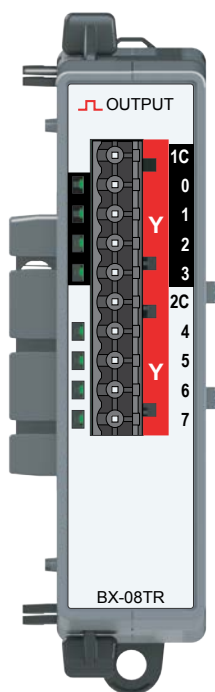
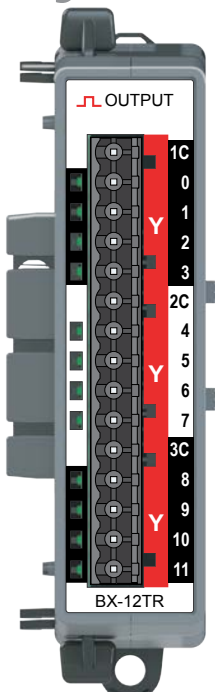


BX-xxTR Relay Output Modules



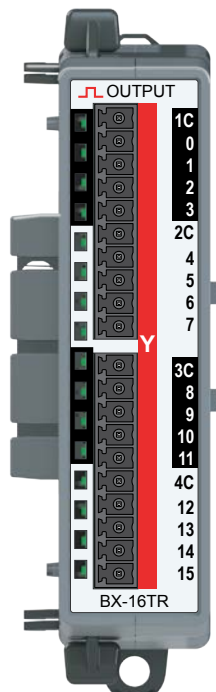
BX-08TR

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



BX-12TR

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



BX-16TR

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 |

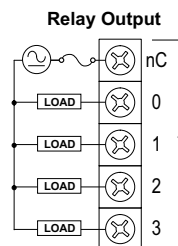
IMPORTANT!



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.

BRX Discrete Expansion Modules

Overview

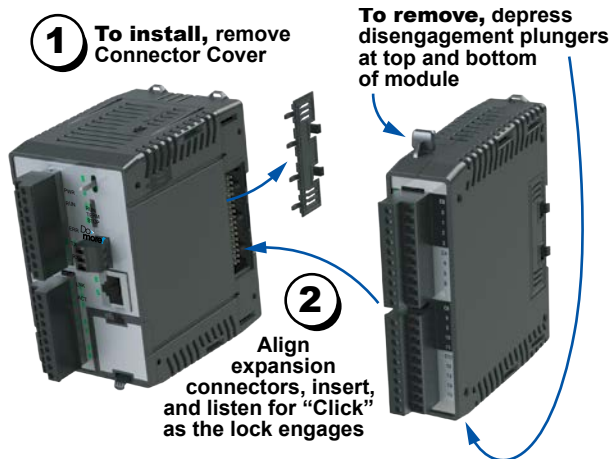
One of the unique features of the BRX platform is its ability to expand its capability to fit your application solution. One of the ways the BRX platform can do this is by using expansion modules that conveniently “snap-on” to the side of any BRX MPU. Once the expansion module has been snapped in place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



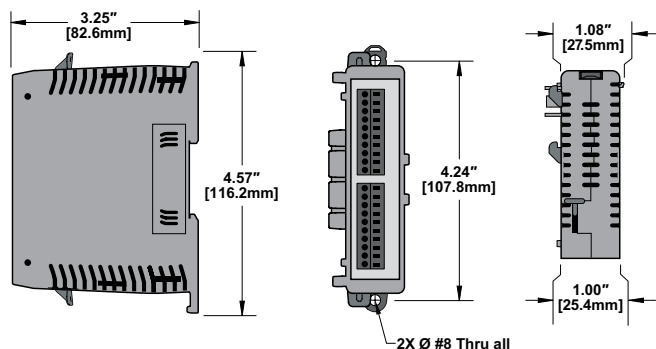
Hot-Swapping Information
 Note: This device cannot be Hot Swapped.

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]

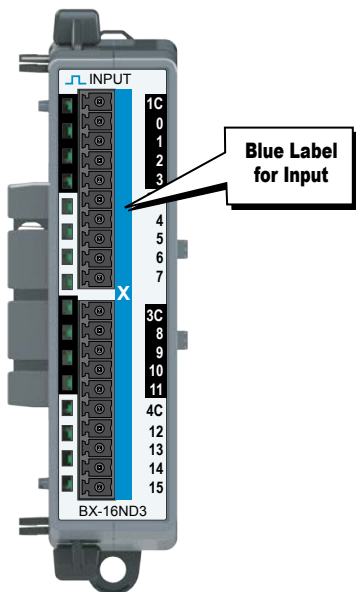


NOTE: When removing an expansion module make sure there is room for the module to slide away from the system. Failure to do so will result in difficulty in removing the module.

BRX Discrete Expansion Modules

Discrete Input Modules

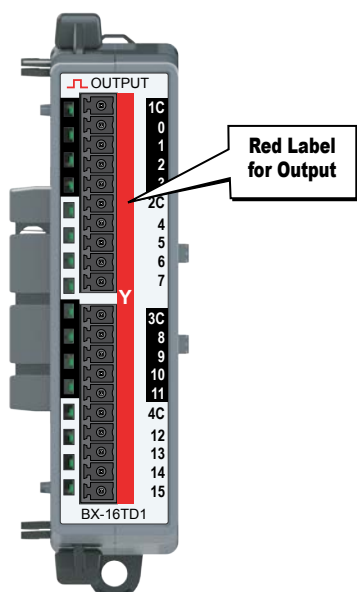
Thirteen (13) discrete input modules are available in various DC and AC voltage ranges. Input module faceplates have a blue terminal bar and symbol \sqcup for easy distinction from other module types.



| Discrete Input Modules | | | |
|--------------------------|--------|---------------------------|-------|
| Part Number | Points | Input Type | Price |
| BX-08NF3 | 8 | 3 – 5 VDC Sink / Source | |
| BX-08ND3 | | 12 – 24 VDC Sink / Source | |
| BX-08NB | | 24VAC | |
| BX-08NA | | 120VAC | |
| BX-08SIM | | Simulator | |
| BX-12ND3 | 12 | 12 – 24 VDC Sink / Source | |
| BX-12NB | | 24VAC | |
| BX-12NA | | 120VAC | |
| BX-16NF3 | 16 | 3–5 VDC Sink/Source | |
| BX-16ND3 | | 12 – 24 VDC Sink / Source | |
| BX-16NB | | 24VAC | |
| BX-16NA | | 120VAC | |
| BX-32ND3 | 32 | 12 – 24 VDC Sink / Source | |

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 \sqcup for easy distinction from other module types.

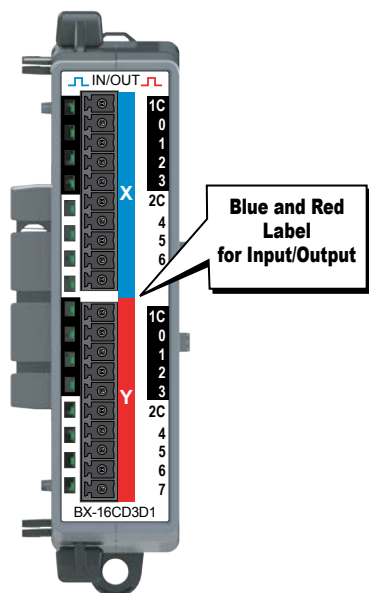


| Discrete Output Modules | | | |
|----------------------------|----------------------|---|---------------------|
| Part Number | Points | Output Type | Price |
| BX-05TRS | 5 | Relay Form C (SPDT) | |
| BX-05TRS-1 | | Relay Form C (SPDT) | |
| BX-08TD1 | 8 | 12 – 24 VDC Sinking | |
| BX-08TD2 | | 12 – 24 VDC Sourcing | |
| BX-08TR | | Relay Form A (SPST) | |
| BX-08TA | | 120 – 240 VAC Triac | |
| BX-08TRZ | | Relay Form A (SPST), no surge suppression | |
| BX-12TD1 | 12 | 12 – 24 VDC Sinking | |
| BX-12TD2 | | 12 – 24 VDC Sourcing | |
| BX-12TR | | Relay Form A (SPST) | |
| BX-12TA | | 120 – 240 VAC Triac | |
| BX-16TD1 | 16 | 12 – 24 VDC Sinking | |
| BX-16TD2 | | 12 – 24 VDC Sourcing | |
| BX-16TF2 | | 3–5 VDC Sourcing | |
| BX-16TR | | Relay Form A (SPST) | |
| BX-16TRZ | 16 | Relay Form A (SPST), no surge suppression | |
| BX-32TD1 | | 32 | 12 – 24 VDC Sinking |
| BX-32TD2 | 12 – 24 VDC Sourcing | | |

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) | |
| <u>BX-12CD3D1</u> | 8 | 4 | | 12-24 VDC Sinking | |
| <u>BX-12CD3D2</u> | | | | 12-24 VDC Sourcing | |
| <u>BX-16CD3D1</u> | 8 | 8 | | 12-24 VDC Sinking | |
| <u>BX-16CD3D2</u> | | | | 12-24 VDC Sourcing | |
| <u>BX-16CF3F2</u> | | | | 3-5 VDC Sink/Source | 3-5 VDC Sourcing |

| Expansion Module Support by Controller | |
|--|---------------------|
| Controller Type | # Expansion Modules |
| <u>BX-DM1E-M</u> | 8 |
| <u>BX-DM1-10</u> | 2 |
| <u>BX-DM1E-10</u> | 2 |
| <u>BX-DM1-18</u> | 4 |
| <u>BX-DM1E-18</u> | 8 |
| <u>BX-DM1-36</u> | 4 |
| <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 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)

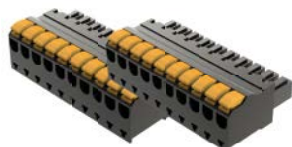
| Terminal Block Specifications 5-, 8- & 12-Point Type | | | |
|--|-------------------------|--|-------------------------|
| Part Number | BX-RTB05 | BX-RTB05-1 | BX-RTB05-2 |
| Single Block | | | |
| Set of 3 Blocks | BX-RTB08 | BX-RTB08-1 | BX-RTB08-2 |
| Price (Single Block) | | | |
| Price (Kit)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

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> | Feedthrough | | | | | | |
| <u>BX-16TD1</u> | | | | | | | |
| <u>BX-16TD2</u> | Relay (Sourcing) | | | | | <u>ZL-RRL16-24-1</u> , <u>ZL-RRL16W-24-1</u> , <u>ZL-RRL16F-24-1</u> , <u>ZL-RRL16HDF-24-1</u> | 1 |
| | Relay (Sinking) | | | | | <u>ZL-RRL16-24-2</u> , <u>ZL-RRL16W-24-2</u> , <u>ZL-RRL16F-24-2</u> , <u>ZL-RRL16HDF-24-2</u> | 1 |
| <u>BX-16TF2</u> | Feedthrough | | | | | <u>ZL-RTB20</u> (Standard) OR <u>ZL-RTB20-1</u> (Compact) | 1 |
| <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 <i>ZIPLink</i> Selector | | | | | | | |
|---|-----------------------|---|------------|---|------------|--|--|
| Expansion Module Part No. | <i>ZIPLink</i> Module | <i>ZIPLink</i> Module Part No. | Qty Needed | <i>ZIPLink</i> 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 | | | | Temperature Input modules are not supported by the <i>ZIPLink</i> wiring system. | | | |
| BX-04THM | | | | | | | |
| 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.