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.

- Wireless industrial I/O device with up to 12 sourcing discrete inputs or outputs. Default configuration is set to 6 inputs and 6 outputs (without bit-packing).
- Selectable transmit power levels of 250 mW or 1 Watt for 900 MHz models and 65 mW for 2.4 GHz models
- 10 V DC to 30 V DC power input
- DIP switches for user configuration
- Frequency Hopping Spread Spectrum (FHSS) technology ensures 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

For additional information, updated documentation, and a list of accessories, refer to Banner Engineering’s website, www.bannerengineering.com.

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

**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.

Models

<table>
<thead>
<tr>
<th>Models</th>
<th>Frequency</th>
<th>I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX80N9X6S-P8</td>
<td>900 MHz ISM Band</td>
<td>Discrete I/O: Up to 12 PNP inputs or up to 12 PNP outputs (for a total of 12 I/O) (Default configuration is 6 IN and 6 OUT, without bit-packing)</td>
</tr>
<tr>
<td>DX80N2X6S-P8</td>
<td>2.4 GHz ISM Band</td>
<td></td>
</tr>
</tbody>
</table>

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-P8C.
Setting Up Your Wireless Network

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

**Disconnect the power from your Sure Cross devices.**

1. Configure the DIP switches of all devices.
2. If your device has I/O, connect the sensors to the Sure Cross devices. If your device does not have I/O, skip this step.
3. 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.
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.
   - 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.
6. Configure any I/O points to use the sensors connected to the Sure Cross devices.
7. 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.
8. 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.

- Sure Cross® Quick Start Guide (p/n 128185)
- Sure Cross® Wireless I/O Network Instruction Manual (p/n 132607)

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 parameters not set via DIP switches, use the User Configuration Software to make configuration changes. For parameters set using the DIP switches, the DIP switch positions override any changes made using the User 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 (C housing models and Class I, Division 2 certified devices).
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.

DIP Switch Settings

* Default configuration

<table>
<thead>
<tr>
<th>Device Settings</th>
<th>DIP Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmit power level: 1 Watt (30 dBm)</td>
<td>OFF*</td>
</tr>
<tr>
<td>Transmit power level: 250 mW (24 dBm), DX80 compatibility mode</td>
<td>ON</td>
</tr>
<tr>
<td>Modbus or software configured (overrides switches 5-8)</td>
<td>OFF*</td>
</tr>
<tr>
<td>DIP switch configured (Uses 5-8 for I/O configuration)</td>
<td>ON</td>
</tr>
</tbody>
</table>

When DIP switch 2 is in its default position (OFF), the I/O is set to 6 discrete inputs and 6 discrete outputs, non-bit-packed. DIP switches 5 through 8 are ignored. For this 6 IN/6 OUT non-bit-packed configuration, the discrete INs use I/O points 1 through 6 and the discrete OUTs use I/O points 9 through 14.
For DIP switches 5 through 8 to be recognized, DIP switch 2 must be in the ON position.

For the 8 bit-packed IN/4 non bit-packed OUT configuration, all discrete INs use I/O point 1 and the discrete OUTs use I/O points 9 through 12.

For the 4 non bit-packed IN/8 bit-packed output configuration, the discrete INs use I/O points 1 through 4 and all bit-packed outputs use I/O point 9.

<table>
<thead>
<tr>
<th>Device Settings</th>
<th>DIP Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 inputs, 0 outputs</td>
<td>5</td>
</tr>
<tr>
<td>11 inputs, 1 output</td>
<td>OFF*</td>
</tr>
<tr>
<td>10 inputs, 2 outputs</td>
<td>OFF</td>
</tr>
<tr>
<td>9 inputs, 3 outputs</td>
<td>OFF</td>
</tr>
<tr>
<td>8 inputs, 4 outputs</td>
<td>OFF</td>
</tr>
<tr>
<td>7 inputs, 5 outputs</td>
<td>OFF</td>
</tr>
<tr>
<td>6 inputs, 6 outputs</td>
<td>OFF</td>
</tr>
<tr>
<td>5 inputs, 7 outputs</td>
<td>ON</td>
</tr>
<tr>
<td>4 inputs, 8 outputs</td>
<td>ON</td>
</tr>
<tr>
<td>3 inputs, 9 outputs</td>
<td>ON</td>
</tr>
<tr>
<td>2 inputs, 10 outputs</td>
<td>ON</td>
</tr>
<tr>
<td>1 input, 11 outputs</td>
<td>ON</td>
</tr>
<tr>
<td>0 inputs, 12 outputs</td>
<td>ON</td>
</tr>
<tr>
<td>8 bit-packed inputs, 4 non bit-packed outputs</td>
<td>ON</td>
</tr>
<tr>
<td>4 non bit-packed inputs, 8 bit-packed outputs</td>
<td>ON</td>
</tr>
</tbody>
</table>

Modbus/Software Configured or DIP Switch Configured for I/O Configuration

In the OFF position, this device is configured for six discrete inputs and six discrete outputs (non-bit packed) for products built after May 2011. For products built before May 2011, this default position configures the device for 12 inputs and zero outputs (bit packed). In the OFF position, users can send commands directly from the host system to the devices to select custom I/O configuration. Users may also use the User Configuration Software to write custom configuration.

In the ON position, use DIP switches 5 through 8 to select one of the pre-programmed discrete I/O configurations shown in the DIP Switch Settings table.

Transmit Power Levels

The 900 MHz radios transmit at 1 Watt (30 dBm) or 250 mW (24 dBm). While the Performance radios operate in 1 Watt mode, they cannot communicate with the older 150 mW radios. To communicate with 150 mW radios, operate this radio in 250 mW mode. 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), making the 2.4 GHz Performance models automatically compatible with older 2.4 GHz models.

Mixing Performance and Non-Performance (150 mW) Radios in the Same Network

To comply with federal regulations, the 150 mW radios and 1 Watt radios communicate differently. All Performance models offer the ability to select between 250 mW and 1 Watt operation using the DIP switches. To mix Performance radios with non-Performance radios, refer to the product datasheet and:

- Operate Performance radios in 250 mW mode, not 1 Watt mode
- Set non-Performance (150 mW) radios to use Extended Address Mode

The 150 mW, 250 mW, and 1 Watt networks operate when collocated, but verify the antenna separation distance between a Gateway and Node or between two Gateways is at least 10 feet apart. For more detailed instructions about setting up your wireless network, refer to the following documents:

- DX80 Performance Quick Start Guide (p/n 128185)
- DX80 Performance Wireless I/O Network Instruction Manual (p/n 132607)

Wire Your Sure Cross® Device

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

Refer to the Class I Division 2/Zone 2 control drawings (p/n 143086) for wiring specifications and limitations. Install the device in a suitable enclosure with provision for connection of Division 2 / Zone 2 wiring methods in accordance with local codes, as acceptable to the local inspection authority having jurisdiction.

Terminal Blocks and Wiring

Refer to the Class I Division 2/Zone 2 control drawings (p/n 143086) for wiring specifications and limitations.
When using the Dip switches to configure the input and output selection, wire the inputs beginning with IO1. After all inputs are wired, begin using the remaining IOx as outputs. For example, if you are using 10 inputs and 2 outputs, use terminals IO1 through IO10 for the inputs and terminals IO11 and IO12 for the outputs.

For the default configuration of 6 IN and 6 OUT, use IO1 through IO6 to wire the inputs and IO7 through IO12 to wire the outputs.

Apply Power to the Node

Integral 5-pin M12/Euro-style male quick disconnect wiring depends on the model and power requirements of the device. Not all models can be powered by 10 to 30 V DC and not all models can be powered by 3.6 to 5.5 V DC. Refer to to verify the power requirements of your device. For FlexPower devices, do not apply more than 5.5 V to the gray wire.

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) causes permanent damage. For FlexPower devices, do not apply more than 5.5 V to the B+ terminal.

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>
<thead>
<tr>
<th>Terminal Label</th>
<th>Battery Powered Nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>B+</td>
<td>3.6 to 5.5 V DC</td>
</tr>
</tbody>
</table>

**Table 1:**

<table>
<thead>
<tr>
<th>5-pin M12/Euro-style (male)</th>
<th>Pin</th>
<th>Wire Color</th>
<th>Nodes Powered by 10 to 30 V DC</th>
<th>Nodes Powered by Battery or Battery Pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
<td>10 to 30 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
<td>DC common (GND)</td>
<td>DC common (GND)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gray</td>
<td>3.6 to 5.5 V DC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sure Cross® User Configuration Software
The User 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.

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 a USB or Ethernet connection. Download the most recent revisions of the configuration software from Banner Engineering’s website: www.bannerengineering.com/wireless. 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 the following instruction manuals for details about successfully installing your wireless network components.
- Performance Wireless I/O Network Instruction Manual: 132607

Holding Registers

<table>
<thead>
<tr>
<th>Modbus Registers</th>
<th>EIP Registers</th>
<th>I/O Type</th>
<th>Holding Register Representation (Dec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway / DX85</td>
<td>Node</td>
<td>Node</td>
<td>Bit-Packed Discrete IN (IO1–IO12)</td>
</tr>
<tr>
<td>1</td>
<td>1 + (Node# × 16)</td>
<td>0 + (Node# × 8)</td>
<td>Instance 100 / N7</td>
</tr>
<tr>
<td>2</td>
<td>2 + (Node# × 16)</td>
<td>1 + (Node# × 8)</td>
<td>Bit-Packed Discrete OUT (IO1–IO12)</td>
</tr>
<tr>
<td>3</td>
<td>3 + (Node# × 16)</td>
<td>2 + (Node# × 8)</td>
<td>Instance 112 / N14</td>
</tr>
<tr>
<td>4</td>
<td>4 + (Node# × 16)</td>
<td>3 + (Node# × 8)</td>
<td>Bit-Packed Discrete OUT (IO1–IO12)</td>
</tr>
<tr>
<td>5</td>
<td>5 + (Node# × 16)</td>
<td>4 + (Node# × 8)</td>
<td>Device Message</td>
</tr>
<tr>
<td>6</td>
<td>6 + (Node# × 16)</td>
<td>5 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>7</td>
<td>7 + (Node# × 16)</td>
<td>6 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>8</td>
<td>8 + (Node# × 16)</td>
<td>7 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>9 + (Node# × 16)</td>
<td>0 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>10 + (Node# × 16)</td>
<td>1 + (Node# × 8)</td>
<td>Max.</td>
</tr>
<tr>
<td>11</td>
<td>11 + (Node# × 16)</td>
<td>2 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>12 + (Node# × 16)</td>
<td>3 + (Node# × 8)</td>
<td>Min.</td>
</tr>
<tr>
<td>13</td>
<td>13 + (Node# × 16)</td>
<td>4 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>14 + (Node# × 16)</td>
<td>5 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>15 + (Node# × 16)</td>
<td>6 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
<tr>
<td>16</td>
<td>16 + (Node# × 16)</td>
<td>7 + (Node# × 8)</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

For other non bit-packed configurations, the inputs begin at I/O point 1 and the outputs begin after the last input. For DIP switches 5 through 8 to be recognized, DIP switch 2 must be in the ON position. For the 4 non bit-packed IN/8 bit-packed output configuration, the discrete INs use I/O points 1 through 4 and all bit-packed outputs use I/O point 9.

Configuring the Discrete I/O of the 12 I/O Device
The 12 I/O device can be configured into any combination of 12 discrete inputs or outputs. Inputs are stored in a bit packed form in I/O point 1, device register 1. Outputs are stored in a bit packed form in I/O point 9, device register 9.

To define which of the 12 I/O points are inputs, adjust the bit field stored as I/O 1’s threshold parameter [15:0]. Set bit 0 of the 16-bit parameter data word to define I/O 1 as an input, set bit 1 to define I/O 2 as an input, et cetera. Each bit position of the parameter is associated to a I/O point. In the example below, the first five I/O points are defined as inputs.

| Input Parameter | Bit 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-----------------|--------|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|
| Input Point #   | 12     | 11 | 10 | 9  | 8  | 7  | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| Parameter Data  | 0      | 0  | 0  | 0  | 0  | 0  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Define outputs the same way by adjusting the bit field stored in I/O 9’s threshold parameter [15:0]. Verify the bit pattern for outputs does not overlap the input pattern. In the example below, I/O points 0-12 are set as outputs.

| Input Parameter | Bit 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-----------------|--------|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|
| Input Point #   | 12     | 11 | 10 | 9  | 8  | 7  | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| Parameter Data  | 1      | 1  | 1  | 1  | 1  | 1  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

For inputs, the first I/O point selected as an input is placed in bit position 0 in register 1. The second input point is in bit position 1, et cetera. Likewise, for outputs, the first I/O point selected as an output is placed in bit position 0 in register 9, the second input point is in bit position 2. The bit-packed values are stored in right-justified format.
Configure the Discrete I/O on the 12 I/O Devices

When using the User Configuration Software to configure either a Gateway or Node, select the Gateway or specific Node from the software’s drop-down list. To configure a DX85 Remote I/O model, set the DX85’s Slave ID to 01 and select the Gateway from the drop-down list.

To define which of the 12 I/O points are inputs for the selected device, adjust the threshold parameter for I/O point 1:

1. Go to the Configuration > Device Configuration screen.
2. On the I/O Points heading, click GET I/O Points. This downloads all existing I/O parameter settings from your device and loads the settings into the User Configuration Software.
3. Click the arrow to display Input 1’s parameters.
4. Enter a value into the Threshold parameter field. Use the bit mask as defined in Configuring the Discrete I/O of the 12 I/O Device on p. 5.
   
   For example, set bit 0 of the 16-bit parameter data word to define I/O 1 as an input, set bit 1 to define I/O 2 as an input, et cetera. Each bit position of the parameter is associated to a I/O point. In the example, the first five I/O points are defined as inputs (0000 0001 1111 = 0x001F = 0031).
5. Click Send or Send I/O Points to upload the settings to the wireless network.

Specifications

Performance Radio Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio Range</td>
<td>900 MHz, 1 Watt: Up to 9.6 km (6 miles) 2.4 GHz, 65 mW: Up to 3.2 km (2 miles)</td>
</tr>
<tr>
<td>Antenna Minimum Separation Distance</td>
<td>900 MHz, 1 Watt: 4.57 m (15 ft) 2.4 GHz, 65 mW: 0.3 m (1 ft)</td>
</tr>
<tr>
<td>Radio Transmit Power</td>
<td>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</td>
</tr>
<tr>
<td>Spread Spectrum Technology</td>
<td>FHSS (Frequency Hopping Spread Spectrum)</td>
</tr>
</tbody>
</table>

1 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. Always verify your wireless network’s range by performing a Site Survey.
P8 Node Specifications

Supply Voltage
10 V DC to 30 V DC (Outside the USA: 12 V DC to 24 V DC, ± 10%)

Power Consumption
900 MHz Consumption: Maximum current draw is < 40 mA and typical current draw is < 30 mA at 24 V DC. (2.4 GHz consumption is less.)

Wiring Access
DX80 models: Four PG-7, One 1/2-inch NPT, One 5-pin threaded M12/Euro-style male quick disconnect
DX80...C models: External terminals

Discrete Inputs
Rating: 3 mA max current at 30 V DC
Sample Rate: 62.5 milliseconds
Report Rate: On change of state
ON Condition (PNP): Greater than 4.5 V
OFF Condition (PNP): Less than 4 V

Discrete Outputs
Update Rate: Up to 62.5 milliseconds
ON Condition (PNP): Supply minus 2 V
OFF Condition (PNP): 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

Certifications
(CE approval only applies to 2.4 GHz models)
(NOM approval only applies to 900 MHz models)

Environmental Specifications

Operating Conditions
-40 °C to +85 °C (Electronics); -20 °C to +80 °C (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: 300 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 Specifications for the C Housings

Operating Conditions
-40 °C to +85 °C (Electronics); -20 °C to +80 °C (LCID)
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: 300 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

Certifications
For European applications, power this device from a Limited Power Source as defined in EN 60950-1.

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
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 this product. When using other antennas, verify that 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 that 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.

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.

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<table>
<thead>
<tr>
<th>Antenas SMA</th>
<th>Modelo</th>
<th>Antenas Tipo-N</th>
<th>Modelo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antena, Omni 902-928 MHz, 2 dBd, junta de caucho, RP-SMA Macho</td>
<td>BWA-902-C</td>
<td>Antena, Omni 902-928 MHz, 6 dBd, fibra de vidrio, 1800mV, N Hembra</td>
<td>BWA-906-A</td>
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<tr>
<td>Antena, Omni 902-928 MHz, 5 dBd, junta de caucho, RP-SMA Macho</td>
<td>BWA-906-C</td>
<td>Antena, Yagi, 900 MHz, 10 dBd, N Hembra</td>
<td>BWA-9Y10-A</td>
</tr>
</tbody>
</table>

Mexican Importer

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