

Wireless Solutions for the Factory

Worldwide service and support. Banner is a global leader in process and factory automation, helping customers increase efficiency, reduce costs, ensure quality, monitor and control processes, and safeguard employees.

sure cross



**wireless
innovatI/O n.**

- Wireless IP67 transceiver pairs replace cables
- Scalable networks collect hundreds of signals
- Analog, discrete, temperature and serial I/O
- FlexPower options include battery, solar and DC
- Integrated Site Survey displays wireless link quality
- 900 MHz and 2.4 GHz license-free radio
- Multi-layer security protocol provides deterministic response
- Intrinsically Safe and Class I Div 2 models

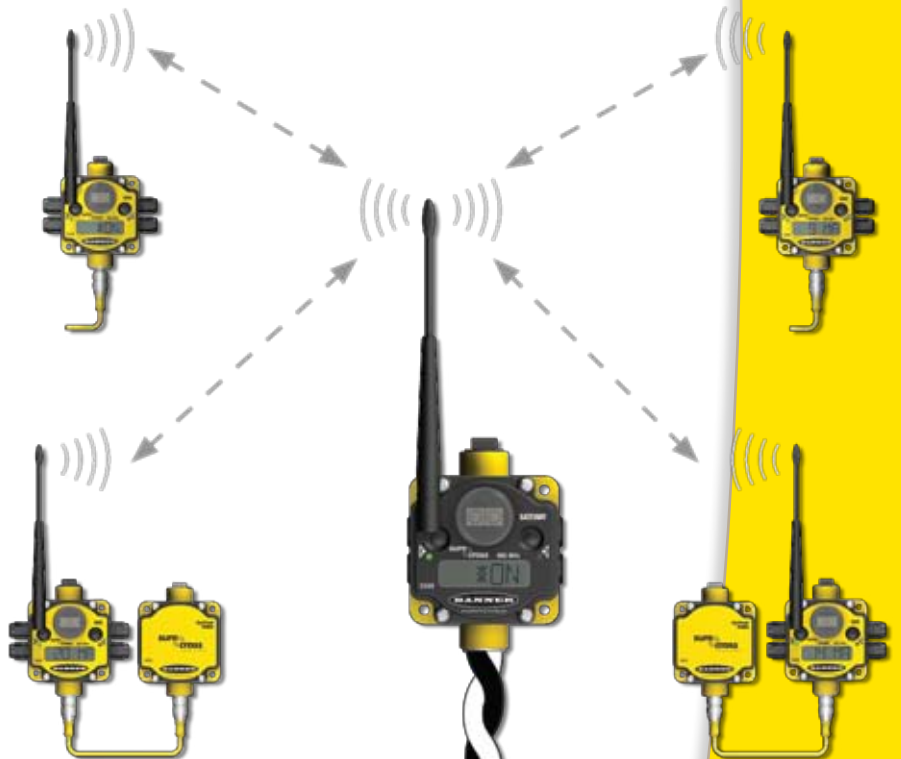
Nodes and Gateways offer combinations of inputs and outputs.



Discrete
PNP/NPN
NPN/NMOS
Dry contact/relay
Counter



Analog
0–20 mA
4–20 mA
0–10V dc
PT100 RTD
Thermocouple



The SureCross Gateways and Data Radios support the following protocols:

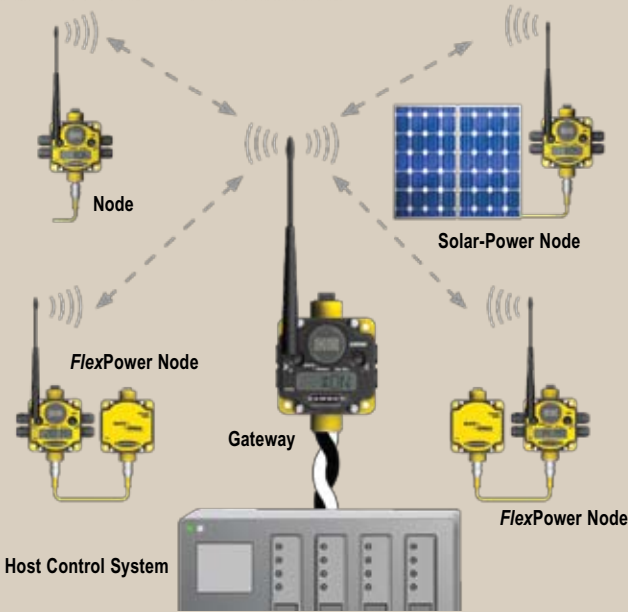
- RS-485 Modbus RTU
- Modbus/TCP
- EtherNet/IP



Wire Replacement Solutions

Star Network Topology

- Inputs and outputs available in each transceiver device
- Point-to-point and point-to-multipoint network configurations
- *FlexPower* options include battery, solar, and dc power
- Installation cost savings compared to hardwiring I/O



Activated Emergency Shower Notification

Notify security and other personnel when and where an emergency shower has been activated. SureCross Nodes certified for use in hazardous areas can be installed at each shower location to ensure a real time alarm is sent to a central communication system as soon as a shower is activated.

Site Survey

A Site Survey analyzes the radio communications link between the Gateway and any Node within the network by reporting the number of missed and received data packets. The Gateway initiates the Site Survey with specified Nodes. Site Survey results are reported as a percentage of data packets received at specific signal strengths.



Excellent signal strength

Good signal strength

Marginal

MISSED: Data not received on first transmission



Predictive Maintenance



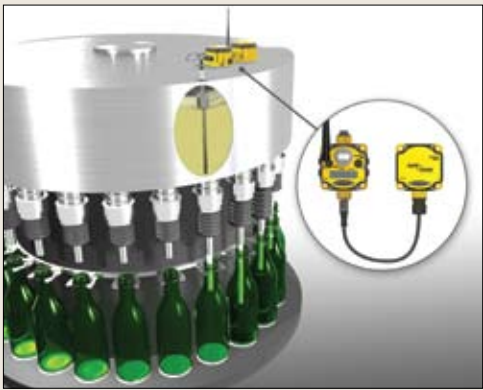
Tank Level, Pressure and Temperature Control

A bottling plant monitors the level, pressure, and temperature on each rotary filler to accurately determine when to activate the inflow into the tank. To eliminate data and power wires on moving assemblies, wireless data acquisition solutions offer an alternative to masses of cables, wires, and slip rings.



Data Logging, Status and Alarming

Vibration and temperature of motors, bearings and other critical rotating equipment can be logged for scheduled maintenance programs using the SureCross Wireless system. Nodes equipped with thermocouples, RTDs and accelerometers can be mounted near the motors or on AGVs for a mobile monitoring system with real-time data collection.



Conveyor Temperature Analysis

The dense airborne particulate in a grain elevator presents a unique challenge when collecting predictive maintenance data such as bearing temperature on a conveyor. An intrinsically safe *FlexPower* Node with an integrated battery powering the radio and thermocouple monitors bearing temperature without running any new wires.

Wireless Andon Systems

Wireless machine monitoring enables an entirely new category of applications and machine diagnostics free from wired limitations. Banner's solution combines a SureCross Wireless I/O Network and EZ-LIGHT indicators.

This enables users to:

- Monitor machines remotely
- Track individual uptime and cycle-counts
- Give operators machine status updates when and where needed
- Provide a central point to log information



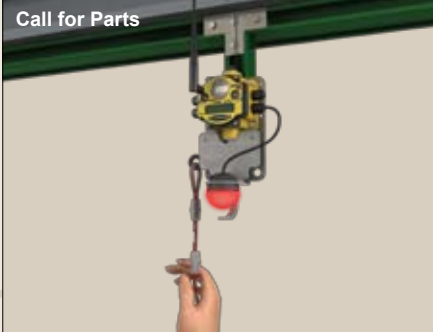
Position Detection Without Wires

Eliminate costly maintenance issues and downtime in the Pressroom and other heavy equipment areas. Wireless controls, especially with battery-powered *FlexNodes* can reduce wiring for low cost installations of position sensors on bolsters and other large moving equipment.



Robotic End-Effectors

A wireless system retrofit is a simple solution to costly maintenance problems due to broken cables. Either an I/O only wireless solution or a complete battery-powered wireless system can be very cost effective and reliable. Surecross Wireless is ideally suited for the applications that do not require high speed response times.



Facilities Management

HVAC Monitoring and Control

Wireless control and monitoring can allow facility managers to identify new opportunities for optimization and energy management. Installed costs can be greatly reduced by using point-to-point control for individual equipment or a networked approach for a more wide spread implementation.



Energy Management

Control and optimize energy consumption in real-time with a SureCross Wireless I/O Network. Industrial fans and air movers can be turned on/off as plant cycles and requirements change. Applications that were once too expensive to hardwire are now possible with a scalable wireless network.



Environmental Monitoring

Warehouse and production areas can be easily monitored using *FlexPower Battery Nodes* equipped with Banner temperature and relative humidity sensors. Each Node communicates back to a Gateway that interfaces with the host control system.



Mobile Control

AGV Scheduling and Control

Simplify a part call or pickup/delivery process with SureCross Nodes and operator devices at each workstation. An ideal application for material scheduling and status. Battery-powered *FlexNodes* enable communication without wires to a host control system.



Automated Guided Carts

Carts are replacing vehicles and there is a strong need for flexibility due to fast changing requirements. SureCross Wireless provides a straightforward way for control, status and tracking within an AGC environment. A wireless network greatly reduces installation time and offers the flexibility to reconfigure the system as needs change.



Material Logistics—Automated Parts Call

Monitor and control the level of parts as they move through the manufacturing process with a battery-powered *FlexNode* at the material location and on the Fork Truck. Operators can directly communicate with the Fork Truck HMI and the plant wide logistics system to create an extremely efficient material flow process.

Why Banner SureCross Wireless?

SureCross Wireless uses a proprietary protocol to provide the highest level of data security and integrity. Time Division Multiple Access (TDMA) and Frequency Hopping Spread Spectrum (FHSS) communication technologies work together to ensure the transfer of signals is reliable and deterministic. This allows SureCross to be used effectively in both data monitoring and control applications and can result in significant cost savings.

Why should I use Banner's proprietary protocol?

Banner Engineering's proprietary communication protocol ensures that only I/O data is transmitted within the deterministic SureCross Wireless network.

What are the advantages of a deterministic system?

The SureCross system allows the user to configure a default output condition. This enables the user to decide the most convenient default condition if a transmission error occurs.

How do I know my data is secure?

The SureCross protocol only carries I/O data, making it impossible for a malicious executable file to be transmitted. This protocol does not operate like an open protocol such as WiFi and is not subject to the risks of an open protocol. SureCross also uses pseudo-random frequency hopping and generic data transfer without context to ensure signal integrity.

Can I use SureCross for control applications? What type of throughput times can I expect?

SureCross wireless is used for control applications and is deterministic based on its communication method within a pre-defined bandwidth. TDMA provides a specific time slot for each device on the network. Typical throughput times are in the 125 to 250 millisecond range for discrete signals.

How far will SureCross Wireless go?

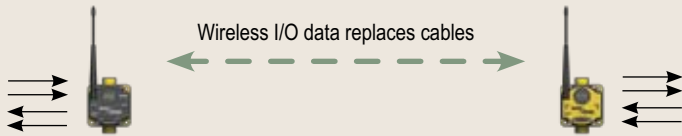
Banner's wireless network is designed for long distance applications and is specified up to 3 miles line of sight. With 900 MHz FHSS technology signals can penetrate floors, walls and other indoor obstructions. To verify range, Banner integrates a Site Survey tool that displays real-time signal quality results. In most cases, a combination of hardware selection and proper device placement will allow for a successful installation.

Can I install multiple networks in my facility?

To prevent networks from interfering with each other, the Gateway and all its Nodes exchange a binding code that prevents radios outside the network from communicating with the Gateway. Additionally, Nodes and Gateways can be configured for multiple channel hop patterns to eliminate data collisions.

How scalable is a SureCross Wireless Network, is there an easy way to send signals point-to-point?

SureCross Wireless offers a comprehensive family of industrial wireless I/O solutions. The DX70 radios are designed for simple point-to-point wire replacement applications. The DX80 Wireless Network offers a Gateway that supports multiple host communication protocols and up to 56 Nodes.



How long will the battery power last in a FlexPower application?

Banner's efficient power management technology enables a single battery power supply to provide continuous power to the radio but intermittent power to a sensor and offers a multi-year battery life. To estimate battery life, each FlexPower application should be evaluated for the sensor current draw and sampling frequency. Our FlexPower technology also enables a Node to be powered by solar or 10-30V dc.

Need more information or have additional questions?
Go to bannerengineering.com/wireless or call us at 1.888.373.6767.



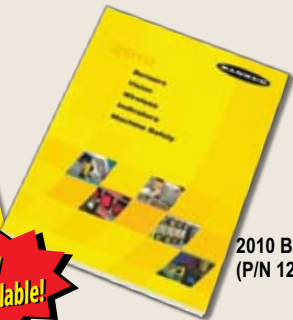
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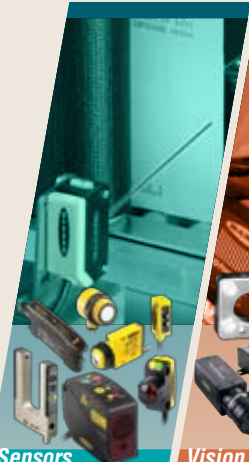


SureCross Industrial Wireless I/O Network Brochure (P/N 131620)



2010 Banner Catalog (P/N 12850)

Now Available!



Sensors

- Presence
- Absence
- Inspection
- Gating
- Counting
- Measurement
- Position



Vision

- Pattern Recognition
- Complex Part Inspection
- Multi-Component Gauging
- Part ID/Orientation
- Assembly Verification
- Print Verification
- Traceability (Bar Code and Text)



Wireless

- Process Control & Monitoring
- Factory Automation
- Agriculture & Water Management
- Traffic Monitoring & Control
- Commercial & Consumer Monitoring



Indicator Lights

- Bin & Part Picking
- Error Proofing
- Pick-to-Light & Call for Parts
- Visual & Audible Indication
- Operator Guidance
- Visual Management
- Andon Indication
- Pilot & Stack Light Replacement



Machine Safety

- Safety Light Screens
- Fiber Optic Safety Systems
- Safety Modules & Controllers
- Emergency Stop Devices
- Safety Interlocks
- Ergonomic Two-Hand Control & Run Bars

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