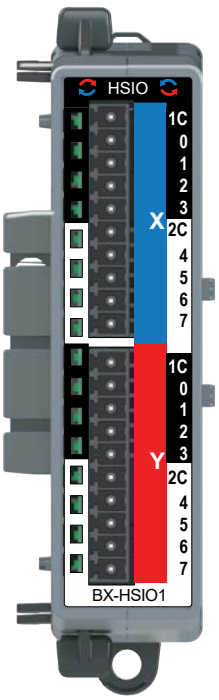
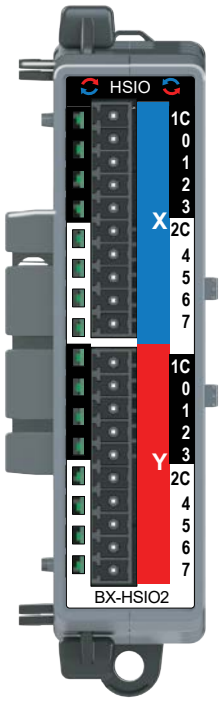
BX-HSIO1/BX-HSIO2 High Speed I/O



BX-HSIO1

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



BX-HSIO2

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

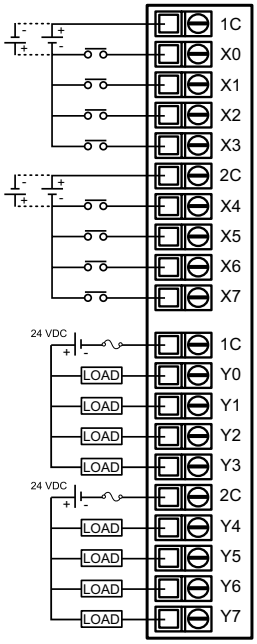
Terminal Blocks Sold Separately.

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

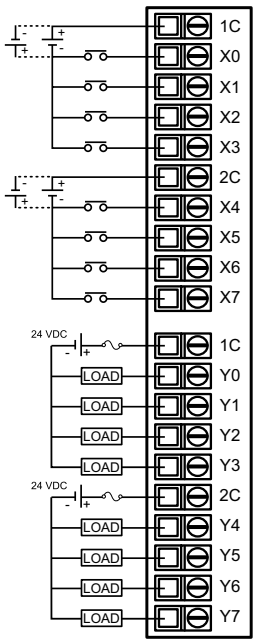
NOTE: Cannot be used in Remote I/O Bases.

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				(optional)		
Bidirectional Counter		2						
Up/Down Counter		2						
Edge Timer		1				N/A	N/A	(optional)
Edge Timer (Duration)		1						
Dual Edge Timer		2						
Pulse Catch		1	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							

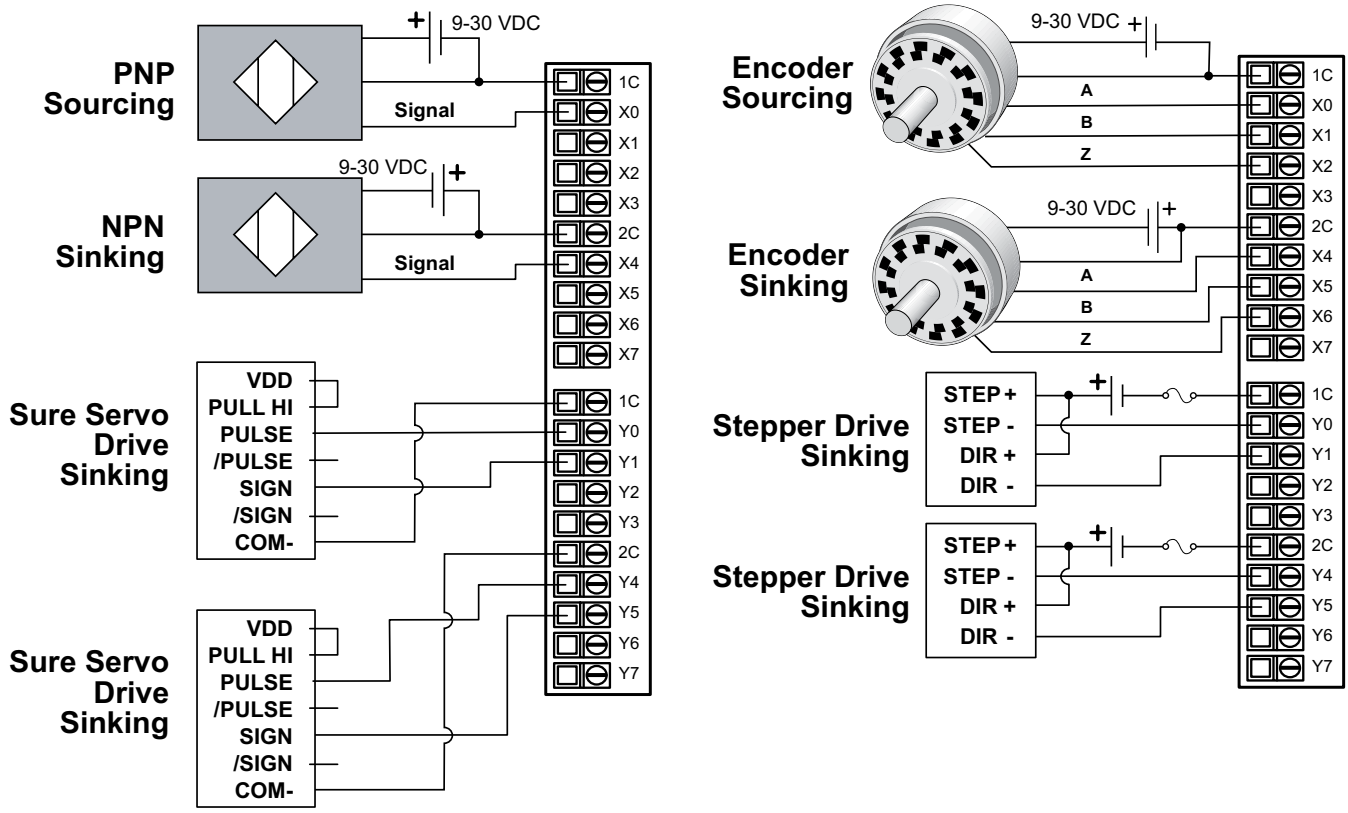
1. Only one scaling option can be used at any given time. If Position scaling is used, Rate scaling is not available (and vice versa).

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

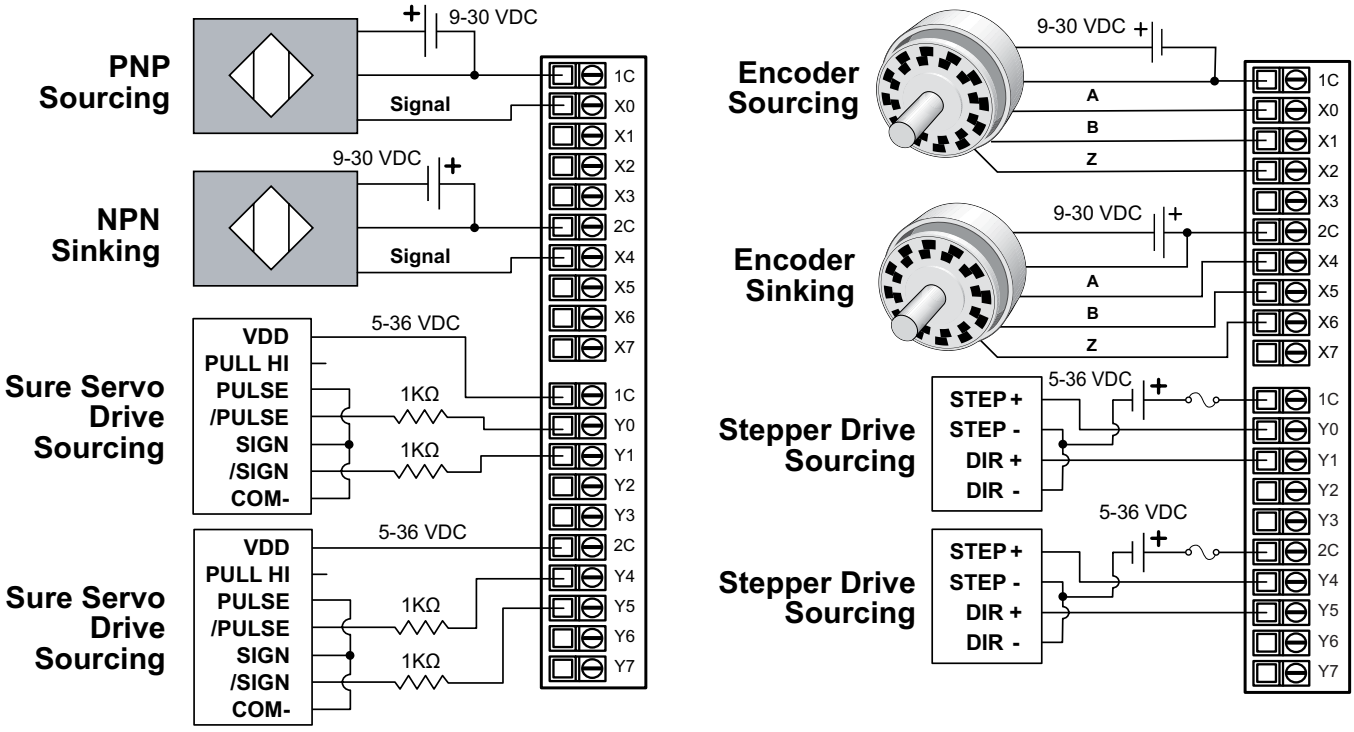
High-speed Output Function			
	Functions Available	Outputs Required	Profile/Instruction
Axis/Pulse Output	Up to 4 (1 virtual and 3 axis)		
Virtual Axis	Up to 4	N/A	Trapezoid, Velocity, Electronic Camming, Electronic Gearing, Following, Homing
Step/Direction	Up to 3	2	
CW/CCW			
Quadrature			
Pulse Width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

BRX Motion Control, Communications and Specialty Expansion Modules

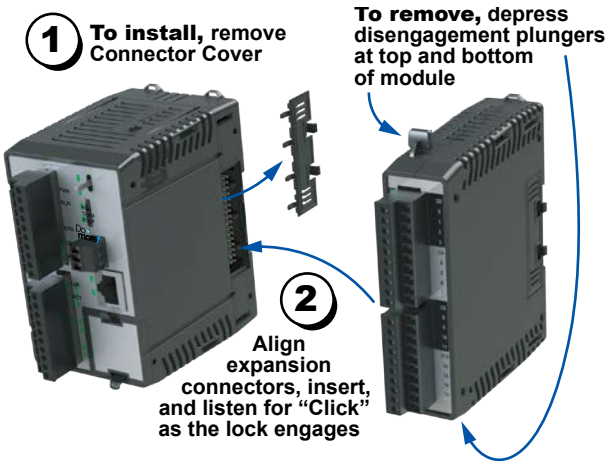
Overview

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

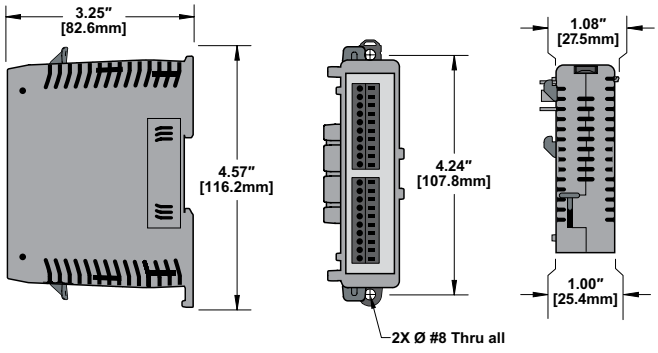
Note: This device cannot be Hot Swapped.

General Specifications

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

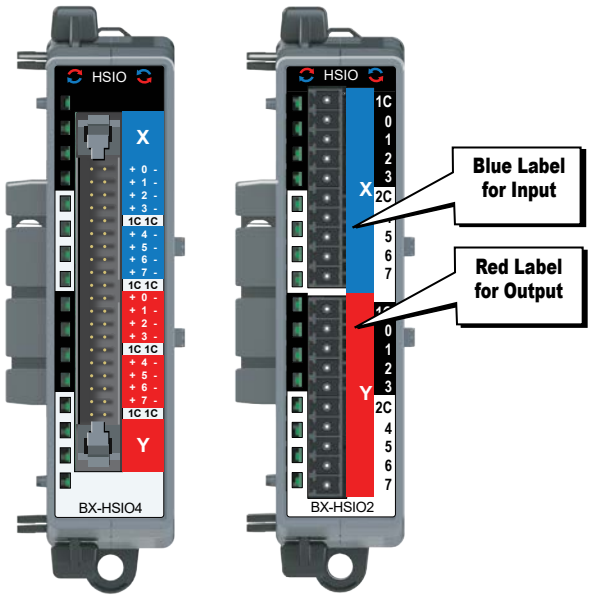
General Specifications	
Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	−20° to 85°C (−4° to 185°F)
Humidity	5% to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	IEC60068-2–6 (Test Fc)
Shock	IEC60068-2-27 (Test Ea)
Enclosure Type	Open Equipment
Noise 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

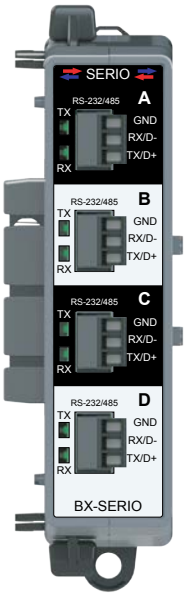
Dimensions



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*
BX-HSIO1	8	8	12–24 VDC Sinking	Up to 250kHz	
BX-HSIO2	8	8	12–24 VDC Sourcing	Up to 250kHz	
BX-HSIO4	8	8	2.5–5 VDC Sinking/Sourcing	Up to 2MHz	

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*
BX-SERIO	4	RS-232 / RS-485	
BX-SERIO-2	4	RS-232 with Flow Control	
BX-SERIO-4	4	RS-422	

Expansion Module Support by Controller	
Controller Type	*# Expansion Modules*
BX-DM1E-M	8
BX-DM1-10	2
BX-DM1E-10	2
BX-DM1-18	4
BX-DM1E-18	8
BX-DM1-36	4
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.**

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.

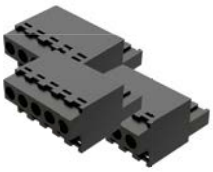
The five (5) and 12-point modules will use all three connectors. The analog and 16-point digital module kits include (2) 10-pin 3.81 mm connectors.

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)



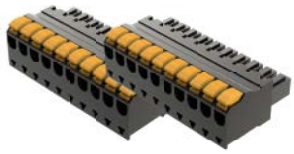
BX-RTB08-2 (Kit - 3 pieces)

Terminal Block Specifications 5-, 8- & 12-Point Type			
Part Number Single Block Set of 3 Blocks	***BX-RTB05 BX-RTB08***	***BX-RTB05-1 BX-RTB08-1***	***BX-RTB05-2 BX-RTB08-2***
Price (Single Block)			
Price (Kit)			
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	***BX-RTB10***	***BX-RTB10-1***	***BX-RTB10-2***
Price (Kit)			
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.