SureCross DX83 Ethernet Bridge

DX83 Ethernet Bridge for industrial network configuration and communication

Features

The SureCross™ DX80 is a radio frequency network system built around a Gateway and one or more Nodes. The DX83 Ethernet Bridge connects between a DX80 Gateway device and a computer. Once connected, the DX80 system may be configured using any Web browser. The DX83 Ethernet Bridge also allows a host connection using Modbus/TCP.

- 10 to 30V dc power input
- Modbus serial interface and Ethernet interface
- XML formatted files store multiple configurations of the DX80 system
- IP address accessible configuration Web page

For additional information, the most recent version of all documentation, and a complete list of accessories, refer to Banner Engineering's website, *www.bannerengineering.com/surecross*.

Models

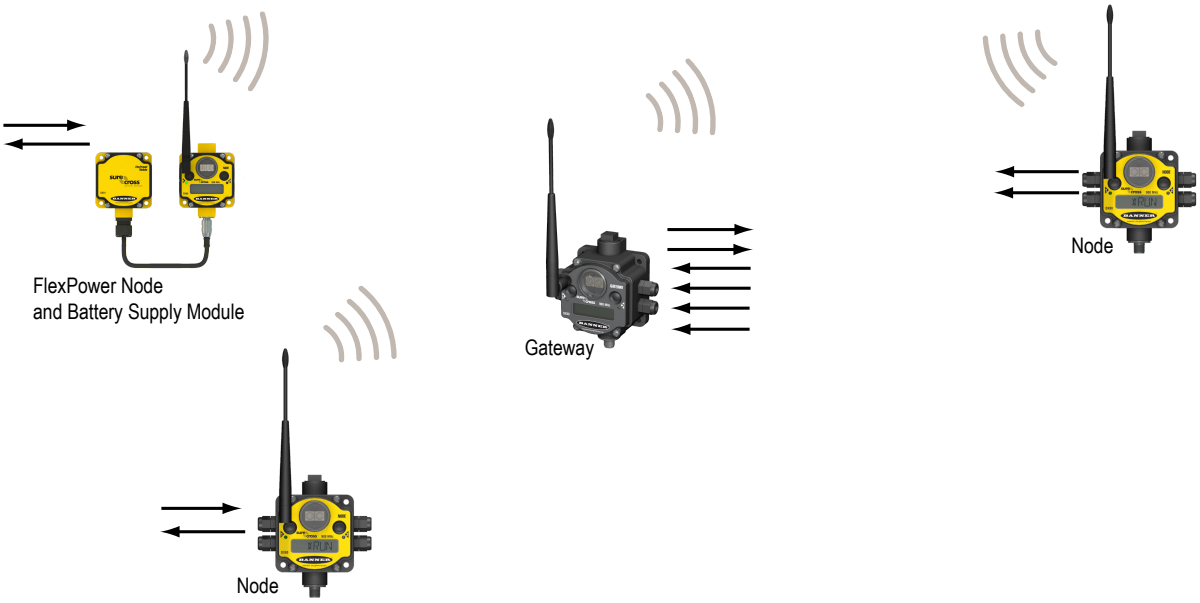
Model	Power	Features
DX83T	+10 to 30V dc	Modbus RTU via RS-485 Modbus/TCP or EtherNet/IP™ communication protocol
DX83A		Modbus/TCP protocol Configuration capability using the Web Configurator

WARNING: Not To Be Used for Personnel Protection
Never use this product as a sensing device for personnel protection. Doing so could lead to serious injury or death. This product 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.

The SureCross® DX80 Wireless Network

The SureCross® DX80 wireless I/O network provides reliable monitoring without the burden of wiring or conduit installation. The SureCross wireless network can operate independently or in conjunction with a host system, PLC, and/or PC software.

Each wireless network system consists of one Gateway and one or more Nodes. Devices ship with factory defined inputs and outputs that may be all discrete, all analog, or a mix of discrete and analog I/O.



The SureCross® DX80 network is a deterministic system—the network identifies when the radio signal is lost and drives relevant outputs to user-defined conditions. Once the radio signal is reacquired, the network returns to normal operation.

SureCross® DX80 Gateways and Nodes

A **Gateway** is the master device within each radio network. Every wireless network must have one Gateway that schedules communication traffic and controls the I/O configuration for the network. A radio network contains only one Gateway, but can contain many Nodes. Similar to how a gateway device on a wired network acts as a "portal" between networks, the SureCross Gateway acts as the portal between the wireless network and the host controller. When the Gateway, using its Modbus RTU RS-485 connection, is a Modbus slave to a Modbus RTU host controller, the wireless network may contain up to 47 Nodes in a single wireless network and the Gateway holds the Modbus registers of all wireless devices within the network.

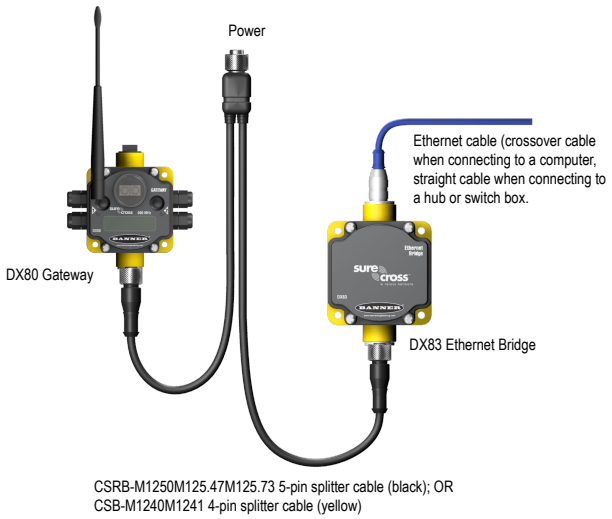
A **Node** is a wireless network end-point device used to provide sensing capability in a remote area or factory. The Node collects data from sensors and communicates the data back to the Gateway. Nodes are available in a wide variety of power or input/output options. Each Node device can be connected to sensors or output devices and reports I/O status to the Gateway.

DX83 Ethernet Bridge Overview

The DX83 Ethernet Bridge adds the Web page configuration ability to a Gateway-Node wireless network as well as the ability to interface to Ethernet using Modbus/TCP or EtherNet/IP protocols. A DX83 Ethernet Bridge connected to a DX80 Gateway functions like a DX80 GatewayPro while allowing the Gateway to have I/O points.

There are two basic DX83 models: DX83T and DX83A.

- DX83T. The 'T model acts as a protocol converter only, offering the Modbus/TCP or EtherNet/IP communication protocols.
- DX83A. The 'A model includes DX80 wireless network configuration, Modbus RTU master, Modbus/TCP client/server, Script Basic, e-mail, data logging, and trending.



Connect a DX83 Ethernet Bridge to a host system using the industrial Ethernet connection on the DX83. To connect the DX83 directly to the host system without using an Ethernet switchbox/hub, some host systems may require a crossover cable.

By default, the DX83 is configured to use Modbus/TCP. To use EtherNet/IP, you must connect the DX83 to a managed switch and you must use the Web Configuration tool to select EtherNet/IP (see *SureCross Wireless I/O Product Manual* or *Host Configuration Manual*).

Logging into the Web Configurator

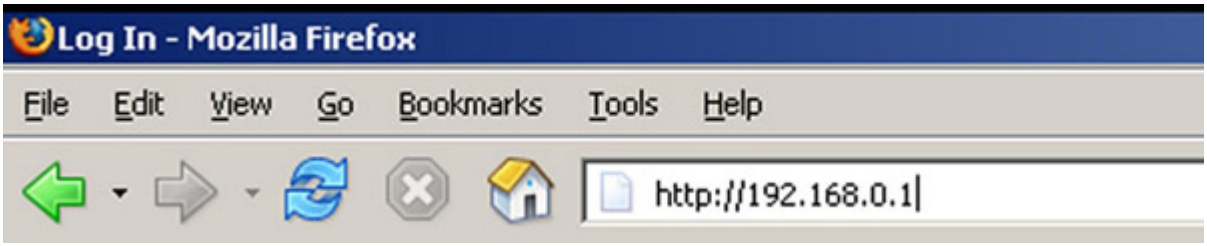
The SureCross™ Pro and DX83 Ethernet Bridge devices use an XML file to configure the network. To access the XML file, use any web browser set up for a direct connection to the Internet. If problems occur while connecting, verify the browser is not set to use a proxy server.

When connecting to the Ethernet Bridge, GatewayPro, or MultiHop Pro directly from a host computer, a crossover Ethernet cable is required; when connecting through a switch or Ethernet hub, use a standard Ethernet cable.

The factory default IP address for the devices is: **192.168.0.1**.

To change the device's default IP address, first set up the host PC with an IP address different from the Ethernet Bridge, GatewayPro, or MultiHop Pro IP addresses. (Please refer to Banner document 133116 for detailed instructions on setting up the host computer's network IP address.) For example, change the PC host IP address to: **192.168.0.2**.

After changing the host's IP address, open a web browser and log into the Ethernet Bridge, GatewayPro, or MultiHop Pro by typing the IP address in the browser location window: **http://192.168.0.1**.



After entering the IP address, the home web page for the SureCross device displays. To log in, click on any tab at the top of the page. To log out, close the browser.

For user-level access, enter the following as the user name and password.

- **User name: system**
- **Password: admin**

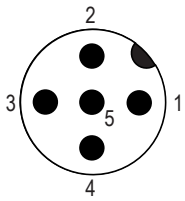
For Admin-level access, enter the following as the user name and password:

- **User name: root**
- **Password: sxi**

Admin-level access allows administrators to set up system users and their passwords. Admin-level access is also required to change the IP address of the system.

5-pin Euro-Style Hookup

Wiring the 5-pin Euro-style connector depends on the model and power requirements of the device. Connecting dc power to the communication pins will cause permanent damage.



Wire No.	Wire Color	RS-485 Mode	RS-232 Mode
1	Brown	10 to 30V dc	10 to 30V dc
2	White	RS485 / D1 / B / +	RS-232 Tx
3	Blue	dc common (GND)	dc common (GND)
4	Black	RS485 / D0 / A / –	RS-232 Rx
5	Gray	Comms Gnd	Comms Gnd

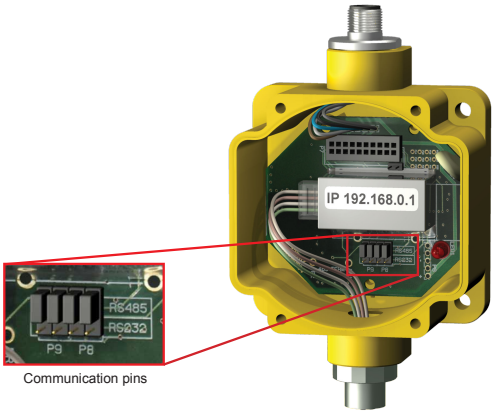
Industrial Ethernet Wiring

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

Wire No.	Wire Color	Description
1	White/Orange	+Tx
2	White/Blue	+Rx
3	Orange	-Tx
4	Blue	-Rx

Serial Communication Configuration for DX83s

The DX83 Ethernet Bridge uses jumpers to select between RS-485 and RS-232 communications.
Install the four jumpers across the two top rows of pins for RS-485 and across the bottom two rows of pins for RS-232.



Additional Information

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

- SureCross Quick Start Guide: Banner part number *128185*
- SureCross Wireless I/O Network Manual: *132607*
- Web Configurator Manual (used with "Pro" and DX83 models): *134421*
- Host Configuration Manual *132114*

Modbus Register Table

I/O Point	Modbus Holding Register	
	Gateway	Any Node
1	1	1 + (Node# × 16)
2	2	2 + (Node# × 16)
3	3	3 + (Node# × 16)
4	4	4 + (Node# × 16)
5	5	5 + (Node# × 16)
6	6	6 + (Node# × 16)
7	7	7 + (Node# × 16)
8	8	8 + (Node# × 16)
9	9	9 + (Node# × 16)
10	10	10 + (Node# × 16)
11	11	11 + (Node# × 16)
12	12	12 + (Node# × 16)
13	13	13 + (Node# × 16)
14	14	14 + (Node# × 16)
15	15	15 + (Node# × 16)

I/O Point	Modbus Holding Register	
	Gateway	Any Node
16	16	16 + (Node# × 16)

Specifications

General

Power*

Requirements: +10 to 30V dc (For European applications: +10 to 24V dc, ± 10%). (See UL section below for any applicable UL specifications)

Consumption: Less than 1.7 W (70 mA) at 24V dc

* For European applications, power the DX80 from a Limited Power Source as defined in EN 60950-1.

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 in·lbf)

Communication

Hardware (RS-485)

Interface: 2-wire half-duplex RS-485

Baud Rates: 9.6k, 19.2k (default), or 38.4k

Data Format: 8 data bits, no parity, 1 stop bit

Modbus/TCP, EtherNet/IP

Interface: 4-wire Industrial Ethernet

Data Rate: 10/100 Mbps, full or half duplex, auto sensing

Environmental

Rating

IEC IP67; NEMA 6; (See UL section below for any applicable UL specifications)

Operating Temperature

−40 to +85° C (Electronics); −20 to +80° C (LCD)

Operating Humidity

95% max. relative (non-condensing)

Radiated Immunity

10 V/m, 80-2700 MHz (EN61000-6-2)

Shock and Vibration

IEC 68-2-6 and IEC 68-2-7

Shock: 30g, 11 millisecond half sine wave, 18 shocks

Vibration: 0.5 mm p-p, 10 to 60 Hz

Refer to the SureCross® DX80 Wireless I/O Network product manual, Banner 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.

Included with Device (DX83 Models)

Included with Device	Model	Qty	Item
Mounting Hardware Kit	BWA-HW-001	4	Screw, M5-0.8 x 25mm, SS
		4	Screw, M5-0.8 x 16mm, SS
		4	Hex nut, M5-0.8mm, SS
		4	Bolt, #8-32 x 3/4", SS
SureCross Literature CD	79685	1	SureCross Literature CD
Ethernet Crossover Cable	BWA-EX2M	1	Ethernet Cable, M12 Industrial/RJ45, Crossover, 2 meter

Splitter Cables

	Part No.	Model No.	Description
	83265	CSRB-M1250M125.47M125.73	Splitter cable, 5-pin Euro-style QD, No trunk male, two female branches, black (shown). Use to split power between two FlexPower or solar powered devices. DO NOT use this cable to connect a FlexPower devices to a 10–30V dc powered device.
	75286	CSB-M1240M1241	Splitter cable, 4-pin Euro-style QD, No trunk male, two female branches, yellow (not shown). Used to split power between two 10–30V dc powered devices, such as a data radio and Gateway, or between a DX85 and Gateway.
	13805	CSRB-M1253.28M1253.28M1253.28	Splitter cable, for dual power sources, 5-pin Euro female to 2 5-pin Euro males Used to connect one FlexPower device (data radio, FlexPowered Gateway, etc) to two power sources, such as the FlexPower Solar Supply and DX81P6 Battery Pack.
	14642	BWA-HW-026	Splitter cable, wall wart for external power split to 5-pin Euro-style male and 5-pin Euro female (to power a M-H at 1 Watt while configuring it through the MHCT)
	13250	BWA-DRSPLITTER	Splitter cable, DB9 Female (RS232) trunk to 5-pin Euro-style male and female

Ethernet Cables

Part No.	Model No.	Description
77669	BWA-E2M	Ethernet cable, RSCD RJ45 440, 2M
78469	BWA-E8M	Ethernet cable, RSCD RJ45 440, 8M
78467	BWA-EX2M	Ethernet cable, crossover, RSCD RJ45CR 440, 2M

Use a crossover cable to connect the DX80 GatewayPro or DX83 Ethernet Bridge to a host system without using an Ethernet switchbox or hub. When using a switchbox or hub, use a straight cable.

Warnings

The manufacturer does not take responsibility for the violation of any warning listed in this document.

Make no modifications to this product. Any modifications to this product not expressly approved by Banner Engineering could void the user's authority to operate the product. Contact the Factory for more information.

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