Overview

Banner's DXMR90-4K IO-Link Controller consolidates data from multiple sources to provide local data processing and accessibility for host systems as a platform for the Industrial Internet of Things (IIoT).

The DXMR90-4K IO-Link Controller 4-port IO-link device serves as the gateway to connect up to four IO-link devices including sensors, lighting products, IO-link hubs, and more. The DXMR90-4K IO-Link Controller can have multiple configurations and includes a model number label on the housing. Use this model number to identify which boards are included in your controller.



The DXMR90-4K contains four IO-Link ports, allowing for concurrent communication to up to four IO-Link devices. Data is collected into the internal logic controller to facilitate edge processing, protocol conversion to Industrial Ethernet, Modbus/TCP, and pushing information to web servers. In addition to IO-Link devices, the IO-Link master can transmit up to eight discrete signals using pin 2 or pin 4 of the IO-Link master ports.

The configurable IO-Link master device works with IO-link devices and allows for quick deployment of IO-Link data to Ethernet, PROFINET, Modbus/TCP, and Modbus RTU networks.

- Local control or connectivity with automation protocols, including EtherNet/IP, PROFINET, Modbus/TCP, and Modbus RTU[1]
- Compatible with Internet protocols including RESTful API, MQTT with web services from AWS, and Sparkplug B
- Logic processing and problem-solving are capable of deploying solutions to process and control data from multiple devices
- Compact housing saves space and weight compared to traditional "block" style form factors
- IP67 housing simplifies installation in any location by eliminating the need for a control cabinet
- Consolidate cable runs to minimize cabling and associated weight, especially in weight-critical applications such as robotics
- Flexible and Customizable—Expanded internal logic controller with action rules and ScriptBasic programming

Models

Model	Ethernet Connection	IO-Link Master Connections	Other Connections
DXMR90-4K	One 5-pin D-code M12 female Ethernet connector	Four 5-pin M12 female connections for IO-Link master connections	One 5-pin M12 (Port 0) male connector for incoming power and Modbus RS-485, one 5-pin M12 female connector for daisy chaining Port 0 signals.

Controller Connections for the DXMR90-4K

To connect IO-Link devices on machines in industrial environments, an M12 quick-disconnect connection is typically used. The pin assignment according to IEC 60974-5 is the following:

- Pin 1: 24 V DC
- Pin 2: Switching Digital I/O (PNP only)
- Pin 3: 0 V
- Pin 4: Switching Digital I/O (NPN, PNP, or Push-Pull) and IO-link Communication Line

[1] EtherNet/IP™ is a trademark of ODVA, Inc. Modbus® is a registered trademark of Schneider Electric USA, Inc. PROFINET® is a registered trademark of PROFIBUS Nutzerorganisation e.V. By default, the DXMR90-4K IO-Link Controller is set to a static IP address of 192.168.0.1.

Original Instructions
19-Jan-26

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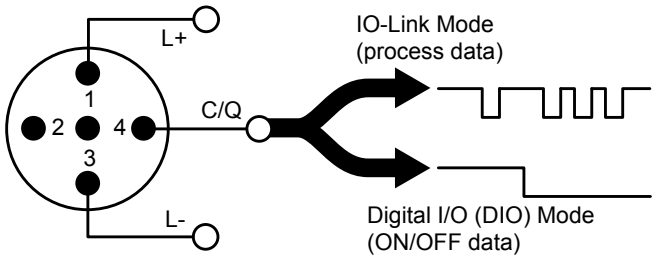
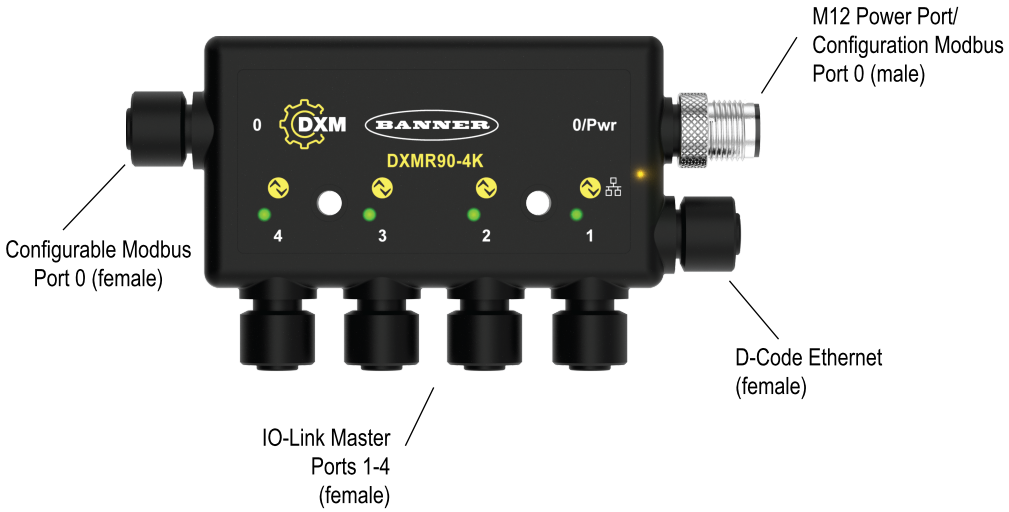
229731
p/n: 229731 Rev. F

ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

IO-Link pin assignments



DXMR90-4K IO-Link Controller ports



One male M12 connection provides common power and ground to all M12 IO-Link ports. One 100 Mbps Ethernet port (female) uses an M12 D-coded Ethernet connection.

- Modbus TCP
- EtherNet/IP
- PROFINET
- Configuration/discovery port

Four IO-Link controller connections using female M12 connectors.

- Separate IO-Link control and programmability for each connection point
- Configurable SIO mode on Input 1 and Input 2 of each IO-Link port

The DXMR90-4K IO-Link Controller has four Class A ports. Pin 2 on these is an additional discrete IO channel. For specific pinout connections, see Wiring.

For more information on the device registers and port settings of the DXMR90-4K IO-Link Controller, refer to the IO-Link Master Device Register Map (p/n 229732).

Installation Instructions

Installing the DXMR90-4K

Install the DXMR90-4K to allow access for functional checks, maintenance, and service or replacement.

Fasteners must be of sufficient strength to guard against breakage. The use of permanent fasteners or locking hardware is recommended to prevent the loosening or displacement of the device. The mounting hole (4.5 mm) in the DXMR90-4K accepts M4 (#8) hardware. See the figure below to help in determining the minimum screw length.

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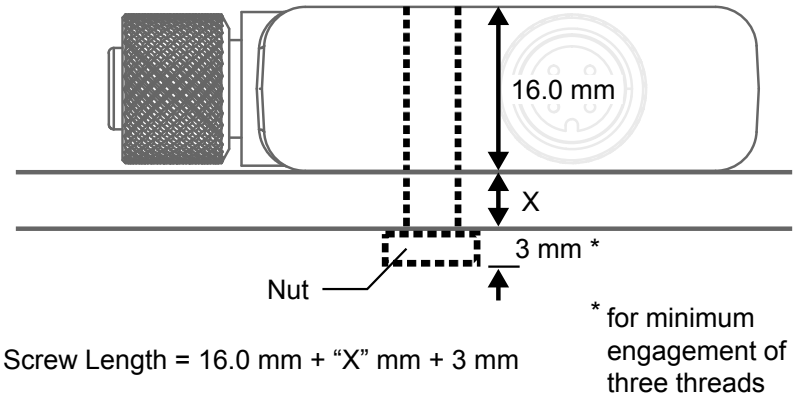
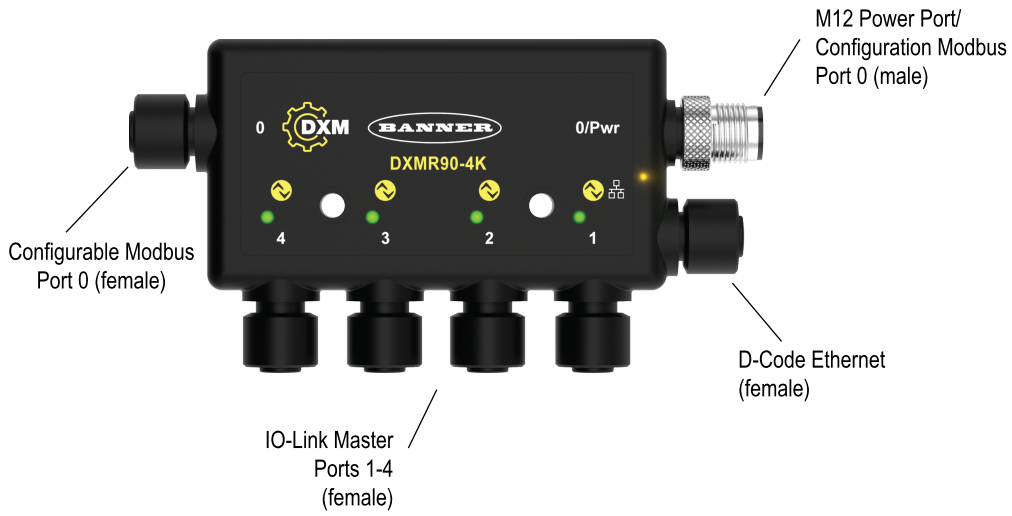


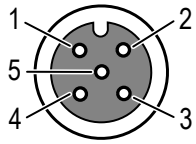
CAUTION: Do not overtighten the DXMR90-4K's mounting screw during installation. Overtightening can affect the performance of the DXMR90-4K.

Wiring

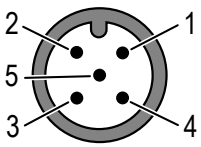
DXMR90-4K IO-Link Controller ports



Ports 1-4 female connector

Port 1–4 5-pin M12 female connector	Pin	Wire Color	Description
	1	Brown (bn)	18 V DC to 30 V DC
	2	White (wh)	I/Q (digital in-out)
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	C/Q (communications/digital in-out)
	5	Gray (gy)	No connection/not used

Port 0 male connector

Port 0 5-pin M12 male connector	Pin	Wire Color	Description
	1	Brown (bn)	18 V DC to 30 V DC
	2	White (wh)	RS485 / D1 / B / +
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	RS485 / D0 / A / -
	5		No connection/not used

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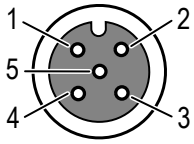
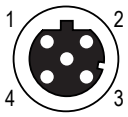
Port 0 female connector

Port 0 5-pin M12 female connector	Pin	Wire Color	Description
	1	Brown (bn)	18 V DC to 30 V DC
	2	White (wh)	RS485 / D1 / B / +
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	RS485 / D0 / A / -
	5		No connection/not used

D-coded industrial Ethernet connector

5-pin D-code female Industrial Ethernet Connector	Pin	Wire Color	Description
	1	Black (bk)	+Tx
	2	Red (rd)	+Rx
	3	Green (gn)	–Tx
	4	White (wh)	–Rx
	5		No connection/not used

Specifications

Supply Voltage
18 V DC to 30 V DC

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Power Consumption
100 mA at 24 V DC

Construction
Connector Body: PVC translucent black

Indicators
Amber/green: Program status indicators
Amber/green: Ethernet communications
Red/amber/green/blue on port 1: IO-Link Port 1 Status
Red/amber/green/blue on port 2: IO-Link Port 2 Status
Red/amber/green/blue on port 3: IO-Link Port 3 Status
Red/amber/green/blue on port 4: IO-Link Port 4 Status

Connections
Five 5-pin fixed nylon M12 female quick disconnect connector
One 5-pin nickel-plated brass M12 male quick disconnect connector
One 5-pin D-code fixed nylon M12 female quick disconnect connector

Application Note
When connecting external devices through the DXMR90-4K, it is important not to exceed the maximum current limitations of 3.5 Amps

Communication Hardware (RS-485)
Interface: 2-wire half-duplex RS-485
Baud rates: 1.2K, 2.4K, 9.6k, 19.2k (default), 38.4k, 57.6K, or 115.2K
Data format: 8 data bits, no parity, 1 stop bit

Communication Protocols
Modbus® RTU, PROFINET®, Modbus/TCP, EtherNet/IP™
EtherNet/IP™ is a trademark of ODVA, Inc. Modbus® is a registered trademark of Schneider Electric USA, Inc. PROFINET® is a registered trademark of PROFIBUS Nutzerorganisation e.V.

Security Protocols
TLS, SSL, HTTPS

Digital Inputs (SIO [DI] Mode)
Input Current: 5 mA typical
ON Voltage/Current: 15 V DC minimum/5 mA minimum
OFF Voltage: 5 V DC maximum

Digital Outputs (SIO [DO] Mode)
On-Resistance: 120 mΩ typical, 250 mΩ maximum
When in SIO mode, Pin 4 can supply up to 700 mA and Pin 2 can supply up to 1 A
Off Leakage Current: -10 µA minimum, 10 µA maximum

IO-Link Master Port Connections
Each IO-Link master port can supply up to 700 mA for the IO-Link device

IO-Link Baud Rates
COM1: 4.8 kbps
COM2: 38.4 kbps
COM3: 230.4 kbps

Operating Conditions
–40 °C to +70 °C (–40 °F to +158 °F)
90% at +70 °C maximum relative humidity (non-condensing)

Storage Temperature
–40 °C to +80 °C (–40 °F to +176 °F)

Environmental Ratings
For Indoor Use Only
IP65, IP67, NEMA 1, UL Type 1

Vibration and Mechanical Shock
Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 1.0 mm amplitude, 5 minutes sweep, 30 minutes dwell)
Meets IEC 60068-2-27 requirements (Shock: 30G 11 ms duration, half sine wave)

Certifications

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Blenheim Court
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Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

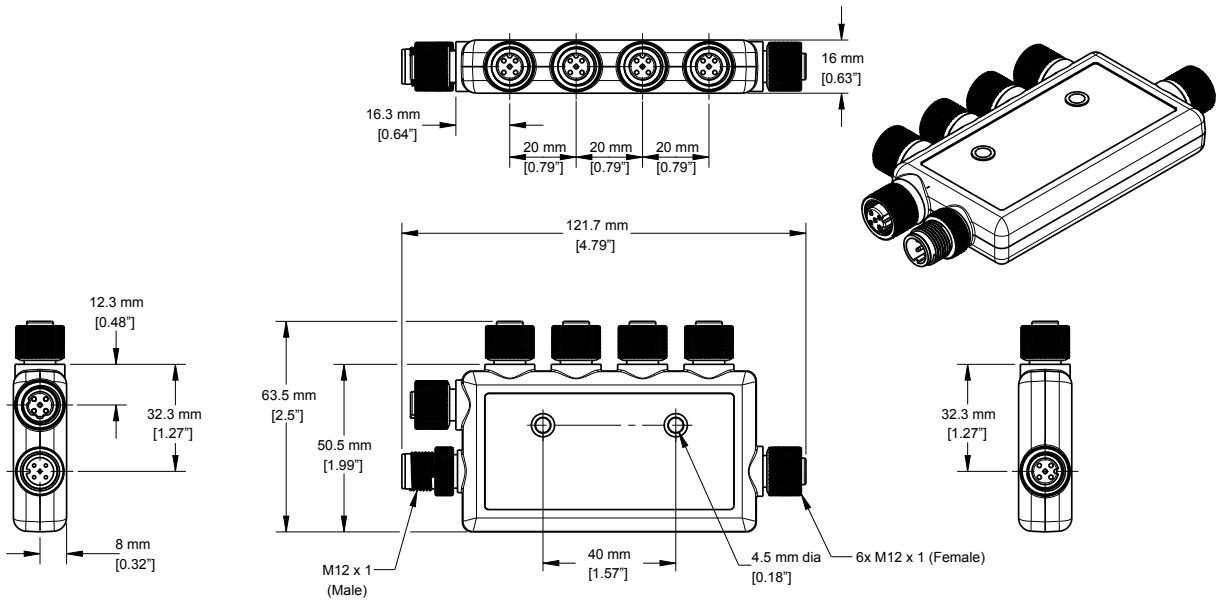
For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	2.0	30	0.5

Dimensions

All measurements are listed in millimeters, unless noted otherwise. The measurements provided are subject to change.

DXMR90-4K dimensions



DXMR90-4K Accessories

Power Supplies

PSD-24-4—DC Power Supply, Desktop style, 3.9 A, 24 V DC, Class 2, 4-pin M12 quick disconnect (QD)
PSDINP-24-06—DC power supply, 0.63 Amps, 24 V DC, with DIN Rail Mount, Class I Division 2 (Groups A, B, C, D) Rated
PSDINP-24-13 —DC power supply, 1.3 Amps, 24 V DC, with DIN Rail Mount, Class I Division 2 (Groups A, B, C, D) Rated
PSDINP-24-25 — DC power supply, 2.5 Amps, 24 V DC, with DIN Rail Mount, Class I Division 2 (Groups A, B, C, D) Rated
PSW-24-1—DC power supply with multi-blade wall plug, 100–240 V AC 50/60 Hz input, 24 V DC 1 A output, UL Listed Class 2, 4-pin female M12 connector
PSWB-24-1—DC power supply with multi-blade wall plug,100–240 V AC 50/60 Hz input, 24 V DC 1 A output, UL Listed Class 2, barrel jack connector

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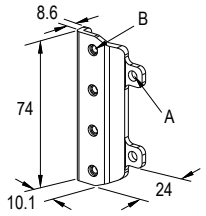
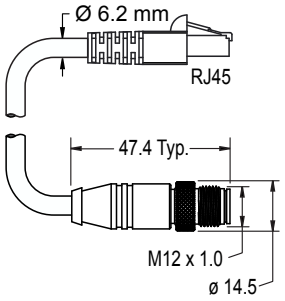
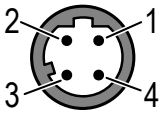
SMBR90S

- Stainless steel bracket
- 4x M4-07 pemnuts (B)
- Includes 2x M4 stainless steel hex head screws and flat washers
- CAD Files: DXF, PDF, IGS, STP

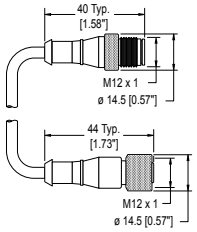
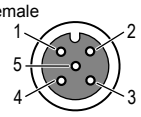
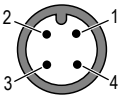
Hole center spacing: A = 40, B = 20
Hole size: A = ø 5



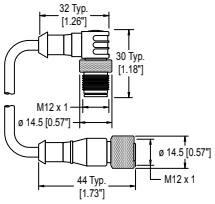
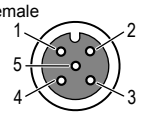
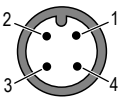
Double-Ended 4-pin M12 Male D-code to 8-Pin RJ45 Male Shielded Ethernet Cordsets

Model	Length	Dimensions	RJ45 Pinout (Male)	M12 Pinout (Male)
STP-M12D-403	0.9 m (2.95 ft)		 1 = White/Orange 2 = Orange 3 = White/Blue 6 = Blue	 1 = White/orange 2 = White/blue 3 = Orange 4 = Blue
STP-M12D-406	1.83 m (6 ft)			
STP-M12D-415	4.57 m (15 ft)			
STP-M12D-430	9.14 m (30 ft)			

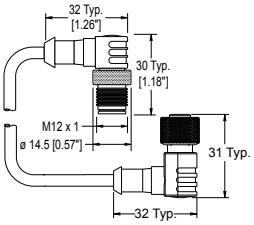
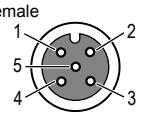
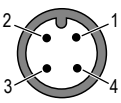
4-pin A-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 236186)

Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-3	3 m (9.84 ft)			
BC-M12F4-M12M4-22-4	4 m (13.12 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4-22-15	15 m (49.2 ft)			

4-pin A-Code Double-Ended M12 Female to M12 Male Right-Angle Cordsets (datasheet p/n 236186)

Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4-M12M4A-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4-M12M4A-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4A-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4A-22-8	8 m (26.25 ft)			
BC-M12F4-M12M4A-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4A-22-15	15 m (49.2 ft)			

4-pin A-Code Double-Ended M12 Female Right-Angle to M12 Male Right-Angle Cordsets (datasheet p/n 236186)

Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4A-M12M4A-22-0.3	0.3 m (1 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4A-M12M4A-22-1	1 m (3.28 ft)			
BC-M12F4A-M12M4A-22-2	2 m (6.56 ft)			
BC-M12F4A-M12M4A-22-5	5 m (16.4 ft)			
BC-M12F4A-M12M4A-22-8	8 m (26.25 ft)			
BC-M12F4A-M12M4A-22-10	10 m (30.81 ft)			
BC-M12F4A-M12M4A-22-15	15 m (49.2 ft)			

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