



SureCross™ DX80 Wireless Gateway

Configurable Gateway with 4 Analog 0-10V Inputs and 4 Analog 0-10V Outputs



Features

The SureCross™ DX80 is a radio frequency network system built around a Gateway and one or more Nodes.

- Wireless industrial I/O device with four analog (0-10V) inputs and four analog (0-10V) outputs
- +10 to 30V dc power input
- Modbus serial interface
- Frequency Hopping Spread Spectrum (FHSS) technology and Time Division Multiple Access (TDMA) control architecture combine to ensure reliable data delivery within the unlicensed Industrial, Scientific, and Medical (ISM) bands
- Transceivers provide two-way communication between the Gateway and Node, including fully acknowledged data transmission
- Site Survey analyzes the network's signal strength and reliability
- Lost RF links are detected and relevant outputs set to user-defined conditions
- External or internal antenna

For additional information and a complete list of accessories, including FCC approved antennas, please refer to Banner Engineering's website, www.bannerengineering.com/surecross.

Models

| Model | Power | Frequency | Antenna | I/O |
|------------------|---------------|------------------|----------|---|
| DX80G9M6S0P0V4V4 | +10 to 30V dc | 900 MHz ISM Band | External | Analog Inputs: Four 0-10V Analog Outputs: Four 0-10V |
| DX80G9M6W0P0V4V4 | | | Internal | |
| DX80G2M6S0P0V4V4 | | 2.4 GHz ISM Band | External | |
| DX80G2M6W0P0V4V4 | | | Internal | |

WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

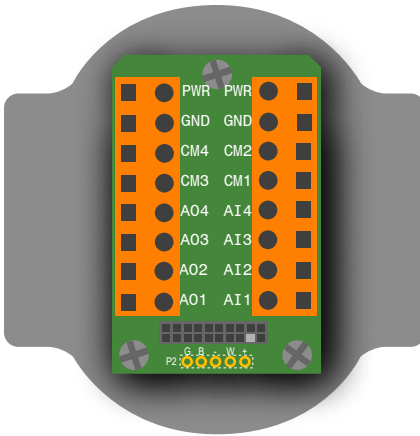
These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.



SureCross™ DX80 Wireless Gateway

Hookup Diagrams

**Gateway
I/O Terminal Block**



Modbus Register Block

| I/O Point* | Gateway Modbus Holding Register | Node Modbus Register | DX80 Mixed I/O | Terminal Block Labels |
|------------|---------------------------------|----------------------|-----------------|-----------------------|
| 1 | 1 | 1 + (Node# • 16) | Analog IN 1 | AI1 |
| 2 | 2 | 2 + (Node# • 16) | Analog IN 2 | AI2 |
| 3 | 3 | 3 + (Node# • 16) | Analog IN 3 | AI3 |
| 4 | 4 | 4 + (Node# • 16) | Analog IN 4 | AI4 |
| 5 | 5 | 5 + (Node# • 16) | | |
| 6 | 6 | 6 + (Node# • 16) | | |
| 7 | 7 | 7 + (Node# • 16) | Reserved | |
| 8 | 8 | 8 + (Node# • 16) | Device Message | |
| 9 | 9 | 9 + (Node# • 16) | Analog OUT 1 | AO1 |
| 10 | 10 | 10 + (Node# • 16) | Analog OUT 2 | AO2 |
| 11 | 11 | 11 + (Node# • 16) | Analog OUT 3 | AO3 |
| 12 | 12 | 12 + (Node# • 16) | Analog OUT 4 | AO4 |
| 13 | 13 | 13 + (Node# • 16) | | |
| 14 | 14 | 14 + (Node# • 16) | | |
| 15 | 15 | 15 + (Node# • 16) | Control Message | |
| 16 | 16 | 16 + (Node# • 16) | Reserved | |

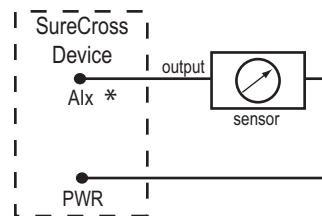
* These are the I/O points as displayed on the device LCD.

5-pin M12 Euro Hookup



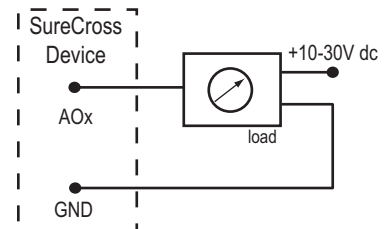
| | | |
|---|-------|--------------------|
| 1 | Brown | 10 to 30V dc Input |
| 2 | White | RS485 / D1 / B / + |
| 3 | Blue | dc common (GND) |
| 4 | Black | RS485 / D0 / A / - |
| 5 | Gray | Comms Gnd |

**Analog (Sourcing) Input Wiring
(10-30V dc Power)**



* Do not exceed analog input ratings for analog inputs. Only connect sensor outputs to analog inputs.

Analog (Sourcing) Output Wiring



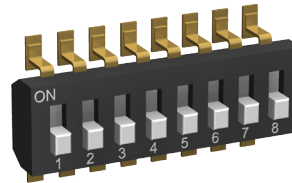
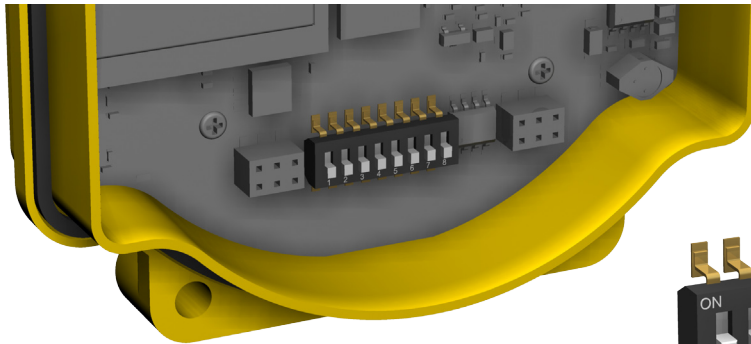
For additional information, including installation and setup, weatherproofing, device menu maps, troubleshooting, and a list of accessories, please refer to the Wireless I/O Network product manual, Banner p/n 132607.

SureCross™ DX80 Wireless Gateway

Device Configuration

| Device Settings | Switches | | | |
|----------------------------|----------|---|---|---|
| | 1 | 2 | 3 | 4 |
| Legacy Address Mode | OFF* | | | |
| DX80 Extended Address Mode | ON | | | |
| | | | | |
| | | | | |

* Default configuration



In legacy address mode, the left rotary dial establishes the network ID and the right rotary dial sets the device ID. The wireless network is restricted to a maximum of 16 devices.

Extended addressing mode allows for specific Node to Gateway binding and allows network expansion for more than 16 devices in a wireless network. For most users, this switch is OFF.

For more information on extended address mode, please refer to the SureCross™ Wireless I/O Network product manual.

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Specifications

Many of the DX80 parameters are configurable. The values in the tables represent factory defaults unless otherwise noted.

General

| | |
|--|---|
| Power* | +10 to 30V dc (For European applications: +10 to 24V dc, \pm 10%) |
| Power Consumption | Less than 1.4 W (60 mA) at 24V dc |
| Mounting | #10 or M5 (M5 hardware included) |
| M5 fasteners – Max. Tightening Torque | 0.56 N•m (5 in•lbf) |
| Case Material | Polycarbonate |
| Weight | 0.26 kg (0.57 lb.) |
| Indicators | Two LED, bi-color |
| Switches | Two Push Buttons |
| Display | Six Character LCD |
| External Cable Glands | Four PG-7 type, One 1/2 NPT type |
| Cable Glands, Max Tightening Torque | 0.56 N•m (5 in•lbf) |

* For European applications, power the DX80 from a Limited Power Source as defined in EN 60950-1.

Radio

| | 900 MHz | 2.4 GHz |
|---|--|--|
| Range, with standard 2 dB antenna* | Up to 4.8 kilometers (3 miles) | Up to 3.2 kilometers (2 miles) |
| Frequency | 902 to 928 MHz ISM band | 2.4 to 2.4835 GHz ISM Band |
| Transmit Power | 21 dBm Conducted | 18 dBm Conducted, \leq 20 dBm EIRP |
| Spread Spectrum Technology | FHSS (Frequency Hopping Spread Spectrum) | FHSS (Frequency Hopping Spread Spectrum) |
| Antenna Connector | Ext. Reverse Polarity SMA - 50 Ohms | Ext. Reverse Polarity SMA - 50 Ohms |
| Antenna - Max Tightening Torque | 0.45 N•m (4 in•lbf) | 0.45 N•m (4 in•lbf) |
| Link Timeout | Configurable, up to 2 minutes | Configurable, up to 2 minutes |

* The range depends on the environment and line of sight. High-gain antennas are available to increase the range.

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Specifications, continued

Inputs

| | |
|---------------------------------|---|
| Analog Inputs | Four, 0 to 10V |
| Analog Input Sample Rate | 125 milliseconds |
| Analog Report Rate | 1 second or on Change of State (1% change in value) |
| Accuracy | 0.1% of full scale +0.01% per °C |

Outputs

| | |
|---------------------------------------|----------------------------------|
| Analog Outputs | Four, 0 to 10V |
| Analog Update Rate | 125 milliseconds |
| Output State Following Timeout | De-energized (OFF) |
| Accuracy | 0.1% of full scale +0.01% per °C |

SureCross™ DX80 Wireless Gateway

Specifications, continued

Communications

| | |
|-------------|------------------------------------|
| Interface | 2-wire RS-485 |
| Baud Rates | 9.6k, 19.2k (default), or 38.4k |
| Data Format | 8 data bits, no parity, 1 stop bit |
| Protocol | Modbus RTU |



Environmental

| | |
|-------------------------|--|
| Environmental Rating* | IEC IP67; NEMA 6 |
| Operating Temperature** | -40 to +85° C (Electronics); -20 to +80° C (LCD) |
| Operating Humidity | 95% max. relative (non-condensing) |
| Radiated Immunity | 10 V/m, 80-2700 MHz (EN61000-6-2) |
| Shock and Vibration | IEC 68-2-6 and IEC 68-2-7 Shock: 30g, 11 millisecond half sine wave, 18 shocks Vibration: 0.5 mm p-p, 10-60 Hz |

* Please refer to the SureCross™ Wireless I/O Network product manual, Banner p/n 132607, for installation and waterproofing instructions.

** Operating the devices at the maximum operating conditions for extended periods can shorten the life of the device.

Compliance

| | |
|----------------|--|
| 900 MHz Models | FCC ID TGUDX80: This device complies with FCC Part 15, Subpart C, 15.247 IC: 7044A-DX8009  |
| 2.4 GHz Models | FCC ID UE300DX80-2400: This device complies with FCC Part 15, Subpart C, 15.247 ETSI/EN: In accordance with EN 300 328: V1.7.1 (2006-05) IC: 7044A-DX8024  |

It is Banner Engineering's intent to fully comply with all national and regional regulations regarding radio frequency emissions. Customers who want to re-export this product to a country other than that to which it was sold must ensure that the device is approved in the destination country. A list of approved countries appears in the SureCross DX80 Wireless Product Manual, in the Agency Certifications section. Consult with Banner Engineering if the destination country is not on this list.

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Notes

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The manufacturer does not take responsibility for the violation of any warning listed in this document.



CAUTION . . .

Make no modifications to this product.

Any modifications to this product not expressly approved by Banner Engineering could void the user's authority to operate the product. Contact the Factory for more information.

Always use lightning arrestors/surge protection with all remote antenna systems to avoid invalidating the Banner Engineering Corp. warranty. No surge protector can absorb all lightning strikes. Do not touch the SureCross device or any equipment connected to the SureCross device during a thunderstorm.

WARRANTY: Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

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