

## Features



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.

## Models

| Models        | Frequency        | Environmental Rating | I/O   |
|---------------|------------------|----------------------|---|
| DX80N9X6S-PM2 | 900 MHz ISM Band | IP67, NEMA 6         | Inputs: Four selectable discrete, two 0–20 mA<br>Outputs: Four PNP discrete, two 0–20 mA analog |
| DX80N2X6S-PM2 | 2.4 GHz ISM Band |                      | I/O is automatically mapped to the PM2 Gateway using the Gateway's menu system                  |



DX80...C (IP20; NEMA 1) models are also available. To order this model with an IP20 housing, add a C to the end of the model number: DX80N9X6S-PM2C.

## Configuration Instructions

### Configure the DIP Switches

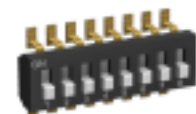
Before changing DIP switch positions, disconnect the power.<sup>(1)</sup>

Any changes made to the DIP switches are not recognized until after power is cycled to the device. 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.

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. Skip this step if there is no ribbon cable (integrated battery models) or the ribbon cable is glued down (for C housing models).
4. Remove the black cover plate from the bottom of the device's cover. The DIP switches are located behind the rotary dials.
5. Make the necessary changes to the DIP switches.
6. Place the black cover plate back into position and gently push into place.
7. If necessary, plug the ribbon cable in after verifying that the blocked hole lines up with the missing pin.
8. Mount the cover back onto the housing.



<sup>(1)</sup> 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.

## DIP Switch Settings

| Device Settings  | Switches |      |      |      |      |       |
|--|----------|------|------|------|------|-------|
|  | 1        | 2    | 3    | 4    | 5    | 6 (1) |
| 900 MHz transmit power level: 500 mW (27 dBm)                            | OFF*     |      |      |      |      |       |
| 900 MHz transmit power level: 250 mW (24 dBm), DX80 compatibility mode   | ON       |      |      |      |      |       |
| Modbus or configuration software configured (overrides DIP switches 3-8) |          | OFF* |      |      |      |       |
| DIP switch configured  |          | ON   |      |      |      |       |
| Inputs sourcing (PNP)  |          |      | OFF* |      |      |       |
| Inputs sinking (NPN)   |          |      | ON   |      |      |       |
| Link loss output: zero   |          |      |      | OFF* | OFF* |       |
| Link loss output: one  |          |      |      | OFF  | ON   |       |
| Link loss output: hold last state  |          |      |      | ON   | OFF  |       |
| Link loss output: user configuration                                     |          |      |      | ON   | ON   |       |
| 0 to 20 mA scale   |          |      |      |      |      | OFF*  |
| 4 to 20 mA scale   |          |      |      |      |      | ON    |

\* Default configuration

### Analog Input and Output Scale

Use the DIP switch to select which current scale to use for all the device’s analog inputs and outputs: 0-20 mA or 4-20 mA. When using a 4-20 mA sensor with a 0-20 mA input, the sensor uses the 4-20 mA section of the total range. Using a 4-20 mA with a 0-20 mA input allows you to determine when you have an error condition with the sensor. A normal input reading between 4 and 20 mA indicates a functioning sensor whereas a value below 4 mA indicates an error condition, such as a broken wire or loose connection. This DIP switch is used only on the 0-20 mA models, not the 0-10V models.

### Discrete Input Type

Select the type of discrete input sensors to use with this device: sourcing (PNP) sensors or sinking (NPN) sensors.

### Link Loss Outputs

The Sure Cross® wireless devices use a deterministic radio link time-out method to address RF link interruption or failure. When a radio link fails, all pertinent wired outputs are set to defined states until the link is recovered, ensuring that disruptions in the communications link result in predictable system behavior.

Following a radio link time-out, all outputs linked to the Node in question are set to de-energize (discrete outputs to zero, analog outputs to 0 mA or 4 mA), energize (discrete outputs to one, analog outputs to 20 mA), or hold the last stable state/value. Use the DIP switches to select the link loss output state.

### 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.

### Transmit Power Levels

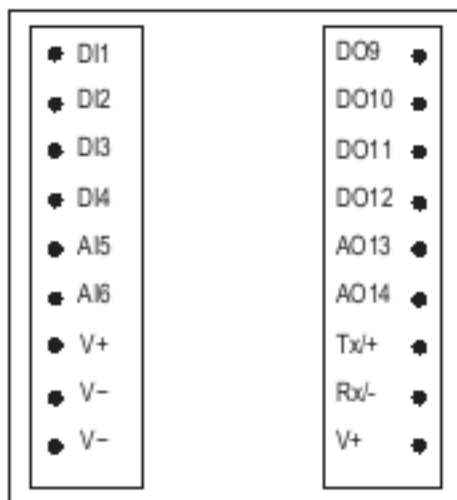
The 900 MHz radios have a high output option that will transmit at 500 mW (27 dBm). The low output option transmits at 250 mW (24 dBm). The 250 mW mode reduces the radio’s range but improves the battery life in short-range applications. For 2.4 GHz models, this DIP switch is disabled. The transmit power 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.

(1) Not used when configured for 0-10 V I/O.

## Terminal Blocks (PM2 and PM2C Models)



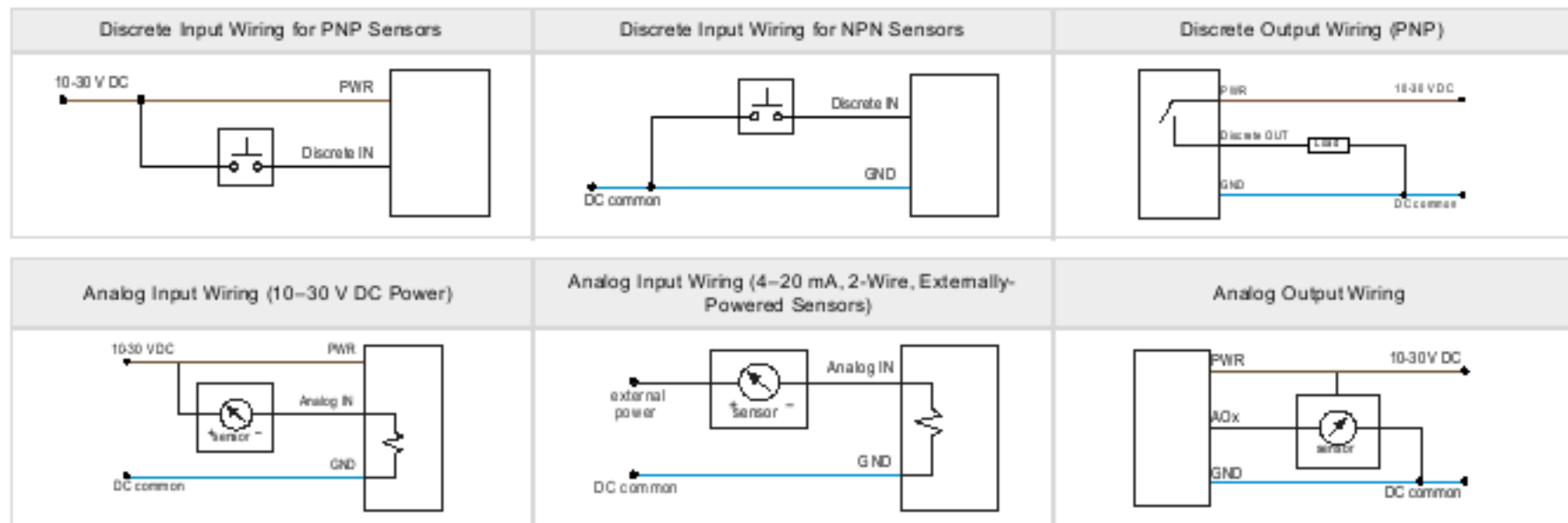
AIx. Analog IN x.  
 AOx. Analog OUT x.  
 DIx. Discrete IN x.  
 DOx. Discrete OUT x.  
 RX/-. Serial communication line for the Gateway. No connection for Nodes  
 TX/+. Serial communication line for the Gateway; no connection for Nodes  
 V+. 10 V DC to 30 V DC power connection  
 V-. Ground/DC common connection

(-PM2 board shown)

Connecting 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.

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

To power the sensor using the switch power output (SPx), replace the PWR with SPx in these wiring diagrams.



## 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 the 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 alternately 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 reference.
- 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.

## LED Behavior for the Gateways and Nodes

Verify all devices are communicating properly. 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 radios transmitting at  $\leq 250$  mW: 6 feet
- 900 MHz radios transmitting at  $\geq 500$  mW: 15 feet
- 2.4 GHz radios (transmitting at 65 mW): 1 foot

LED behavior

| Devices with Two LEDs      |                            | Devices with One LED                                      | Gateway Status  | Node Status                            |
|----------------------------|----------------------------|---|---|--|
| LED 1                      | LED 2                      |   |   |  |
| Green                      |                            | Green   | Power is on   | N/A                                    |
| Flashing green             |                            |   | N/A   | Radio link is okay                     |
| Flashing red               | Flashing red               | Flashing red  | Device error  | Device error                           |
|                            | Flashing amber             | Green and red flash (amber) together                      | Modbus communication active   | N/A                                    |
|                            | Flashing red               | Flashing red  | Modbus communication error  | No radio link (flashes once every 3 s) |
| Flashing red (alternately) | Flashing red (alternately) | Green and red flash alternately                           | Device is in binding mode   | Device is in binding mode              |
|                            |                            | Red   | Gateway is trying to conduct a Site Survey with a Node that doesn't exist |  |
|                            |                            | Green and red solid (amber) together                      | No radio communication detected   |  |
| Red (for 4 seconds)        | Red (for 4 seconds)        | Green/red solid (amber) for 4 seconds, then flash 4 times |   | Binding mode is complete               |

For Gateway systems, the Modbus communication LEDs refer to the communication between the Gateway and its host system (if applicable).

## Installing Your Sure Cross® Radios

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

- DX80 Performance Wireless I/O Network Instruction Manual: [132607](#)
- MultiHop Data Radio Instruction Manual: [151317](#)

## PM2 Modbus Registers

| I/O | Modbus Holding Register |                   | I/O Type           | IO Range   |            | Holding Register Representation |             |
|-----|-------------------------|-------------------|--------------------|------------|------------|---------------------------------|-------------|
|     | Gateway                 | Any Node          |                    | Min. Value | Max. Value | Min. (Dec.)                     | Max. (Dec.) |
| 1   | 1                       | 1 + (Node# × 16)  | Discrete IN 1      | 0          | 1          | 0                               | 1           |
| 2   | 2                       | 2 + (Node# × 16)  | Discrete IN 2      | 0          | 1          | 0                               | 1           |
| 3   | 3                       | 3 + (Node# × 16)  | Discrete IN 3      | 0          | 1          | 0                               | 1           |
| 4   | 4                       | 4 + (Node# × 16)  | Discrete IN 4      | 0          | 1          | 0                               | 1           |
| 5   | 5                       | 5 + (Node# × 16)  | Analog IN 5 (mA)   | 0.0        | 20.0       | 0                               | 65535       |
| 6   | 6                       | 6 + (Node# × 16)  | Analog IN 6 (mA)   | 0.0        | 20.0       | 0                               | 65535       |
| 7   | 7                       | 7 + (Node# × 16)  | Reserved           |            |            |                                 |             |
| 8   | 8                       | 8 + (Node# × 16)  | Device Message     |            |            |                                 |             |
| 9   | 9                       | 9 + (Node# × 16)  | Discrete OUT 9     | 0          | 1          | 0                               | 1           |
| 10  | 10                      | 10 + (Node# × 16) | Discrete OUT 10    | 0          | 1          | 0                               | 1           |
| 11  | 11                      | 11 + (Node# × 16) | Discrete OUT 11    | 0          | 1          | 0                               | 1           |
| 12  | 12                      | 12 + (Node# × 16) | Discrete OUT 12    | 0          | 1          | 0                               | 1           |
| 13  | 13                      | 13 + (Node# × 16) | Analog OUT 13 (mA) | 0.0        | 20.0       | 0                               | 65535       |
| 14  | 14                      | 14 + (Node# × 16) | Analog OUT 14 (mA) | 0.0        | 20.0       | 0                               | 65535       |
| 15  | 15                      | 15 + (Node# × 16) | Control Message    |            |            |                                 |             |
| 16  | 16                      | 16 + (Node# × 16) | Reserved           |            |            |                                 |             |

## Specifications

### Radio Specifications for Performance Models

#### Radio Transmit Power (900 MHz, 500 mW radios)

- Conducted: 27 dBm (500 mW)
- EIRP with the supplied antenna: < 36 dBm

#### Radio Transmit Power (2.4 GHz radios)

- Conducted: < 18 dBm (65 mW)
- EIRP with the supplied antenna: < 20 dBm (100 mW)

#### Radio Range

- A 2 dB antenna ships with this device.
- Transmit power and range are subject to many factors, including antenna gain, installation methods, characteristics of the application, and environmental conditions.
- Please refer to the following documents for installation instructions and high-gain antenna options.
  - Installing Your Sure Cross® Radios ([151514](#))
  - Conducting a Site Survey ([133602](#))
  - Sure Cross® Antenna Basics ([132113](#))

#### Antenna Minimum Separation Distance

- 900 MHz radios transmitting at  $\geq$  500 mW: 4.57 m (15 ft) with the supplied antenna
- 2.4 GHz radios transmitting at 65 mW: 0.3 m (1 ft) with the supplied antenna

#### Link Timeout (Performance)

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

#### Spread Spectrum Technology

- FHSS (Frequency Hopping Spread Spectrum)

#### Antenna Connection

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

#### 900 MHz Compliance (SX7023EXT Radio Module)

- Radio module is indicated by the product label marking
- Contains FCC ID: UE3SX7023EXT
- Contains IC: 7044A-SX7023EXT

#### 2.4 GHz Compliance (SX243 Radio Module)

- Radio module is indicated by the product label marking
- Contains FCC ID: UE3SX243
- Radio Equipment Directive (RED) 2014/53/EU
- Contains IC: 7044A-SX243

### FCC Part 15 Class A for Intentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### Industry Canada Statement for Intentional Radiators

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs/récepteurs exemptés de licence conformes à la norme Innovation, Sciences, et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### PM2 Specifications

#### Supply Voltage

- 10 V DC to 30 V DC (Outside the USA: 12 V DC to 24 V DC,  $\pm$  10% <sup>(1)</sup>)

#### Power Consumption

- 900 MHz Consumption: Maximum current draw is < 100 mA and typical current draw is < 50 mA at 24 V DC. (2.4 GHz consumption is less.)

#### Wiring Access

- Two 1/2-inch NPT ports

#### 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)

#### Interface

- Two bi-color LED indicators, Two buttons, Six character LCD

<sup>(1)</sup> For European applications, power this device from a Limited Power Source as defined in EN 60950-1.

#### Discrete Inputs

- Four, DIP switch selectable between PNP and NPN
- Rating: 3 mA max current at 30 V DC
- Sample Rate: 62.5 milliseconds
- Report Rate: On change of state

#### Discrete Input ON Condition

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

#### Discrete Input OFF Condition

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

#### Discrete Outputs

- Four PNP
- Update Rate: 125 milliseconds
- ON Condition: Supply minus 2 V
- OFF Condition: Less than 2 V
- Output State Following Timeout: OFF

**Discrete Output Rating (PNP)**

- 100 mA max current at 30 V DC
- ON-State Saturation: Less than 3 V at 100 mA
- OFF-state Leakage: Less than 10 µA

**Analog Outputs**

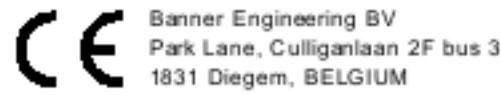
- Two, 0 to 20 mA
- Update Rate: 125 milliseconds
- Accuracy: 0.1% of full scale +0.01% per °C
- Resolution: 12-bit

**Analog Inputs**

- Two, 0 to 20 mA
- Input Rating: 24 mA
- Impedance: Approximately 220 Ohms
- Sample Rate: 62.5 milliseconds
- Report Rate: 1 second or On Change of State (1% change in value)
- Accuracy: 0.2% of full scale +0.01% per °C
- Resolution: 12-bit

**Certifications**

CE/UKCA approval only applies to 2.4 GHz models



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



Agência Nacional de Telecomunicações 03737-22-04042

## ANATEL

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/)



## Environmental Specifications (IP67 Housing Models)

**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.

## Environmental Specifications for the C Housings

**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)

**Environmental Ratings**

- "C" Housing Models/External wiring terminals: IEC IP20; NEMA 1
- Refer to the Sure Cross® DX80 Performance (p/n 132607) or the Sure Cross® MultiHop (p/n 151317) instruction manual for installation and waterproofing instructions.

**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

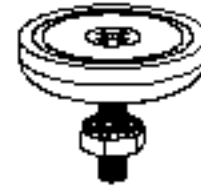
Operating the devices at the maximum operating conditions for extended periods can shorten the life of the device.

## Accessories

### Mounting Brackets

#### BWA-BK-020

- Includes two 80-lb pull rare-earth magnet mounts and two #10-32 × 1 inch screw mounts
- Used on multiple mounting brackets
- 31.75 mm (1.25 inch) diameter



### Included with Model

The following items ship with the PM2 and PM8 radios.

- One 1/2-inch NPT plug (not included with IP20 "C" models)
- Two 1/2-inch nylon gland fittings (not included with IP20 "C" models)
- BWA-902-C (900 MHz) or BWA-202-C (2.4 GHz) Antenna, 2 dBd Omni, Rubber Swivel RP-SMA Male
- BWA-HW-011 IP20 Screw Terminal Headers (2 pack) (IP20 "C" models only)

## Warnings



#### 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:** Please download the complete Performance PM2 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 PM2 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 PM2 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.

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:

- Never operate a radio without connecting an antenna
- Operating 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 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 (con Antena)

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."

### Approved Antennas

BWA-902-C--Antena, Omni 902-928 MHz, 2 dBd, junta de caucho, RP-SMA Macho  
BWA-905-C--Antena, Omni 902-928 MHz, 5 dBd, junta de caucho, RP-SMA Macho  
BWA-906-A--Antena, Omni 902-928 MHz, 6 dBd, fibra de vidrio, 1800mm, N Hembra  
BWA-9Y 10-A--Antena, Yagi, 900 MHz, 10 dBd, N Hembra

## Mexican Importer

Banner Engineering de México, S. de R.L. de C.V. | David Alfaro Siqueiros 103 Piso 2 Valle oriente | San Pedro Garza Garcia Nuevo León, C. P. 66269

81 8363.2714