

# DXMR90-4K IO-Link Master



## Datasheet

The DXMR90-4K IO-Link Master 4-port IO-link device serves as the gateway for the connection of up to 4 IO-link devices including sensors, lighting products, IO-link hubs, and more.



- The configurable controller works with IO-link devices and allows for quick deployment of IO-link data to Ethernet/IP and Modbus TCP, and Modbus RTU networks.
- Four independent IO-Link master ports
- Local control or connectivity with:
  - Automation protocols including EtherNet/IP, Modbus/TCP, and Modbus RTU
  - Internet protocols including RESTful API and MQTT with web services from AWS

- Logic processing and problem solving 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, MicroPython, and ScriptBasic programming

## Models

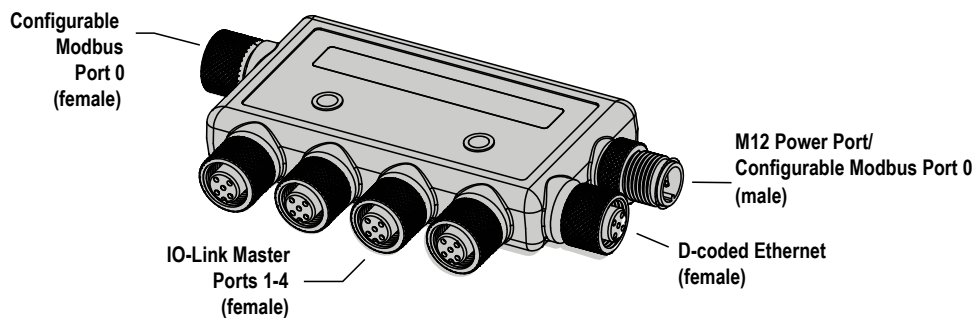
Model	Ethernet Connection	IO-Link Master Connections	Other Connections
DXMR90-4K	One female M12 D-Code Ethernet Connector	Four female M12 connections for IO-Link master connections	One male M12 (Port 0) for incoming power

## Overview

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

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.

Figure 1. Overview of the DXMR90-4K IO-Link Master



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
- 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

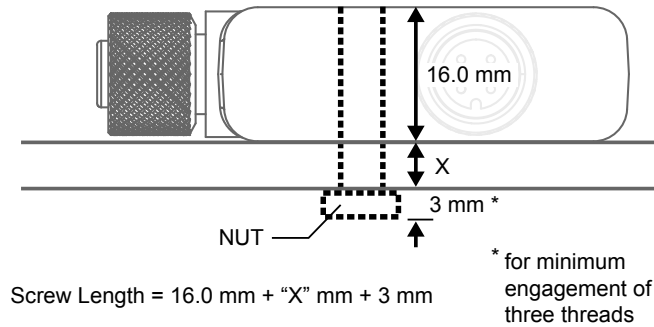


## Installation Instructions

### Mechanical Installation

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

All mounting hardware is supplied by the user. Fasteners must be of sufficient strength to guard against breakage. 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.



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

### Wiring

Table 1: Ports 1-4 female connector

Port 1-4 5-pin M12 Connector (female)	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)	Not used/reserved

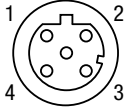
Table 2: Port 0 male connector

Port 0 4-pin M12 Connector (male)	Pin	Wire Color	Description
	1	Brown (bn)	12 V DC to 30 V DC
	2	White (wh)	RS485 / D1 / B / +
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	RS485 / D0 / A / -

Table 3: Port 0 female connector

Port 0 4-pin M12 Connector (female)	Pin	Wire Color	Description
	1	Brown (bn)	12 V DC to 30 V DC
	2	White (wh)	RS485 / D1 / B / +
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	RS485 / D0 / A / -

Table 4: D-coded industrial Ethernet connector

4-pin Industrial Ethernet Connector (female)	Pin	Wire Color	Description
	1	Black (bk)	+Tx
	2	Red (rd)	+Rx
	3	Green (gn)	-Tx
	4	White (wh)	-Rx

## Specifications

### Supply Voltage

12 V DC to 30 V DC

### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

### Power Consumption

24 V DC at 100 mA + 200 mA/port = 900 mA maximum

### Construction

Connector Body: PVC translucent black

### Communication Protocols

Modbus® RTU, Modbus/TCP, EtherNet/IP™ 1

### 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

### Security Protocols

TLS, SSL, HTTPS

### Environmental Ratings

For Indoor Use Only

IP65, IP67, NEMA 1, UL Type 1

### 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)

### 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)

### Indicators

Green/amber: Program status indicators

Green/amber: Ethernet communications

Red/green/blue on port 1: IO-Link Port 1 Status

Red/green/blue on port 2: IO-Link Port 2 Status

Red/green/blue on port 3: IO-Link Port 3 Status

Red/green/blue on port 4: IO-Link Port 4 Status

### Connections

Five integral 5-pin M12 female quick disconnect

One integral 4-pin M12 male quick disconnect

One integral 5-pin M12 female D-Code quick disconnect

### Application Note

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

### 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

Current Limit: 0.7 A minimum, 1.0 A typical, 1.3 A maximum

Off Leakage Current: -10 μA minimum, 10 μA maximum

### IO-Link Baud Rates

COM1: 4.8 kbps

COM2: 38.4 kbps

COM3: 230.4 kbps

### 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](http://www.bannerengineering.com).

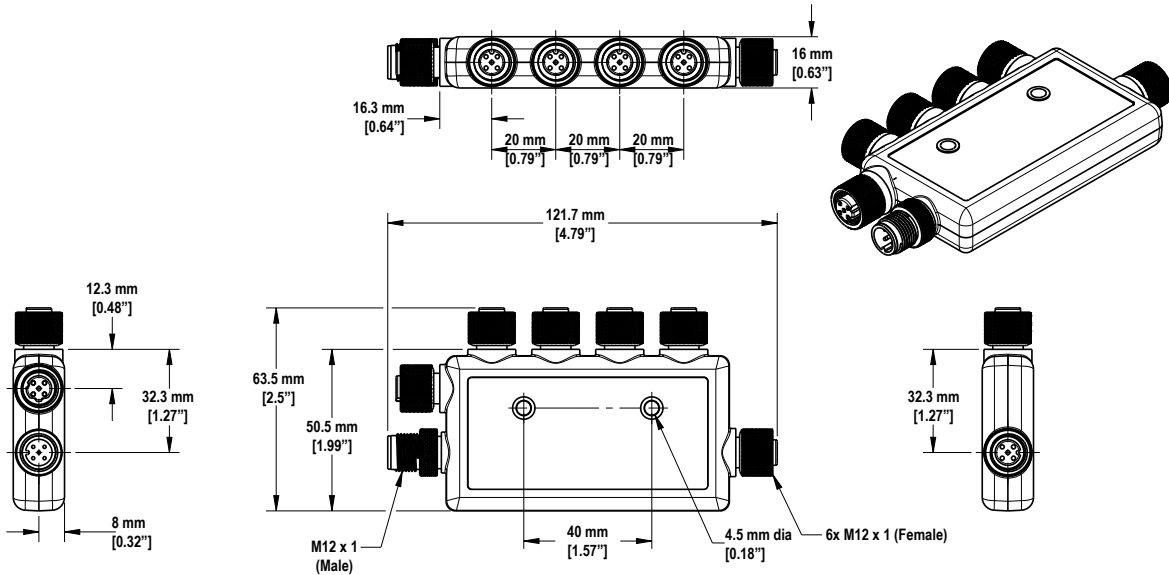
Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

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.

## Dimensions

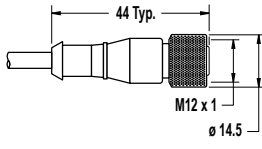
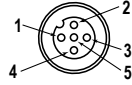
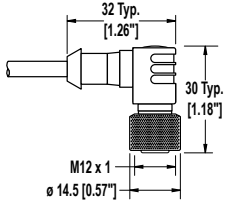
All measurements are listed in millimeters, unless noted otherwise.

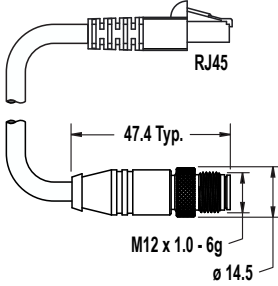
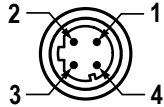
Figure 2. DXMR90-4K dimensions



## Accessories

4-Pin Threaded M12 Cordsets—Double Ended				
Model	Length	Style	Dimensions	Pinout
MQDEC-401SS	0.31 m (1 ft)	Male Straight/ Female Straight		<p>Female</p> <p>Male</p> <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDEC-403SS	0.91 m (2.99 ft)			
MQDEC-406SS	1.83 m (6 ft)			
MQDEC-412SS	3.66 m (12 ft)			
MQDEC-420SS	6.10 m (20 ft)			
MQDEC-430SS	9.14 m (30.2 ft)			
MQDEC-450SS	15.2 m (49.9 ft)	Male Right-Angle/ Female Straight		<p>Female</p> <p>Male</p> <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDEC-403RS	0.91 m (2.99 ft)			
MQDEC-406RS	1.83 m (6 ft)			
MQDEC-412RS	3.66 m (12 ft)			
MQDEC-420RS	6.10 m (20 ft)			
MQDEC-430RS	9.14 m (30.2 ft)	Male Right-Angle/ Female Right-Angle		<p>Female</p> <p>Male</p> <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDEC-450RS	15.2 m (49.9 ft)			
MQDEC-403RR	0.9 m (2.9 ft)			
MQDEC-406RR	1.8 m (5.9 ft)			
MQDEC-412RR	3.6 m (11.8 ft)	Male Right-Angle/ Female Right-Angle		<p>Female</p> <p>Male</p> <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>
MQDEC-420RR	6.1 m (20 ft)			

5-Pin Threaded M12 Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC1-501.5	0.5 m (1.5 ft)	Straight		
MQDC1-503	0.9 m (2.9 ft)			
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)			
MQDC1-560	18 m (59 ft)			
MQDC1-506RA	2 m (6.5 ft)	Right-Angle		<p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray</p>
MQDC1-515RA	5 m (16.4 ft)			
MQDC1-530RA	9 m (29.5 ft)			
MQDC1-560RA	19 m (62.3 ft)			

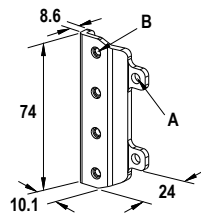
4-pin M12 D-code to RJ45 Shielded Ethernet				
Model	Length	Style	Dimensions	Pinout (Male)
STP-M12D-406	1.83 m (6 ft)	Straight		 <p>1 = White/ Orange 2 = Orange 3 = White/Blue 6 = Blue</p>
STP-M12D-415	4.57 m (15 ft)			
STP-M12D-430	9.14 m (30 ft)			

**SMBR90S**

- Stainless steel bracket
- 4x M4-07 pemnuts (B)
- Includes 2x M4 stainless steel hex head screws and flat washers

**Hole center spacing:** A = 40, B = 20

**Hole size:** A =  $\varnothing$  5



**Power Supplies**

- PSD-24-4**—DC Power Supply, Desktop style, 3.9 A, 24 V DC, Class 2, 4-pin M12/Euro-style 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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more sensors, more solutions