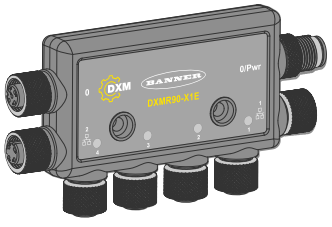
DXMR90-X1E Series Industrial Controller Datasheet

Features

The DXMR90-X1E Series Industrial Controller is an industrial controller within the Banner DXM family of controllers that consolidates, processes, and distributes data using industrial or web services protocols.



- Configurable controller works with a wide range of Modbus devices; quickly deploy Modbus server device data to EtherNet/IP™, Modbus® TCP, or PROFINET® Networks[1]
  - Four independent Modbus client ports per converter increase simplicity and decrease deployment time for co-located assets
  - Connect up to four Modbus server devices without manually assigning a server address to connected devices
  - Inline power and Ethernet switches enable multiple DXMR90-X1E controllers to be connected in series
- Local control or connectivity with automation protocols including EtherNet/IP, PROFINET, Modbus TCP, and Modbus RTU
- Compatible with Internet protocols including RESTful API, MQTT with web services from AWS, and Sparkplug B
- 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

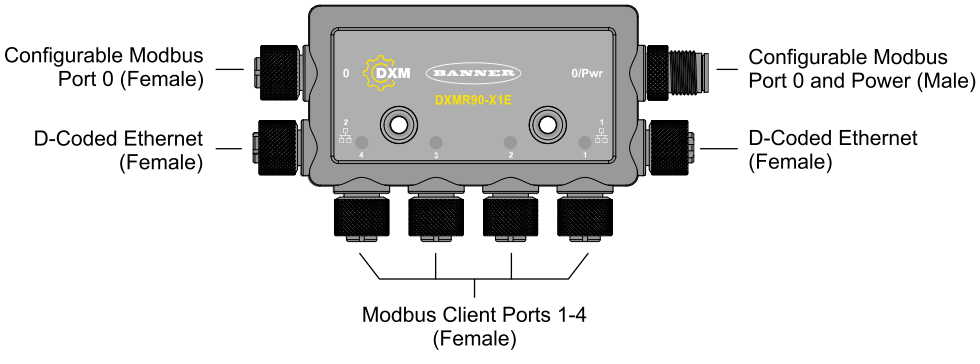
Model	Ethernet Connection	Modbus Client Connections	Other Connections
DXMR90-X1E	Two female M12 D-Code Ethernet Connectors	Four female M12 connections for Modbus client connections	One male M12 (Port 0) for incoming power and Modbus RS-485 and one female M12 for outgoing power and serially connecting Port 0 signals.

Overview

Banner's DXMR90-X1E Series Industrial Controller 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-X1E contains four individual Modbus clients allowing for concurrent communication to up to four independent networks. Data is collected into the internal logic controller to facilitate edge processing, protocol conversion to Industrial Ethernet, and pushing information to web servers.

Overview of the DXMR90-X1E Series Industrial Controller



One male M12 connection provides common power and ground to all M12 Modbus ports. The two port 0 Modbus connections can be configured as pass-through wiring to connect to a Modbus trunk and to pass power to other DXM Controllers in series. Inline power and Ethernet switches enable multiple DXMR90-X1E Controllers to be connected in series. Two 100 Mbps Ethernet ports (female) use an M12 D-coded Ethernet connection.

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

[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-X1E Series Industrial Controller is set to a static IP address of 192.168.0.1.

Original Instructions
06-Jan-25

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242713
p/n: 242713 Rev. B

ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Four Modbus client connections using female M12 connectors.

- 2-wire RS-485 physical transceiver with power/ground at each connector
- Separate Modbus client control and programmability for each connection point
- Independent and selectable baud rate and parity settings
- Individual timing and packet timing for each Modbus connection

The DXMR90-X1E is compatible with Internet protocols including RESTful API, MQTT with web services from AWS, and MQTT Sparkplug B.

Installation Instructions

Mechanical Installation

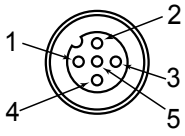
Install the DXMR90-X1E to allow access for functional checks, maintenance, and service or replacement. Do not install the DXMR90-X1E in such a way to allow for intentional defeat.

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-X1E accepts M4 (#8) hardware.

CAUTION: Do not overtighten the DXMR90-X1E's mounting screw during installation. Overtightening can affect the performance of the DXMR90-X1E.

Wiring

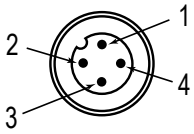
Ports 0-4 female connector

Port 0–4 5-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 / -
	5	Gray (gy)	Not used/reserved

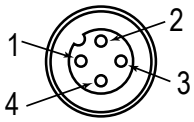
CAUTION:

- Wiring devices incorrectly will cause electrical damage.
- Do not apply more than 12 volts on pins 2 or 4 for ports 1 through 4.

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 / -

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 / -

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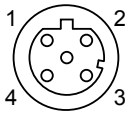
D-coded industrial Ethernet connector

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

120 mA maximum at 12 V DC

Construction

Connector Body: PVC translucent black

Indicators

Amber: Power port 0

Amber: Modbus communications port 0-4

Green/amber: Ethernet communications

Red/amber/green: User-configurable LEDs

Connections

Five integral 5-pin fixed nylon M12 female quick disconnect connectors

One integral 4-pin nickel-plated brass M12 male quick disconnect connector

Two integral 5-pin fixed nylon M12 female D-Code quick disconnect connectors

Application Note

When connecting external devices through the DXMR90-X1E, 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, Modbus/TCP, EtherNet/IP™, and PROFINET®

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

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)

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)

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	1.0	30	0.5

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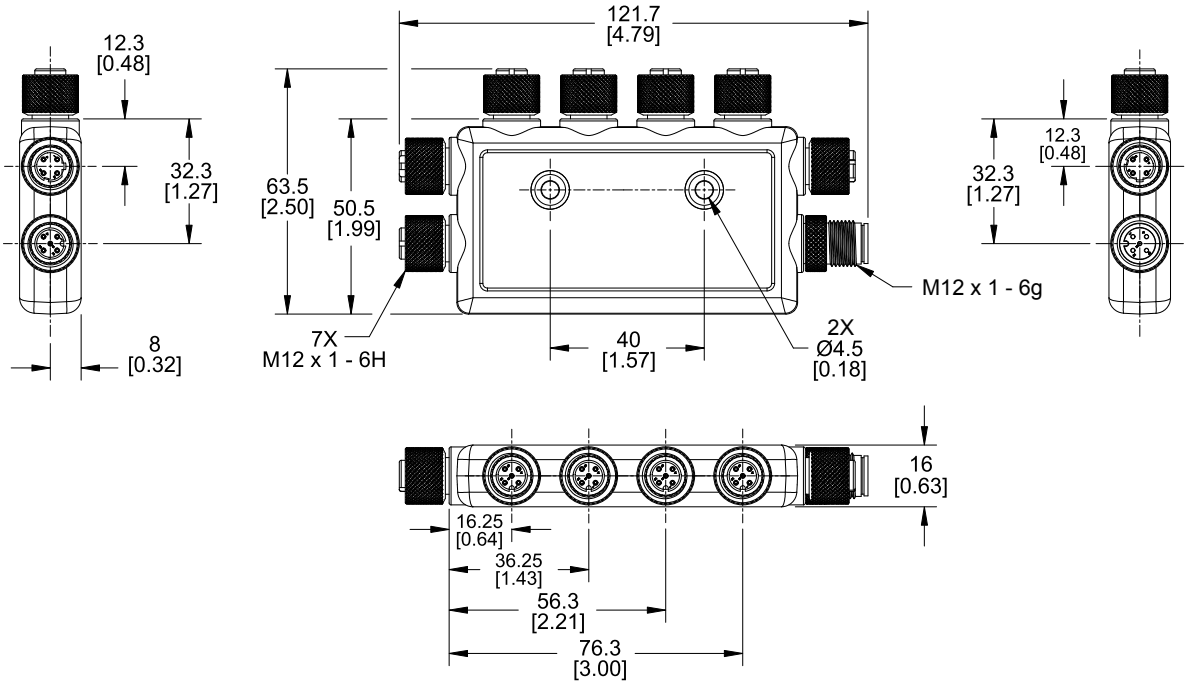
Dimensions

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

DXMR90-X1E dimensions



Accessories

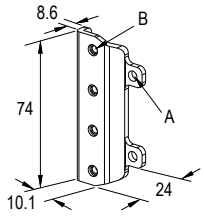
Power Supplies

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

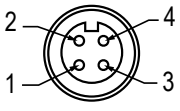
SMBR90S

- 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 = ø 5



Cordsets

4-Pin M12 Female RS-485 to USB Adapter Cordset, with Wall Plug				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
BWA-UCT-900	1 m (3.28 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black

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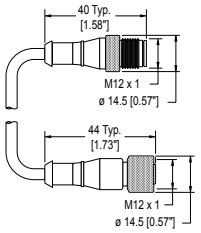
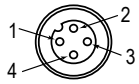
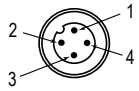
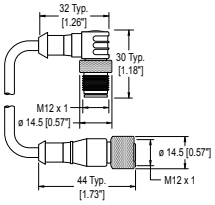
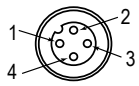
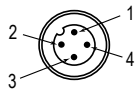
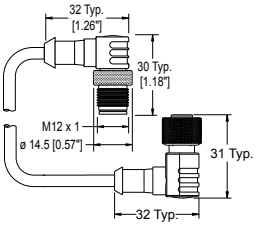
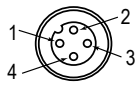
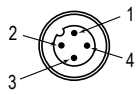
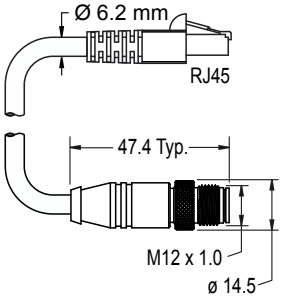
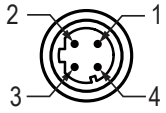
4-pin A-Code Double-Ended M12 Female to M12 Male Cordsets				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-8	8 m (26.25 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				
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
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				
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
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)			

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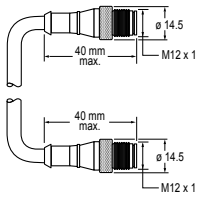
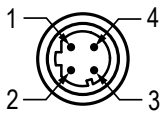
4-Pin D-Code Double-Ended M12 Male Ethernet Cordsets				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Male)**
BCD-M12DM-M12DM-0.3M	0.3 m (13 in)	Straight		 1 = White/Orange 2 = White/Green 3 = Orange 4 = Green
BCD-M12DM-M12DM-1M	1 m (39 in)			

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