

DXMR190-8K Ethernet IO-Link Master Datasheet



Overview

Banner's DXMR190-8K Ethernet 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 DXMR190-8K Ethernet IO-Link Master 8-port IO-link device serves as the gateway for the connection of up to eight IO-link devices including sensors, lighting products, IO-link hubs, and more.

The DXMR190-8K contains eight IO-link ports, allowing for concurrent communication to up to eight IO-Link devices. Data is collected into the internal logic controller to facilitate edge processing, protocol conversion to Industrial Ethernet, Modbus/TCP, and PROFINET, and pushing information to web servers. In addition to IO-Link devices, the IO-Link master can be used to transmit up to 16 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, Modbus/TCP, and PROFINET networks⁽¹⁾.

- Multiprotocol support allows users to stock one part that can be used with a variety of industrial control systems
- Compatible with Internet protocols including RESTful API, MQTT with web services from AWS, and Sparkplug B
- Two discrete inputs and one discrete output on each port give flexibility to system designers and simplify system architecture
- By locating IO-Link Masters near devices on the machine, users can eliminate I/O cards on the PLC, along with excess wiring to/from the control panel
- Flexible and customizable; expanded internal logic controller with action rules, MicroPython, and ScriptBasic programming
- IP67 housing simplifies installation in any location by eliminating the need for a control cabinet



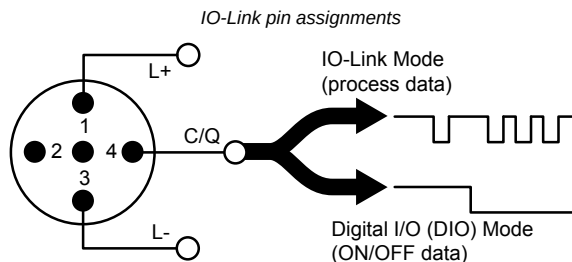
Models

Model	Ethernet Connection	IO-Link Master Connections	Other Connections
DXMR190-8K	Two female M12 D-Code Ethernet Connectors for daisy chaining and communication to a higher-level control system	Eight female M12 connections for IO-Link master connections	One male M12 for incoming power, one female M12 for daisy chaining power

Controller Connections

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 input (PNP only)
- Pin 3: 0 V
- Pin 4: Switching digital I/O (NPN, PNP, or Push-Pull) and IO-Link communication line



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

- Modbus/TCP®
- EtherNet/IP™
- PROFINET®

⁽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 DXMR190-8K Ethernet IO-Link Master is set to a static IP address of 192.168.0.1.



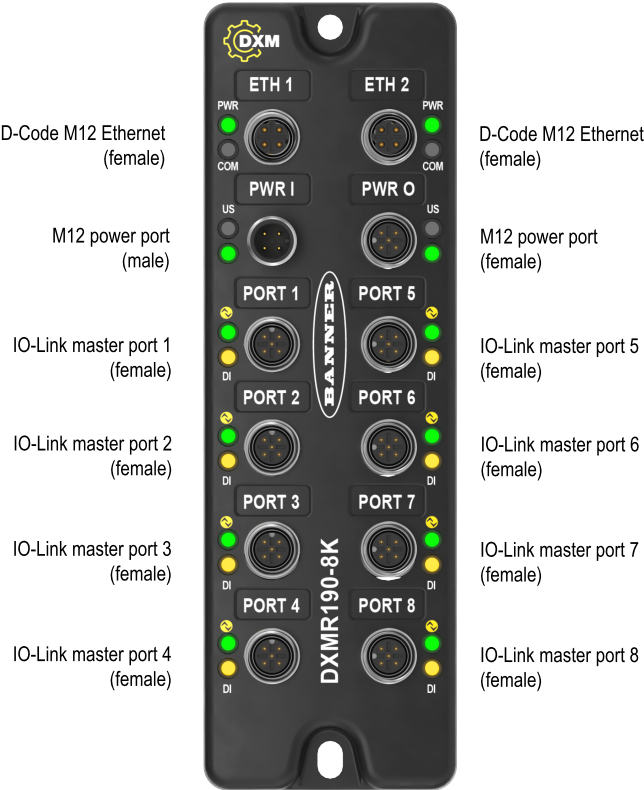
- Eight IO-Link controller connections using female M12 connectors.
- Separate IO-Link control and programmability for each connection point
 - Configurable SIO mode on Input 1 and Input 2 of each IO-Link port

The DXMR190-8K Ethernet IO-Link Master has eight Class A ports. Pin 2 on these is an additional discrete input channel. For specific pinout connections, see [Wiring](#).

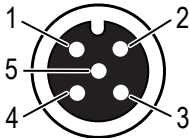
For more information on the device registers and port settings of the DXMR190-8K Ethernet IO-Link Master, refer to the DXMR190-8K Ethernet IO-Link Master IO-Link Master Device Register Map (p/n 241147).

Wiring

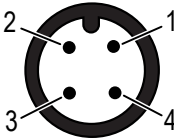
DXMR190-8K Ethernet IO-Link Master ports



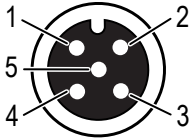
Ports 1-8 5-pin M12 female connector

Port 1-8 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)
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	C/Q (communications/digital in-out)
	5	Gray (gy)	No connection/not used

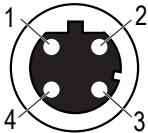
4-pin M12 male connector

4-pin M12 Male Power Connector	Pin	Wire Color	Description
	1	Brown (bn)	18 V DC to 30 V DC
	2	White (wh)	No connection/not used
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	No connection/not used

5-pin M12 female connector

5-pin M12 Female Power Connector	Pin	Wire Color	Description
	1	Brown (bn)	18 V DC to 30 V DC
	2	White (wh)	No connection/not used
	3	Blue (bu)	DC common (GND)
	4	Black (bk)	No connection/not used
	5		No connection/not used

D-code industrial Ethernet connectors

4-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

Specifications

Supply Voltage

18 V DC to 30 V DC

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Power Consumption

150 mA at 24 V DC

Application Note

When connecting external devices to the DXMR190-8K, it is important that the power consumption of the IO-Link master and connected devices combined does not exceed 4 Amps

Construction

Connector Body: PVC translucent black

Indicators

Green/amber: Power status
 Green/amber: Ethernet communications
 Green/amber/red on port 1: IO-Link Port 1 Status
 Green/amber/red on port 2: IO-Link Port 2 Status
 Green/amber/red on port 3: IO-Link Port 3 Status
 Green/amber/red on port 4: IO-Link Port 4 Status
 Green/amber/red on port 5: IO-Link Port 5 Status
 Green/amber/red on port 6: IO-Link Port 6 Status
 Green/amber/red on port 7: IO-Link Port 7 Status
 Green/amber/red on port 8: IO-Link Port 8 Status

Connections

Nine 5-pin M12 female quick disconnect connectors
 One 5-pin M12 male quick disconnect connector
 Two 4-pin D-Code M12 female quick disconnect connectors

Communication Protocols

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)

When in SIO Mode, pin 4 can supply up to 500 mA
 On-Resistance: 120 mΩ typical, 250 mΩ maximum
 Off Leakage Current: -10 μA minimum, 10 μA maximum

IO-Link Master Port Connections

Each IO-Link master port can supply up to 500 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 +60 °C (-40 °F to +140 °F)
 95% at +60 °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



Banner Engineering BV
 Park Lane, Culliganlaan 2F bus 3
 1831 Diegem, BELGIUM



Turck Banner LTD Blenheim House
 Blenheim Court
 Wickford, Essex SS11 8YT
 GREAT BRITAIN



Required Overcurrent Protection



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

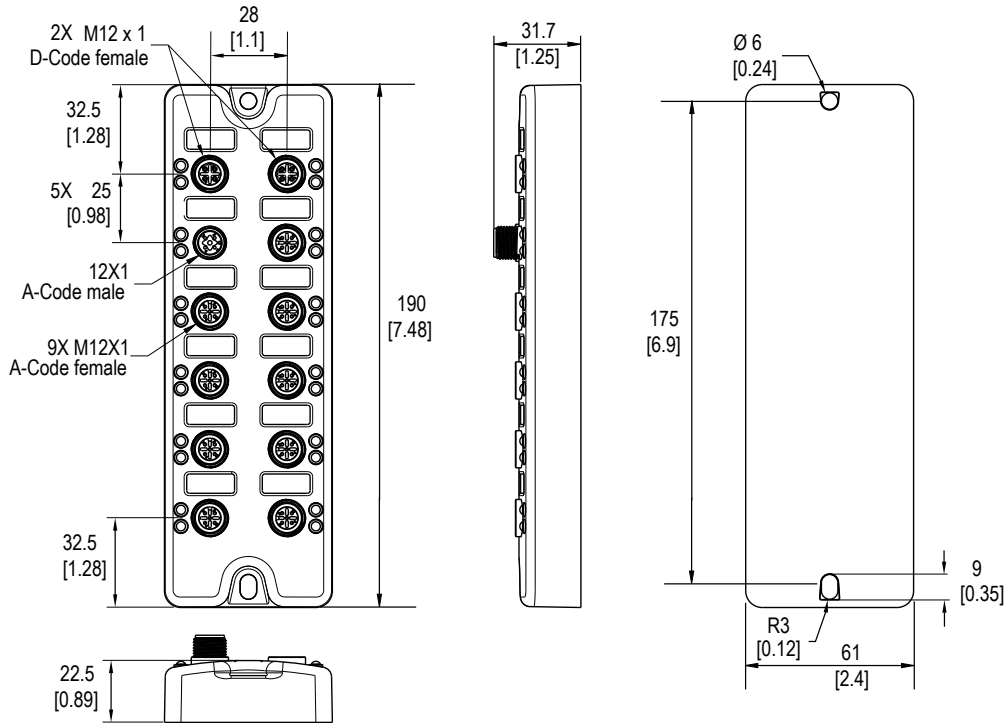
Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

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.

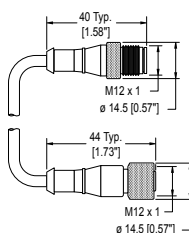
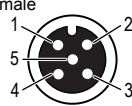
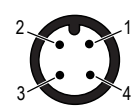


Accessories

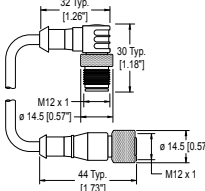
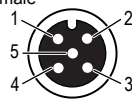
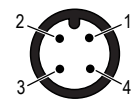
Power Supplies

- [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

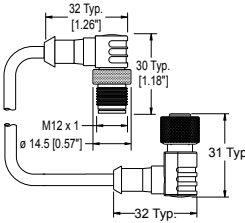
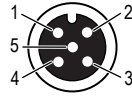
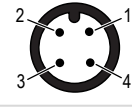
4-Pin A-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 236186)

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)			

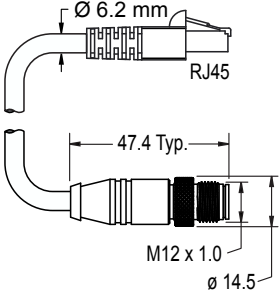
4-Pin A-Code Double-Ended M12 Female to M12 Male Right-Angle Cordsets (datasheet p/n 236186)

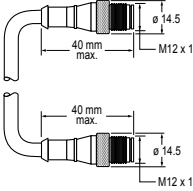
Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4-M12M4A-22-1	1 m (3.28 ft)		Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused 	
BC-M12F4-M12M4A-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4A-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4A-22-8	8 m (26.25 ft)			
BC-M12F4-M12M4A-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4A-22-15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

4-pin M12 D-code to RJ45 Shielded Ethernet

Model	Length	Style	Dimensions	Pinout (Male)
STP-M12D-406	1.83 m (6 ft)	Straight		 1 = White/Orange 2 = Orange 3 = White/Blue 6 = Blue  1 = White/Orange 2 = White/Blue 3 = Orange 4 = Blue
STP-M12D-415	4.57 m (15 ft)			
STP-M12D-430	9.14 m (30 ft)			

4-Pin D-Code Double-Ended M12 Male Ethernet Cordsets				
Model	Length	Style	Dimensions	Pinout (Male)
BCD-M12DM-M12DM-0.3M	0.3 m (13 in)	Straight		 1 = White/Orange 2 = White/Green 3 = Orange 4 = Green
BCD-M12DM-M12DM-1M	1 m (39 in)			

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