Sure Cross® DXER9 Ethernet Data Radio

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Datasheet

The Sure Cross Ethernet radio is an industrial grade, long range, 900 MHz radio used to create point to multipoint configurations of wireless Ethernet networks.

- RF transmission rate of 1.536 Mb/s and a throughput of 935 Kb/s
- 128 bit AES encryption for Ethernet data packets
- Sub-block error detection and retransmission
- Automatic scan or manual override for the best of the 12 communication channels
- Indicator LEDs for channel selection and signal strength
- Point to multipoint configurations with up to 16 subscriber units
- User configuration via an internal web page
- Built-in spectrum analyzer and firmware upgrading

Important: Please download the complete Sure Cross® DXER9 Data Radio technical documentation, available in multiple languages, from 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 toda la documentación técnica de los Sure Cross® DXER9 Data Radio, 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 Sure Cross® DXER9 Data Radio sur notre site 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:
- **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

| Model	Physical Connection	Radio Frequency
DXER9	Power: 4-pin or 5-pin M12/Euro-style quick disconnect Ethernet: Industrial connection	900 MHz ISM Band

Overview

The Sure Cross Ethernet radio allows the user to create a long-range, wireless Ethernet network for up to 16 subscriber unit radios for each access point radio. The access points act as the masters for the data radio networks: they keep the timing and control the encryption key exchange.

The access point data radio automatically scans for the best of the 12 available radio channels, encrypts Ethernet data received from the network, and transmits it wirelessly to the correct subscriber unit data radio. The access point also monitors the network performance and automatically changes channels if interference degrades the performance. The user may manually select any of the 12 radio channels by toggling DIP switch settings on the access point radio. It is possible to operate up to 12 access points in the same area with each access point on a different channel, but to avoid interference, position all radios at least 10 feet apart.

Any 10/100 BaseT Ethernet client device (ECD) can be connected to a Sure Cross Ethernet radio subscriber unit. Each subscriber unit encrypts Ethernet traffic received from the attached ECD and wirelessly transmits the data to its access point. Each subscriber unit can be plugged directly into an ECD without adding drivers or loading software. Crossover cables are never needed. Only one ECD can be directly attached to each subscriber unit, and fixed IP addresses are recommended for the attached ECDs.

Banner Ethernet Data Radios use electronic network encryption keys that allow the user to group radios together to form a network. Network keys are shared between radios using web-based configuration pages.
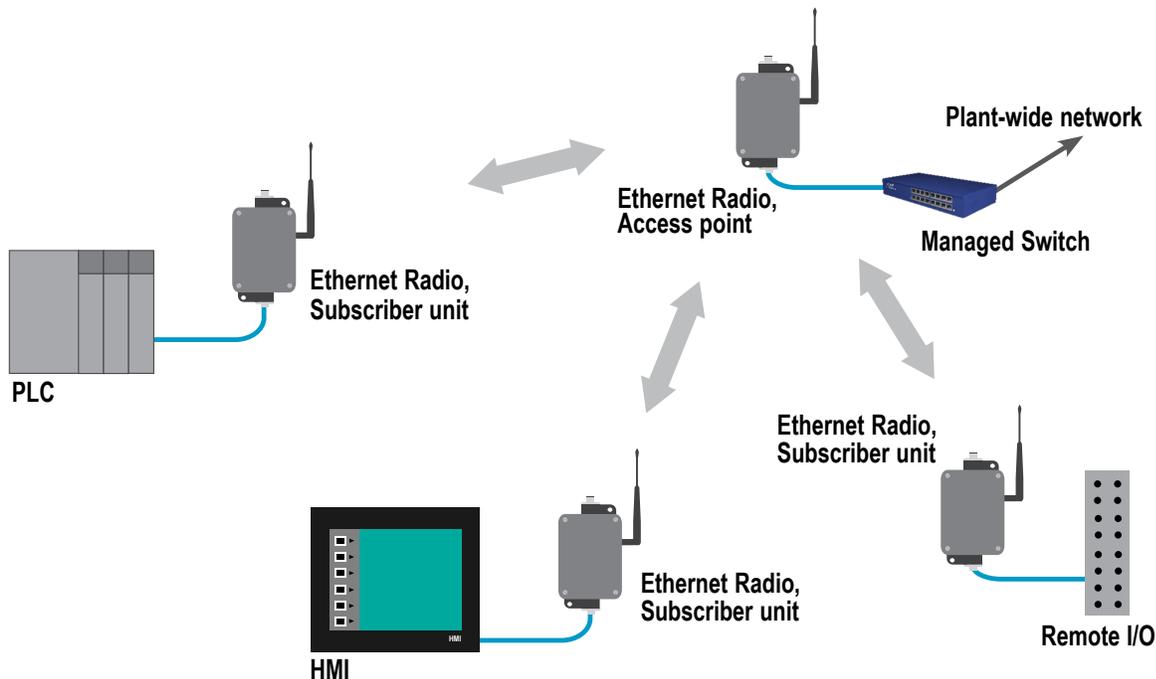
Radios are IP addressable, with remote configuration and diagnostic tools. There is a limit of 64 routable MAC addresses per access point. This allows an Ethernet switch to be attached to subscriber units, but limits to 64 the total number of Ethernet devices to which the access point can connect.

Radios support multiple IP addresses at each remote node. There is a limit of 16 active subscriber units for each access point. A total of 12 access points (in the 900 MHz band) can be deployed to support up to 192 fixed subscriber units across a given site.

For additional information, including installation and setup, weatherproofing, and a list of accessories, refer to the Sure Cross® Wireless I/O Network product manual, Banner p/n 132607.

Please call Banner technical support at 888.373.6767 if the system topology requires:
- More than 16 subscriber units per access point for roaming/mobility applications
- Multiple access points that use the same network key for roaming/mobility
- Low packet loss rates when using broadcast or multicast Ethernet packets

> **Tip:** Broadcast and multicast packets (example: DHCP, UDP) are sent once and may experience losses at extended range. Unicast packets (example: HTTP, TCP) are sent using advanced error correction and retransmission techniques to ensure delivery.

Configuration Instructions

Set Up the DXER9 Data Radio

1. Starting with all units powered off, select a radio to operate as the access point data radio and set its DIP switch 1 to the ON position to enable access point operation.
2. Apply power to the units.
3. Using the Ethernet cable, connect the access point radio to your computer. Go to 192.168.17.17 to view the configuration web pages.

   To view the configuration screens, enter the password and click the Login button. The default password is "password." The IP address and default password is printed on a sticker on the radio board instead of the Ethernet radio device. Note that configuration changes made using these web-based screens will override any DIP switch settings.
4. Go to the **Advanced Admin** screen.
5. Select **Enable User Specified Keys**.
6. For the access point: Enter the number of subscriber devices connected. For the subscriber units: Assign a unique subscriber ID, in numerical order from 1 to 63.
7. Enter an 8-digit hex (0 to 9 and A through F) network name. Use the hyphens as shown on the screen. Use this same network name for the access point (master) and all subscriber units (slaves) in the same network.
8. Enter a 32-digit encryption key. Use the hyphens as shown on the screen. Use this same encryption key for all radios within the same network.
9. Click **Apply** to send the information to the Ethernet data radio.
10. Repeat steps 2 through 8 for all subscriber units.
11. Cycle power to all radios to activate the new keys.
12. Deploy the radios.

Configuration Software
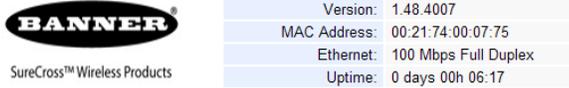
Version:	1.48.4007
MAC Address:	00:21:74:00:07:75
Ethernet:	100 Mbps Full Duplex
Uptime:	0 days 00h 06:17

Password: [   ] Login
Refresh Now Every 10 sec ▼

Need help? To contact an application engineer, go to www.bannerengineering.com

Statistics

Radio Block Error Rate:	0.0 %
Radio Total Packets:	0
Radio Failed Packets:	0
Radio Passed Packets:	0
Radio Broadcast Packets:	0
Radio Unicast Packets:	0
Radio Average TX Size:	0 bytes
Radio Average RX Size:	0 bytes

Device Information

Device Type:	Subscriber Unit
Subscriber ID:	0
Current RF Channel:	6
RF Connected:	No
Radio Active:	Standby
Product Code:	4
Radio Version:	3
Radio Firmware Release:	063

Network Settings

IP Address:	192.168.17.17
Network Mask:	255.0.0.0
Default Gateway:	0.0.0.0
HTTP Port:	80

Figure 1. Login Screen

Version:	1.48.4007
MAC Address:	00:21:74:00:07:75
Ethernet:	100 Mbps Full Duplex
Uptime:	0 days 00h 17:10

Logout   Back to Admin Page
Refresh Now

Need help? To contact an application engineer, go to www.bannerengineering.com

**Warning! These setting are only for use by advanced users!
Please proceed with caution.**

Device Settings

	Description	Value
Device:	Type:	○ Access Point *(override DIP 1 selection)* ⦿ Subscriber Unit *(DIP 1 selection)*
	Subscriber ID:	Every SU must have a unique ID. Valid IDs are from 1 to 63. [0] (decimal 1-63)
Encryption:		☐ Enable User Specified Keys
	Network Name (32-bit):	xxxx-xxxx [0000-023c] (hex)
	Encryption Key (128-bit):	xxxx-xxxx-xxxx-xxxx-xxxx- xxxx-xxxx-xxxx [ ] (hex)

Apply   Cancel

Reset the Device

Reset Device

Figure 2. Advanced Admin Screen

Add New Subscriber Units to the Network

1. Apply power to the subscriber unit.
2. Using the Ethernet cable, connect the radio to your computer. Go to 192.168.17.17 to view the configuration web pages.
3. Go to the **Advanced Admin** screen.
4. Select **Enable User Specified Keys**.
5. Enter the 8-digit hex (0 to 9 and A through F) network name. Use the hyphens as shown on the screen. Use the same network name for the access point (master) and all subscriber units (slaves) in the same network.

6. Enter a 32-digit encryption key. Use the hyphens as shown on the screen. Use this same encryption key for all radios within the same network.
7. Click **Apply** to send the information to the Ethernet data radio.
8. Repeat steps 1 through 7 until all new subscriber units are successfully programmed.
9. Cycle power to the new radios to activate the new keys.

Re-Key a Subscriber Unit to a New Access Point

1. Apply power to the subscriber unit.
2. Using the Ethernet cable, connect the radio to your computer. Go to 192.168.17.17 to view the configuration web pages.
3. Go to the **Advanced Admin** screen.
4. Select **Enable User Specified Keys**.
5. Enter the 8-digit hex (0 to 9 and A through F) network name used by the new access point. Use the hyphens as shown on the screen.
6. Enter a 32-digit encryption key used by the new access point. Use the hyphens as shown on the screen.
7. Click **Apply** to send the information to the Ethernet data radio.
8. Cycle power to the new radio to activate the new keys.

Reset the Radios to Factory Default Settings

To reset the radio to factory defaults, follow these steps.

1. Apply power to radio.
2. Open the radio housing.
3. Press and hold the button for 5 seconds.
    The LEDs cycle on and off to indicate the radio is rebooting.

The radios cannot be damaged by incorrect programming. If DIP 1 is accidentally toggled, DIP 1 can be returned to its previous position and the radio retains all the network associations it had in its previous mode (assuming the radio had not yet successfully key exchanged with a new network). A access point data radio can be reset by programming it as a subscriber unit data radio to a new access point and then turning it back into a access point again.
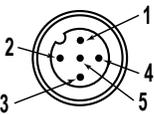
Subscriber units without a network key boot up in "key exchange mode" and wait to receive a key. Subscriber units with a network key boot up for five seconds in "key exchange mode" and search for the access point. If a new access point is present, the subscriber unit exchanges keys with the access point; otherwise the subscriber unit begins normal operation after the five seconds.

Access point data radios without network keys boot up in "key exchange mode" until they have issued network keys to at least one subscriber unit data radio. Once the access point has issued keys, it only boots up for five seconds in "key exchange mode." If a subscriber unit is present during the five seconds, the access point issues new keys to the subscriber unit and remains in "key exchange mode," waiting for more subscriber units to be attached. Once all new subscriber units have been attached, cycle power to the access point. The access point boots up and enters normal operation after five seconds of "key exchange mode."
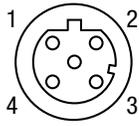
LED Display

Name	Function		LED Color
Power	Unit has power and has successfully booted		Red
RF Rx	Radio reception is occurring		Green
RF Tx	Radio transmission is occurring		Green
Eth Link	The Ethernet port has a valid Ethernet connection		Green
1 2 4 8 16 32	By adding the numbers that are lit, the user can determine the current radio channel. 1 903.12500 MHz 2 905.20833 MHz 3 907.29167 MHz 4 909.37500 MHz 5 911.45833 MHz 6 913.54167 MHz	7 915.62500 MHz 8 917.70833 MHz 9 919.79167 MHz 10 921.87500 MHz 11 923.95833 MHz 12 926.04167 MHz	Green
Link Quality Meter - The more lighted LEDs, the higher the link quality. OR "Key exchange mode" when blinking sequentially	Excellent link quality - No transmission retries		Green
	Very good link quality - Few transmission retries		Green
	Good link quality - Occasional transmission retried		Amber
	Fair link quality - Some transmission retries		Amber
	Poor link quality - Many transmission retries		Red
	No link quality - No link available		Red

5-pin M12/Euro-style Wiring

4-pin or 5-pin M12/Euro-style Male Quick Disconnect	Pin	Wire Color	Function
	1	brown	+ 5 to 48 V DC
	2		
	3	blue	DC Common (GND)
	4		
	5		

Industrial Ethernet Wiring

Use the 4-pin industrial Ethernet connection to connect the radio network to an Ethernet-based host system.

4-pin Industrial Ethernet Connector	Pin	Wire Color	Description
	1	White/orange	+ Tx
	2	White/blue	+Rx
	3	Orange	–Tx
	4	Blue	–Rx

DIP Switch Settings

DIP Switch 1

Access point data radio or subscriber unit data radio:
- DIP 1 ON - The radio operates as a access point
- DIP 1 OFF - The radio operates as a subscriber unit. When defines as a subscriber unit, DIP switches 3 through 8 are not used.

DIP Switches 3 through 8

Automatic Frequency Selection Mode (DIP 3-8 OFF for automatic mode)— The Sure Cross Ethernet radio is designed to automatically select and continuously optimize the performance of its radio channel. The radio channel is monitored to ensure it is providing low error rates necessary for successful data transmission. If the error rate rises, the access point data radio autonomously changes to a new channel. There are 12 non-overlapping channels.

Manual Frequency Selection Mode— The operation of the Sure Cross Ethernet radio can be restricted to a specific channel within the 900 MHz band by setting DIP switches 3-8 on the access point data radio as shown in the DIP switch table. The subscriber unit data radio responds to the access point's choice of channel.

Device Settings	Switches							
	1	2	3	4	5	6	7	8
Subscriber unit (default)	OFF							
Access point	ON							
Channel center frequency								
Automatic channel selection (default)			OFF	OFF	OFF	OFF		
903.12500 MHz			ON	OFF	OFF	OFF		
905.20833 MHz			OFF	ON	OFF	OFF		
907.29167 MHz			ON	ON	OFF	OFF		
909.37500 MHz			OFF	OFF	ON	OFF		
911.45833 MHz			ON	OFF	ON	OFF		
913.54167 MHz			OFF	ON	ON	OFF		
915.62500 MHz			ON	ON	ON	OFF		
917.70833 MHz			OFF	OFF	OFF	ON		
919.79167 MHz			ON	OFF	OFF	ON		
921.87500 MHz			OFF	ON	OFF	ON		
923.95833 MHz			ON	ON	OFF	ON		
926.04167 MHz			OFF	OFF	ON	ON		

IP Discovery Changer Utility

The IP Discovery Changer Utility reads the IP addresses of the devices connected to the local network when the program is launched. Download the IP Address Utility from www.bannerengineering.com.

Devices are listed by MAC Address and IP Address. To change the IP address, Network Mask, or password settings, double-click on the device in the list.
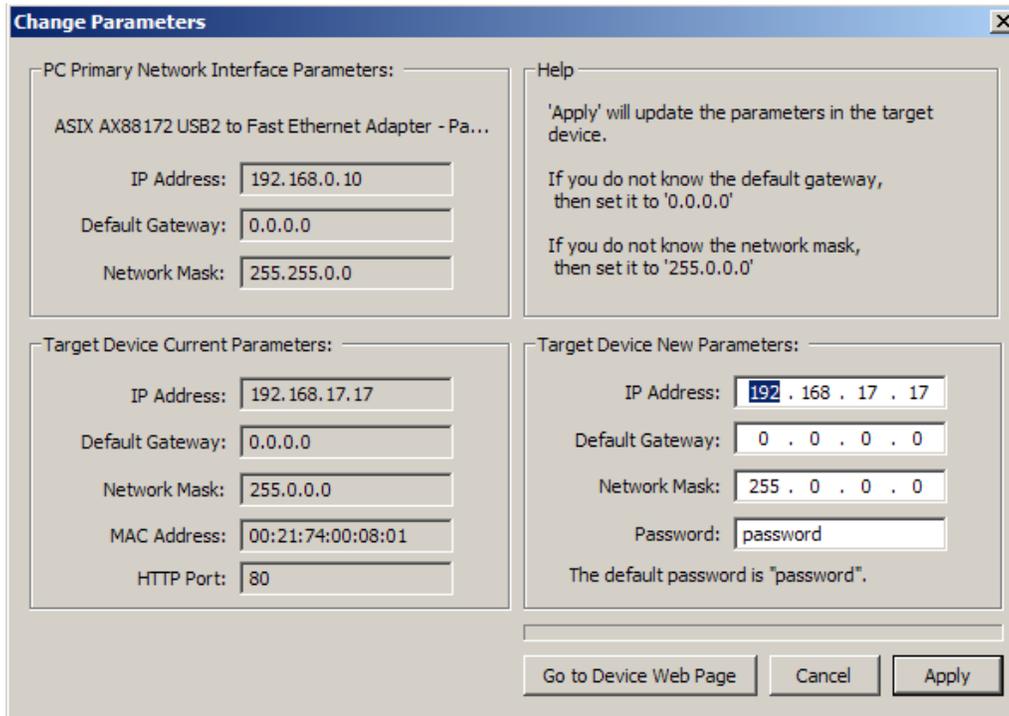
After making changes on the **Change Parameters** screen, click **Apply**, then click **Go to Device Web Page** to launch the **Web Configuration** page.

Software Screens

The following sections explain the function of each screen.

Configuration Web Pages

With the Ethernet Radio plugged into your computer via the Ethernet cable, go to 192.168.17.17 to view the configuration web pages. This initial screen displays the performance statistics, network settings, and device information for your Ethernet radio device.

To view the configuration screens, enter the password and click the Login button. The default password is "password." The IP address and default password is printed on a sticker on the radio board instead of the Ethernet radio device. Note that configuration changes made using these web-based screens will override any DIP switch settings.

Device Settings Screen

After the password is entered and the **Login** button clicked, additional information is added to the bottom of the screen. The first section, **Device Settings**, displays the specific radio and network settings for the Ethernet radio. Use this screen to change the password, select the radio operation, or change the IP address, network mask, or http port. After making changes, click **Apply** to activate these changes.

By default, the radio chooses its frequency to minimize interference. If you set a fixed channel, verify that the access point and all subscriber units use the same channel.

Spectrum Scanner Screen

The Spectrum Scanner analyzes the radio traffic in your area and displays the results graphically. Spikes in the readings indicate radio traffic.

To see an accurate display, set the Automatic Scan Interval to every 3 to 10 seconds. Note that when you leave this screen, the Automatic Scan Interval is reset to none.
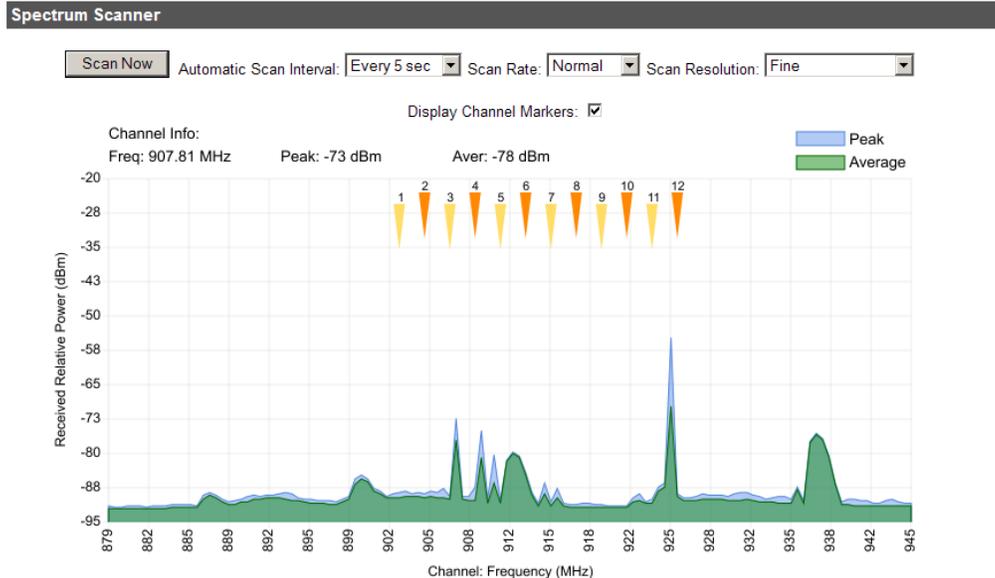
Use this display to help select an available radio channel when you are setting the channel manually. The first time you access this web page, this graphic may not be visible. If there are no graphic images displayed, click on the link at the bottom of the display area to download the SVG plugin and follow your browser's instructions.

This graphic may not display properly in all browsers. If the graphic does not display as part of the Admin screen, click on the **Fast Spectrum Scanner** button at the bottom of the screen to load the image on its own web page. If the graphic does not display by either method, load these configuration pages using another browser. Internet Explorer and Mozilla's Firefox should display the graphic in both locations. Apple Safari and Google Chrome may not display the graphic as part of the **Admin** screen, but do display this graphic from the **Fast Spectrum Scanner** button.

Updating the Firmware

To update the Ethernet or radio firmware, follow these instructions.

1. Download the firmware updates from either the data radio or software pages on Banner Engineering's website.
2. Using the radio's web browser interface, enter the password and click **Login**. (If you don't know the password, use the IP Address Changer utility to read or reset it. This file is also downloadable from Banner Engineering's website.)
3. Near the bottom of the **Admin** page is a section titled **Upload New Firmware**. Enter the path to the Radio firmware update file (file extension .BIN) or click **Browse** to find it.
4. Click **Upload Firmware** and **OK** to confirm. After a few seconds, the radio should reset and return to the **Login** page.
5. Repeat steps 3 and 4 to update the Ethernet firmware update file (file extension .WEBBIN).
6. Look at the version number listed on the top of the **Login** page to verify the update was successful.

Upload New Firmware

Browse for firmware file on local computer:

[_____] [Browse...]

[Upload Firmware] [Cancel]

Advanced Links

**Warning! These links are only for use by advanced users!
Please proceed with caution.**

[Advanced Admin]

[Fast Spectrum Scanner]

The bottom of the web page contains a link to the **Advanced Admin** page. Use the **Advanced Admin** page only for advanced configuration of networks with more than 16 subscriber units. Click **Advanced Admin** to access this configuration page.

Advanced Admin Screen

When using more than 16 subscriber units within a network or when using the web pages instead of the DIP switches to configure your devices, use the Advanced Admin page to set the following parameters.

- Device type—Choose the device type, either an Access Point or Subscriber Unit. For Subscriber Units, assign unique ID numbers in numeric order from 1 to 63. For an Access Point, enter the number of Subscriber Units that will be communicating with it.
- Keys—Click the box labeled "Enable User Specified Keys" and select and enter an 8-digit hex (0-9 and A-F) Network name that will be common among the Access Point and its Subscriber Units. The hyphen is required.
- Encryption key—Choose and enter a 32-digit hex encryption key, including the hyphens. Use the same key for the AP and the SU.

After entering the parameters, click **Apply** to save them to the radio.

When all the radios are keyed and operating, connect them to your network and Ethernet devices as desired and cycle the radio's power to begin normal operation. Browser management of the subscriber units can now be performed over the wireless network. Avoid plugging actively linked radios into the same switch because this will corrupt the routing tables and may cause network problems just as if you had plugged a CAT5 cable directly between two ports of a switch.

BANNER ®
SureCross™ Wireless Products

Version:	1.48.4007
MAC Address:	00:21:74:00:07:75
Ethernet:	100 Mbps Full Duplex
Uptime:	0 days 00h 17:10

[Logout] [Back to Admin Page]
[Refresh Now]

Need help? To contact an application engineer, go to www.bannerengineering.com

**Warning! These setting are only for use by advanced users!
Please proceed with caution.**

Device Settings

	Description	Value
Device:	Type:	○ Access Point *(override DIP 1 selection)* ◉ Subscriber Unit *(DIP 1 selection)*
	Subscriber ID:	Every SU must have a unique ID. Valid IDs are from 1 to 63. [0] (decimal 1-63)
Encryption:	Network Name (32-bit):	□ Enable User Specified Keys xxxx-xxxx [0000-023c] (hex)
	Encryption Key (128-bit):	xxxx-xxxx-xxxx-xxxx-xxxx- xxxx-xxxx-xxxx [_____] (hex)

[Apply] [Cancel]

Reset the Device

[Reset Device]

Specifications

Radio transmission rate
 1.536 Mb/s

Ethernet throughput
 935 Kb/s

Output power
 +21 dBm (4 Watts EIRP used with 15 dBi antenna)

Receive sensitivity
 –97 dBm at 10e-4 BER (–112 dBm with 15 dBi antenna)

Radio link budget
 148 dB with 15 dBi antenna

Range
 40 miles LOS with 15 dBi antenna

Radio channels/bandwidth
 12 non-overlapping with 2.0833 MHz spacing and 1.75 MHz occupied bandwidth

Spread Spectrum technology
 Direct Sequence Spread Spectrum

Manual frequency select
 Channel selected with DIP switch or via Web browser interface

Adjacent-band rejection
 SAW receiver filter attenuates cellular and pager interference

Regulator type
 Switching regulator

Operating conditions
 –40 °C to +70 °C (–40 °F to +158 °F)

Environmental rating
 IEC IP65; NEMA 4X
 (For UL rating, refer to the UL section below)

900 MHz Radio Compliance
 FCC ID: R4N - AW900MR
 IC: 5303A - AW900MR
 AvaLAN Wireless Systems: www.AvaLANwireless.com
 IFT: NYC-CT133219C0

UL Certifications
 Maximum ambient temperature. 70 °C
 Mounting instructions. See document 132607
 Power rating. UL Class 2
 Enclosure environmental rating. UL Type 1

Browser management tools
 QoS Statistics, Network Settings, Spectrum Analyzer, and Firmware Upgrading

Power consumption
 Transmit: 1.7 Watts
 Receive: 0.8 Watts

Voltage
 Apply power using one of the following connections: Euro-style connector: 5 to 48 V dc with pin 1 positive and pin 3 ground

Housing
 Mounting: #10 or M5 (SS M5 hardware included)
 Max. Tightening Torque: 0.56 N·m (5 lbf·in)
 Case Material: PBT

Connector types
 Ext. Reverse Polarity SMA / 10-100 baseT Industrial Ethernet / 5-pin or 4-pin M12/ Euro-style power connection

Status LEDs
 Power, Ethernet Link, RF RX, RF TX, 4/Channel, and 6/Link Quality

Error correction technique
 Sub-block error detection and retransmission

Required Overcurrent Protection

> ⚠️ **WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

> **Note:**
>
> **Compliance Statement (Part 15.9)**— This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: this device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.
>
> This device contains FCC ID:R4N-AW900MR and IC: 5305A-AW900MR
>
> **Warning (Part 15.21)**— Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
>
> **RF Exposure (OET Bulletin 65)**— To comply with FCC RF exposure requirements for mobile transmitting devices, this transmitter should only be used or installed at locations where there is at least 20 cm separation distance between the antenna and all persons.
>
> **Information to the User - Part 15.105(b)**— This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
> - Reorient or relocate the receiving antenna.
> - Increase the separation between the equipment and receiver.
> - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
> - Consult the dealer or an experienced radio/TV technician for help.

Dimensions

All measurements are listed in millimeters, unless noted otherwise.

148.1 [5.83"]

55.9 [2.20"]

196.3 [7.73"]

59.7 [2.35"]

96.6 [3.81"]
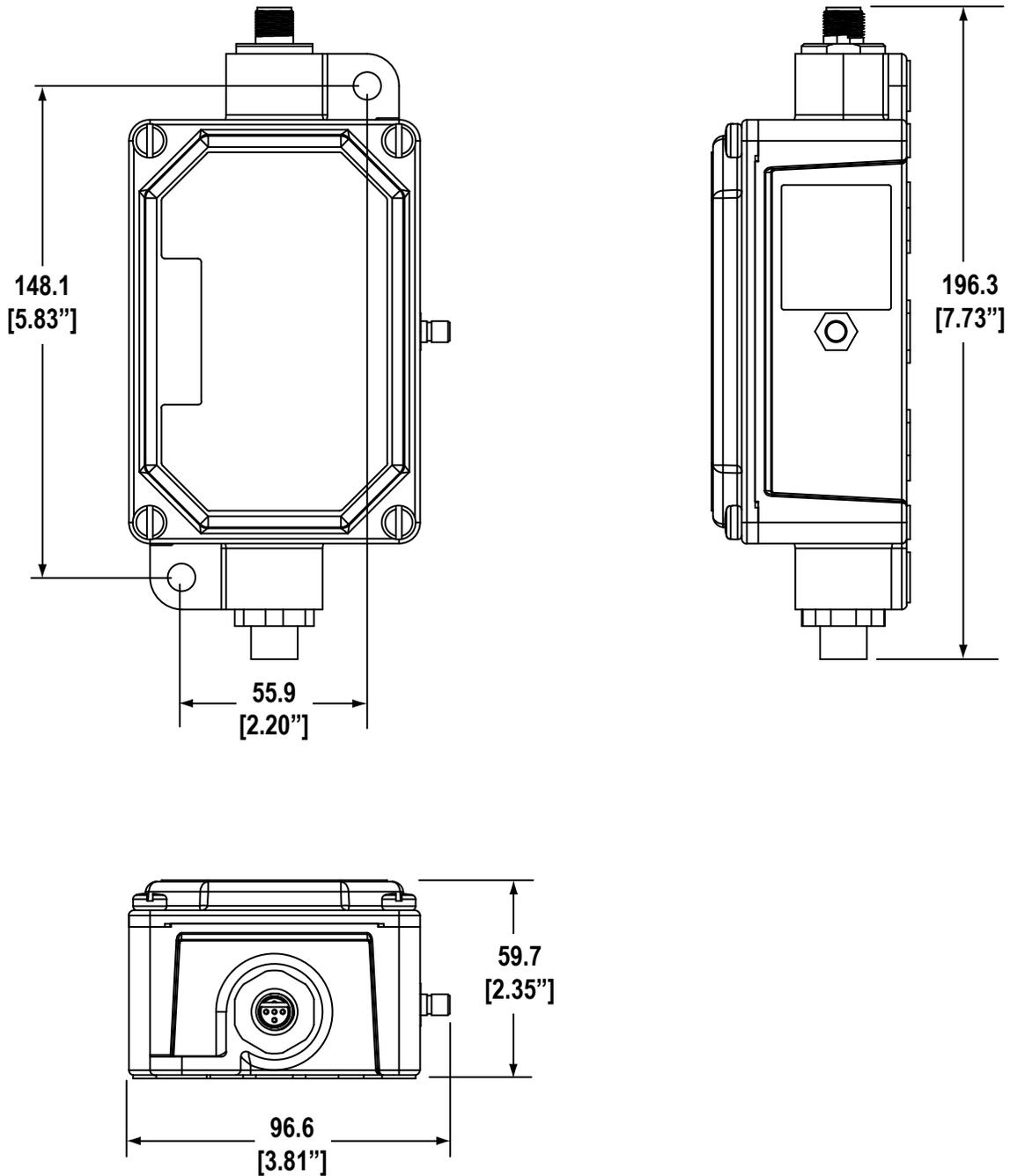
Included with Device

- BWA-HW-001: Mounting Hardware Kit, containing four M5-0.8 x 25mm SS screws, four M5-0.8 x 16mm SS screws, four M5-0.8mm SS hex nuts, and four #8-32 x 3/4" SS bolts
- BWA-9O2-C (900 MHz): Antenna, 2 dBd Omni, Rubber Swivel RP-SMA Male
- MQDC1-506: 5-Euro (single ended) straight cable, 2m (Not included with FlexPower devices)
- BWA-EX2M: Ethernet crossover cable, M12 industrial/RJ45, 2 meter

Go to www.bannerengineering.com and download the Sure Cross Accessories List (p/n b_3147091) for a complete listing of available accessories.

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 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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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.

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Antenas SMA	Modelo	Antenas Tipo-N	Modelo
Antena, Omni 902-928 MHz, 2 dBd, junta de caucho, RP-SMA Macho	BWA-9O2-C	Antena, Omni 902-928 MHz, 6 dBd, fibra de vidrio, 1800mm, N Hembra	BWA-9O6-A
Antena, Omni 902-928 MHz, 5 dBd, junta de caucho, RP-SMA Macho	BWA-9O5-C	Antena, Yagi, 900 MHz, 10 dBd, N Hembra	BWA-9Y10-A

Mexican Importer

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