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
Weight	169g (6 oz)

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

Power Supply Specifications

Nominal Voltage Range*	12–24 VDC
Input Voltage Range (Tolerance)*	10–36 VDC
Maximum Input Voltage Ripple	<+/- 10%
Maximum Input Power	14W
Cold Start Inrush Current	5A, 2ms
Maximum Inrush Current (Hot Start)	5A, 2ms
Internal Input Protection	Reverse Polarity Protection and Undervoltage
Heat Dissipation	7.4W Max
Voltage Withstand (dielectric)	1500VAC Power Inputs to Ground applied for 1 minute

*Class 2 or LPS Power Supply required.

CPU Specifications

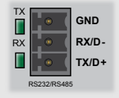
Program Memory Type	FLASH memory
User Data Memory Type	Battery Backed RAM, User configurable
Pluggable Option Module	RS-232, RS-485, Ethernet 10/100 BASE-T (1Mbps throughput max), USB 2.0 Type B
Expansion Modules	2 expansion modules max
Real Time Clock Accuracy	±2.6s per day typical at 25°C ±8s per day max at 60°C
Programming Software	Do-more Designer – Ver. 2.0 or higher
Programming Cable Options	BX-PGM-CBL

Terminal Block Connection Options

BX-RTB10	Terminal Block Kit, 90-degree screw type, Fits all BRX 10-point PLCs and 16 point Expansion I/O Modules. Kit includes (2) 10-pin 3.8mm plugs.
BX-RTB10-1	Terminal Block Kit, 180-degree spring clamp type, Fits all BRX 10-point PLCs and 16 point Expansion I/O Modules. Kit includes (2) 10-pin 3.8mm plugs.
BX-RTB10-2	Terminal Block Kit, 180-degree screw type, Fits all BRX 10-point PLCs and 16 point Expansion I/O Modules. Kit includes (2) 10-pin 3.8mm plugs.
ZL-BX-CBL20	***ZIP***Link PLC I/O cable, 20-position terminal block to 24-pin connector, 24AWG, cable length 0.5meter (1.6ft).
ZL-BX-CBL20-1	***ZIP***Link PLC I/O cable, 20-position terminal block to 24-pin connector, 24AWG, cable length 1meter (3.3ft).
ZL-BX-CBL20-2	***ZIP***Link PLC I/O cable, 20-position terminal block to 24-pin connector, 24AWG, cable length 2meter (6.6ft).
ZL-BX-CBL20-1P	***ZIP***Link PLC I/O cable, 20-position terminal block to pigtail connection, 24AWG, cable length 1meter (3.3ft).
ZL-BX-CBL20-2P	***ZIP***Link PLC I/O cable, 20-position terminal block to pigtail connection, 24AWG, cable length 2meter (6.6ft).
ZL-RTB20	***ZIP***Link Two Level Feedthrough Module, 20-pole, 35mm, DIN mount.
ZL-RTB20-1	***ZIP***Link Three Level Feedthrough Module, 20-pole, 35mm, DIN mount.

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)
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 3.5mm 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



Pinout	RS232	RS485
1	GND	GND
2	RX	D-
3	TX	D+

Removable connector included.

* NOTE: When using RS-485, a terminator resistor is built-in and software selectable.

CPU Mode Switch Functions

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

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BRX Do-more DRIVEN

BX-DM1-10ED1-D

BRX MPU with Do-more! DM1 technology

24 VDC required, serial port, microSD slot, Discrete Input: 6-point, sink / source, Discrete Output: 4-point, sinking.

I/O Terminal Blocks sold separately.
(See Terminal Block Connection Options table).

Document Name	Edition/Revision	Date
BX-DM1-10ED1-D	1st Ed. RevD	9/8/2021

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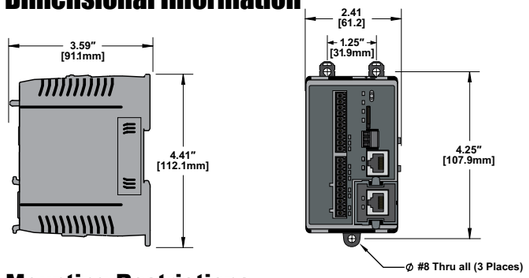
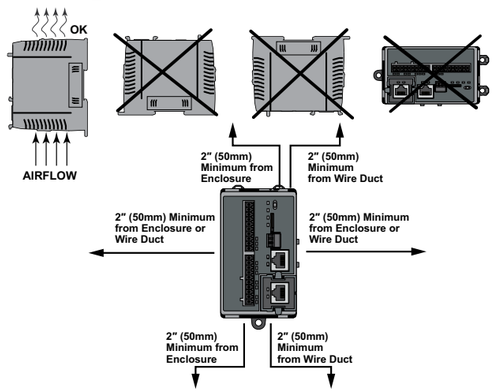
Dimensional Information



Mounting Restrictions



Terminal Block Connector Specifications

Part Number	BX-RTB03S	BX-RTB10	BX-RTB10-1	BX-RTB10-2
Connector Type	Screw Type-90°	Screw Type-90°	Spring Clamp Type-180°	Screw Type-180°
Wire Exit	180°	180°	180°	180°
Pitch	3.5mm	3.81mm	3.81mm	3.81mm
Screw Size	M2	M2	N/A	M2
Recommended Screw torque	<1.77 lb·in (0.2 N·m)	<1.77 lb·in (0.2 N·m)	N/A	<1.77 lb·in (0.2 N·m)
Screwdriver Blade Width	2.5mm	2.5mm	2.5mm	2.5mm
Wire Gauge (Single Wire)	28-16 AWG	28-16 AWG	28-18 AWG	30-16 AWG
Wire Gauge (Dual Wire)	28-16 AWG	28-16 AWG	30-20 AWG (Dual Wire Ferrule Required)	30-18 AWG
Wire Strip Length	0.24in (6mm)	0.24in (6mm)	0.35in (9mm)	0.26in (6.5mm)
Equiv. Dinkle part #	EC350V-03P-BK	EC381V-10P-BK	ESC381V-10-BK	EC381F-10P-BK

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

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.

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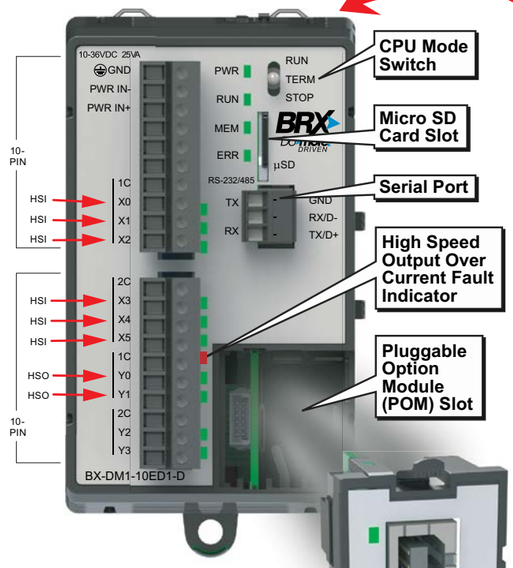
Do-more BRX Manual available at http://www.automationdirect.com/pn/doc/manual/BX-DM1-10ED1-D

IMPORTANT!

Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Terminal and Front Panel Layout



CPU Mode Switch

Micro SD Card Slot

Serial Port

High Speed Output Over Current Fault Indicator

Pluggable Option Module (POM) Slot

NOTE: DIP switches located in this compartment are used for debug and recovery functions only. Please refer to the BRX User Manual for full instructions on using these switches.

Battery Replacement
Coin Battery CR2032
ADC Part # D0-MC-BAT.
Replacement batteries do not come with tape. To assist with future battery removal, reuse tape from the original battery or add new tape.

NOTE: Do not remove tape from battery.

I/O Terminal Blocks sold separately.
(See Terminal Block Connection Options table).

POM Modules
BX-P-SER2-TERM 3-Pin Serial RS-232
BX-P-SER2-RJ12 RJ12 Serial RS-232
BX-P-SER4-TERM 3-Pin Serial RS-485
BX-P-USB-B USB Type B
BX-P-ECOMLT Ethernet 10/100 BASE-T

NOTE: Only POM modules can be hot-swapped.

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

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	0.1mA @ 24VDC	
Maximum Output Current	0.5A 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	

High Speed Input (HSI) Functions

Input Function	Inputs Required[1]		10/ 10E	18/ 18E	36/ 36E
High-Speed Counting Position Scaling Frequency Measurement	1	Up counters	Up to (3)		
	1	Down counters			
	2	Up/Down counters			
	2	Pulse/Direction (Bidirectional) counters			
	2	Quadrature (A and B) counters			
	3	Quadrature (A and B with Z) counters			
Interval Measurement	1	Single Input (Edge) timers			
	2	Dual Input (Dual Edge) timers			
Duration Measurement	1	Single Input (Edge) timers			
Table-Driven Output(s)[2]		Programmable limit switches	Up to (4)		
		Preset tables			
Interrupt(s)	4	Input interrupts			
	0	Timer interrupts			
	0	Match register interrupts			

1. Standard inputs may be used with high-speed functions, but at lower response frequencies of approximately 120Hz.
2. 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. (see HSO Note 1 below)

High Speed Output (HSO) Functions

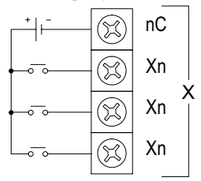
	Outputs Required[1]	Function[2]	10/ 10E	18/ 18E	36/ 36E
Pulse Mode	0	Virtual axis	4	4	4
	2	PTO linear step/direction outputs	2	3	3
	2	PTO rotary clockwise/counter-clockwise (CW/CCW) outputs	2	3	3
	2	PTO quadrature (A and B) output	2	3	3
	1	PWM pulse width modulation outputs	4	4	4
Axis Profile	Relative/Absolute positioning, Velocity mode, Trapezoid, S-curve, Electronic gearing, Camming, Following, Homing, Jogging				

1. Standard outputs may be used for high-speed functions, but at lower response frequencies of approximately 110Hz. Use of relay outputs is not recommended.
2. This is the total number of functions. A combination of high-speed outputs and standard outputs may be used **up to** this total.

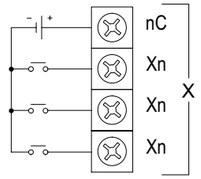
I/O Wiring

Discrete Input Wiring

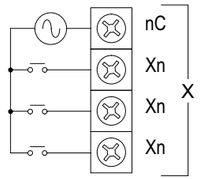
Sinking Input



Sourcing Input

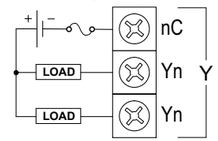


AC Input

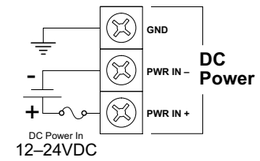


Discrete Output Wiring

Sinking Output



Supply Power Wiring



Class 2 or LPS User Supplied Power