



Overview

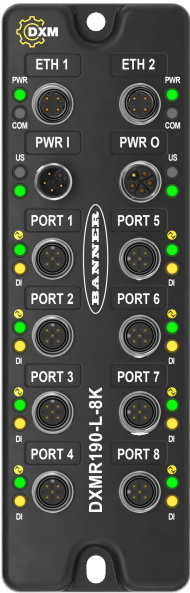
Banner's DXMR190-L-8K Ethernet IO-Link Master consolidates data from multiple sources to provide local data processing as well as accessibility for host systems as a platform for the Industrial Internet of Things (IIoT).

The DXMR190-L-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-L-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. Two L-code M12 power ports share 8 amps on power pins 1 and 3, allowing IO-Link masters to be daisy-chained without injecting extra power using splitters or power drops.

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



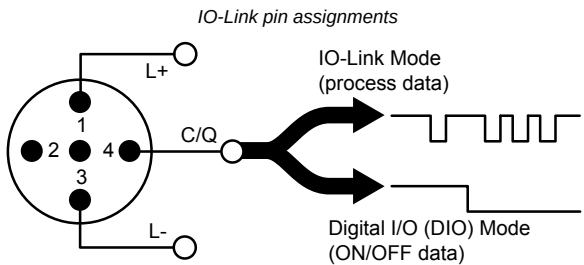
Models

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

Eight IO-Link controller connections using female M12 connectors.

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



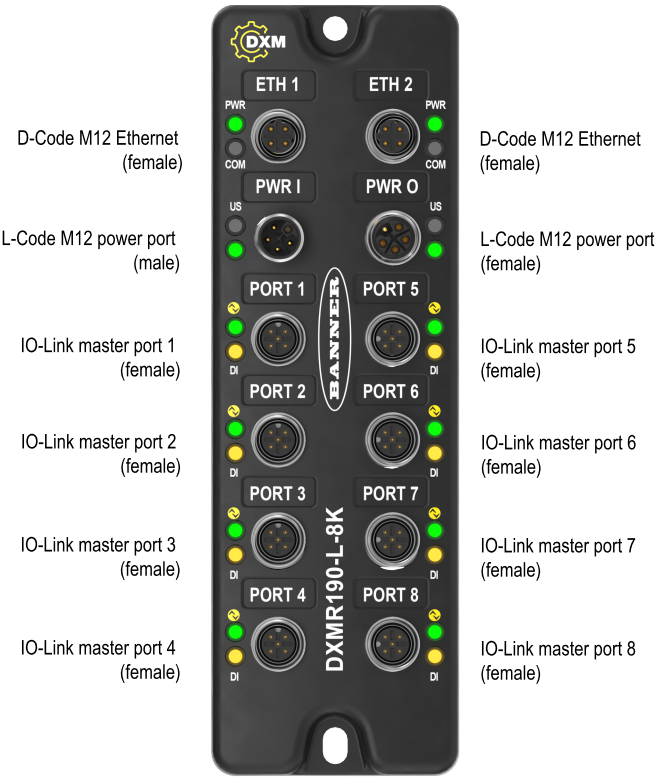
- Separate IO-Link control and programmability for each connection point
- Configurable SIO mode on Input 1 and Input 2 of each IO-Link port

The DXMR190-L-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](#).

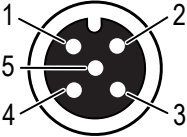
For more information on the device registers and port settings of the DXMR190-L-8K Ethernet IO-Link Master, refer to the DXMR190-L-8K Ethernet IO-Link Master IO-Link Master Device Register Map (p/n 254147).

Wiring

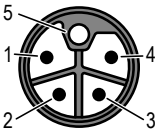
DXMR190-L-8K Ethernet IO-Link Master ports



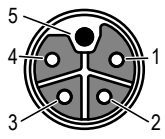
Ports 1-8 5-pin M12 female connector

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

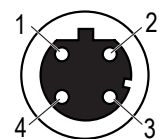
L-Code M12 male connector

5-pin L-Code 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	Gray (gy)	FE

L-Code M12 female connector

5-pin L-Code 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	Gray (gy)	FE

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 8 Amps

Construction

Connector Body: PVC translucent black

Indicators

Green/amber/red: Program status indicators
 Green: 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
 Red/green/blue on port 5: IO-Link Port 5 Status
 Red/green/blue on port 6: IO-Link Port 6 Status
 Red/green/blue on port 7: IO-Link Port 7 Status
 Red/green/blue on port 8: IO-Link Port 8 Status

Connections

Eight 5-pin M12 female quick disconnect connectors
 One 5-pin L-Code M12 male quick disconnect connector
 One 5-pin L-Code M12 female quick disconnect connector

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)
 90% 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)

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.

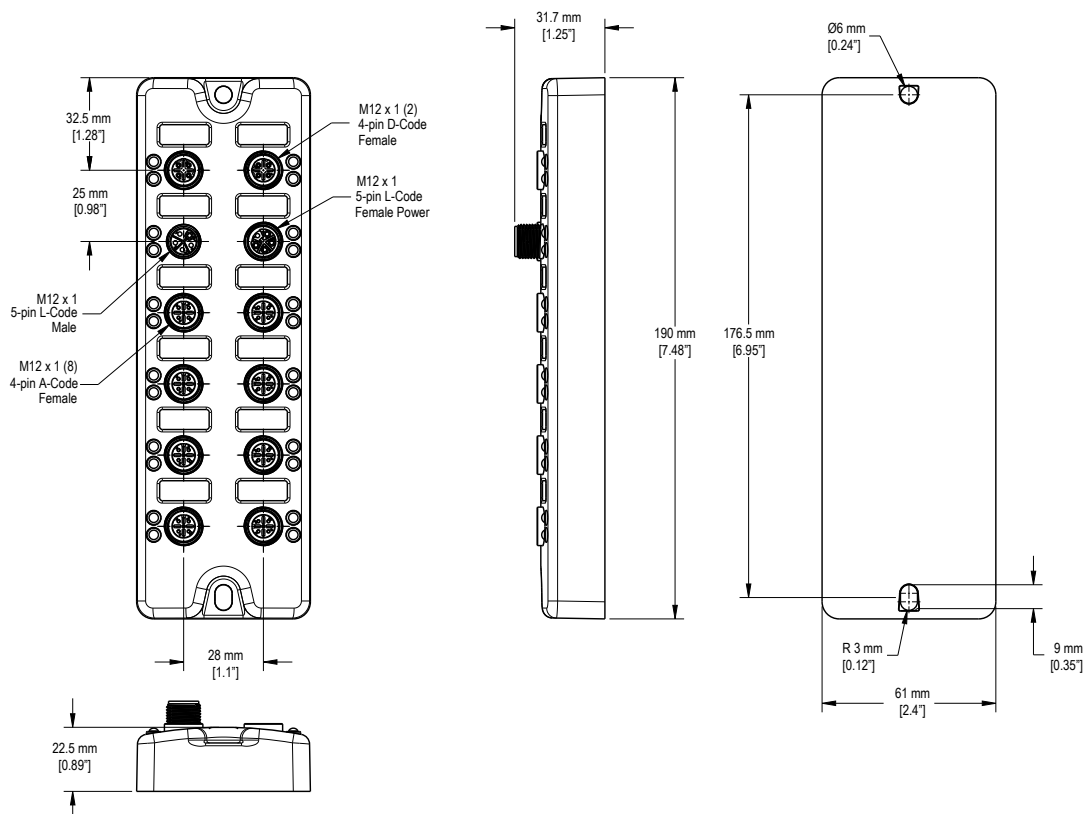
Supply wiring leads < 24 AWG shall not be spliced.

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

5-pin L-Code Single-Ended M12 Female Cordsets (datasheet p/n [242454](#))

Model	Length	Dimensions (mm)	Pinout (Female)
BCP-M12LF5-14-1	1 m (3.28 ft)		
BCP-M12LF5-14-2	2 m (6.56 ft)		
BCP-M12LF5-14-5	5 m (16.4 ft)		
BCP-M12LF5-14-10	10 m (32.8 ft)		
BCP-M12LF5-14-15	15 m (49.2 ft)		
BCP-M12LF5-14-20	20 m (65.6 ft)		

5-pin L-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 242456)

Model	Length	Dimensions (mm)	Pinout (Female)	Pinout (Male)
BCP-M12LF5-M12LM5-14-1	1 m (3.28 ft)			
BCP-M12LF5-M12LM5-14-2	2 m (6.56 ft)			
BCP-M12LF5-M12LM5-14-5	5 m (16.4 ft)			
BCP-M12LF5-M12LM5-14-10	10 m (32.8 ft)			
BCP-M12LF5-M12LM5-14-15	15 m (49.2 ft)			
BCP-M12LF5-M12LM5-14-20	20 m (65.6 ft)		1 = Brown 2 = White 3 = Blue 4 = Black 5 = Yellow/Green Shell = Braid	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Yellow/Green Shell = Braid

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

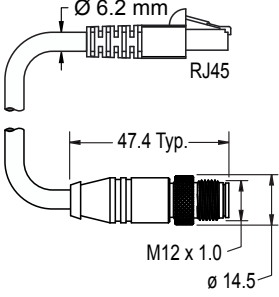
Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-3	3 m (9.84 ft)			
BC-M12F4-M12M4-22-4	4 m (13.12 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-10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

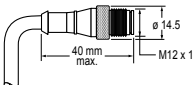
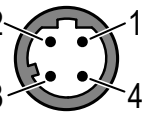
4-pin A-Code Double-Ended M12 Female to M12 Male Right-Angle Cordsets (datasheet p/n 236186)

Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4-M12M4A-22-1	1 m (3.28 ft)		Female 	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 	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
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)			

Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.