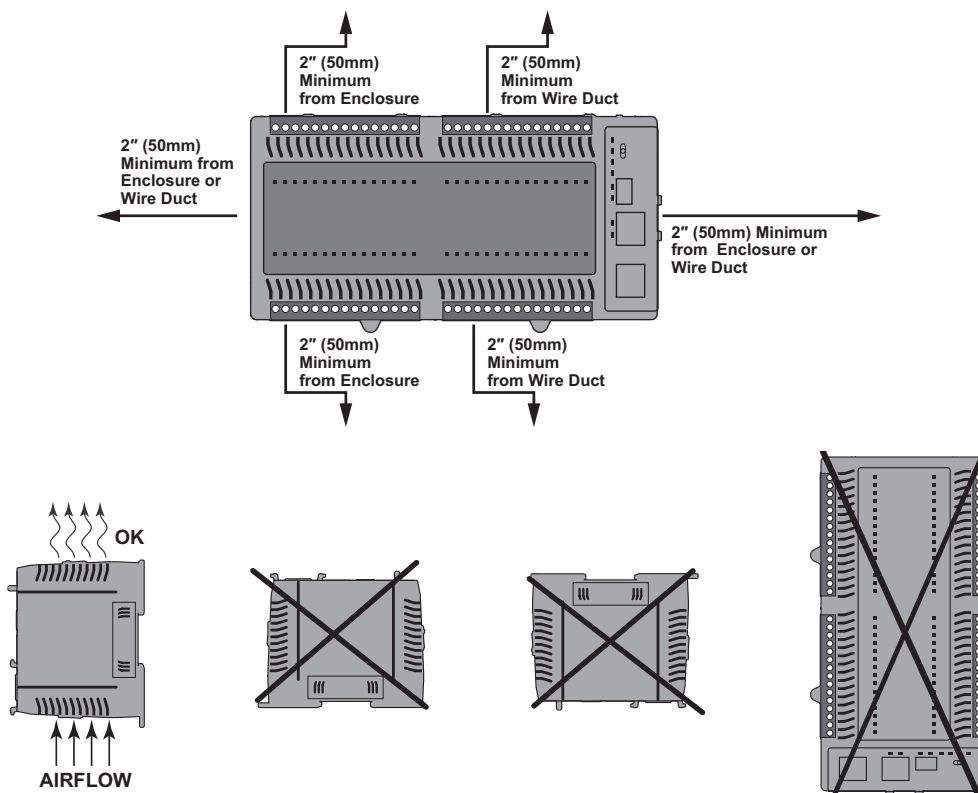
Built-in Ethernet Specifications	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
Port Status LED	LED is solid when network LINK is established. LED flashes when port is active (ACT).
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-STxxx-xx from AutomationDirect.com
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

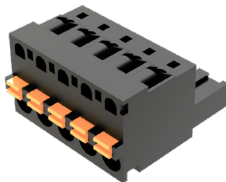
4 outputs each with an isolated common. For example, inputs X0–X3 are grouped with a common terminal. The groups are isolated such that a single 5-pin connector can be removed without affecting another group of I/O or the external power source.



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	<i>BX-RTB36</i>	<i>BX-RTB36-1</i>
Price	\$1291:	\$1298:
Connector Type	Screw Type-90-degree	Spring Clamp Type-180-degree
Wire Exit	180-degree	180-degree
Pitch	5.0 mm	5.0 mm
Screw Size	M2.5	N/A
Screw Torque	< 3.98 lb·in [0.45 N·m]	N/A
Screwdriver Blade Width	3.5 mm	3.5 mm
Wire Gauge (Single Wire)	28–12 AWG	28–14 AWG
Wire Gauge (Dual Wire)	28–16 AWG	28–16 AWG (Dual wire ferrule required)
Wire Strip Length	0.3 in [7.5 mm]	0.37 in [9.5 mm]
Equiv. Dinkle P/N	5ESDV-05P-BK	5ESDSR-05P-BK



Wiring Solutions

ZIPLink Pre-Wired Cable Solutions

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

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

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

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

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

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

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

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



Wiring Solutions

ZIPLink Pre-wired Cables

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

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

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



Pre-wired ZIPLink Cable



ZIPLink Pigtail Cable

ZIPLink Feedthrough Modules

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

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

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

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



[ZL-RTB20](#)



[ZL-RTB20-1](#)



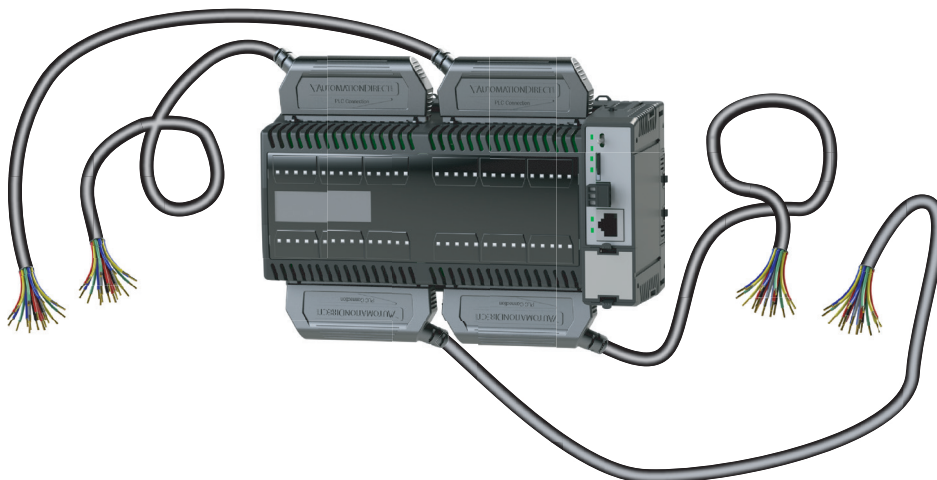
Wiring Solutions

ZIPLink System Examples

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



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



BX 36/36E MPUs

BX-DM1-36ED1

\$;0129.:

BRX MPU with Do-more! DM1 technology

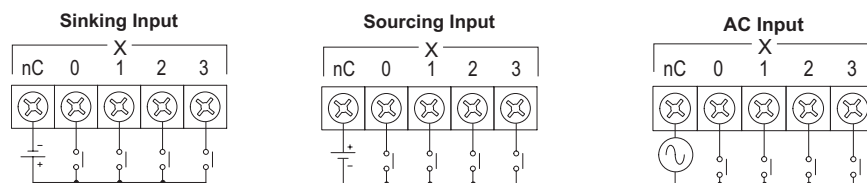
- 120VAC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sinking

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

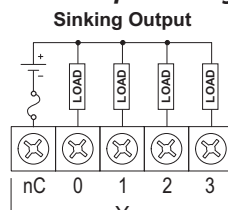
Discrete Input Specifications	
Input Type	Sink/Source
Total Inputs per Module	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage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

I/O Wiring

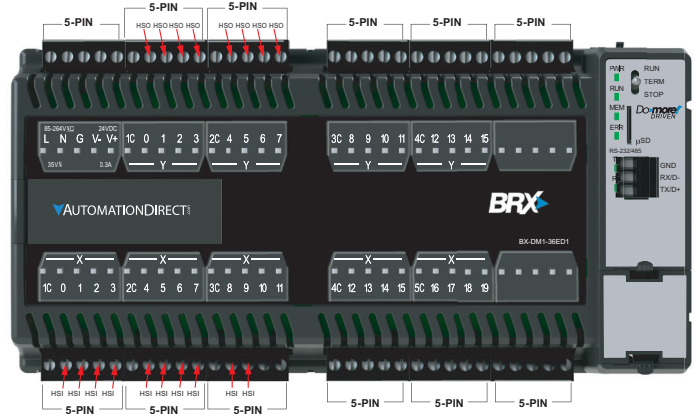
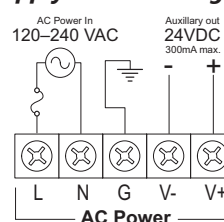
Discrete Input Wiring



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

BX 36/36E MPUs

BX-DM1-36ED2

\$012a0:

BRX MPU with Do-more! DM1 technology

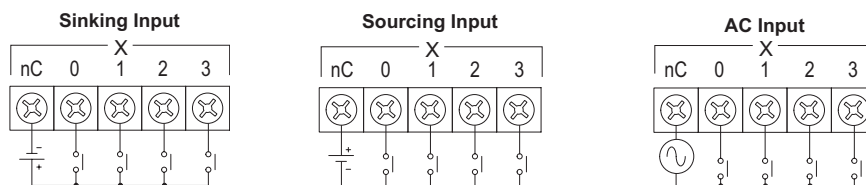
- 120VAC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sourcing

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

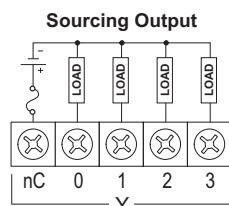
Discrete Input Specifications	
Input Type	Sink/Source
Total Inputs per Module	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs.
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage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

I/O Wiring

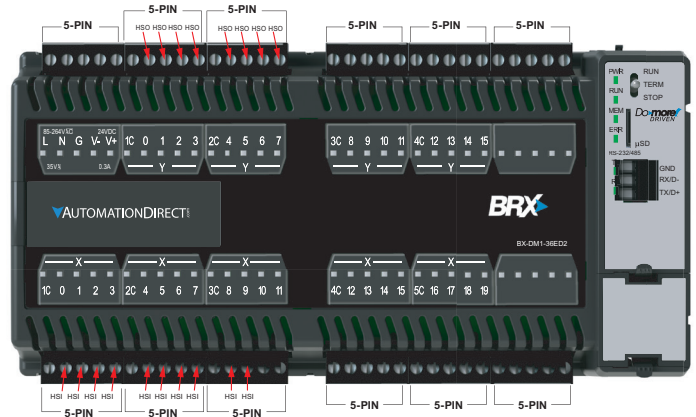
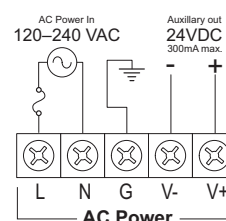
Discrete Input Wiring



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

BX 36/36E MPUs

BX-DM1-36ER

\$012a1:

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

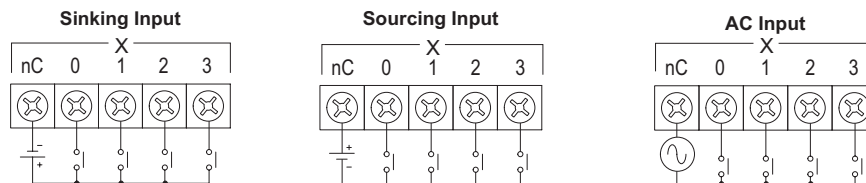
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

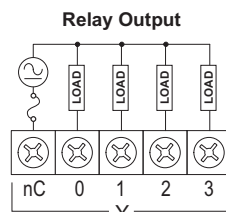
Input Type	Sink/Source
Total Inputs per Module	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz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

I/O Wiring

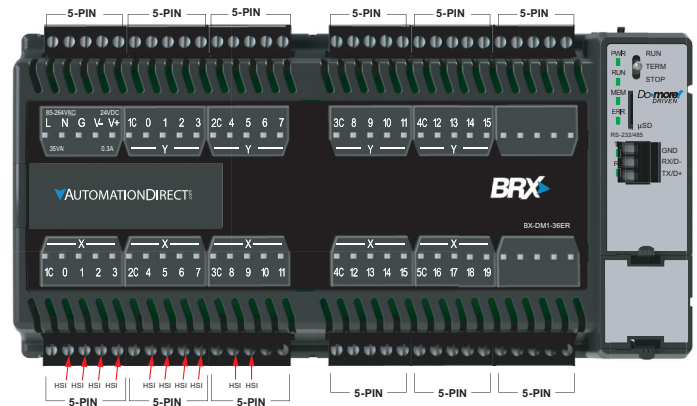
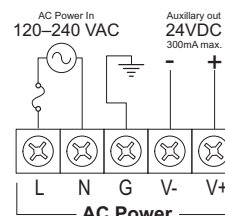
Discrete Input Wiring



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

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

BX 36/36E MPUs

BX-DM1-36AR

\$012a2:

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

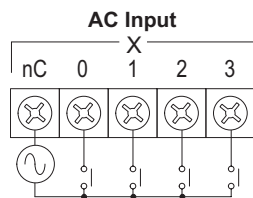
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

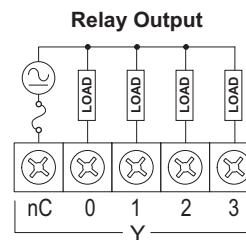
Input Type	AC
Total Inputs per Module	20 Total – 20 Standard (X0...X19)
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	120–240 VAC
Input Voltage Range	85–264 VAC
Maximum Voltage	264 VAC RMS
AC Frequency	47–63 Hz
Input Current (typical)	9mA @ 120VAC, 13mA @ 220VAC
Input Impedance	15kΩ
ON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

I/O Wiring

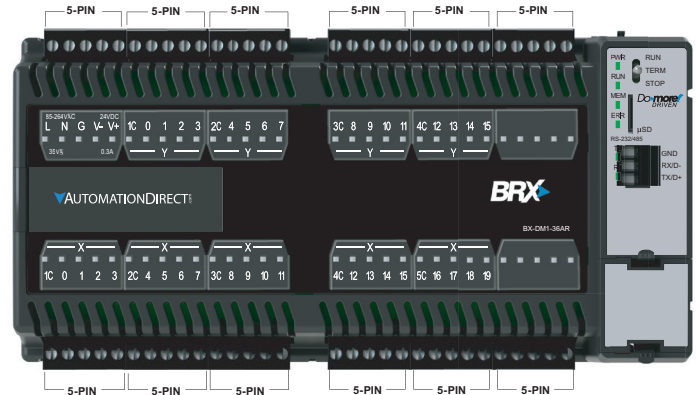
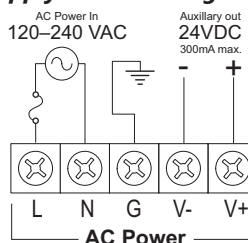
Discrete Input Wiring



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

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

BX 36/36E MPUs

BX-DM1-36ED1-D \$012a3:

BRX MPU with Do-more! DM1 technology

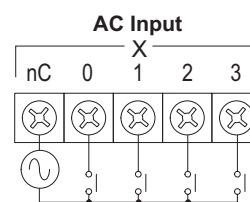
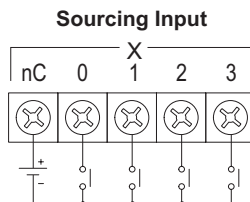
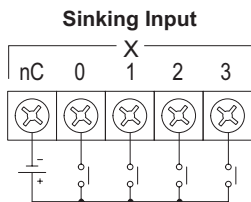
- 24VDC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, sinking

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

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

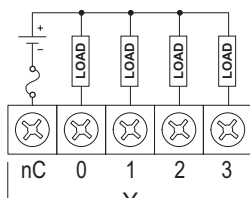
I/O Wiring

Discrete Input Wiring

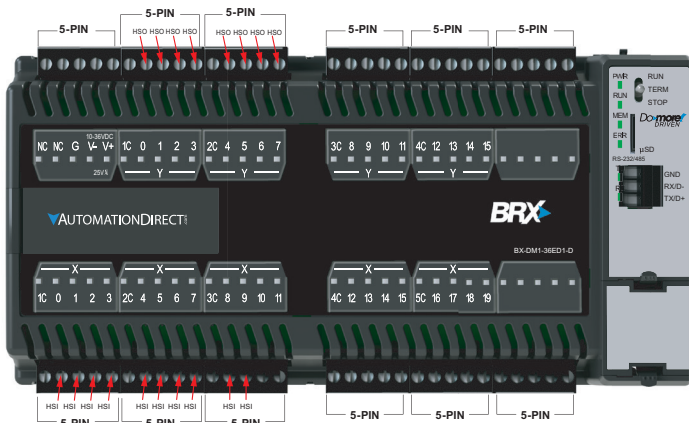
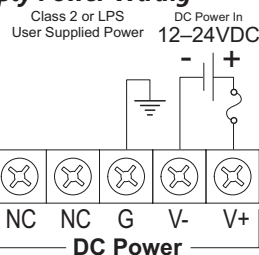


Discrete Output Wiring

Sinking Output



Supply Power Wiring



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

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

BX 36/36E MPUs

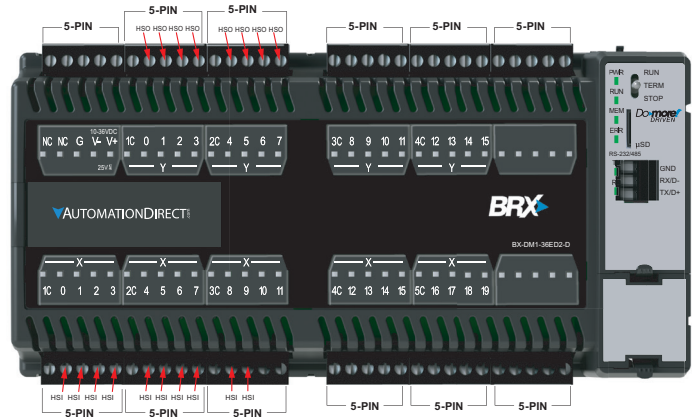
BX-DM1-36ED2-D \$012a4:

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

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

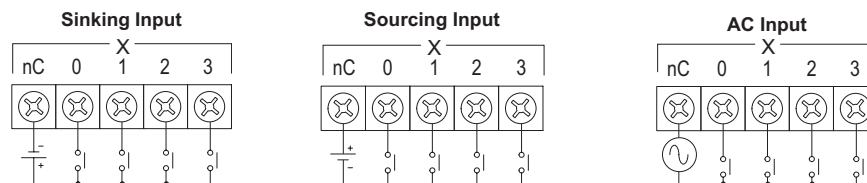


I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 36/36E MPU Accessories page.)

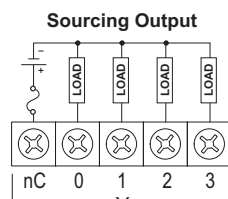
Discrete Output Specifications	
Output Type	Sourcing
Total Outputs per Module	16 Total – 8 High Speed (Y0...Y7)* 8 Standard (Y8...Y15) *All outputs may be used as standard outputs
Commons	4 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range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

I/O Wiring

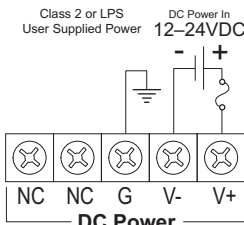
Discrete Input Wiring



Discrete Output Wiring



Supply Power Wiring



BX 36/36E MPUs

BX-DM1-36ER-D

\$012a5:

BRX MPU with Do-more! DM1 technology

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

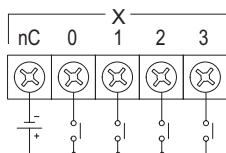
CPU Specifications	
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD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

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

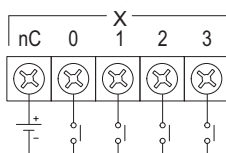
I/O Wiring

Discrete Input Wiring

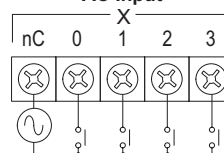
Sinking Input



Sourcing Input

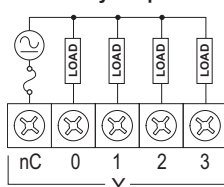


AC Input

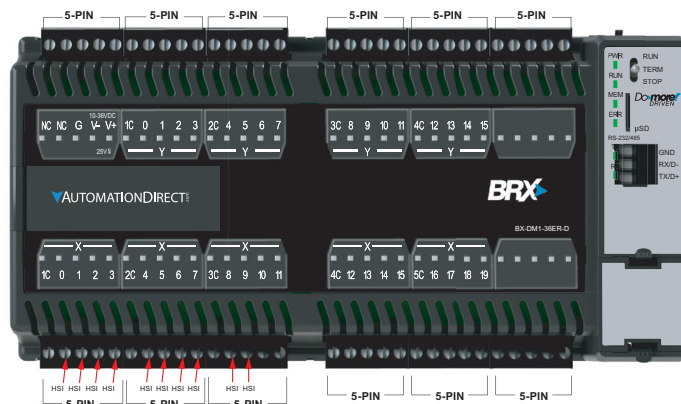
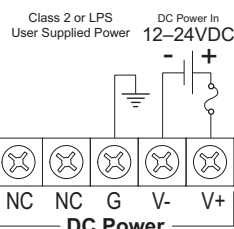


Discrete Output Wiring

Relay Output



Supply Power Wiring



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

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

BX 36/36E MPUs

BX-DM1E-36ED13 \$012a6:

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

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

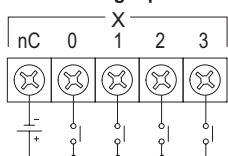
Discrete Input Specifications

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

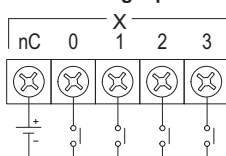
I/O Wiring

Discrete Input Wiring

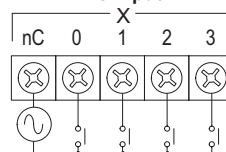
Sinking Input



Sourcing Input

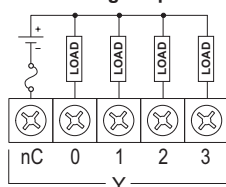


AC Input

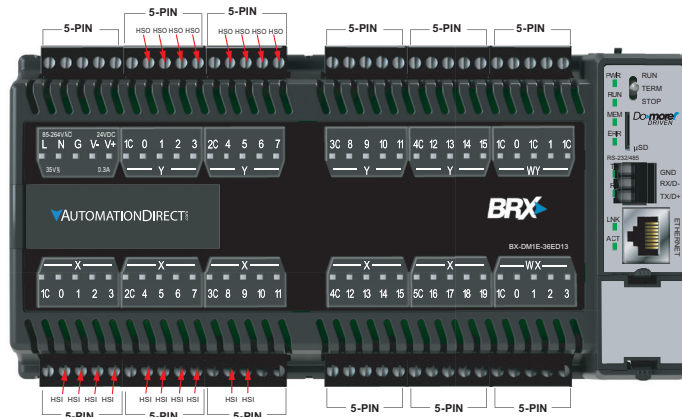
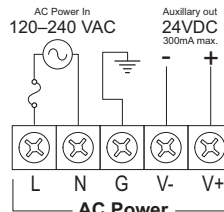


Discrete Output Wiring

Sinking Output



Supply Power Wiring



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

Discrete Output Specifications

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

BX 36/36E MPUs

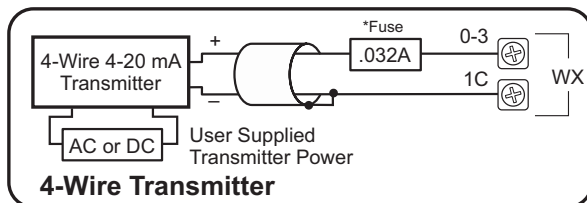
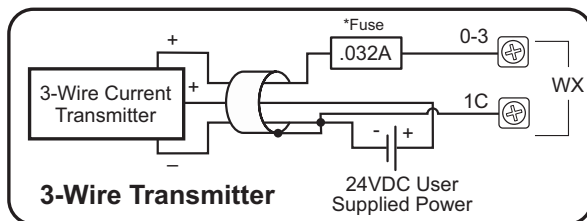
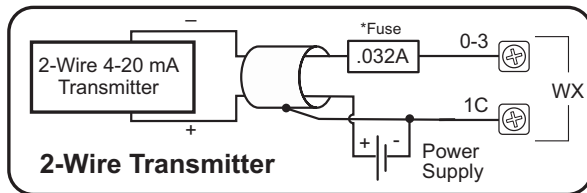
Analog Input Specifications

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

Analog Output Specifications

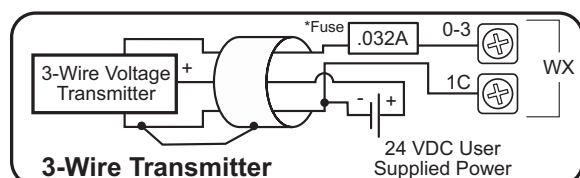
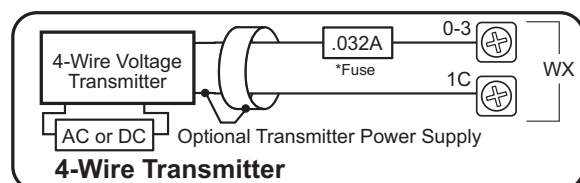
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{ V}$, $0-5\text{ V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{ mA}$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms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

Analog Current Sinking Input Circuits



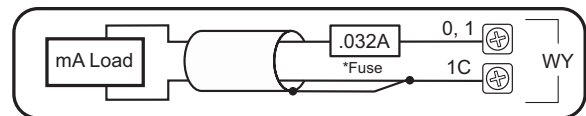
*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits

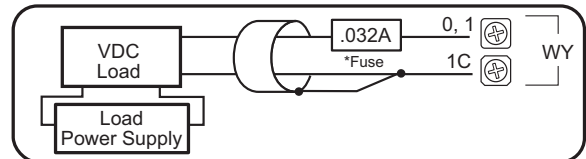


Analog Output Wiring

Current Source Output



Voltage Output



BX 36/36E MPUs

BX-DM1E-36ED23 \$012a7:

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

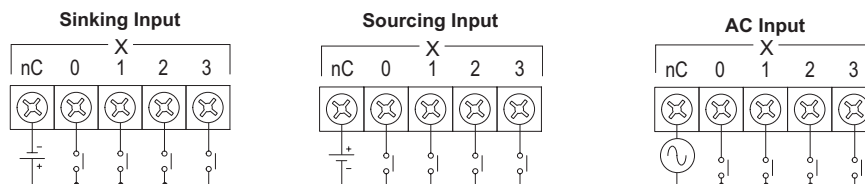
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management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

Discrete Input Specifications

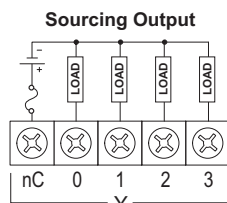
Input Type	Sink/Source
Total Inputs per Module	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz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

I/O Wiring

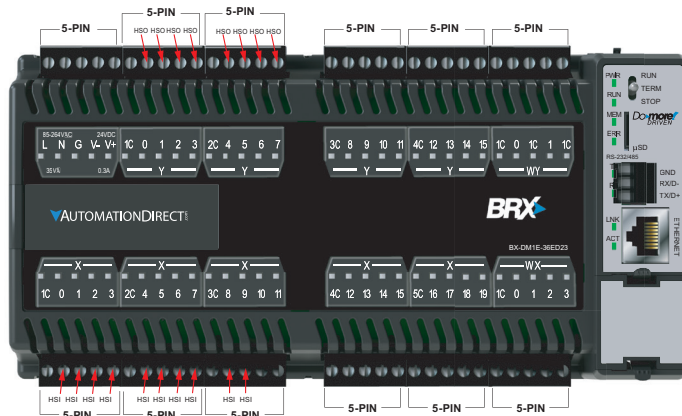
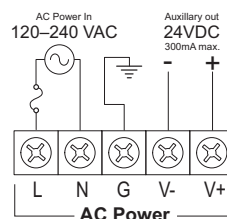
Discrete Input Wiring



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

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

BX 36/36E MPUs

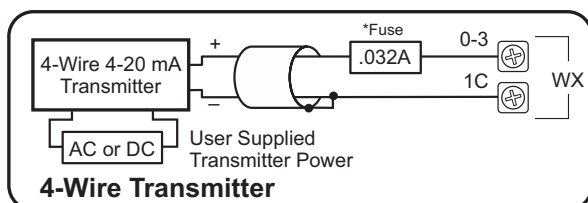
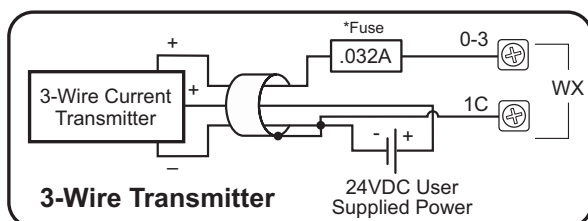
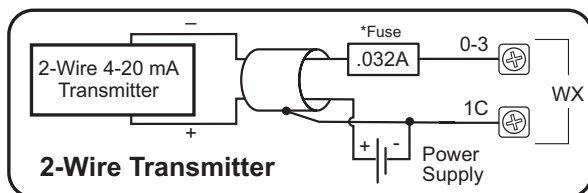
Analog Input Specifications

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 Ω
Input Impedance	249 Ω
Current Modes	

Analog Output Specifications

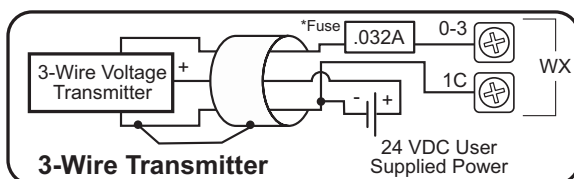
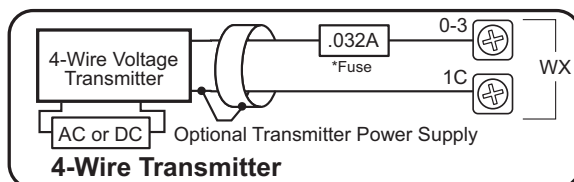
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10 V$, $0-5 V$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20mA$, $4-20 mA$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$

Analog Current Sinking Input Circuits



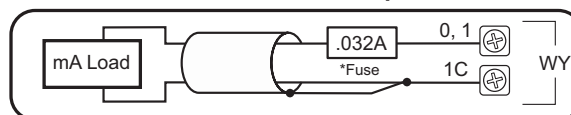
*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits

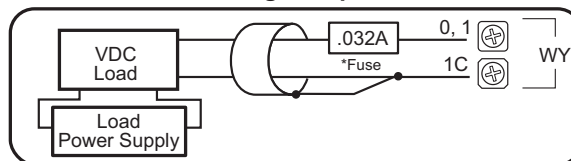


Analog Output Wiring

Current Source Output



Voltage Output



BX 36/36E MPUs

BX-DM1E-36ER3

\$012a8:

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

CPU Specifications

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

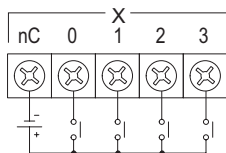
Discrete Input Specifications

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

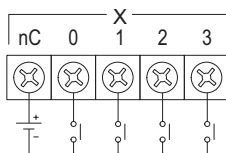
I/O Wiring

Discrete Input Wiring

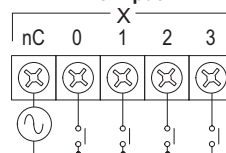
Sinking Input



Sourcing Input

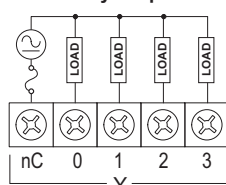


AC Input

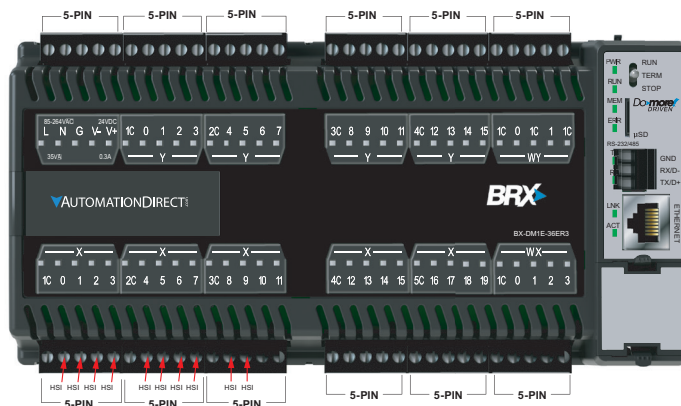
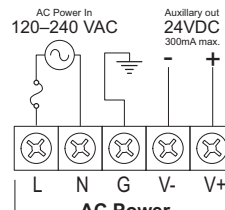


Discrete Output Wiring

Relay Output



Supply Power Wiring



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

Discrete Output Specifications

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

BX 36/36E MPUs

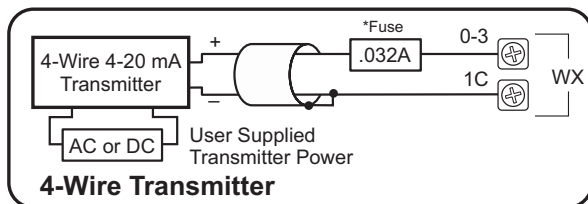
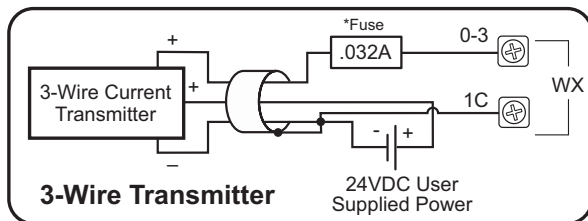
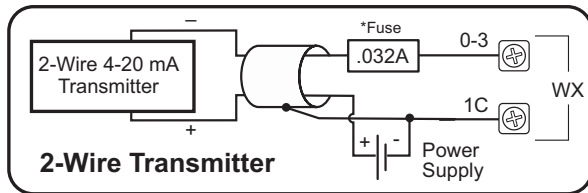
Analog Input Specifications

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

Analog Output Specifications

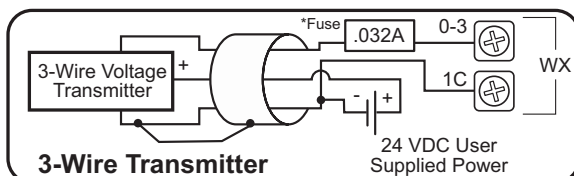
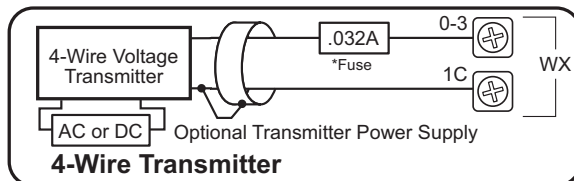
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10V$, $0-5V$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20mA$, $4-20mA$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$

Analog Current Sinking Input Circuits



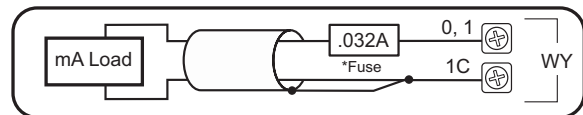
*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits

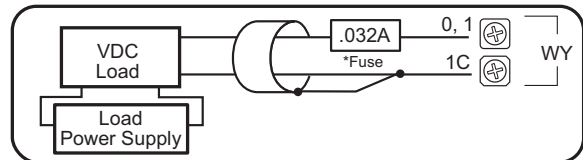


Analog Output Wiring

Current Source Output



Voltage Output



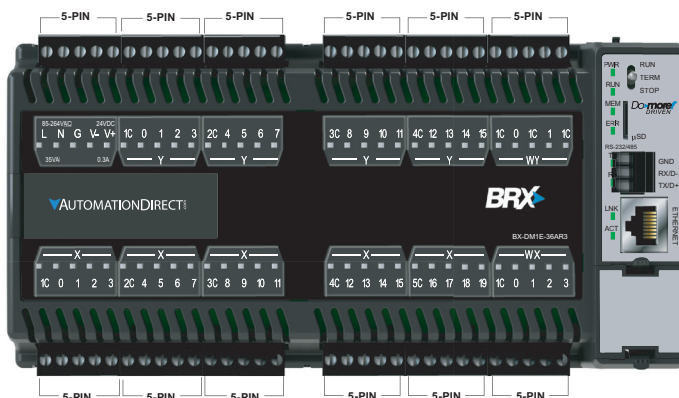
BX 36/36E MPUs

BX-DM1E-36AR3

\$012a9:

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



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

CPU Specifications

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

Discrete Input Specifications

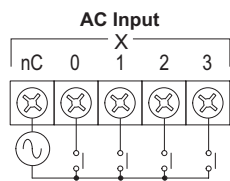
Input Type	AC
Total Inputs per Module	20 Total – 20 Standard (X0...X19)
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	120–240 VAC
Input Voltage Range	85–264 VAC
Maximum Voltage	264 VAC RMS
AC Frequency	47–63 Hz
Input Current (typical)	9mA @ 120VAC, 13mA @ 220VAC
Input Impedance	15kΩ
ON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

Discrete Output Specifications

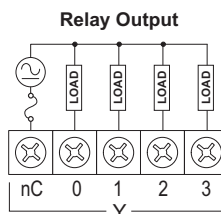
Output Type	Relay Form A (SPST)
Total Outputs per Module	16 Relay
Commons	4 (4 points/common) Isolated
Maximum current per common	8A
Nominal Voltage Ratings	12–48 VDC, 24–240 VAC
Operating Voltage Range	5–60 VDC, 5–264 VAC
Maximum Voltage	60VDC, 264VAC
Minimum Output Current	0.1 mA @ 24VAC/DC
Maximum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

I/O Wiring

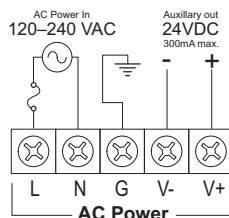
Discrete Input Wiring



Relay Output Wiring



Supply Power Wiring



BX 36/36E MPUs

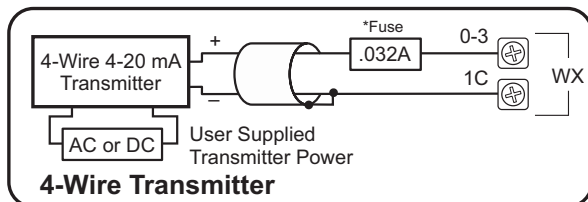
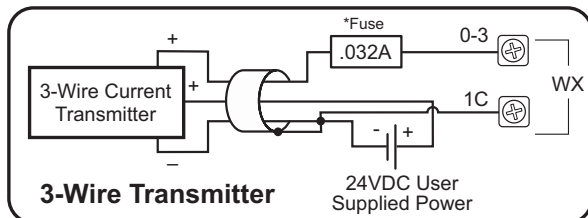
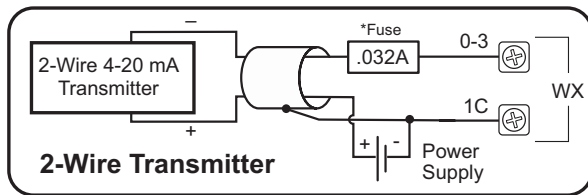
Analog Input Specifications

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 Ω
Input Impedance	
Current Modes	249 Ω

Analog Output Specifications

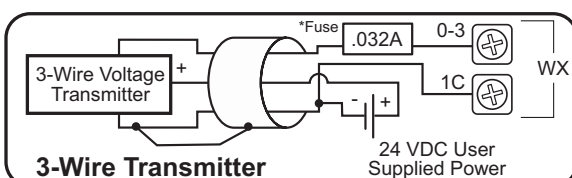
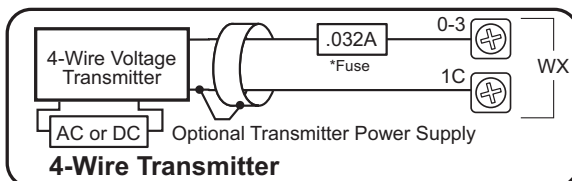
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10 V$, $0-5 V$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20mA$, $4-20 mA$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$

Analog Current Sinking Input Circuits



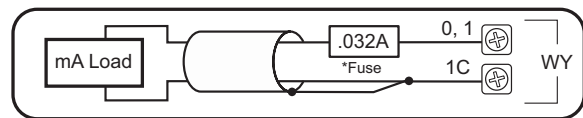
*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits

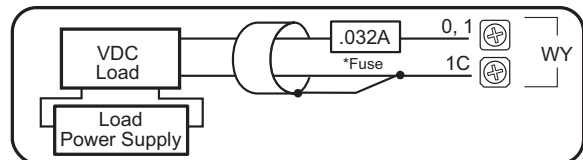


Analog Output Wiring

Current Source Output



Voltage Output



BX 36/36E MPUs

BX-DM1E-36ED13-D \$012aa:

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

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

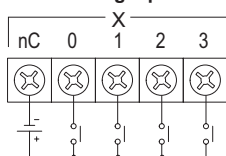
Discrete Input Specifications

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

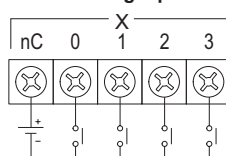
I/O Wiring

Discrete Input Wiring

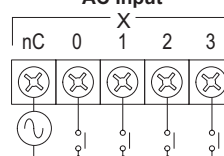
Sinking Input



Sourcing Input

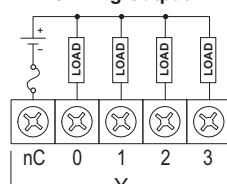


AC Input

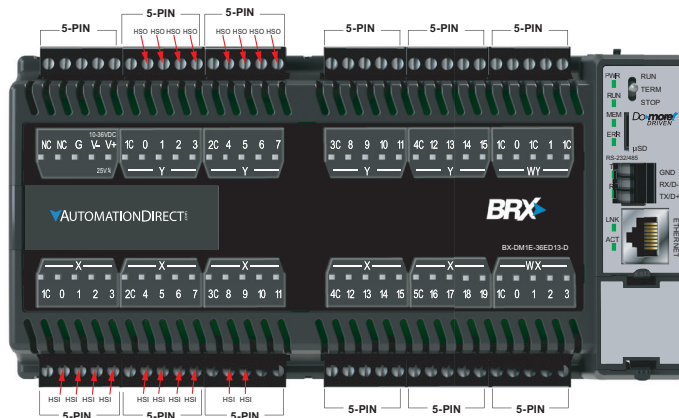
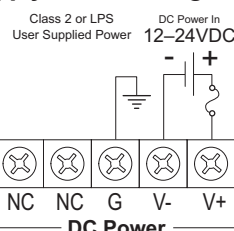


Discrete Output Wiring

Sinking Output



Supply Power Wiring



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

Discrete Output Specifications

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

BX 36/36E MPUs

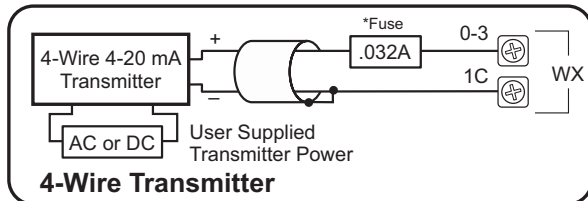
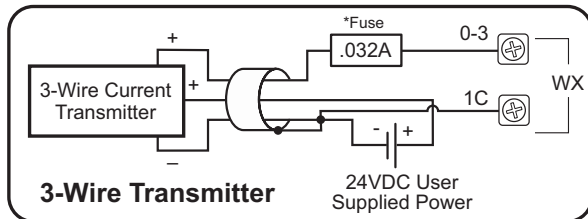
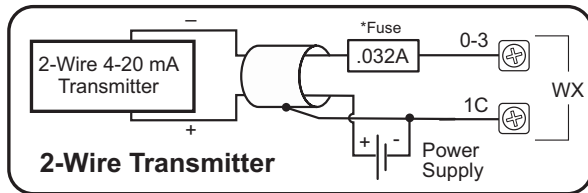
Analog Input Specifications

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

Analog Output Specifications

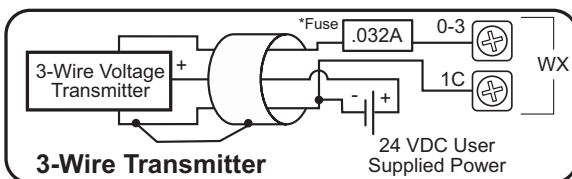
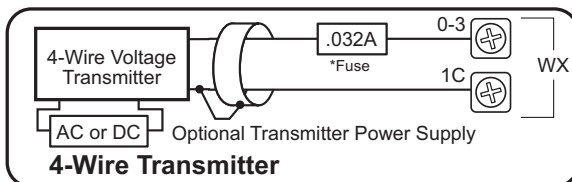
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10V$, $0-5V$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20mA$, $4-20mA$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$

Analog Current Sinking Input Circuits



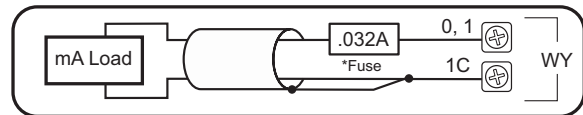
*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits

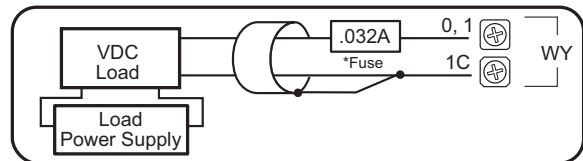


Analog Output Wiring

Current Source Output



Voltage Output



BX 36/36E MPUs

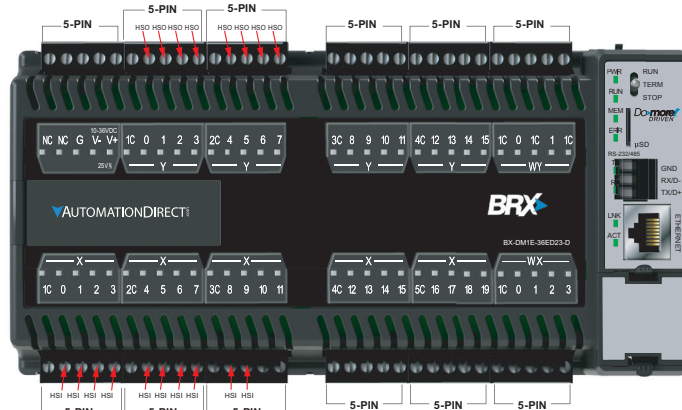
BX-DM1E-36ED23-D \$012ab:

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

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

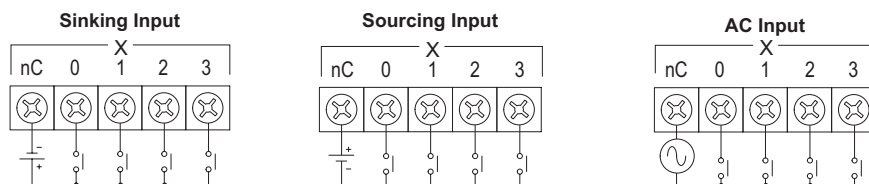


I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 36/36E MPU Accessories page.)

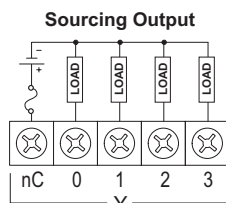
Discrete Output Specifications	
Output Type	Sourcing
Total Outputs per Module	16 Total – 8 High Speed (Y0...Y7)* 8 Standard (Y8...Y15) *All outputs may be used as standard outputs
Commons	4 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range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

I/O Wiring

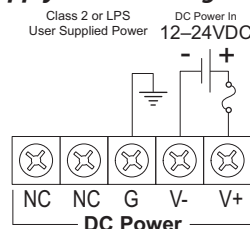
Discrete Input Wiring



Discrete Output Wiring



Supply Power Wiring



BX 36/36E MPUs

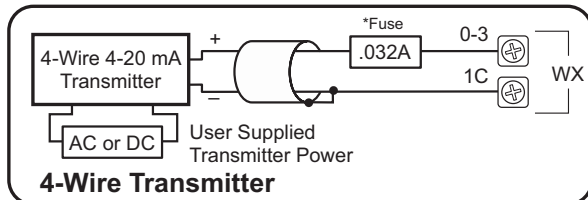
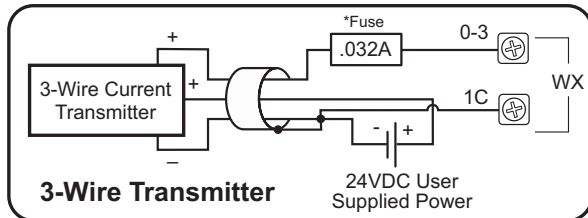
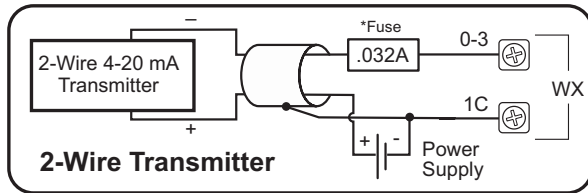
Analog Input Specifications

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

Analog Output Specifications

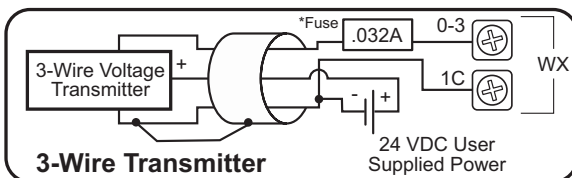
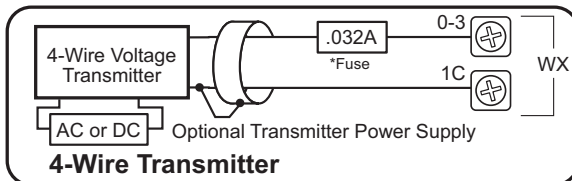
Outputs per Module	2
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution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

Analog Current Sinking Input Circuits

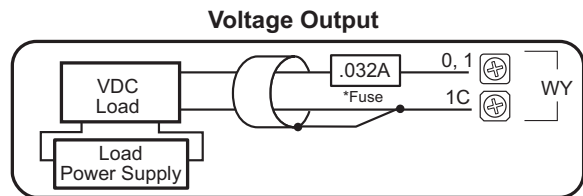
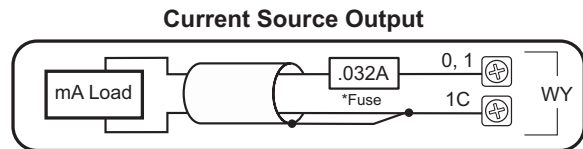


*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits



Analog Output Wiring



BX 36/36E MPUs

BX-DM1E-36ER3-D \$012ac:

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

CPU Specifications

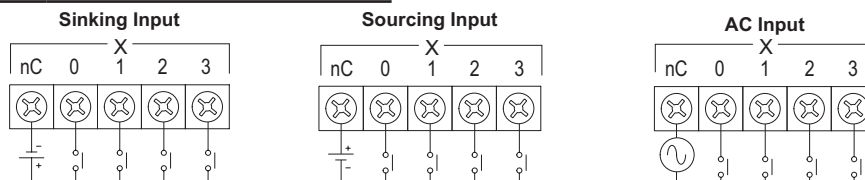
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management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

Discrete Input Specifications

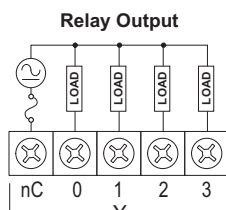
Input Type	Sink/Source
Total Inputs per Module	20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs
Commons	5 (4 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz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

I/O Wiring

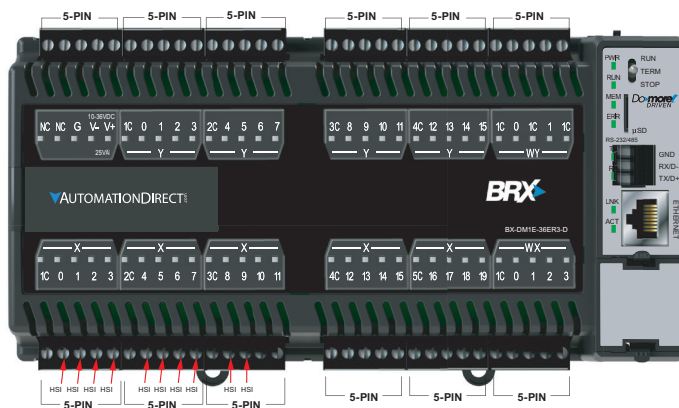
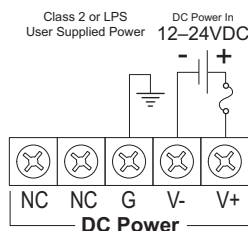
Discrete Input Wiring



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

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

BX 36/36E MPUs

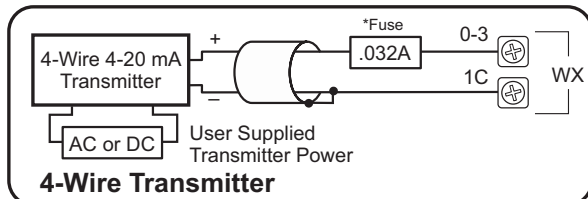
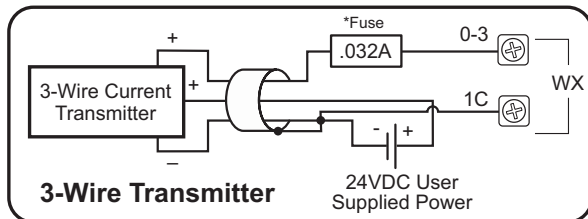
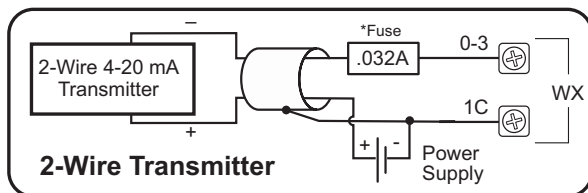
Analog Input Specifications

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 Ω
Voltage Modes	
Input Impedance	249 Ω
Current Modes	

Analog Output Specifications

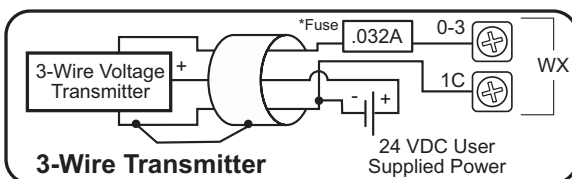
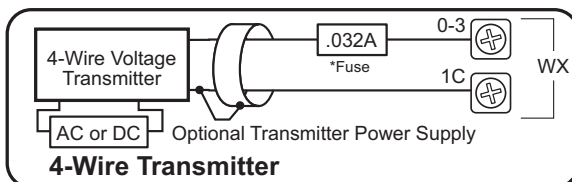
Outputs per Module	2
Operating Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10 V$, $0-5 V$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20mA$, $4-20 mA$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$

Analog Current Sinking Input Circuits



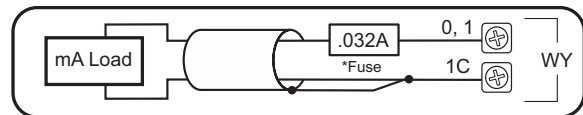
*NOTE: An Edison S500-32-R 0.032 A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits

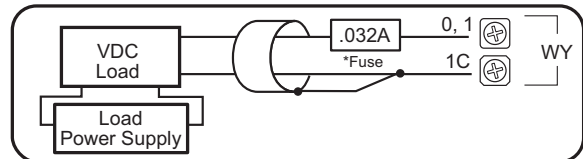


Analog Output Wiring

Current Source Output



Voltage Output



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
<u>BX-DM1-18ED1</u>	\$0129q:	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
<u>BX-DM1-18ED1-D</u>	\$0129v:	12–24 VDC			
<u>BX-DM1-18ED2</u>	\$0129s:	120–240 VAC		4 High-Speed 4 Standard DC Sourcing	
<u>BX-DM1-18ED2-D</u>	\$0129x:	12–24 VDC			
<u>BX-DM1-18ER</u>	\$;0129t:	120–240 VAC		8 Form A Relay	
<u>BX-DM1-18ER-D</u>	\$0129y:	12–24 VDC			
<u>BX-DM1-18AR</u>	\$0129u:	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



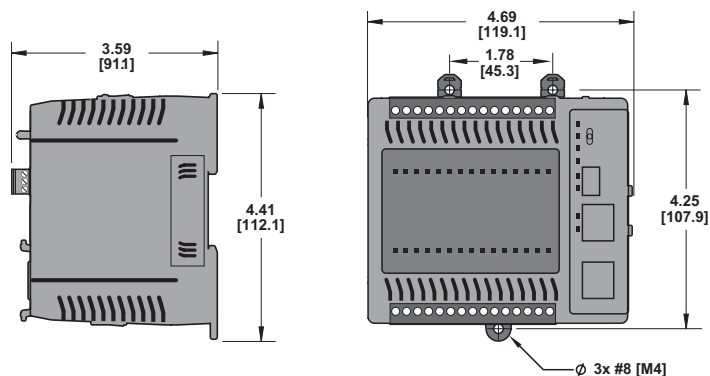
BX 18E Micro PLC Unit (MPU)
(Built-in Analog and Ethernet port)

BX 18E MPUs							
Part Number	Price	External Power	Discrete Inputs	Discrete Output	Analog		Expansion Modules
					Input	Output	
BX-DM1E-18ED13	\$0129z:	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
BX-DM1E-18ED13-D	\$0129#:	12–24 VDC					
BX-DM1E-18ED23	\$.0129j:	120–240 VAC		4 High-Speed 4 Standard DC sourcing			
BX-DM1E-18ED23-D	\$.0129l:	12–24 VDC					
BX-DM1E-18ER3	\$.0129j:	120–240 VAC		8 Form A relay			
BX-DM1E-18ER3-D	\$0129?:	12–24 VDC					
BX-DM1E-18AR3	\$0129_:	120–240 VAC	10 Standard AC				

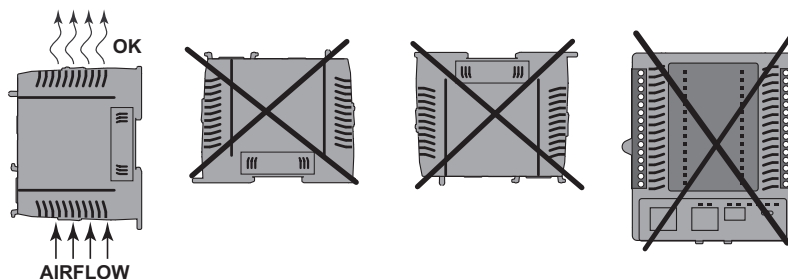
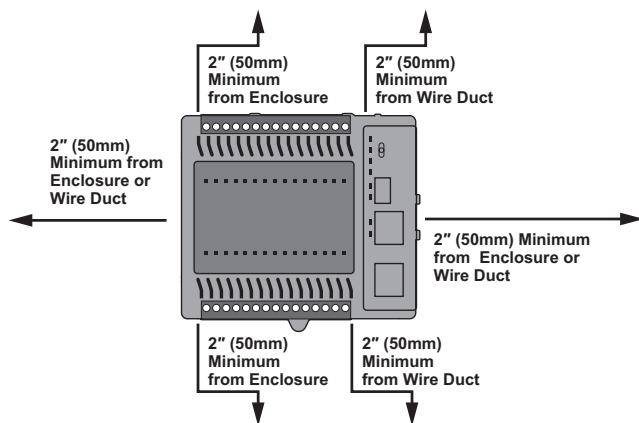
Built-in Ethernet Specifications	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
Port Status LED	LED is solid when network LINK is established. LED flashes when port is active (ACT).
Supported Protocols	Port:
	Do-more! Protocol 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
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com
Port Type	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.

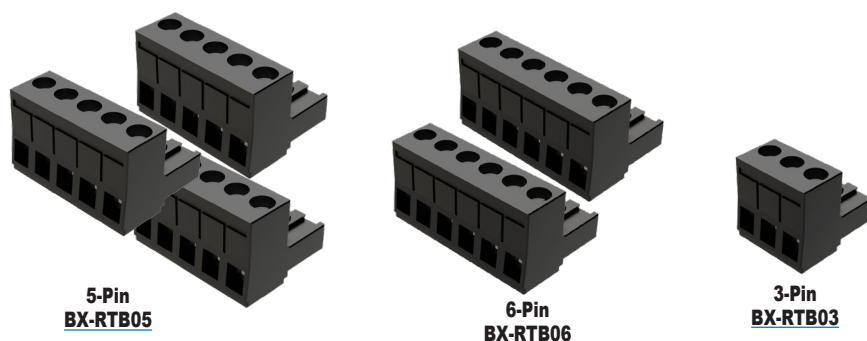
The BX 18/18E MPUs terminals are

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.

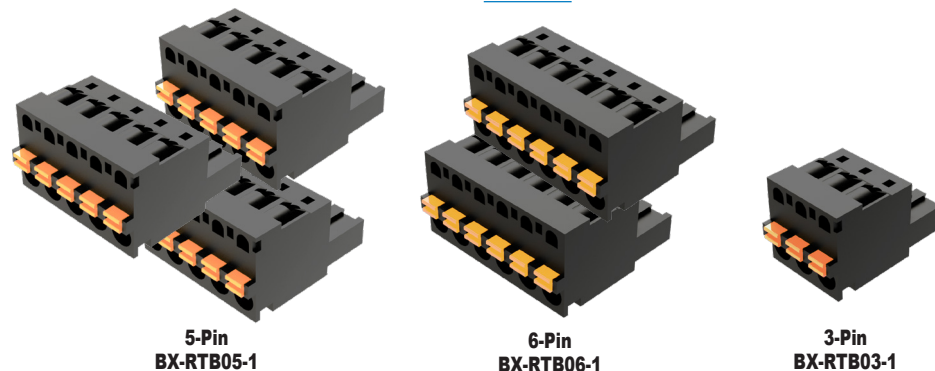
BX-RTB18 Screw Terminal Block Kit

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)	\$1290:	\$1297:	\$1281:	\$1294:
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
BX-DM1-18ED1	Feedthrough	ZL-RTB20 (Standard) OR ZL-RTB20-1 (Compact)	2	ZL-BX-CBL15 ZL-BX-CBL15-1 ZL-BX-CBL15-2	2
BX-DM1-18ED1-D					
BX-DM1-18ED2					
BX-DM1-18ED2-D					
BX-DM1-18ER**					
BX-DM1-18ER-D**					
BX-DM1-18AR**					
BX-DM1E-18ED13					
BX-DM1E-18ED13-D					
BX-DM1E-18ED23					
BX-DM1E-18ED23-D					
BX-DM1E-18ER3**					
BX-DM1E-18ER3-D**					
BX-DM1E-18AR3**					

* 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	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 18/18E MPUs

BX-DM1-18ED1
\$0129q:
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

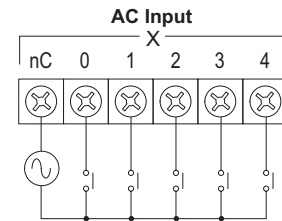
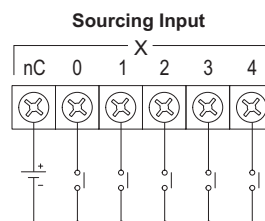
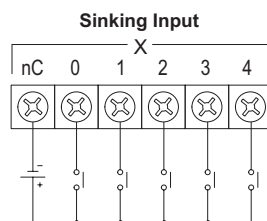
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

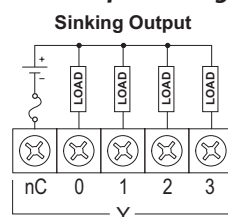
Input Type	Sink/Source
Total Inputs per Module	10 High Speed *
	* All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

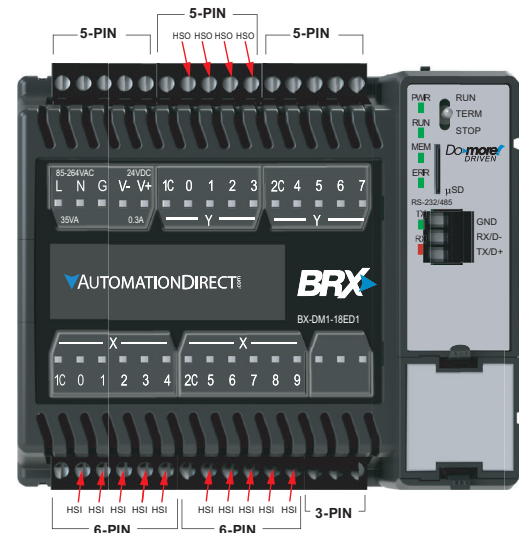
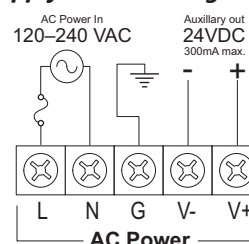
Discrete Input Wiring



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

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

BX 18/18E MPUs

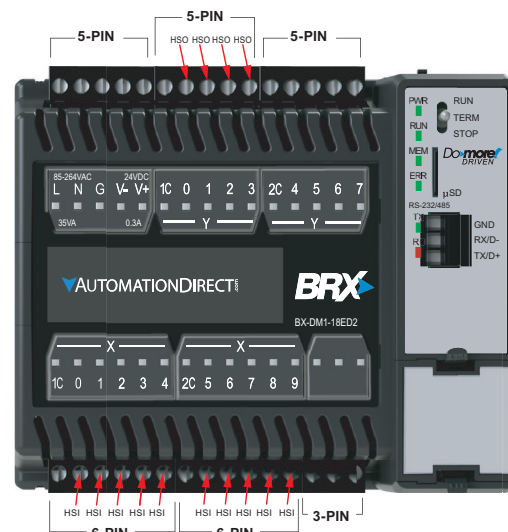
BX-DM1-18ED2 \$0129s:

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

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

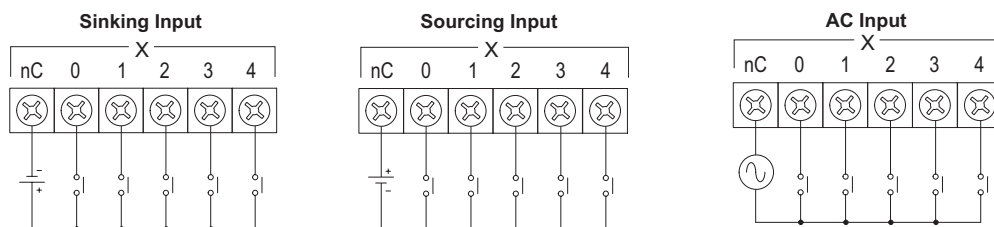


I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page.)

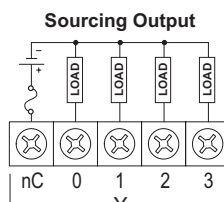
Discrete Output Specifications	
Output Type	Sourcing
Total Outputs per Module	8 Total – 4 High Speed (Y0...Y3)* 4 Standard (Y4...Y7) *All outputs may be used as standard outputs
Commons	2 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range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

I/O Wiring

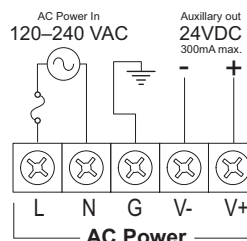
Discrete Input Wiring



Discrete Output Wiring



Supply Power Wiring



BX 18/18E MPUs

BX-DM1-18ER \$;0129t:
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

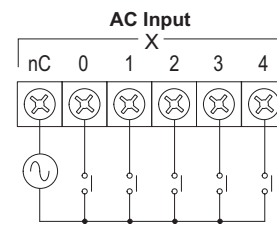
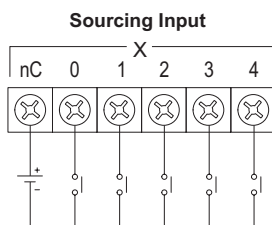
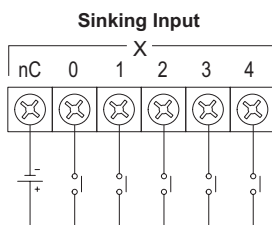
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

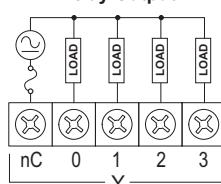
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

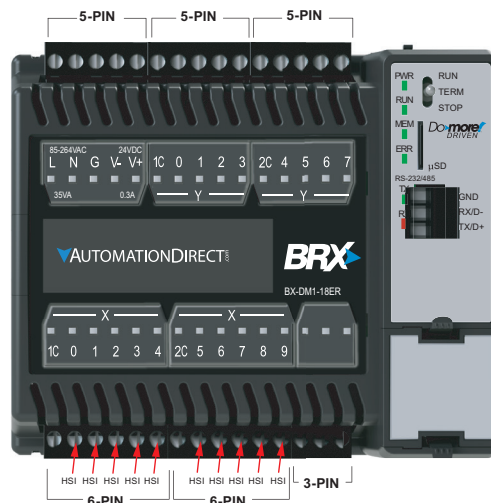
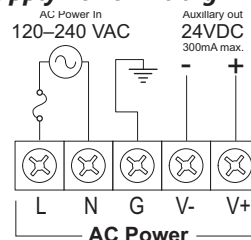
Discrete Input Wiring



Relay 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

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

BX 18/18E MPUs

BX-DM1-18AR \$0129u:

BRX MPU with Do-more! DM1 technology

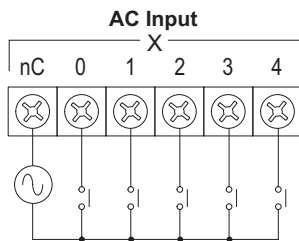
- 120VAC required; serial port; microSD slot
- Discrete input: 10-point, AC
- Discrete output: 8-point, relay.

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

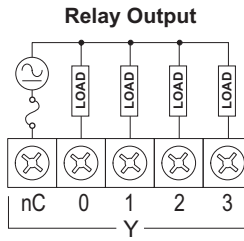
Discrete Input Specifications	
Input Type	AC
Total Inputs per Module	10 Standard
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	120–240 VAC
Input Voltage Range	85–264 VAC
Maximum Voltage	264 VAC RMS
AC Frequency	47–63 Hz
Input Current (typical)	9mA @ 120VAC, 13mA @ 220VAC
Input Impedance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

I/O Wiring

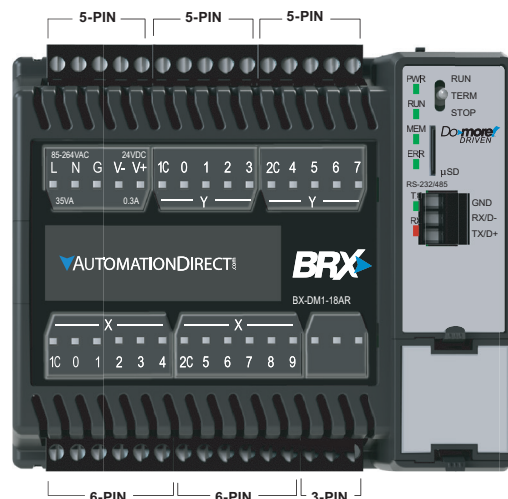
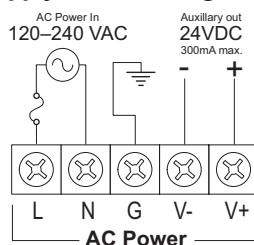
Discrete Input Wiring



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

BX 18/18E MPUs

BX-DM1-18ED1-D \$0129v:

BRX MPU with Do-more! DM1 technology

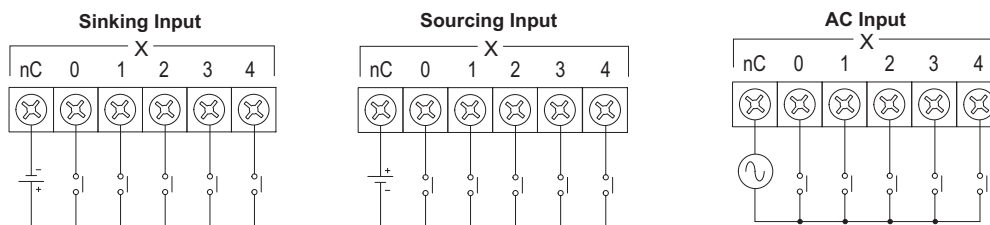
- 24VDC required; serial port; microSD slot
- Discrete input: 10-point, sink/source
- Discrete output: 8-point, sinking

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

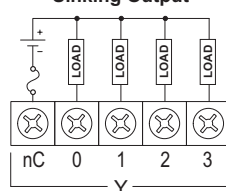
Discrete Input Specifications	
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed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

I/O Wiring

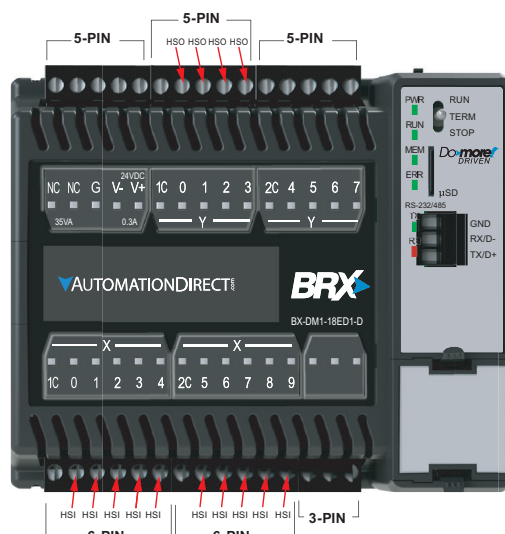
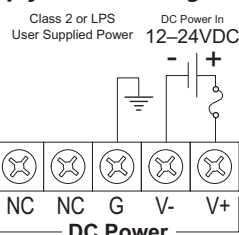
Discrete Input Wiring



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

BX 18/18E MPUs

BX-DM1-18ED2-D

\$0129x:

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

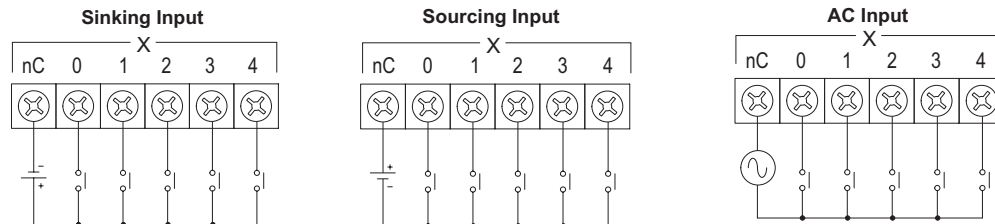
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

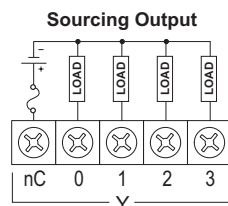
Input Type	Sink/Source
Total Inputs per Module	10 High Speed *
	* All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

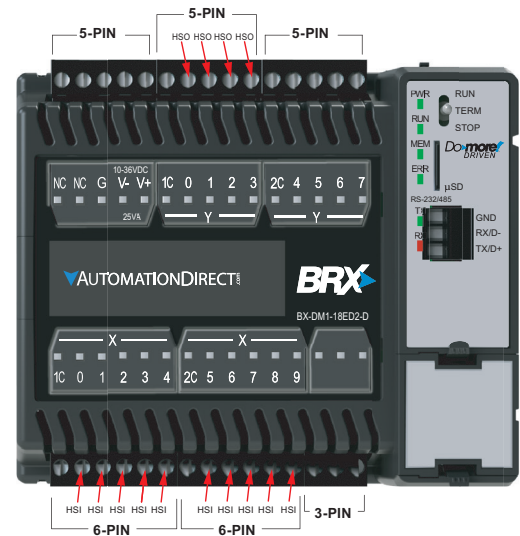
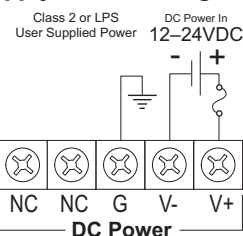
Discrete Input Wiring



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

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

BX 18/18E MPUs

BX-DM1-18ER-D

\$0129y:

BRX MPU with Do-more! DM1 technology

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

CPU Specifications

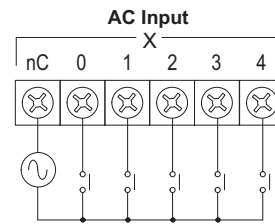
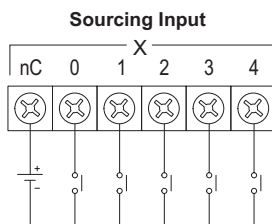
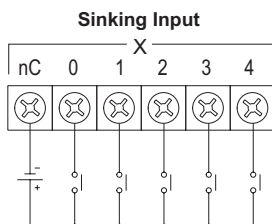
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

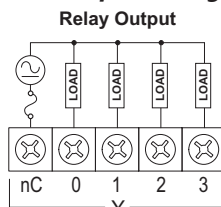
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

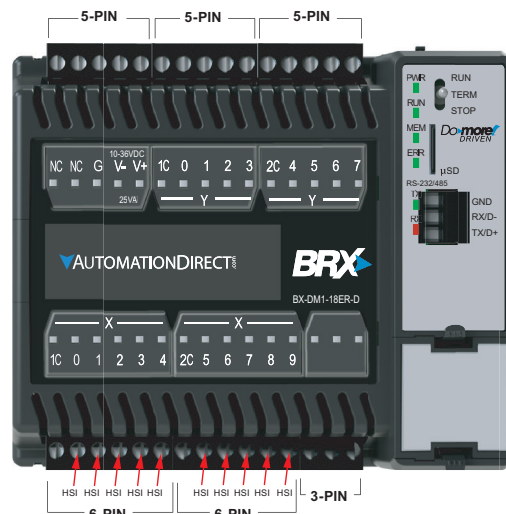
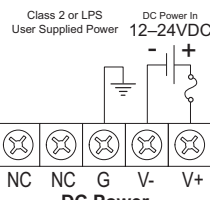
Discrete Input Wiring



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

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

BX 18/18E MPUs

BX-DM1E-18ED13 **\$0129z:**

BRX MPU with Do-more! DM1 technology

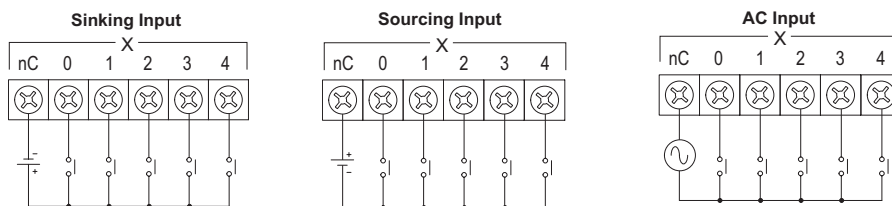
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, sinking
- Analog output: 1-channel, current / voltage

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

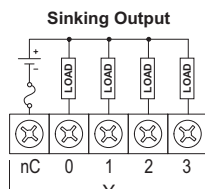
Discrete Input Specifications	
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed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

I/O Wiring

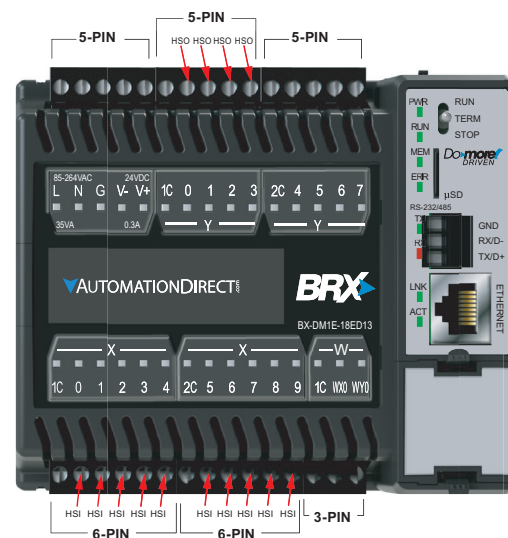
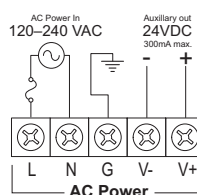
Discrete Input Wiring



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

BX 18/18E MPUs

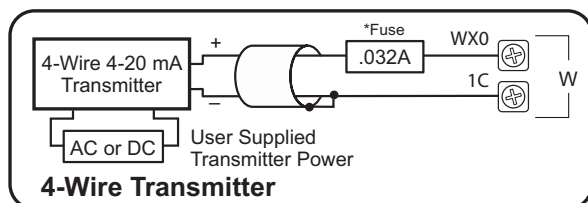
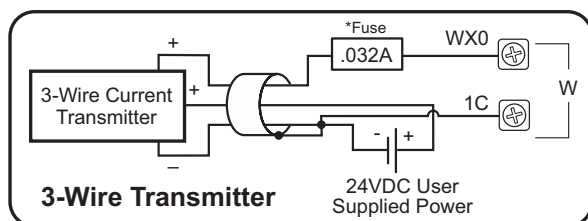
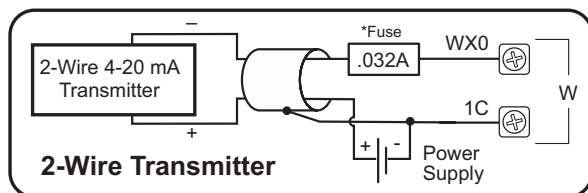
Analog Input Specifications

Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Input Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Resolution	16 bit @ $\pm 10\text{V}$, $\pm 20\text{mA}$
Conversion Time	1.2 ms
Input Impedance	100k Ω
Voltage Modes	
Input Impedance	249 Ω
Current Modes	

Analog Output Specifications

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

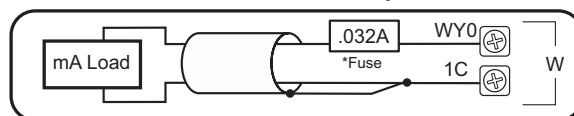
Analog Current Sinking Input Circuits



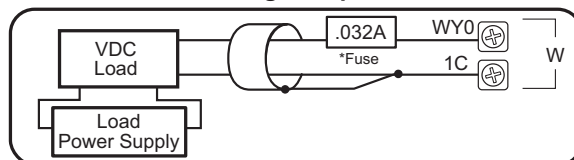
*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Output Wiring

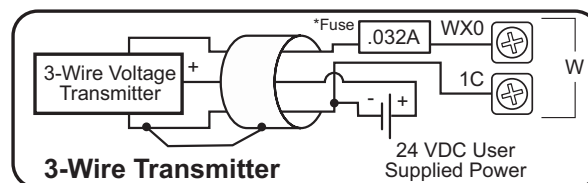
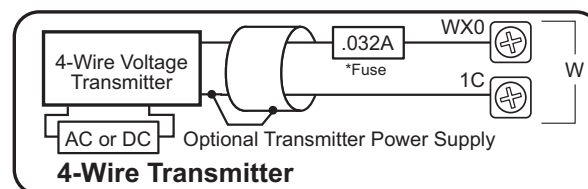
Current Source Output



Voltage Output



Analog Voltage Input Circuits



BX 18/18E MPUs

BX-DM1E-18ED23 \$;0129]:

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

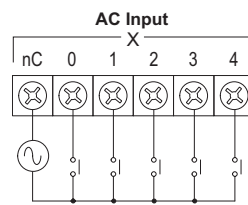
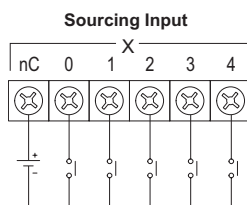
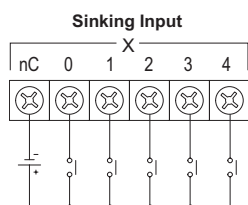
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management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

Discrete Input Specifications

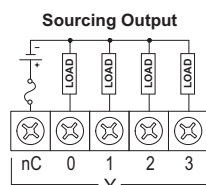
Input Type	Sink/Source
Total Inputs per Module	10 High Speed *
	* All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 μs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

I/O Wiring

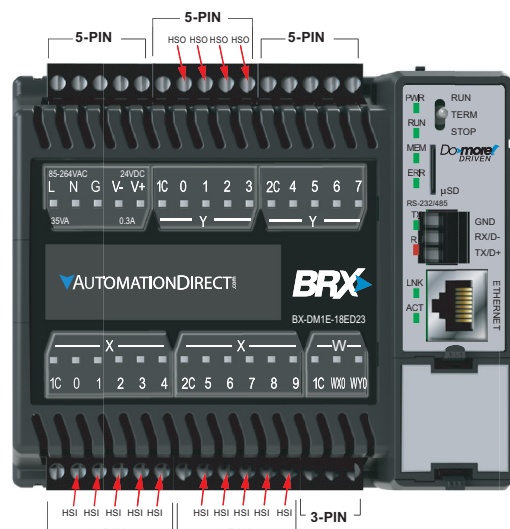
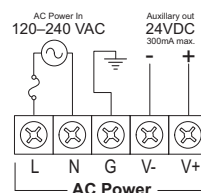
Discrete Input Wiring



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

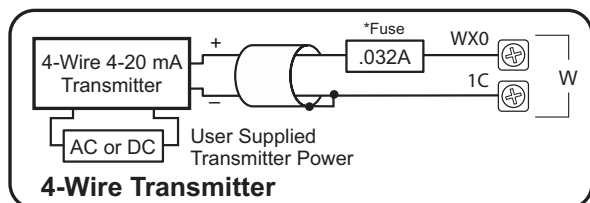
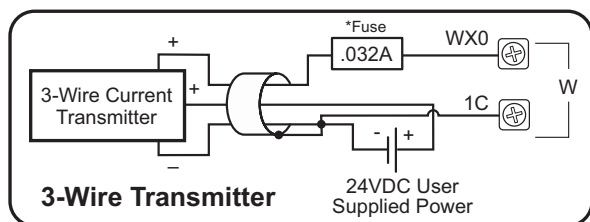
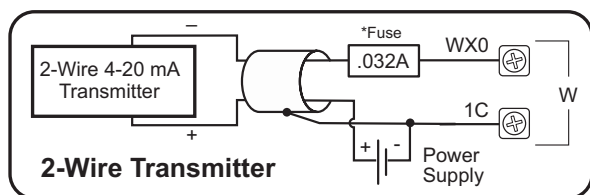
Output Type	Sourcing
Total Outputs per Module	8 Total – 4 High Speed (Y0...Y3)* 4 Standard (Y4...Y7) *All outputs may be used as standard outputs
Commons	2 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range	5–36 VDC
Maximum Voltage	36VDC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

BX 18/18E MPUs

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

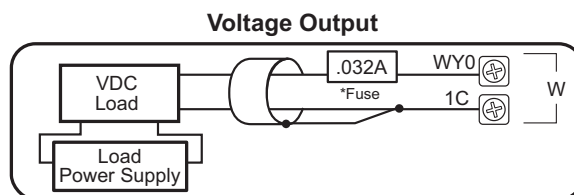
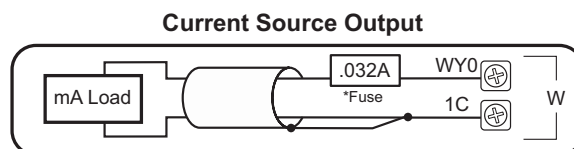
Analog Output Specifications	
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500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

Analog Current Sinking Input Circuits

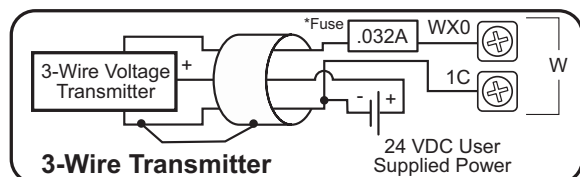
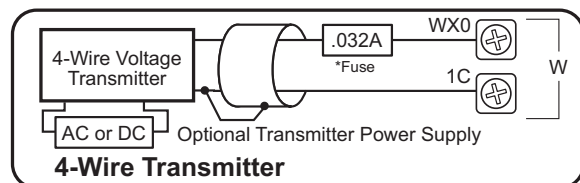


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Output Wiring



Analog Voltage Input Circuits



BX 18/18E MPUs

BX-DM1E-18ER3

\$;0129[:

BRX MPU with Do-more! DM1 technology

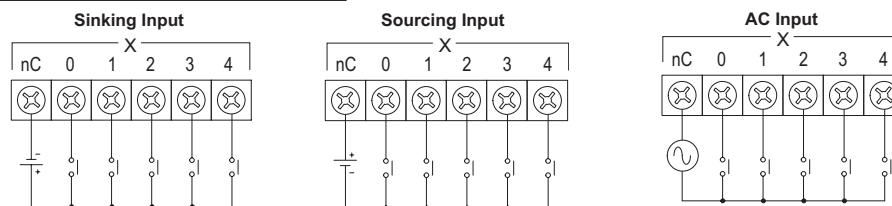
- 120VAC required; serial port; Ethernet port; microSD slot
- Discrete input: 10-point, sink/source
- Analog input: 1-channel, current / voltage
- Discrete output: 8-point, relay
- Analog output: 1-channel, current / voltage

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

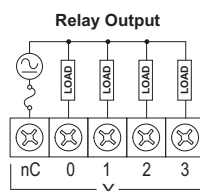
Discrete Input Specifications	
Input Type	Sink/Source
Total Inputs per Module	10 High Speed *
Commons	* All inputs may be used as standard inputs. 2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed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

I/O Wiring

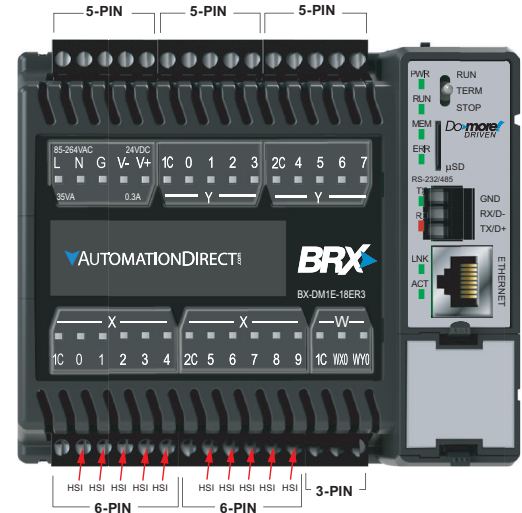
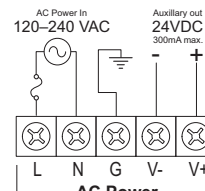
Discrete Input Wiring



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.)

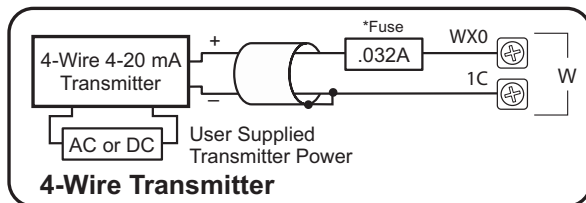
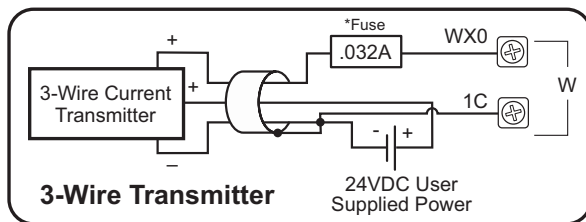
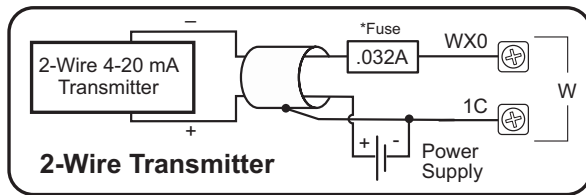
Discrete Output Specifications	
Output Type	Relay Form A (SPST)
Total Outputs per Module	8 Relay
Commons	2 (4 points/common) Isolated
Maximum current per common	8A
Nominal Voltage Ratings	12–48 VDC, 24–240 VAC
Operating Voltage Range	5–60 VDC, 5–264 VAC
Maximum Voltage	60VDC, 264VAC
Minimum Output Current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

BX 18/18E MPUs

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

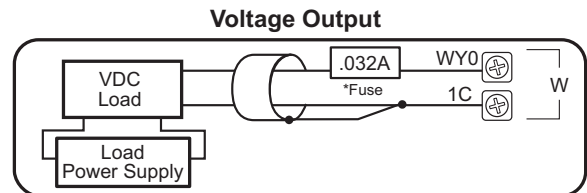
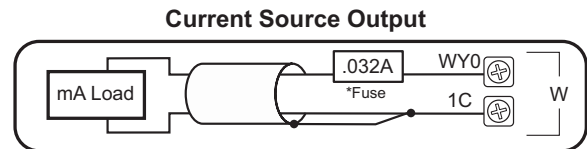
Analog Output Specifications	
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{ V}$, $0-5\text{ V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{ mA}$
Maximum Current Load Impedance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

Analog Current Sinking Input Circuits

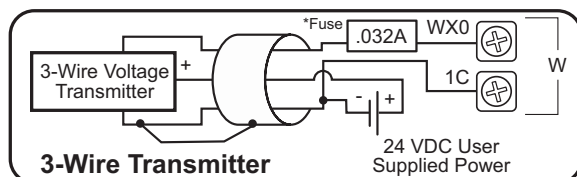
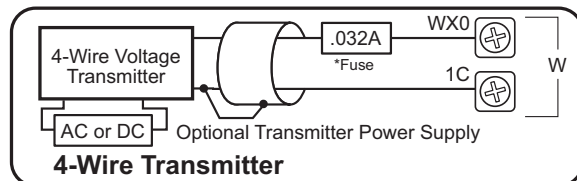


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Output Wiring



Analog Voltage Input Circuits



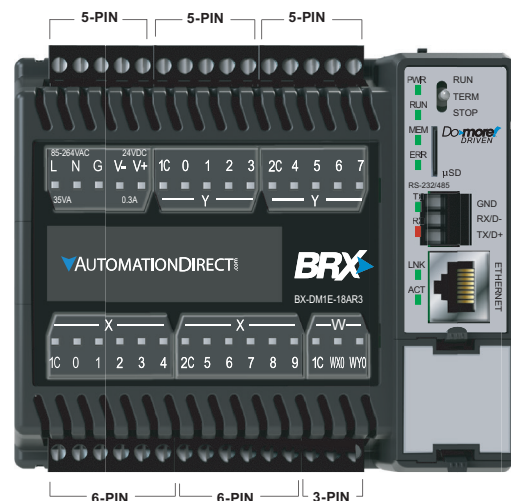
BX 18/18E MPUs

BX-DM1E-18AR3
\$0129_:
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	
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)
Expansion Modules	8 max, as long as the MPU power budget is not exceeded
Real Time Clock Accuracy	±2.6 s per day typical at 25°C ±8s per day max at 60°C
Programming Software	Do-more! Designer – Ver. 2.0 or higher
Programming Cable Options	BX-PGM-CBL
Custom Label Window Size	0.75" x 2.25" [19mm x 57.2 mm]
MPU Weight	324g [11.4 oz]

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

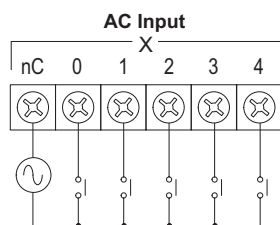


I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 18/18E MPU Accessories page.)

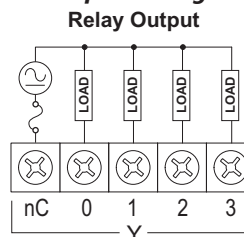
Discrete Output Specifications	
Output Type	Relay Form A (SPST)
Total Outputs per Module	8 Relay
Commons	2 (4 points/common) Isolated
Maximum current per common	8A
Nominal Voltage Ratings	12–48 VDC, 24–240 VAC
Operating Voltage Range	5–60 VDC, 5–264 VAC
Maximum Voltage	60VDC, 264VAC
Minimum Output Current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

I/O Wiring

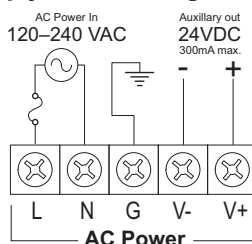
Discrete Input Wiring



Discrete Output Wiring



Supply Power Wiring

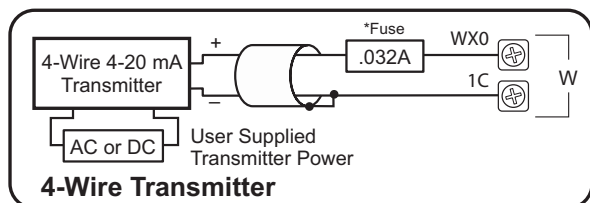
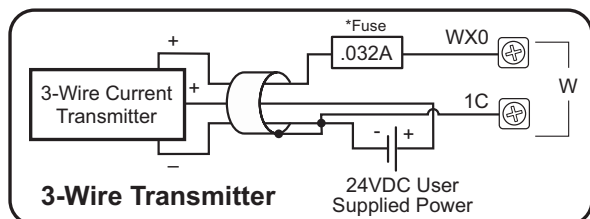
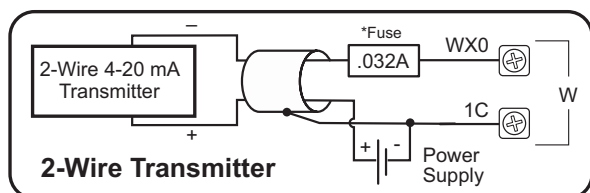


BX 18/18E MPUs

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

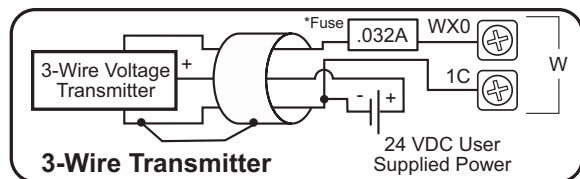
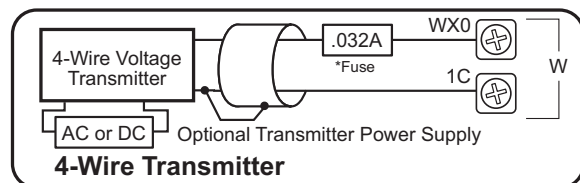
Analog Output Specifications	
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500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

Analog Current Sinking Input Circuits

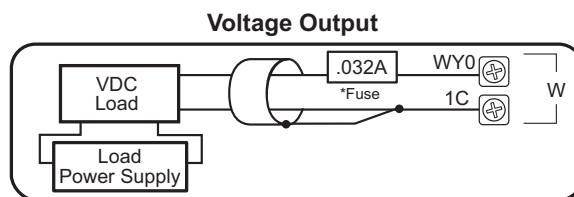
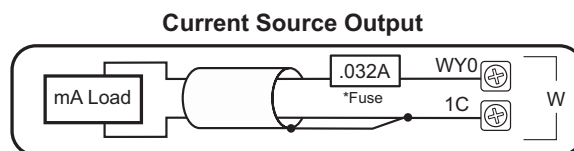


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits



Analog Output Wiring



BX 18/18E MPUs

BX-DM1E-18ED13-D \$0129#:

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

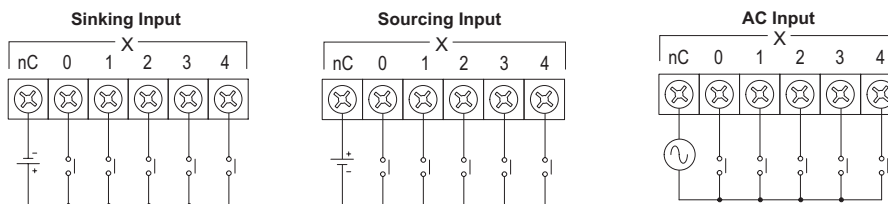
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management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

Discrete Input Specifications

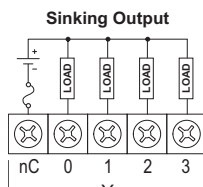
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

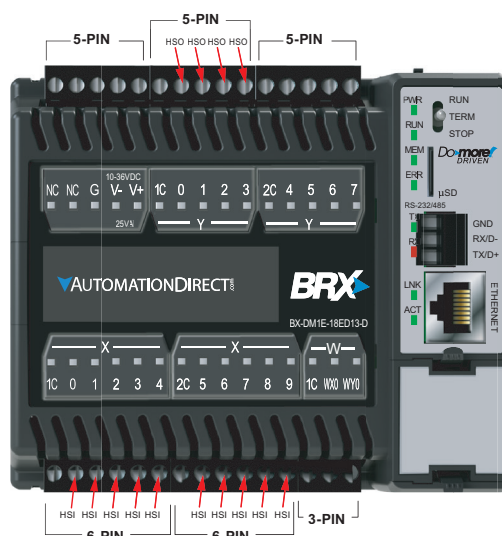
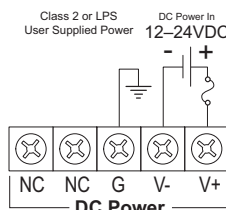
Discrete Input Wiring



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

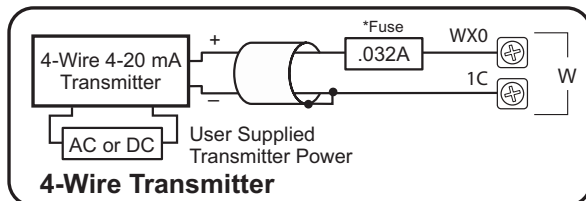
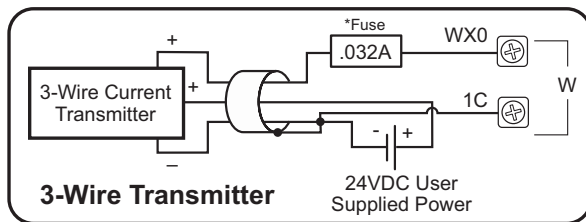
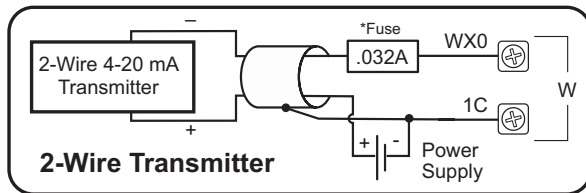
Output Type	Sinking
Total Outputs per Module	8 Total – 4 High Speed (Y0...Y3)* 4 Standard (Y4...Y7) *All outputs may be used as standard outputs
Commons	2 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range	5–36 VDC
Maximum Voltage	36VDC
Minimum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

BX 18/18E MPUs

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

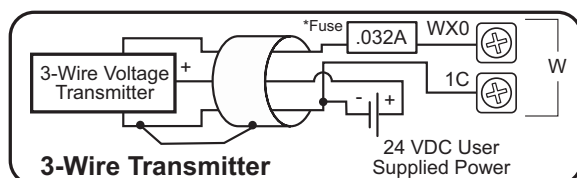
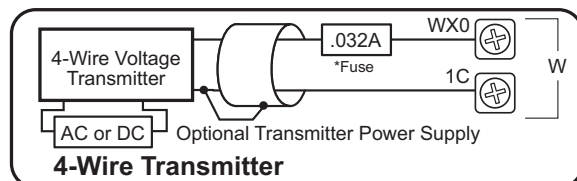
Analog Output Specifications	
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500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

Analog Current Sinking Input Circuits

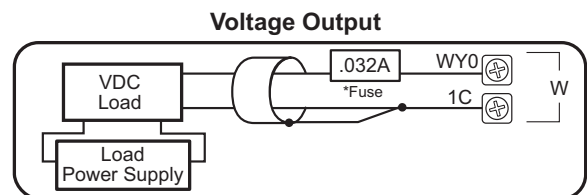
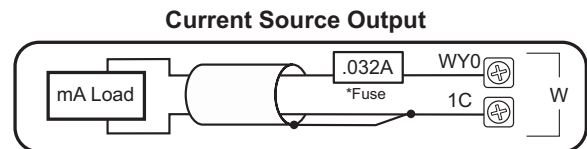


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits



Analog Output Wiring



BX 18/18E MPUs

BX-DM1E-18ED23-D \$;0129!:

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

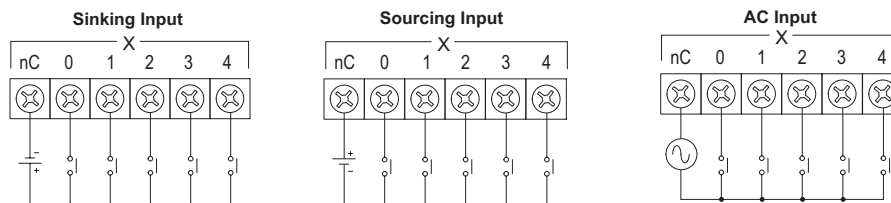
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management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

Discrete Input Specifications

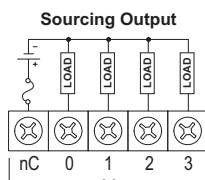
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

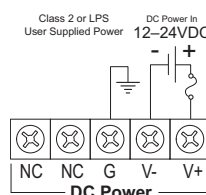
Discrete Input Wiring



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

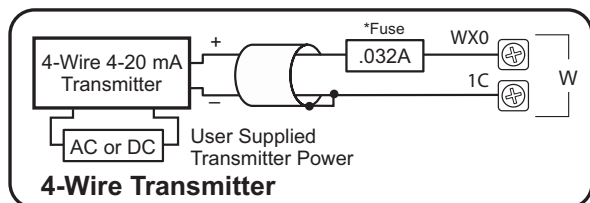
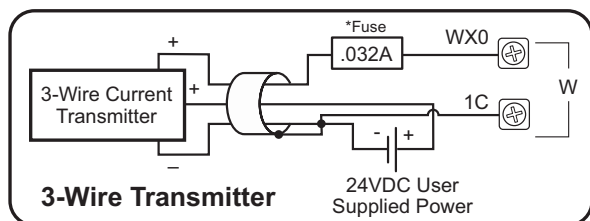
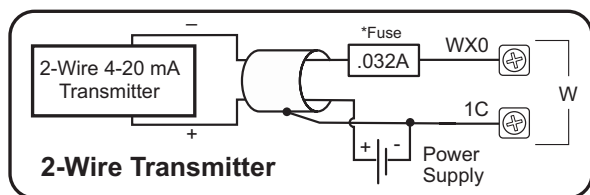
Output Type	Sourcing
Total Outputs per Module	8 Total – 4 High Speed (Y0...Y3)* 4 Standard (Y4...Y7) *All outputs may be used as standard outputs
Commons	2 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range	5–36 VDC
Maximum Voltage	36VDC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

BX 18/18E MPUs

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

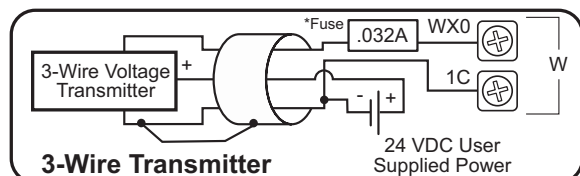
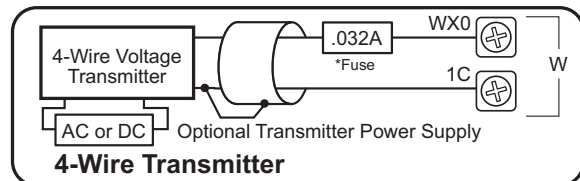
Analog Output Specifications	
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500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

Analog Current Sinking Input Circuits

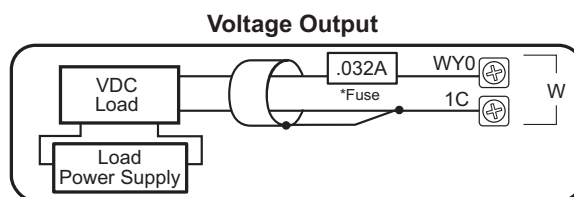
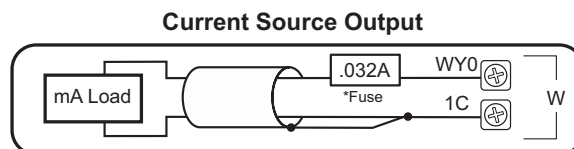


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits



Analog Output Wiring



BX 18/18E MPUs

BX-DM1E-18ER3-D \$0129?:

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

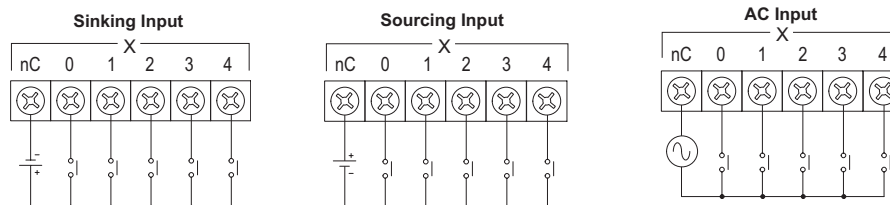
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management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

Discrete Input Specifications

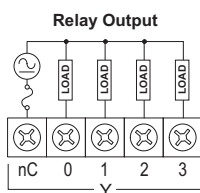
Input Type	Sink/Source
Total Inputs per Module	10 High Speed * * All inputs may be used as standard inputs.
Commons	2 (5 points/common) Isolated
Nominal Voltage Rating	12–24 VAC/DC
Input Voltage Range	9–30 VAC/DC
Maximum Voltage	30 VAC/DC
DC Frequency	0–250kHz - High Speed
Minimum Pulse Width	0.5 µs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

I/O Wiring

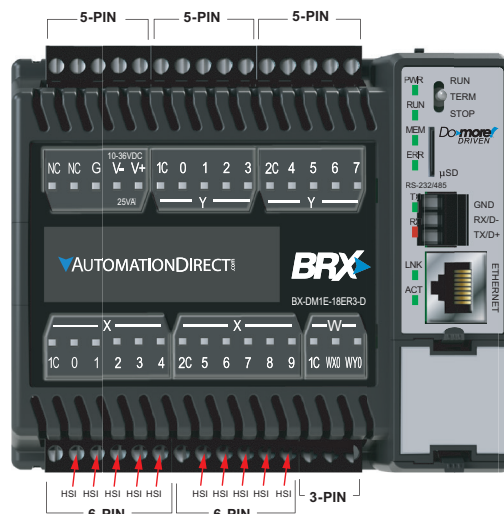
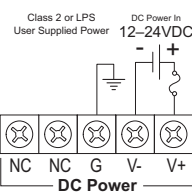
Discrete Input Wiring



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

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

BX 18/18E MPUs

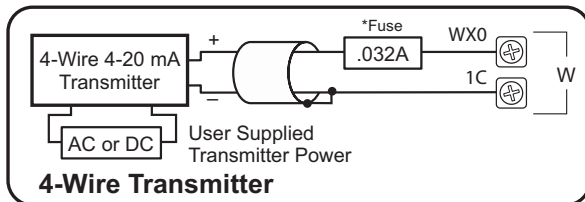
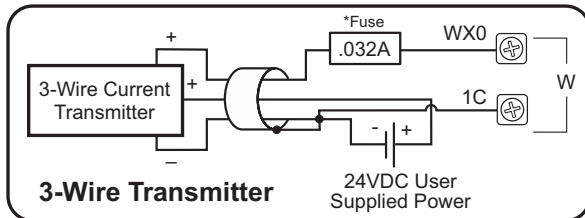
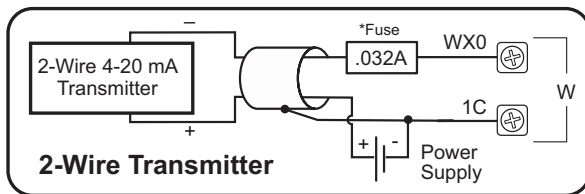
Analog Input Specifications

Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Input Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Resolution	16 bit @ $\pm 10\text{V}$, $\pm 20\text{mA}$
Conversion Time	1.2 ms
Input Impedance	100k Ω
Input Impedance Voltage Modes	
Input Impedance Current Modes	249 Ω

Analog Output Specifications

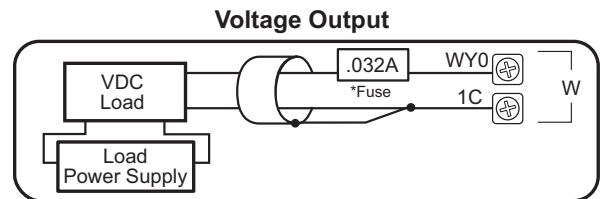
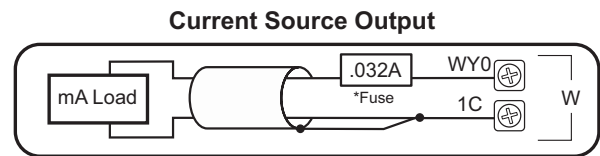
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution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

Analog Current Sinking Input Circuits

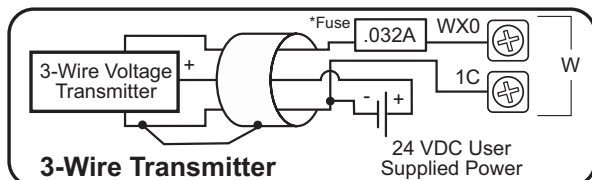
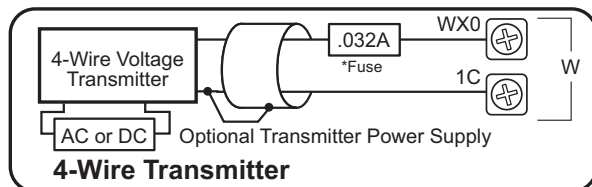


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Output Wiring



Analog Voltage Input Circuits

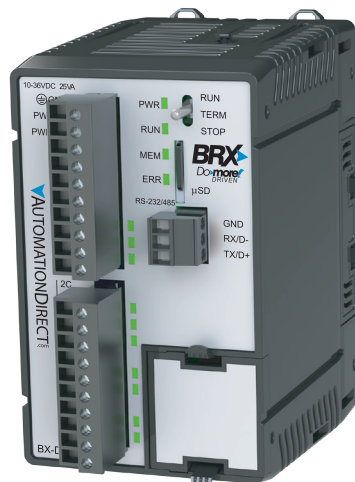


BX 10 MPUs

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)

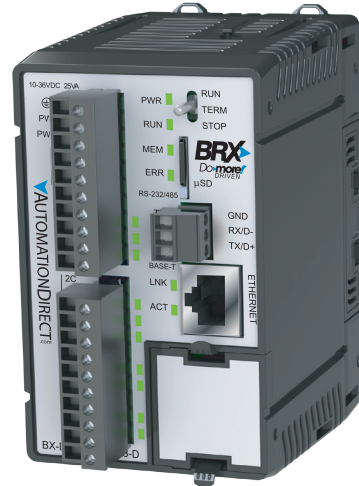
BX 10 MPUs					
Part Number	Price	External Power	Discrete Input	Discrete Output	Expansion Modules
<u>BX-DM1-10ED1-D</u>	\$0129h:	12–24 VDC	6 High-Speed, Sinking or Sourcing	2 High-Speed 2 Standard DC Sinking	8, as long as the MPU power budget is not exceeded
<u>BX-DM1-10ED2-D</u>	\$-0129i:			2 High-Speed 2 Standard DC Sourcing	
<u>BX-DM1-10ER-D</u>	\$-0129j:			4 Form A Relay	
<u>BX-DM1-10AR-D</u>	\$0129k:		6 Standard AC		

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



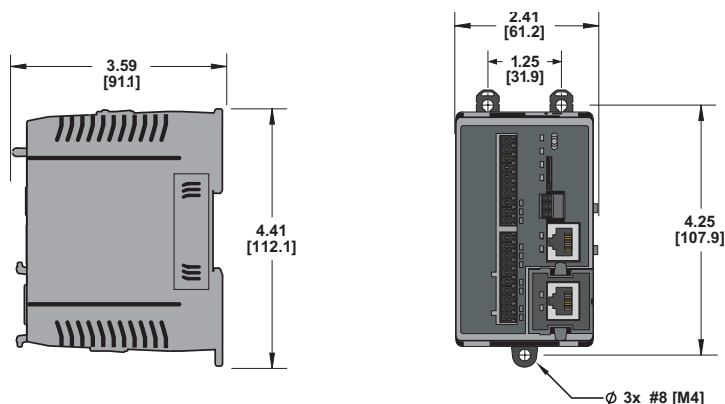
BX 10E Micro PLC Unit (MPU)
(Built-in Analog and Ethernet port)

BX 10E MPUs							
Part Number	Price	External Power	Discrete Inputs	Discrete Output	Analog		Expansion Modules
					Input	Output	
<u>BX-DM1E-10ED13-D</u>	\$-0129l:	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
<u>BX-DM1E-10ED23-D</u>	\$0129n:			2 High-Speed 2 Standard DC Sourcing			
<u>BX-DM1E-10ER3-D</u>	\$0129o:			4 Form A Relay			
<u>BX-DM1E-10AR3-D</u>	\$0129p:		6 Standard AC				

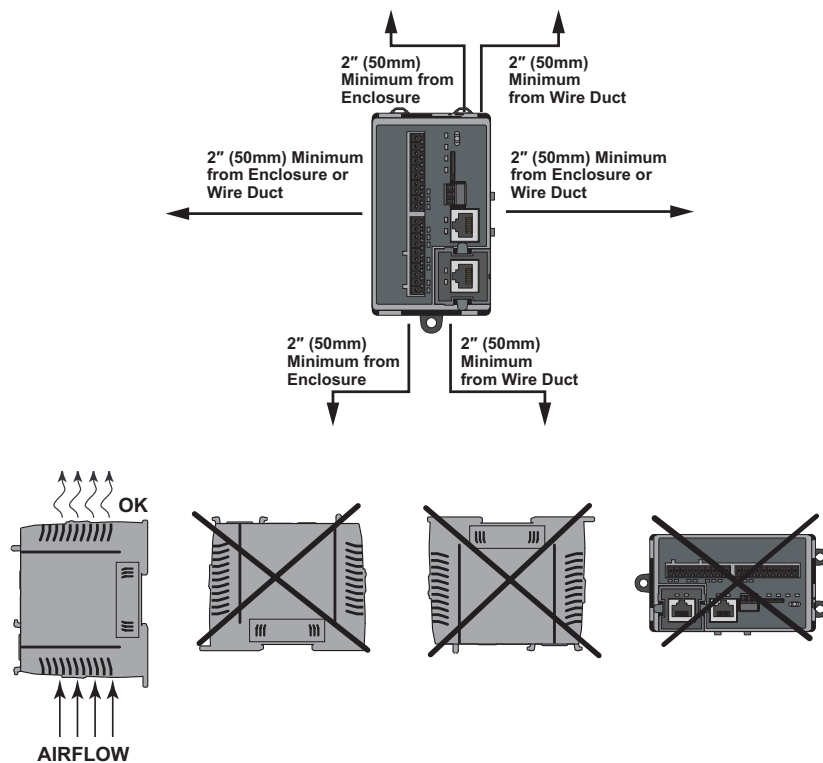
Built-in Ethernet Specifications	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
Port Status LED	LED is solid when network LINK is established. LED flashes when port is active (ACT).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

BX 10/10E MPU_s

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

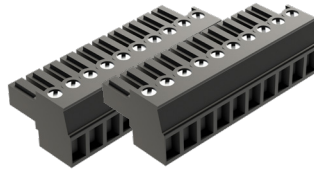
The terminal block connectors are provided in kits and can be easily ordered as a single part number to receive all the terminal block connectors needed. Each

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

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 Screw Terminal Block Kit

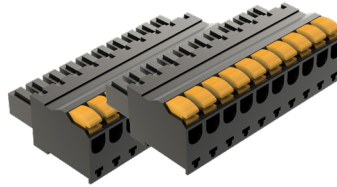
This terminal block kit includes 2 10-pin 3.8 mm terminal blocks ([BX-RTB10](#)). These are 90-degree screw terminal blocks. Wire is 180-degree pass through.



BX-RTB10

BX-RTB10-1 Screw Terminal Block Kit

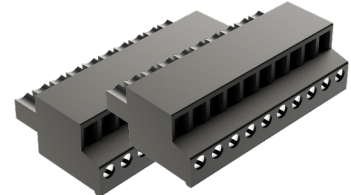
This terminal block kit includes 2 10-pin 3.8 mm terminal blocks ([BX-RTB10-1](#)). These are 90-degree screw terminal blocks. Wire is 180-degree pass through.



BX-RTB10-1

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	BX-RTB10	BX-RTB10-1	BX-RTB10-2
Price (pkg)	\$128:	\$1296:	\$129b:
Connector Type	Screw Type-90-degree	Spring Clamp Type-180-degree	Screw Type-180-degree
Wire Exit	180-degree	180-degree	180-degree
Pitch	3.81 mm	3.81 mm	3.81 mm
Screw Size	M2	N/A	M2
Recommended Screw Torque	<1.77 lb·in [0.2 N·m]	N/A	<1.77 lb·in [0.2 N·m]
Screwdriver Blade Width	2.5 mm	2.5 mm	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG	28–18 AWG	30–16 AWG
Wire Gauge (Dual Wire)	28–16 AWG	30–20 AWG (Dual Wire Ferrule Required)	30–18 AWG
Wire Strip Length	0.24 in [6mm]	0.35 in [9mm]	0.26 in [6.5 mm]
Equiv. Dinkle part #	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
BX-DM1-10ED1-D	Feedthrough	ZL-RTB20 (Standard) OR ZL-RTB20-1 (Compact)	ZL-BX-CBL20 ZL-BX-CBL20-1 ZL-BX-CBL20-2	1
BX-DM1-10ED2-D				
BX-DM1-10ER-D**				
BX-DM1-10AR-D**				
BX-DM1E-10ED13-D				
BX-DM1E-10ED23-D				
BX-DM1E-10ER3-D**				
BX-DM1E-10AR3-D**				

* 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	<u>ZL-RTB20</u> (Maximum of 4 needed)	<u>ZL-RTB20-1</u> (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

\$0129h:

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

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

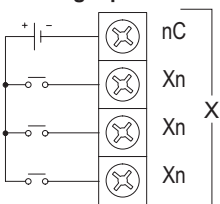
Discrete Input Specifications

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

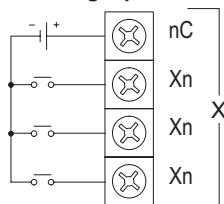
I/O Wiring

Discrete Input Wiring

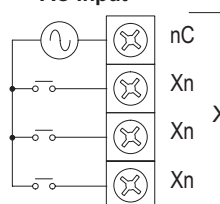
Sinking Input



Sourcing Input

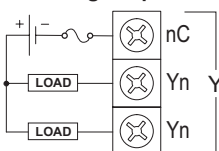


AC Input

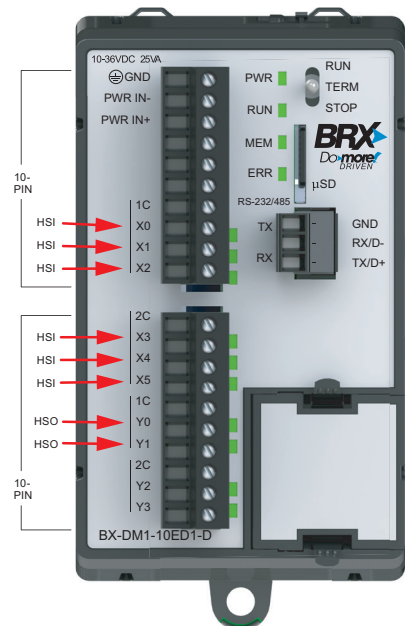
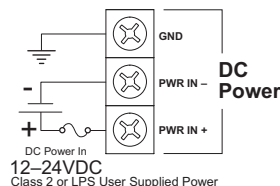


Discrete Output Wiring

Sinking Output



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

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

BX 10/10E MPUs

BX-DM1-10ED2-D \$-0129i:

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

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

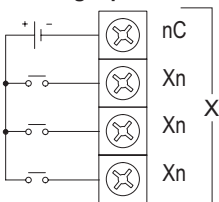
Discrete Input Specifications

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

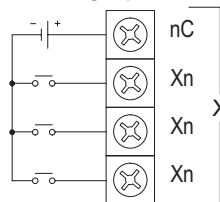
I/O Wiring

Discrete Input Wiring

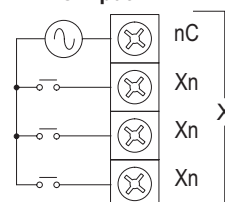
Sinking Input



Sourcing Input

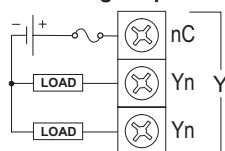


AC Input

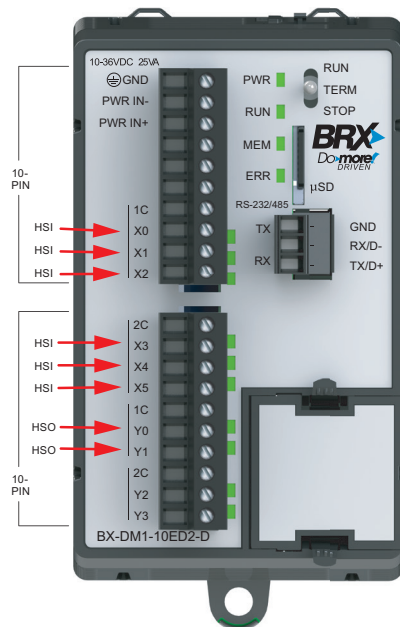
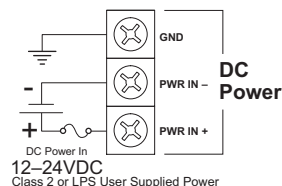


Discrete Output Wiring

Sourcing Output



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

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

BX 10/10E MPUs

BX-DM1-10ER-D

\$-0129j:

BRX MPU with Do-more! DM1 technology

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

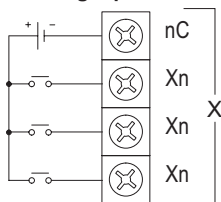
CPU Specifications	
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD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

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

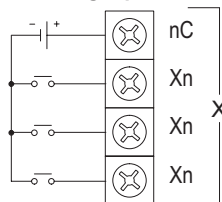
I/O Wiring

Discrete Input Wiring

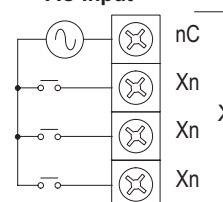
Sinking Input



Sourcing Input

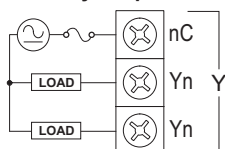


AC Input

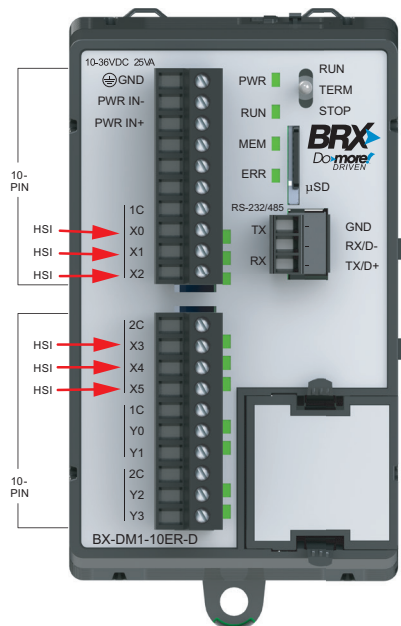
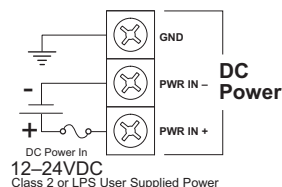


Discrete Output Wiring

Relay Output



Supply Power Wiring



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

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

BX 10/10E MPUs

BX-DM1-10AR-D

\$0129k:

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

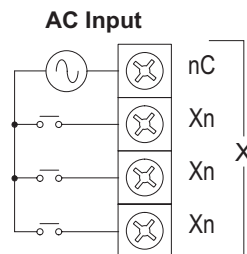
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data Logging/File Management	microSD card slot (32G max)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

Discrete Input Specifications

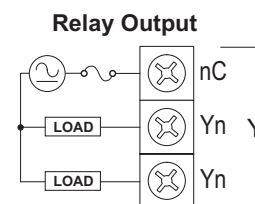
Input Type	AC
Total Inputs per Module	6 Standard
Commons	2 (3 points/common) Isolated
Nominal Voltage Rating	120–240 VAC
Input Voltage Range	85–264 VAC
Maximum Voltage	264 VAC RMS
AC Frequency	47–63 Hz
Input Current (typical)	9mA @ 120VAC, 13mA @ 220VAC
Input Impedance	15kΩ
ON Voltage Level	> 85 VAC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

I/O Wiring

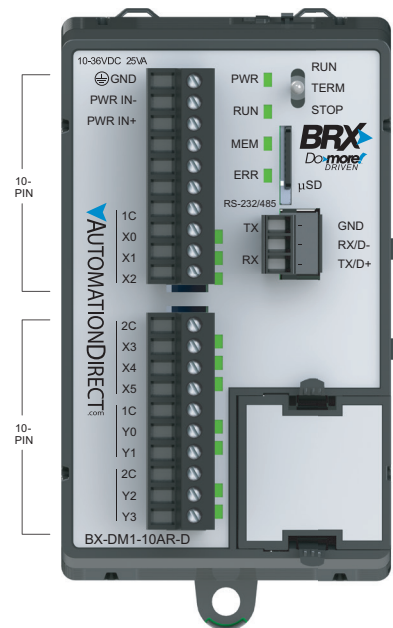
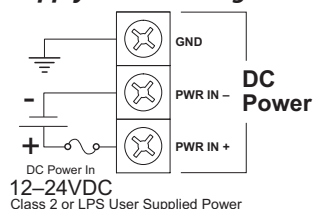
Discrete Input Wiring



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

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

BX 10/10E MPUs

BX-DM1E-10ED13-D \$-0129L:

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

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

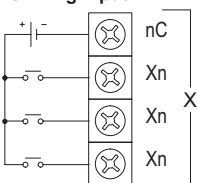
Discrete Input Specifications

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

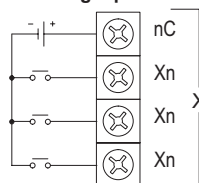
I/O Wiring

Discrete Input Wiring

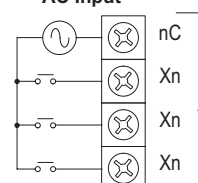
Sinking Input



Sourcing Input

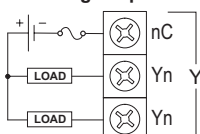


AC Input

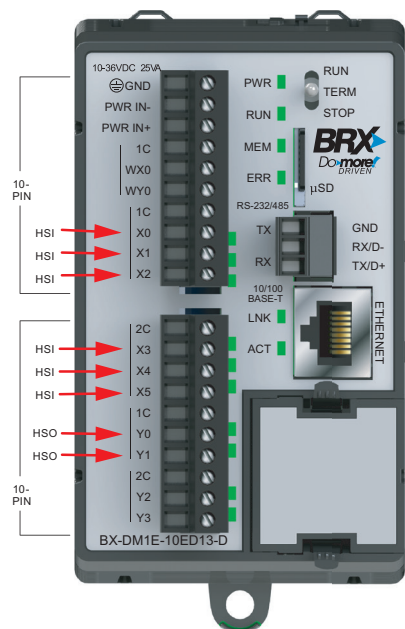
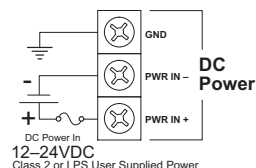


Discrete Output Wiring

Sinking Output



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

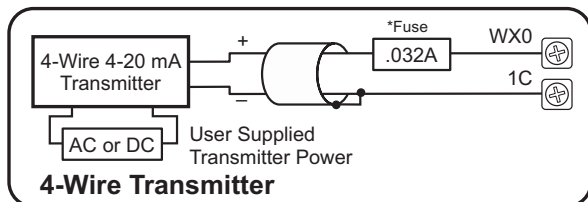
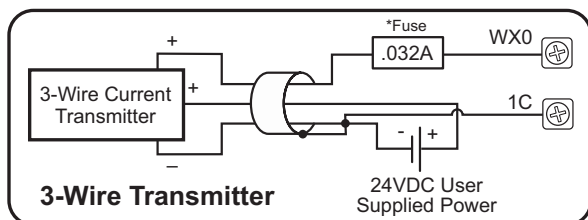
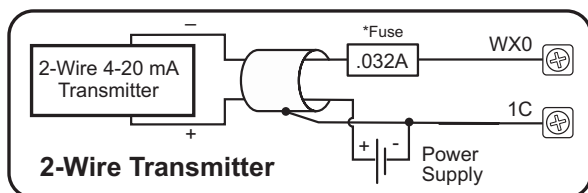
Output Type	Sinking
Total Outputs per Module	4 Total – 2 High Speed (Y0...Y1)* 2 Standard (Y2...Y3) *All outputs may be used as standard outputs
Commons	2 (2 points/common) Isolated
Maximum Current per Common	1A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range	5–36 VDC
Maximum Voltage	36VDC
Minimum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

BX 10/10E MPUs

Analog Input Specifications

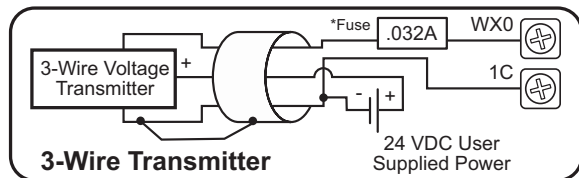
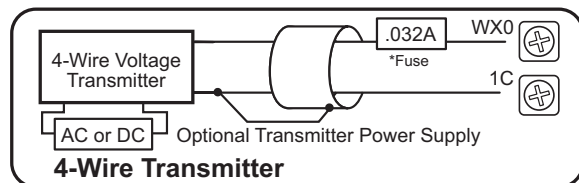
Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{ V}$, $0-5\text{ V}$
Input Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{ mA}$
Resolution	16 bit @ $\pm 10\text{V}$, $\pm 20\text{mA}$
Conversion Time	1.2 ms
Input Impedance	100k Ω
Voltage Modes	
Input Impedance	249 Ω
Current Modes	

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

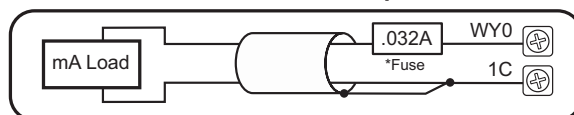


Analog Output Specifications

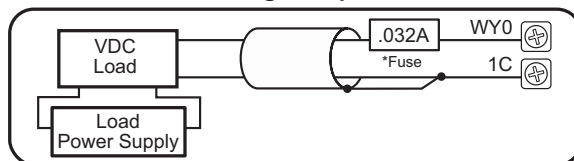
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{ V}$, $0-5\text{ V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{ mA}$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms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

Analog Output Wiring

Current Source Output



Voltage Output



BX 10/10E MPUs

BX-DM1E-10ED23-D \$0129n:

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

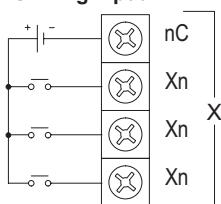
CPU Specifications	
Program Memory Type	FLASH memory
User Data Memory Type	Battery-backed RAM, user configurable
Serial Port	RS-232/485 3-Pin, Software selectable
Ethernet Port	RJ-45, 10/100 Mbps
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B
Data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

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

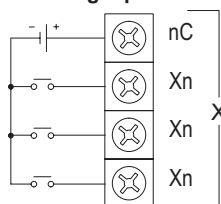
I/O Wiring

Discrete Input Wiring

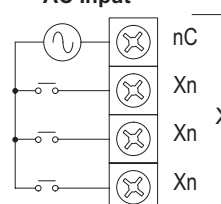
Sinking Input



Sourcing Input

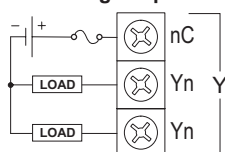


AC Input

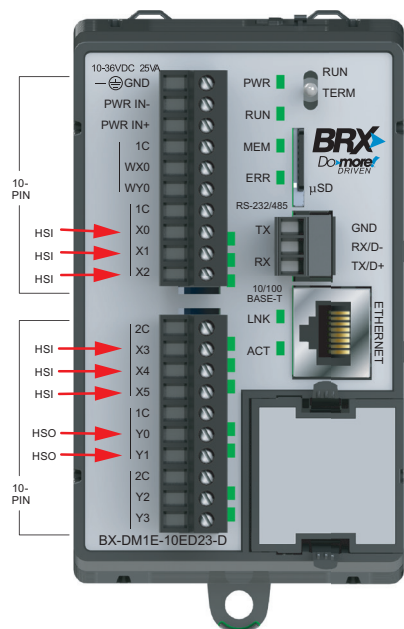
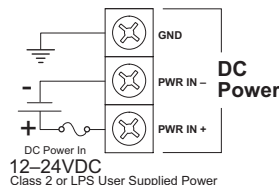


Discrete Output Wiring

Sourcing Output



Supply Power Wiring



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

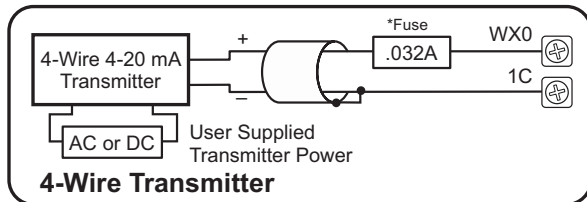
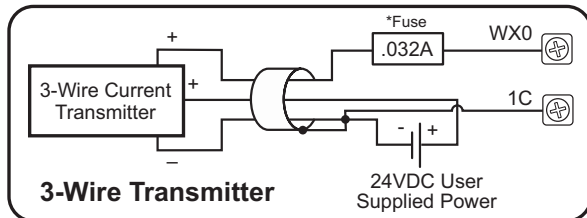
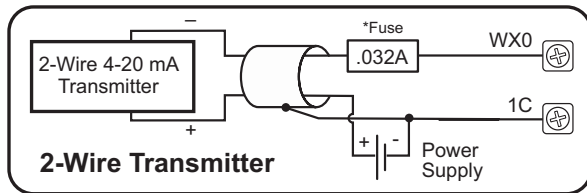
Discrete Output Specifications	
Output Type	Sourcing
Total Outputs per Module	4 Total – 2 High Speed (Y0...Y1)* 2 Standard (Y2...Y3) *All outputs may be used as standard outputs
Commons	2 (2 points/common) Isolated
Maximum Current per Common	1A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range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

BX 10/10E MPUs

Analog Input Specifications

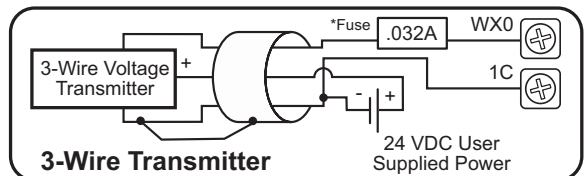
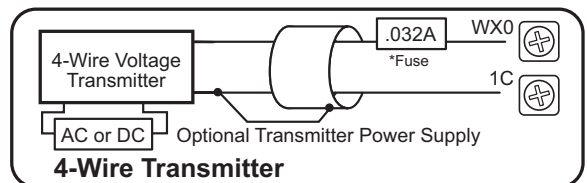
Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Input Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Resolution	16 bit @ $\pm 10\text{V}$, $\pm 20\text{mA}$
Conversion Time	1.2 ms
Input Impedance	100k Ω
Input Impedance Voltage Modes	
Input Impedance Current Modes	249 Ω

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

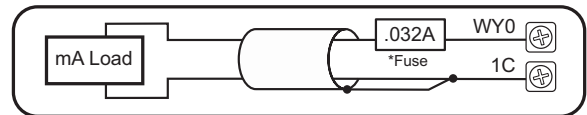


Analog Output Specifications

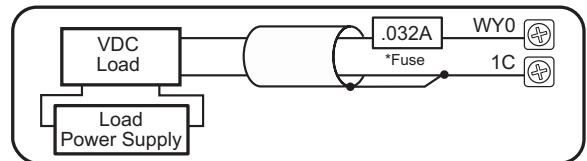
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0-10\text{V}$, $0-5\text{V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4-20\text{mA}$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution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

Analog Output Wiring

Current Source Output



Voltage Output



BX 10/10E MPUs

BX-DM1E-10ER3-D \$0129^o:

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

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

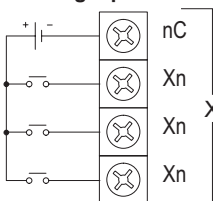
Discrete Input Specifications

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

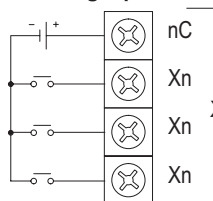
I/O Wiring

Discrete Input Wiring

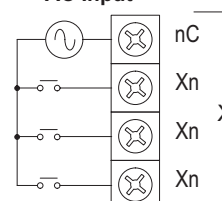
Sinking Input



Sourcing Input

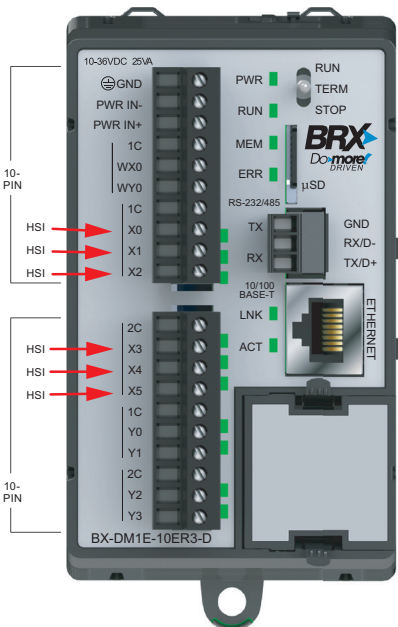
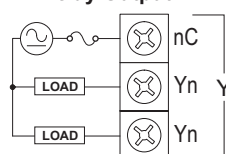


AC Input



Discrete Output Wiring

Relay Output

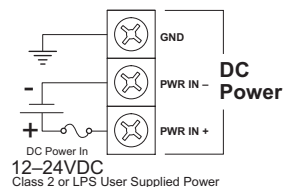


I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 10/10E MPU Accessories page.)

Discrete Output Specifications

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

Supply Power Wiring

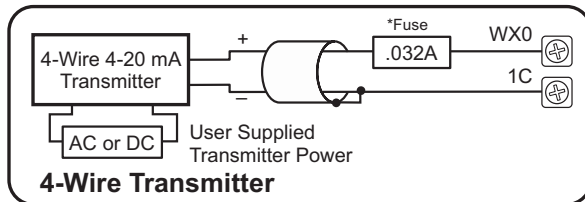
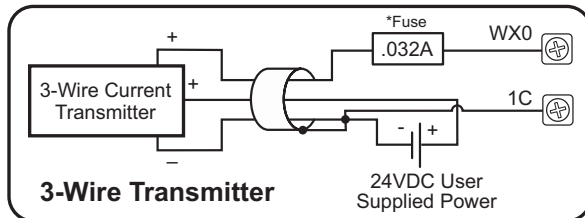
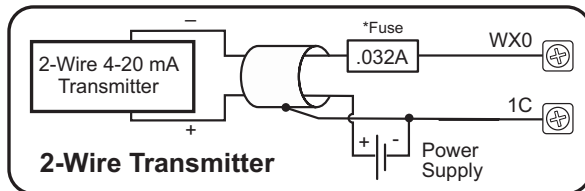


BX 10/10E MPUs

Analog Input Specifications

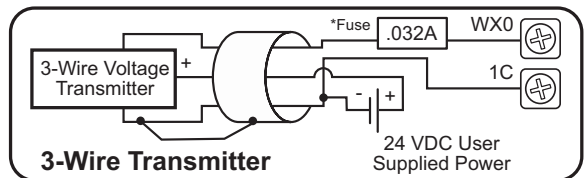
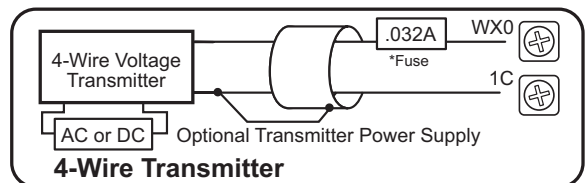
Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10V$, $0-5V$
Input Current Range	Software Selectable $\pm 20mA$, $4-20mA$
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$
Conversion Time	1.2 ms
Input Impedance	100k Ω
Input Impedance Voltage Modes	
Input Impedance Current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

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

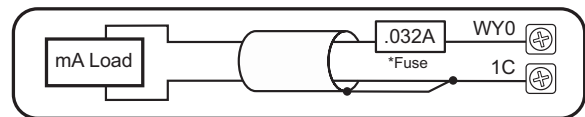


Analog Output Specifications

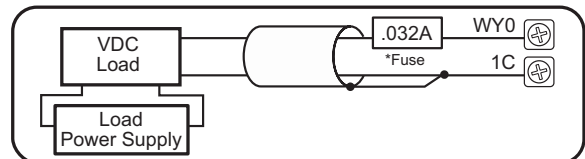
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10V$, $\pm 5V$, $0-10V$, $0-5V$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20mA$, $4-20mA$
Maximum Current Load Impedance	500 Ω
Conversion Time	< 1ms
Resolution	16 bit @ $\pm 10V$, $\pm 20mA$

Analog Output Wiring

Current Source Output



Voltage Output



BX 10/10E MPUs

BX-DM1E-10AR3-D \$0129p:

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

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

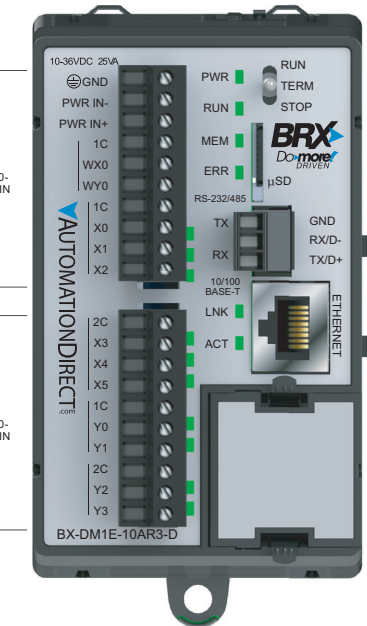
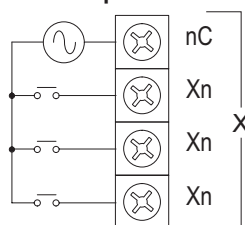
Discrete Input Specifications

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

I/O Wiring

Discrete Input Wiring

AC Input



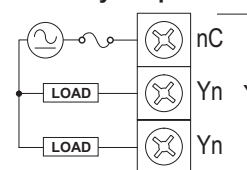
I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 10/10E MPU Accessories page.)

Discrete Output Specifications

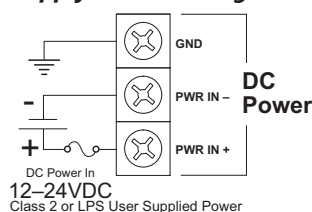
Output Type	Relay Form A (SPST)
Total Outputs per Module	4 Relay
Commons	2 (2 points/common) Isolated
Maximum current per common	4A
Nominal Voltage Ratings	12–48 VDC, 24–240 VAC
Operating Voltage Range	5–60 VDC, 5–264 VAC
Maximum Voltage	60VDC, 264VAC
Minimum Output Current	0.1 mA @ 24VAC/DC
Maximum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

Discrete Output Wiring

Relay Output



Supply Power Wiring

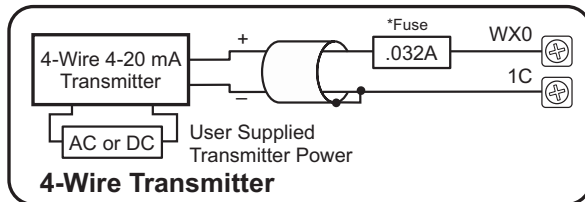
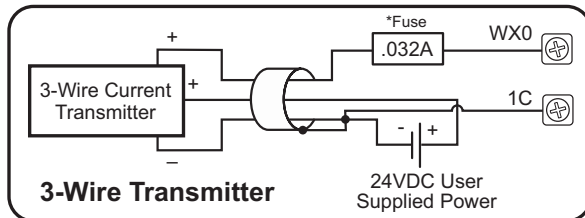
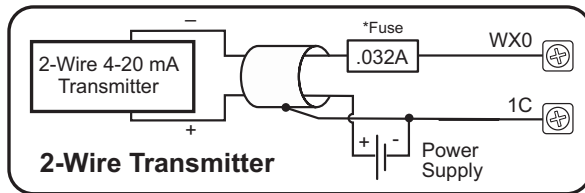


BX 10/10E MPUs

Analog Input Specifications

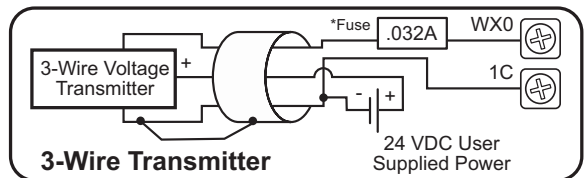
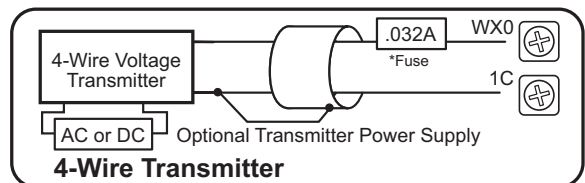
Inputs per Module	1
Input Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0\text{--}10\text{ V}$, $0\text{--}5\text{ V}$
Input Current Range	Software Selectable $\pm 20\text{mA}$, $4\text{--}20\text{ mA}$
Resolution	16 bit @ $\pm 10\text{V}$, $\pm 20\text{mA}$
Conversion Time	1.2 ms
Input Impedance	100k Ω
Voltage Modes	
Input Impedance	249 Ω
Current Modes	

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

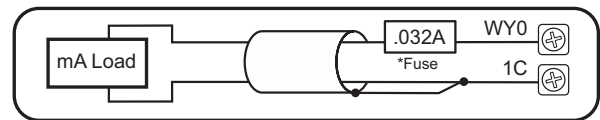


Analog Output Specifications

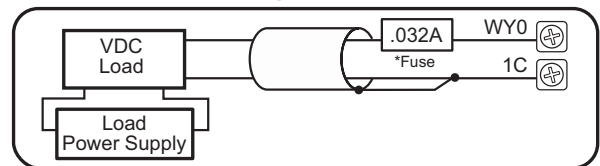
Outputs per Module	1
Output Voltage Range	Software Selectable $\pm 10\text{V}$, $\pm 5\text{V}$, $0\text{--}10\text{ V}$, $0\text{--}5\text{ V}$
Minimum Voltage Load Impedance	1k Ω
Output Current Range	Software Selectable $\pm 20\text{mA}$, $4\text{--}20\text{ mA}$
Maximum Current Load Impedance	500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

Analog Output Wiring

Current Source Output



Voltage Output



BRX ME MPUs

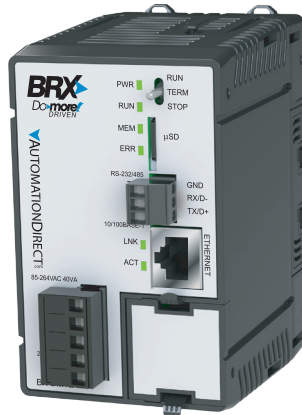
Overview

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

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

Features

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



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

Power Supply Connector

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



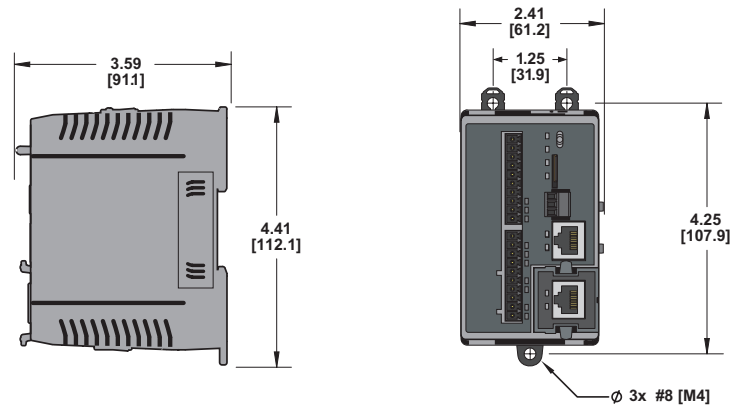
BX-DM1E-M-D Micro PLC Unit (MPU)
12–24 VDC

BX ME MPUs							
Part Number	Price	External Power	Discrete Input	Discrete Output	Analog		Expansion Modules
					Input	Output	
BX-DM1E-M	\$012ad:	120–240 VAC	N/A	N/A	N/A	N/A	8
BX-DM1E-M-D	\$012ae:	12–24 VDC					

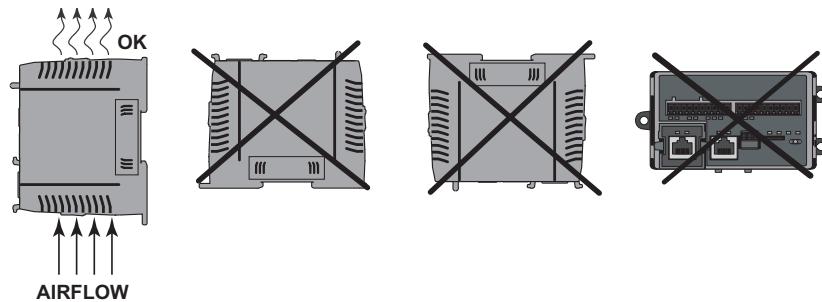
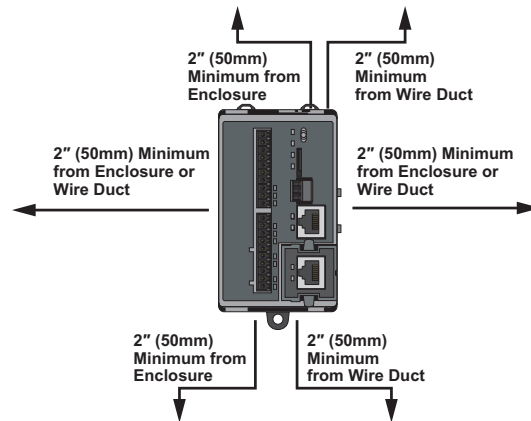
Built-in Ethernet Specifications (BX-DM1E-M-D Only)	
Port Name	ETHERNET
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10 Mbps (Yellow LED) and 100 Mbps (Green LED)
Port Status LED	LED is solid when network LINK is established. LED flashes when port 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-STxxx-xx from AutomationDirect.com
Port Type	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

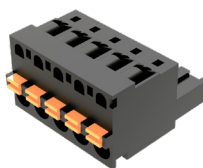
clamp terminal block and a screw type 180-degree terminal block that can also be used and are sold separately.

BX-DM1E-M AC Power Supply Connector Specifications

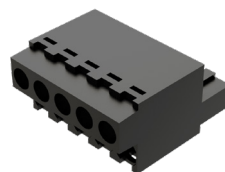
Part Number	<i>BX-RTB05</i> (included with unit)	<i>BX-RTB05-1</i>	<i>BX-RTB05-2</i>
Price (each)	\$128#:	\$1293:	\$1299:
Connector Type	Screw Type-90 deg	Spring Clamp Type-180 deg	Screw Type-180 deg
Wire Exit	180 deg	180 deg	180 deg
Pitch	5.0 mm	5.0 mm	5.0 mm
Screw Size	M2.5	N/A	M2.5
Recommended Screw 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



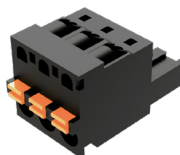
BX-RTB05-2

BX-DM1E-M-D DC Power Supply Connector Specifications

Part Number	<i>BX-RTB03</i>	<i>BX-RTB03-1</i>	<i>BX-RTB03-2</i>
Price (each)	\$128 :	\$1292:	\$4gh?:
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 MPU_s

BX-DM1E-M

\$012ad:

BRX MPU with Do-more! DM1 technology

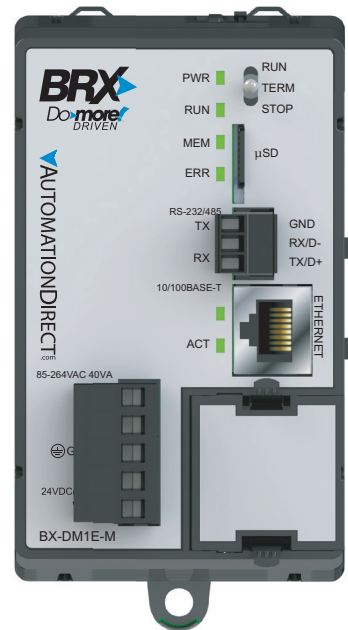
- 120VAC required
- Serial port, RS-232/485 with 3-Pin removable connector
- Ethernet port, 10/100 Mbps
- microSD slot
- No on-board I/O

CPU Specifications

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

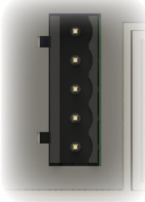
Power Supply Specifications

Nominal Voltage Rating	120–240 VAC
Input Voltage Range (Tolerance)	85-264 VAC
Rated Operating Frequency	47–63 Hz
Maximum Input Power	40VA
Cold Start Inrush Current	1.5 A, 2ms
Maximum Inrush Current (Hot Start)	1.5 A, 2ms
Internal Input Fuse Protection	Micro fuse 250V, 2A Non-replaceable
Heat Dissipation	8W Max
Isolated User 24VDC Output	24VDC @ 0.3 A max, <1V P-P Ripple, Integrated self-resetting short circuit protection
Voltage Withstand (dielectric)	1500VAC Power Inputs to Ground applied for 1 minute 1500VAC Ground to 24VDC applied for 1 minute
Replacement Connector	ADC Part # BX-RTB05



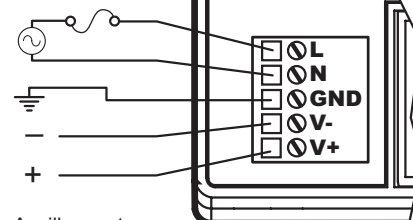
Input Wiring

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



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

AC Power In
120–240 VAC



Auxiliary out
24VDC
300mA max.

BX ME MPU_s

BX-DM1E-M-D \$012ae:

BRX MPU with Do-more! DM1 technology

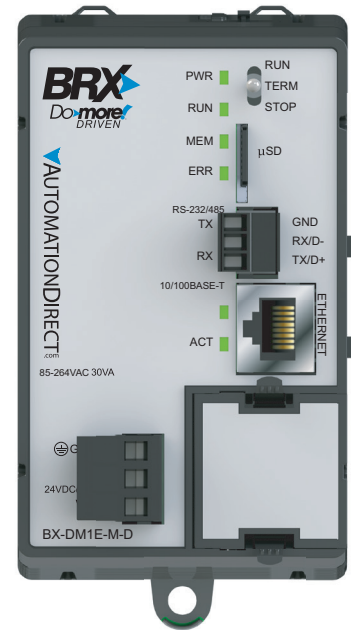
- 24VDC required
- Serial port, RS-232/485 with removable 3-Pin connector
- Ethernet port, 10/100 Mbps
- microSD slot
- No on-board I/O

CPU Specifications

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

Power Supply Specifications

Nominal Voltage Rating	12–24 VDC
Input Voltage Range (Tolerance)	10–36 VDC
Maximum Input Voltage Ripple	< ±10%
Maximum Input Power	30W
Cold Start Inrush Current	5A, 2ms
Maximum Inrush Current (Hot Start)	5A, 2ms
Internal Input Protection	Reverse Polarity Protection and Undervoltage
Heat Dissipation	3.2 W Max
Voltage Withstand (dielectric)	1500VAC Power Inputs to Ground applied for 1 minute
Replacement Connector	ADC Part # BX-RTB03



Input Wiring

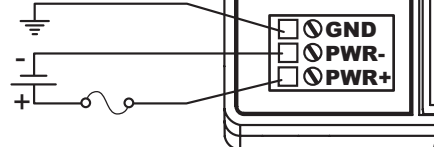
Pin	Connection
1	GND
2	PWR –
3	PWR +



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

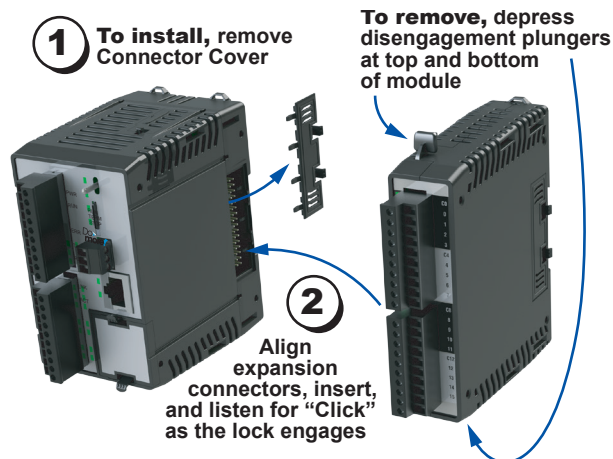
One of the unique features of the BRX platform is its ability to expand its capability to fit your application solution. One of the ways the BRX platform can do this is by using expansion modules that conveniently "snap-on" to the side of any BRX MPU. Once the expansion module has been snapped in place 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

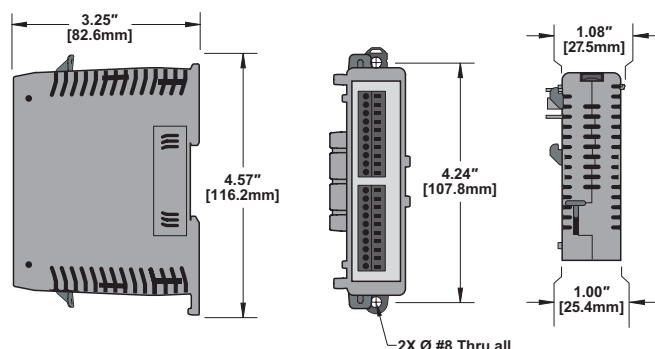
Note: This device cannot be Hot Swapped.

General Specifications

All BRX discrete expansion modules have the same general specifications listed in the table below.

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

Dimensions, inches[mm]

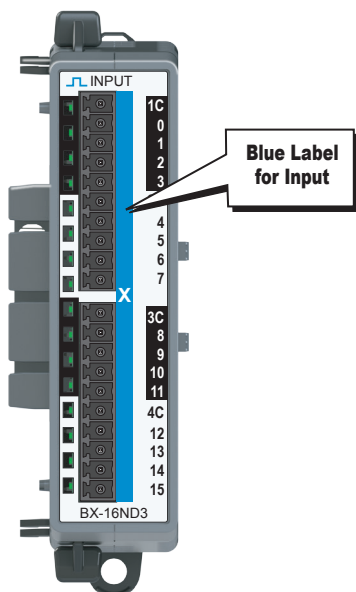


NOTE: When removing an expansion module make sure there is room for the module to slide away from the system. Failure to do so will result in difficulty in removing the module.

BRX Discrete Expansion Modules

Discrete Input Modules

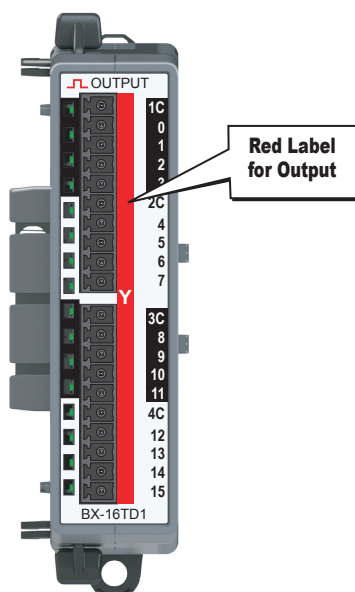
Thirteen (13) discrete input modules are available in various DC and AC voltage ranges. Input module faceplates have a blue terminal bar and symbol  for easy distinction from other module types.



Discrete Input Modules			
Part Number	Points	Input Type	Price
BX-08NF3	8	3 – 5 VDC Sink / Source	\$;126[:
BX-08ND3		12 – 24 VDC Sink / Source	\$12h0:
BX-08NB		24VAC	\$126?:
BX-08NA		120VAC	\$126_:
BX-08SIM		Simulator	\$-1oci:
BX-12ND3	12	12 – 24 VDC Sink / Source	\$12h1:
BX-12NB		24VAC	\$;126,:
BX-12NA		120VAC	\$126#:
BX-16NF3	16	3-5 VDC Sink/Source	\$;4o,7:
BX-16ND3		12 – 24 VDC Sink / Source	\$12h2:
BX-16NB		24VAC	\$1270:
BX-16NA		120VAC	\$;126!:
BX-32ND3	32	12 – 24 VDC Sink / Source	\$01oc6:

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.

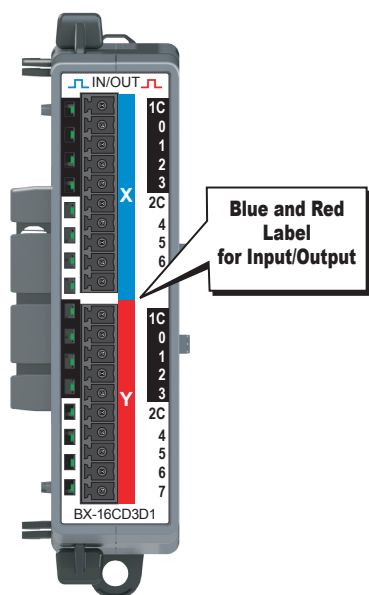


Discrete Output Modules			
Part Number	Points	Output Type	Price
BX-05TRS	5	Relay Form C (SPDT)	\$127c:
BX-05TRS-1		Relay Form C (SPDT)	\$;4o,4:
BX-08TD1	8	12 – 24 VDC Sinking	\$1273:
BX-08TD2		12 – 24 VDC Sourcing	\$1276:
BX-08TR		Relay Form A (SPST)	\$1279:
BX-08TA		120 – 240 VAC Triac	\$0127d:
BX-08TRZ		Relay Form A (SPST), no surge suppression	\$;4o,2:
BX-12TD1	12	12 – 24 VDC Sinking	\$1274:
BX-12TD2		12 – 24 VDC Sourcing	\$1277:
BX-12TR		Relay Form A (SPST)	\$127a:
BX-12TA	16	120 – 240 VAC Triac	\$0127e:
BX-16TD1		12 – 24 VDC Sinking	\$01275:
BX-16TD2		12 – 24 VDC Sourcing	\$01278:
BX-16TF2		3-5 VDC Sourcing	\$;4o,8:
BX-16TR		Relay Form A (SPST)	\$0127b:
BX-16TRZ	32	Relay Form A (SPST), no surge suppression	\$;04o,3:
BX-32TD1		12 – 24 VDC Sinking	\$-01ocj:
BX-32TD2		12 – 24 VDC Sourcing	\$01ock:

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.

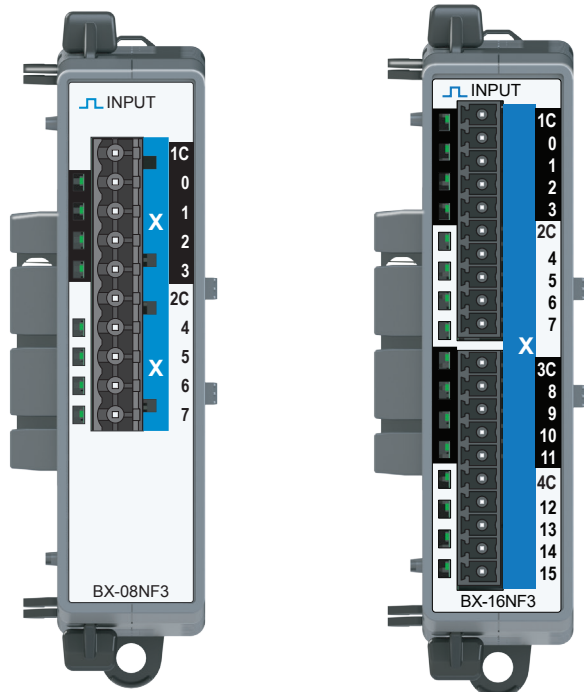


Discrete Combo Input / Output Modules					
Part Number	Points		Input Type	Output Type	Price
	Input	Output			
<u>BX-08CD3R</u>	4	4	12–24 VDC Sink / Source	Relay Form A (SPST)	\$127g:
<u>BX-12CD3D1</u>	8	4		12–24 VDC Sinking	\$127h:
<u>BX-12CD3D2</u>				12–24 VDC Sourcing	\$-127i:
<u>BX-16CD3D1</u>	8	8		12–24 VDC Sinking	\$-127j:
<u>BX-16CD3D2</u>				12–24 VDC Sourcing	\$127k:
<u>BX-16CF3F2</u>			3–5 VDC Sink/Source	3–5 VDC Sourcing	\$;4o,0:

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

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

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



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

BX-08NF3 \$;126[: **BX-16NF3** \$;40,7:

Input Module
8-pt, 3-5 VDC

Input Module
16-pt, 3-5 VDC

**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.

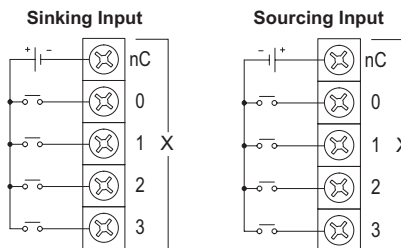
IMPORTANT!



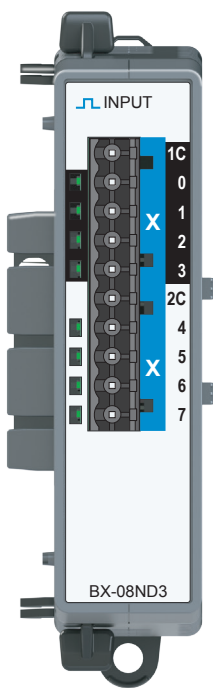
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

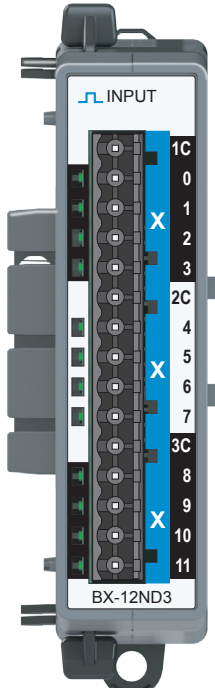
Discrete Input Wiring



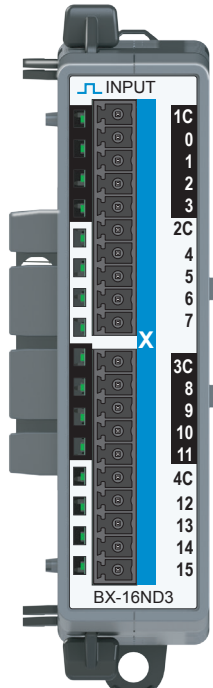
BX-xxND3 Sinking/Sourcing 12–24 VDC Input Modules

**BX-08ND3 \$12h0:**

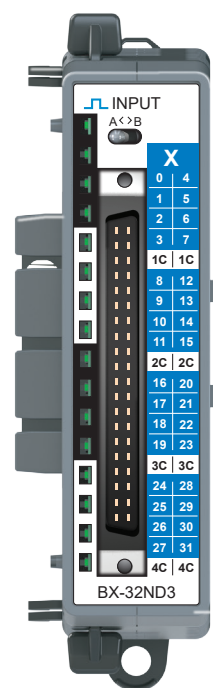
Input Module
8-pt, 12–24 VDC
Sink/Source
Terminal Blocks or
ZIPLink Cable
Sold Separately

**BX-12ND3 \$12h1:**

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

**BX-16ND3 \$12h2:**

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

**BX-32ND3 \$01oc6:**

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

Discrete Input Specifications

	<i>BX-08ND3</i>	<i>BX-12ND3</i>	<i>BX-16ND3</i>	<i>BX-32ND3</i>
<i>Input Type</i>	Sink/Source			
<i>Inputs per Module</i>	8	12	16	32
<i>Commons (Isolated)</i>	2	3	4	4
<i>Points per Common</i>	4	4	4	8
<i>Nominal Voltage Range*</i>	12–24 VDC			
<i>Input Voltage Range*</i>	9–30 VDC			
<i>Maximum Voltage</i>	30VDC			
<i>Input Impedance</i>	3kΩ @ 24VDC			8kΩ @ 24VDC
<i>Input Current (typical)</i>	8mA @ 24VDC			3mA @ 24VDC
<i>Maximum Input Current</i>	12mA @ 30VDC			6mA @ 30VDC
<i>ON Voltage Level</i>	> 9.0 VDC			
<i>OFF Voltage Level</i>	< 2.0 VDC			
<i>OFF-ON Response</i>	2ms			
<i>ON-OFF Response</i>	2ms			
<i>Status Indicators</i>	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.



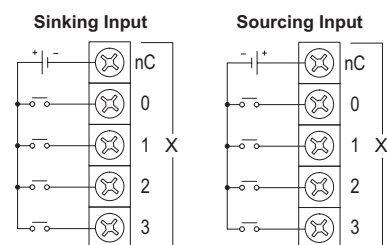
We recommend using prewired ZIPLink cables and connection modules.

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



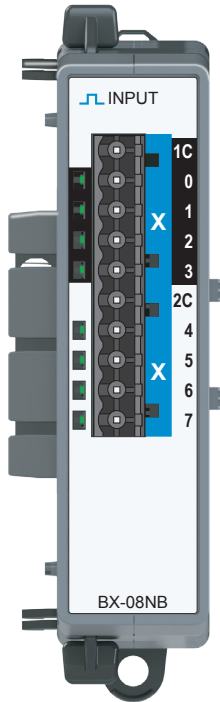
IMPORTANT!



Hot-Swapping Information

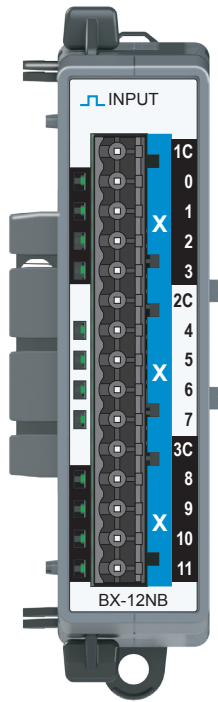
Note: This device cannot be Hot Swapped.

BX-xxNB 12–24 VAC Input Modules



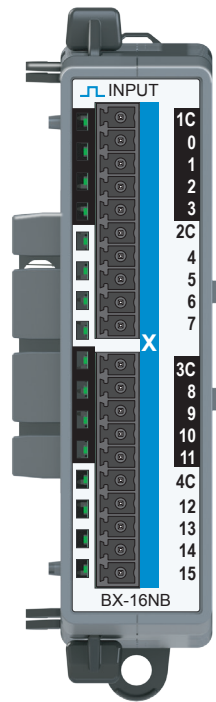
BX-08NB \$126?:

Input Module
8-pt, 12–24 VAC



BX-12NB \$;126,:

Input Module
12-pt, 12–24 VAC



BX-16NB \$1270:

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.



Discrete Input Specifications

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

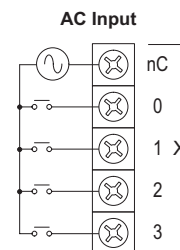
IMPORTANT!



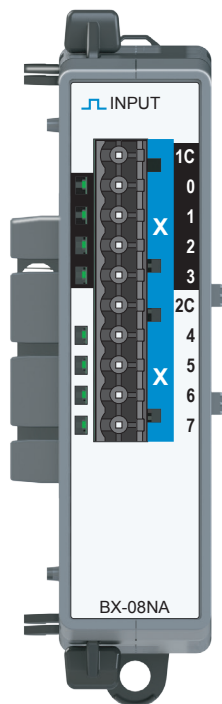
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Discrete Input Wiring

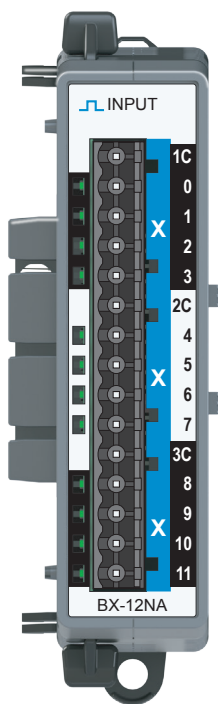


BX-xxNA 120–240 VAC Input Modules



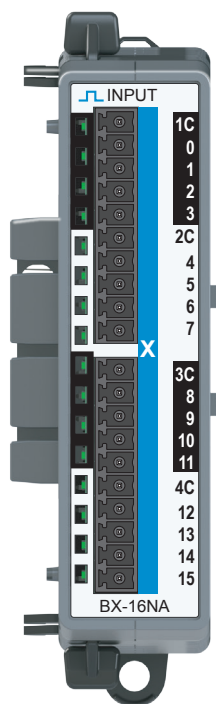
BX-08NA \$126_:

Input Module
8-pt, 120–240 VAC



BX-12NA \$126#:

Input Module
12-pt, 120–240 VAC



BX-16NA \$;126!:

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.



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

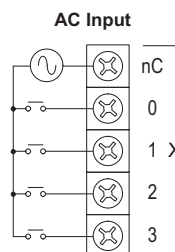
IMPORTANT!



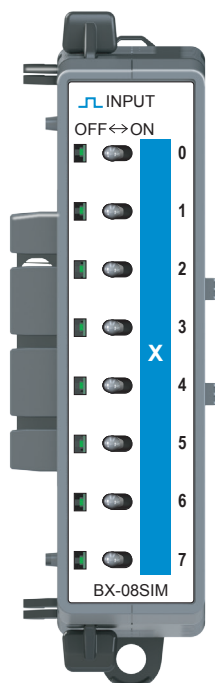
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Discrete Input Wiring



BX-08SIM Simulator Input Module



BX-08SIM \$-1oci:

Input Module 8-pt,
Simulator

Discrete Input Specifications

Input Type	Simulator
Inputs per Module	8
Status Indicators	Logic Side, Green

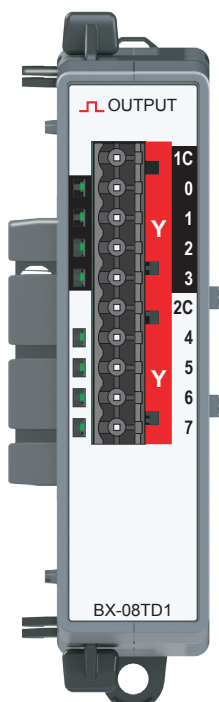
IMPORTANT!



Hot-Swapping Information

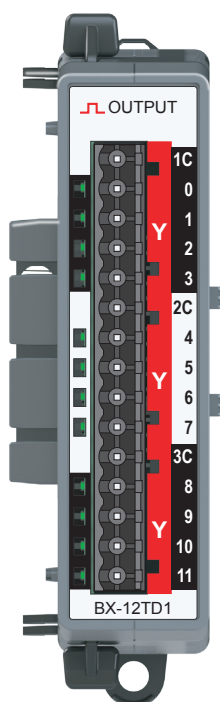
Note: This device cannot be Hot Swapped.

BX-xxTD1 Sinking 12–24 VDC Output Modules

**BX-08TD1 \$1273:**

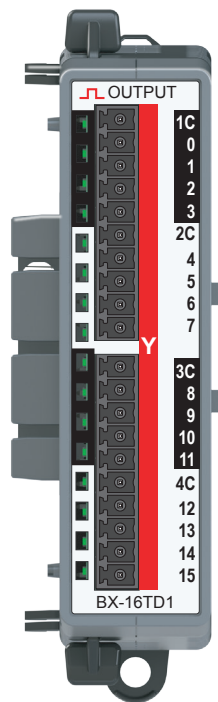
Output Module 8-pt,
12–24 VDC, Sinking

Terminal Blocks or
ZIPLink Cable
Sold Separately

**BX-12TD1 \$1274:**

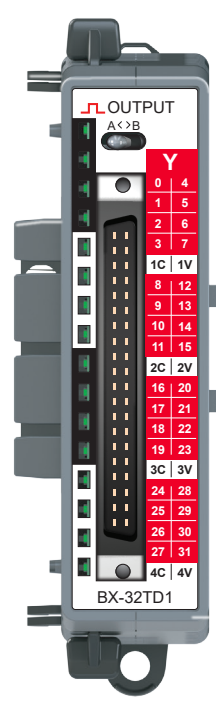
Output Module 12-pt,
12–24 VDC, Sinking

Terminal Blocks or
ZIPLink Cable
Sold Separately

**BX-16TD1 \$01275:**

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

Terminal Blocks or
ZIPLink Cable
Sold Separately

**BX-32TD1 \$-01ocj:**

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

ZIPLink Cable
Sold Separately

Discrete Output Specifications

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

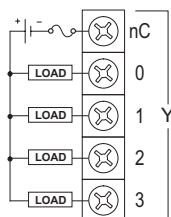
Note: This device cannot be Hot Swapped.

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

Discrete Output Wiring

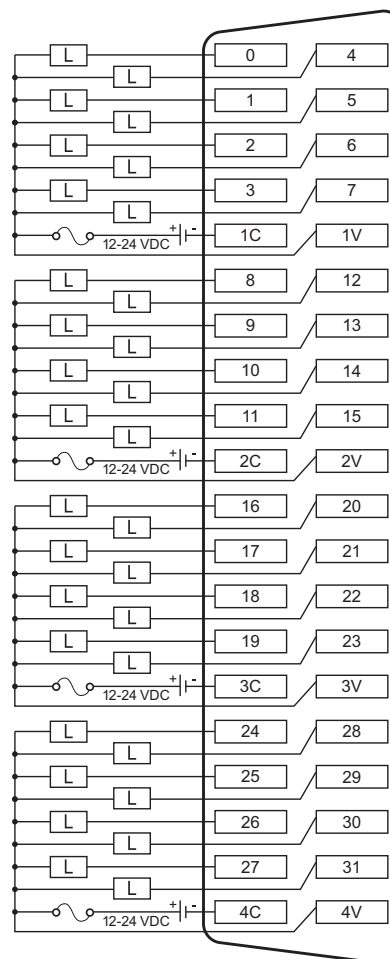
BX-08TD1 / BX-12TD1 / BX-16TD1

Sinking Output



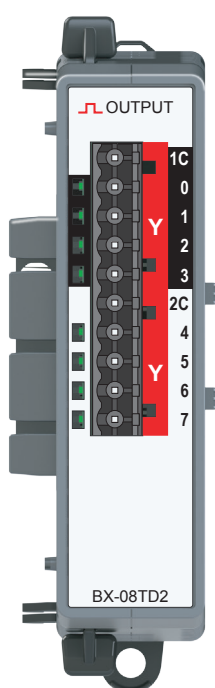
We recommend using prewired ZIPLink cables and connection modules.
If you wish to hand-wire your module, a removable terminal block is available. See *Wiring Termination Selection* for all options.

BX-32TD1



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

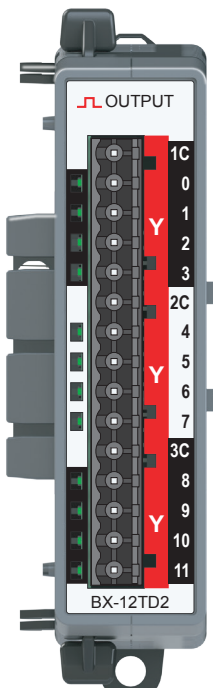
BX-xxTD2 Sourcing 12–24 VDC Output Modules



BX-08TD2 \$1276:

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

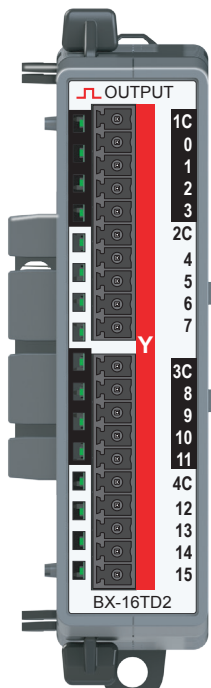
Terminal Blocks or
ZIPLink Cable
Sold Separately



BX-12TD2 \$1277:

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

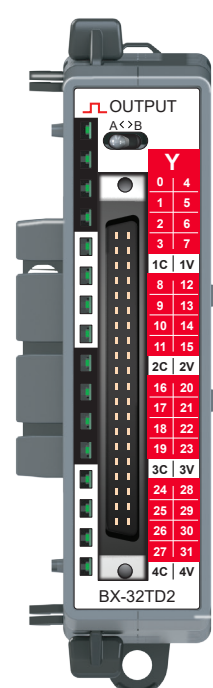
Terminal Blocks or
ZIPLink Cable
Sold Separately



BX-16TD2 \$01278:

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

Terminal Blocks or
ZIPLink Cable
Sold Separately



BX-32TD2 \$01000:

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

ZIPLink Cable
Sold Separately

Discrete Output Specifications

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

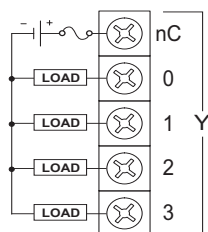
Note: This device cannot be Hot Swapped.

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

Discrete Output Wiring

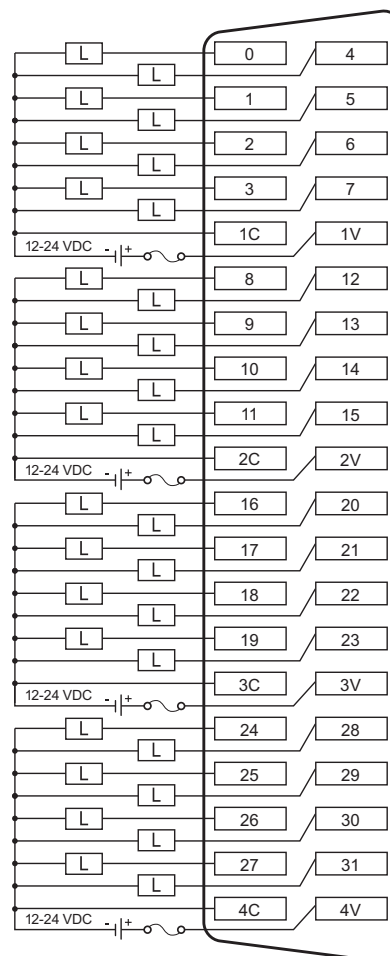
BX-08TD2 / BX-12TD2 / BX-16TD2

Sourcing Output



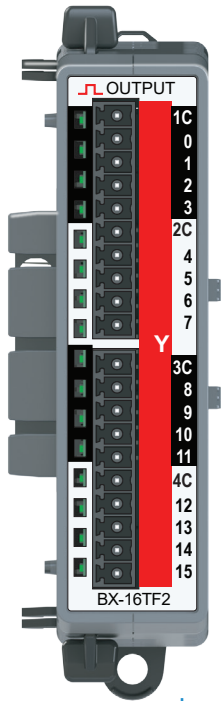
We recommend using prewired ZIPLink cables and connection modules.
If you wish to hand-wire your module, a removable terminal block is available. See Wiring Termination Selection for all options.

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

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

BX-16TF2 \$40.8:

Output Module 16-pt,
3–5 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 section for all options.



IMPORTANT!

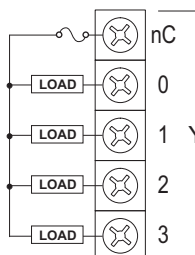


Hot-Swapping Information

Note: This device cannot be Hot Swapped.

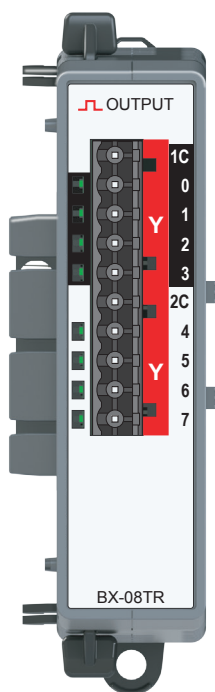
Discrete Output Wiring Diagram

Sourcing Output

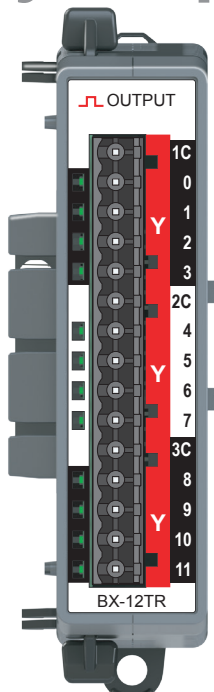


Internal 5VDC
power to outputs

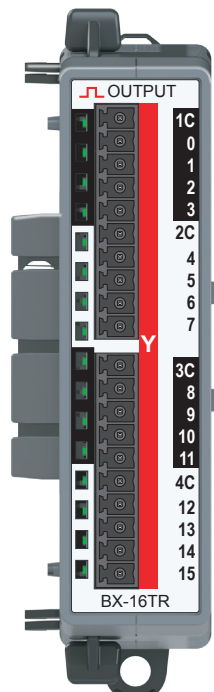
BX-xxTR Relay Output Modules


BX-08TR \$1279:

Output Module 8-pt,
Relay Form A (SPST)


BX-12TR \$127a:

Output Module 12-pt,
Relay Form A (SPST)


BX-16TR \$0127b:

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.



Discrete Output Specifications

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

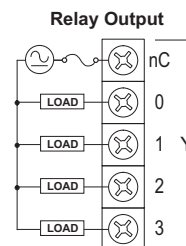
IMPORTANT!



Hot-Swapping Information

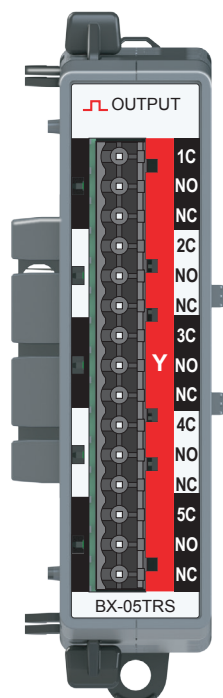
Note: This device cannot be Hot Swapped.

Relay Output Wiring Diagram



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 \$127c:

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.



IMPORTANT!



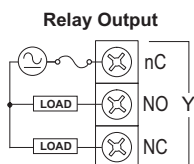
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

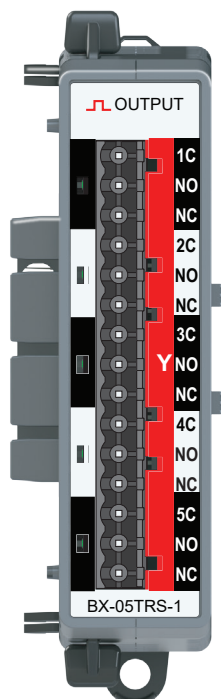
Discrete Output Specifications	
Output Type	Relay, Form B (SPDT)
Outputs per Module	5
Commons	5 Isolated
Maximum Current per Common	2A
Nominal Voltage	12–48 VDC 24–240 VAC
Operating Voltage Range	5–60 VDC, 5–264 VAC
Maximum Voltage	60VDC, 264VAC
Minimum Output Current	0.1 mA 24VDC
Maximum Output Current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

Relay Output Wiring Diagram



BX-05TRS-1 Relay Output Module



Terminal Blocks
Sold Separately

BX-05TRS-1 \$;40,4:

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

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



NOTE: This device does not support
ZIPLink Wiring Systems

IMPORTANT!



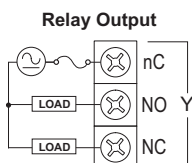
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

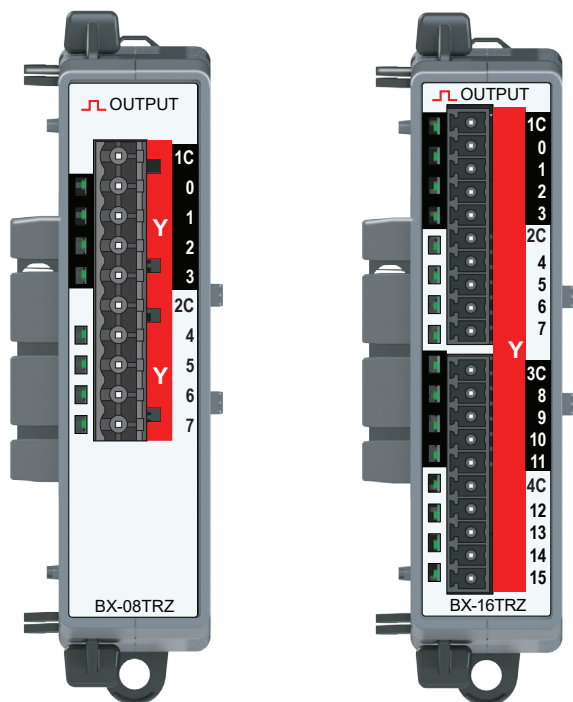


NOTE: When using relay expansion modules, adding more than 32 relay points requires you to perform a power budget calculation.
See Appendix B in the Hardware Manual for more information.

Relay Output Wiring Diagram



BX-xxTRZ Relay Output Module



BX-08TRZ \$;40,2:

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

BX-16TRZ \$;040,3:

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

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.

Discrete Output Specifications

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

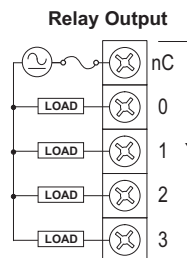
IMPORTANT!



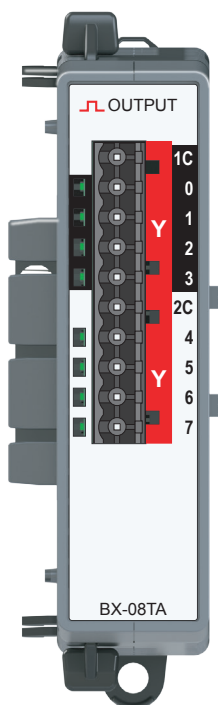
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Relay Output Wiring Diagram

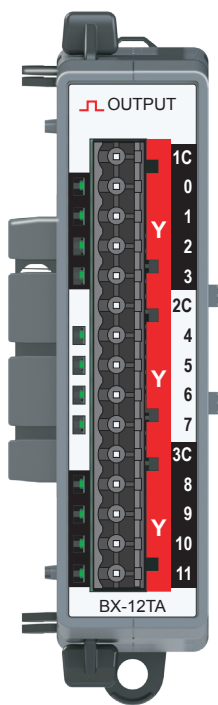


BX-xxTA 120–240 VAC Output Modules



BX-08TA \$0127d: **BX-12TA** \$0127e:

Output Module
8-pt, 120–240 VAC



Output Module
12-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!



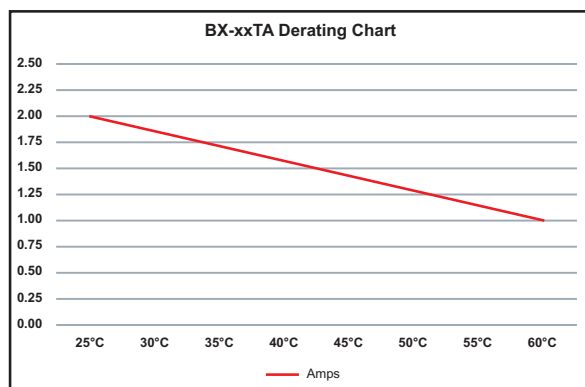
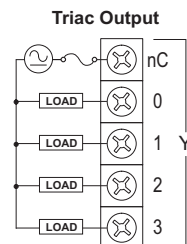
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Discrete Output Specifications

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

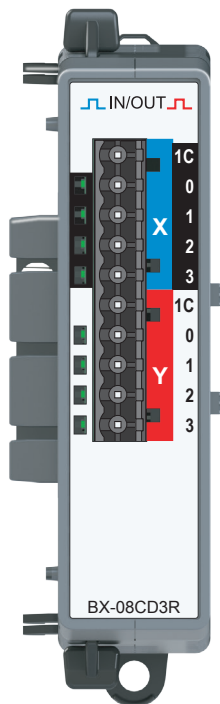
Triac Output Wiring Diagram



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

BX-08CD3R \$127g:

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.

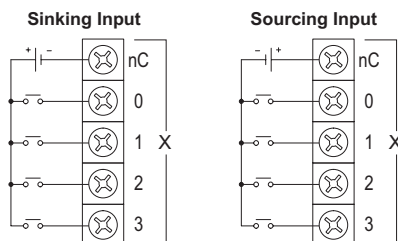
IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Input Wiring Diagrams

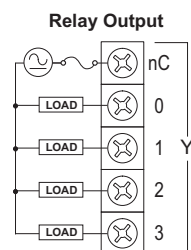


BX-08CD3R Combination DC Input/Relay Output Module, continued

Discrete Output Specifications

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

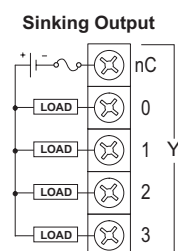
Relay Output Wiring Diagram



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

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

Output Wiring Diagram

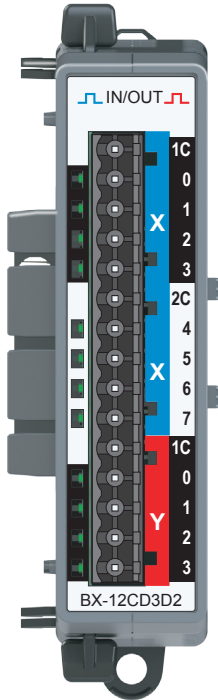


BX-xxCD3D2 Combination DC Input/DC Output Modules

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

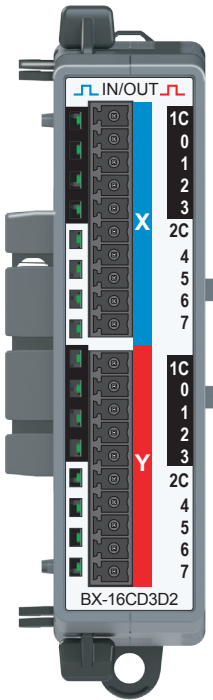
total of twelve (12) or sixteen (16) points:
eight (8) 12–24 VDC sink/source inputs

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



BX-12CD3D2 \$-127i:

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



BX-16CD3D2 \$127k:

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



IMPORTANT!



Hot-Swapping Information

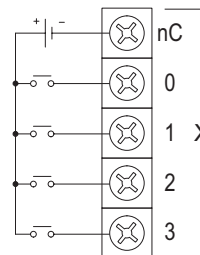
Note: This device cannot be Hot Swapped.

Discrete Input Specifications

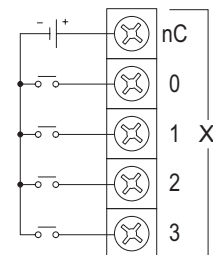
Input Type		Sink/Source
Inputs per Module		8
Commons	<u>BX-12CD3D2</u>	2 (4 points/common) Isolated
	<u>BX-16CD3D2</u>	2 (4 points/common) Isolated
Nominal Voltage Rating		12–24 VDC
Input Voltage Range		9–30 VDC
Maximum Voltage		30VDC
Input Impedance		3kΩ @ 24VDC
Input Current (typical)		8mA @ 24VDC
Maximum Input Current		12mA @ 30VDC
ON Voltage Level		> 9.0 VDC
OFF Voltage Level		< 2.0 VDC
Minimum ON Current		5.0 mA (9V required-guarantee ON state)
Maximum OFF Current		2.0 mA
OFF-ON Response		2ms
ON-OFF Response		2ms
Status Indicators		Logic Side, Green

Input Wiring Diagram

Sinking Input



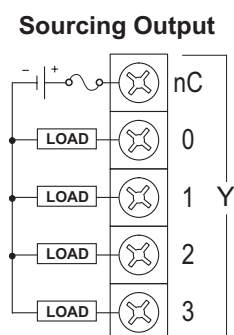
Sourcing Input



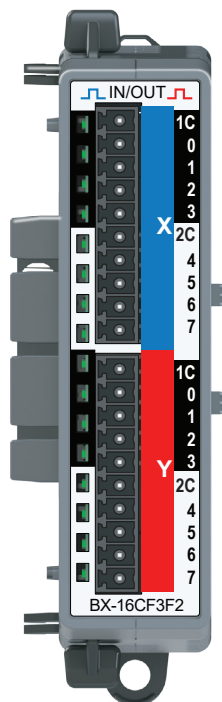
BX-xxCD3D2 Combination DC Input/DC Output Modules

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

Output Wiring Diagram



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



BX-16CF3F2 \$;40,0:

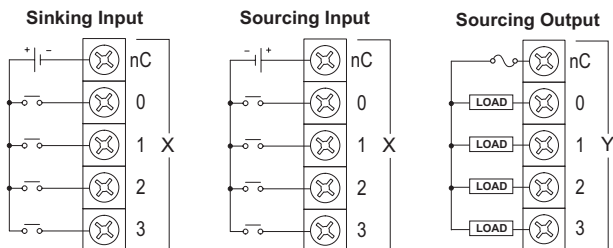
Combination Discrete Module
Input: 8-pt, 3–5 VDC, Sink/Source
Output: 8-pt, 3–5 VDC, Sourcing

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

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

Discrete Input Specifications

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

Discrete Output Specifications

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

IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.

BRX Analog Expansion Modules

Overview

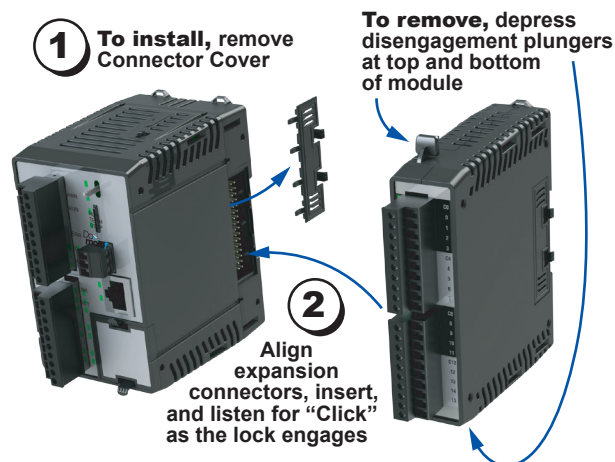
One of the unique features of the BRX platform is its ability to expand its capability to fit your application solution. One of the ways the BRX platform can do this is by using expansion modules that conveniently "snap-on" to the side of any BRX MPU. Once the expansion module has been snapped in place 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 **ZIP**Link cable solutions.



Hot-Swapping Information

Note: This device cannot be Hot Swapped.

General Specifications

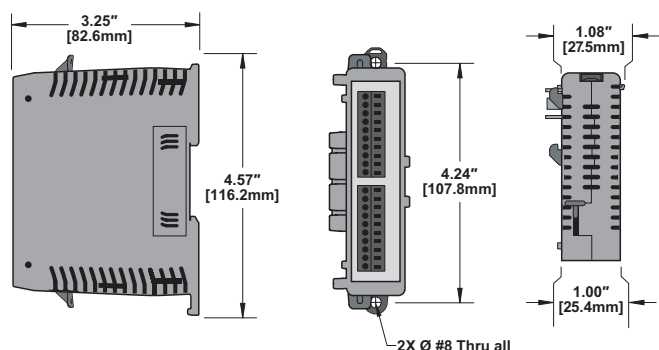
All BRX analog input and output modules and temperature input modules have the same general specifications listed in the table below.

General Specifications	
Storage Temperature	-20° to 70°C [-4° to 158°F]
Humidity	5% to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Enclosure Type	Open Equipment
Noise Immunity	NEMA ICS3-304
EU Directive	See the "EU Directive" topic in the BRX Help File
Agency Approvals (unless otherwise noted on individual module specifications)	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>BX-08AD-1</u>	Rev A (Prior to May 2018)	Rev B (After May 2018)
<u>BX-08AD-2B</u>		
<u>BX-04THM</u>		
<u>BX-08DA-1</u>	Rev B (Prior to May 2018)	Rev C (After May 2018)
<u>BX-08DA-2B</u>		
All other Analog and Temperature Expansion Module part numbers	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

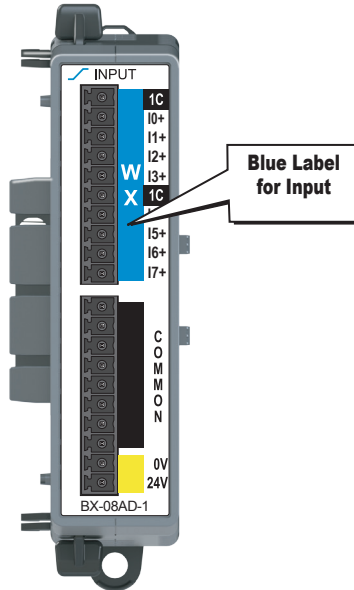


NOTE: When removing an expansion module, make sure there is room for the module to slide away from the system. Failure to do so will result in difficulty removing the module.

BRX Analog Expansion Modules

Analog Input Modules

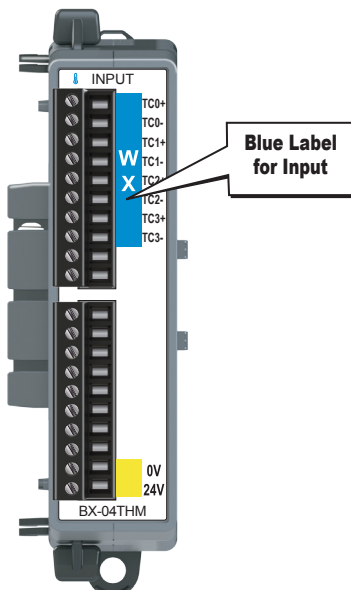
Nine (9) analog input modules are available, with current or voltage inputs. Analog input module faceplates have a blue terminal bar to distinguish them as inputs, with symbols  or  to signify current or voltage, respectively.



Analog Input Modules				
Part Number	Points	Input Type	Resolution	Price
<u>BX-04ADM-1</u>	4	Current Sink 0–20 mA, 4–20 mA	14-bit	\$0127n:
<u>BX-04AD-1</u>	4	Current Sink 0–20 mA, 4–20 mA	16-bit	\$0127o:
<u>BX-08AD-1</u>	8			\$0127p:
<u>BX-16AD-1</u>	16			\$,;03!t3:
<u>BX-04AD-2B</u>	4	Voltage ± 10VDC, ± 5VDC, 0–5 VDC, 0–10 VDC	16-bit	\$0289#:
<u>BX-08AD-2B</u>	8			\$,0127t:
<u>BX-16AD-2B</u>	16			\$,;03!t4:
<u>BX-04AD-3</u>	4	Current Sink 0–20mA, 4–20mA	16-bit	\$-04gi5:
<u>BX-08AD-3</u>	8	Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC		\$-04gi6:

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.

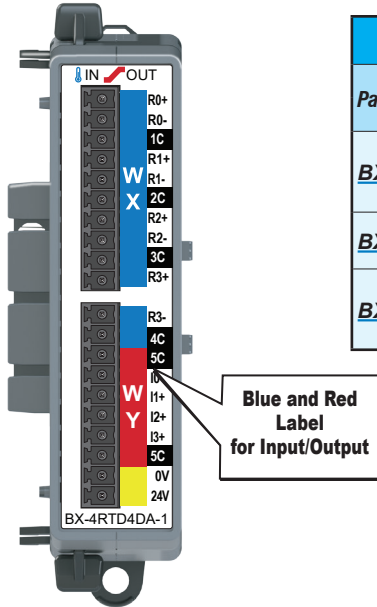


Temperature Input Modules			
Part Number	Points	Input Type	Price
<u>BX-04THM</u>	4	Thermocouple	\$0127?:
<u>BX-08THM</u>	8	Thermocouple	\$,0289!:
<u>BX-06RTD</u>	6	RTD	\$0289?:
<u>BX-08NTC</u>	8	Thermistor	\$,0127,:
<u>BX-04UT</u>	4	Universal Temperature (Thermocouple, RTD, Thermistor supported)	\$,-04gif:
<u>BX-08UT</u>	6	Universal Temperature (Thermocouple, RTD, Thermistor supported)	\$-04gig:

BRX Analog Expansion Modules

Temperature/Analog Combo Module

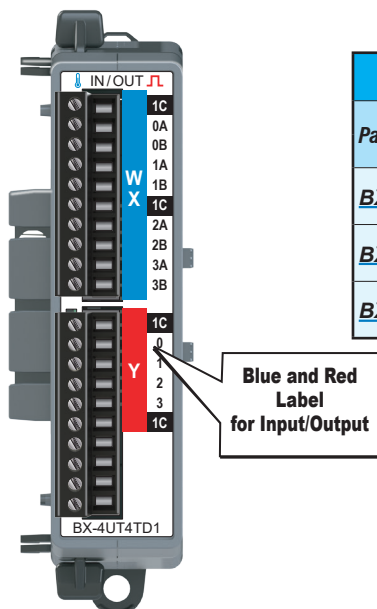
Three (3) combination modules are available, with thermocouple, RTD or universal temperature inputs and current sourcing outputs. The thermocouple input modules can also be configured for millivolt-level voltage inputs, and the RTD input module can also be configured for resistance input. The Input/Output 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			
<u>BX-4RTD4DA-1</u>	4	4	Resistance Temperature Detector (RTD)	Current Source 0–20mA, 4–20mA	\$;03!t5:
<u>BX-4THM4DA-1</u>	4	4	Thermocouple	Current Source 0–20mA, 4–20mA	\$;03!t6:
<u>BX-4UT4DA-3</u>	4	4	Universal Temperature	Current Source: 0–20mA, 4–20mA Voltage: ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	\$-04gib:

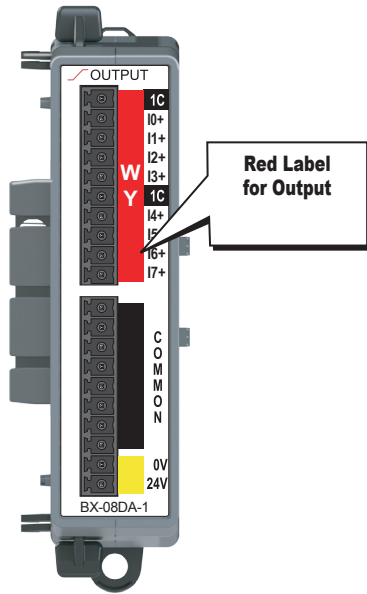
Temperature/Discrete Combo Module

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			
<u>BX-4UT4TD1</u>	4	4	Universal Temperature	12–24 VDC Sinking	\$-04gic:
<u>BX-4UT4TD2</u>	4	4		12–24 VDC Sourcing	\$-04gid:
<u>BX-4UT4TR</u>	4	4		Relay Form A (SPST)	\$-04gie:

BRX Analog Expansion Modules

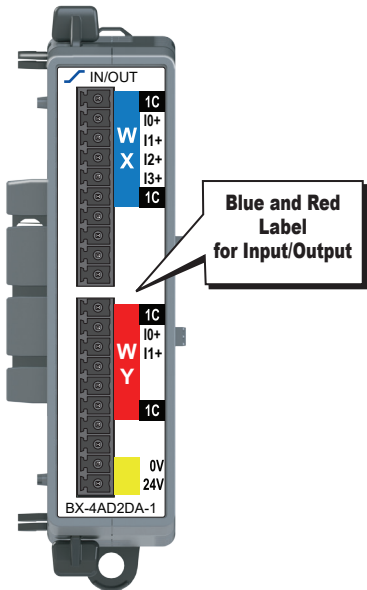


Red Label
for Output

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
BX-04DA-1	4	Current Source 0–20 mA, 4–20 mA	\$0127v:
BX-08DA-1	8		\$0127x:
BX-04DA-2B	4	Voltage ±10VDC, ±5VDC, 0–5 VDC, 0–10 VDC	\$0127y:
BX-08DA-2B	8		\$0127z:
BX-04DA-3	4	Current Source 0–20mA, 4–20mA Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	\$:04gh,::
BX-08DA-3	8		\$-04gi0:



Blue and Red
Label
for Input/Output

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.

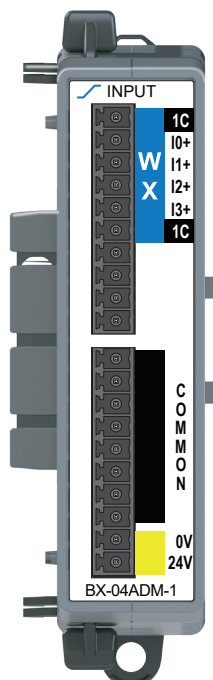
Analog Combo Input / Output Modules					
Part Number	Points		Input Type	Output Type	Price
	Input	Output			
BX-2AD2DA-1	2	2	Current Sink 0–20mA, 4–20mA	Current Source 0–20mA, 4–20mA	\$:,03!t0:
BX-4AD2DA-1	4	2			\$:,03!s,::
BX-2AD2DA-2B	2	2	Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	\$:,03!t2:
BX-4AD2DA-2B	4	2			\$:,03!t1:
BX-2AD2DA-3	2	2	Current Source 0–20mA, 4–20mA Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	Current Source 0–20mA, 4–20mA Voltage ±10VDC, ±5VDC, 0–5VDC, 0–10VDC	\$-04gi7:
BX-4AD4DA-3	4	4			\$-04gi8:

Expansion Module Support by Controller

Controller Type	# Expansion Modules
BX-DM1E-M	8
BX-DM1-10	8
BX-DM1E-10	8
BX-DM1-18	8
BX-DM1E-18	8
BX-DM1-36	8
BX-DM1E-36	8
BX-DMIO*	8
BX-EBC100*	8
BX-MBIO*	8

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

BX-04ADM-1 Analog Current Sinking Input



BX-04ADM-1 \$0127n:

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	
Inputs per Module	4
Commons	1
Module Signal Input Range	0–20mA, 4–20mA (Default)
Signal Resolution	14-bit
Resolution Value of LSB	See Data Range Specifications table
Input Impedance	125Ω±0.1%, 1/10th watt
All Channel Update Rate	45ms
Over Current Circuit Detection Time	< 1second
Maximum Continuous Overload	±28mA
Sample Duration Time	5μs per channel
Hardware Filter Characteristics	Low Pass 1st order, –3dB @ 144Hz
Conversion Method	Successive approximation
Linearity Error (end to end)	±0.09% of range
Input Stability and Repeatability	±0.035% of range (after 10 min. warmup)
Full Scale Calibration Error	±0.1% of range
Offset Calibration Error	±0.1% of range
Accuracy vs. Temperature	±35PPM / °C maximum
Maximum Inaccuracy	0.1% of range (incl. Temperature Drift)
Maximum Crosstalk	–96dB, 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
External DC Power Required	Class 2 or LPS power supply 24VDC (±20%) 25mA
Heat Dissipation	0.8 W
Weight	98g [3.5 oz]
Software Version Required (Do-more! Designer Programming Software)	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!

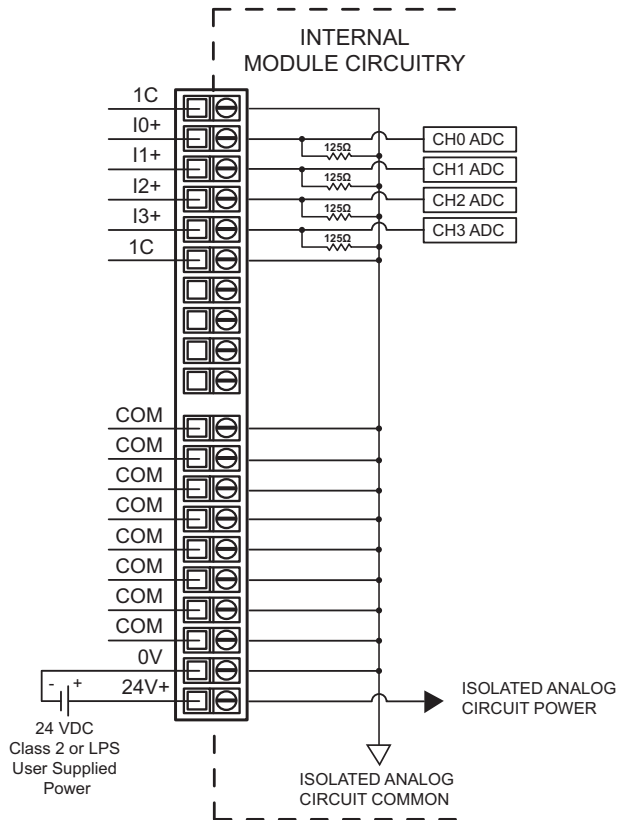


Hot-Swapping Information

Note: This device cannot be Hot Swapped.

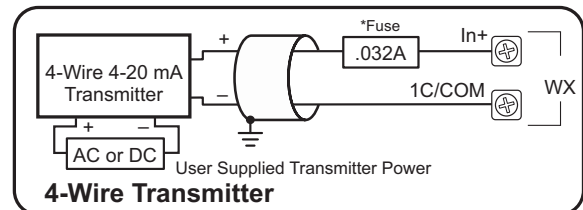
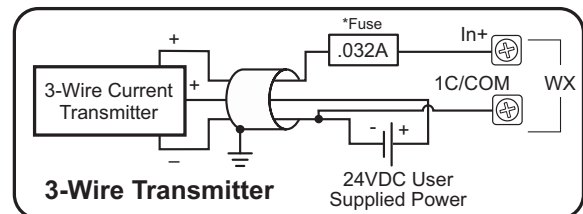
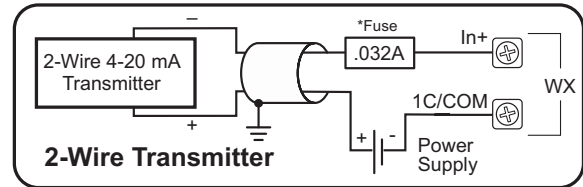
BX-04ADM-1 Analog Current Sinking Input, continued

Analog Current Sinking Input Wiring



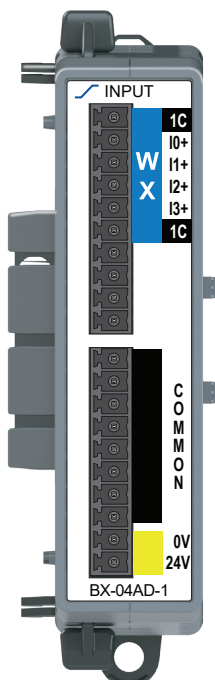
Analog Current Sinking Input Circuits

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



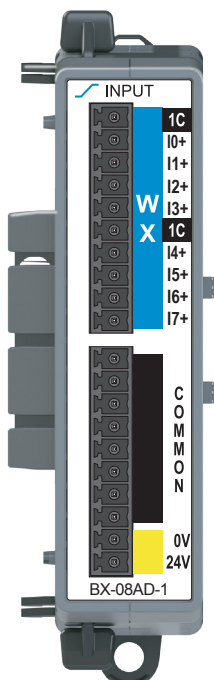
NOTE: Shield should be connected only at one end, to ground at the source device.

BX-xxAD-1 Analog Current Sinking Input



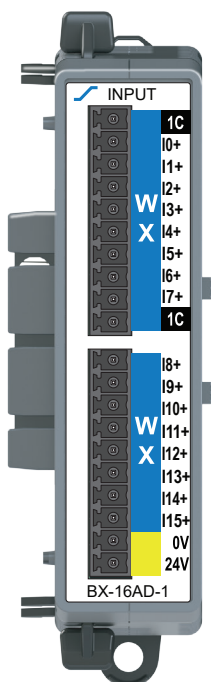
BX-04AD-1
\$0127o:

Input Module 4-pt,
Analog Current Sinking



BX-08AD-1
\$0127p:

Input Module 8-pt,
Analog Current Sinking



BX-16AD-1
\$;03!t3:

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
Inputs per Module	4	8	16
Commons	1		
Module Signal Input Range	0–20mA, 4–20mA (Default)		
Signal Resolution	16-bit, 15-bit (Default)		
Resolution Value of LSB	See Data Range Specifications table		
Input Impedance	125Ω±0.1%, 1/10th watt		256Ω±0.1%, 1/10th watt
All Channel Update Rate	45ms		80ms
Over Current Circuit Detection Time	< 1second		NA
Maximum Continuous Overload	±28mA		
Sample Duration Time	5μs per channel		100μs per channel
Hardware Filter Characteristics	Low Pass 1st order, –3dB @ 144Hz		Low Pass 2nd order, –3dB @ 15kHz
Conversion Method	Successive approximation		
Linearity Error (end to end)	±0.09% of range		
Input Stability and Repeatability (after 10 min. warmup)	±0.035% of range		±0.05% of range
Full Scale Calibration Error	±0.1% of range		
Offset Calibration Error	±0.1% of range		
Accuracy vs. Temperature	±25PPM / °C maximum		
Maximum Inaccuracy	0.1% of range (incl. Temperature Drift)		
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	2.5 W	2W
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.

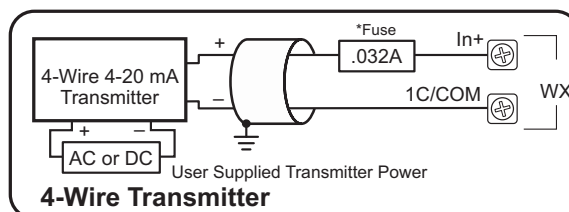
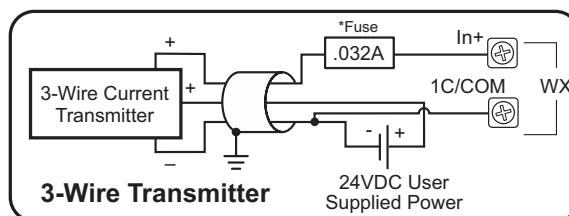
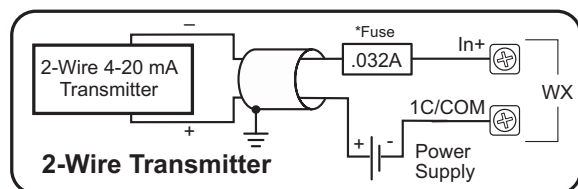
BX-xxAD-1 Analog Current Sinking Input

Data Range Specifications							
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default)			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting*	$\mu\text{A Per Count}$	Raw Counts	Casting*	$\mu\text{A Per Count}$
0–20 mA	Unipolar 0–20 mA	0–32767	-	0.61	0–65535	WXn:U	0.31
4–20 mA	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

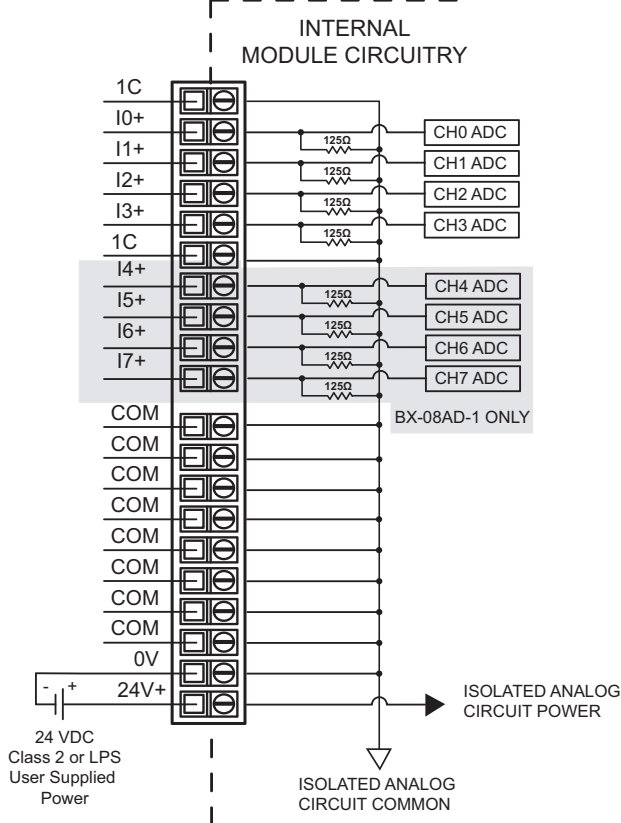
*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.



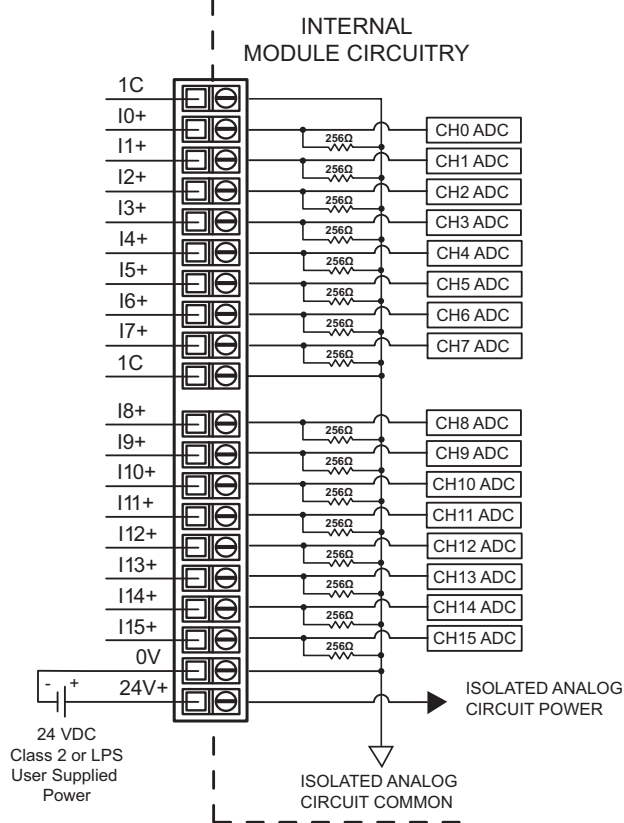
NOTE: Shield should be connected only at one end, to ground at the source device.

Analog Current Sinking Input Wiring

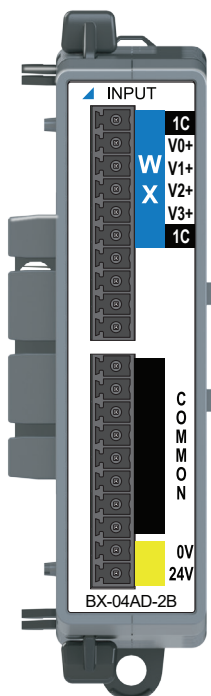
BX-04AD-1 / BX-08AD-1



BX-16AD-1

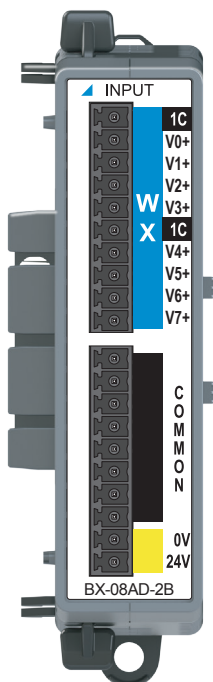


BX-xxAD-2B Analog Voltage Input



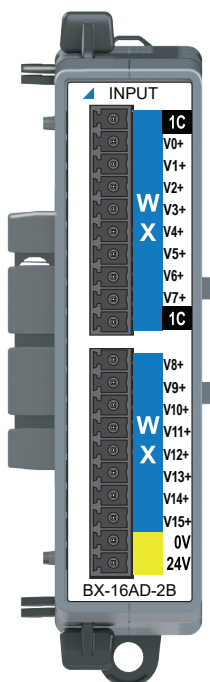
BX-04AD-2B
\$0289#:

Input Module 4-pt,
Analog Voltage



BX-08AD-2B
\$0127t:

Input Module 8-pt,
Analog Voltage



BX-16AD-2B
\$0314t:

Input Module 16-pt,
Analog Voltage

Terminal Blocks Sold Separately

Analog Voltage Input Specifications			
Specification	BX-04AD-2B	BX-08AD-2B	BX-16AD-2B
Inputs per Module	4	8	16
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	$>10\text{M}\Omega$		$>1\text{M}\Omega$
All Channel Update Rate	45ms		100ms
Sample Duration Time	5 μ s per channel		100 μ s per channel
Hardware Filter Characteristics	Low Pass 2nd order, –3dB @ 15kHz		
Conversion Method	Successive Approximation		
Accuracy vs. Temperature	± 25 PPM / °C maximum		
Maximum Inaccuracy	0.15% of full range (over temp)		
Linearity Error (end to end)	$\pm 0.03\%$		$\pm 0.09\%$
Input Stability and Repeatability	$\pm 0.06\%$ of range (after 10 min. warmup)		
Full Scale Calibration Error	$\pm 0.08\%$ of range		$\pm 0.1\%$ of range
Offset Calibration Error	$\pm 0.08\%$ of range		$\pm 0.1\%$ 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 ($\pm 20\%$)		
	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.

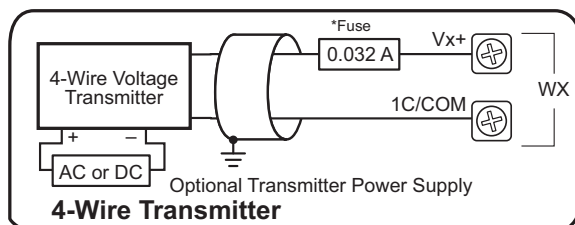
BX-xxAD-2B Analog Voltage Input

Data Range Specifications							
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default) ¹			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting ²	μV Per Count	Raw Counts	Casting ²	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

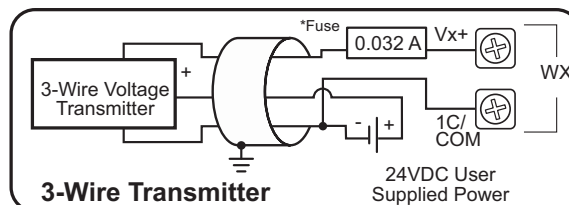
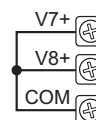
1. Bipolar ranges default to 16-bit resolution.
2. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

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.



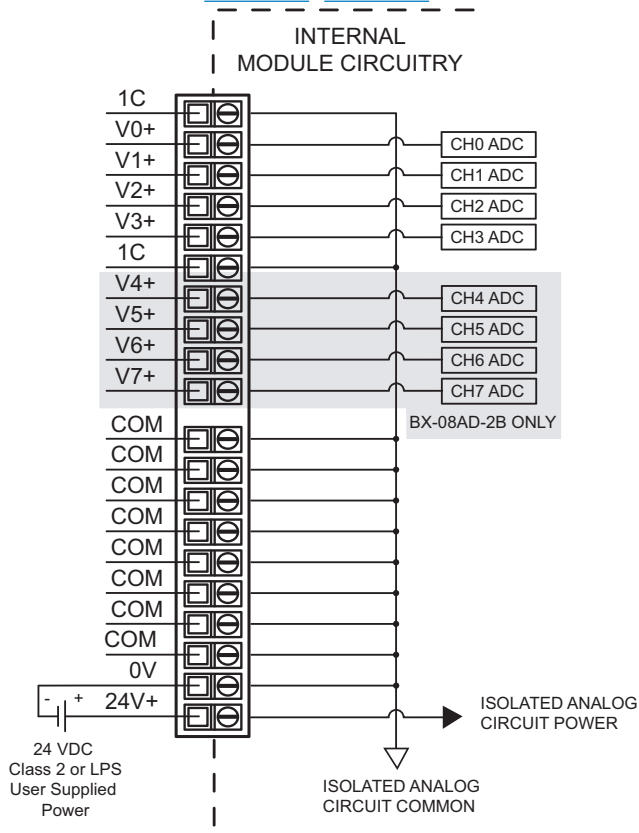
NOTE: For maximum accuracy, jumper unused inputs to common.



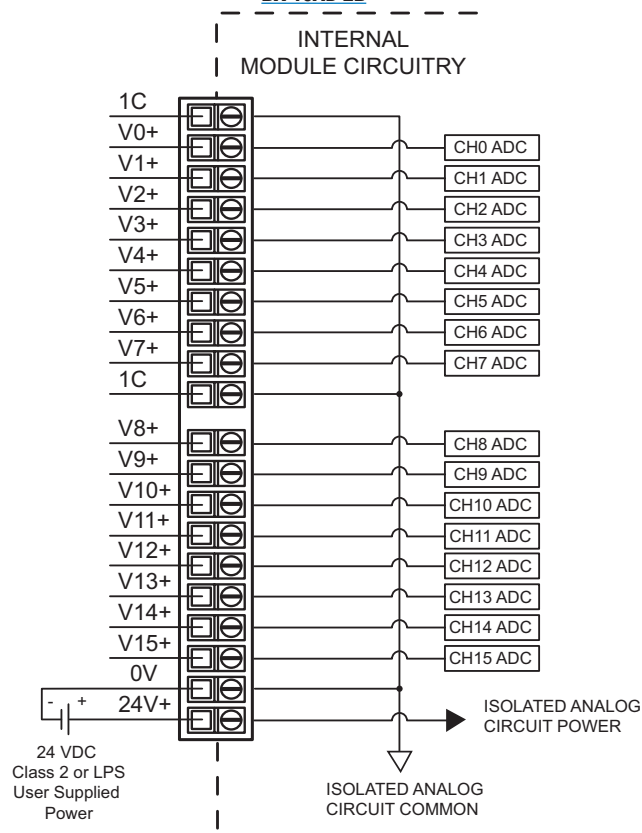
NOTE: Shield should be connected only at one end, to ground at the source device.

Analog Voltage Input Wiring

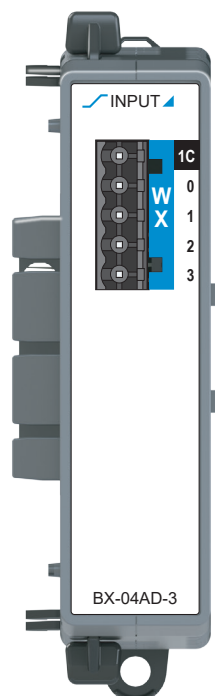
BX-04AD-2B / BX-08AD-2B



BX-16AD-2B



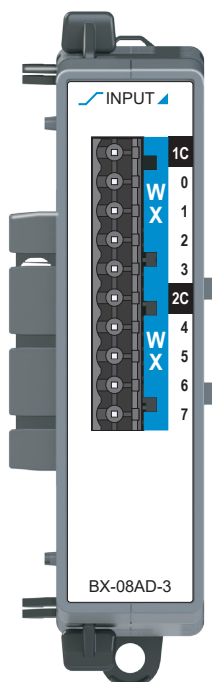
BX-xxAD-3 Universal Analog Input



BX-04AD-3 \$-04gi5:

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 \$-04gi6:

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.

Universal Current/Voltage Sinking Input Specifications

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

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

IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot
Swapped.

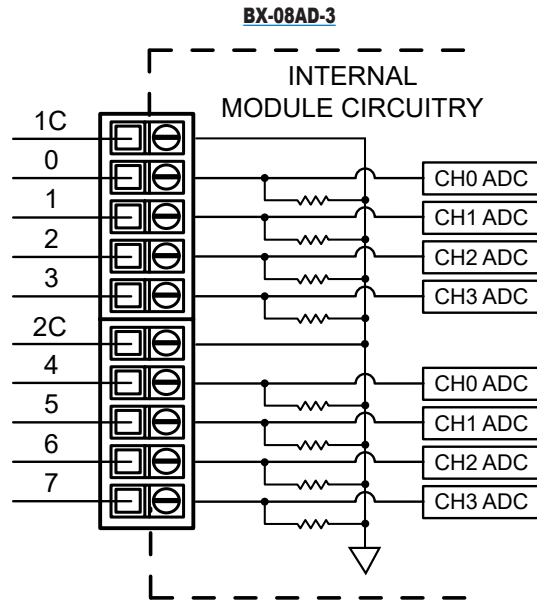
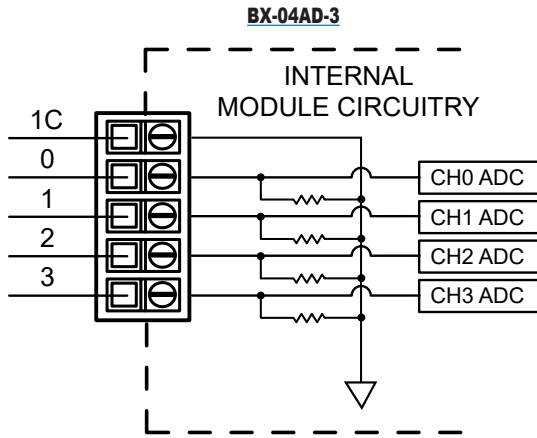
Data Range Specifications

Selection	Description	Raw Counts	Casting ¹	Per Count
–20–20mA	bipolar –20–20mA	–32768 to 32767	-	0.61 μA
4–20mA	unipolar 4–20mA	6553–32767	-	0.61 μA
0–10V	unipolar 10VDC	0–32767	-	305 μV
0–5V	unipolar 5VDC	0–32767	-	305 μV
$\pm 10\text{V}$	bipolar 10VDC	–32768 to 32767	-	305 μV
$\pm 5\text{V}$	bipolar 5VDC	–32768 to 32767	-	305 μV

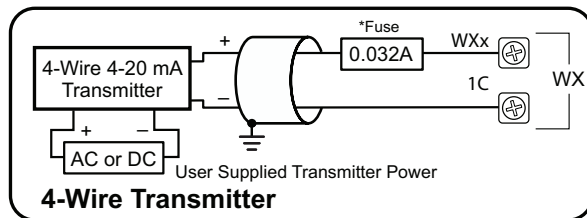
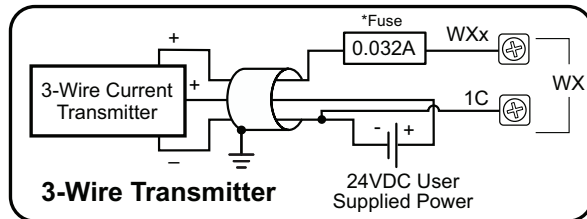
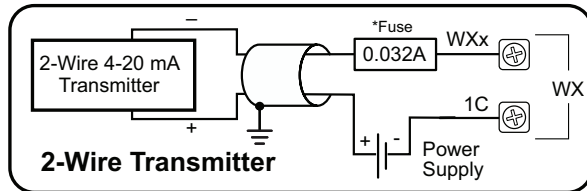
1. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

BX-xxAD-3 Universal Analog Input, continued

Analog Current/Voltage Input Wiring

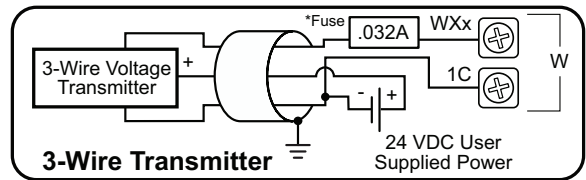
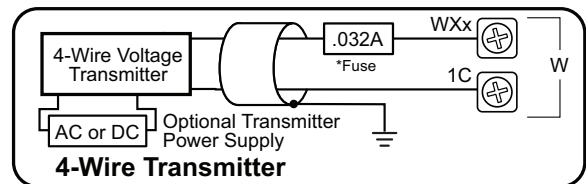


Analog Current Sinking Input Circuits



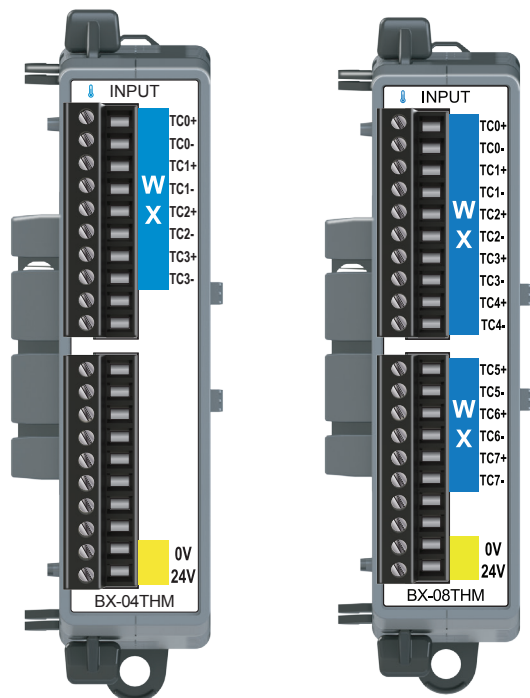
*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

Analog Voltage Input Circuits



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

BX-xxTHM Thermocouple Input



BX-04THM \$0127?:

Input Module 4-pt,
Thermocouple

BX-RTB10 Terminal Blocks Included.

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

BX-08THM \$;0289!:

Input Module 8-pt,
Thermocouple



NOTE: This device does not support
ZIPLink Wiring Systems

Thermocouple Input Specifications

	BX-04THM	BX-08THM
Input Channels	4 Differential	8 Differential
Commons	0	
Input Impedance	Rev. B2 or lower: >5MΩ Rev. B3 or higher: >1MΩ	Rev. A1: >5MΩ Rev. A2 or higher: >1MΩ
Resolution	16-bit, 0.1°C (or F) See Data Range Specifications table	
Thermocouple Input Ranges	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]	
Cold Junction Compensation	Automatic	
Thermocouple Linearization	Automatic	
Accuracy vs. Temperature	±50PPM per °C (maximum)	
Maximum Inaccuracy–Temperature	±3°C maximum (excluding thermocouple error) (including temperature drift)	
Linear Voltage Input Ranges	0–39mV ±39mV ±78mV 0–156mV ±156mV 0–1.25 V	
Maximum Inaccuracy–Voltage	0.06% @ 25°C, 0.10% @ 0–60°C	
All Channel Update Rate	1.08 s	2.16 s
Sample Duration Time	270ms	
Open Circuit Detection Time	Within 2s	
Maximum Ratings	Fault protected inputs to ±50V	
Common Mode Range	0.6 V (@ 16-bit Resolution)	
Common Mode Rejection	100dB @ DC and 130dB @ 60Hz	
Conversion Method	Sigma-Delta	
Backplane Power Consumption	0.1 W	
External DC Power Required	Class 2 or LPS power supply 24VDC (±20%) 25mA	
Heat Dissipation	0.8 W	
Weight	98g [3.5 oz]	
Software Version Required (Do-more! Designer Programming Software)	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) ¹ (15-bit Resolution)			Enable 16-bit: Checked (16-bit Resolution)			
		Raw Counts	Casting ²	μV Per Count	Raw Counts ³	Casting ²	μV Per Count	
Type J	Type J	-	-		°C: -1900 to 7600 °F: -3100 to 14000	-	-	
Type K	Type K	-	-		°C: -1500 to 13720 °F: -2380 to 25020	-	-	
Type E	Type E	-	-		°C: -2100 to 10000 °F: -3460 to 18320	-	-	
Type R	Type R	-	-		°C: 650 to 17680 °F: 1490 to 32140	-	-	
Type S	Type S	-	-		°C: 650 to 17680 °F: 1490 to 32140	-	-	
Type T	Type T	-	-		°C: -2300 to 4000 °F: -380 to 7520	-	-	
Type B	Type B	-	-		°C: 5290 to 18200 °F: 9840 to 33080	- WXn:U	-	
Type N	Type N	-	-		°C: -700 to 13000 °F: -940 to 23720	-	-	
Type C	Type C	-	-		°C: 650 to 23200 °F: 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	

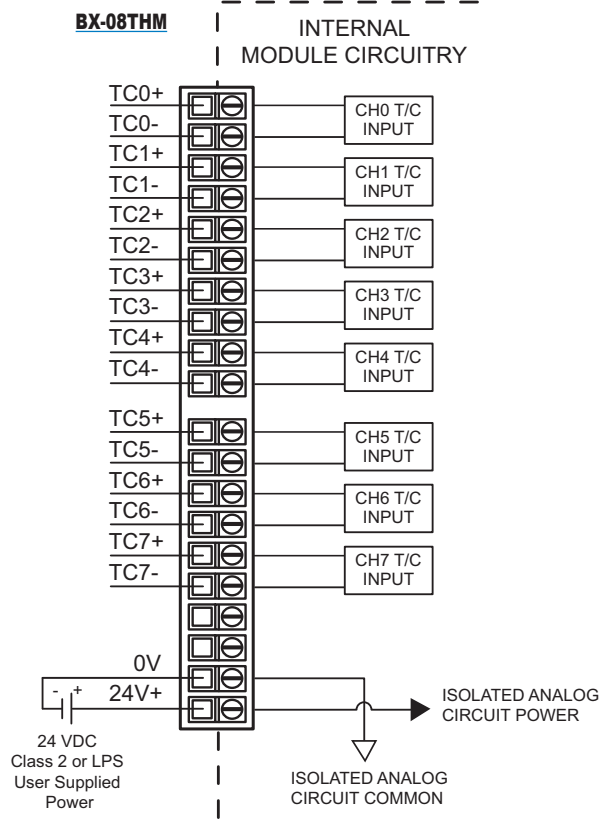
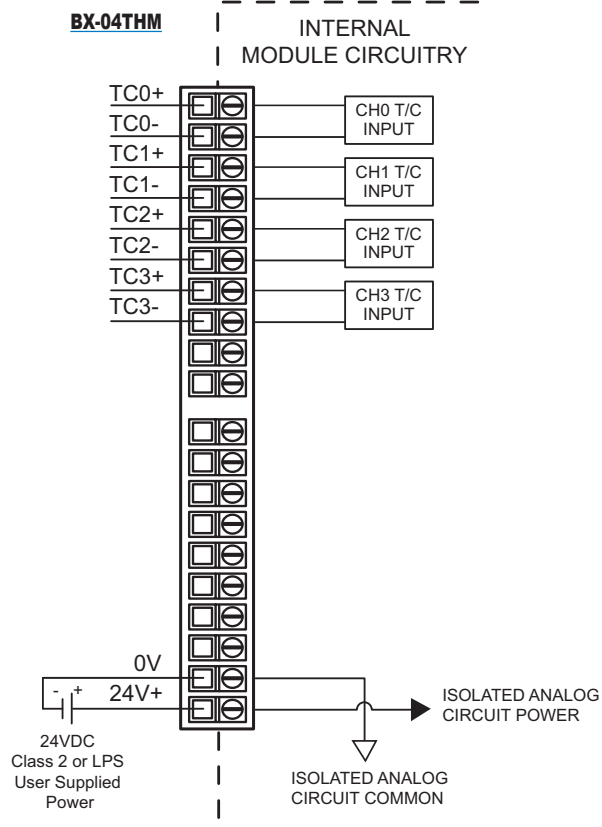
1. Thermocouple and bipolar ranges default to 16-bit resolution.

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

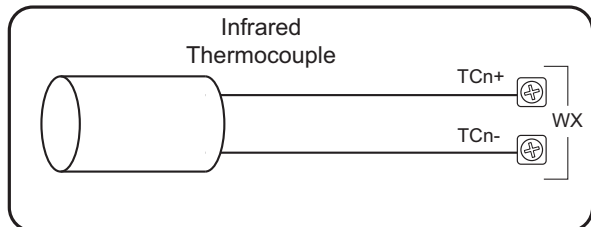
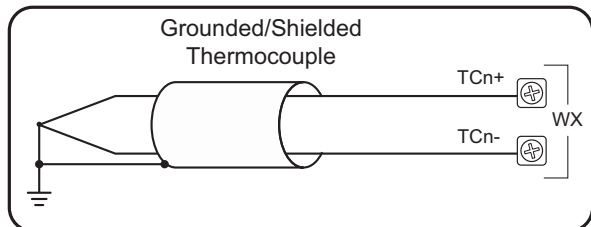
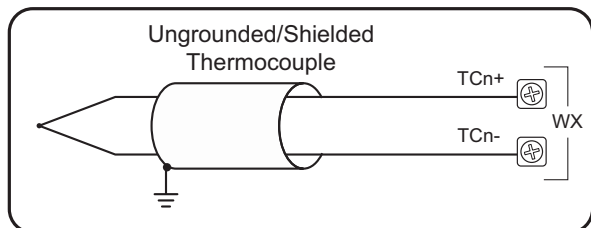
3. Temperatures have one implied decimal place (e.g., raw count of -1900 is -190.0°).

BX-xxTHM Thermocouple Input, continued

Analog Thermocouple/Voltage Input Wiring

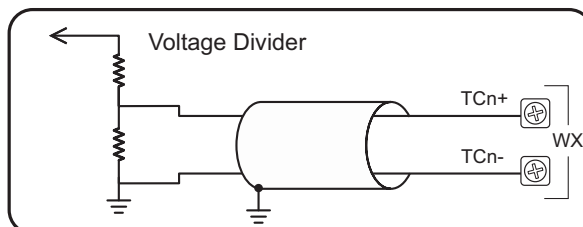
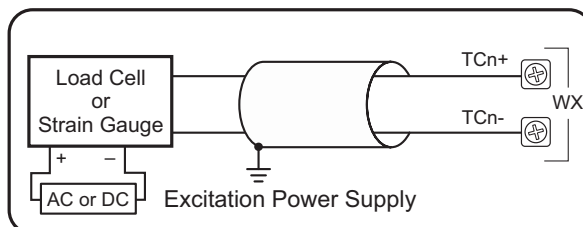
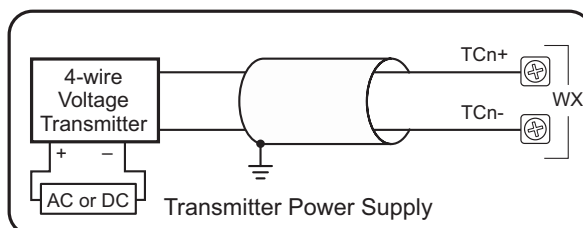


Thermocouple Input Circuits



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.

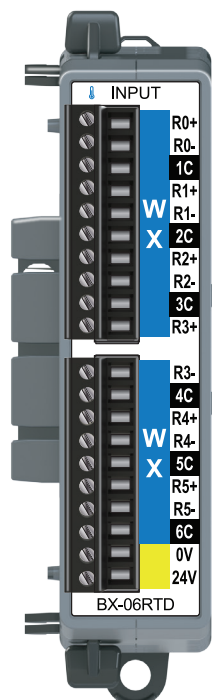
For maximum accuracy, jumper unused inputs.



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 \$0289?:

Input Module 6-pt,
Resistance Temperature Detector



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

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

IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.

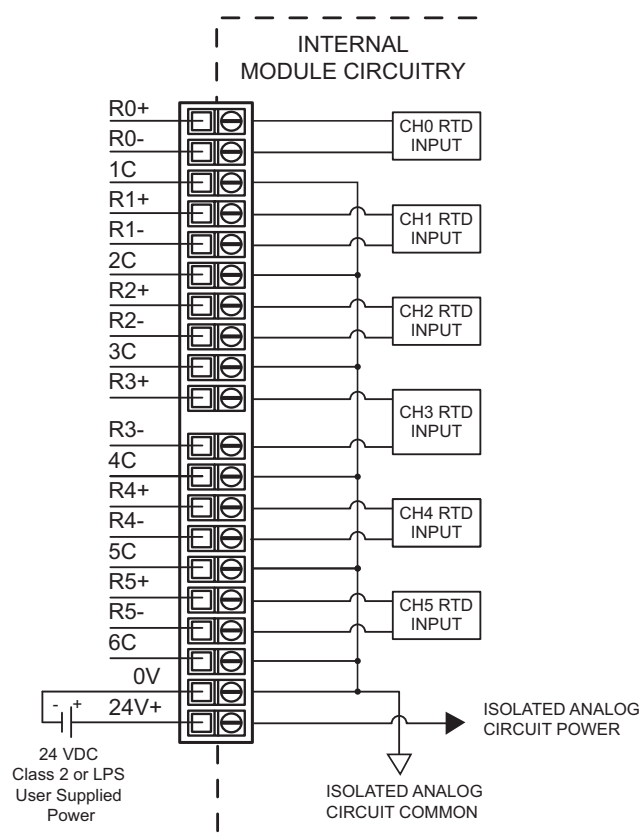
BX-06RTD Resistance Temperature Detector Input, continued

Data Range Specifications				
Selection	Description	Raw Counts ¹		
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 ²	
0-781.2 Ω			0-7812 ²	
0-390.6 Ω			0-3906 ²	
0-195.3 Ω			0-1953 ²	

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).

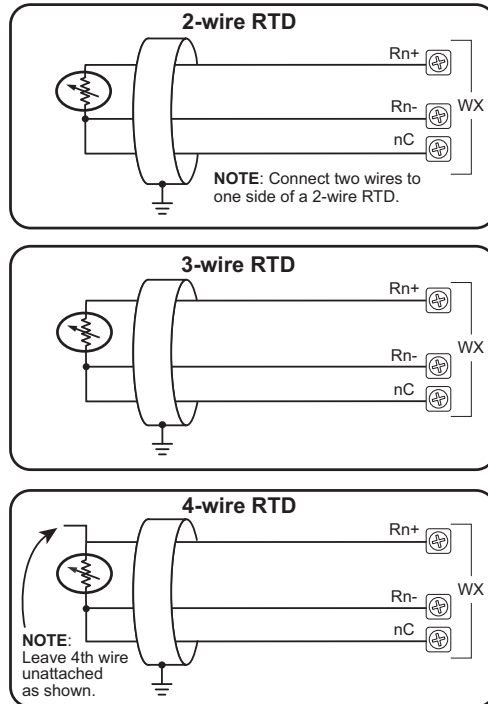
Analog RTD/Resistance Input Wiring



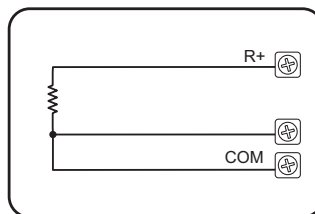
BX-06RTD Resistance Temperature Detector Input, continued

Analog RTD/Resistance Input Circuits

RTD Input Circuits

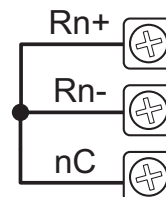


Resistance Input

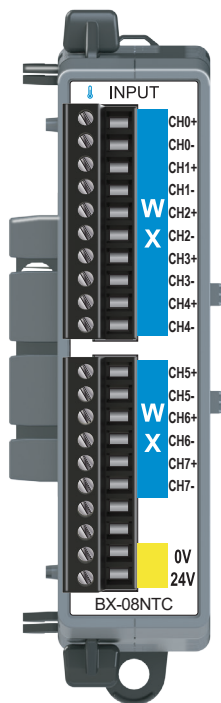


Notes for maximum accuracy:

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 \$;0127,:

Input Module 8-pt,
Thermistor



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

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

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

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

IMPORTANT!

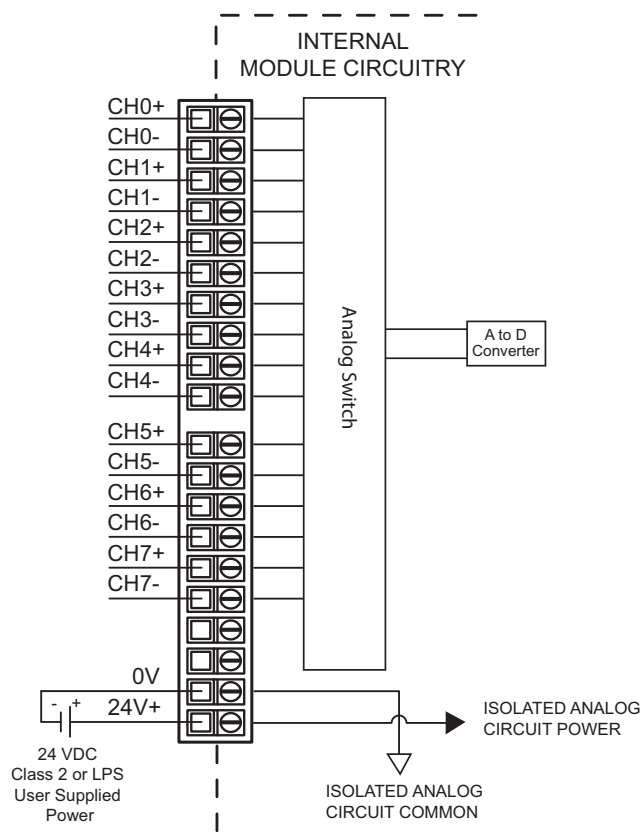


Hot-Swapping Information

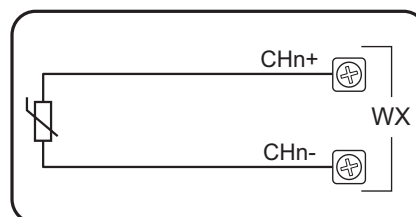
Note: This device cannot be Hot Swapped.

BX-08NTC Thermistor Input, continued

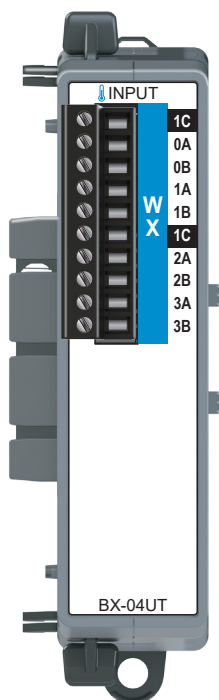
Thermistor Input Wiring



Thermistor Input Circuits

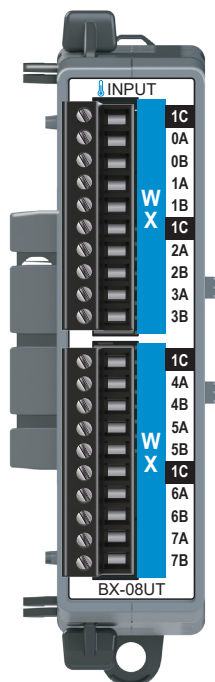


BX-xxUT Universal Temperature Input



BX-04UT
\$;-04gig:

Temperature Input
Expansion Module
4-pt Universal
Temperature Input



BX-08UT
\$;-04gig:

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

	<u>BX-04UT</u>	<u>BX-08UT</u>
Input Channels	4 Differential	8 Differential
Commons	1	
Input Impedance	>5MΩ	
Resolution	24-bit, 0.1°(C or F) See Data Range Specifications table	
All Channel Update Rate	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)	2s max (8 thermocouples enabled) 1.4 s max (4RTD/NTX/mV enabled)
Sample Duration Time	175ms	
Open Circuit Detection Time	Within 5s	
Maximum Ratings	-0.3 V to +5.3 V, <15mA	
Common Mode Range	-0.3 V to +5.3 V	
Common Mode Rejection	100dB@DC, 130dB@60Hz	
Conversion Method	Sigma-Delta, 24-bit	
Backplane Power Consumption	1.5 W	
Heat Dissipation	1.5 W	
Weight	98g [3.5 oz]	
Agency Approvals	UL 61010-2 File E185989, Canada and USA	
Software Version Required	Do-more! Designer 2.7 or later	
Thermocouple Parameters		
Thermocouple Input Ranges	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]
Linear Voltage Input Ranges	-31.25 to 31.25 mVDC -31.25 to 62.5 mVDC	-31.25 to 125mVDC 0 to 1.0 VDC
Cold Junction Compensation	Automatic	
Thermocouple Linearization	Automatic	
Max. Inaccuracy—Thermocouple	±(0.2°C + 3% of °C reading)	
Maximum Inaccuracy—Voltage	±250μV	
RTD/Thermistor Parameters		
RTD Input Ranges (RTD Types)	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]	
Thermistor Input Ranges	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 Excitation Current	RTD 10, 100, 120, 200: RTD 500: RTD 1000:	1mA 500μA 250μA
Thermistor Excitation Current	NTC 2.252k, NTC 3k: NTC 5k, NTC 10k: NTC 30k:	10μA 5μA 1μA
Thermistor Linearization	Automatic	
Maximum Inaccuracy	±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) ¹	24-Bit Floating ¹
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 ³		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn ²	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) ¹	24-Bit Floating ¹
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) ¹	24-Bit Floating ¹
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

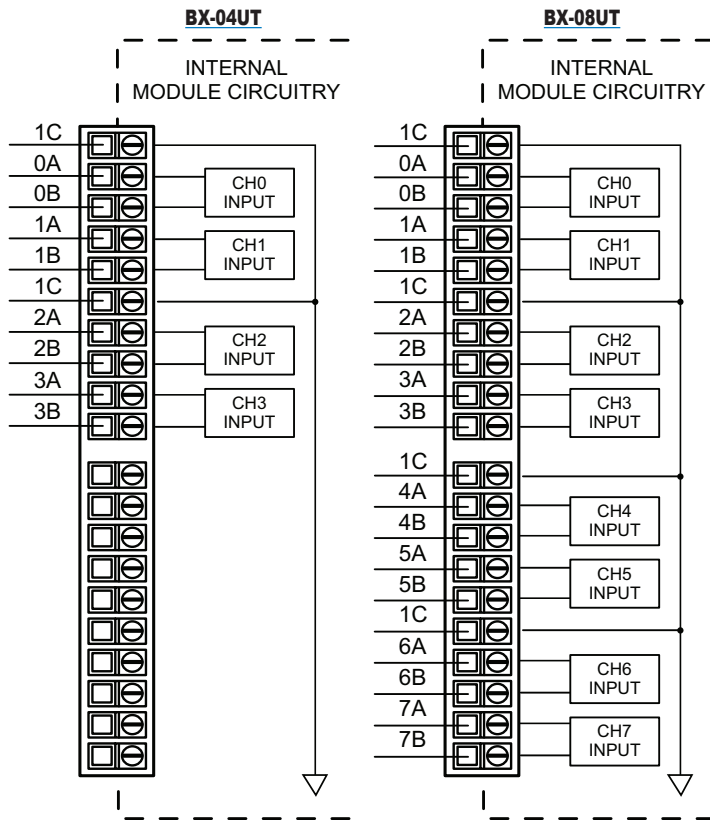
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

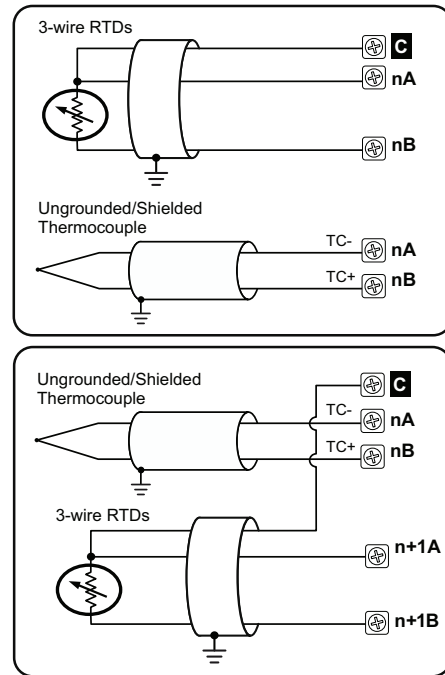
3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

BX-xxUT Universal Temperature Input, continued

Analog Thermocouple/Voltage Input Wiring



Mixed Resistive and Thermocouple Sensors



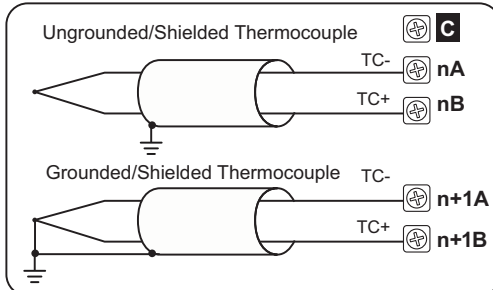
Notes for maximum accuracy:

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.

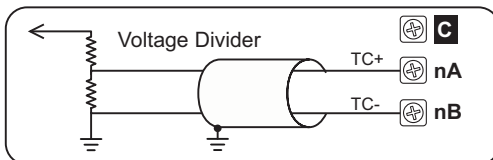
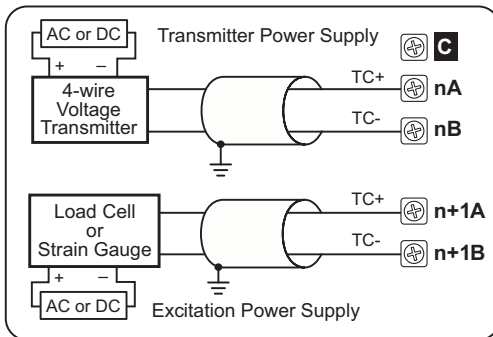


BX-xxUT Universal Temperature Input, continued

Thermocouple and Voltage Sensors



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

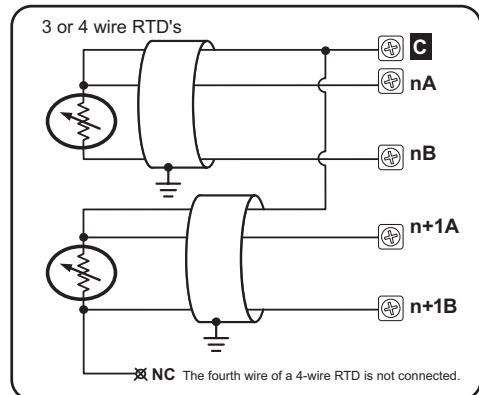
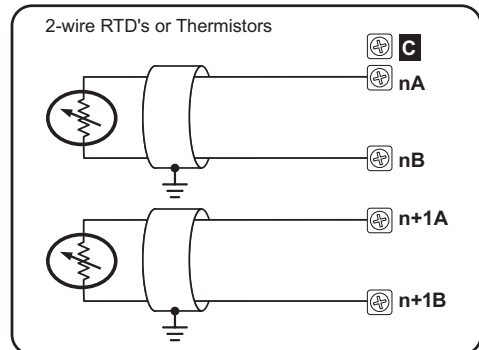


NOTE: Shield should be connected only at one end, to ground at the source device.

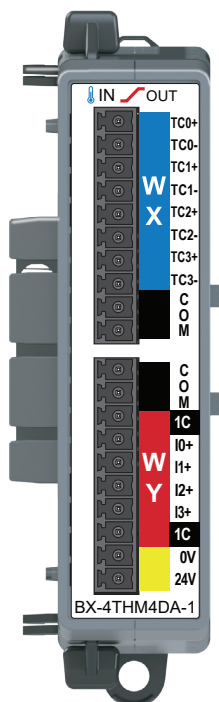
For maximum accuracy:
Jumper unused inputs.



Resistive and Thermistor Sensors



BX-4THM4DA-1 Thermocouple In/Current Out



BX-4THM4DA-1

\$\$\$!t6:

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

Input Channels	4 Differential
Commons	NA
Resolution	16-bit, 0.1°C or F See Data Range Specifications table
Thermocouple Input Ranges	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]
Cold Junction Compensation	Automatic
Thermocouple Linearization	Automatic
Accuracy vs. Temperature	±50PPM per °C (maximum)
Maximum Inaccuracy–Temperature	±3°C maximum (excluding thermocouple error) (including temperature drift)
Linear Voltage Input Ranges	0–39mV ±39mV 0–156mV ±156mV 0–1.25 V ±78mV
Maximum Inaccuracy–Voltage	0.06% @ 25°C, 0.10% @ 0–60°C
All Channel Update Rate	1.6 s
Sample Duration Time	270ms
Open Circuit Detection Time	Within 2–10s
Maximum Ratings	Fault protected inputs to ±50V
Common Mode Range	0.6 V (@ 16-bit Resolution)
Common Mode Rejection	100dB @ DC and 130dB @ 60Hz
Conversion Method	Sigma-Delta

Analog Current Sourcing Output Specifications

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

BX-4THM4DA-1 Thermocouple In/Current Out

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

Data Range Specifications								
Selection	Description	Enable 16-bit: Unchecked (Default) ¹ (15-bit Resolution)			Enable 16-bit: Checked (16-bit Resolution)			
		Raw Counts	Casting ²	µV Per Count	Raw Counts ³	Casting ²	µV Per Count	
Type J	Type J	-	-		°C: -1900 to 7600 °F: -3100 to 14000	-	-	
Type K	Type K	-	-		°C: -2100 to 10000 °F: -3460 to 18320	-	-	
Type E	Type E	-	-		°C: -1500 to 13720 °F: -2380 to 25020	-	-	
Type R	Type R	-	-		°C: 650 to 17680 °F: 1490 to 32140	-	-	
Type S	Type S	-	-		°C: 650 to 17680 °F: 1490 to 32140	-	-	
Type T	Type T	-	-		°C: -2300 to 4000 °F: -380 to 7520	-	-	
Type B	Type B	-	-		°C: 5290 to 18200 °F: 9840 to 33080	- WXn:U	-	
Type N	Type N	-	-		°C: -700 to 13000 °F: -940 to 23720	-	-	
Type C	Type C	-	-		°C: 650 to 23200 °F: 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	

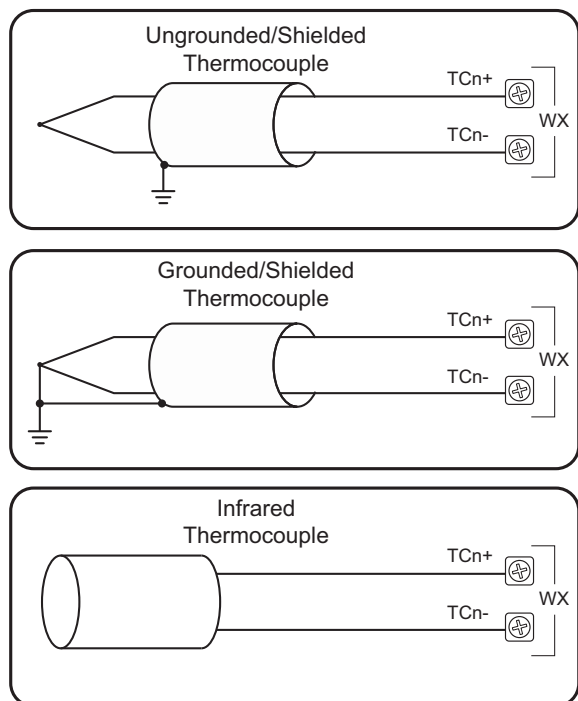
1. Thermocouple and bipolar ranges default to 16-bit resolution.

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°).

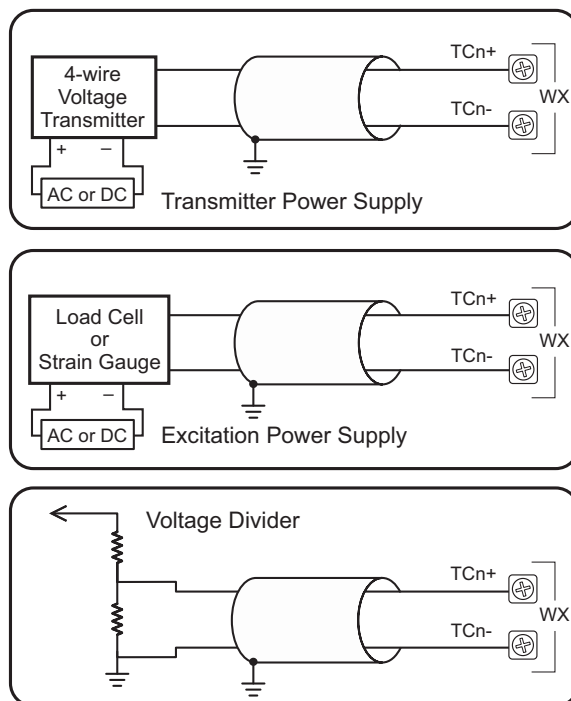
BX-4THM4DA-1 Thermocouple In/Current Out

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

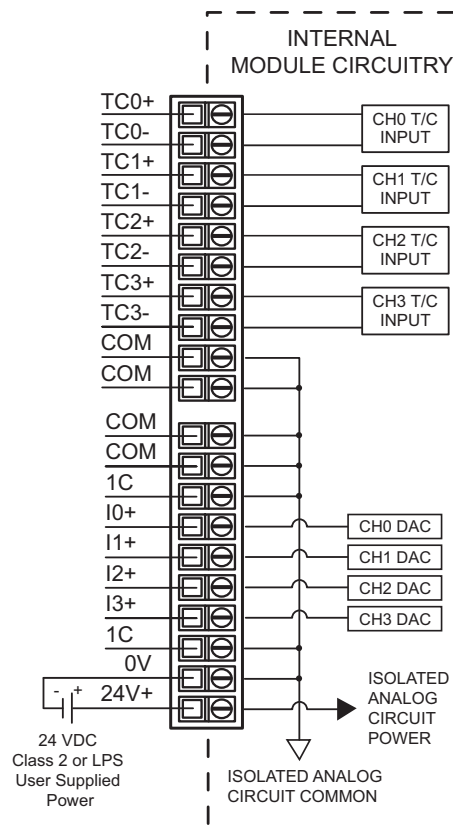


NOTE: Shield should be connected only at one end, to ground at the source device.

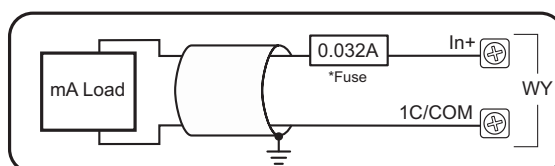
For maximum accuracy, jumper unused inputs.



Analog Thermocouple/Voltage Input and Current Output Wiring



Analog Current Source Output Circuit



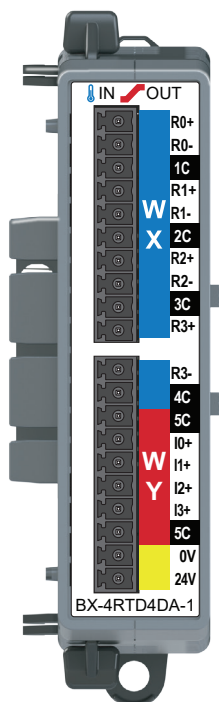
*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

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 \$;03!t5:

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!



Hot-Swapping Information

Note: This device cannot be
Hot Swapped.

RTD Input Specifications

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

Analog Current Sourcing Output Specifications

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

BX-4RTD4DA-1 RTD Input/Current Output

Module General Specifications

Weight	110g [3.9 oz]
Heat Dissipation	3W Max
Backplane Power Consumption	0.1 W
External DC Power Required	Class 2 or LPS power supply 24VDC (±20%) 125mA
Software Version Required	Do-more! Designer version 2.6 or later

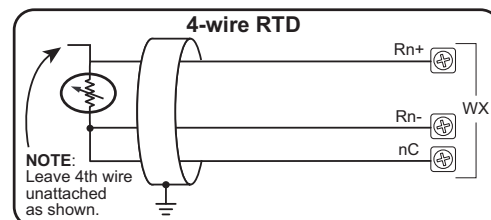
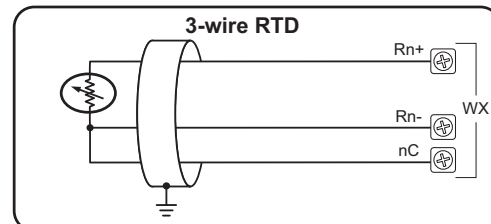
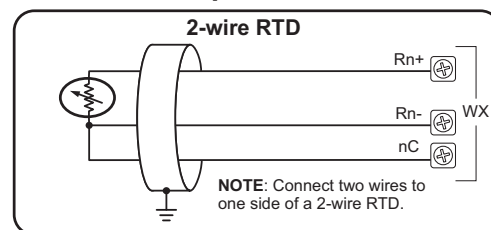
Data Range Specifications

Selection	Description	Raw Counts ¹			
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 ²		
0-781.2 Ω			0-7812 ²		
0-390.6 Ω			0-3906 ²		
0-195.3 Ω			0-1953 ²		

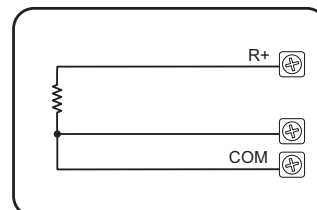
1. Temperatures have one implied decimal place (e.g., raw count of -1900 is -190.0°).
2. Certain resistance ranges have one implied decimal place (e.g., raw count of 7812 is 781.2 Ω).

Analog RTD/Resistance Input Circuits

RTD Input Circuits

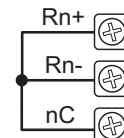


Resistance Input

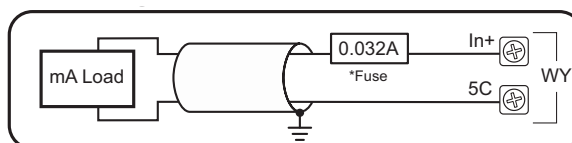


Notes for maximum accuracy:

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.



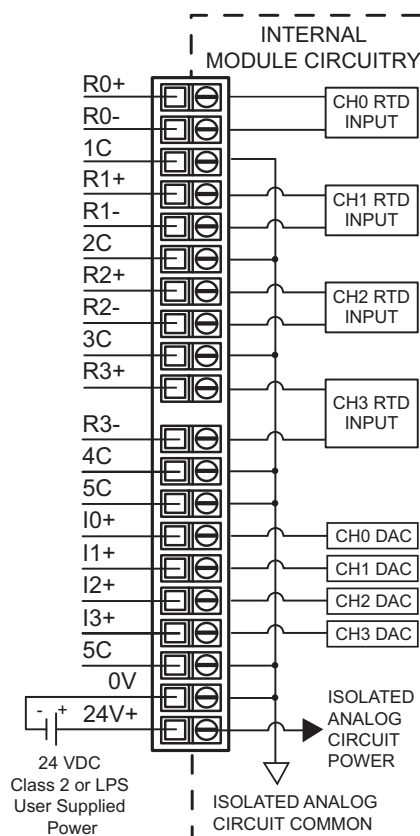
Analog Current Source Output Circuit



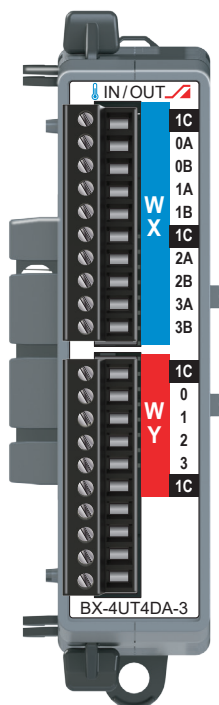
*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

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

Analog RTD/Resistance Input Wiring



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



BX-4UT4DA-3 \$-04gib:

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

Universal Temperature Input Specifications	
Input Channels	4 Differential
Commons	1
Input Impedance	>5MΩ
Resolution	24-bit, 0.1°C (or F) See Data Range Specifications table
All Channel Update Rate	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)
Sample Duration Time	175ms
Open Circuit Detection Time	Within 5s
Maximum Ratings	-0.3 V to +5.3 V, <15mA
Common Mode Range	-0.3 V to +5.3 V
Common Mode Rejection	100dB@DC, 130dB@60Hz
Conversion Method	Sigma-Delta, 24-bit
Thermocouple Parameters	
Thermocouple Input Ranges	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]
Linear Voltage Input Ranges	-31.25 to 31.25 mVDC -31.25 to 125mVDC -31.25 to 62.5 mVDC 0 to 1.0 VDC
Cold Junction Compensation	Automatic
Thermocouple Linearization	Automatic
Maximum Inaccuracy—Thermocouple	±(0.2°C + 3% of °C reading)
Maximum Inaccuracy—Voltage	±250μV
RTD/Thermistor Parameters	
Input Ranges (RTD Types)	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]
Thermistor Input Ranges	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 Excitation Current	RTD 10, 100, 120, 200: 1mA RTD 500: 500μA RTD 1000: 250μA
Thermistor Excitation Current	NTC 2.252k, NTC 3k: 10μA NTC 5k, NTC 10k: 5μA NTC 30k: 1μA
RTD/Thermistor Linearization	Automatic
Maximum Inaccuracy	±0.2°C

IMPORTANT!



Hot-Swapping Information

Note: This device cannot be
Hot Swapped.

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

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

Module General Specifications	
Weight	98g [3.5 oz]
Heat Dissipation	2.5 W
Backplane Power Consumption	2.65 W
Agency Approvals	UL 61010-2 File E185989, Canada and USA
Software Version Required	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) ¹	24-Bit Floating ¹
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 ³		
Type T	-265 to 400 °C -445 to 752 °F		
Voltage Selection	Voltage Range	WXn ²	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) ¹	24-Bit Floating ¹
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) ¹	24-Bit Floating ¹
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

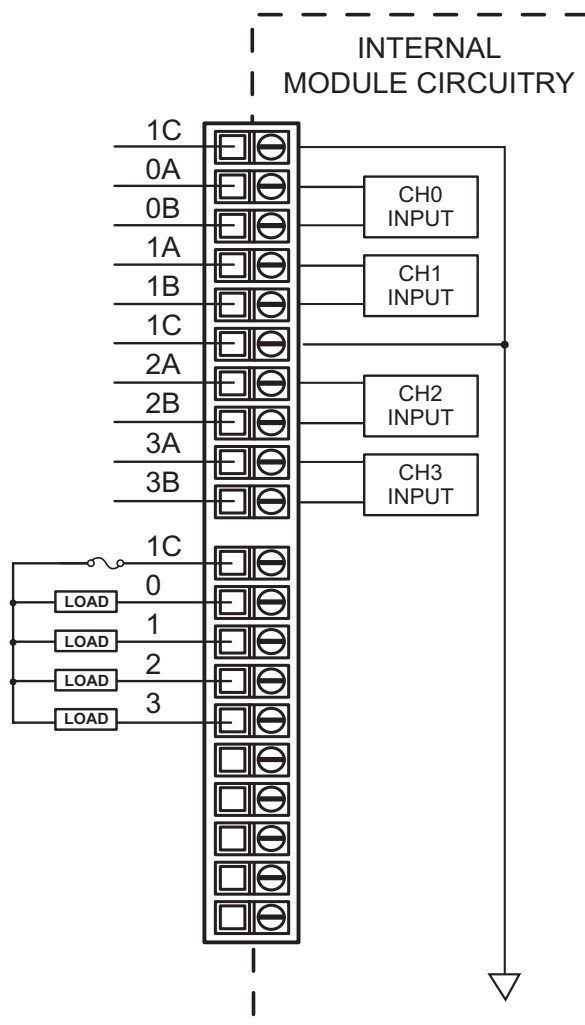
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = -32768 to 32767.

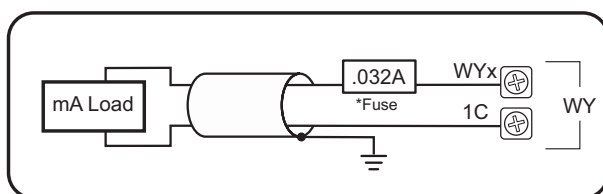
3. Maximum value displayed in WXn is 32767. RXn will display the full range of 3308.0.

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

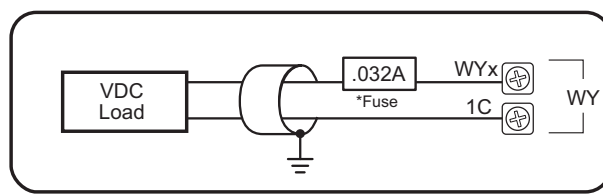
Universal Temp. Input/Analog Output Wiring



Analog Current Source Output Circuit



Analog Voltage Output Circuit



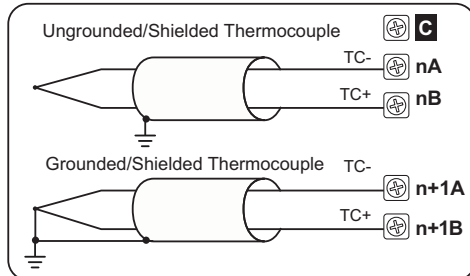
NOTE: Shield should be connected only at one end, to ground at the source device.

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

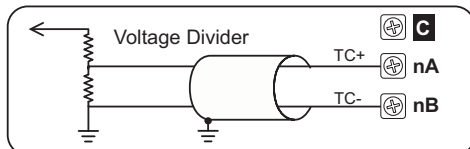
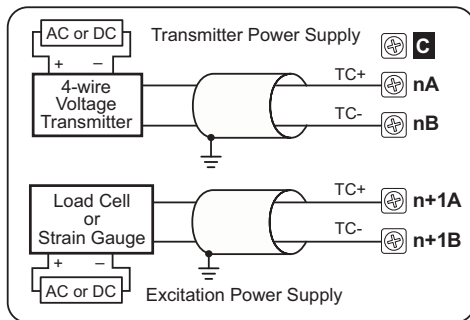
BX-4UT4DA-3 Universal Temp. Input/Analog Output

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.

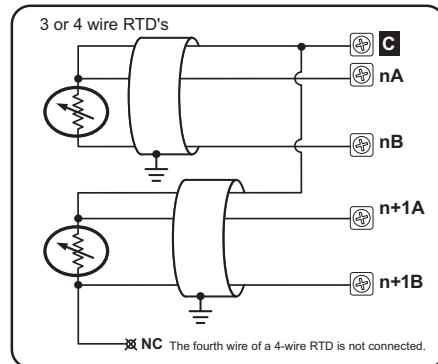
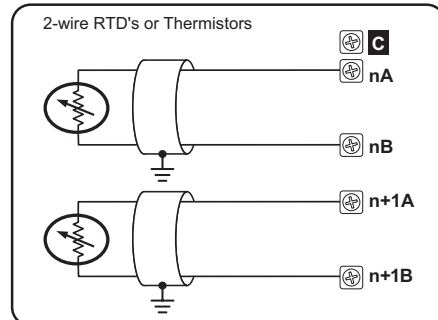


NOTE: Shield should be connected only at one end, to ground at the source device.

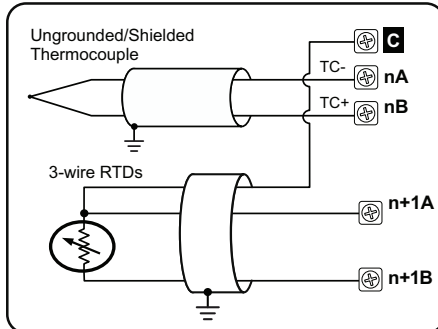
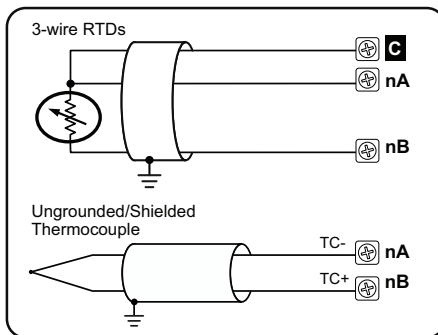
For maximum accuracy:
Jumper unused inputs.



Resistive and Thermistor Sensors



Mixed Resistive and Thermocouple Sensors

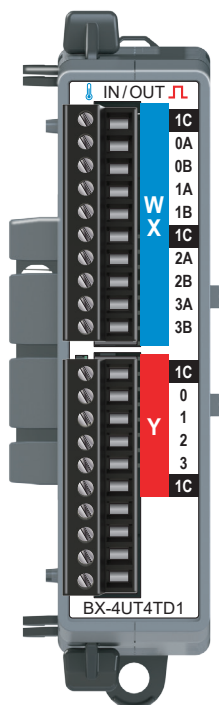


Notes for maximum accuracy:

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-4UT4TD1 Universal Temp. In/DC Sink Output



BX-4UT4TD1 \$-04gic:

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	
Commons		1	
Input Impedance		>5MΩ	
Resolution		24-bit, 0.1°(C or F) See Data Range Specifications table	
All Channel Update Rate		1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)	
Sample Duration Time		175ms	
Open Circuit Detection Time		Within 5s	
Maximum Ratings		-0.3 V to +5.3 V, <15mA	
Common Mode Range		-0.3 V to +5.3 V	
Common Mode Rejection		100dB@DC, 130dB@60Hz	
Conversion Method		Sigma-Delta, 24-bit	
Thermocouple Parameters			
Thermocouple Input Ranges	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]
Linear Voltage Input Ranges		-31.25 to 31.25 mVDC -31.25 to 62.5 mVDC	-31.25 to 125mVDC 0 to 1.0 VDC
Cold Junction Compensation		Automatic	
Thermocouple Linearization		Automatic	
Maximum Inaccuracy–Thermocouple		±(0.2°C + 3% of °C reading)	
Maximum Inaccuracy–Voltage		±250μV	
RTD/Thermistor Parameters			
Input Ranges (RTD Types)	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]		
Thermistor Input Ranges	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 Excitation Current	RTD 10, 100, 120, 200:	1mA	
	RTD 500:	500μA	
	RTD 1000:	250μA	
Thermistor Excitation Current	NTC 2.252k, NTC 3k:	10μA	
	NTC 5k, NTC 10k:	5μA	
	NTC 30k:	1μA	
RTD/Thermistor Linearization		Automatic	
Maximum Inaccuracy		±0.2°C	

Module General Specifications

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

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

Voltage Sinking Output Specifications	
	BX-4UT4TD1
Outputs per Module	4
Commons	1
Output Type	Sinking
Maximum Current per Common	2A
Nominal Voltage	12–24VDC
Operating Voltage Range	5–36VDC
Peak Voltage	36VDC
Minimum Output Current	0.1 mA @ 24VDC
Maximum Output Current	0.5 A per output, no derating over temperature range
Maximum Inrush Current	5A for 50ms
Maximum Leakage Current	10µA
ON Voltage Drop	0.05 VDC
Fuses, Overcurrent Protection	N/A
OFF-ON Response	<5ms
ON-OFF Response	<2ms
Status Indicators	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) ¹	24-Bit Floating ¹
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 ³		
Type T	–265 to 400 °C –445 to 752 °F		
Voltage Selection	Voltage Range	WXn ²	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) ¹	24-Bit Floating ¹
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) ¹	24-Bit Floating ¹
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

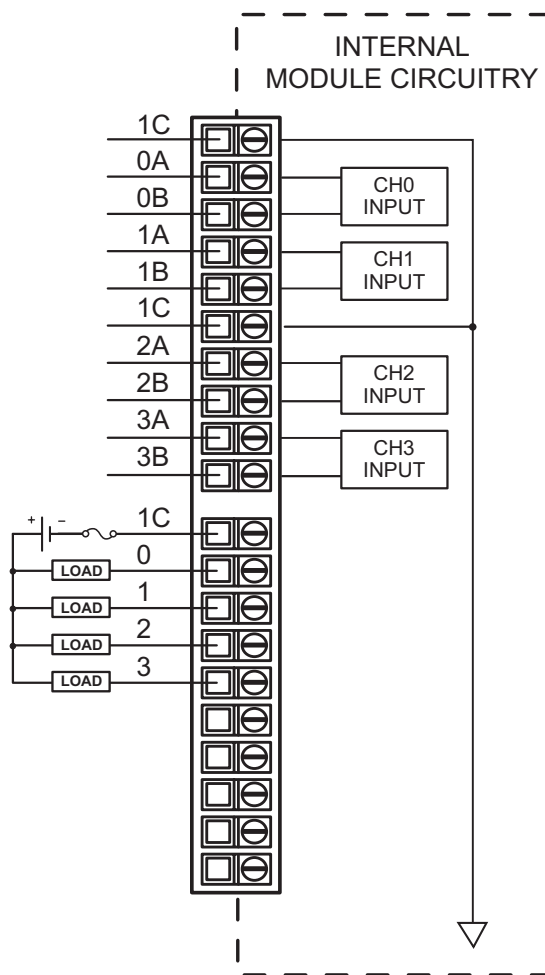
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

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

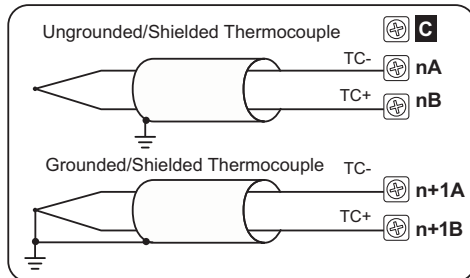
Universal Temperature Input/DC Sink Output Wiring



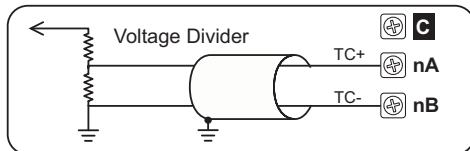
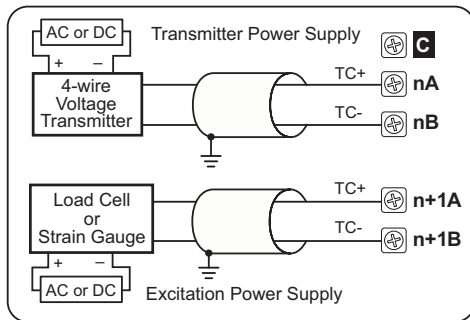
BX-4UT4TD1 Universal Temp. In/DC Sink Output

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.

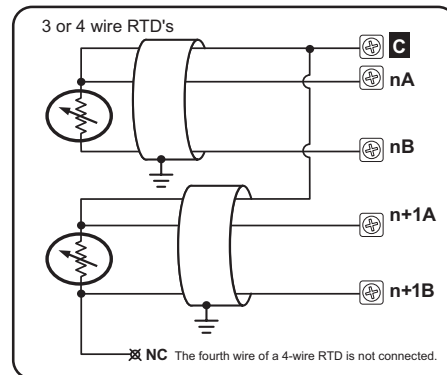
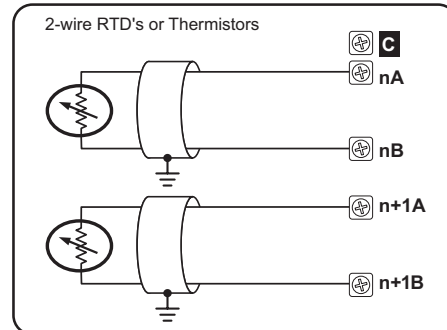


NOTE: Shield should be connected only at one end, to ground at the source device.

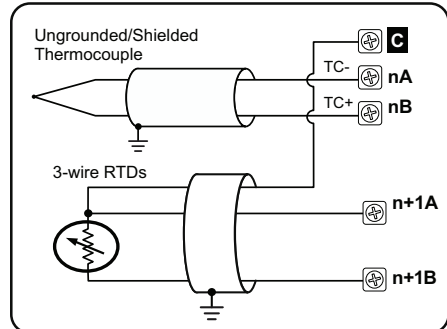
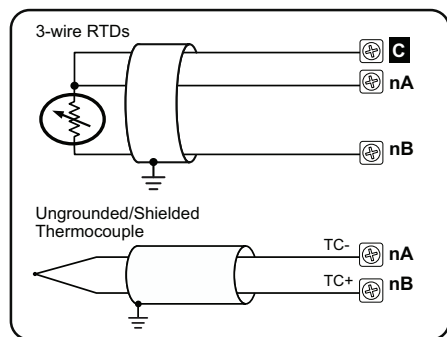
For maximum accuracy:
Jumper unused inputs.



Resistive and Thermistor Sensors



Mixed Resistive and Thermocouple Sensors

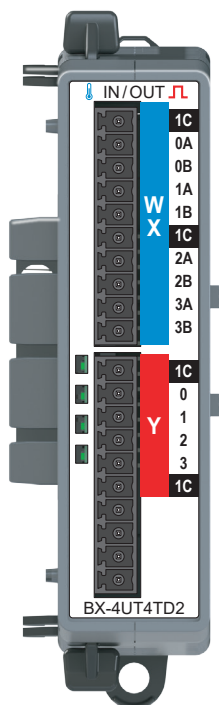


Notes for maximum accuracy:

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-4UT4TD2 Universal Temp. In/DC Source Output



BX-4UT4TD2
\$-04gid:

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	
Input Channels	4 Differential
Commons	1
Input Impedance	>5MΩ
Resolution	24-bit, 0.1°C or F See Data Range Specifications table
All Channel Update Rate	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)
Sample Duration Time	175ms
Open Circuit Detection Time	Within 5s
Maximum Ratings	-0.3 V to +5.3 V, <15mA
Common Mode Range	-0.3 V to +5.3 V
Common Mode Rejection	100dB@DC, 130dB@60Hz
Conversion Method	Sigma-Delta, 24-bit
Thermocouple Parameters	
Thermocouple Input Ranges	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]
Linear Voltage Input Ranges	-31.25 to 31.25 mVDC -31.25 to 125mVDC -31.25 to 62.5 mVDC 0 to 1.0 VDC
Cold Junction Compensation	Automatic
Thermocouple Linearization	Automatic
Maximum Inaccuracy–Thermocouple	±(0.2°C + 3% of °C reading)
Maximum Inaccuracy–Voltage	±250μV
RTD/Thermistor Parameters	
Input Ranges (RTD Types)	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]
Thermistor Input Ranges	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 Excitation Current	RTD 10, 100, 120, 200: 1mA RTD 500: 500μA RTD 1000: 250μA
Thermistor Excitation Current	NTC 2.252k, NTC 3k: 10μA NTC 5k, NTC 10k: 5μA NTC 30k: 1μA
RTD/Thermistor Linearization	Automatic
Maximum Inaccuracy	±0.2°C

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

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

Voltage Sourcing Output Specifications	
	BX-4UT4TD2
Outputs per Module	4
Commons	1
Output Type	Sourcing
Maximum Current per Common	2A
Nominal Voltage	12–24VDC
Operating Voltage Range	5–36VDC
Peak Voltage	36VDC
Minimum Output Current	0.1 mA @ 24VDC
Maximum Output Current	0.5 A per output, no derating over temperature range
Maximum Inrush Current	5A for 50ms
Maximum Leakage Current	10µA
ON Voltage Drop	0.05 VDC
Fuses, Overcurrent Protection	N/A
OFF-ON Response	<5ms
ON-OFF Response	<2ms
Status Indicators	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) ¹	24-Bit Floating ¹
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 ³		
Type T	–265 to 400 °C –445 to 752 °F		
Voltage Selection	Voltage Range	WXn ²	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) ¹	24-Bit Floating ¹
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) ¹	24-Bit Floating ¹
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

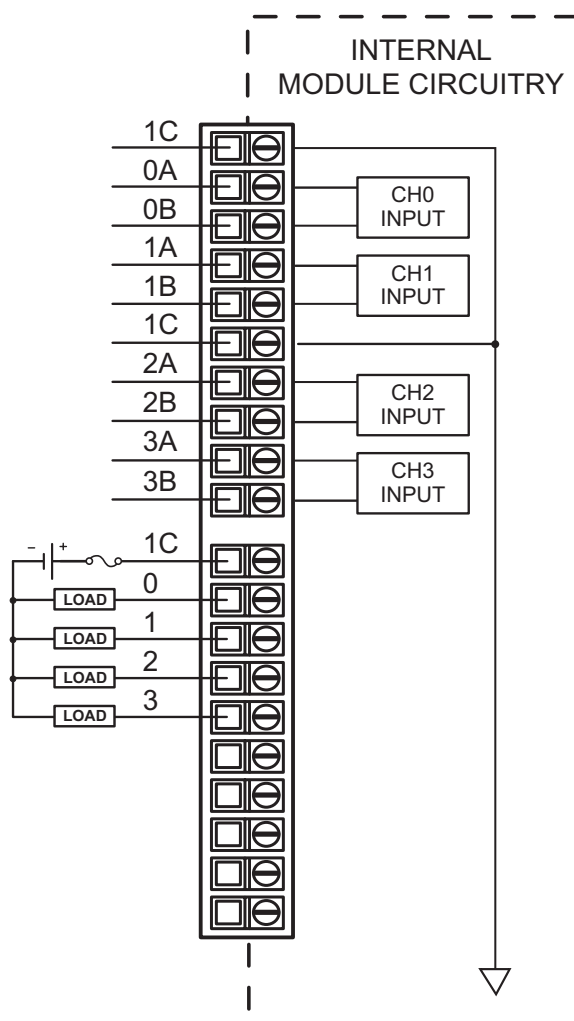
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = –32768 to 32767.

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

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

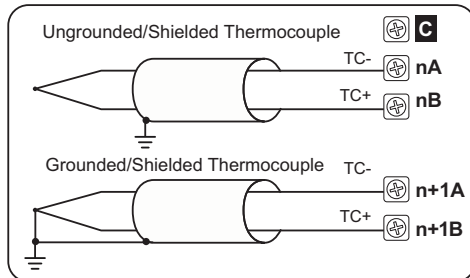
Universal Temperature Input/DC Source Output Wiring



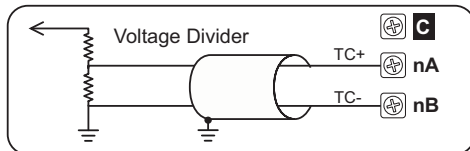
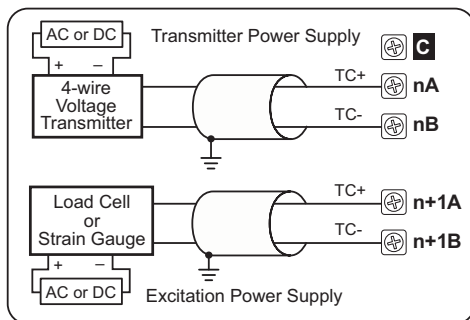
BX-4UT4TD2 Universal Temp. In/DC Source Output

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.

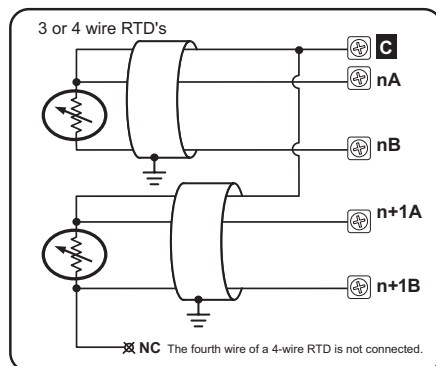
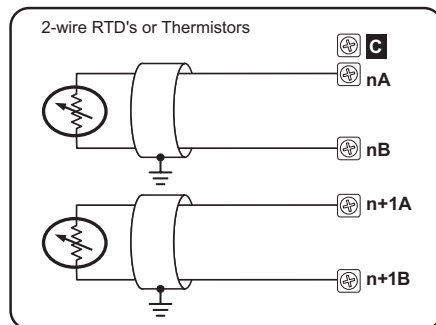


NOTE: Shield should be connected only at one end, to ground at the source device.

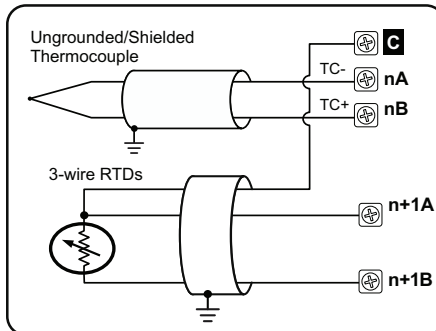
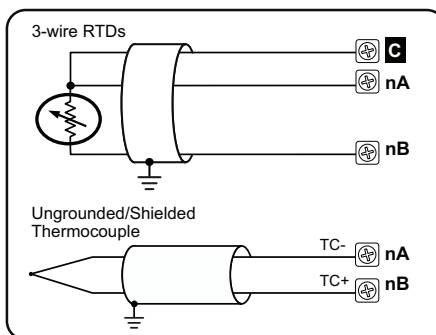
For maximum accuracy: Jumper unused inputs.



Resistive and Thermistor Sensors



Mixed Resistive and Thermocouple Sensors

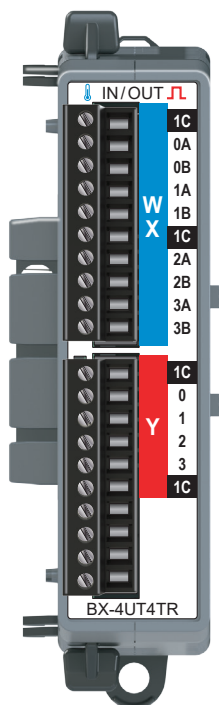


Notes for maximum accuracy:

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
\$-04gie:

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	
Input Channels	4 Differential
Commons	1
Input Impedance	>5MΩ
Resolution	24-bit, 0.1°C or F See Data Range Specifications table
All Channel Update Rate	1s max (4 thermocouples enabled) 700ms max (4RTD/NTX/mV enabled)
Sample Duration Time	175ms
Open Circuit Detection Time	Within 5s
Maximum Ratings	-0.3 V to +5.3 V, <15mA
Common Mode Range	-0.3 V to +5.3 V
Common Mode Rejection	100dB@DC, 130dB@60Hz
Conversion Method	Sigma-Delta, 24-bit
Thermocouple Parameters	
Thermocouple Input Ranges	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]
Linear Voltage Input Ranges	-31.25 to 31.25 mVDC -31.25 to 62.5 mVDC -31.25 to 125mVDC 0 to 1.0 VDC
Cold Junction Compensation	Automatic
Thermocouple Linearization	Automatic
Maximum Inaccuracy–Thermocouple	±(0.2°C + 3% of °C reading)
Maximum Inaccuracy–Voltage	±250µV
RTD/Thermistor Parameters	
Input Ranges (RTD Types)	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]
Thermistor Input Ranges	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 Excitation Current	RTD 10, 100, 120, 200: 1mA RTD 500: 500µA RTD 1000: 250µA
Thermistor Excitation Current	NTC 2.252k, NTC 3k: 10µA NTC 5k, NTC 10k: 5µA NTC 30k: 1µA
RTD/Thermistor Linearization	Automatic
Maximum Inaccuracy	±0.2°C

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

BX-4UT4TR Universal Temp. Input/ Relay Output

Voltage Relay Output Specifications	
	BX-4UT4TR
Outputs per Module	4
Commons	1
Maximum Current per Common	8A
Nominal Voltage	5–48VDC, 24–240VAC
Operating Voltage Range	5–60VDC, 18–264VAC
Peak Voltage	60VDC, 264VAC
Minimum Output Current	0.1 mA @ 24VDC
Maximum Output Current	2A
Maximum Inrush Current	5A for 50ms
Maximum Leakage Current	1µA
ON Voltage Drop	0.2 V maximum
Fuses, Overcurrent Protection	N/A
OFF-ON Response	<10ms
ON-OFF Response	<10ms
Relay Cycle Life	5 Million Operations
Mechanical Endurance	120,000 Operations
Electrical Endurance	
Status Indicators	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) ¹	24-Bit Floating ¹
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 ³		
Type T	–265 to 400 °C –445 to 752 °F		
Voltage Selection	Voltage Range	WXn ²	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) ¹	24-Bit Floating ¹
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) ¹	24-Bit Floating ¹
Thermistor 3kΩ @25°C			
Thermistor 5kΩ @25°C			
Thermistor 10k-AN Type 3 @25°C			
Thermistor 30kΩ @25°C			

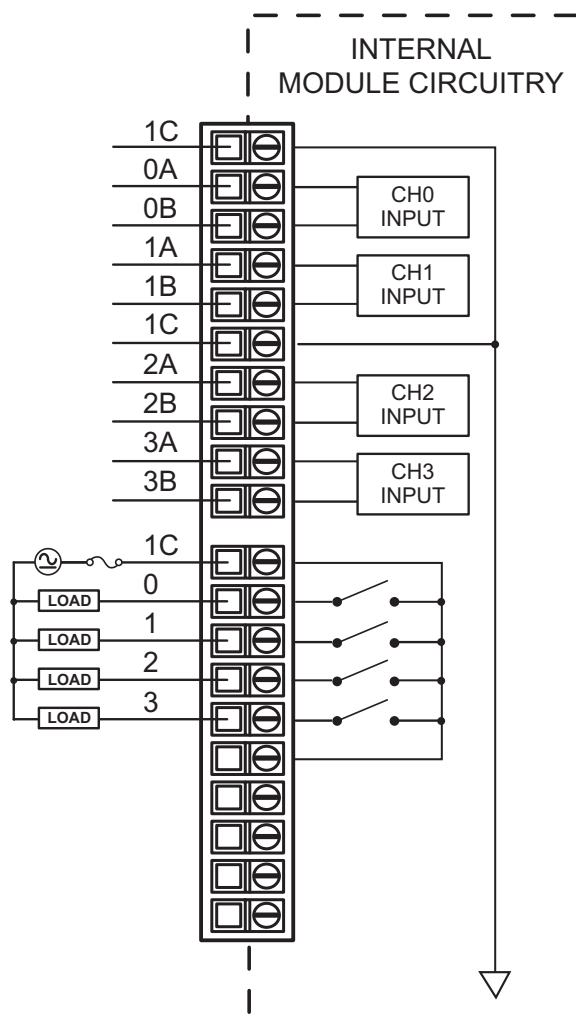
1. Temperatures reported in rounded integer to WXn and as scaled floating point 24bits resolution to RXn.

2. Raw Counts = –32768 to 32767.

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

BX-4UT4TR Universal Temp. Input/ Relay Output

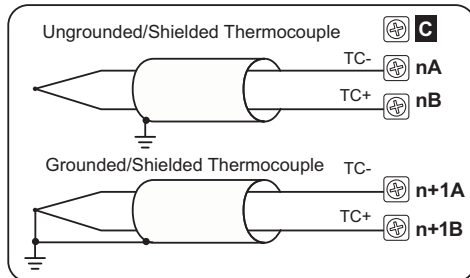
Universal Temperature Input/Relay Output Wiring



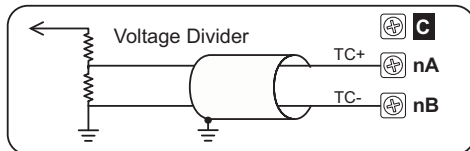
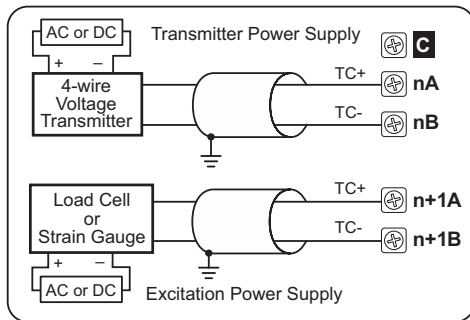
BX-4UT4TR Universal Temp. Input/ Relay Output

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.

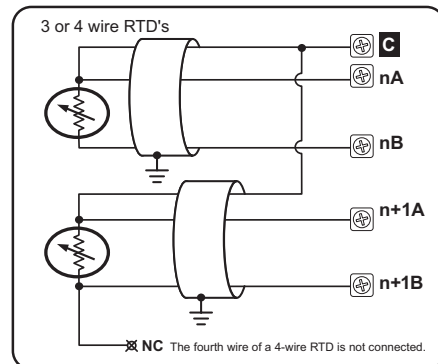
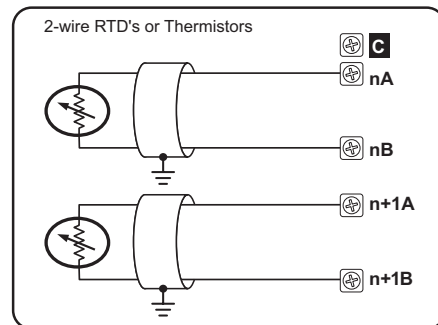


NOTE: Shield should be connected only at one end, to ground at the source device.

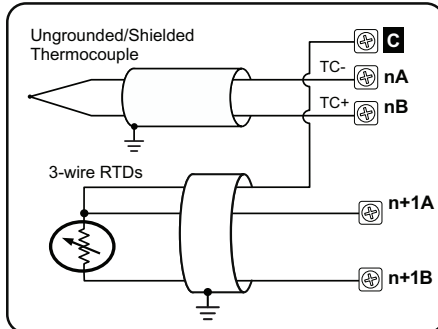
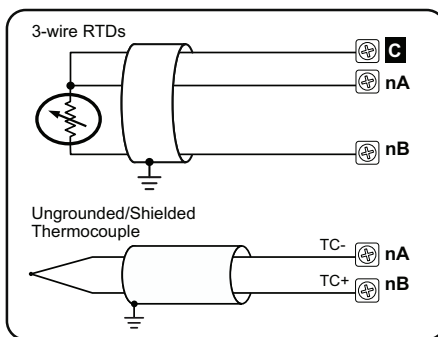
For maximum accuracy:
Jumper unused inputs.



Resistive and Thermistor Sensors



Mixed Resistive and Thermocouple Sensors

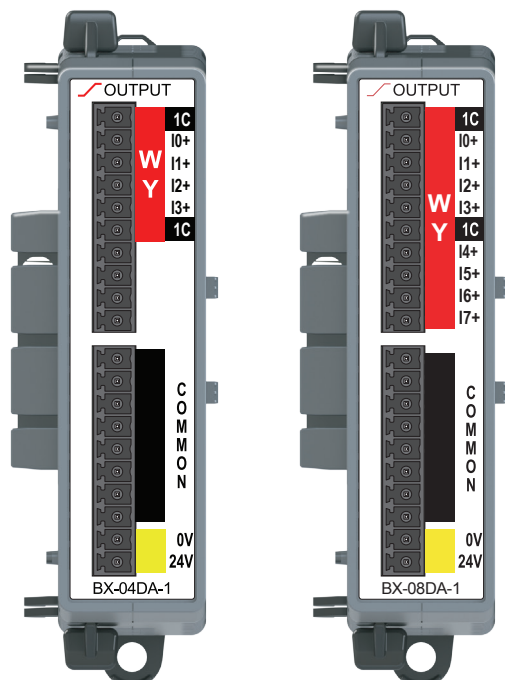


Notes for maximum accuracy:

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-xxDA-1 Analog Current Source Output



BX-04DA-1
\$0127v:

Output Module 4-pt,
Analog Current Source

BX-08DA-1
\$0127x:

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.



Analog Current Source Output Specifications

Specification	BX-04DA-1	BX-08DA-1
Outputs per Module	4	8
Commons	1	
Module Signal Output Range	0–20mA, 4–20mA (Default)	
Signal Resolution	16-bit, 15-bit (Default)	
Resolution Value of LSB	See Data Range Specifications table	
Output Type	Current Sourcing up to 22mA	
Output Value in Fault Mode	~0mA	
Maximum Load Impedance	700Ω	
Maximum Capacitive Load	1000pF	
Allowed Load Type	Grounded	
Maximum Continuous Overload	30mA	
All Channel Update Rate	1.5 ms per enabled channel	
Maximum Inaccuracy	±0.1% of range	±0.05% of range
Maximum Full Scale Calibration Error	±0.05% of range	
Maximum Offset Calibration Error	±0.05% of range	
Conversion Method	Successive approximation	
Accuracy vs. Temperature	±25PPM / °C maximum	
Maximum Crosstalk	+10μV	
Linearity Error (end to end)	±0.08% of range	±0.06% of range
Output Stability and Repeatability	±0.02% of full range after 10 minute warmup (typical)	
Output Ripple	±0.01% of range/mA	
Output Settling Time	200μs	
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	
External DC Power Required	Class 2 or LPS power supply 24VDC (±20%)	
	175mA	250mA
Heat Dissipation	5.1 W	8.1 W
Weight	98g [3.5 oz]	
Software Version Required (Do-more! Designer Programming Software)		
	2.3 or later	2.1 or later

IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.

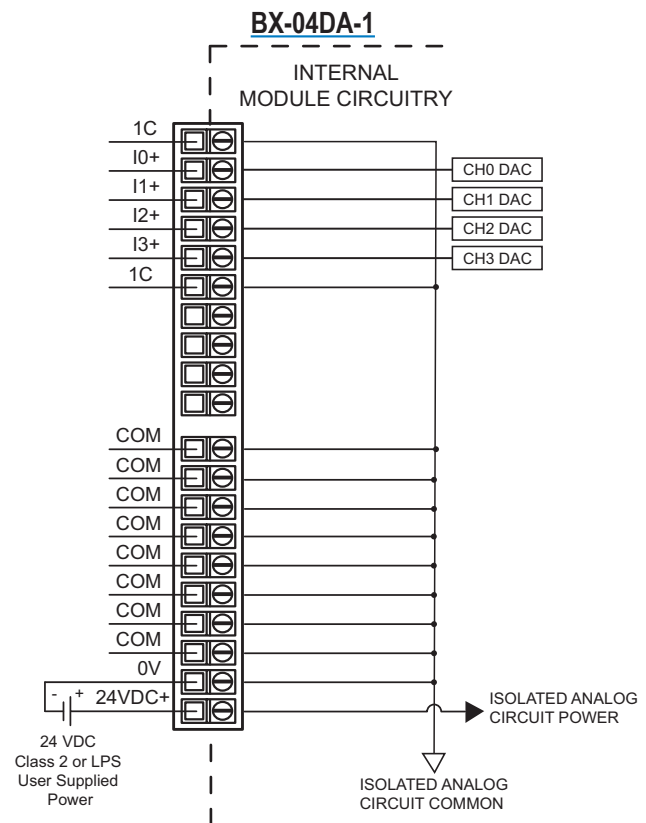
Data Range Specifications

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

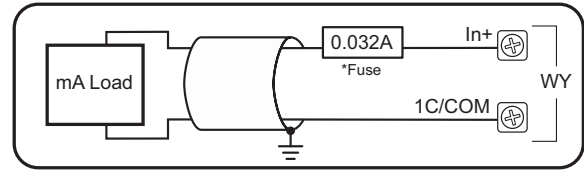
* For more information on Casting refer to Help topic DMD0309 in the Do-more! Designer Software.

BX-xxDA-1 Analog Current Source Output, continued

Analog Current Source Output Wiring

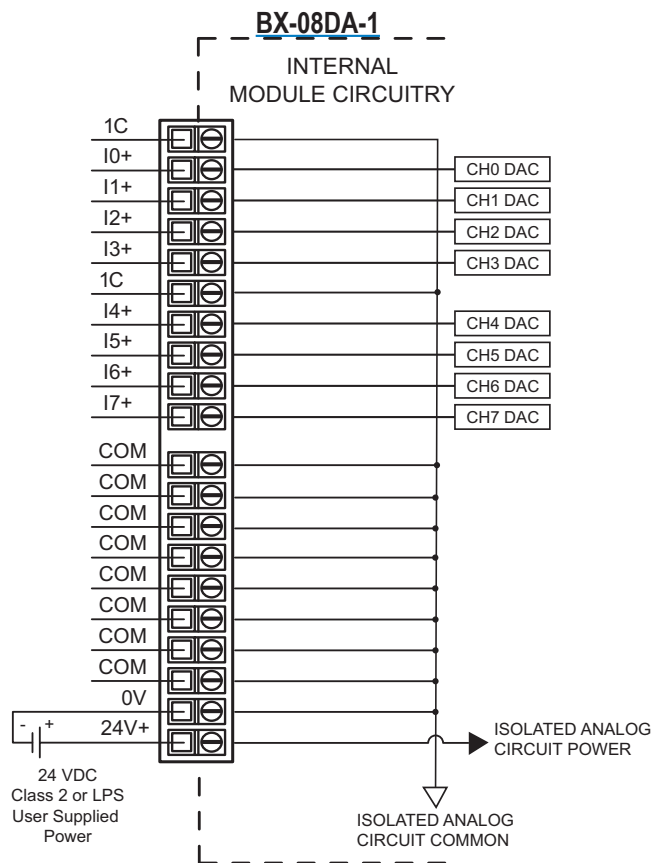


Analog Current Source Output Circuit

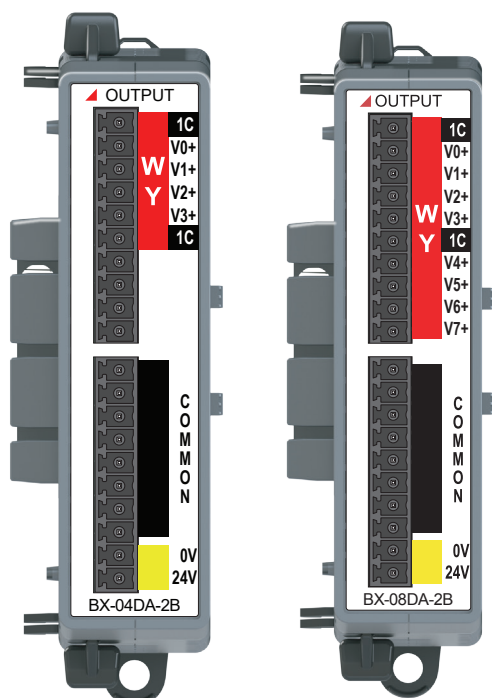


*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

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



BX-xxDA-2B Analog Voltage Output



BX-04DA-2B
\$0127y:

Output Module 4-pt,
Analog Voltage

BX-08DA-2B
\$0127z:

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
Outputs per Module	4	8
Commons	1	
Module Signal Output 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	
Output Type	Voltage outputs sourcing/sinking at 10mA (example 10V @ 1k Ω load).	
Output Value in Fault Mode	Voltage outputs 0V (Unipolar or Bipolar)	
Minimum Load Impedance	1k Ω	
Maximum Capacitive Load	1000pF	
Allowed Load Type	Grounded	
Maximum Continuous Overload	15mA	
All Channel Update Rate	3ms	
Maximum Inaccuracy	0.2% of range	
Maximum Full Scale Calibration Error	$\pm 0.08\%$ of range	
Maximum Offset Calibration Error	$\pm 0.04\%$ of range	
Accuracy vs. Temperature	± 25 PPM / $^{\circ}\text{C}$ maximum	
Maximum Crosstalk	+3 μV	
Linearity Error (end to end)	$\pm 0.01\%$ of range	
Output Stability and Repeatability	$\pm 0.02\%$ of full range after 10 min. warmup (typical)	
Output Ripple	150 $\mu\text{V}/\text{mA}$	
Output Settling Time	200 μs	
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	
External DC Power Required	Class 2 or LPS power supply 24VDC ($\pm 20\%$) 100mA	
Heat Dissipation	2.9 W	3.1 W
Weight	104g [3.7 oz]	
Software Version Required (Do-more! Designer Programming Software)	2.3 or later	2.1 or later

Data Range Specifications

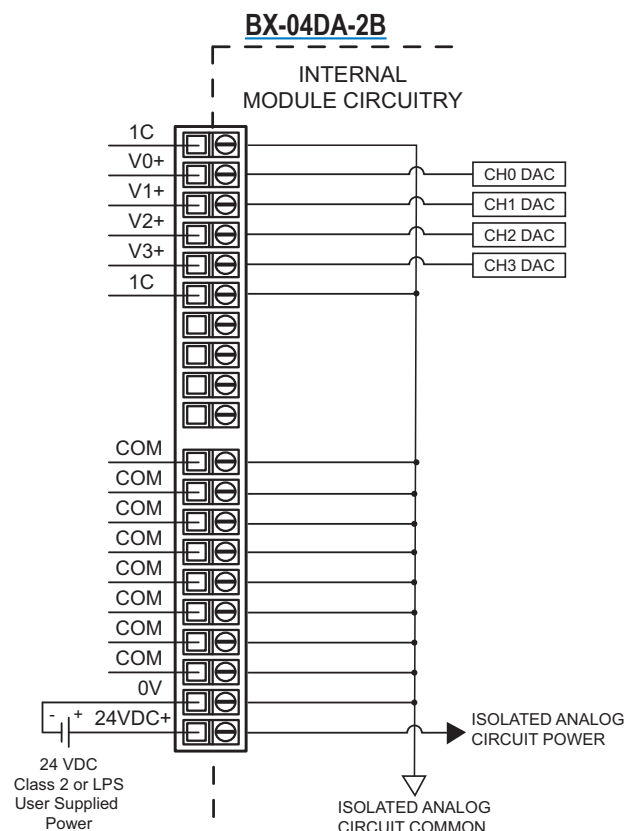
Selection	Description	Enable 16 bit Unchecked (15 bit Resolution, Default) ¹			Enable 16 bit Checked (16 bit Resolution)		
		Raw Counts	Casting ²	μV Per Count	Raw Counts	Casting ²	μV Per Count
0–10V	Unipolar 10VDC	0–32767	-	305	0–65535	WYn:U	152
0–5V	Unipolar 5VDC	0–32767	-	152	0–65535	WYn:U	76
$\pm 10\text{V}$	Bipolar 10VDC	-	-		-32768 to 32767	-	305
$\pm 5\text{V}$	Bipolar 5VDC	-	-		-32768 to 32767	-	152

1. Bipolar ranges default to 16-bit resolution.

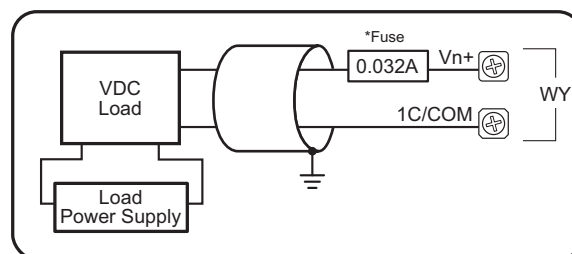
2. For more information on Casting refer to Help topic DMD0309 in the Do-more! Designer Software.

BX-xxDA-2B Analog Voltage Output, continued

Analog Voltage Output Wiring

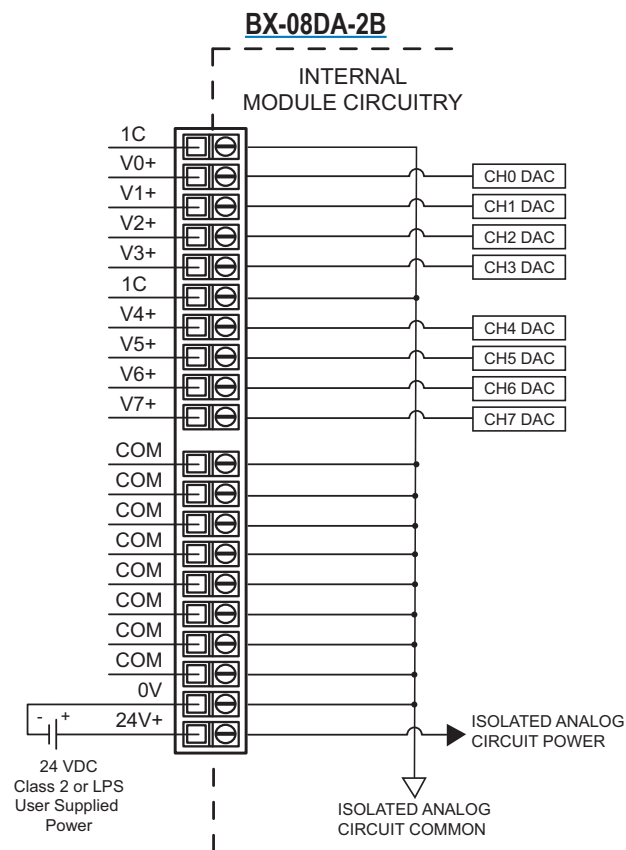


Analog Voltage Output Circuits

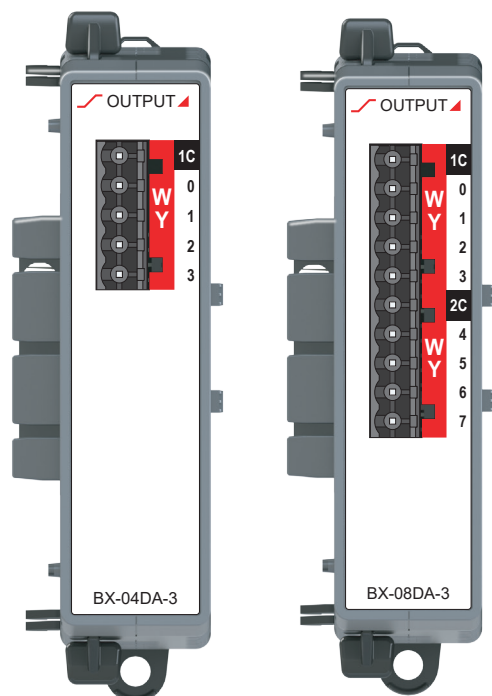


*An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

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



BX-xxDA-3 Universal Analog Output



BX-04DA-3 \$;04gh,:

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 \$-04gi0:

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.

Analog Universal Current/Voltage Output Specifications

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

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

IMPORTANT!



Hot-Swapping Information

Note: This device cannot be
Hot Swapped.

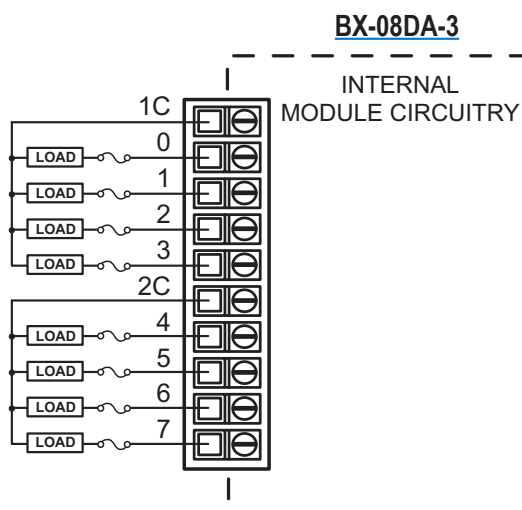
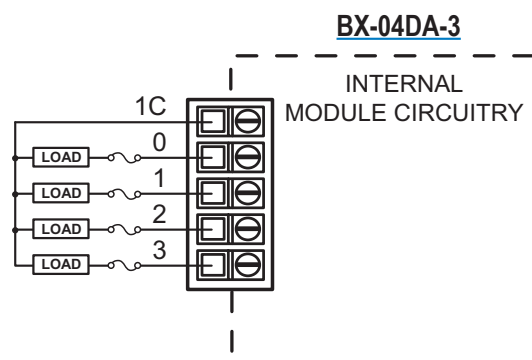
Data Range Specifications

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

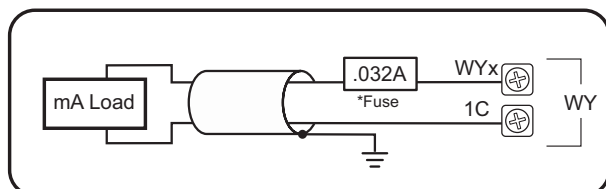
1. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

BX-xxDA-3 Universal Analog Output, continued

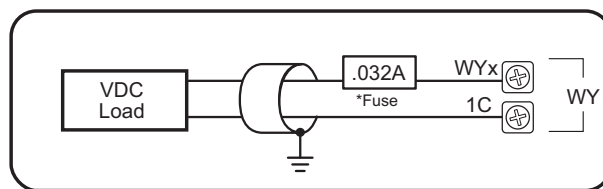
Analog Current/Voltage Output Wiring



Analog Current Source Output Circuits



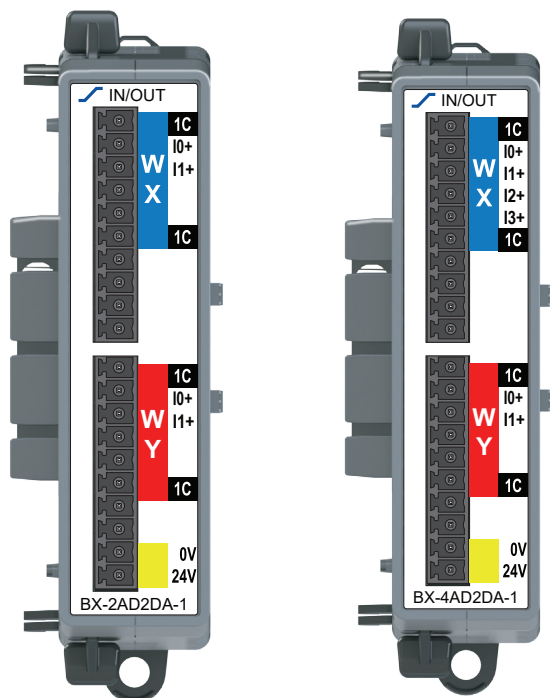
Analog Voltage Output Circuits



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
\$31.00

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

BX-4AD2DA-1
\$35.00

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.



Analog Current Sinking Input Specifications

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

Analog Current Sourcing Output Specifications

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

Module General Specifications

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

IMPORTANT!



Hot-Swapping Information

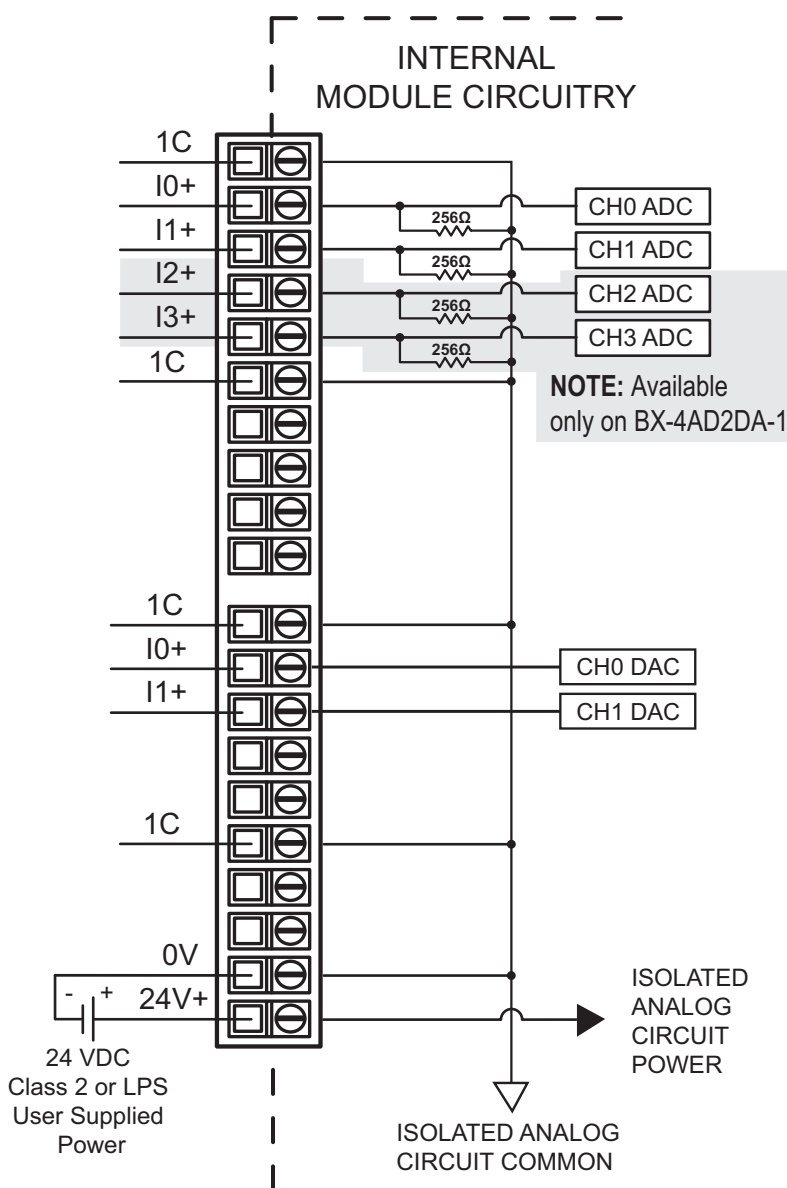
Note: This device cannot be Hot Swapped.

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

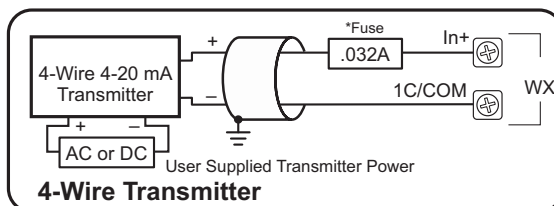
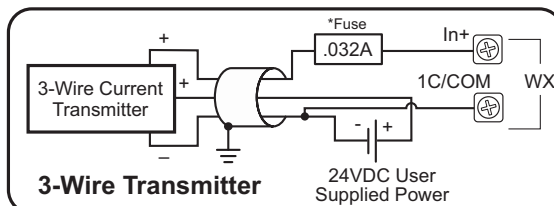
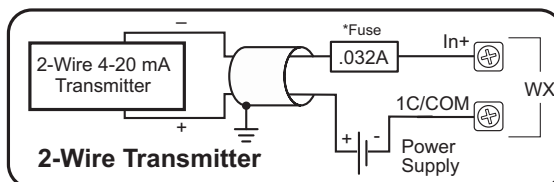
* For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

Analog Current Input/Output Wiring



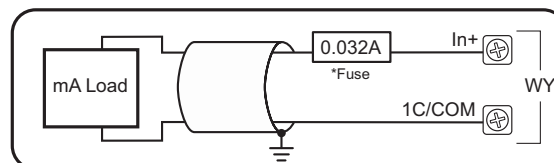
Analog Current Sinking Input Circuits

*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.

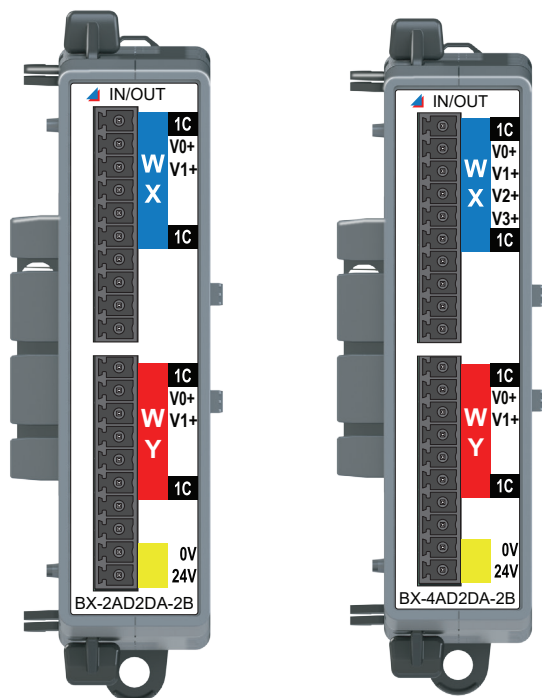
Analog Current Source Output Circuit



*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

2 Channels In, 2 Channels Out

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

BX-4AD2DA-2B

4 Channels In, 2 Channels Out

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
Inputs per Module	2	4
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	>1MΩ	
All Channel Update Rate	30ms	45ms
Maximum Continuous Overload	15mA	
Sample Duration Time	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)	±0.09% of range	
Input Stability and Repeatability	±0.06% of range (after 10 min. warmup)	
Full Scale Calibration Error	±0.1% of range	
Offset Calibration Error	±0.1% of range	
Maximum Crosstalk	-90dB, 1 LSB	
Channel to Backplane Isolation	1800VAC applied for one second	
Channel to Channel Isolation	None	

Analog Voltage Output Specifications

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

Module General Specifications

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

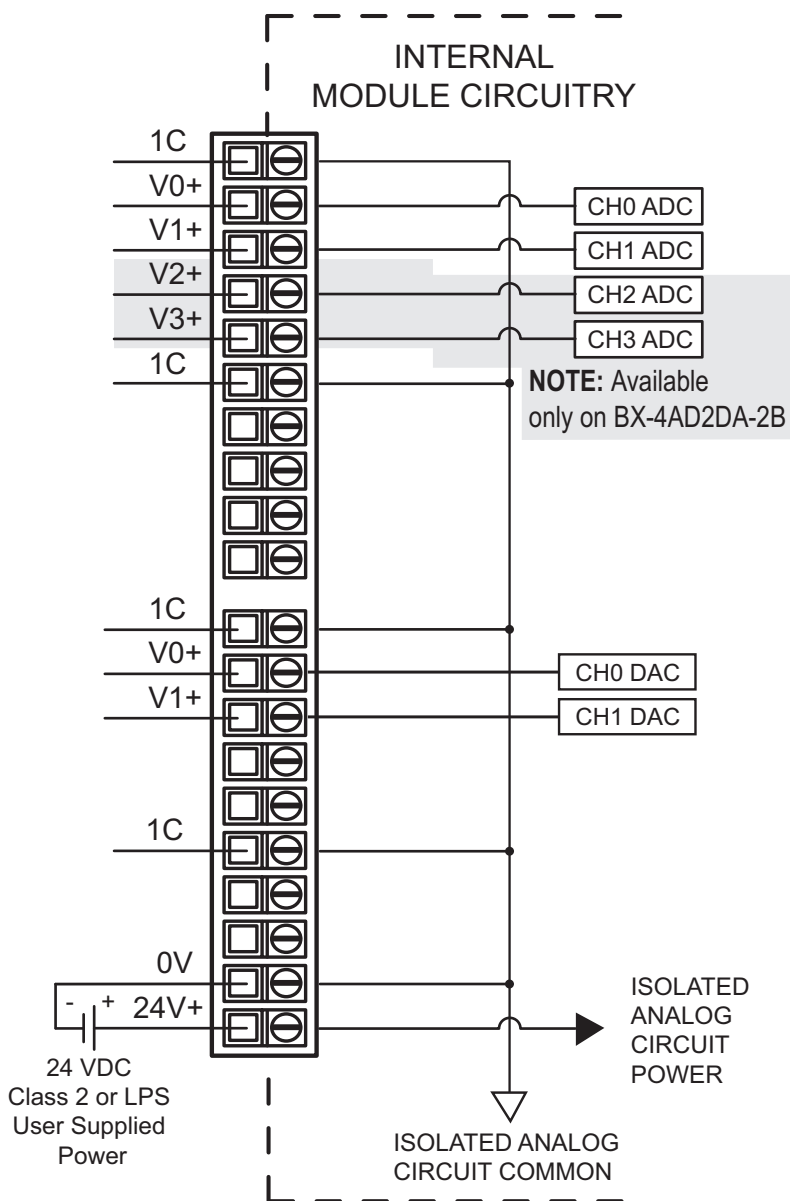
BX-xADxDA-2B Analog Combo Voltage I/O

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

1. Bipolar ranges default to 16-bit resolution.

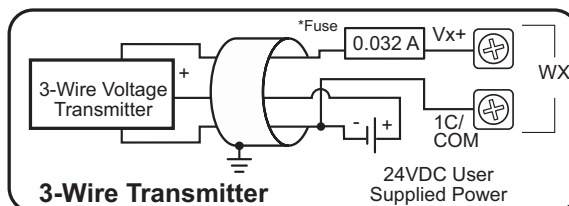
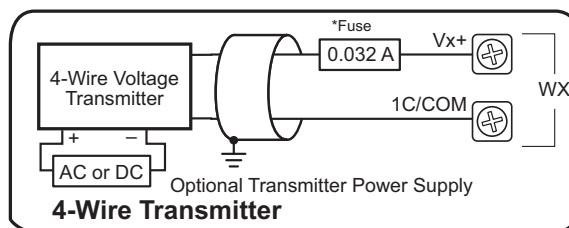
2. For more information on Casting, refer to Help topic DMD0309 in the Do-more! Designer Software.

Analog Voltage Input/Output Wiring

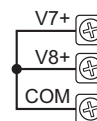


Analog Voltage Input Circuits

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

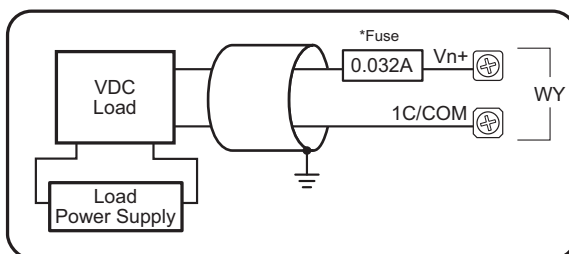


NOTE: For maximum accuracy, jumper unused inputs to common.



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

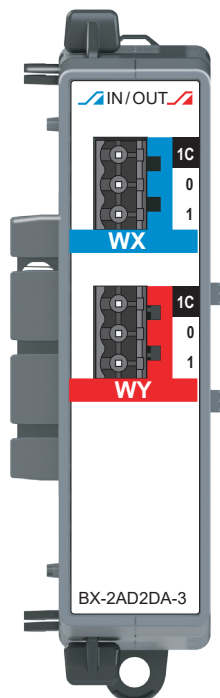
Analog Voltage Output Circuit



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

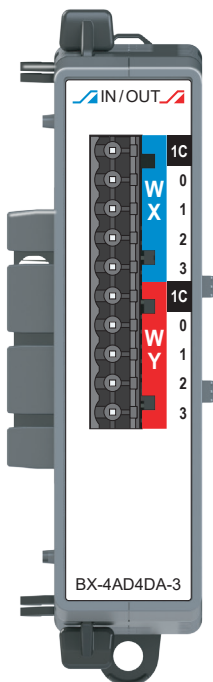
NOTE: Shield should be connected only at one end, to ground at the source device.

BX-xADxDA-3 Universal Analog I/O



BX-2AD2DA-3
\$-04gi7:

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
\$-04gi8:

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 ZIP-
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

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

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

Analog Universal Current/Voltage Output Specs

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

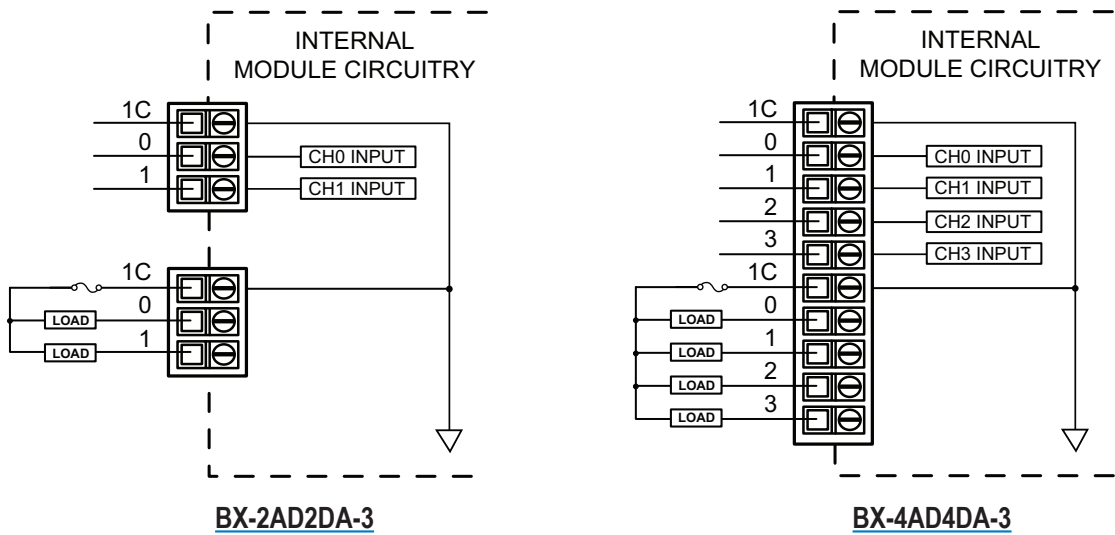
* 16-bit resolution is only available when a bipolar output range is selected.

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

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

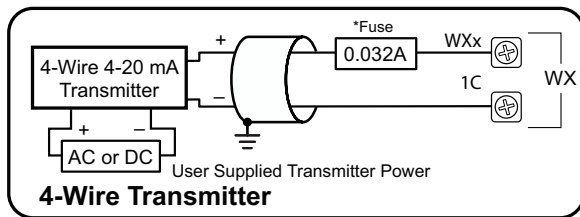
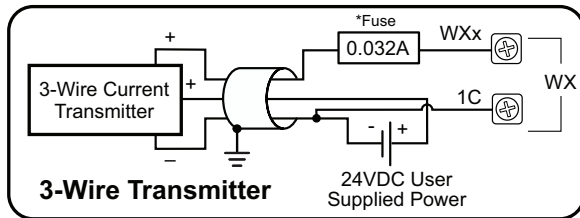
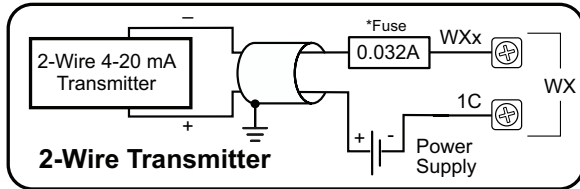
Data Range Specifications			
Selection	Description	Raw Counts	Per Count
-20~20mA	bipolar -20 to 20mA	-32768 to 32767	0.61 μ A
4~20mA	unipolar 4-20mA	6553-32767	0.61 μ A
0~10V	unipolar 10VDC	0-32767	305 μ V
0~5V	unipolar 5VDC	0-32767	153 μ V
$\pm$ 10V	bipolar 10VDC	-32768 to 32767	305 μ V
$\pm$ 5V	bipolar 5VDC	-32768 to 32767	153 μ V

Analog Input/Output Wiring



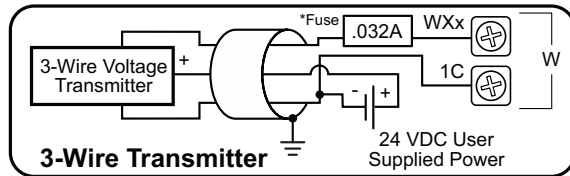
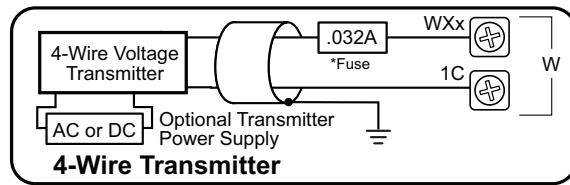
BX-xADxDA-3 Universal Analog I/O, continued

Analog Current Sinking Input Circuits

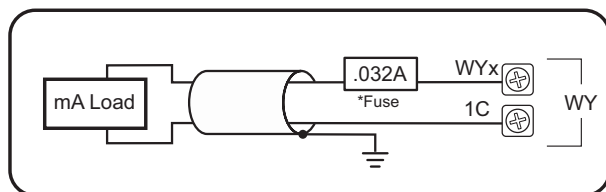


*NOTE: An Edison S500-32-R 0.032A fast-acting fuse is recommended for all analog voltage inputs, analog outputs, and current loops.

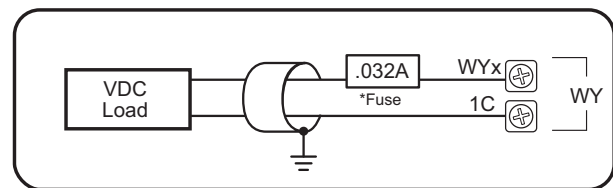
Analog Voltage Input Circuits



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

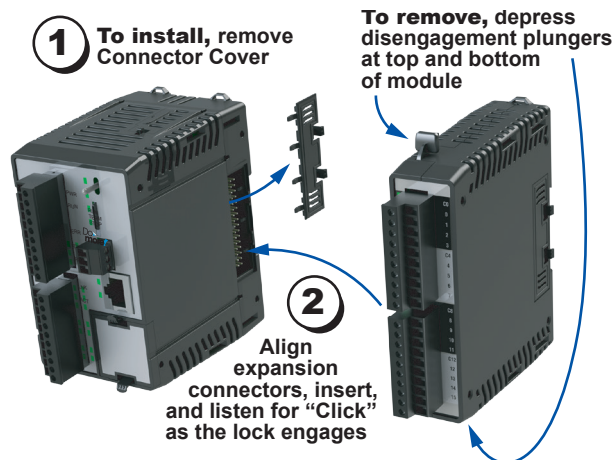
Overview

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

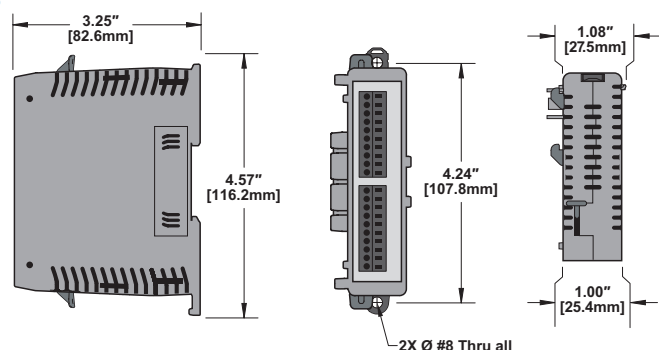
Note: This device cannot be Hot Swapped.

General Specifications

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

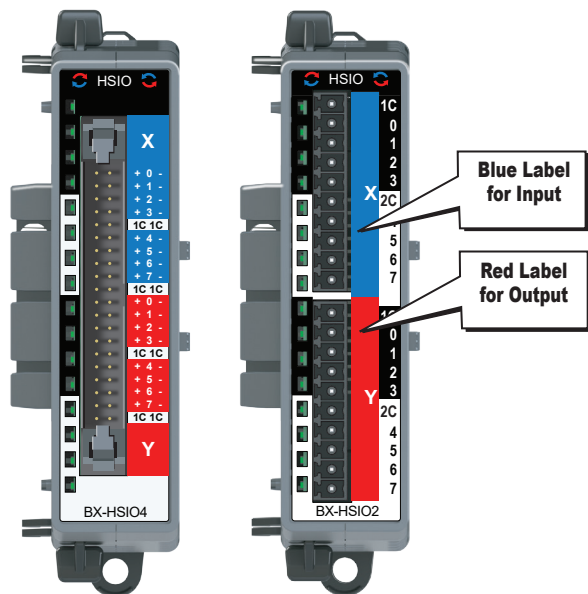
General Specifications	
Operating Temperature	0° to 60°C [32° to 140°F]
Storage Temperature	-20° to 85°C [-4° to 185°F]
Humidity	5% to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Enclosure Type	Open Equipment
Noise Immunity	NEMA ICS3-304
EU Directive	See the “EU Directive” topic in the BRX Help File
Agency Approvals	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



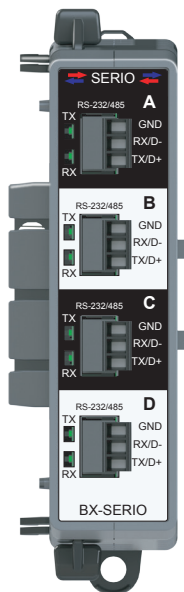
High-speed Input/Output Modules

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
<u>BX-HSIO1</u>	8	8	12–24 VDC Sinking	Up to 250kHz	\$0447u:
<u>BX-HSIO2</u>	8	8	12–24 VDC Sourcing	Up to 250kHz	\$0447v:
<u>BX-HSIO4</u>	8	8	2.5–5 VDC Sinking/Sourcing	Up to 2MHz	\$,04o10:

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.

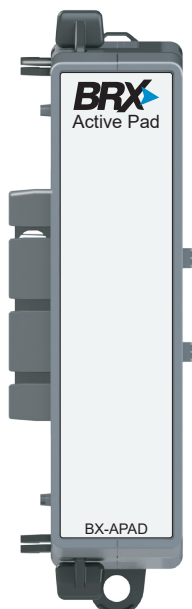


Serial Communications Module			
Part Number	Ports	Port Type	Price
<u>BX-SERIO</u>	4	RS-232 / RS-485	\$01och:
<u>BX-SERIO-2</u>	4	RS-232 with Flow Control	\$-04gi1:
<u>BX-SERIO-4</u>	4	RS-422	\$-04gi2:

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

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

BRX Motion Control, Communications and Specialty Expansion Modules

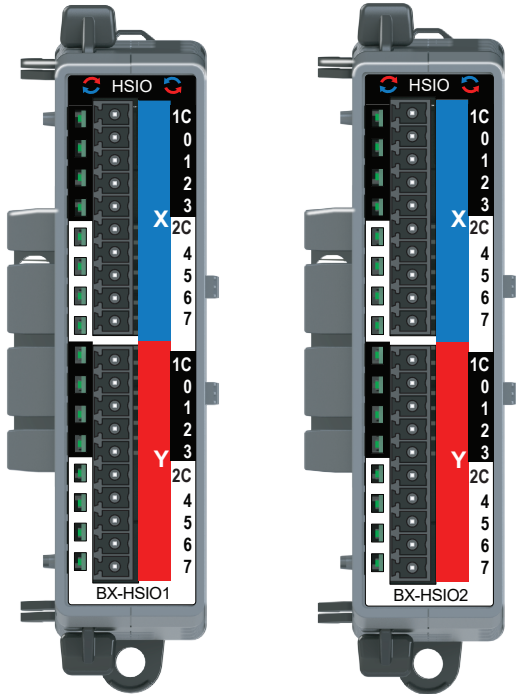


Active Filling Module

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
<u>BX-APAD</u>	\$-4gih:

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



BX-HSIO1
\$0447u:

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

BX-HSIO2
\$0447v:

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

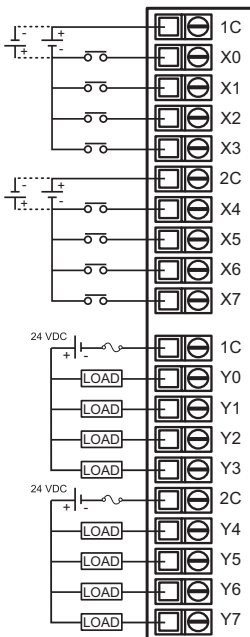
Terminal Blocks Sold Separately.

NOTE: This device does not support
ZIPLink Wiring Systems

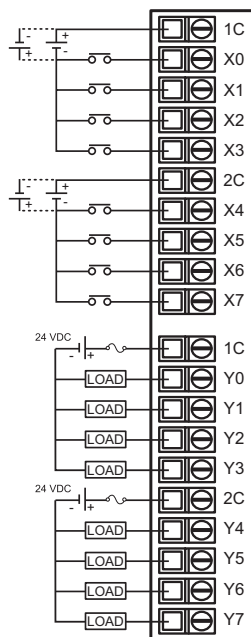
NOTE: Cannot be used in Remote I/O Bases.

High-Speed Input/Output Wiring

BX-HSIO1



BX-HSIO2



High Speed Input/Output Specifications

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

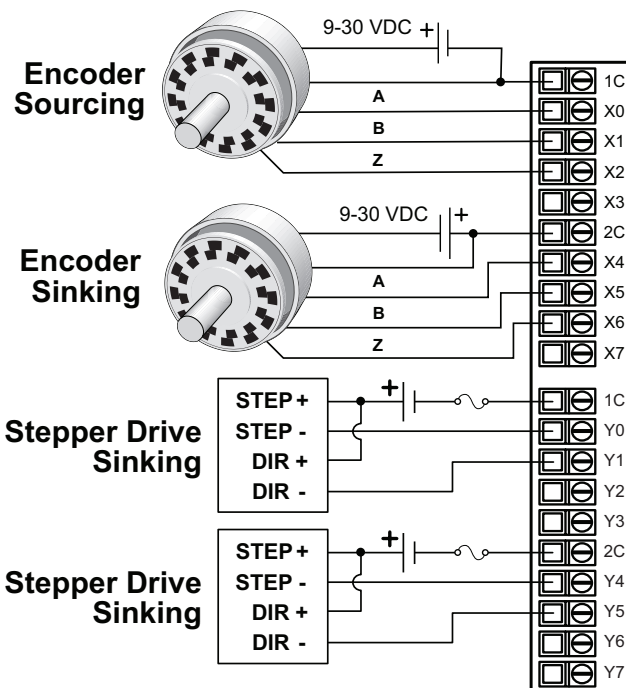
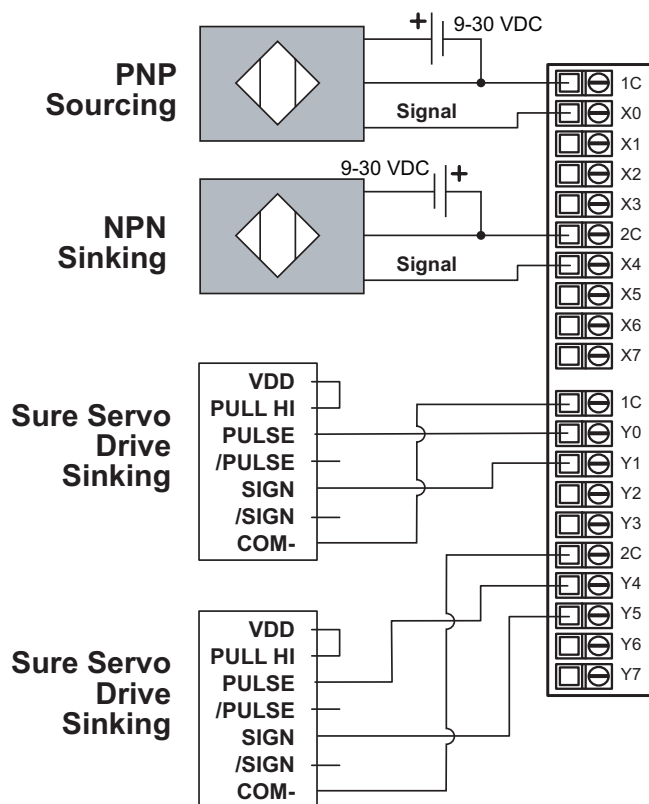
1. Only one scaling option can be used at any given time. If Position scaling is used, Rate scaling is not available (and vice versa).

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

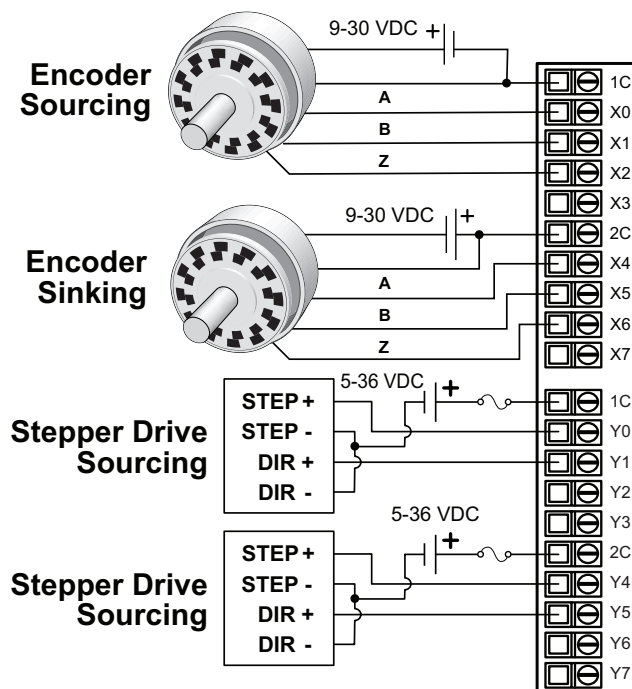
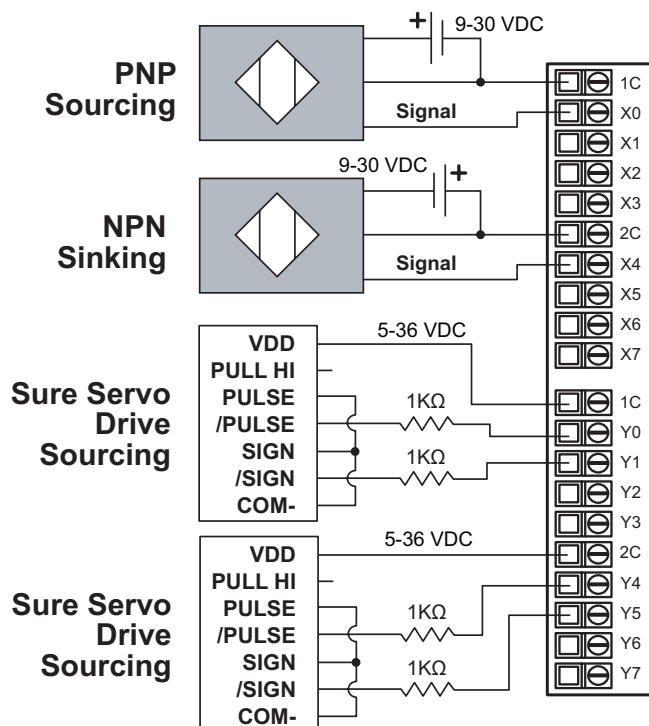
High-speed Output Function			
	Functions Available	Outputs Required	Profile/Instruction
Axis/Pulse Output	Up to 4 (1 virtual and 3 axis)		Trapezoid, Velocity, Electronic Camming, Electronic Gearing, Following, Homing
Virtual Axis	Up to 4	N/A	
Step/Direction	Up to 3	2	
CW/CCW			
Quadrature			
Pulse Width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

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

BX-HSIO1 High-Speed Input/Output Circuits

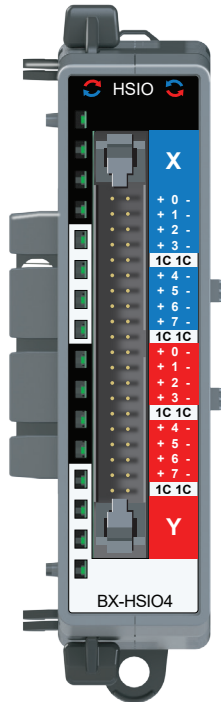


BX-HSIO2 High-Speed Input/Output Circuits



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

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



NOTE: This device requires **ZIP**Link Wiring Systems



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

High Speed Input/Output Specifications

High Speed Input Specifications

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

High Speed Output Specifications

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

General

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
BX-HSIO4	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	UPPER
	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	LOWER

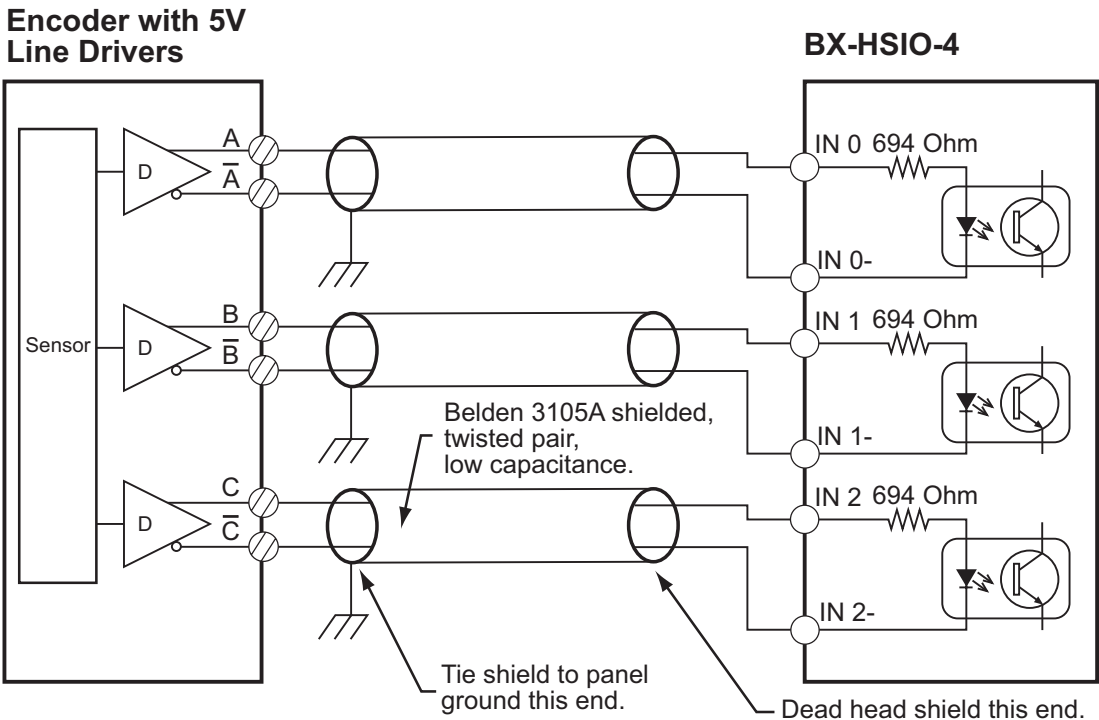
TERMINAL BLOCK LABEL SHEET FOR ZIPLINK CABLE ZL-BX-CBL-40-xS

Wiring Connections for ZL-RTB40-1 Terminal Block																	
MODULE	LABELS																LEVEL
BX-HSIO4	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

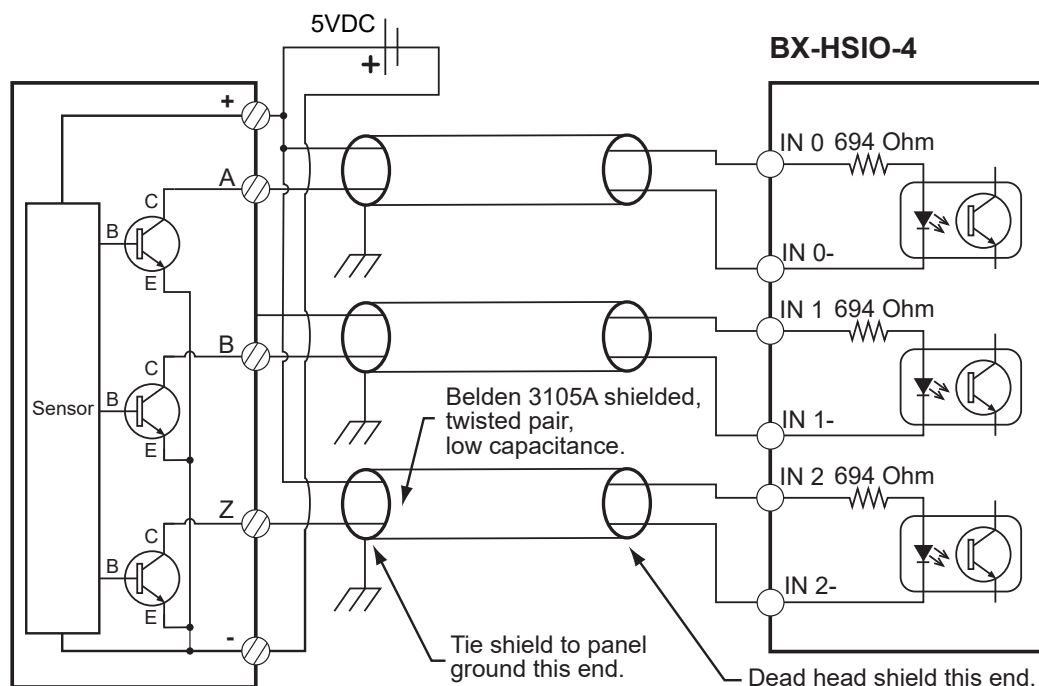
Differential 5V Encoder Input to BX-HSIO4

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

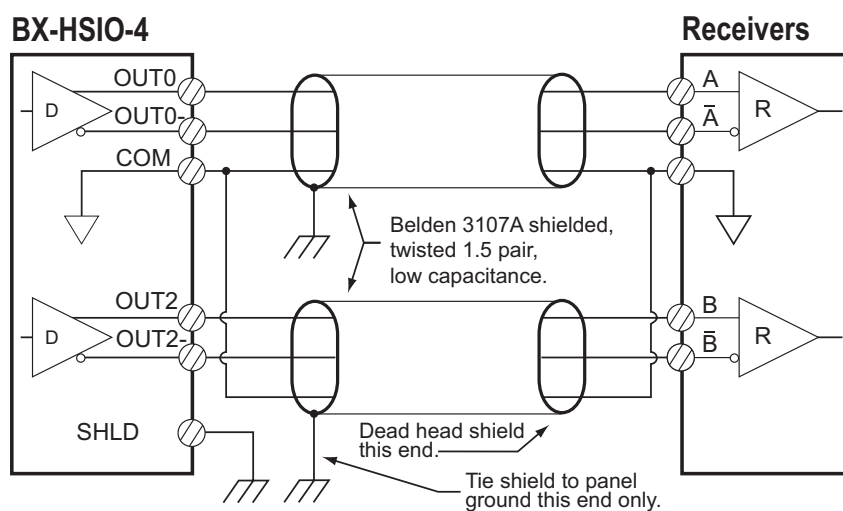


BX-HSIO4 High Speed Input/Output, continued

Single-Ended 5V Encoder Input to BX-HSIO4

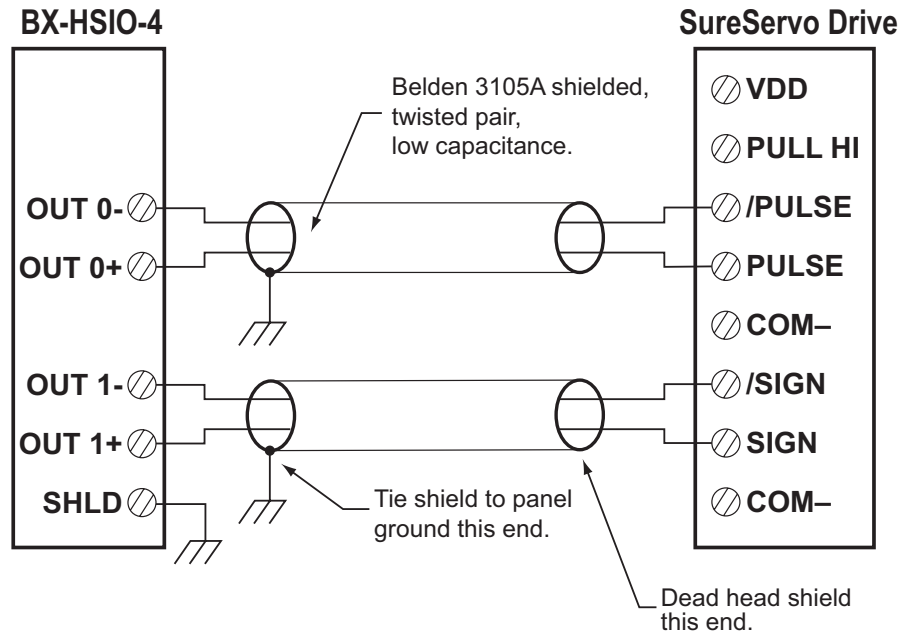


Line Driver Pulse Output from BX-HSIO4

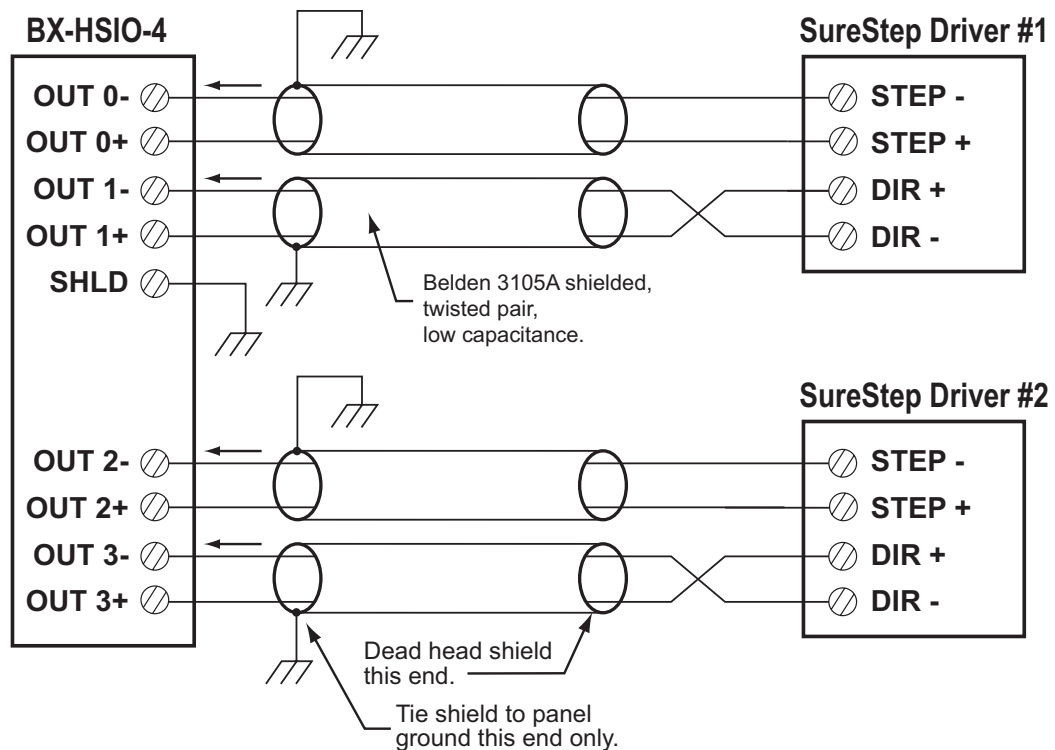


BX-HSIO4 High Speed Input/Output, continued

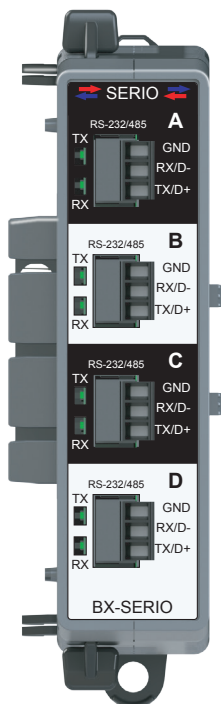
BX-HSIO4 to SureServo



BX-HSIO4 to SureStep



BX-SERIO Serial Communications



BX-SERIO \$01och:

4 port, RS-232/RS-485

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



NOTE: This device does not support **ZIF** Link Wiring Systems

IMPORTANT!

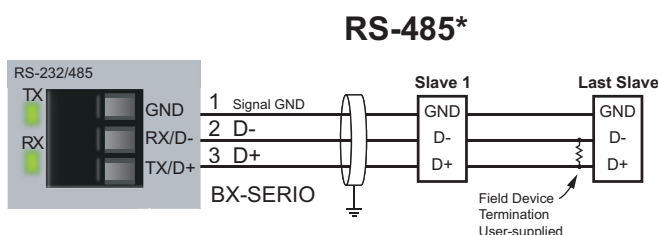
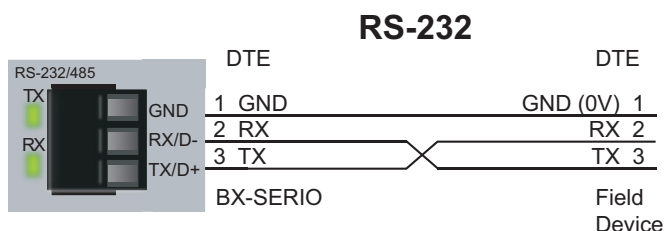


Hot-Swapping Information

Note: This device cannot be Hot Swapped.

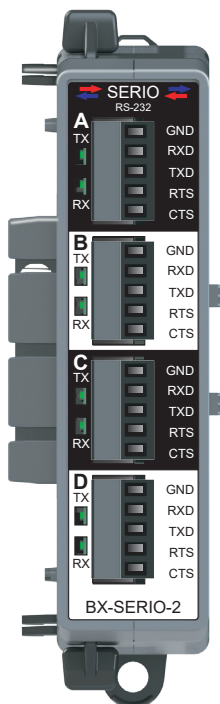
Serial Communications Specifications		
Specification	BX-SERIO	
Number of Ports	Four RS-232/RS-485 serial ports	
Description	Isolated serial port that can communicate via RS-232 or RS-485 (software selectable). Includes ESD protection and built-in surge protection.	
Supported Protocols	Do-more! Protocol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

BX-SERIO Field Wiring Diagrams



***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
\$-04gi1:

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

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



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

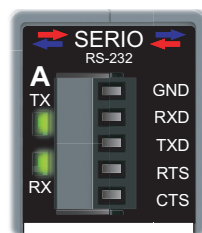
IMPORTANT!



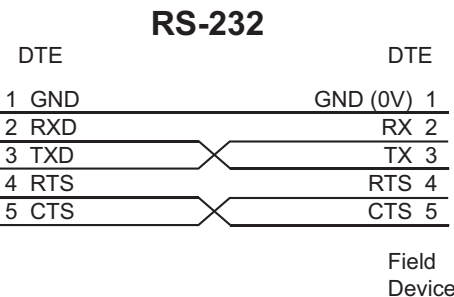
Hot-Swapping Information

Note: This device cannot be Hot Swapped.

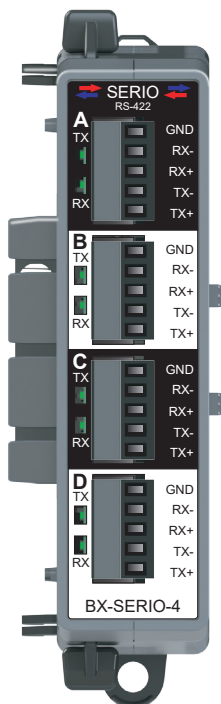
BX-SERIO-2 Field Wiring Diagram



BX-SERIO-2



BX-SERIO-4 Serial Communications



BX-SERIO-4 \$-04gi2:

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.

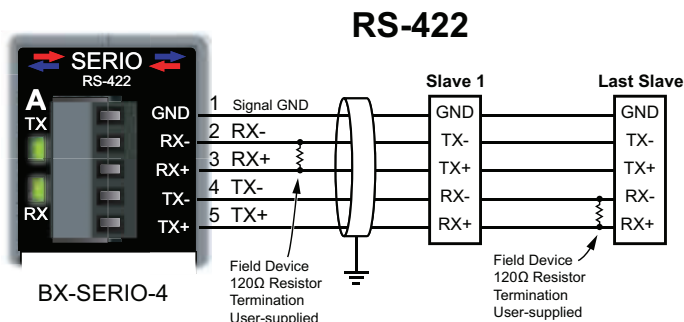


NOTE: Cannot be used in Remote I/O Bases.



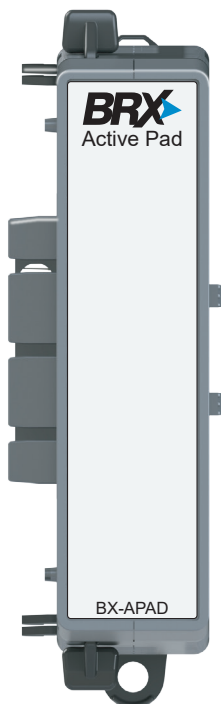
NOTE: The **BX-SERIO-4** supports point to point wiring only. Multi-Drop wiring is not supported.

BX-SERIO-4 Field Wiring Diagram



Serial Communications Specifications	
Specification	BX-SERIO-4
Number of Ports	Four RS-422 Serial Ports
Description	Isolated serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection.
Supported Protocols	Do-more! Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps
Default Settings	RS-422, 115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
Port Status LED	Green LED illuminated when active (TXD and RXD)
Port Type	Removable 5-pin terminal strip 3.5 mm pitch
Station Addresses	1-247
TX-/RX-	RS-422 transceiver low
TX+/RX+	RS-422 transceiver high
GND	Logic Ground
Input Impedance	96kΩ
Maximum Load	1 transceiver, 19kΩ each, 120Ω termination
Output Short Circuit Protection	±250mA, thermal shutdown protection
Minimum Differential Output Voltage	2.0 VDC with 54Ω load
Maximum Common Mode Voltage	-7.5 to 12.5 VDC
Fail Safe Inputs	Logic high input state if inputs are unconnected
Electrostatic Discharge Protection	±15kV per IEC 1000-4-2
Cable Requirements	ADC Part# L19853-XXX
Maximum Cable Distance	1000m [3280ft]
Replacement Connector	ADC Part# BX-RTB05S
Backplane Power Consumption	1.2 W
Heat Dissipation	1.2 W
Weight	85g [3oz]
Software Version	Do-more! Designer v2.7 or later

BRX-APAD Active Filling



BRX-APAD
\$-4gih:

Active Filling

Active Filling Module Specifications

Description	BRX active padding module, allows emulation of BRX modules in I/O configuration.
Backplane Power Consumption	0 W
Heat Dissipation	0 W
Weight	85g [3oz]
Software Version	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.

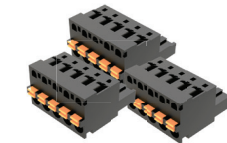
The five (5) and 12-point modules will use all three connectors. The analog and 16-point digital module kits include (2) 10-pin 3.81 mm connectors.

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

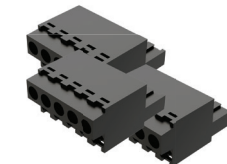
Terminal Block Kits for 5-point, 8-point and 12-point Expansion Modules



BX-RTB08 (Kit - 3 pieces)



BX-RTB08-1 (Kit - 3 pieces)



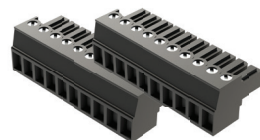
BX-RTB08-2 (Kit - 3 pieces)

Terminal Block Specifications 5-, 8- & 12-Point Type

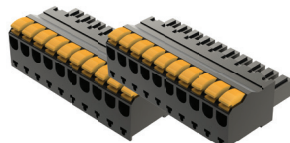
Part Number Single Block Set of 3 Blocks	<u>BX-RTB05</u> <u>BX-RTB08</u>	<u>BX-RTB05-1</u> <u>BX-RTB08-1</u>	<u>BX-RTB05-2</u> <u>BX-RTB08-2</u>
Price (Single Block)	\$128#:	\$1293:	\$1299:
Price (Kit)	\$128?:	\$1295:	\$129a:
Connector Type	Screw Type - 90-degree	Spring Clamp Type - 180-degree	Screw Type - 180-degree
Wire Exit	180-degree	180-degree	180-degree
Pitch	5.0 mm	5.0 mm	5.0 mm
Screw Size	M2.5	N/A	M2.5
Screw Torque Recommended	< 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 (Dual 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-05P-BK	5ESDSR-05P-BK	5ESDF-05P-BK

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

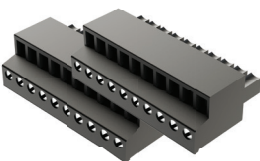
Terminal Block Kits for Analog and 16-point Discrete Expansion Modules



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>BX-RTB10</u>	<u>BX-RTB10-1</u>	<u>BX-RTB10-2</u>
Price (Kit)	\$,128,:	\$1296:	\$129b:
Connector Type	Screw Type 90-degree	Spring Clamp Type 180-degree	Screw Type 180-degree
Wire Exit	180-degree	180-degree	180-degree
Pitch	3.81 mm	3.81 mm	3.81 mm
Screw Size	M2	N/A	M2
Screw Torque Recommended	<1.77 lb-in [0.2 N·m]	N/A	<1.77 lb-in [0.2 N·m]
Screwdriver Blade Width	2.5 mm	2.5 mm	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG	26–18 AWG	30–16 AWG
Wire Gauge (Dual Wire)	28–18 AWG	30–20 AWG (Dual Wire Ferrule Required)	30–18 AWG
Wire Strip Length	0.24 in [6mm]	0.35 in [9mm]	0.26 in [6.5 mm]
Equiv. Dinkle P/N	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
BX-08ND3	Feedthrough	ZL-RTB20 (Standard) OR ZL-RTB20-1 (Compact)	1	ZL-BXEM-CBL10 ZL-BXEM-CBL10-1 ZL-BXEM-CBL10-2	1
BX-08NF3					
BX-08NA					
BX-08NB					
BX-08TD1					
BX-08TD2					
BX-08TR**					
BX-08TRZ**					
BX-08TA					
BX-08CD3R**					

* 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
BX-12ND3	Feedthrough	ZL-RTB20 (Standard) OR ZL-RTB20-1 (Compact)	1	ZL-BXEM-CBL15 ZL-BXEM-CBL15-1 ZL-BXEM-CBL15-2	1
BX-12NA					
BX-12NB					
BX-12TD1					
BX-12TD2					
BX-12TR**					
BX-05TRS					
BX-12TA					
BX-12CD3D1					
BX-12CD3D2					

* 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>BX-16NA</u>										
<u>BX-16NB</u>										
<u>BX-16TD1</u>	Feedthrough		1							
	Relay (Sourcing)	<u>ZL-RRL16-24-1</u> , <u>ZL-RRL16W-24-1</u> , <u>ZL-RRL16F-24-1</u> ,								
<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							
	Feedthrough	<u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact)	1							
<u>BX-16TF2</u>	Feedthrough									
<u>BX-16TR**</u>										
<u>BX-16TRZ**</u>										
<u>BX-16CD3D1</u>										
<u>BX-16CD3D2</u>										
<u>BX-16CF3F2</u>										

* 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>					

* 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-HSIO4</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. ¹	Qty Needed
BX-04ADM-1	Feedthrough	ZL-RTB20 (Standard) OR ZL-RTB20-1 (Compact)	1	ZL-BXEM-CBL20 ZL-BXEM-CBL20-1 ZL-BXEM-CBL20-2	1
BX-04AD-1					
BX-08AD-1					
BX-16AD-1					
BX-04AD-2B					
BX-08AD-2B					
BX-16AD-2B					
BX-04DA-1					
BX-08DA-1					
BX-04DA-2B					
BX-08DA-2B					
BX-2AD2DA-1					
BX-4AD2DA-1					
BX-2AD2DA-2B					
BX-4AD2DA-2B					
BX-08AD-3				ZL-BXEM-CBL10 ZL-BXEM-CBL10-1 ZL-BXEM-CBL10-2	1
BX-08DA-3					
BX-2AD2DA-3					
BX-4AD4DA-3					
BX-04THM	Temperature Input modules are not supported by the ZIPLink wiring system.				
BX-08THM					
BX-06RTD					
BX-08NTC					
BX-04UT					
BX-08UT					
BX-4THM4DA-1					
BX-4RTD4DA-1					
BX-4UT4DA-3					
BX-4UT4TD1					
BX-4UT4TD2					
BX-4UT4TR					

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

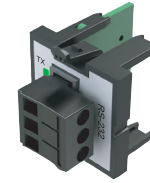
All BRX Do-more! MPUs have an available slot to receive one BRX Pluggable Option Module (POM). Available POM configurations are:

- 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

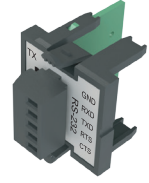
POM modules are hot swappable giving you the ability to utilize different communication options while the system is running. For example, you can configure the system using a POM RJ45 Ethernet port to talk with a C-more panel. Then hot swap to the USB POM for programming. When programming is complete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



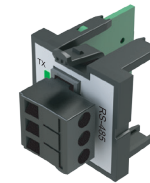
NOTE: Pluggable Option Modules cannot be installed in BRX Remote I/O modules (e.g., BX-DMIO, BX-MBIO, BX-EBC100).



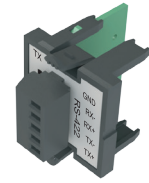
BX-P-SER2-TERM
RS-232 Port



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



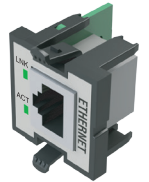
BX-P-SER4-TERM
RS-485 Port



BX-P-SER422-TERM
RS-422 Port



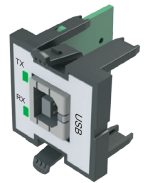
BX-P-SER2-RJ12
RS-232 Port (RJ12)



BX-P-ECOMLT
Ethernet Port (RJ45)



BX-P-ECOMEX
Ethernet Port



BX-P-USB-B
USB Type B Port

BRX Programmable Option Modules

Expansion Module Part No.	Price	Description
<u>BX-P-SER2-TERM</u>	\$12ag:	Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection.
<u>BX-P-SER2-TERMFC</u>	\$-4gi3:	Non-isolated Serial port for communication via RS-232, with flow control. Includes ESD protection and built-in surge protection.
<u>BX-P-SER4-TERM</u>	\$12ah:	Non-isolated Serial port for communication via RS-485. Includes ESD protection and built-in surge protection.
<u>BX-P-SER422-TERM</u>	\$-4gi4:	Non-isolated Serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection.
<u>BX-P-SER2-RJ12</u>	\$;12af:	Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection.
<u>BX-P-ECOMLT</u>	\$-012aj:	Standard transformer isolated Ethernet port (1 Mbps throughput max) with built-in surge protection.
<u>BX-P-ECOMEX</u>	\$;04tz:	General-purpose standard transformer isolated Ethernet port (10/100 Mbps) with built-in surge protection.
<u>BX-P-USB-B</u>	\$-12ai:	USB Type B Port for programming.

General Specifications

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

General Specifications	
Operating Temperature	0° to 60°C [32° to 140°F]
Storage Temperature	-20° to 85°C [-4° to 185°F]
Humidity	5% to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2-6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Enclosure Type	Open equipment
Agency Approvals	UL 61010-2 - UL File # E185989 Canada and USA CE Compliant E185989*
Noise Immunity	NEMA ICS3-304
EU Directive	See the "EU Directive" in Appendix B of the User Manual or topic DMD0331 in the Help File.
Weight	7g [0.25 oz]

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

BRX POM Capabilities

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

* Limited to 1 Mbps throughput max

BRX Pluggable Option Modules (POM)

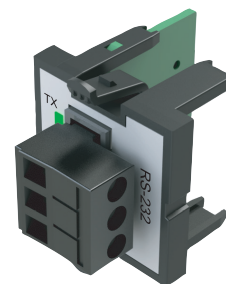
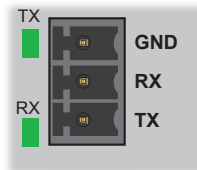
BX-P-SER2-TERM

The RS-232 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices,

\$12ag:

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	RX
3	TX



Removable Connector Included

BX-P-SER2-TERM Specifications

Description	Non-isolated Serial port that can communicate via RS-232. Includes ESD protection and built-in surge protection.
Supported Protocols	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
Default Settings	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
Port Status LED	Green LED is illuminated when active for TXD and RXD
Port Type	Removable 3-pin terminal strip 3.5 mm pitch
RS-232 TX	RS-232 Transmit output
RS-232 RX	RS-232 Receive input
RS-232 GND	Logic ground
RS-232 Maximum Output Load (TXD/RTS)	3kΩ, 1000pf
RS-232 Minimum Output Voltage Swing	±5V
RS-232 Output Short Circuit Protection	±15mA
Cable Requirements	RS-232 use P/N L19772-XXX from automationdirect.com
Maximum Distance	30 meters [100 feet]; 6 meters [20 feet] recommended maximum
Replacement Connector	ADC Part # BX-RTB03S
Hot Swappable	Yes

BX-RTB03S

\$;128[:

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)

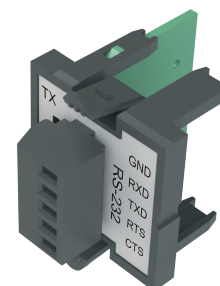
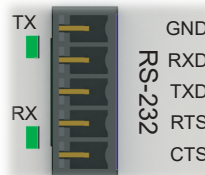
BX-P-SER2-TERMFC

The RS-232 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices,

\$-4gi3:

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



Removable Connector Included

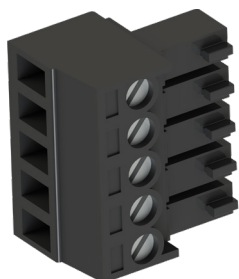
BX-P-SER2-TERMFC Specifications

Description	Non-isolated Serial port that can communicate via RS-232. Includes ESD protection and built-in surge protection.
Supported Protocols	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
Default Settings	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
Port Status LED	Green LED is illuminated when active for TXD and RXD
Port Type	Removable 5-pin terminal strip 3.5 mm pitch
RS-232 TX	RS-232 Transmit output
RS-232 RX	RS-232 Receive input
RS-232 GND	Logic ground
RS-232 CTS	RS-232 Clear to Send input
RS-232 RTS	RS-232 Request to Send input
RS-232 Maximum Output Load (TXD/RTS)	3kΩ, 1000pf
RS-232 Minimum Output Voltage Swing	±5V
RS-232 Output Short Circuit Protection	±15mA
Cable Requirements	RS-232 use P/N L19853-XXX from automationdirect.com
Maximum Distance	6 meters [20 foot] recommended maximum
Replacement Connector	ADC Part # BX-RTB05S
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.7 or later

BX-RTB05S

\$;4gh!:

Replacement removable connector.



BX-RTB05S Connector Specifications

Part Number	BX-RTB05S
Connector Type	Screw type
Wire Exit	180-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-05P-BK

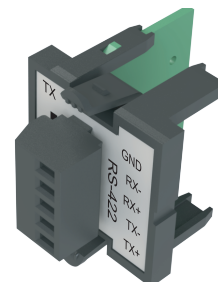
BRX Pluggable Option Modules (POM)

BX-P-SER422-TERM

The RS-422 POM can be connected to the Do-more! Designer programming software, Modbus RTU master devices, DirectLogic

\$-4gi4:

PLCs via K-Sequence protocol, as well as devices that send or receive non-sequenced ASCII strings or characters.

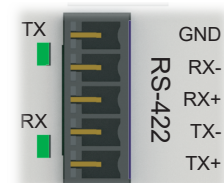


Removable Connector Included

BX-P-SER422-TERM Specifications

Description	Non-isolated Serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection.
Supported Protocols	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
Default Settings	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
Port Status LED	Green LED is illuminated when active for TXD and RXD
Port Type	Removable 5-pin terminal strip 3.5 mm pitch
Station Addresses	1–247
TX-/RX-	RS-422 Transceiver low
TX+/RX+	RS-422 Transceiver high
GND	Logic ground
Input Impedance	96kΩ
Maximum Load	50 transceivers, 19kΩ each, 120Ω termination
Output Short Circuit Protection	±250mA, thermal shutdown protection
Minimum Differential Output Voltage	2.0 VDC with 54Ω load
Maximum Common Mode Voltage	-7.5 to 12.5 VDC
Fail Safe Inputs	Logic high input state if inputs are unconnected
Electrostatic Discharge Protection	±15kV human body, ±6kV contact discharge per IEC61000-4-2
Cable Requirements	RS-422 use P/N L19853-XXX from automationdirect.com
Maximum Distance	1000 meters [3280 feet] recommended maximum
Replacement Connector	ADC Part # BX-RTB05S
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.7 or later

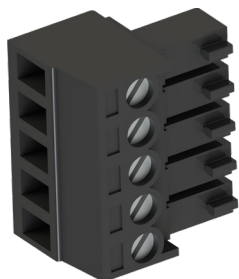
Pinout	RS422
1	GND
2	RX-
3	RX+
4	TX-
5	TX+



BX-RTB05S

\$;4gh!:

Replacement removable connector.



BX-RTB05S Connector Specifications

Part Number	BX-RTB05S
Connector Type	Screw type
Wire Exit	180-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-05P-BK

BRX Pluggable Option Modules (POM)

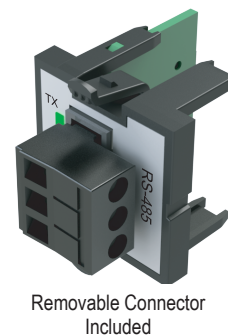
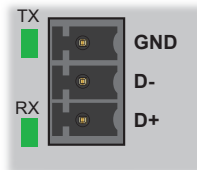
BX-P-SER4-TERM

\$12ah:

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,

as well as devices that send or receive non-sequenced ASCII strings or characters.

Pinout	RS485
1	GND
2	D-
3	D+



BX-P-SER4-TERM Specifications

Description	Non-isolated Serial port that can communicate via RS-485. Includes ESD protection and built-in surge protection.
Supported Protocols	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (in & Out)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 baud
Default Settings	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1, Termination resistor OFF
Port Status LED	Green LED is illuminated when active for TXD and RXD
Port Type	Removable 3-pin terminal strip 3.5 mm pitch
RS-485 Station Addresses	1–247
RS-485 D+	RS-485 transceiver high
RS-485 D-	RS-485 transceiver low
RS-485 GND	Logic ground
RS-485 Input Impedance	19kΩ
RS-485 Maximum Load	50 transceivers, 19kΩ each, 120Ω termination
RS-485 Output Short Circuit Protection	±250mA, thermal shut-down protection
RS-485 Electrostatic Discharge Protection	±8kV per IEC1000-4-2
RS-485 Electrical Fast Transient Protection	±2kV per IEC1000-4-4
RS-485 Minimum Differential Output Voltage	1.5 V with 60Ω load
RS-485 Fail Safe Inputs	Logic high input state if inputs are unconnected
RS-485 Maximum Common Mode Voltage	-7.5 V to 12.5 V
Cable Requirements	RS-232 use P/N L19772-XXX from automationdirect.com
Maximum Distance	30 meters [100 feet]; 6 meters [20 foot] recommended maximum
Replacement Connector	ADC Part # BX-RTB03S
Hot Swappable	Yes

BX-RTB03S

\$;128[:

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)

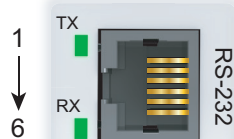
BX-P-SER2-RJ12

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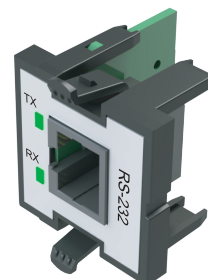
The RS-232 RJ12 POM can be connected to the Do-more! Designer programming software, Modbus RTU master or slave devices, DirectLogic PLCs via K-Sequence

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)



6-pin RJ12 Female Modular Connector



BX-P-SER2-RJ12 Specifications

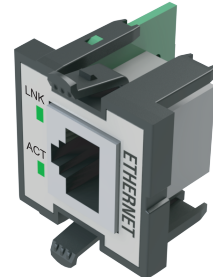
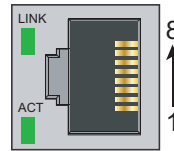
Description	Non-isolated Serial port that can communicate via RS-232 Includes ESD protection and built-in surge protection.
Supported Protocols	Do-more!™ Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud
Default Settings	115200bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
Port Status LED	Green LED is illuminated when active for TXD and RXD
Port Type	RJ12 - 6P6C
RS-232 Maximum Output Load (TXD/RTS)	3kΩ, 1000pf
RS-232 Minimum Output Voltage Swing	±5V
RS-232 Output Short Circuit Protection	±15mA
Cable Requirements	RS-232 use P/N L19772-XXX from automationdirect.com
Maximum Distance	30 meters [100 feet]; 6 meters [20 foot] recommended maximum
Replacement Connector	N/A
Hot Swappable	Yes

BRX Pluggable Option Modules (POM)

BX-P-ECOMLT \$-012aj:

The Ethernet LT POM can be connected to the Do-more! Designer programming software or HMI's 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



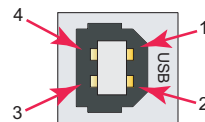
BX-P-ECOMLT Specifications

Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	1 Mbps throughput max
Port Status LED	LINK LED is solid when network is established. ACT LED flashes when port is active.
Supported Protocols	Do-more! Protocol (Server) Modbus TCP (Server) K-sequence (Server) Programming/Monitoring
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com
Port Type	RJ45, Category 5, Auto Crossover
Ethernet Port Numbers:	
Do-more! Protocol	28784, UDP
Modbus	502, TCP
K-sequence	28784, UDP
Programming/Monitoring	28784, UDP
Hot Swappable	Yes

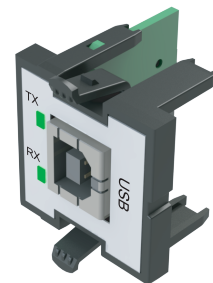
BX-P-USB-B \$-12ai:

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

Description	USB Type B Port for programming.
USB Specification Version	USB 2.0
Port Status LED	LED flashes when port is active
Cable Recommendation	USB-CBL-ABxx from AutomationDirect.com
Hot Swappable	Yes

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



BRX-DMIO-M



BRX-EBC100-M



BRX-MBIO-M

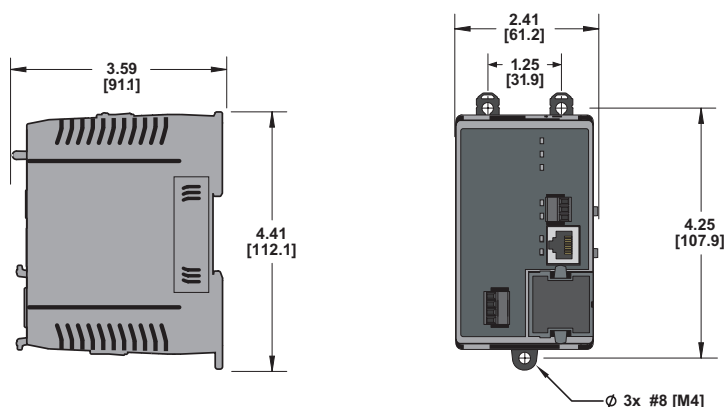
BRX Remote I/O Controllers					
Part Number	Price	External Power	Supported Protocols	Can Be Used With	Expansion Modules
<u>BX-DMIO-M</u>	\$01ocd:	120–240 VAC	Do-more! Ethernet Remote I/O Embedded Web Server: HTTP (Unsecure)	BX-DM1E MPUs H2-DM1E CPUs T1H-DM1E CPUs	8
<u>BX-DMIO-M-D</u>	\$01oce:	12–24 VDC			
<u>BX-EBC100-M</u>	\$01ocb:	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	
<u>BX-EBC100-M-D</u>	\$01occ:	12–24 VDC			
<u>BX-MBIO-M</u>	\$;01ocf:	120–240 VAC		Modbus RTU Modbus TCP	
<u>BX-MBIO-M-D</u>	\$01ocg:	12–24 VDC	Embedded Web Server: HTTP (Unsecure)		



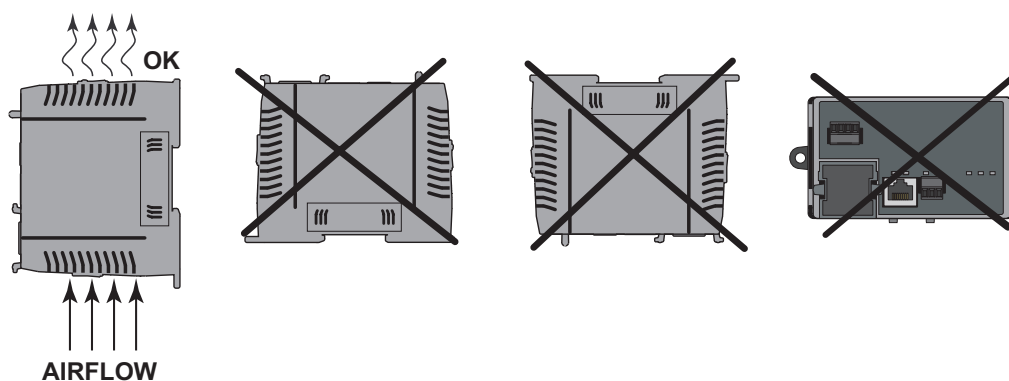
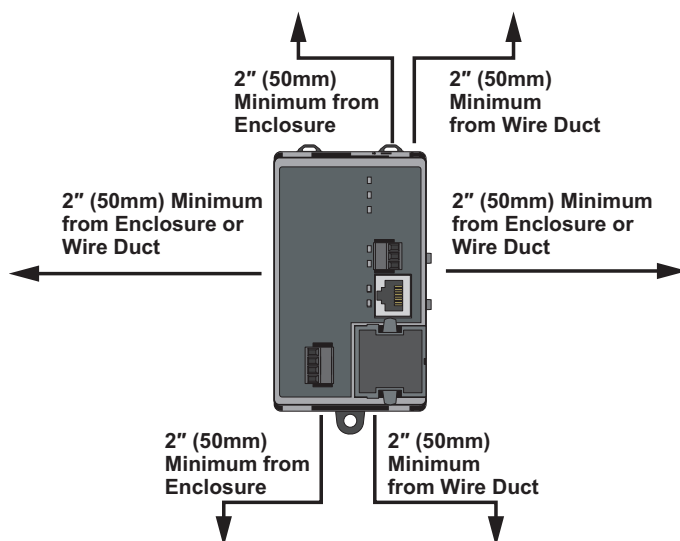
NOTE: Remote I/O controllers do not support Motion Control and Communications Modules.

BRX Remote I/O Controllers

Dimensions, inches[mm]



Clearances and Mounting Restrictions



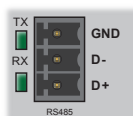
BRX Remote I/O Controllers

Port Specifications

Built-in Ethernet Specifications			
	<i>BX-DMIO-M (-D)</i>	<i>BX-EBC100-M (-D)</i>	<i>BX-MBIO-M (-D)</i>
Port Type	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 (Server):			
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
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com		
Port Type	RJ45, Category 5, 10/100 BASE-T, Auto Crossover		
Ethernet Port Numbers:			
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	
Port Name	RS-RS-485 Serial Port
Description	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).
Supported Protocols	Modbus RTU (Slave)
Data Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200
Timeout	Fixed at 800ms. Once the first character arrives, the controller waits 800ms for the entire request to arrive.
Default Settings	115200 bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1
Port Type	3-pin terminal strip 3.5 mm pitch
Port Status LED	Green LED is illuminated when active for TXD and RXD
RS-485 Station Addresses	1-247
Cable Recommendations	RS-485 use L19827-XXX from AutomationDirect.com
Replacement Connector	ADC Part # BX-RTB03S

Removable connector included.



Pinout	RS485
1	GND
2	D-
3	D+

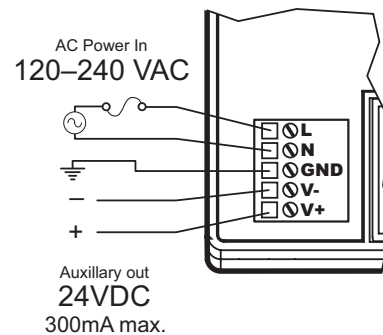
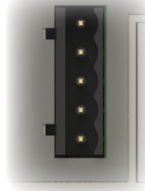
BRX Remote I/O Controllers

Power Supply Specifications

Power Supply Specifications		
	AC Models (-M)	DC Models (-M-D)
Nominal Voltage Range	120–240 VAC	12–24 VDC
Input Voltage Range (Tolerance)	85–264 VAC	10–36 VDC
Rated Operating Frequency	47–63 Hz	–
Maximum Input Voltage Ripple	–	< ±10%
Maximum Input Power	40VA	30W
Cold Start Inrush Current	1.5 A, 2ms	5A, 2ms
Maximum Inrush Current (Hot Start)	1.5 A, 2ms	5A, 2ms
Internal Input Protection	Micro fuse 250V, 2A Non-replaceable	Reverse polarity protection and undervoltage lockout via transistor circuit
Heat Dissipation	8W Max	5.5 W Max
Isolated User 24VDC Output	24VDC @ 0.3 A max, <1V P-P Ripple, Integrated self-resetting short circuit protection	None
Voltage Withstand (dielectric)	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
Replacement Connector	ADC Part # BX-RTB05	ADC Part # BX-RTB03

AC Input Power Wiring

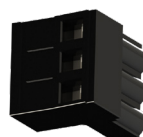
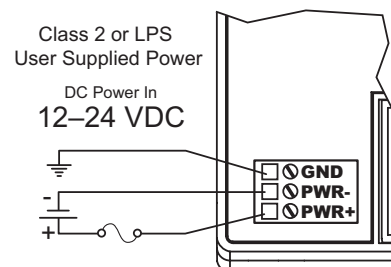
Pin	Connection
1	L
2	N
3	GND
4	V–
5	V+



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

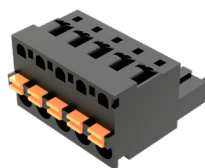
connector specifications are listed in the 2 charts below. Also listed in the tables are an optional spring clamp terminal

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

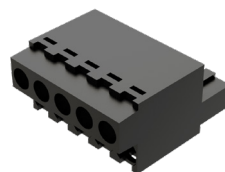
BRX Remote I/O AC Power Supply Connector Specifications			
Part Number	<i>BX-RTB05</i> (included with unit)	<i>BX-RTB05-1</i>	<i>BX-RTB05-2</i>
Price (each)	\$128#:	\$1293:	\$1299:
Connector Type	Screw Type-90 deg	Spring Clamp Type-180 deg	Screw Type-180 deg
Wire Exit	180 deg	180 deg	180 deg
Pitch	5.0 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

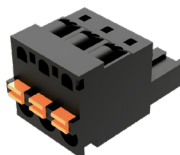


BX-RTB05-2

BRX Remote I/O DC Power Supply Connector Specifications			
Part Number	<i>BX-RTB03</i>	<i>BX-RTB03-1</i>	<i>BX-RTB03-2</i>
Price (each)	\$128.:	\$1292:	\$4gh?:
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

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
\$10c9:



[BX-PGM-CBL](#) \$1288:

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 \$;6t8:

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



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

BRX Blank Custom Slot Labels

BX-LBL-1 \$1oc7:

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 \$1oc8:

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.

