Machine Monitoring and Indication Solutions

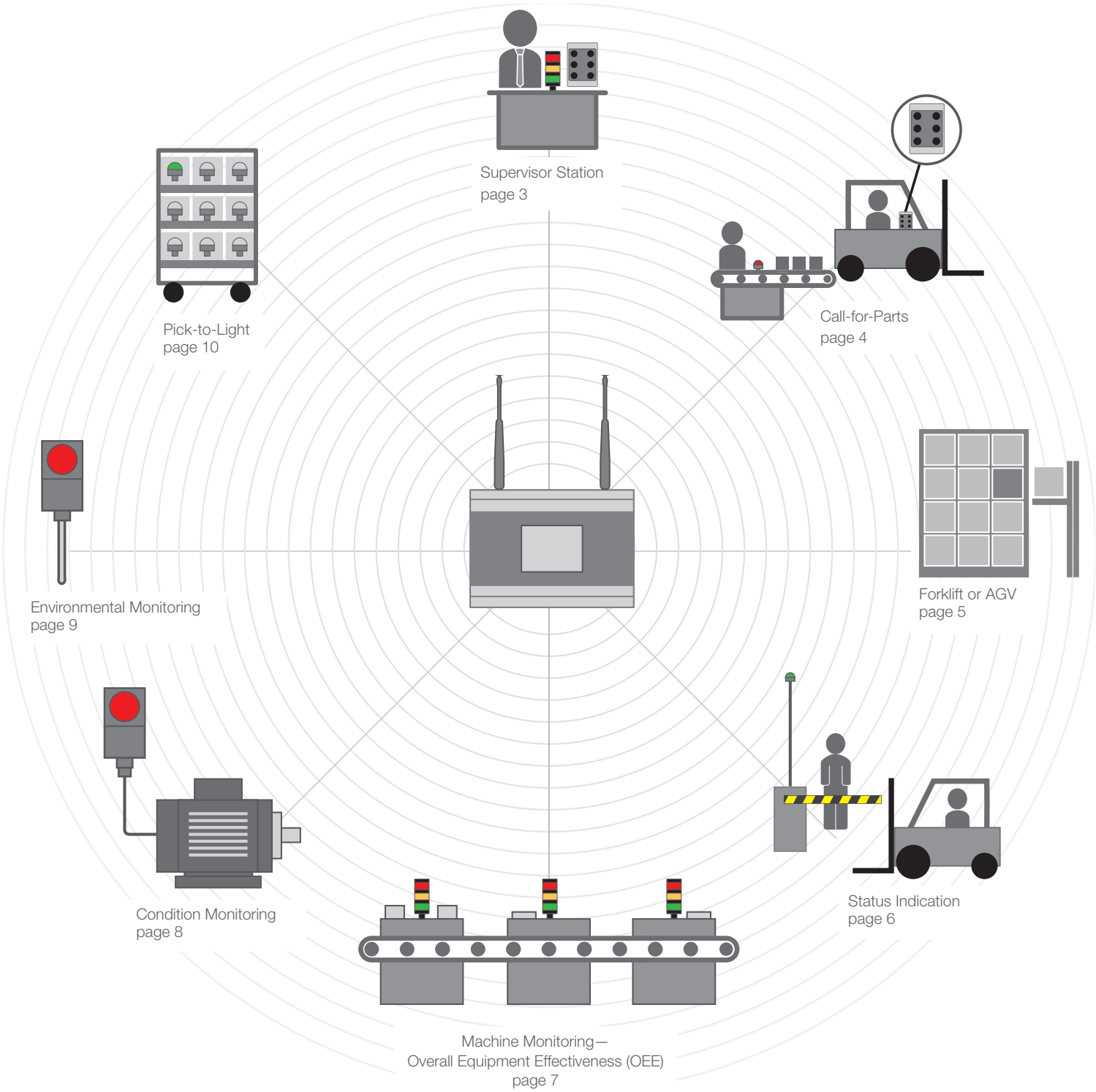
BANNER®
more sensors, more solutions



ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Solutions for Machine Monitoring & Status Indication

Wireless monitoring and indication products from Banner Engineering can increase productivity, reduce downtime, and provide data to optimize your operation. Banner's wireless products eliminate expensive cable runs, are easy to install and set up, and can integrate machines that were not previously network capable.



Supervisor Station
page 3

Pick-to-Light
page 10

Call-for-Parts
page 4

Environmental Monitoring
page 9

Forklift or AGV
page 5

Condition Monitoring
page 8

Status Indication
page 6

Machine Monitoring—
Overall Equipment Effectiveness (OEE)
page 7

Product Information
page 11





Supervisor's Station



Application

Real-time monitoring of machine status allows supervisors to address any issues as they arise, minimizing machine downtime and potentially resolving small issues before they become big problems. Providing clear indication of status at a machine is a necessary requirement. Communicating that status information from a machine to other devices makes it possible for personnel to monitor multiple machines on a factory floor from a convenient location.

Solution

The TL70 wireless tower light combines high visibility indication with wireless communication, ideal for this type of application. The extremely bright display of the TL70 provides at-a-glance status indication, enabling staff to easily identify the condition of a machine on the floor. Wireless communication connects the light to other devices without the time and expense associated with lengthy cable runs.

To disseminate machine status, or any additional information from the inputs, the TL70 communicates with a DXM100 wireless controller. The DXM100 distributes this information to any of a range of devices located throughout the facility, including a master light at the supervisor's station or other indicator lights, a PLC or HMI, a laptop or a device installed on mobile equipment, and it can alert supervisors via text message or email. Critical status information is sent to where it is needed, allowing staff to respond quickly and appropriately.



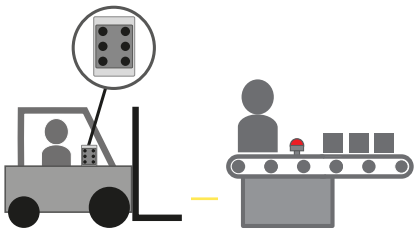
TL70 Wireless Tower Lights



DXM100 Controller



Call for Parts



Application

Assembly workers need the correct supplies in order to build products and maintain a smooth workflow. Restocking assembly stations on-time, before components run out without overstocking and creating congestion at a station can be a challenge. Real-time communication between assemblers and the forklift operators who stock their stations enables a more efficient delivery of components as well as the timely removal of completed products.

Solution

A K70 wireless touch button is located in each assembly station at the facility. A Q120 6-button pendant mounted on the dash panel of a forklift is linked via a remote DXM100 wireless controller to the assembly stations. When an assembly station needs to be restocked, a worker simply touches the K70 at their station. The red LED light on the pendant that corresponds to the assembly station will begin to flash, notifying the forklift driver. The driver acknowledges the request by pushing the button, which causes the K70 to change color. The operator can clear the request by touching the button again. The forklift driver is completely autonomous and delivery efficiency can be monitored thanks to the wireless infrastructure.



K70 Wireless Touch Button



Q120 6-Button Pendant



DXM100 Controller



Forklift or AGV

Application

Assembly station workers build products, pack completed products into boxes, and load the filled boxes onto a pallet. A completed pallet must be quickly removed from the station to allow the assembly worker to begin building a new pallet. An Automated Guided Vehicle (AGV) is used to collect and remove complete pallets.

Solution

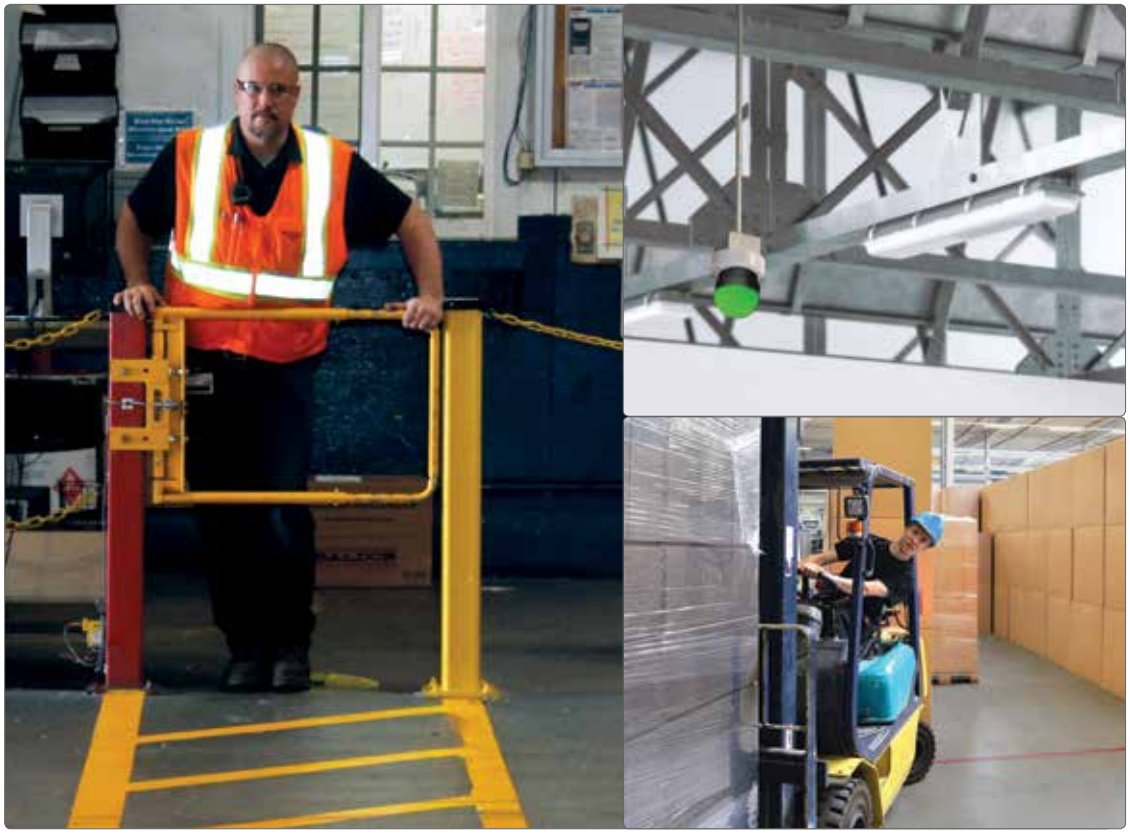
When a pallet has been built the assembly worker touches a wireless K70 touch button located at the station. This sends a signal to a DXM100 wireless controller installed on the AGV. The DXM100 directly interfaces with the control system on the AGV, prompting it to proceed to the assembly station to remove the pallet. Once the AGV is in motion the DXM100 sends a signal back to the K70, changing its color from red to yellow to notify the worker that the AGV is coming. Once the pallet has been removed by the AGV, the operator touches the K70 again, resetting the condition to green. Response times and other data are collected by the DXM100 and can be used to improve process.

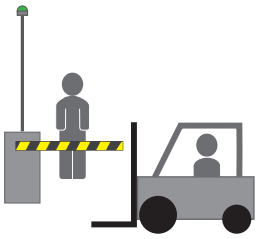


K70 Wireless Touch Button



DXM100 Controller





Status Indication

Application

In an automotive assembly plant forklifts often carry large loads that are difficult to see around. In high traffic areas, gates are used to restrict foot traffic and protect staff.

Solution

A wireless K70 indicator is installed in a position that is visible to the forklift driver, even if the forklift is carrying a large load. When a person opens the gate, the input from a proximity sensor is mapped to the wireless K70. The K70 will flash red, alerting the driver to stop because a pedestrian has entered the high traffic area. After the pedestrian crosses, the K70 turns back to yellow, informing the driver to continue, but proceed with caution.



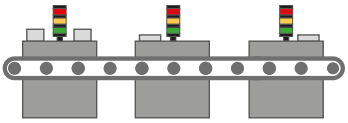
K70 Wireless Indicator Light



DXM100 Controller



Machine Monitoring (OEE)



Application

Increasing production line efficiency is always a top concern for plant and production managers. Reducing the amount of time machines are down or not operating at an optimal rate is an easy way to increase overall efficiency.

Solution

Wireless TL70 tower lights are installed on machines throughout the factory. Each tower light displays machine status, providing instant visual communication across the plant floor. By connecting to the DXM100 wireless controller, vital data is collected for use in productivity calculations, such as Overall Equipment Effectiveness (OEE). The TL70s monitor uptime, production volume and rejected parts. Logged data can be analyzed offline or local analysis can provide quick notification of critical changes. The wireless infrastructure eliminates messy wiring between machines and the control hub and centralizes data control to ensure accuracy.



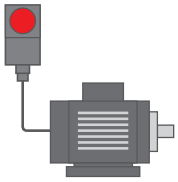
TL70 Wireless Tower Lights



DXM100 Controller



Condition Monitoring



Application

Machine vibration is often caused by imbalanced, misaligned, loose, or worn parts. As vibration increases, so can damage to the machine. By monitoring motors, pumps, compressors, fans, blowers, and gearboxes for increases in vibration, problems can be detected before they become too severe and cause additional damage or result in unplanned downtime.

Solution

A QM42VT1 Vibration and Temperature sensor paired with a Q45VT Wireless Node enables remote monitoring of machine health and can serve as a check engine light, notifying staff of changes in machine conditions. The Q45VT wireless node sends vibration data to the DXM controller which, using Banner's machine learning algorithm, establishes the machine's vibration baseline and automatically sets warning and alarm thresholds. When a statistically significant anomaly in the machine's vibration has been detected, the DXM controller can activate a wireless tower light in a supervisor's office, or send a text or email alert to appropriate personnel. The DXM is configured to monitor RMS velocity, a measure of overall machine health, and high frequency RMS acceleration which is indicative of early bearing wear. Other vibration characteristics can also be collected by the DXM.



TL70 Wireless Tower Lights



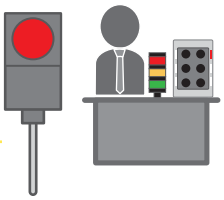
Q45 Vibration/Temp Node



DXM100 Controller



Environmental Monitoring



Application

Problems inside a machine control panel can often go unnoticed. Excessive heat or humidity can be indicative of potentially serious problems and may lead to a complete shutdown of equipment. Even the slightest rises above acceptable levels can have detrimental effects on the performance and longevity of components inside the cabinet. Over time, small problems can become major issues that impact machine performance and uptime.

Solution

An M12 temperature and humidity sensor can monitor conditions inside the control panel. The sensor is directly connected to a Q45TH wireless node. This allows the sensor to be integrated into a Sure Cross wireless network and to communicate with other devices on that network. Environmental data from the control panel is transmitted from the Q45TH to a DXM100 wireless controller, which logs the data. If conditions inside the panel are outside of the operator set parameters, the LED light on the Q45TH will provide local indication of the problem, a TL70 wireless tower light on the network will provide high visibility indication of the condition from a centralized location, and the DXM100 will alert the operator via text or email.



TL70 Wireless Tower Lights



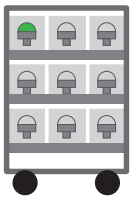
Q45 Temp/Humidity Node



DXM100 Controller



Pick-to-Light



Application

As consumers demand more options in the products they choose the manufacturing processes that produce those products become more complex. Providing workers with clear guidance for assembly minimizes the potential for errors, especially with frequent changes to product requirements. Providing manufacturers with the ability to easily reconfigure and move assembly stations can have real benefits for production efficiency and space utilization.

Solution

Wireless K70 touch buttons are deployed across bins on a portable parts rack. A DXM100 wireless controller determines the selection sequence by illuminating the green LED on the K70 corresponding to the part that should be selected. The operator selects the part and touches the K70 to confirm the action. The K70 turns red if activated out of sequence and yellow to confirm the correct process. The next K70 in the sequence then turns green and the process continues. The wireless connection allows the assembly station to be moved or reconfigured without rewiring.



K70 Wireless Touch Button



DXM100 Controller

Machine Monitoring and Indication Products

Wireless TL70 Tower Light



A bright 70 mm tower light with wireless networking provides local and remote status information and has inputs for process monitoring.

- Improve productivity with a clear, easy-to-read signal tower light
- Scalable solution with two-way wireless communication and visual status indication
- Save money and time by eliminating costly, time consuming wiring runs
- Use in harsh environments with rugged, water-resistant IP65 housing made of UV-stabilized material
- Control wires can be used as uncommitted sourcing inputs from external devices which can be configured as simple discrete signals or as event counters/totalizers
- Two network topologies are available to ensure optimal system layout

Wireless K70 Touch Button



The K70 touch button is an ergonomic solid state switch with integrated multicolor indication functions. Bidirectional wireless communication provides a simple operator interface for pick-to-light, call button, and general industrial applications.

- Bidirectional wireless communication
- Solid state touch sensor requires no force to operate, eliminating hand, wrist, and arm stresses
- Can be actuated with bare or gloved hands
- Up to three colors in one touch button; momentary and latching versions available
- Excellent immunity to false triggering by water spray, detergents, oils, and other foreign materials

Wireless K70 Indicator



Bright, multicolor K70 indicators offer status indication and remote monitoring in a compact package for greater versatility in deployment.

- Integrated wireless node
- 70 mm diameter with 30 mm mounting base
- Flashing input control; up to five colors in one indicator
- Control wires can be used as uncommitted sourcing inputs from external devices which can be configured as simple discrete signals or as event counters/totalizers

Wireless Q120 6-Button Pendant



The wireless Q120 6-button pendant is an autonomous node with six independent push button inputs and six sets of LED indicators.

- Long battery life and extended communication range for fully autonomous operation in a typical factory
- Push buttons can be configured for toggle or momentary operation
- LED indicator lights can be configured for solid or flashing operation
- Internal battery and 10 – 30 V dc power terminals

Wireless Q45U Node



The Q45 universal node works with all Sure Cross® sensors with a 1-wire serial interface.

- Recognizes which Sure Cross sensor is connected and automatically configures itself and optimizes power settings
- Includes a red, yellow, green, blue LED that can be used to provide local visual indication of change in environmental conditions
- Integrated lithium batteries

Control Your Wireless Networks with the DXM100 Controller



The DXM100 is an industrial wireless controller developed to facilitate Ethernet connectivity and Industrial Internet of Things (IIoT) applications.

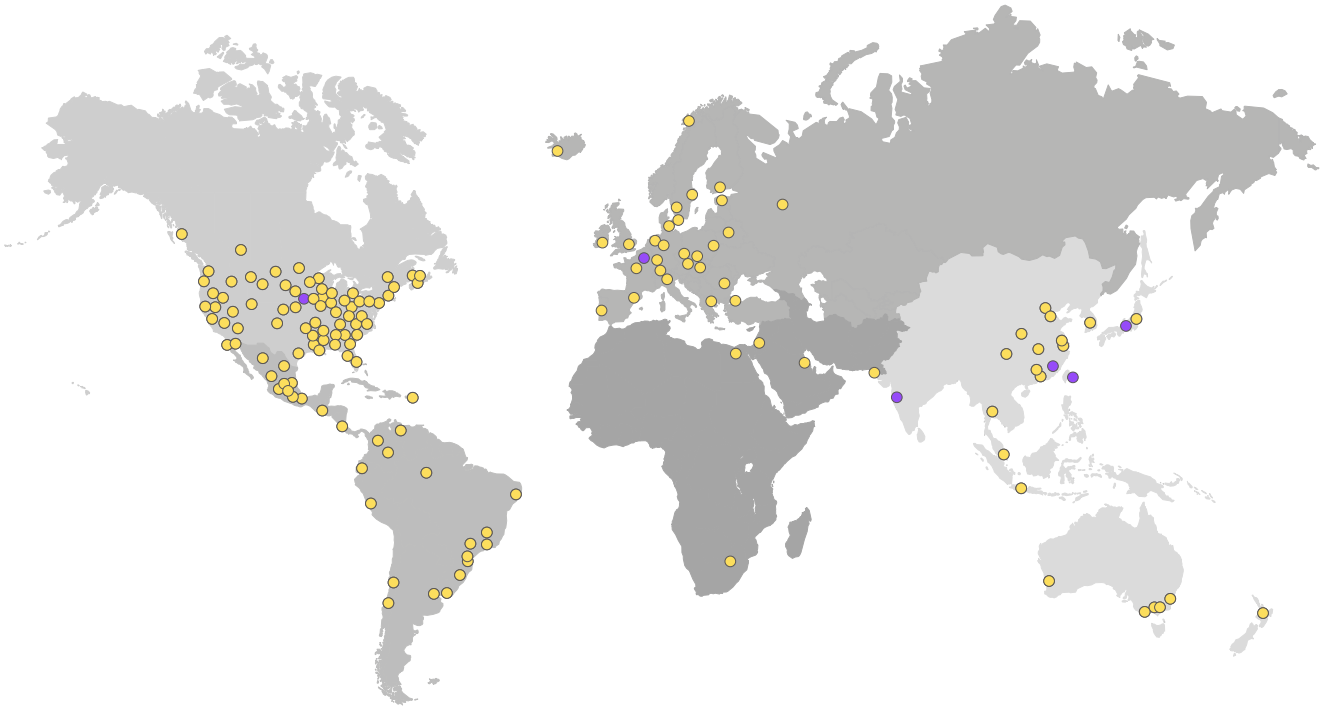
- Programmable to solve specific applications
- Log data locally
- Send alerts via email or text
- Independent local network or interface with control system

How to Reach Us

Global Sales and Support

Questions? Need additional assistance?

Banner has more than 3,000 representatives and distributors worldwide — ready to help you. Our highly skilled application engineers and industry experts are ready to support you wherever you are. For a complete listing, go to bannerengineering.com and find your local Banner Representative.



To contact a Banner Engineer about your application, call 1-888-3SENSOR (1-888-373-6767) or visit our website at www.bannerengineering.com/contact-us

more sensors, more solutions

9714 10th Ave. North
Minneapolis, MN 55441
Office: (763) 544-3164
www.bannerengineering.com

PN 173001 rev. B
© 2018 Banner Engineering Corp., Mpls, MN USA