Sure Cross® Performance P14L Node

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more sensors, more solutions

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 P14L Node is a low-cost, battery-powered device that can be used to convert any discrete or analog sensor into a wireless input. All configuration is done through internal DIP switches or the DX80 User Configuration Tool.

Benefits
- Powerful device to deliver factory automation and IIoT solutions by converting any existing sensors to wireless signals using field wireable terminals of the following:
  - One Discrete PNP or NPN sensor
  - One Thermistor
  - One 0–10 V dc or 0–20 mA sensor
- Switched sensor power for one device up to 24 V dc
- The large "D" cell battery in the P14L powers the sensor with selectable sensor power voltage, sensor warmup time, and sample rate to conserve and extend battery life
- **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**—Simplify installation on existing equipment to enable deployment in remote and hard-to-access locations where implementing a wired solution would be difficult, impractical, or not cost-effective
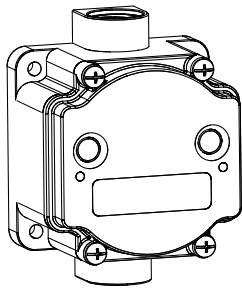
- Wireless industrial I/O device with one configurable discrete input, one configurable analog input, one thermistor input, and one switch power output
- Selectable transmit power levels of 250 mW or 1 Watt for 900 MHz models and 65 mW for 2.4 GHz models
- DIP switches for user configuration
- Frequency Hopping Spread Spectrum (FHSS) technology 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
- Diagnostics allow user defined output settings in the unlikely event of lost RF signal

⚠ **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.

⚠ **CAUTION: Never Operate 1 Watt Radios Without Antennas**

To avoid damaging the radio circuitry, never power up Sure Cross® Performance or Sure Cross MultiHop (1 Watt) radios without an antenna.

⚠ **CAUTION: Electrostatic Discharge (ESD)**

ESD Sensitive Device. This product uses semiconductors that can be damaged by electrostatic discharge (ESD). When performing maintenance, care must be taken so the device is not damaged. Disconnect power from the device when accessing the internal DIP switches. Proper handling procedures include wearing anti-static wrist straps. Damage from inappropriate handling is not covered by warranty.

Models

Model	Frequency	Inputs and Outputs	
DX80N9X1W-P14L	900 MHz ISM Band	**Discrete Mode**	**Analog Mode**
DX80N2X1W-P14L	2.4 GHz ISM Band	**Inputs**: One configurable discrete, one thermistor **Switch Power Outputs**: One	**Inputs**: One configurable discrete, one configurable analog, one thermistor **Switch Power Outputs**: One

This model can be configured to supply continuous power. For more information and detailed instructions, refer to the technical note "*Configuring for Continuous Switch Power or Host Controlled Switch Power*," part number b_3099584.

Integrated battery models are also available without batteries. If you purchase a model without the battery, Banner Engineering recommends using the XENO XL-205F battery or equivalent. For Class I Division 1/Zone 0 and Class I Division 2/Zone 2 environments, only a XENO XL-205F battery is certified.

Configuration Instructions

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: *128185*
- Sure Cross® Wireless I/O Network Instruction Manual: *132607*
- Web Configurator Instruction Manual (used with "Pro" and DX83 models): *134421*
- Host Controller Systems Instruction Manual: *132114*

Configure the DIP Switches

Before changing DIP switch positions, disconnect the power. DIP switch changes are not recognized until after power is 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.
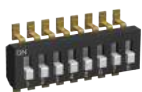
 After making the necessary changes to the DIP switches, place the black cover plate back into position and gently push into place. Plug the ribbon cable in after verifying that the blocked hole lines up with the missing pin. Mount the cover back onto the housing.

DIP Switch Settings

	Switches	
Device Settings	**1**	**2**
Transmit power level: 1 Watt (30 dBm)	OFF*	
Transmit power level: 250 mW (24 dBm), DX80 compatibility mode	ON	
Analog configuration		OFF*
Discrete configuration		ON

* Default configuration

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.

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.

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). The analog cofiguration pairs the switch power output with the analog input and is programmable using switches four through eight. The discrete input is active in this configuration and its input type is defined using switch 3.

Analog Configuration, Switch 2 OFF	DIP Switches					
Descriptions	3	4	5	6	7	8
Discrete Sinking (NPN)	OFF*					
Discrete Sourcing (PNP)	ON					
Sensor Switched Power Voltage: 10 V (to Analog IN 1)		OFF*				
Sensor Switched Power Voltage: 15 V (to Analog IN 1)		ON				
Warm-up Time 10 milliseconds			OFF*			
Warm-up Time 500 milliseconds			ON			
Modbus or UCT Configured (Overrides DIP Switches)				OFF	OFF	OFF
Sample/Report Rate 15 minutes				OFF	OFF	ON
Sample/Report Rate 5 minutes				OFF	ON	OFF
Sample/Report Rate 64 seconds				OFF	ON	ON
Sample/Report Rate 16 seconds				ON	OFF	OFF
Sample/Report Rate 4 seconds				ON	OFF	ON
Sample/Report Rate 2 seconds				ON	ON	OFF
Sample/Report Rate 1 second				ON	ON	ON

Discrete Configuration (DIP Switch 2 ON)

The discrete configuration pairs the switch power output with the discrete input. The discrete configuration is selected when switch 2 is in the ON position.

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

Sensor Switched Power Voltage

The sensor switched power voltage is the power supplied by the Node to the sensor.

Discrete Input Type

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

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

In Modbus/UCT Configured mode, use the User Configuration Tool (UCT) 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 *Flex*Power® 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.

Wire for Power and I/O

Follow these instructions to wire your device for power, ground, inputs, and outputs. The jumper settings determine which inputs and outputs are active.

Input Configuration	Jumper Setting	Wiring Terminals	Wiring Diagram Label	Description
Discrete Input	J1 set to 5	1	Discrete IN	Discrete Input (default)
Reserved	J1 set to 8	1		Reserved for future use
		2	GND	Ground
		3	SPx	Sensor Switched Power 1 (3.6 to 24 V)
Analog Current Input	J2 set to C	4	Analog IN	Analog Input (0-20 mA) (default)
Analog Voltage Input	J2 set to V	4	Analog IN	Analog Input (0-10 V)
		5	GND	Ground
Thermistor Input	J3 set to 4	6	Thermistor IN	Thermistor Input (default)
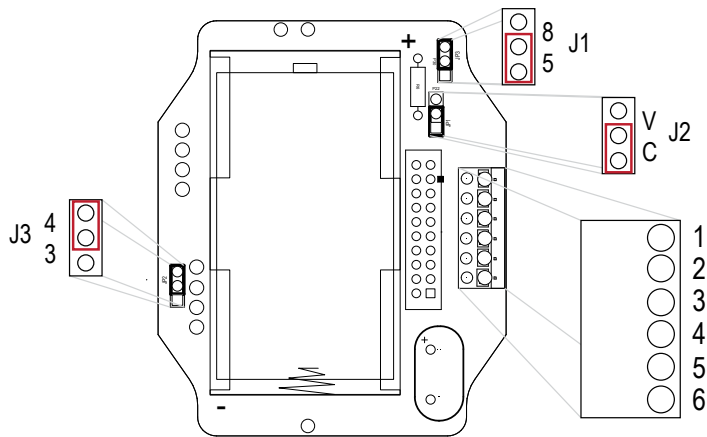
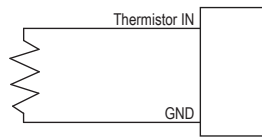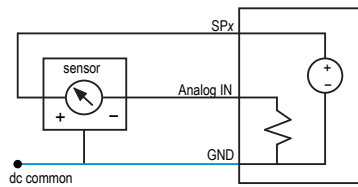### Wiring Diagrams

Discrete Input Wiring for PNP Sensors
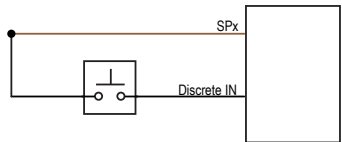
Discrete Input Wiring for NPN Sensors

Analog Input Wiring
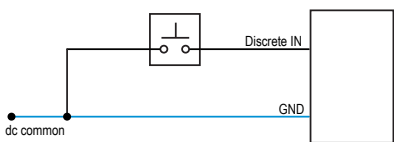
Thermistor Input Wiring

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

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.

1. 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.

2. 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.

3. 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.

4. Label the Node with the assigned address for future references.
5. Repeat steps 2 through 4 for all Nodes that need to communicate to this Gateway.
6. 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 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 DXM Gateway into binding at a time to prevent binding to the wrong Gateway.

1. Enter binding mode on the DXM radio:

   a) Use the arrow keys to select the **ISM Radio** menu on the LCD and click **ENTER**.
   b) Highlight the **Binding** menu and click **ENTER**.

2. 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.

3. Start binding mode on the DXM radio by clicking **ENTER** on the DXM radio.
4. 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 red 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 exits binding mode.

5. Label the Node with the assigned address number for future reference.
6. Click **BACK** on the DXM to exit binding for that specific Node address.
7. Repeat steps 2 through 5, for as many DX80 Nodes as are needed for your network.
8. When you are finished binding, click **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:

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

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

Configuring the Discrete Input

By default, the J1 jumper is set to 5 for a discrete input and DIP switch 3 is set to OFF to select NPN.

To use discrete PNP inputs, set DIP switch 3 to the ON position. See *Configure the DIP Switches* on page 2 for more instructions.

Configuring the Thermistor Input

By default, jumper J3 is set to use the thermistor input.

The thermistor input requires a 10 kOhm 44006, 44016, or 44031 type thermistor. By default, the Node is configured to use a 44006 or 44031 type. To use type 44016, use the User Configuration Tool and follow these instructions.
1. With the Gateway connected to your computer, launch the User Configuration Tool software.
2. From the **Device** > **Configuration Settings** menu, select **Comm Port** and click **Connect**.
3. Go to the **Configuration** > **Device Configuration** screen.
4. Click the arrow next to the Node number of your P14 Node to view its parameters.
5. Click **GET Node**.
6. Click on the arrow next to Input 5 to view that input's parameters.
7. Under **Serial Options**, change **I/O Config** from 3 to 5.
8. Click **SEND**.

Configuring the Analog Input

By default, jumper J2 is set to use a current (0 to 20 mA) analog input. To use the voltage (0 to 10 V) analog input, change the J2 jumper position from A to V. Complete the configuration change using the User Configuration Tool and follow these instructions.
1. With the Gateway connected to your computer, launch the User Configuration Tool software.
2. From the **Device** > **Configuration Settings** menu, select **Comm Port** and click **Connect**.
3. Go to the **Configuration** > **Device Configuration** screen.
4. Click the arrow next to the Node number of your P14 Node to view its parameters.
5. Click **GET Node**.
6. Under **I/O Configuration**, change the **Units** from 0-20mA to 0-10V.
7. Click **SEND**.

Sure Cross® 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, 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 UCT 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.
- DX80 and Performance Wireless I/O Network Instruction Manual: *132607*

Holding Registers

Modbus Registers		EIP Registers		I/O Type	I/O Range		Holding Register Representation (Dec)	
Gateway	Node	Node			Min.	Max.	Min.	Max.
1	1 + (Node# × 16)	0 + (Node# × 8)		Discrete IN 1	0	1	0	1
2	2 + (Node# × 16)	1 + (Node# × 8)		Analog IN 1 (mA / V)	0.0	20.0 / 10.0	0	65535
3	3 + (Node# × 16)	2 + (Node# × 8)	Instance 100 / N7					
4	4 + (Node# × 16)	3 + (Node# × 8)						
5	5 + (Node# × 16)	4 + (Node# × 8)		Thermistor IN 4 (°F/°C)	-1638.3	+1638.4	-32768	32767
6	6 + (Node# × 16)	5 + (Node# × 8)						
7	7 + (Node# × 16)	6 + (Node# × 8)		Reserved				
8	8 + (Node# × 16)	7 + (Node# × 8)		Device Message				
9	9 + (Node# × 16)	0 + (Node# × 8)						
	...		Instance 112 / N14					
15	15 + (Node# × 16)	6 + (Node# × 8)		Control Message				
16	16 + (Node# × 16)	7 + (Node# × 8)		Reserved				

The temperature = (Modbus register value) ÷ 20. Temperature values are stored as signed values in the Modbus register. A 0 in the register is interpreted as 0°; and -32767 (65535 unsigned) in the register (0xFFFF) is interpreted as –1 ÷ 20 = –0.05° in high resolution mode and –1 ÷ 2 = –0.5° in low resolution mode.

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Storage and Sleep Modes

Storage Mode (applies to battery-powered models only)—While in **storage mode**, the radio does not operate. All Sure Cross® 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 5 seconds. To put any *Flex*Power® or integrated battery Sure Cross radio into storage mode, press and hold button 1 for 5 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 1 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.

Installing or Replacing the Battery (DX80 Models)

To install or replace a lithium "D" cell battery in any integrated housing model, 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 (if applicable) by pressing the battery toward the negative terminal to compress the spring. Pry up on the battery's positive end to remove from the battery holder.
3. Install the new battery. Only use a 3.6 V lithium battery from Xeno, model number XL-205F.
4. Verify the battery's positive and negative terminals align to the positive and negative terminals of the battery holder mounted within the case. The negative end is toward the spring.

   Caution: There is a risk of explosion if the battery is replaced incorrectly.
5. After installing the battery, allow up to 60 seconds for the device to power up.
6. 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.

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.

Replacement battery model number: BWA-BATT-001. For pricing and availability, contact Banner Engineering.

Specifications

Performance Radio Specifications

Radio Range[1]
  900 MHz, 1 Watt: Up to 9.6 km (6 miles)
  2.4 GHz, 65 mW: Up to 3.2 km (2 miles)

Antenna Minimum Separation Distance
  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

Spread Spectrum Technology
  FHSS (Frequency Hopping Spread Spectrum)

900 MHz Compliance (1 Watt)
  FCC ID UE3RM1809: This device complies with FCC Part 15, Subpart C, 15.247
  IC: 7044A-RM1809

2.4 GHz Compliance
  FCC ID UE300DX80-2400 - This device complies with FCC Part 15, Subpart C, 15.247
  ETSI EN 300 328: V1.8.1 (2012-06)
  IC: 7044A-DX8024

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

Link Timeout
  Gateway: Configurable via User Configuration Tool (UCT) software
  Node: Defined by Gateway

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
  IEC 68-2-6 and IEC 68-2-27
  Shock: 30g, 11 millisecond half sine wave, 18 shocks
  Vibration: 0.5 mm p-p, 10 to 60 Hz

Environmental Ratings
  IEC IP67; NEMA 6
  Refer to the Sure Cross® Wireless I/O Networks Instruction 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.

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[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.

P14 Model Specifications

Supply Voltage
3.6 V dc low power option from an internal battery

Current Draw at 3.6 V dc
900 MHz, 1 Watt: Approximately 1 mA
900 MHz, 250 mW: Approximately 0.5 mA
2.4 GHz, 65 mW: Approximately 0.3 mA

Wiring Access
Two 1/2-inch NPT

Discrete Input
Rating: 3 mA max current at 30 V dc
Sample / Report Rates: DIP switch configurable

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

Analog Inputs
Rating in 0–20 mA mode: 24 mA
Rating in 0–10 V mode: 10 V
Impedance: Approximately 220 Ohms
Analog Input 1 Sample/Report Rates: DIP switch configurable
Accuracy: 0.2% of full scale +0.01% per °C
Resolution: 12-bit

Housing
Polycarbonate housing and rotary dial cover; 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)

Interface
Two bi-color LED indicators; Two buttons; Six character LCD

Sensor Switched Power Outputs
Analog configuration: one (SP1)
Discrete configuration: one (SP1)

Thermistor Input
Model: 44006, 44016, or 44031 family of 10 kOhm thermistors
Sample Rate: 16 seconds
Report Rate: 64 seconds
Accuracy: 0.4 °C (10 °C to 50 °C); Up to 0.8 °C (–40 °C to 85 °C)

Certifications

CE

Accessories

Thermistor Probes

BWA-THERMISTOR-PROBE-001

- Temperature sensor with thermistor PS103G2
- Beta Value(K) 0 ~50°C: 3575
- Base thermistor accuracy of 0.2%
- Operating Temperature Range: –20 °C to +105 °C
- Maximum Power Rating: 30 mW at 25 °C; derated to 1 mW at 125 °C
- Dissipation Constant: 1 mW/°C
- Plated nickel finish; PVC insulation
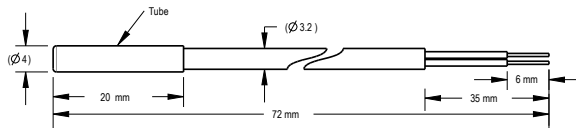
Warnings

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.** A list of approved countries appears in the *Radio Certifications* section of the product manual. 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. Consult with Banner Engineering Corp. if the destination country is not on this list.

Banner Engineering Corp. Limited Warranty

BANNER®
more sensors, more solutions