

BRX PLUGGABLE OPTION MODULE (POM)



In This Chapter...

Overview.....	6-2
General Specifications	6-2
Module Installation	6-3
BX-P-SER2-TERM	6-4
BX-P-SER2-TERMFC	6-5
BX-P-SER422-TERM	6-6
BX-P-SER4-TERM	6-7
BX-P-SER2-RJ12	6-8
BX-P-ECOMLT	6-9
BX-P-ECOMEX	6-10
BX-P-OPCUA	6-11
BX-P-SPARK	6-12
BX-P-USB-B	6-13
BX-P-USB-C	6-13

Overview

BRX Do-more! MPUs have a slot available for the addition of a single BRX Pluggable Option Module (POM). The POM slot can be used to add a serial port, Ethernet port, USB port or any other POM modules that are available.

POM modules are hot swappable; this allows you to interchange different communication options while the system is running. For example you can configure the system to use the RJ45 Ethernet port POM to talk with a C-more panel. Then you can hot swap to the USB POM for programming. When you are done programming you can hot swap back to the Ethernet POM without needing to power cycle or reconfigure the system.

General Specifications

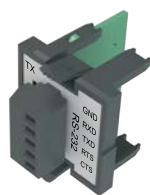
General specifications common to the POM modules are listed in the table below.

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 or topic DMD0331 in the Do-more! Designer software Help file.
Weight	7g (0.25 oz)

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



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
(Any CPU)



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



BX-P-OPCUA
OPC-UA
Communications



BX-P-SPARK
Sparkplug B
Communications



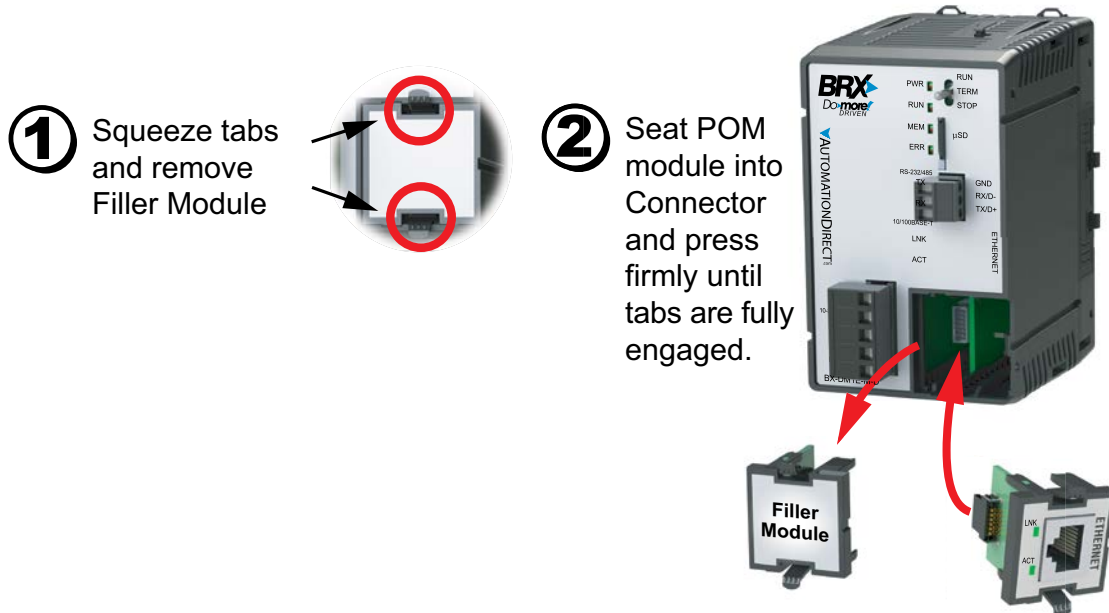
BX-P-USB-B
USB Type B Port



BX-P-USB-C
USB Type C Port

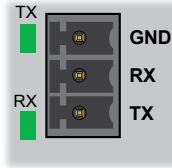
Module Installation

The blank filler plate can be removed by squeezing in on the top and bottom tabs and pulling the module forward, away from the unit. To install the POM, orient the module so that the connector on the rear is on the left side, align the locking tabs on the top and bottom of the module, and gently guide the module into the opening until you hear it click, locking the module into place.



BX-P-SER2-TERM

This RS-232 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	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 (Slave) (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 Q8604-1 from automationdirect.com
Maximum Distance	6 meters (20 foot) recommended maximum
Replacement Connector	ADC Part # BX-RTB03S
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.0 or later

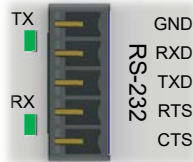
BX-RTB03S Connector Specifications	
Part Number	BX-RTB03S
Connector Type	Screw type
Wire Exit	180 degree
Pitch	3.5 mm
Screw Size	M2
Recommended Screw Torque	<1.77 lb-in (0.2 N·m)
Screwdriver Blade Width	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG
Wire Gauge (Two Wires)	28–16 AWG
Wire Strip Length	0.24 in (6mm)
Equiv. Dinkle part #	EC350V-03P-BK



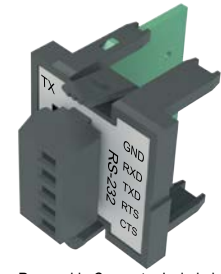
Removable Connector Included

BX-P-SER2-TERMFC

This RS-232 POM can be connected to the Do-more! Designer programming software, Modbus RTU master devices, 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 (Slave) (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
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 Connector Specifications

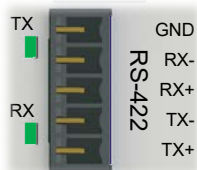
Part Number	BX-RTB05S
Connector Type	Screw type
Wire Exit	180 degree
Pitch	3.5 mm
Screw Size	M2
Recommended Screw Torque	<1.77 lb-in (0.2 N·m)
Screwdriver Blade Width	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG
Wire Gauge (Two Wires)	28–16 AWG
Wire Strip Length	0.24 in (6mm)
Equiv. Dinkle part #	EC350V-05P-BK



Removable Connector Included

BX-P-SER422-TERM

The RS-422 POM can be connected to the Do-more! Designer programming software, Modbus RTU master devices, DirectLogic PLCs via K-Sequence protocol, as well as devices that send or receive non-sequenced ASCII strings or characters.



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



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 (Slave) (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

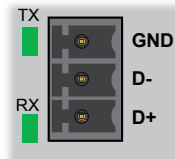
BX-RTB05S Connector Specifications	
Part Number	BX-RTB05S
Connector Type	Screw type
Wire Exit	180 degree
Pitch	3.5 mm
Screw Size	M2
Recommended Screw Torque	<1.77 lb-in (0.2 N·m)
Screwdriver Blade Width	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG
Wire Gauge (Two Wires)	28–16 AWG
Wire Strip Length	0.24 in (6mm)
Equiv. Dinkle part #	EC350V-05P-BK



Removable Connector Included

BX-P-SER4-TERM

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+



Removable Connector Included

BX-P-SER4-TERM Specifications

Description	Non-isolated Serial port that can communicate via RS-485. Includes ESD protection and built-in surge protection. Includes internal biasing to be a true failsafe receiver while maintaining EIA/TIA-485 compatibility.
Supported Protocols	Do-more!™ Protocol (Slave) (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, DIP switch selectable 120Ω termination resistor
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-485 use P/N L19954-XXX from automationdirect.com
Maximum Distance	1000 meters (3280 feet)
Replacement Connector	ADC Part # BX-RTB03S
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.0 or later

BX-RTB03S Connector Specifications

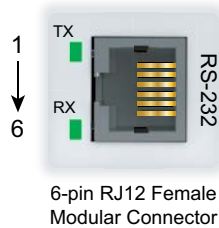
Part Number	BX-RTB03S
Connector Type	Screw type
Wire Exit	180 degree
Pitch	3.5 mm
Screw Size	M2
Recommended Screw Torque	<1.77 lb-in (0.2 N·m)
Screwdriver Blade Width	2.5 mm
Wire Gauge (Single Wire)	28–16 AWG
Wire Gauge (Two Wires)	28–16 AWG
Wire Strip Length	0.24 in (6mm)
Equiv. Dinkle part #	EC350V-03P-BK



Removable Connector Included

BX-P-SER2-RJ12

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.

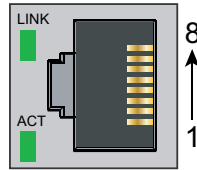


Pin #	Signal
1	0V Power (-) connection (GND)
2	5V Power (+) connection (220mA max)
3	RXD Receive Data (RS-232)
4	TXD Transmit Data (RS-232)
5	RTS Request to Send (RS-232)
6	CTS Clear to Send (RS-232)

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 (Slave) (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	Recommend AutomationDirect.com cable D2-DSCBL (with USB-RS232-1) or EA-MG-PGM-CBL
Maximum Distance	6 meters (20 feet), maximum recommended distance
Replacement Connector	N/A
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.0 or later

BX-P-ECOMLT

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.



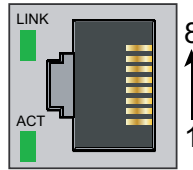
Pin #	Signal
1	TXD+ Transmit Data
2	TXD- Transmit Data
3	RXD+ Receive Data
4	N/C
5	N/C
6	RXD- Receive Data
7	N/C
8	N/C

BX-P-ECOMLT Specifications	
Description	Standard transformer isolated Ethernet port with built-in surge protection.
Transfer Rate	10/100 Mbps
Port Status LED ¹	LINK LED is solid when network link is established. ACT LED flashes when port is active.
Supported Protocols	Do-more! Protocol (Server) Modbus (Server) K-sequence (Server) Programming/Monitoring
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com
Maximum Distance	100 meters (328 feet)
Port Type	RJ45, Category 5, Auto Crossover
Ethernet Port Numbers:	
Do-more! Slave Protocol	28784, UDP
Modbus TCP Slave	502, TCP
K-sequence Slave	28784, UDP
Programming/Monitoring	28784, UDP
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.0 or later

1. Link LED will Blink when no cable is attached, showing that the POM has a connection to the CPU and is waiting for a working link.

BX-P-ECOMEX

The Ethernet EX POM provides a general-purpose Ethernet interface that can be connected to devices using a wide range of protocols, as shown in the table below.



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



NOTE: The BX-P-ECOMEX POM can be installed in the DM1E CPUs only. It must be configured via Do-more! Designer software, and **must be on a different subnet than the built-in Ethernet port.**

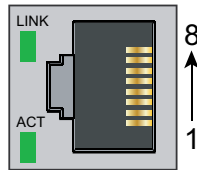
BX-P-ECOMEX Specifications																																											
Description	Standard transformer isolated Ethernet port with built-in surge protection.																																										
Transfer Rate	10/100 Mbps																																										
Port Status LED*	LINK LED is solid when network link is established. ACT LED flashes when port is active.																																										
Supported Protocols	SMTP (Email) FTP (Client) Do-more! Ethernet I/O MQTT / MQTTS HTTP / HTTPS Embedded Web Server: HTTP (Unsecure) EtherNet/IP: Explicit/Implicit Messaging, Scanner/Adapter SNTP (Time Server) TCP/IP (Raw Packet) Modbus TCP/IP (Client & Server) DHCP																																										
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com																																										
Maximum Distance	100 meters (328 feet)																																										
Port Type	RJ45, Category 5, Auto Crossover																																										
Ethernet Port Numbers:	<table border="0"> <tr><td>Peerlink</td><td>28784</td><td>UDP</td></tr> <tr><td>Do-more! Protocol (Client, Server)</td><td>28784</td><td>UDP</td></tr> <tr><td>Modbus TCP (Client, Server)</td><td>502</td><td>TCP</td></tr> <tr><td>HOST Ethernet Protocol (Client, Server)</td><td>28784</td><td>UDP</td></tr> <tr><td>EtherNet/IP: Explicit/Implicit Messaging Scanner/Adapter</td><td>44818</td><td>TCP</td></tr> <tr><td>SMTP (Email)</td><td>25</td><td>TCP</td></tr> <tr><td>Ethernet Remote I/O</td><td>28784</td><td>UDP</td></tr> <tr><td>HTTP, HTTPS</td><td>80, 443</td><td>TCP</td></tr> <tr><td>Embedded Web Server: HTTP (Unsecure)</td><td>80</td><td>TCP</td></tr> <tr><td>MQTT, MQTTS</td><td>1883, 8883</td><td>TCP</td></tr> <tr><td>SNTP (Time Server)</td><td>123</td><td>TCP</td></tr> <tr><td>TCP Raw Packet</td><td>User defined</td><td>TCP</td></tr> <tr><td>UDP Raw Packet</td><td>User defined</td><td>UDP</td></tr> <tr><td>FTP (Client)</td><td>20, 21</td><td>TCP</td></tr> </table>	Peerlink	28784	UDP	Do-more! Protocol (Client, Server)	28784	UDP	Modbus TCP (Client, Server)	502	TCP	HOST Ethernet Protocol (Client, Server)	28784	UDP	EtherNet/IP: Explicit/Implicit Messaging Scanner/Adapter	44818	TCP	SMTP (Email)	25	TCP	Ethernet Remote I/O	28784	UDP	HTTP, HTTPS	80, 443	TCP	Embedded Web Server: HTTP (Unsecure)	80	TCP	MQTT, MQTTS	1883, 8883	TCP	SNTP (Time Server)	123	TCP	TCP Raw Packet	User defined	TCP	UDP Raw Packet	User defined	UDP	FTP (Client)	20, 21	TCP
Peerlink	28784	UDP																																									
Do-more! Protocol (Client, Server)	28784	UDP																																									
Modbus TCP (Client, Server)	502	TCP																																									
HOST Ethernet Protocol (Client, Server)	28784	UDP																																									
EtherNet/IP: Explicit/Implicit Messaging Scanner/Adapter	44818	TCP																																									
SMTP (Email)	25	TCP																																									
Ethernet Remote I/O	28784	UDP																																									
HTTP, HTTPS	80, 443	TCP																																									
Embedded Web Server: HTTP (Unsecure)	80	TCP																																									
MQTT, MQTTS	1883, 8883	TCP																																									
SNTP (Time Server)	123	TCP																																									
TCP Raw Packet	User defined	TCP																																									
UDP Raw Packet	User defined	UDP																																									
FTP (Client)	20, 21	TCP																																									
Hot Swappable	Yes																																										
Software Version Required	Do-more! Designer version 2.8 or later (version 2.10 or later required for EtherNet/IP Implicit Messaging)																																										

* Link LED will Blink when no cable is attached, showing that the POM has a connection to the CPU and is waiting for a working link.

BX-P-OPCUA

OPC Unified Architecture (OPC UA) is a cross-platform, open-source standard for secure, reliable data exchange from sensors to cloud applications.

The OPC UA POM performs as an OPC UA Server.



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

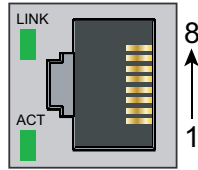
BX-P-OPCUA Specifications	
Description	Ethernet-based OPC UA gateway
Transfer Rate	10/100 Mbps
Port Status LED*	LINK LED is solid when network link is established. ACT LED flashes when port is active.
Supported Protocols	OPC UA Server
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com
Maximum Distance	100 meters (328 feet)
Port Type	RJ45, Category 5, Auto Crossover
Ethernet Port Numbers:	OPC UA Server 4840 default (configurable) UDP
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.11 or later

*Link LED will Blink when no cable is attached, showing that the POM has a connection to the CPU and is waiting for a working link.

BX-P-SPARK

SparkPlug B is a standardized protocol using MQTT or MQTTS as transport layer. The SparkPlug B POM transmits data on change to an MQTT broker for tags selected through the documentation editor.

The Sparkplug B POM operates as a Sparkplug B Publisher. It cannot be used as a Broker.



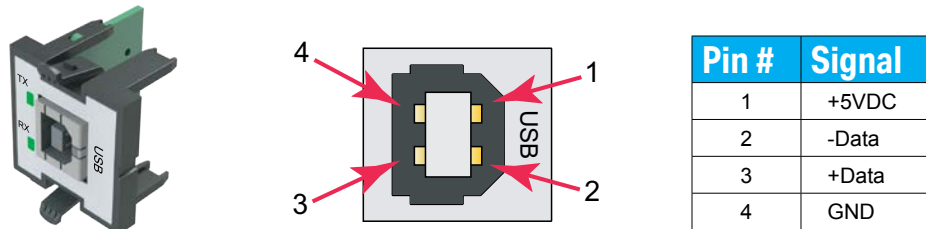
Pin #	Signal
1	TXD+ Transmit Data
2	TXD- Transmit Data
3	RXD+ Receive Data
4	N/C
5	N/C
6	RXD- Receive Data
7	N/C
8	N/C

BX-P-SPARK Specifications			
Description	Ethernet-based Sparkplug B gateway		
Transfer Rate	10/100 Mbps		
Port Status LED*	LINK LED is solid when network link is established. ACT LED flashes when port is active.		
Supported Protocols	MQTT with Sparkplug B Publisher		
Cable Recommendation	C5E-STxxx-xx from AutomationDirect.com		
Maximum Distance	100 meters (328 feet)		
Port Type	RJ45, Category 5, Auto Crossover		
Ethernet Port Numbers:	MQTT	1883 default (configurable)	TCP
	MQTTS	8883 default (configurable)	TCP
Hot Swappable	Yes		
Software Version Required	Do-more! Designer version 2.11 or later		

* Link LED will Blink when no cable is attached, showing that the POM has a connection to the CPU and is waiting for a working link.

BX-P-USB-B

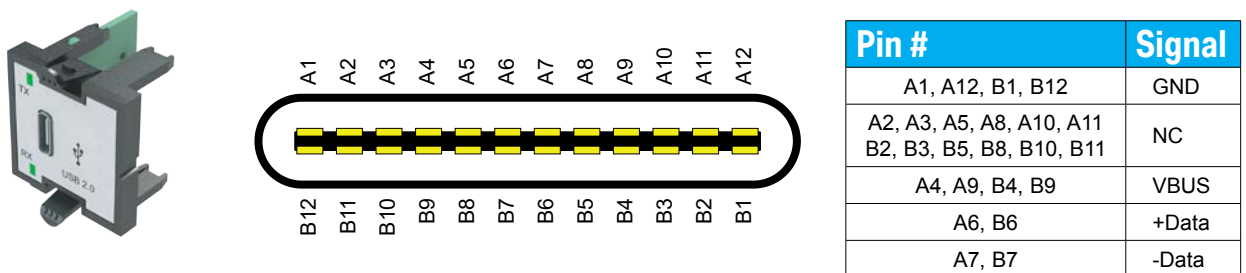
The USB Type B POM can only be connected to the Do-more! Designer programming software. This POM functions only as a programming interface.



BX-P-USB-B Specifications	
Description	USB Type B Port that can be utilized 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
Software Version Required	Do-more! Designer version 2.0 or later

BX-P-USB-C

The USB Type C POM can only be connected to the Do-more! Designer programming software. This POM functions only as a programming interface.



BX-P-USB-C Specifications	
Description	USB Type C Port for programming.
USB Specification Version	USB 2.0
Port Status LED	LED flashes when port is active
Cable Recommendation	USB-CBL-ACx from AutomationDirect.com
Hot Swappable	Yes
Software Version Required	Do-more! Designer version 2.11 or later