

# SureCross DX80 FlexPower Node



Configurable Node with switched power outputs, discrete inputs, discrete NMOS outputs, and analog inputs



The SureCross® wireless system is a radio frequency network with integrated I/O that can operate in most environments and eliminate the need for wiring runs. Wireless networks are formed around a Gateway, which acts as the wireless network master device, and one or more Nodes.

- Wireless industrial I/O device with two discrete inputs, two discrete (NMOS sinking) outputs when configured for discrete mode; two discrete inputs, two discrete outputs, and two analog inputs when configured for analog mode
- FlexPower® power options allows for +10 to 30V dc, solar, and battery power sources for low power applications.
- DIP switches for user configuration
- Multiple switched power outputs can be switch configured to provide sensor actuation voltage from the battery supply
- Frequency Hopping Spread Spectrum (FHSS) technology and Time Division Multiple Access (TDMA) control architecture ensure reliable data delivery within the unlicensed Industrial, Scientific, and Medical (ISM) band
- Transceivers provide bidirectional communication between the Gateway and Node, including fully acknowledged data transmission
- Lost RF links are detected and relevant outputs set to user-defined conditions
- The DX80...C models are certified for use in Class I, Division 2, Group A, B, C, D; Zone 2 (Category 3G) Hazardous Locations when properly installed in accordance with the National Electrical Code, the Canadian Electrical Code, or applicable local codes/regulations (see Specifications)

For additional information, updated documentation, and accessories, refer to Banner Engineering's website, [www.bannerengineering.com/surecross](http://www.bannerengineering.com/surecross).

| Models (0-20 mA Analog Inputs) | Frequency        | Environmental Rating | Inputs and Outputs  |  |
|--------------------------------|------------------|----------------------|---|--|
| DX80N9X2S2N2M2                 | 900 MHz ISM Band | IP67, NEMA 6         | <b>Discrete Mode</b><br><b>Inputs:</b> Two selectable discrete<br><b>Outputs:</b> Two NMOS discrete<br><b>Switch Power:</b> Two, Configurable | <b>Analog Mode</b><br><b>Inputs:</b> Two selectable discrete, two 0 to 20 mA analog<br><b>Outputs:</b> Two NMOS discrete<br><b>Switch Power:</b> One, Configurable |
| DX80N2X2S2N2M2                 | 2.4 GHz ISM Band |                      |   |  |
| DX80N9X2S2N2M2C                | 900 MHz ISM Band | IP20, NEMA 1         |   |  |
| DX80N2X2S2N2M2C                | 2.4 GHz ISM Band |                      |   |  |

| Models (0-10V Analog Inputs) | Frequency        | Environmental Rating | Inputs and Outputs  |  |
|------------------------------|------------------|----------------------|---|--|
| DX80N9X2S2N2V2               | 900 MHz ISM Band | IP67, NEMA 6         | <b>Discrete Mode</b><br><b>Inputs:</b> Two selectable discrete<br><b>Outputs:</b> Two NMOS discrete<br><b>Switch Power:</b> Two, Configurable | <b>Analog Mode</b><br><b>Inputs:</b> Two selectable discrete, two 0 to 10V analog<br><b>Outputs:</b> Two NMOS discrete<br><b>Switch Power:</b> One, Configurable |
| DX80N2X2S2N2V2               | 2.4 GHz ISM Band |                      |   |  |
| DX80N9X2S2N2V2C              | 900 MHz ISM Band | IP20, NEMA 1         |   |  |
| DX80N2X2S2N2V2C              | 2.4 GHz ISM Band |                      |   |  |

Internal antenna models are also available. For more information, contact your local Banner Engineering Corp. representative.





### **WARNING: Not To Be Used for Personnel Protection**

**Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death.** This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

## SureCross User Configuration Tool



The User Configuration Tool (UCT) offers an easy way to link I/O points in your wireless network, view I/O register values graphically, and set system communication parameters when a host system is not part of the wireless network.

The UCT requires a special USB to RS-485 (model number BWA-UCT-900 for 1 Watt radios, BWA-HW-006 can be used for all other radios) converter cable to pass information between your computer and the Gateway. Download the most recent revisions of the UCT software from Banner Engineering's website: <http://www.bannerengineering.com/wireless>.

## Setting Up Your Wireless Network

To set up and install your wireless network, follow these steps:

1. Configure the DIP switches of all devices.
2. Connect the sensors to the SureCross devices.
3. Apply power to all devices.
4. Form the wireless network by binding the Nodes to the Gateway. If the binding instructions are not included in the datasheet, refer to the product manual for binding instructions.
5. Observe the LED behavior to verify the devices are communicating with each other.
6. Conduct a site survey between the Gateway and Nodes. If the site survey instructions are not included in this datasheet, refer to the product manual for detailed site survey instructions.
7. Install your wireless sensor network components. If installation instructions are not included in this datasheet, refer to the product manual for detailed installation instructions.

For additional information, including installation and setup, weatherproofing, device menu maps, troubleshooting, and a list of accessories, refer to one of the following product manuals.

- SureCross Quick Start Guide: Banner part number [128185](#)
- SureCross Wireless I/O Network Manual: [132607](#)
- Web Configurator Manual (used with "Pro" and DX83 models): [134421](#)
- Host Configuration Manual [132114](#)

### Configuring the DIP Switches

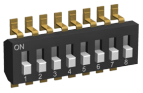
Before making any changes to the DIP switch positions, disconnect the power. DIP switch changes will not be recognized if power isn't cycled to the device.

For parameters not set via DIP switches, use the User Configuration Tool (UCT) to make configuration changes. For parameters set using the DIP switches, the DIP switch positions override any changes made using the User Configuration Tool.

### Accessing the Internal DIP Switches

To access the internal DIP switches, follow these steps:

1. Unscrew the four screws that mount the cover to the bottom housing.
2. Remove the cover from the housing without damaging the ribbon cable or the pins the cable plugs into.
3. Gently unplug the ribbon cable from the board mounted into the bottom housing.
4. Remove the black cover plate from the bottom of the device's cover.  
The DIP switches are located behind the rotary dials.



After making the necessary changes to the DIP switches, place the black cover plate back into position and gently push into place. Plug the ribbon cable in after verifying that the blocked hole lines up with the missing pin. Mount the cover back onto the housing.

### DIP Switch Settings

| Device Settings          | Switches |      |
|--------------------------|----------|------|
|                          | 1        | 2    |
| Rotary dial address mode | OFF*     |      |
| Extended address mode    | ON       |      |
| Analog Configuration     |          | OFF* |
| Discrete Configuration   |          | ON   |

\* Default configuration

#### Address Mode

The SureCross wireless devices may use one of two types of addressing modes: rotary dial addressing or extended addressing. In **rotary dial** 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** address mode uses a security code to "bind" Nodes to a specific Gateway. Bound Nodes can only send and receive information from the Gateway to which they are bound. In extended address mode, wireless networks may contain up to 48 radio devices. For more information on extended address mode, refer to the SureCross™ Wireless I/O Network product manual.

The device ships in rotary dial address mode by default, with the DIP switch in the OFF position. To use extended address mode, change the DIP switch to the ON position.

#### Analog or Discrete Configuration

Select between an analog configuration or a discrete configuration using the DIP switch specified in the table. The default switch settings for this device are all in the OFF position.

#### DIP Switch Settings for Analog Configuration (Switch 2 OFF)

Select between an analog configuration or a discrete configuration using DIP switch 2.

For analog configuration, DIP switch 2 is in the OFF position (factory default). Analog configuration has analog IN 1 linked to switch power 1 (SP1) and is programmable using switches four through eight. Sample and report rates for analog input 2 (not available in the integrated battery model) are listed in the specifications. Discrete inputs 1 and 2 are also active in this configuration and the input types are defined using switch 3. Two sinking discrete outputs are active for this configuration.

| Analog Configuration, Switch 2 OFF  | DIP Switches |      |      |     |     |     |
|-------------------------------------|--------------|------|------|-----|-----|-----|
|                                     | 3            | 4    | 5    | 6   | 7   | 8   |
| Discrete Sinking (NPN)              | OFF*         |      |      |     |     |     |
| Discrete Sourcing (PNP)             | ON           |      |      |     |     |     |
| Boost Voltage: 10V (to Analog IN 1) |              | OFF* |      |     |     |     |
| Boost Voltage: 15V (to Analog IN 1) |              | ON   |      |     |     |     |
| Warm-up Time 10 milliseconds        |              |      | OFF* |     |     |     |
| Warm-up Time 500 milliseconds       |              |      | ON   |     |     |     |
| Sample/Report Rate 1 second         |              |      |      | OFF | OFF | OFF |
| Sample/Report Rate 2 seconds        |              |      |      | OFF | OFF | ON  |
| Sample/Report Rate 4 seconds        |              |      |      | OFF | ON  | OFF |
| Sample/Report Rate 16 seconds       |              |      |      | OFF | ON  | ON  |

| Analog Configuration, Switch 2 OFF                | DIP Switches |   |   |    |     |     |
|---|--------------|---|---|----|-----|-----|
| Descriptions                                      | 3            | 4 | 5 | 6  | 7   | 8   |
| Sample/Report Rate 64 seconds                     |              |   |   | ON | OFF | OFF |
| Sample/Report Rate 5 minutes                      |              |   |   | ON | OFF | ON  |
| Modbus or UCT configured (overrides DIP switches) |              |   |   | ON | ON  | OFF |
| Sample/Report Rate 15 minutes                     |              |   |   | ON | ON  | ON  |

Analog IN 2 (not available in integrated battery model), Discrete 1, and Discrete 2 are not powered from switched power terminals. In this configuration, SP2 is disabled. If you need SP2, contact the factory.

### Boost Voltage

The boost voltage is the power supplied to the sensor powered by this FlexPower Node.

### Modbus/User Configuration Tool (UCT) or DIP Switch Configured

In Modbus/UCT Configured mode, the device parameters are changed using the User Configuration Tool (UCT) or a Modbus command. All DIP switch positions are ignored. In DIP Switch Configured mode, use the DIP switches to configure the parameters listed in the table.

### Sample and Report Rates

The sample interval, or rate, defines how often the SureCross device samples the input. For battery-powered applications, setting a slower rate extends the battery life.

The report rate defines how often the Node communicates the I/O status to the Gateway. Change of state reporting sets the system to report only when the value crosses the threshold setting. For FlexPower™ applications, setting the report rate to a slower rate extends the battery life.

### Warm-Up Time

The warm-up time defines how long the device must power up the sensor before a stable sensor reading is taken.

### DIP Switch Settings for Discrete Configuration (DIP Switch 2 ON)

The discrete configuration matches the switch power outputs (SP1, SP2) with the discrete inputs. The discrete configuration is selected when switch 2 is in the ON position. Two sinking discrete outputs are active for this configuration.

| Discrete Configuration, Switch 2 ON               | DIP Switches |      |      |     |     |     |
|---|--------------|------|------|-----|-----|-----|
| Descriptions                                      | 3            | 4    | 5    | 6   | 7   | 8   |
| Discrete Sinking (NPN)                            | OFF*         |      |      |     |     |     |
| Discrete Sourcing (PNP)                           | ON           |      |      |     |     |     |
| Boost Voltage: 5V                                 |              | OFF* |      |     |     |     |
| Boost Voltage: 10V                                |              | ON   |      |     |     |     |
| Warm-up Time 4 milliseconds                       |              |      | OFF* |     |     |     |
| Warm-up Time 10 milliseconds                      |              |      | ON   |     |     |     |
| Sample/Report Rate 62.5 milliseconds              |              |      |      | OFF | OFF | OFF |
| Sample/Report Rate 125 milliseconds               |              |      |      | OFF | OFF | ON  |
| Sample/Report Rate 250 milliseconds               |              |      |      | OFF | ON  | OFF |
| Sample/Report Rate 500 milliseconds               |              |      |      | OFF | ON  | ON  |
| Sample/Report Rate 1 second                       |              |      |      | ON  | OFF | OFF |
| Sample/Report Rate 2 seconds                      |              |      |      | ON  | OFF | ON  |
| Modbus or UCT configured (overrides DIP switches) |              |      |      | ON  | ON  | OFF |
| Sample/Report Rate 16 seconds                     |              |      |      | ON  | ON  | ON  |

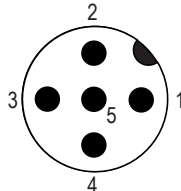
Discrete IN 1 uses switched power 1 (SP1). Discrete IN 2 uses switched power 2 (SP2).

## Wiring Your SureCross® Device

Use the following wiring diagrams to first wire the sensors and then apply power to the SureCross devices.

### 5-pin Euro-Style Wiring (Nodes)

Wiring the 5-pin Euro-style connector depends on the model and power requirements of the device. Connecting dc power to the communication pins will cause permanent damage. For FlexPower devices, do not apply more than 5.5V to the gray wire.

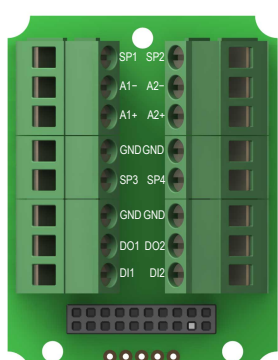
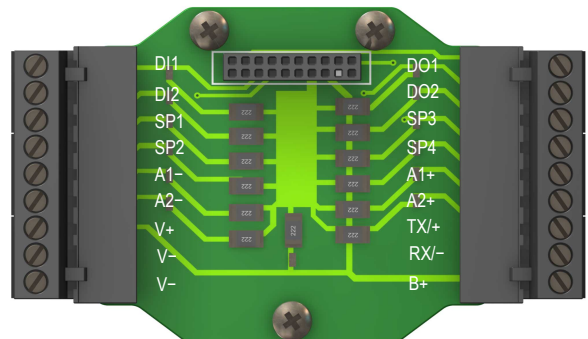
|   | Wire No. | Wire Color | 10 to 30V dc Powered Nodes | Battery Powered Nodes |
|---|----------|------------|----------------------------|-----------------------|
|  | 1        | Brown      | 10 to 30V dc               |                       |
|   | 2        | White      |                            |                       |
|   | 3        | Blue       | dc common (GND)            | dc common (GND)       |
|   | 4        | Black      |                            |                       |
|   | 5        | Gray       |                            | 3.6 to 5.5V dc        |

### DX80...C Wiring

Wiring power to the DX80...C models varies depending the power requirements of the model. Connecting dc power to the communication pins (Tx/Rx) will cause permanent damage. For FlexPower devices, do not apply more than 5.5V to the gray wire.

| Terminal Label | Gateway, DX85      | 10 to 30V dc Powered Nodes | Battery Powered Nodes |
|----------------|--------------------|----------------------------|-----------------------|
| V+             | 10 to 30V dc       | 10 to 30V dc               |                       |
| Tx/+           | RS485 / D1 / B / + |                            |                       |
| V-             | dc common (GND)    | dc common (GND)            | dc common (GND)       |
| Rx/-           | RS485 / D0 / A / - |                            |                       |
| B+             |                    |                            | 3.6 to 5.5V dc        |

### Terminal Blocks (IP67 and IP20 Base)

| IP67 Base   | IP20 Base  |
|---|--|
|  |  |

Ax+ and Ax-. Analog IN x. Analog inputs for devices requiring more than one connection, such as thermocouples or RTDs. When there is no Ax-, use Ax+ as an analog input.

DIx. Discrete IN x.

DOx. Discrete OUT x.

GND. Ground/dc common connection.

B+. 3.6 to 5.5V dc (for battery powered models only).

Rx/-. Serial comms line

Tx/+. Serial comms line

V+. Power, 10 to 30V dc power connection.

V-. Ground/dc common connection.

**IP67 Base**

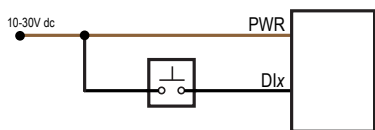
**IP20 Base**

SPx. Switch Power. Provides variable power sources for external devices. (SP3 and SP4 are not used for the factory default configuration of this model.)

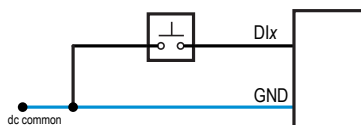
**Wiring Diagrams for Discrete Inputs**

Connecting dc power to the communication pins will cause permanent damage. For the DX8x...C models, PWR in the wiring diagram refers to V+ on the wiring board and GND in the wiring diagram refers to V- on the wiring board.

**Discrete Input Wiring for PNP Sensors**



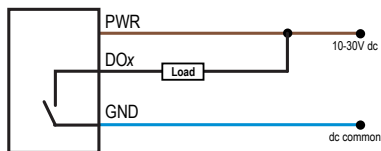
**Discrete Input Wiring for NPN Sensors**



**Wiring Diagrams for Discrete Outputs**

Connecting dc power to the communication pins will cause permanent damage. For the DX8x...C models, PWR in the wiring diagram refers to V+ on the wiring board and GND in the wiring diagram refers to V- on the wiring board.

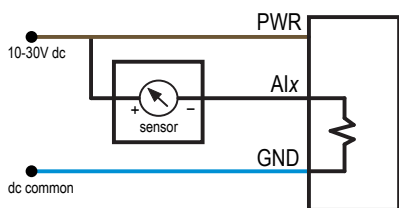
**Discrete Output Wiring (NPN or NMOS)**



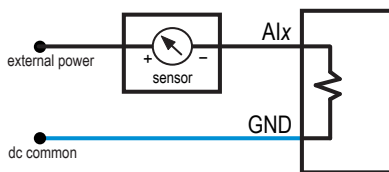
**Wiring Diagrams for Analog Inputs**

Connecting dc power to the communication pins will cause permanent damage. Do not exceed analog input ratings for analog inputs. Only connect sensor outputs to analog inputs.

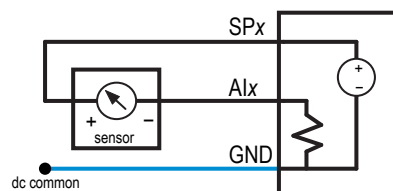
**Analog Input Wiring (10 to 30V dc Power)**



**Analog Input Wiring (4–20mA, 2-Wire, Externally Powered Sensors)**



**Analog Input Wiring (4–20mA, 2-Wire, Switch Powered Sensors)**

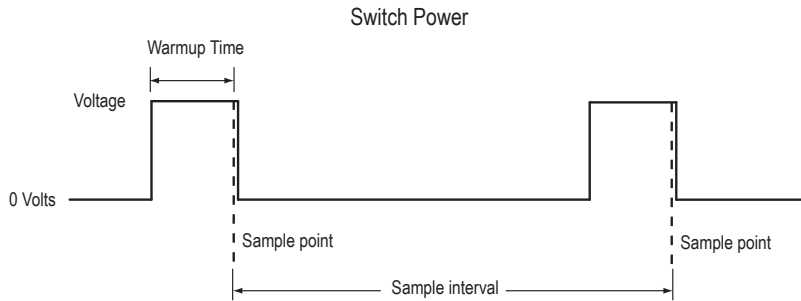


(Only possible in models with switch power (SPx) outputs)

**Switch Power (with FlexPower)**

Efficient power management technology enables some FlexPower devices to include an internal power supply, called switch power (SP), that briefly steps up to power sensors requiring 5, 10, or 15V power (ideally, 4 to 20 mA loop-powered sensors). When the switch power output cycles on, the voltage is boosted to the voltage needed to power the sensor for a specific warmup time. This warmup time denotes how long the sensor must be powered before a reliable reading can be taken. After the warmup time has passed, the input reads the sensor, then the switch power shuts off to prolong battery life. The switch power voltage, warm-up time, and sample interval are configurable parameters.

- To reduce power consumption and extend battery life, slower sample and reporting rates are used. Faster sample and report rates can be configured, but this will decrease the battery's life. For details, refer to the included table of DIP switch configurable parameters.
- The FlexPower switched power management system can operate a FlexPower Node and a sensing device for up to five years on a single lithium D cell.



### Storage Mode and Sleep Mode

While in **storage mode**, the radio does not operate. All SureCross® radios powered from an integrated battery ship from the factory in storage mode to conserve the battery. To wake the device, press and hold button 1 for five seconds. To put any FlexPower® or integrated battery SureCross radio into storage mode, press and hold button 1 for five seconds. The radio is in storage mode when the LEDs stop blinking, but in some models, the LCD remains on for an additional minute after the radio enters storage mode. After a device has entered storage mode, you must wait one minute before waking it.

During normal operation, the SureCross radio devices enter **sleep mode** after 15 minutes of operation. The radio continues to function, but the LCD goes blank. To wake the device, press any button.

### LED Behavior for the Nodes

After powering up and binding the Gateway and its Nodes, verify all devices are communicating properly. A Node will not sample its inputs until it is communicating with its Gateway. When testing communication between the Gateway and Node, all radios and antennas should be at least two meters apart or the communications may fail.

| LED 1              | LED 2                         | Node Status   |
|--------------------|-------------------------------|---------------|
| 🟢 (flashing green) |                               | Radio Link Ok |
| 🔴 (flashing red)   | 🔴 (flashing red)              | Device Error  |
|                    | 🔴 (flashing red, 1 per 3 sec) | No Radio Link |

### Modbus Register Table (Analog or Discrete Configuration)

| I/O | Modbus Holding Register |                  | I/O Type       | Units  | I/O Range |             | Holding Register Representation |             | Terminal Block Labels |
|-----|-------------------------|------------------|----------------|--------|-----------|-------------|---------------------------------|-------------|-----------------------|
|     | Gateway                 | Any Node         |                |        | Min.      | Max.        | Min. (Dec.)                     | Max. (Dec.) |                       |
| 1   | 1                       | 1 + (Node# × 16) | Discrete IN 1  | -      | 0         | 1           | 0                               | 1           | DI1                   |
| 2   | 2                       | 2 + (Node# × 16) | Discrete IN 2  | -      | 0         | 1           | 0                               | 1           | DI2                   |
| 3   | 3                       | 3 + (Node# × 16) | Analog IN 1+   | mA / V | 0.0       | 20.0 / 10.0 | 0                               | 65535       | A1+                   |
| 4   | 4                       | 4 + (Node# × 16) | Analog IN 2+   | mA / V | 0.0       | 20.0 / 10.0 | 0                               | 65535       | A2+                   |
|     |                         | ...              |                |        |           |             |                                 |             |                       |
| 7   | 7                       | 7 + (Node# × 16) | Reserved       |        |           |             |                                 |             |                       |
| 8   | 8                       | 8 + (Node# × 16) | Device Message |        |           |             |                                 |             |                       |
| 9   | 9                       | 9 + (Node# × 16) | Discrete OUT 1 | -      | 0         | 1           | 0                               | 1           | DO1                   |

| I/O | Modbus Holding Register |                   | I/O Type        | Units | I/O Range |      | Holding Register Representation |             | Terminal Block Labels |
|-----|-------------------------|-------------------|-----------------|-------|-----------|------|---------------------------------|-------------|-----------------------|
|     | Gateway                 | Any Node          |                 |       | Min.      | Max. | Min. (Dec.)                     | Max. (Dec.) |                       |
| 10  | 10                      | 10 + (Node# × 16) | Discrete OUT 2  | -     | 0         | 1    | 0                               | 1           | DO2                   |
|     |                         | ...               |                 |       |           |      |                                 |             |                       |
| 15  | 15                      | 15 + (Node# × 16) | Control Message |       |           |      |                                 |             |                       |
| 16  | 16                      | 16 + (Node# × 16) | Reserved        |       |           |      |                                 |             |                       |

## Specifications

### Radio and General

#### Range

900 MHz: Up to 4.8 kilometers (3 miles)  
2.4 GHz: Up to 3.2 kilometers (2 miles)

#### Transmit Power

900 MHz: 21 dBm conducted  
2.4 GHz: 18 dBm conducted, less than or equal to 20 dBm EIRP

#### 900 MHz Compliance (150 mW Radios)

FCC ID TGUDX80 - This device complies with FCC Part 15, Subpart C, 15.247  
IC: 7044A-DX8009

#### 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: V1.7.1 (2006-05)  
IC: 7044A-DX8024

#### Spread Spectrum Technology

FHSS (Frequency Hopping Spread Spectrum)

#### Link Timeout

Gateway: Configurable  
Node: Defined by Gateway

Radio range is with the 2 dB antenna that ships with the product. High-gain antennas are available, but the range depends on the environment and line of sight. To determine the range of your wireless network, perform a Site Survey.

#### Power

Requirements: +10 to 30V dc or +3.6 to 5.5V dc low power option (Outside the USA: +12 to 24V dc, ±10% or +3.6 to 5.5V dc low power option)  
Consumption: Less than 1.4 W (60 mA) at 24V dc

#### Housing

Polycarbonate housing and rotary dial cover; polyester labels; EDPM rubber cover gasket; nitrile rubber, non-sulphur cured button covers  
Weight: 0.26 kg (0.57 lbs)  
Mounting: #10 or M5 (SS M5 hardware included)  
Max. Tightening Torque: 0.56 N·m (5 lbf·in)

#### Antenna Connection

Ext. Reverse Polarity SMA, 50 Ohms  
Max Tightening Torque: 0.45 N·m (4 lbf·in)

#### Interface

Indicators: Two bi-color LEDs  
Buttons: Two  
Display: Six character LCD

#### Wiring Access

Four PG-7, One 1/2-inch NPT, One 5-pin Euro-style male connector

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

### Inputs and Outputs

#### Discrete Inputs

Rating: 3 mA max current at 30V dc  
Sample/Report Rates: DIP switch configurable (see tables)

#### Discrete Input ON Condition

PNP: Greater than 8V  
NPN: Less than 0.7V

#### Discrete Input OFF Condition

PNP: Less than 5V  
NPN: Greater than 2V or open

#### Discrete Output Rating (NMOS)

Less than 10 mA max current at 30V dc  
ON-State Saturation: Less than 0.7V at 20 mA

#### Discrete Output

Update Rate: 1 second  
ON Condition: Less than 0.7V  
OFF Condition: Open

#### Output State Following Timeout

De-energized (OFF)



## Inputs and Outputs

### Analog Inputs

Rating for 0 to 20 mA models: 24 mA  
 Rating for 0 to 10V models: 10V  
 Impedance: 100 Ohms  
 Sample/Report Rates (Analog IN 1): DIP switch configurable (see tables)  
 Sample/Report Rates (Analog IN 2): 1 second/16 seconds  
 Accuracy: 0.1% of full scale +0.01% per °C  
 Resolution: 12-bit

### Switch Power Outputs

Analog configuration: one  
 Discrete configuration: two  
 Host configuration: up to four  
 To verify the analog input's impedance, use an Ohm meter to measure the resistance between the analog input terminal (AIx) and the ground (GND) terminal.

## Environmental and Certifications

### Rating

DX80 Models: IEC IP67; NEMA 6; (See UL section below for any applicable UL specifications)  
 DX80...C Models: IEC IP20; NEMA 1 (In a suitable enclosure: Class I, Division 2, Group A, B, C, D; T4 -40 to 80 °C)

### 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 to 60 Hz

### DX80...C (External Wiring Terminal Models)



UL CSA: Class I, Division 2, Groups A, B, C, D  
 (Ex/A Ex nA II T4); Certificate: 1921239



LCIE/ATEX: Zone 2 (II 3G / Ex nA IIC); Certificate: LCIE 10 ATEX 1012 X



Refer to the [SureCross DX80 Wireless I/O Network Product Manual](#) (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.

## Included with Model

The following items ship with the DX80 radios.

- BWA-HW-002: DX80 Access Hardware Kit, containing four PG-7 plastic threaded plugs, four PG-7 nylon gland fittings, four PG-7 hex nuts, one 1/2-inch NPT plug, and one 1/2-inch nylon gland fitting. (Not included with IP20 DX80...C models)
- BWA-HW-001: Mounting Hardware Kit, containing four M5-0.8 x 25mm SS screws, four M5-0.8 x 16mm SS screws, four M5-0.8mm SS hex nuts, and four #8-32 x 3/4" SS bolts
- BWA-HW-003: PTFE tape
- BWA-902-C (900 MHz) or BWA-202-C (2.4 GHz): Antenna, 2 dBd Omni, Rubber Swivel RP-SMA Male. (Not included with Internal antenna models)
- Quick Start Guide (128185 for DX80 Gateways or 152653 for MultiHop models)
- MQDC1-506: 5-Euro (single ended) straight cable, 2m (Not included with FlexPower devices)
- BWA-HW-011: IP20 Screw Terminal Headers (2 pack) (Included only with the IP20 DX80...C models)

## Warnings

**Antenna Installations.** Install and properly ground a qualified surge suppressor when installing a remote antenna system. Remote antenna configurations installed without surge suppressors invalidate the manufacturer's warranty. Keep the ground wire as short as possible and make all ground connections to a single-point ground system to ensure no ground loops are created. No surge suppressor can absorb all lightning strikes; do not touch the SureCross® device or any equipment connected to the SureCross device during a thunderstorm.

**Exporting SureCross Radios.** It is our 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 the device is approved in the destination country.** A list of approved countries appears in the *Radio Certifications* section of the product manual. The SureCross wireless products were

certified for use in these countries using the antenna that ships with the product. When using other antennas, verify you are not exceeding the transmit power levels allowed by local governing agencies. Consult with Banner Engineering Corp. if the destination country is not on this list.

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