Remote I/O

R95C-8UI-MQ

DXMR110-8K

R45C-KII-IIQ

BANNER ®

Remote I/O Solutions from Banner

Remote I/O Blocks from Banner help machine builders optimize control system design, performance, and space efficiency with their compact form-factors, multi-protocol support, on-board programmability, and customization capability. Additionally, these products offer what you would expect from remote I/O blocks such as reduced wiring and costs associated with installation, integration, and diagnostics.
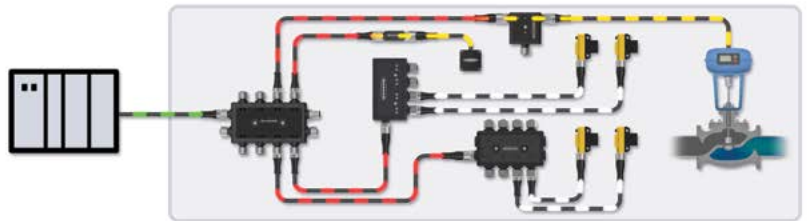

Reduce Wiring and Simplify Installation

Typically, the primary objective of machine builders using Remote I/O is to reduce wiring between field devices and the PLC located in the control panel. The graphics below illustrate the evolution of I/O management, from direct wired I/O to the most efficient IO-Link and Modbus I/O networks.
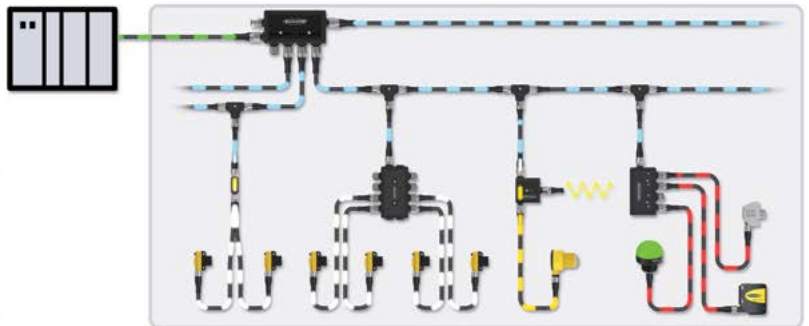
Direct Wired I/O

IO-Link Network
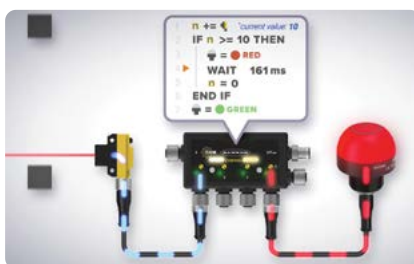

Passive (Passthrough) Junction Blocks

Modbus Network

Network I/O Blocks

Advanced Metrics and Simplified Programming

Optimize Control System Design through Customization

Versatile Housing and I/O Options

Multi-Protocol Ethernet Blocks

DXMR90 Industrial Controller

DXMR90 controllers are a central component of a Remote I/O system for device monitoring, An internal processor receives signals from sensors and other connected devices through four dedicated Modbus or IO-Link ports. The DXMR90 combines all signals into one unified stream of insightful data which can be exported via industrial Ethernet protocols.

Ethernet Connection	Modbus Connections	Other Connections	Models
One female M12 D-Code Ethernet connector	Four female M12 connections for Modbus client connections		**DXMR90-X1**
Two female M12 D-Code Ethernet Connector	Four female M12 connections for Modbus client connections	One male M12 (Port 0) for incoming power and Modbus RS-485, one female M12 for daisy chaining Port 0 signals	**DXMR90-X1E**
One female M12 D-Code Ethernet connector	Four female M12 connections for IO-Link master connections		**DXMR90-4K**

DXMR110-8K IO-Link Master

- Local control or connectivity with automation protocols, including EtherNet/IP, Modbus/TCP, and PROFINET
- Logic processing and problem-solving capable of deploying solutions to process and control data from multiple devices
- 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
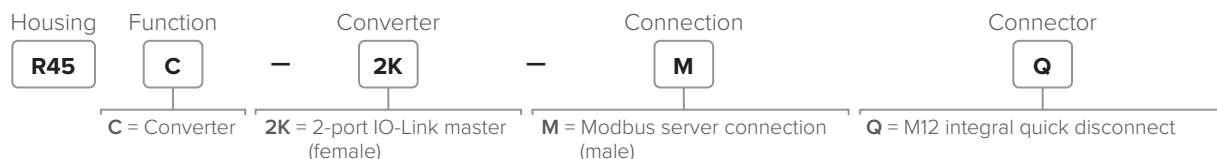
Ethernet Connection	IO-Link Master Connections	Other Connections	Models
Two female M12 D-Code Ethernet connectors for daisy chaining and communication to a higher-level control system	Eight female M12 connections for IO-Link	One male M12 for incoming power, one female M12 for daisy chaining power	**DXMR110-8K**

IO-Link Masters with Modbus RTU
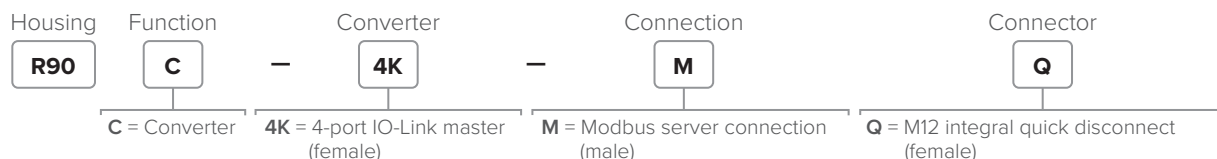
R45C IO-Link Master Modbus Converter

- Connects two IO-Link devices and provides access via Modbus RTU interface
- Rugged design; easy installation with no assembly or individual wiring required
- 5-pin M12 male quick disconnect connector
- Two 4-pin M12 female quick disconnect connectors
- Built-in indication for two IO-Link master ports
- Built-in indication for Modbus RTU connection status
- Rugged over-molded design meets IP65, IP67, and IP68

Housing	Function	Converter	Connection	Connector
R45	**C**	**2K**	**M**	**Q**
	C = Converter	**2K** = 2-port IO-Link master (female)	**M** = Modbus server connection (male)	**Q** = M12 integral quick disconnect

R90C IO-Link Master Modbus Converter

The R90C 4-Port IO-Link Master connects to four IO-Link devices and provides access to IO-Link data and functionality via a Modbus RTU connection. Modbus registers allow for access to both IO-Link devices and their functions:

- Process Data In
- Process Data Out
- Connected device information
- ISDU data
- Discrete I/O configuration
- IO-Link events
- Data storage
- SIO mode

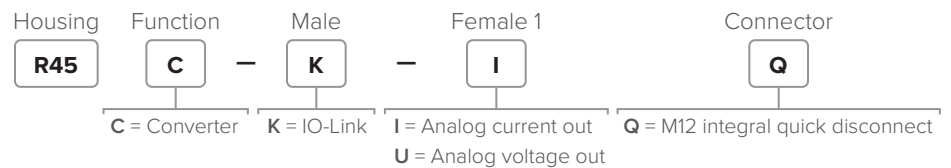| Housing	Function	Converter	Connection	Connector
R90	**C**	**4K**	**M**	**Q**
	C = Converter	**4K** = 4-port IO-Link master (female)	**M** = Modbus server connection (male)	**Q** = M12 integral quick disconnect (female)

IO-Link Hubs

S15C Hub

- Easily converts signals like 4–20 mA analog to IO-Link without any setup required
- Allows previously incompatible devices to be connected to a smart system
- Rugged over-molded design meets IP65, IP67, and IP68 standards
- Simple M12 connection for easy installation wherever needed in the circuit

S15C	—	**I**	—	**KQ**

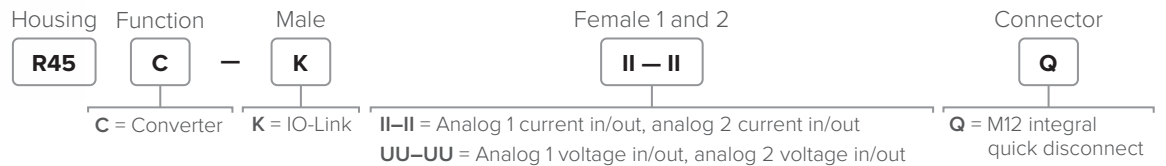**I** = 4–20 mA   **U** = 0–10 V DC   **B21** = Discrete input/output
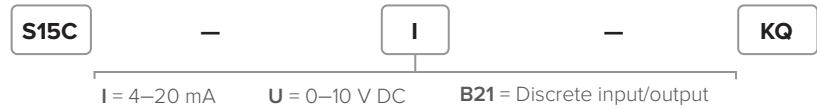
R45C IO-Link to Analog Out Hub

- Compact analog to IO-Link device converter that outputs an analog value, voltage, or current, as presented by the IO-Link master
- Rugged over-molded design meets IP65, IP67, and IP68
- Connects directly to a sensor or anywhere in-line for ease of use

Housing	Function		Male		Female 1	Connector
R45	**C**	—	**K**	—	**I**	**Q**

C = Converter   **K** = IO-Link   **I** = Analog current out   **Q** = M12 integral quick disconnect
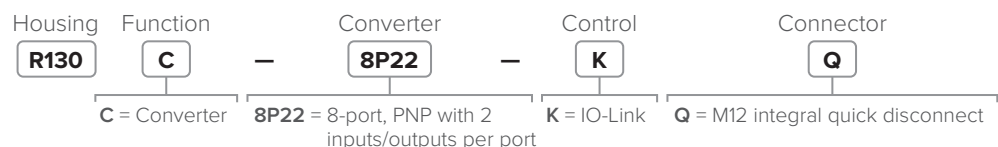**U** = Analog voltage out

R45C IO-Link to Dual Analog Input-Output Hub

- Compact IO-Link device to analog converter that outputs an analog value, voltage, or current, as presented by the IO-Link master
- The converter also connects to an analog source, voltage, or current, and outputs the value to the IO-Link master and as a representative PFM output
- Rugged over-molded design meets IP65, IP67, and IP68
- Connects directly to a sensor or anywhere in-line for ease of use

Housing	Function		Male	Female 1 and 2	Connector
R45	**C**	—	**K**	**II — II**	**Q**

C = Converter   **K** = IO-Link   **II–II** = Analog 1 current in/out, analog 2 current in/out   **Q** = M12 integral quick disconnect
UU–UU = Analog 1 voltage in/out, analog 2 voltage in/out

R130C Discrete IO-Link Hub

- Cost-efficiently integrate up to 16 devices into an IO-Link system
- Simplify wiring and installation with M12 QD cables
- Minimize the size of the control panel by locating I/O remotely on the machine, closer to sensors and other devices
- Provide power to lighting products and other devices that draw higher current with 4 amps shared across ports

Housing	Function		Converter		Control	Connector
R130	**C**	—	**8P22**	—	**K**	**Q**

C = Converter   **8P22** = 8-port, PNP with 2 inputs/outputs per port   **K** = IO-Link   **Q** = M12 integral quick disconnect

IO-Link Hubs

R90C Discrete IO-Link Hub

The R90C IO-Link Hubs connect two discrete signals to each of the unique ports, providing access to monitoring and configuring those ports with an IO-Link master. Host mirroring is available where a selected port input/output discrete signal can be routed to Pin 2 (male) on the PLC/Host connection.
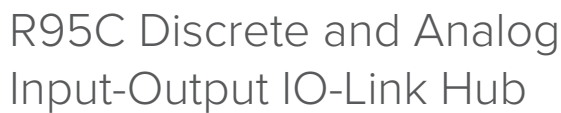
Housing	Function		Converter		Control		Connector
R90	**C**	—	**4B21**	—	**K**		**Q**
	C = Converter		**4B21** = 4-port, bimodal, 2 inputs, 1 output		**K** = IO-Link		**Q** = M12 integral quick disconnect

R95C Discrete IO-Link Hub

The R95C IO-Link Hubs connect two discrete signals to each of the unique ports, providing access to monitoring and configuring those ports with an IO-Link master. Host mirroring is available where a selected port input/output discrete signal can be routed to Pin 2 (male) on the PLC/Host connection.

Housing	Function		Converter		Control		Connector
R95	**C**	—	**8B21**	—	**K**		**Q**
	C = Converter		**8B21** = 8-port, bimodal, 2 inputs, 1 output		**K** = IO-Link		**Q** = M12 integral quick disconnect
			8B22 = 8-port, bimodal, 2 inputs, 2 outputs				

R95C Discrete and Analog Input-Output IO-Link Hub

- Compact IO-Link device converter with the ability to send 4 ports of discrete input and 4 ports of analog input data (voltage or current) to an IO-Link Master
- The IO-Link Master Process Data Output can also output discrete values and analog outputs (voltage or current) through any of the respective sets of 4 ports
- Rugged overmolded design meets IP65, IP67, and IP68

Housing	Function		Converter		Control	Connector
R95	C	—	4B4UI	—	K	Q

C = Converter **4B4UI** = 4-port, bimodal, 2 inputs/outputs per port **K** = IO-Link **Q** = M12 integral quick disconnect
4-port, analog, 4 inputs and 4 outputs.

R95C Analog Input IO-Link Hub

- Compact analog IO-Link hub that connects to a current or voltage analog source and outputs the value to an IO-Link master
- Ability to represent one of the eight analog inputs as a PFM output
- R95C IO-Link hubs are a quick, easy, and economical way to integrate non-IO-Link devices into an IO-Link system
- Rugged over-molded design meets IP65, IP67, and IP68

Housing	Function		Converter		Control	Connector
R95	C	—	8UI	—	K	Q

C = Converter **8UI** = 8-port, voltage/current analog input **K** = IO-Link **Q** = M12 integral quick disconnect

IC70 In-Cabinet IO-Link Hub

- Save space with a compact, DIN-rail mountable design
- Increase system flexibility with configurable input/output channels
- Reduce wiring and PLC logic with built-in delays and port mirroring
- Speed up troubleshooting with real-time status LEDs

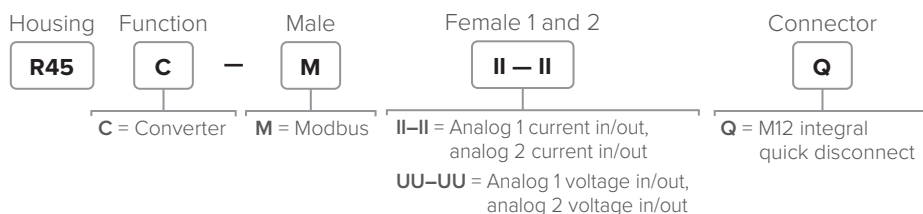| Description	Connections	Model
16-Channel PNP IO-Link Hub	Screw terminals	**IC70-16P-K**

Modbus RTU I/O Blocks

S15C Converter

- Easily converts signals like discrete, analog, and more to Modbus, which makes it easy to monitor and send data to the cloud
- Allows previously incompatible devices to be connected to a smart system
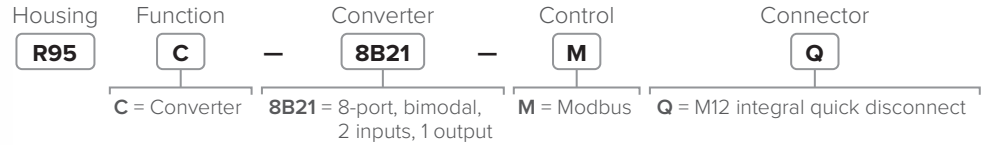- Rugged over-molded design meets IP65, IP67, and IP68 standards

Housing	Converter	Connector
S15C	— **I** —	**MQ**

I = 4–20 mA
B22 = Discrete inputs (NPN/PNP)

Q = M12 integral quick disconnect
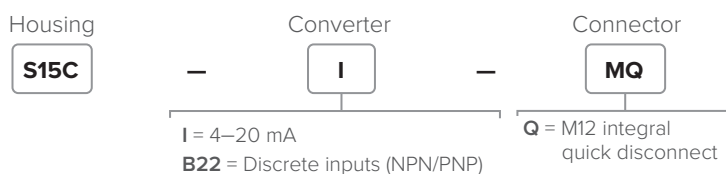
R45C Modbus to Dual Analog Input-Output Converter

- Compact Modbus to analog converter that can output an analog value, voltage, or current as presented to the appropriate Modbus register
- The converter can also connect to an analog source, voltage, or current, and outputs the value to defined Modbus register
- Rugged over-molded design meets IP65, IP67, and IP68

Housing	Function	Male	Female 1 and 2	Connector
R45	**C**	— **M**	**II — II**	**Q**

C = Converter

M = Modbus

II–II = Analog 1 current in/out, analog 2 current in/out
UU–UU = Analog 1 voltage in/out, analog 2 voltage in/out

Q = M12 integral quick disconnect

R95C Discrete Bimodal to Modbus Hub

The R95C Discrete Bimodal to Modbus Hub connects two discrete channels to each of the eight unique ports, providing access to monitoring and configuring those ports via Modbus registers. Host mirroring is available where a selected port input/output discrete signal can be routed to Pin 5 (male) on the PLC/Host connection.

Housing	Function		Converter		Control	Connector
R95	**C**	—	**8B21**	—	**M**	**Q**
	C = Converter		**8B21** = 8-port, bimodal, 2 inputs, 1 output		**M** = Modbus	**Q** = M12 integral quick disconnect

R95C Hybrid I/O Modbus Hub

• Consolidate discrete and analog I/O and sent it to a control system via Modbus RTU

• Reduce system cost and installation time with four analog I/O, plus eight discrete I/O

• Locate more I/O in a smaller space with compact design and stackable form factor

• Simplify wiring and installation by mounting on machines and not in cabinets with IP67- and IP68-rated housing

Housing	Function		Converter		Control	Connector
R95	**C**	—	**4B4UI**	—	**M**	**Q**
	C = Converter		**4B4UI** = 4 analog inputs/outputs 8 discrete (PNP or NPN) I/O		**M** = Modbus	**Q** = M12 integral quick disconnect
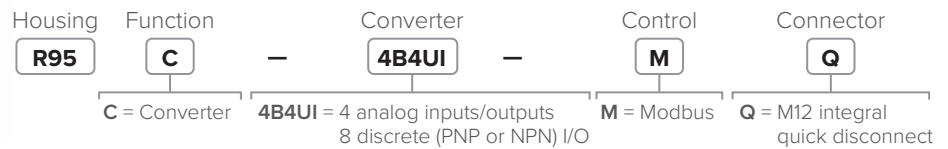
R95C Analog In to Modbus Hub

• Compact analog to Modbus device converter that connects up to eight analog sources (either current or voltage) and converts to Modbus

• R95C Modbus hubs are a quick and economical way to integrate device signals into a Modbus system

• Rugged over-molded design meets IP65, IP67, and IP68

• Connects directly to a sensor or anywhere in-line for ease of use

Housing	Function		Converter		Control	Connector
R95	**C**	—	**8UI**	—	**M**	**Q**
	C = Converter		**8UI** = 8-port, voltage/current analog input		**M** = Modbus	**Q** = M12 integral quick disconnect

Specialized I/O
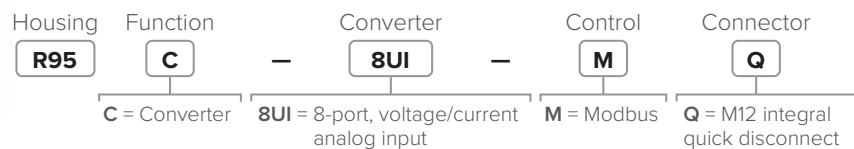
R50C Motor Driven Roller Controller

- Easily control motor driven rollers from a PLC using Modbus® communication
- Simplify installation of multiple R50Cs on a conveyor using M12 connectors and daisy-chained L-coded 16-amp motor power connections
- Can be used in refrigerated, wet, and other challenging environments with IP67-rated fully sealed housing and -40° to 70° C operating range without an additional protective enclosure
- Effortlessly monitor status and troubleshoot via LED indicators

Function	Control	Connectors	Model
2 discrete outputs and 1 analog 0-18 V output	Modbus	1 Pair: 5-pin M12 A-Code male quick-disconnect connector (power/comms) 　　　　5-pin M12 A-Code female quick-disconnect connector (MDR control) and 1 Pair: 5-pin M12 L-Code male quick-disconnect connector (aux power) 　　　　5-pin M12 L-Code female quick-disconnect connector (aux power)	**R50C-L-B22AOU-MQ**

Connectivity

Cable: PVC jacket, PUR (polyurethane) connector body, nickel-plated brass coupling nut

Conductors: 22 AWG or 24 AWG (open shield only) high-flex stranded, gold-plated contacts

Temperature: -40° to +90° C

| 44 Typ. [1.73"] | 40 Typ. [1.58"] | 32 Typ. [1.26"] | 32 Typ. [1.26"] |
| M12 x 1 ø 14.5 [0.57"] | M12 x 1 ø 14.5 [0.57"] | 30 Typ. [1.18"] M12 x 1 ø 14.5 [0.57"] | 30 Typ. [1.18"] M12 x 1 ø 14.5 [0.57"] |
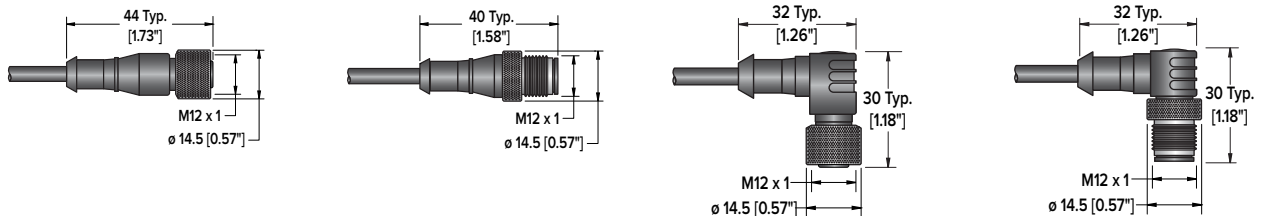
4-Pin M12 Cordsets (Voltage: 250 V dc/ac, Current: 4 A)

	Length	Straight	Right-Angle	Pinout
4-Pin Female QD to Flying Leads	1 m	BC-M12F4-22-1	BC-M12F4A-22-1	**Female**
	2 m	BC-M12F4-22-2	BC-M12F4A-22-2	1 = Brown
	5 m	BC-M12F4-22-5	BC-M12F4A-22-5	2 = White
	8 m	BC-M12F4-22-8	BC-M12F4A-22-8	3 = Blue
	10 m	BC-M12F4-22-10	BC-M12F4A-22-10	4 = Black
	15 m	BC-M12F4-22-15	BC-M12F4A-22-15	**22 AWG** Cable ø – 5.2 mm
4-Pin Male QD to Flying Leads	1 m	BC-M12M4-22-1	—	**Male**
	2 m	BC-M12M4-22-2	—	1 = Brown
	5 m	BC-M12M4-22-5	—	2 = White
	8 m	BC-M12M4-22-8	—	3 = Blue
				4 = Black
	10 m	BC-M12M4-22-10	—	**22 AWG** Cable ø – 5.2 mm

	Length	Straight/Straight (female/male)	Straight/Right-Angle (female/male)	Pinout
4-Pin Double-Ended	0.3 m	BC-M12F4-M12M4-22-0.3	BC-M12F4-M12M4A-22-0.3	**Female**
	0.5 m	BC-M12F4-M12M4-22-0.5	—	
	1 m	BC-M12F4-M12M4-22-1	BC-M12F4-M12M4A-22-1	
	2 m	BC-M12F4-M12M4-22-2	BC-M12F4-M12M4A-22-2	
	3 m	BC-M12F4-M12M4-22-3	—	1 = Brown
	4 m	BC-M12F4-M12M4-22-4	—	2 = White
	5 m	BC-M12F4-M12M4-22-5	BC-M12F4-M12M4A-22-5	**Male** 3 = Blue
	6 m	BC-M12F4-M12M4-22-6	—	4 = Black
	10 m	BC-M12F4-M12M4-22-10	BC-M12F4-M12M4A-22-10	
	15 m	BC-M12F4-M12M4-22-15	BC-M12F4-M12M4A-22-15	**22 AWG** Cable ø – 5.2 mm
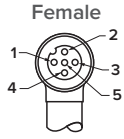
*Not all models are shown. Please contact Banner for other available lengths and double-ended styles.

Connectivity
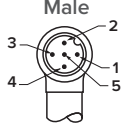
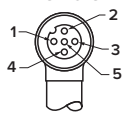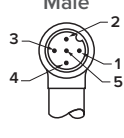 **5-Pin M12 Cordsets** (Voltage: 60 V dc/ac, Current: 4 A)

	Length	Straight	Right-Angle	Pinout	
5-Pin Female QD to Flying Leads	1 m	BC-M12F5-22-1	BC-M12F5A-22-1	**Female**	**1** = Brown
	2 m	BC-M12F5-22-2	BC-M12F5A-22-2		**2** = White
	5 m	BC-M12F5-22-5	BC-M12F5A-22-5		**3** = Blue
	8 m	BC-M12F5-22-8	BC-M12F5A-22-8		4 = Black
	10 m	BC-M12F5-22-10	BC-M12F5A-22-10		5 = Gray
	15 m	BC-M12F5-22-15	—	**22 AWG**	**Cable ø – 5.6 mm**
5-Pin Male QD to Flying Leads	1 m	BC-M12M5-22-1	—	**Male**	**1** = Brown
	2 m	BC-M12M5-22-2	—		**2** = White
	5 m	BC-M12M5-22-5	—		**3** = Blue
	8 m	BC-M12M5-22-8	—		4 = Black
	10 m	BC-M12M5-22-10	—	**22 AWG**	5 = Gray / **Cable ø – 5.6 mm**

	Length	Straight/Straight (female/male)	Straight/Right-Angle	Pinout	
5-Pin Double-Ended	1 m	BC-M12F5-M12M5-22-1	—	**Female**	
	2 m	BC-M12F5-M12M5-22-2	—		**1** = Brown
	5 m	BC-M12F5-M12M5-22-5	—	**Male**	**2** = White **3** = Blue 4 = Black 5 = Gray
	8 m	BC-M12F5-M12M5-22-8	—		
	10 m	BC-M12F5-M12M5-22-10	—	**22 AWG**	**Cable ø – 5.6 mm**
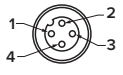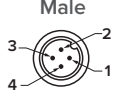
*Not all models are shown. Please contact Banner for other available lengths and double-ended styles.

M12 Coiled Cordsets

	Length	Straight	Pinout	
4-Pin Coiled Cordsets	0.8 to 1.7 m	MQDC-401.7M-PUR-C	**Female**	**1** = Brown
	1.0 to 2.6 m	MQDC-402.6M-PUR-C		**2** = White **3** = Blue
	1.2 to 3.3 m	MQDC-403.3M-PUR-C	**22 AWG**	4 = Black / **Cable ø – 5.2 mm**
4-Pin Coiled Double-Ended Cordsets	0.8 to 1.7 m	MQDEC-401.7M-PUR-C	**Female**	**1** = Brown **2** = White
	1.0 to 2.6 m	MQDEC-403.3M-PUR-C	**Male**	**3** = Blue 4 = Black
			22 AWG	**Cable ø – 5.2 mm**

M12 Splitters and Tees
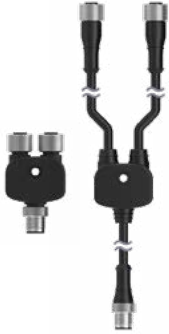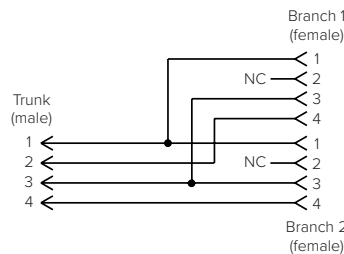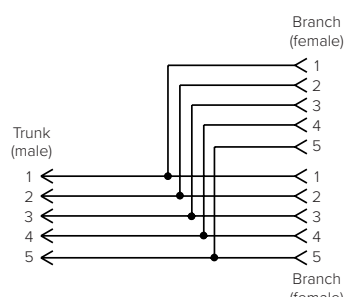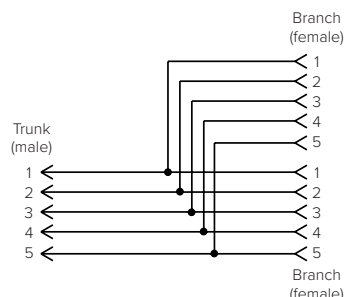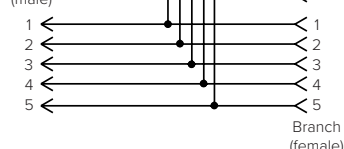
Models	Cable Lengths		Wiring Diagrams
	Branches (Female)	Trunk (Male)	
4-Pin CSB-M1240M1240	No Branch	No Trunk	
CSB-M1240M1241	2 x 0.3 m	No Trunk	
CSB-M1241M1241	2 x 0.3 m	0.3 m	
CSB-M1243M1243	2 x 1 m	1 m	
CSB-M1243M1246	2 x 2 m	1 m	
CSB-M1248M1241	2 x 0.3 m	2.4 m	
CSB-M12415M1241	2 x 0.3 m	4.6 m	
CSB-UNT425M1241	2 x 0.3 m	7.6 m Unterminated	**22 AWG** **Cable ø – 6.0 mm**
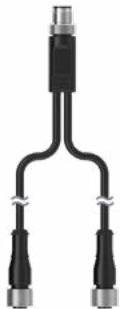
Models	Cable Lengths		Wiring Diagrams
	Branches (Female)	Trunk (Male)	
4-Pin S15YB-M124-M124-0.2M			
S15YA4-M124-M124-0.2M	2 x 0.2 m	No Trunk	
S15YA24-M124-M124-0.2M			
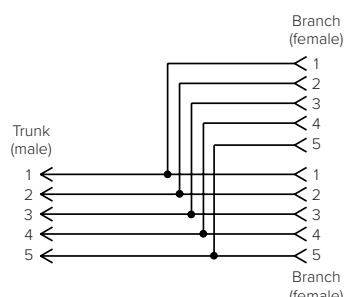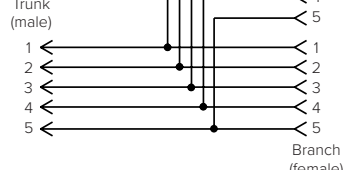
Connectivity

M12 Splitters and Tees

Models	Cable Lengths		Wiring Diagrams (applies to all branches)
	Branches	Trunk	
5-Pin CSB-M1251FM1251M	2 x 0.3 m (Male)	0.3 m (Female)	
CSB4-M1251M1250	4 x No Branch (Female)	0.3 m (Male)	

Models	Cable Lengths		Wiring Diagrams (applies to all branches)
	Branches	Trunk	
5-Pin CSB-M1250M1250-T	No Branch	No Trunk	
CSB-M1250M1250-A	No Branch	No Trunk	**22 AWG** **Cable ø – 5.6 mm**

M12 Molded Junction Blocks

Models	Cable Lengths		Wiring Diagram (applies to all branches)
	Branches (Female)	Trunk (Male)	
5-Pin R50-4M125-M125Q-P	4 x No Branch	No Trunk	
R95-8M125-M125Q-P	8 x No Branch	No Trunk	

Molded I/O Junction Blocks

Models		Cable Lengths		Wiring Diagram
		Branches (Female)	Trunk	
5-Pin	R95-8M125-C1-D24P	8 x No Branch/ Integral QD	1 m with Flying Leads	
	R95-8M125-0.3M23-D24P		0.3 m 19-pin M23 Male QD	
	R95-8M125-C1-D24		1 m with Flying Leads	
	R95-8M125-0.3M23-D24		0.3 m 19-pin M23 Male QD	

M12 Field Wireable Slide Lock

	Straight	Right-Angle	Pinout	
4-Pin Male Field Wireable	BFW-M12M4-6SL	BFWM12M4A-6SL	**Male**	**1** = Brown
				2 = White
4-Pin Female Field Wireable	BFW-M12F4-6SL	BFW-M12F4A-6SL	**Female**	**3** = Blue
				4 = Black
				22 AWG
5-Pin Male Field Wireable	BFW-M12M5-6SL	BFWM12M5A-6SL	**Male**	**1** = Brown
				2 = White
				3 = Blue
5-Pin Female Field Wireable	BFW-M12F5-6SL	BFW-M12F5A-6SL	**Female**	**4** = Black
				5 = Gray
				22 AWG

Ethernet Cordsets

	Length	Straight	Pinout	
4-Pin Male M12 to RJ45	2 m	STP-M12D-406	**Male**	**1** = Brown
	5 m	STP-M12D-415		**2** = White
				3 = Blue
	9 m	STP-M12D-430		**4** = Black
			2 x 24 Pair AWG	**Cable ø – 6.2 mm UTP Stranded**

Accessories

|					
LMBM12MAG Attaches to M12 cordset end (magnetic)	**BWA-M12CAB-MAG** Attaches to M12 cable (magnetic)	**LMBM12SP** Attaches to M12 cordset end	**ACC-CAP M12-10** Protective end cap	**LMBS15MAG** Attaches to S15C (magnetic)	**LMBS15SP** Attaches to S15C

Streamline Your IO-Link Network

The compact DXMR110-8K allows for the connection and control of up to eight IO-Link devices such as sensors, indicator lights, IO-Link hubs, without the need for multiple traditionally expensive input cards. The DXMR110-8K can communicate with higher-level control systems via EtherNet/IP, Modbus/TCP, and PROFINET. The DXMR110-8K also has the ability to push IO-Link data to cloud platforms.

DXMR110-8K System Diagram
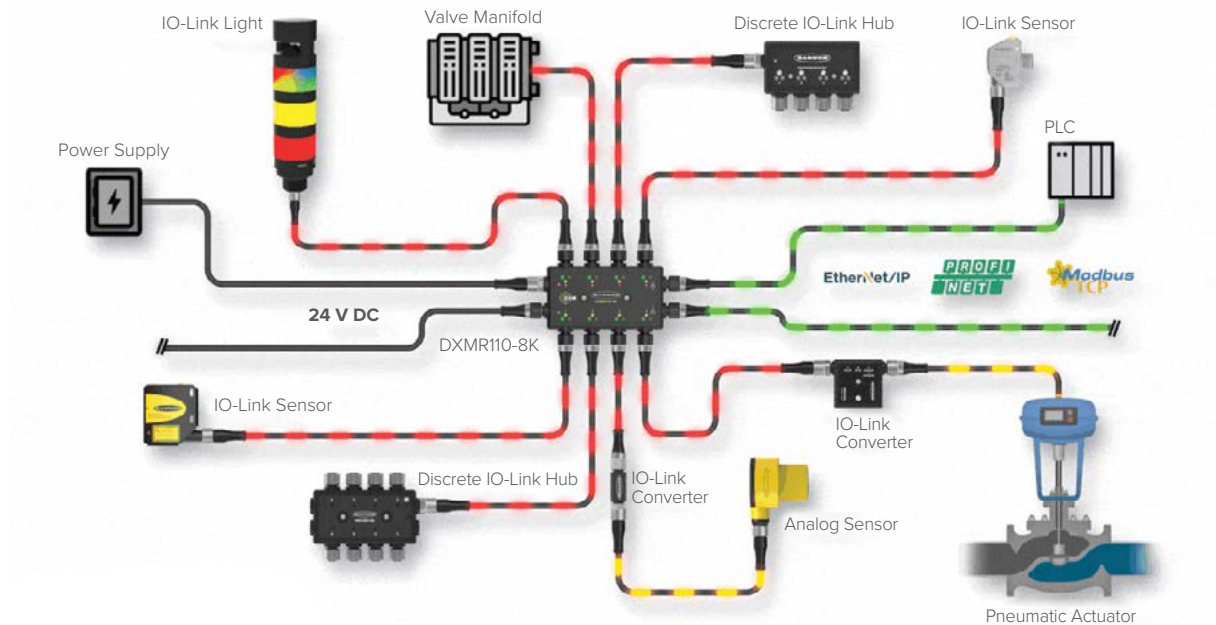
No IO-Link Device? No problem. Our expansive line of converters can adapt most industrial devices to IO-Link quickly, giving you the flexibility to build the system you need.

Connect More Devices with Ease

The DXMR90-4K allows for the connection and control of up to four IO-Link devices, replacing multiple traditionally expensive input cards. The DXMR90-4K can communicate with higher-level control systems via EtherNet/IP, Modbus/TCP, and PROFINET. This IO-Link master also has an additional serial port that allows for the connection of more devices for maximum flexibility.

DXMR90-4K System Diagram