WARNING: To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

This publication is based on information that was available at the time it was printed. At AutomationDirect.com® we constantly strive to improve our products and services, so we reserve the right to make changes to the products and/or publications at any time without notice and without any obligation. This publication may also discuss features that may not be available in certain revisions of the product.

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 IC3-304
- EU Directive: See the "EU Directive" topic in the Help File
- Heat Dissipation: 5.7W
- Weight: 85g (3 oz)
- Software Version: Do-more! Designer 2.5 or later

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

Input Specifications
- Input Type: Sink/Source
- Total Inputs per Module: 8
- Commons: 2 (4 points/common) isolated
- Nominal Voltage Range: 12 - 24 VDC
- Input Voltage Range: 9 - 30 VDC
- Maximum Voltage: 30 VDC
- DC Frequency: 0 - 250kHz
- Minimum Pulse Width: 0.5μs
- Input Impedance: 3kΩ @ 24VDC
- Input Current (typical): 4mA @ 24 VDC
- Maximum Input Current: 8mA @ 30 VDC
- ON Voltage Level: > 9.0 VDC
- OFF Voltage Level: < 2.0 VDC
- Minimum ON Current: 3.0mA (9V required to guarantee ON state)
- Maximum OFF Current: 1.5mA
- Status Indicators: Logic Side, Green
- OFF to ON Response: < 2us
- ON to OFF Response: < 2us

Output Specifications
- Output Type: Sourcing
- Total Outputs 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: 36 VDC
- Minimum Output Current: 0.1mA @ 24 VDC
- Maximum Load Current: 0.5A 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: < 2us
- ON to OFF Response: < 2us
- 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 per Com: 4A minimum, 8A maximum
- Fuse Type: User-supplied external fuse

**Important!**

Hot-Swapping Information

Note: This device cannot be Hot Swapped.

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Edition/Revision</th>
<th>Date</th>
</tr>
</thead>
</table>

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To Install, remove Connector Cover

Align expansion connectors, insert, and listen for “Click” as the lock engages

Dimensional Information

Note: Drawings are for reference only. Shown without terminal blocks.

To remove, depress disengagement plungers at top and bottom of module

Encoder Sourcing

Sure Servo Drive Sourcing

High Speed Output (HSO) Functions

<table>
<thead>
<tr>
<th>Outputs Required</th>
<th>Function</th>
<th>BX-HSIO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Virtual axis</td>
<td>Up to (4)</td>
</tr>
<tr>
<td>2</td>
<td>PTO linear step/direction outputs</td>
<td>Up to (3)</td>
</tr>
<tr>
<td>2</td>
<td>PTO rotary clockwise/counter-clockwise (CW/CCW) outputs</td>
<td>Up to (3)</td>
</tr>
<tr>
<td>1</td>
<td>PTO quadrature (A and B) output</td>
<td>Up to (4)</td>
</tr>
</tbody>
</table>

Axis Profile: Relative/Absolute positioning, Velocity mode, Trapezoid, S-curve, Electronic gearing, Camming, Following, Homing, Jogging

High Speed Input (HSI) Functions

<table>
<thead>
<tr>
<th>Input Function</th>
<th>Inputs Required</th>
<th>BX-HSIO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Up counters</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Down counters</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Up/Down counters</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pulse/Direction (Bidirectional) counters</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Quadrature (A and B) counters</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Quadrature (A and B with Z) counters</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Single Input (Edge) timers</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dual Input (Dual Edge) timers</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Single Input (Edge) timers</td>
<td></td>
</tr>
<tr>
<td>Programmable limit switches</td>
<td></td>
<td>Up to (4)</td>
</tr>
<tr>
<td>Preset tables</td>
<td></td>
<td>Up to (4)</td>
</tr>
<tr>
<td>Input interrupts</td>
<td></td>
<td>Up to (4)</td>
</tr>
<tr>
<td>Timer interrupts</td>
<td></td>
<td>Up to (4)</td>
</tr>
</tbody>
</table>

1. Table Driven Output(s) are triggered by an Axis Position or a high-speed counter/timer accumulator value. It requires the selection of 1 discrete output.

Connector Options

<table>
<thead>
<tr>
<th>Connector Options</th>
<th>Part Number</th>
<th>BX-RTO10</th>
<th>BX-RTO10-1</th>
<th>BX-RTO10-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BX-RTO10</td>
<td>Terminal Block Kit, 90-degree screw type. For use with BRX 10-point PLCs and BRX 16-point expansion modules. Kit includes (2) 10-pin 3.8mm plugs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BX-RTO10-1</td>
<td>Terminal Block Kit, 180-degree spring clamp type. For use with BRX 10-point PLCs and BRX 16-point expansion modules. Kit includes (2) 10-pin 3.8mm plugs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BX-RTO10-2</td>
<td>Terminal Block Kit, 180-degree screw type. For use with BRX 10-point PLCs and BRX 16-point expansion modules. Kit includes (2) 10-pin 3.8mm plugs.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Encoder Sinking

Sure Servo Drive Sourcing

Pulse Mode

9-30 VDC

NPN Sourcing

VDD

Pulse

SIGN

PULL HI

SIGNAL

Encoder Sourcing

Sure Servo Drive Sourcing

5-36 VDC

NPN

Sourcing

5-36 VDC

VDD

Pulse

SIGN

PULL HI

SIGNAL

Encoder Sourcing

Sure Servo Drive Sourcing

5-36 VDC

VDD

Pulse

SIGN

PULL HI

SIGNAL

Encoder Sourcing

Sure Servo Drive Sourcing

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.

High-Speed Counting Function

Position Scaling Function

Frequency Measurement Function

Table-Driven Output(s)

Interrupt(s)

To remove, depress disengagement plungers at top and bottom of module

Align expansion connectors, insert, and listen for “Click” as the lock engages

Dimensional Information

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To Install, remove Connector Cover

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Leaflet for high-speed input (HSI) and high-speed output (HSO) functions, connector options, terminal block connector specifications, and dimensional information.

High-Speed Counting Function

Position Scaling Function

Frequency Measurement Function

Table-Driven Output(s)

Interrupt(s)

To remove, depress disengagement plungers at top and bottom of module

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