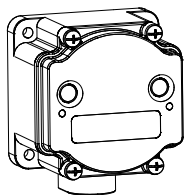


## Datasheet

The Sure Cross® wireless system is a radio frequency network with integrated I/O that operates in most environments to eliminate the need for wiring runs. The Performance Series P6L Node is low-cost, battery-powered device that can convert Banner 1-wire serial sensor device into a wireless input. All configuration is done through internal DIP switches or the DX80 Performance Configuration Software.

### Benefits

- Deliver factory automation or IIoT solutions by connecting any Banner 1-wire serial sensor for applications such as:
  - Ultrasonic distance measurement for tank level monitoring, distance sensing, etc
  - Vibration and temperature for predictive maintenance motor health monitoring
  - Temperature and humidity for energy management, process monitoring, etc
- **Longer Battery Life**—Large D cell battery gives extended battery life vs. Q45 1-wire serial devices
- **Compact Design**—Internal antenna for smaller footprint
- **Eliminate control wires**—The Sure Cross wireless system is a radio frequency network with integrated I/O that removes the need for power and control wires.
- **Reduce complexity**—Machine or process reconfiguration made easier; great for retrofit applications
- **Deploy easily**—Simplified installation on existing equipment enables deployment in remote and hard-to-access locations where implementing a wired solution would be difficult, impractical, or not cost-effective



- Selectable transmit power levels of 250 mW or 1 Watt for 900 MHz models and 65 mW for 2.4 GHz models
- DIP switches for user configuration
- Frequency Hopping Spread Spectrum (FHSS) technology ensures reliable data delivery
- Transceivers provide bidirectional communication between the Gateway and Node, including fully acknowledged data transmission
- Diagnostics allow user-defined output settings in the unlikely event of lost RF signal

## Models

Models	Frequency	Power	I/O
DX80N9X1W-P6L	900 MHz ISM Band	Integrated battery	Inputs: 1-Wire serial interface for one serial sensing device
DX80N2X1W-P6L	2.4 GHz ISM Band		

## General Operation

For the first five minutes after powering up, the Node operates in fast sample mode, sampling and sending data every two seconds. After five minutes, the Node defaults to five minute sample intervals and the LCD turns off to save power, which is ideal for the battery-powered models.

Use the DIP switches or the DX80 Performance Configuration Software to set the sample rate.

To activate fast sample mode, single-click button 1. LED 2 is on (amber) during the fast sample mode. To exit fast sample mode and turn off the LCD, click button 2 five times.

## Configuration Instructions

### Setting Up Your Wireless Network

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

For complete instructions, including binding, configuration, installation, weatherproofing, device menu maps, troubleshooting, and a list of accessories, refer to Sure Cross® Wireless I/O Network Instruction Manual (p/n [132607](#))

1. Disconnect the power from your Sure Cross devices.
2. Configure the DIP switches of all devices. DIP switch configurations are always listed in the product's datasheet.
3. If your device has I/O, connect the sensors to the Sure Cross devices. Available I/O is always listed in the product's datasheet. If your device does not have I/O, skip this step.
4. Refer to the wiring diagrams to apply power to all devices.
  - For housed models, the Gateway's LED 1 is solid green and the Node's LED 2 flashes red to indicate there is no radio link to the Gateway.
  - For board-level models, the Gateway's LED is solid green and the Node's LED flashes red to indicate there is no radio link to the Gateway.
5. Form the wireless network by binding the Nodes to the Gateway.
6. Observe the LED behavior to verify the devices are communicating with each other.
  - For housed models, the Gateway's LED 1 is solid green and the Node's LED 1 flashes green to indicate it is communicating with the Gateway.
  - For board-level models, the Gateway's LED is solid green and the Node's LED flashes green to indicate it is communicating with the Gateway.
7. Configure any I/O points to use the sensors connected to the Sure Cross devices.
8. Conduct a site survey between the Gateway and Nodes.



- Install your wireless sensor network components.

## Configure the DIP Switches

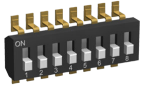
Before changing DIP switch positions, disconnect the power. Any changes made to the DIP switches are not recognized until after power is cycled to the device.

For devices powered by batteries integrated into the housing, triple-click button 2, then double-click button 2 to reset the device without removing the battery.

For parameters not set using the DIP switches, use the configuration software to make configuration changes. For parameters set using the DIP switches, the DIP switch positions override any changes made using the configuration software.

### Access the Internal DIP Switches

Follow these steps to access the internal DIP switches.



- Unscrew the four screws that mount the cover to the bottom housing.
- Remove the cover from the housing without damaging the ribbon cable or the pins the cable plugs into.
- Gently unplug the ribbon cable from the board mounted into the bottom housing. Skip this step if there is no ribbon cable (integrated battery models) or the ribbon cable is glued down (C housing models).
- Remove the black cover plate from the bottom of the device's cover. The DIP switches are located behind the rotary dials.
- Make the necessary changes to the DIP switches.
- Place the black cover plate back into position and gently push into place.
- If necessary, 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

These DIP switch settings are available with radio firmware versions 5.3 and higher.

Device Settings	Switches							
	1	2	3	4	5	6	7	8
Transmit power level: 1 Watt (30 dBm) (default)	OFF							
Transmit power level: 250 mW (24 dBm), DX80 compatibility mode	ON							
Modbus or software configured (overrides DIP switches 3-8) (default)		OFF						
DIP switch configured		ON						
Sensor 1: 6 registers (default)			OFF	OFF	OFF			
Sensor 1: 3 registers			OFF	OFF	ON			
Sample/Report Rates: 5 minutes (default)						OFF	OFF	OFF
Sample/Report Rates: 2 minutes						OFF	OFF	ON
Sample/Report Rates: 1 minute						OFF	ON	OFF
Sample/Report Rates: 30 seconds						OFF	ON	ON
Sample/Report Rates: 10 seconds						ON	OFF	OFF
Sample/Report Rates: 5 seconds <sup>1</sup>						ON	OFF	ON
Sample/Report Rates: sample on demand						ON	ON	OFF

When powered by an internal battery, select **Sensor 1: 3 registers** when the sensor is only using inputs 1 through 3 to conserve battery life.

### Modbus/Software or DIP Switch Configured

In Modbus/Software Configured mode, use the DX80 Performance Configuration Software or a Modbus command to change the device parameters. DIP switch positions 3 through 8 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 Sure Cross 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. For battery-powered applications, setting the report rate to a slower rate extends the battery life.

### Transmit Power Levels

The 900 MHz radios transmit at 1 Watt (30 dBm) or 250 mW (24 dBm). The 250 mW mode reduces the radio's range but improves the battery life in short range applications. For 2.4 GHz models, this DIP switch is disabled. The transmit power for 2.4 GHz is fixed at about 65 mW EIRP (18 dBm).

## Wire Your Sure Cross® Device

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

### Control Drawings

Refer to the Class I Division 2/Zone 2 control drawings (p/n [143086](#)) for wiring specifications and limitations.

<sup>1</sup> Recommended setting for 10–30 V DC powered devices.

### 5-Pin M12 Female Quick Disconnect

This female quick disconnect fitting interfaces with a 1-wire serial sensor. The following information defines the wires and the appropriate connection points in the Sure Cross radio.

5-pin M12 Female Quick Disconnect	Pin	Wire Color	Description
	1	Brown	Power out + (to sensor)
	2	White	Device select
	3	Blue	DC common (GND)
	4	Black	Device output
	5	Gray	Serial comms

### Bind the DX80 Nodes to the DX80 Gateway and Assign the Node Address

Before beginning the binding procedure, apply power to all the devices. Separate radios by 2 meters when running binding procedure. Put only one Gateway into binding at a time to prevent binding to the wrong Gateway.

- Enter binding mode on the Gateway.
  - For housed DX80 Gateways, triple-click the right-hand button. LEDs alternatively flash red.
  - For board level DX80 Gateways, triple-click the binding button. LED flashes green and red.
- Use both of the Node's rotary dials to assign the Node Address defined in the Gateway's datasheet.
 

The left rotary dial represents the tens digit (0 through 4) and the right dial represents the ones digit (0 through 9) of the Node Address.
- To enter binding mode on the Node, triple-click button 2.
 

The Node enters binding mode and locates the Gateway in binding mode. The red LEDs flash alternately. The Node automatically exits binding mode. After the Node is bound, the LEDs are both solid red for a few seconds. The Node cycles its power, then enters Run mode. For the pre-mapped kits (PMx), the Node's rotary dials must be set based on the mapping defined by the Gateway. For more information, refer to the mapping tables in the MAPIO Menu section of the Gateway's datasheet.
- Label the Node with the assigned address for future references.
- Repeat steps 2 through 4 for all Nodes that need to communicate to this Gateway.
- Exit binding mode on the Gateway by single-clicking either button 1 or button 2.

For Gateways with single line LCDs, after binding your Nodes to the Gateway, make note of the binding code displayed under the Gateway's \*DVCFG menu, XADR submenu on the LCD. Knowing the binding code prevents having to re-bind all Nodes if your Gateway is ever replaced.

### Bind a DX80 Node to a DXM and Assign the Node Address

Binding Nodes to a Gateway ensures the Nodes only exchange data with the Gateway they are bound to. After a Gateway enters binding mode, the Gateway automatically generates and transmits a unique extended addressing (XADR), or binding, code to all Nodes within range that are also in binding mode. The extended addressing (binding) code defines the network, and all radios within a network must use the same code.

- Apply power to all the devices.
 

Separate radios by two meters when running the binding procedure. Put only one DXM Gateway into binding mode at a time to prevent binding to the wrong Gateway.
- Enter binding mode on the DXM radio:
  - Use the arrow keys to select the **ISM Radio** menu on the LCD and press **ENTER**.
  - Highlight the **Binding** menu and press **ENTER**.
- Assign the Node address to the Node.
  - For Nodes without rotary dials: Use the DXM arrow keys to select the Node address to assign to the DX80 Node about to enter binding mode. The DXM assigns this Node address to the next Node that enters binding mode. Only bind one Node at a time.
  - For Nodes with rotary dials: Use the Node's rotary dials to assign a valid decimal Node Address (between 01 and 47). The left rotary dial represents the tens digit (0 through 4) and the right dial represents the ones digit (0 through 9) of the Node Address. You can leave the DXM "Bind to" address set to 1 because the Node's rotary dials will override that setting.
- Start binding mode on the DXM radio by pressing **ENTER** on the DXM radio.
- Enter binding mode on the DX80 Node.
  - For housed radios, triple-click button 2.
  - For board-level radios, triple-click the button.
  - For Nodes without buttons, refer to the Node's datasheet for instructions on entering binding mode.

The left and right LEDs flash alternately and the Node searches for a Gateway in binding mode. After the Node binds, the LEDs stay solid momentarily, then they flash together four times. The Node automatically exits binding mode and reboots.
- Label the Node with the assigned address number for future reference.
- Press **BACK** on the DXM to exit binding mode for that specific Node address.
 

The Node LEDs continue to flash red until the DXM exits binding mode with that Node address.
- Repeat these steps for as many DX80 Nodes as are needed for your network.
- When you are finished binding, press **BACK** on the DXM until you return to the main menu.

### LED Behavior for the Nodes

Nodes do not sample inputs until they are communicating with the Gateway.

The radios and antennas must be a minimum distance apart to function properly. Recommended minimum distances are:

- 900 MHz 150 mW and 250 mW radios: 6 feet
- 900 MHz 1 Watt radios: 15 feet
- 2.4 GHz 65 mW radios: 1 foot

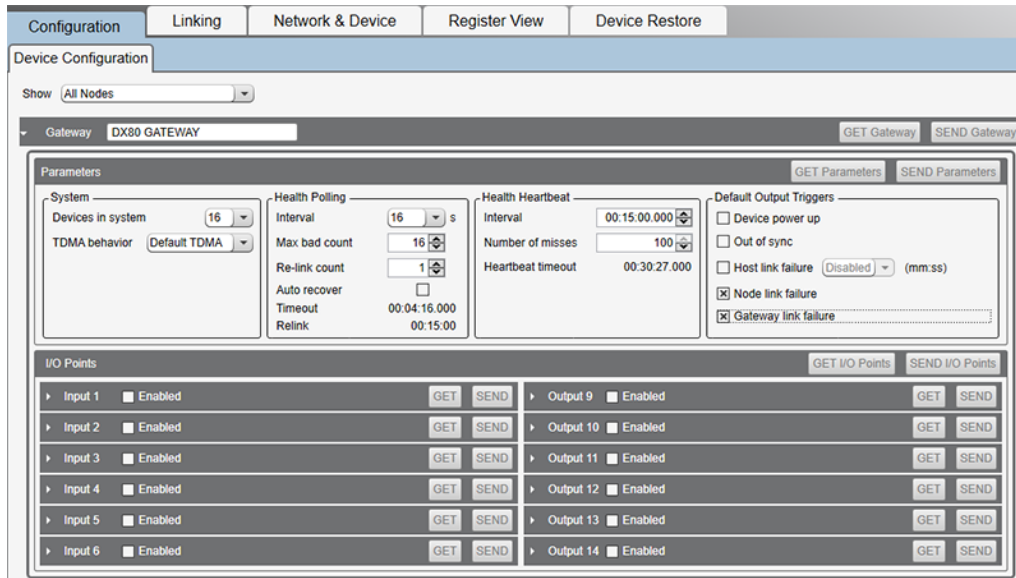
Table 1: LED behavior for the Nodes

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

## Sure Cross® DX80 Performance Configuration Software

The configuration software offers an easy way to link I/O points in your wireless network, view I/O register values, and set system communication parameters when a host system is not part of the wireless network. The software runs on any computer with the Windows Vista, Windows 7, Windows 8, or Windows 10 operating system.

Figure 1. Device Configuration screen



Use a USB to RS-485 adapter cable to connect a standalone DX80 Gateway to the computer. For DXM Controllers with an internal DX80 radio, connect a computer to the DXM Controller using the supplied USB or Ethernet connection. Download the most recent revisions of the configuration software from Banner Engineering's website: <https://www.bannerengineering.com/us/en/products/wireless-sensor-networks/reference-library/software.html>.

The USB to RS-485 adapter cable is not required for the DXM Controller. For standalone DX80 Gateway devices use:

- USB to RS-485 adapter cable model **BWA-UCT-900** for 1 Watt radios
- USB to RS-485 adapter cable model **BWA-HW-006** for all other radios

## Installing Your Sure Cross® Radios

Please refer to one of these instruction manuals to install your wireless network components.

- Performance Wireless I/O Network Instruction Manual: [132607](#)
- MultiHop Data Radio Instruction Manual: [151317](#)

## Holding Registers

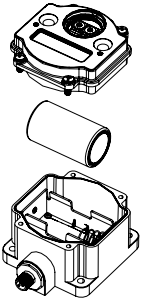
I/O Point	Modbus Registers		EIP Registers		I/O Type
	Gateway	Any Node			
1	1	1 + (Node# × 16)	0 + (Node# × 8)	Instance 100 / N7	Sensor Data Input 1
2	2	2 + (Node# × 16)	1 + (Node# × 8)		Sensor Data Input 2
3	3	3 + (Node# × 16)	2 + (Node# × 8)		Sensor Data Input 3
4	4	4 + (Node# × 16)	3 + (Node# × 8)		Sensor Data Input 4
5	5	5 + (Node# × 16)	4 + (Node# × 8)		Sensor Data Input 5
6	6	6 + (Node# × 16)	5 + (Node# × 8)		Sensor Data Input 6
7	7	7 + (Node# × 16)	6 + (Node# × 8)		Reserved
8	8	8 + (Node# × 16)	7 + (Node# × 8)		Device Message
		...		Instance 112 / N14	
15	15	15 + (Node# × 16)	6 + (Node# × 8)		Control Message
16	16	16 + (Node# × 16)	7 + (Node# × 8)		Reserved

## Install or Replace the Battery for a DX80 Integrated Battery Model

To install or replace the 3.6 V lithium "D" cell battery in any model with a battery integrated into the housing, follow these steps.

1. Remove the four screws mounting the face plate to the housing and remove the face plate.

2. Remove the discharged battery.
3. Install the new battery, verifying the battery's positive and negative terminals align to the positive and negative terminals of the battery holder mounted within the case.
4. After installing the battery, allow up to 60 seconds for the device to power up.
5. Properly dispose of used batteries according to local regulations by taking it to a hazardous waste collection site, an e-waste disposal center, or other facility qualified to accept lithium batteries.



**CAUTION:** There is a risk of explosion if the battery is replaced incorrectly.

As with all batteries, these are a fire, explosion, and severe burn hazard. Do not burn or expose them to high temperatures. Do not recharge, crush, disassemble, or expose the contents to water.

For non-hazardous locations, the replacement battery is model **BWA-BATT-011**. For non-hazardous or hazardous locations, the replacement battery is Xeno model XL-205F, Banner model **BWA-BATT-001**. For pricing and availability, contact Banner Engineering.

## Storage and Sleep Modes

**Storage Mode** (applies to battery-powered models only)—While in **storage mode**, the radio does not operate. To put any integrated battery Sure Cross® radio into storage mode, press and hold button 1 for five seconds. To wake the device, 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.

**Sleep Mode** (applies to both battery and 10–30 V DC powered models)—During normal operation, the Sure Cross 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.

## Specifications

### Performance Radio with Internal Antenna Specifications

#### Radio Range<sup>2</sup>

900 MHz, 1 Watt: Up to 3.2 km (2 miles) with line of sight (internal antenna)  
2.4 GHz, 65 mW: Up to 1000 m (3280 ft) with line of sight (internal antenna)

#### Antenna Minimum Separation Distance

900 MHz, 150 mW and 250 mW: 2 m (6 ft)  
900 MHz, 1 Watt: 4.57 m (15 ft)  
2.4 GHz, 65 mW: 0.3 m (1 ft)

#### Radio Transmit Power

900 MHz, 1 Watt: 30 dBm (1 W) 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

#### Link Timeout (Performance)

Gateway: Configurable via User Configuration Software  
Node: Defined by Gateway

#### Spread Spectrum Technology

FHSS (Frequency Hopping Spread Spectrum)

#### 900 MHz Compliance (1 Watt)

FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247  
IC: 7044A-RM1809  
IFT: RCPBARM13-2283



(NOM approval only applies to 900 MHz models)

#### 2.4 GHz Compliance

FCC ID UE300DX80-2400: FCC Part 15, Subpart C, 15.247  
Radio Equipment Directive (RED) 2014/53/EU  
IC: 7044A-DX8024

ANATEL: 15966-21-04042 Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL [www.gov.br/anatel/pt-br/](http://www.gov.br/anatel/pt-br/)

### P6L Model Specifications

#### Supply Voltage

3.6 V DC (internal battery)

#### Sample/Report Rates

5 minutes

#### Interface

Two bi-color LED indicators  
Two buttons

#### Wiring Access

One 5-pin M12 female quick-disconnect connector

#### Housing

Polycarbonate housing, polyester labels, EDPM rubber cover gasket, nitrile rubber, non-sulphur cured button covers  
Weight: 0.30 kg (0.65 lbs)  
Mounting: #10 or M5 (SS M5 hardware included)  
Max. Tightening Torque: 0.56 N·m (5 lbf·in)

#### Certifications



**Banner Engineering Europe**  
Park Lane, Culliganlaan 2F bus  
3, 1831 Diegem, BELGIUM

(CE approval only applies to 2.4 GHz models)

**Turck Banner LTD** Blenheim  
House, Blenheim Court,  
Wickford, Essex SS11 8YT,  
Great Britain

<sup>2</sup> Range depends on the environment and decreases significantly without line of sight. Always verify your wireless network's range by performing a Site Survey.

## Environmental Specifications

### 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

All models meet IEC 60068-2-6 and IEC 60068-2-27 testing criteria  
Shock: 30G 11 ms duration, half sine wave per IEC 60068-2-27  
Vibration: 10 Hz to 55 Hz, 0.5 mm peak-to-peak amplitude per IEC 60068-2-6

### Environmental Ratings



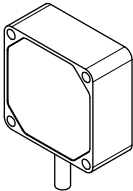
IEC IP67; NEMA 6  
For installation and waterproofing instructions, go to [www.bannerengineering.com](http://www.bannerengineering.com) and search for the complete instruction manual (p/n 132607)

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

## Accessories

### Sensors with a Serial Interface

The following sensors are designed to be used with any of the 1-Wire Serial Interface Nodes.

<p><b>K50UX1ARA</b> U-GAGE Ultrasonic Sensor</p> <ul style="list-style-type: none"> <li>1-wire serial interface</li> <li>Range: 100 mm to 1 m (3.94 in to 39.4 in)</li> <li>Datasheet: <a href="#">191599</a></li> </ul> <p><b>K50UX1CRA</b> U-GAGE Ultrasonic Sensor</p> <ul style="list-style-type: none"> <li>1-wire serial interface</li> <li>Range: 300 mm to 3 m (11.8 in to 118 in)</li> <li>Datasheet: <a href="#">191599</a></li> </ul>		<p><b>M12FTH4Q</b> Temperature and Humidity Sensor</p> <ul style="list-style-type: none"> <li>±2% Accuracy, 1-wire serial interface</li> <li>(Requires a 5-pin threaded M12 double-ended cordset less than 3 meters long, such as model DEE2R-5xD.)</li> <li>Datasheet: <a href="#">162669</a></li> </ul> <p><b>M12FT4Q</b> Temperature Sensor</p> <ul style="list-style-type: none"> <li>1-wire serial interface</li> <li>(Requires a 5-pin threaded M12 double-ended cordset less than 3 meters long, such as model DEE2R-5xD.)</li> <li>Datasheet: <a href="#">162669</a></li> </ul>	
<p><b>QM30VT1</b> Vibration and Temperature Sensor</p> <ul style="list-style-type: none"> <li>Aluminum housing</li> <li>2.09 m (6.85 ft) cable with a 5-pin M12 male quick disconnect (QD)</li> <li>Datasheet: <a href="#">212568</a></li> </ul> <p><b>QM30VT1-QP</b> Vibration and Temperature Sensor</p> <ul style="list-style-type: none"> <li>Aluminum housing</li> <li>150 mm (6 in) cable with a 5-pin M12 male quick disconnect (QD)</li> <li>Datasheet: <a href="#">212568</a></li> </ul> <p><b>QM30VT1-SS</b> Vibration and Temperature Sensor</p> <ul style="list-style-type: none"> <li>Stainless steel housing</li> <li>2.09 m (6.85 ft) cable with a 5-pin M12 male quick disconnect (QD)</li> <li>Datasheet: <a href="#">212568</a></li> </ul>			

## Warnings

**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 Sure Cross® device or any equipment connected to the Sure Cross device during a thunderstorm.

**Exporting Sure Cross® 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.** The Sure Cross 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. This device has been designed to operate with the antennas listed on Banner Engineering's website and having a maximum gain of 9 dBm. Antennas not included in this list or having a gain greater than 9 dBm are strictly prohibited for use with this device. The required antenna impedance is 50 ohms. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen such that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication. Consult with Banner Engineering Corp. if the destination country is not on this list.



**Important:** Please download the complete Performance Gateway or Node technical documentation, available in multiple languages, from [www.bannerengineering.com](http://www.bannerengineering.com) for details on the proper use, applications, Warnings, and installation instructions of this device.



**Important:** Por favor descargue desde [www.bannerengineering.com](http://www.bannerengineering.com) toda la documentación técnica de los Performance Gateway or Node, disponibles en múltiples idiomas, para detalles del uso adecuado, aplicaciones, advertencias, y las instrucciones de instalación de estos dispositivos.



**Important:** Veuillez télécharger la documentation technique complète des Performance Gateway or Node sur notre site [www.bannerengineering.com](http://www.bannerengineering.com) pour les détails sur leur utilisation correcte, les applications, les notes de sécurité et les instructions de montage.



### WARNING:

- Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

**Important:**

- **Never operate a 1 Watt radio without connecting an antenna**
- Operating 1 Watt radios without an antenna connected will damage the radio circuitry.
- To avoid damaging the radio circuitry, never apply power to a Sure Cross® Performance or Sure Cross MultiHop (1 Watt) radio without an antenna connected.

**Important:**

- **Electrostatic discharge (ESD) sensitive device**
- ESD can damage the device. Damage from inappropriate handling is not covered by warranty.
- Use proper handling procedures to prevent ESD damage. Proper handling procedures include leaving devices in their anti-static packaging until ready for use; wearing anti-static wrist straps; and assembling units on a grounded, static-dissipative surface.

## Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.**

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: [www.bannerengineering.com](http://www.bannerengineering.com).

For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).

## Notas Adicionales

Información México: La operación de este equipo está sujeta a las siguientes dos condiciones: 1) es posible que este equipo o dispositivo no cause interferencia perjudicial y 2) este equipo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Banner es una marca registrada de Banner Engineering Corp. y podrán ser utilizadas de manera indistinta para referirse al fabricante. "Este equipo ha sido diseñado para operar con las antenas tipo Omnidireccional para una ganancia máxima de antena de 6 dBd y Yagi para una ganancia máxima de antena 10 dBd que en seguida se enlistan. También se incluyen aquellas con aprobación ATEX tipo Omnidireccional siempre que no excedan una ganancia máxima de antena de 6dBd. El uso con este equipo de antenas no incluidas en esta lista o que tengan una ganancia mayor que 6 dBd en tipo omnidireccional y 10 dBd en tipo Yagi, quedan prohibidas. La impedancia requerida de la antena es de 50 ohms."

Antenas SMA	Modelo	Antenas Tipo-N	Modelo
Antena, Omni 902-928 MHz, 2 dBd, junta de caucho, RP-SMA Macho	<b>BWA-902-C</b>	Antena, Omni 902-928 MHz, 6 dBd, fibra de vidrio, 1800mm, N Hembra	<b>BWA-906-A</b>
Antena, Omni 902-928 MHz, 5 dBd, junta de caucho, RP-SMA Macho	<b>BWA-905-C</b>	Antena, Yagi, 900 MHz, 10 dBd, N Hembra	<b>BWA-9Y10-A</b>

## Mexican Importer

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## ANATEL

Modelo (Model): DX80-2400—Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL [www.gov.br/anatel/pt-br/](http://www.gov.br/anatel/pt-br/)

