Controllers

Industrial wireless controllers that facilitate industrial Internet of Things (IIoT) applications.

DXM100 Wireless Controller

The DXM100 Controller is an industrial wireless controller developed to facilitate Ethernet connectivity and Industrial Internet of Things (IIoT) applications. Available with an internal DX80 Gateway or a MultiHop Data Radio, this powerful Modbus communications device connects local wireless networks with the internet and/or host systems.

Key Features:

- ISM radios available in 900 MHz and 2.4 GHz for local wireless network
- Converts Modbus RTU to Modbus TCP/IP or Ethernet I/P
- Logic controller can be programmed using action rules and text language methods
- Cellular connectivity
- Micro SD card for data logging
- Email and text alerts
- Local I/O options: universal inputs, NMOS outputs, and analog outputs
- Powered by 12 to 30 V dc, 12 V dc solar panel, or battery backup
- RS-232, RS-485, and Ethernet communications ports; and a USB configuration port
- LCD display for I/O information and user programmable LEDs

point-to-point

point-to-multipoint

star

tree

Series: **DXM100** – Base: **B1** – Activation Method: **R1**

B1 = Modbus controller for data aggregation of sensors and wireless networks
Power: 12–30 V dc/ Solar/ Battery
Comms: RS-485, CAN, RS-232 w/flow or secondary RS-485
Inputs: (4) universal IN
Outputs: (4) NMOS OUT, (2) analog OUT (0–10 V or 4–20 mA)
Power Out: (2) Selected 5 V or 16 V switched power, (1) 5 V courtesy power

B2 = Smart valve control, SDI-12 data collection
Power: 12–30 V dc/Solar/Battery
Comms: RS-485, (1) SDI-12 sensor interface
Inputs: (4) universal IN
Outputs: (4) NMOS OUT, (2) 0-10 V analog, (2) DC Latching
Power Out: (2) Adjustable 5 V to 24 V switched power, (1) SDI switched power, and (1) 5 V courtesy power

S1* = Modbus slave I/O device for MultiHop wireless networks or wired networks
Power: 12–30 V dc/Solar/Battery
Comms: RS-485
Inputs: (4) Universal IN
Outputs: (4) NMOS OUT, (2) Analog OUT (0–10 V or 4–20 mA)
Power Out: (2) Selectable 5 V or 16 V switched power, (1) 5 V courtesy power

S2* = Modbus slave device for valve control, SDI-12 data collection for MultiHop wireless networks or wired networks
Power: 12–30 V dc/Solar/Battery
Comms: RS-485, (1) SDI-12 sensor interface
Inputs: (4) universal IN
Outputs: (4) NMOS OUT, (2) 0–10 V analog, (2) DC Latching
Power Out: (2) Adjustable 5 V to 24 V switched power, (1) SDI switched power, and (1) 5 V courtesy power

Blank = None
R1 = 900 MHz, 1 W PE5 Performance Radio (North America)
R2 = 900 MHz, 1 W HE5 MultiHop Data Radio (North America)
R3 = 2.4 GHz, 65 mW PE5 Performance Radio (Worldwide)
R4 = 2.4 GHz, 65 mW HE5 MultiHop Data Radio (Worldwide)
R5 = 900 MHz, 65 mW HE5L MultiHop Data Radio (Used for M-GAGE networks)
R8 = 900 MHz, Performance Radios approved for Australia/New Zealand
R9 = 900 MHz, MultiHop Radio approved for Australia/New Zealand

* For S1 and S2 models, only order the R2, R4, R5, and R9 radio configurations

Cellular Communication
Controllers accept Banner GSM and LTE modems only. Cellular modems are ordered separately as accessories under the following part numbers:

- GSM/3G (HSPA) – **SXI-GSM-001**
- LTE – Verizon – **SXI-LTE-001**

DXM100 Controllers Specifications

Supply Voltage	12 to 30 V dc use only with a suitable Class 2 power supply (UL) or 9 SELV (CE) powers supply or 12 V dc solar panel and 12 V sealed lead acid battery	
Power Consumption	B1 and B2 models: 35 mA average at 12 V	S1 and S2 models: 20 mA average at 12 V
Solar Power Battery Charging	1 Amp maximum with 20 Watt solar panel	
Radio (ISM Band) Transmit Power	900 MHz at 1 Watt	2.4 GHz at 65 mW
Radio Range	900 MHz, 1 Watt: Up to 9.6 km (6 miles)	2.4 GHz, 65 mW: Up to 3.2 km (2 miles)
Minimum Separation Distance	900 MHz, 1 Watt: 4.57 m (15 ft) 900 MHz, 150/250 mW: 2 m (6 ft)	2.4 GHz, 65 mW: 0.3 m (1 ft)
Antenna Connection	Ext. Reverse Polarity SMA, 50 Ohms Max Tightening Torque: 0.45 N·m (4 lbf·in)	
Radio Transmit Power	900 MHz, 1 Watt: 30 dBm (1 Watt) conducted (up to 36 dBm EIRP)	2.4 GHz, 65 mW: 18 dBm (65 mW) conducted, less than or equal to 20 dBm (100 mW EIRP)
Compliance	900 MHz Compliance (1 Watt) FCC ID UE3RM1809: This device complies with FCC Part 15, Subpart C,15.247 IC: 7044A-RM1809	2.4 GHz Compliance FCC ID UE300DX80-2400 - This device complies with FCC Part 15, Subpart C, 15.247 ETSI/EN: In accordance with EN 300 328: V1.8.1 (2012-04) IC: 7044A-DX8024
Spread Spectrum Technology	FHSS (Frequency Hopping Spread Spectrum)	
Logging	8 GB maximum; removable Micro SD card format	
Protocols	Modbus RTU Master/Slave, Modbus TCP, and Ethernet/IP	
Construction	Polycarbonate; DIN rail mount option	
Communication Hardware (RS-232)	2-wire full duplex; flow control –15 to +15 Volts signaling Baud rates: 9.6k, 19.2k (default), or 38.4k Data format: 8 data bits, no parity, 1 stop bit	
Communication Hardware (RS-485)	2-wire half duplex RS-485 Baud rates: 9.6k, 19.2k (default), or 38.4k Data format: 8 data bits, odd, even or no parity, 1 stop bit	
Universal Inputs	Discrete sinking/sourcing, 4 to 20 mA analog, 0 to 10 V analog, 10k thermistor, counter	
Courtesy Power	One output at 5 volts, 500 mA maximum	
Switched Power Outputs	B1 and S1 models: Two selectable 5 V or 16 V outputs 5 V: 400 mA maximum 16 V: 125 mA maximum	B2 and S2 models: Two adjustable 5 V or 24 V outputs One SDI-12 adjustable 5 V to 24 V output 5 V: 400 mA maximum 16 V: 125 mA maximum 24 V: 85 mA maximum
Environmental Rating	IEC IP20	
Operating Conditions	–40 °C to +85 °C (–40 °F to +185 °F) (Electronics); –20 °C to +80 °C (–4 °F to +176 °F) (LCD) 95% maximum relative humidity (non-condensing) Radiated Immunity: 10 V/m, 80-2700 MHz (EN 61000-4-3)	
Shock and Vibration	IEC 68-2-6 and IEC 68-2-27 Shock: 30g, 11 millisecond half sine wave, 18 shocks Vibration: .5 mm p-p, 10 to 60 Hz	
Analog Outputs	0 to 20 mA or 0 to 10 V dc output Accuracy: 0.1% of full scale +0.01% per °C Resolution: 12 bit	
Certifications	CE	

DXM150 Wireless Controller

The DXM150 Controller is an industrial wireless controller developed to facilitate Ethernet connectivity and Industrial Internet of Things (IIoT) applications. Available with an internal DX80 Gateway or a MultiHop Data Radio, this powerful Modbus communications device has expanded I/O options and connects local wireless networks with the internet and/or host systems.

Key Features:

- ISM radios available in 900 MHz and 2.4 GHz for local wireless network
- Converts Modbus RTU to Modbus TCP/IP or Ethernet I/P
- Logic controller can be programmed using action rules and text language methods
- Cellular connectivity
- Micro SD card for data logging
- Email and text alerts
- Local I/O options: 8 universal inputs, NMOS outputs, and relay and analog outputs
- Powered by 12 to 30 V dc, 12 V dc solar panel, or battery backup
- RS-232, RS-485, and Ethernet communications ports; and a USB configuration port
- LCD display for I/O information and user programmable LEDs

point-to-point

point-to-multipoint

star

tree

Series: **DXM150** — Base: **B1**

B1 = Modbus controller designed for applications with high I/O count, isolated inputs or integrated relays
Power: 12–30 V dc/ Solar/ Battery
Comms: RS-485 and RS-232 / CAN or secondary RS-485
Inputs: (2) Isolated discrete, (8) Universal
Outputs: (2) Relay, (4) NMOS, (2) Analog
Power Out: (2) Jumper selectable between 2.7 V or battery, 4.2 V or incoming power

B2 = Modbus controller for high I/O count applications
Power: 12-30 V dc/Solar/Battery
Comms: RS-485 and RS-232 w/flow control or secondary RS-485
Inputs: (2) Isolated discrete, (8) Universal
Outputs: (8) PNP/NPN Selectable, (2) Analog
Power Out: (2) Courtesy power out; (2) jumper selectable between 2.7 V or battery, 4.2 V or incoming power

S1* = Modbus slave with high I/O count for MultiHop wireless networks or wired networks
Power: 12–30 V dc/Solar/Battery
Comms: RS-485
Inputs: (2) Isolated discrete, 8 Universal
Outputs: (2) Relay, (4) NMOS Discrete, (2) Analog
Power Out: (2) Jumper selectable between 2.7 V or battery, 4.2 V or incoming power

S2* = Modbus slave with high I/O count for MultiHop wireless networks or wired networks
Power: 12–30 V dc/Solar/Battery
Comms: RS-485
Inputs: (2) Isolated discrete, (8) Universal
Outputs: (8) PNP/NPN Selectable, (2) Analog
Power Out: (2) Courtesy power out; (2) Jumper selectable between 2.7 V or battery, 4.2 V or incoming power
Outputs: (4) NMOS OUT, (2) 0–10 V analog, (2) DC Latching
Power Out: (2) Adjustable 5 V to 24 V switched power, (1) SDI switched power, and (1) 5 V courtesy power

* For S1 and S2 models, only order the R2, R4, R5, and R9 radio configurations

Activation Method: **R1**

Blank = None
R1 = 900 MHz, 1 W PE5 Performance Radio (North America)
R2 = 900 MHz, 1 W HE5 MultiHop Data Radio (North America)
R3 = 2.4 GHz, 65 mW PE5 Performance Radio (Worldwide)
R4 = 2.4 GHz, 65 mW HE5 MultiHop Data Radio (Worldwide)
R5 = 900 MHz, 65 mW HE5L MultiHop Data Radio (Used for M-GAGE networks)
R8 = 900 MHz, Performance Radios approved for Australia/New Zealand
R9 = 900 MHz, MultiHop Radio approved for Australia/New Zealand

Cellular Communication
Controllers accept Banner GSM and LTE modems only. Cellular modems are ordered separately as accessories under the following part numbers:

- GSM/3G (HSPA) – **SXI-GSM-001**
- LTE – Verizon – **SXI-LTE-001**

DXM150 Controllers Specifications

Supply Voltage	12 to 30 V dc or 12 V dc solar panel and 12 V sealed lead acid battery	
Power Consumption	B1 and B2 models: 35 mA average at 12 V	S1 and S2 models: 20 mA average at 12 V
Solar Power Battery Charging	1 Amp maximum with 20 Watt solar panel	
Radio (ISM Band) Transmit Power	900 MHz at 1 Watt	2.4 GHz at 65 mW
Radio Range	900 MHz, 1 Watt: Up to 9.6 km (6 miles)	2.4 GHz, 65 mW: Up to 3.2 km (2 miles)
Minimum Separation Distance	900 MHz, 1 Watt: 4.57 m (15 ft)	2.4 GHz, 65 mW: 0.3 m (1 ft)
Antenna Connection	Ext. Reverse Polarity SMA, 50 Ohms Max Tightening Torque: 0.45 N·m (4 lbf·in)	
Radio Transmit Power	900 MHz, 1 Watt: 30 dBm (1 Watt) conducted (up to 36 dBm EIRP)	2.4 GHz, 65 mW: 18 dBm (65 mW) conducted, less than or equal to 20 dBm (100 mW EIRP)
Compliance	900 MHz Compliance (1 Watt) FCC ID UE3RM1809: This device complies with FCC Part 15, Subpart C,15.247 IC: 7044A-RM1809	2.4 GHz Compliance FCC ID UE300DX80-2400 - This device complies with FCC Part 15, Subpart C, 15.247 ETSI/EN: In accordance with EN 300 328: V1.8.1 (2012-04) IC: 7044A-DX8024
Spread Spectrum Technology	FHSS (Frequency Hopping Spread Spectrum)	
Logging	8 GB maximum; removable Micro SD card format	
Protocols	Modbus RTU Master/Slave, Modbus TCP, and Ethernet/IP	
Construction	Polycarbonate; DIN rail mount option	
Communication Hardware (RS-232)	Interface: 2-wire RS-232 Baud rates: 9.6k, 19.2k (default), or 38.4k via DIP switches; 1200 and 2400 via the MultiHop Configuration Tool Data format: 8 data bits, no parity, 1 stop bit	
Communication Hardware (RS-485)	Interface: 2-wire half-duplex RS-485 Baud rates: 9.6k, 19.2k (default), or 38.4k via DIP switches; 1200 and 2400 via the MultiHop Configuration Tool Data format: 8 data bits, no parity, 1 stop bit	
Switched Power Outputs	5 Volts/400 mA maximum; 16 V/125 mA maximum	
Environmental Rating	IEC IP20	
Operating Conditions	–40 °C to +85 °C (–40 °F to +185 °F) (Electronics); –20 °C to +80 °C (–4 °F to +176 °F) (LCD) 95% maximum relative humidity (non-condensing) Radiated Immunity: 10 V/m (EN 61000-4-3)	
Shock and Vibration	IEC 68-2-6 and IEC 68-2-27 Shock: 30g, 11 millisecond half sine wave, 18 shocks Vibration: .5 mm p-p, 10 to 60 Hz	
Selectable (Jumper) Power Out	Output on pin 45, jumper selects 2.7 V or battery Output on pin 35, jumper selects 4.2 V or incoming power 100 mA maximum	
Discrete Inputs	Optically isolated AC input type Input to output isolation: 2.5 kV	
Counters, Synchronous	32-bits unsigned 10 ms clock rate minimum	
Universal Inputs	Sinking/Sourcing discrete, 4–20 mA analog, 0–10 V analog, counter, and temperature 10 kOhm thermistor	
Indicators	Four LEDs, four control buttons, one LCD	
Security Protocols	VPN, SSL, and HTTPS	
Analog Outputs	0 to 20 mA or 0 to 10 V dc output Accuracy: 0.1% of full scale +0.01% per °C Resolution: 12 bit	
Discrete Output Rating (NMOS)	Less than 1 A max current at 30 V dc ON-state saturation: less than 0.7 V at 20 mA ON condition: Less than 0.7 V Off condition: Open	
Relay Outputs	One; output at 5 volts , 500 mA maximum	
Certifications	CE	