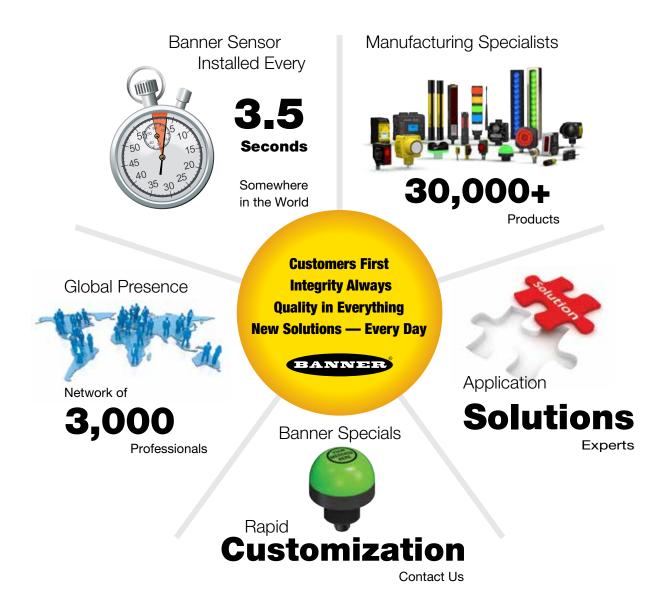


more sensors, more solutions







## Who is Banner?

Every 3.5 seconds, a Banner sensor is installed somewhere in the world. Banner solves problems for most of the manufacturing companies in the Fortune 500, who rely on Banner for reliable automation solutions.

Banner products help manufacture the cars you drive, the TVs you watch, the food you eat, the medicine you take and virtually every product you consume. Whatever the industry, Banner has a solution to help you automate your plants, improve efficiency and manufacture quality products.



## Sensors







page 6



page 8



page 10



page 12-15

# Lighting & Indication



page 16



page 1



page 18



page 19



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page 20



page 21



page 22



page 22



page 24

## Wireless



page 27



page 28



page 29



page 25

# Machine Safety





# **Q4X Series**

#### Versatile, Rugged, Laser Measurement Sensor

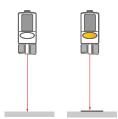


#### Easy-to-Use

- Save time and money with the Q4X which is ready to measure right out of the box
- A simple user experience from installation to setup
  - Bright spot alignment
- Three push buttons simplify setup
- Intuitive menus
- Four-digit display shows distance to target in mm
- FDA-grade stainless steel is suitable for IP69K washdown environments

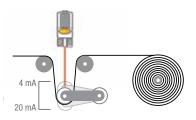
#### Q4X Discrete Sensors

Can detect a 0.4 mm target at a range of 25 to 100 mm



#### Q4X Analog Sensors

Sub millimeter changes in size or position

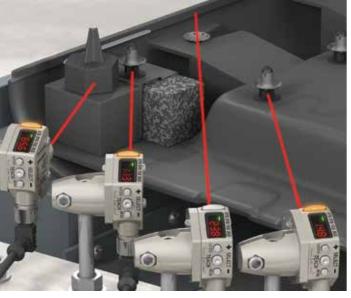


#### Superior Performance

- A powerful problem-solving sensor with advanced functions including:
  - Remote teach
- Laser inhibit
- Dual mode

- Clear object detection
- Background suppression
- Cross-talk avoidance
- Sensing range of 25 to 300 mm
- Best-in-class excess gain allows the sensor to see black targets at a 300 mm range
- Durable housing rated IP69K
- Superior resistance to high frequency ambient light sources





Detecting black parts on black door panel

Model (300 mm)	Output
Q4XTBLAF300-Q8	Discrete
Q4XTILAF300-Q8	4 to 20 mA
Q4XTULAF300-Q8	0 to 10 V

#### Versatile

One sensor that does the work of many, reduces inventory and training expenses.

#### Discrete models

Solves the most challenging inspection and orientation applications

- Multicolor foil packaging
- Black foam on black plastic
- Black rubber in front of metal
- Clear objects without using a reflector

#### Analog models (voltage and current options)

Solves measurement applications

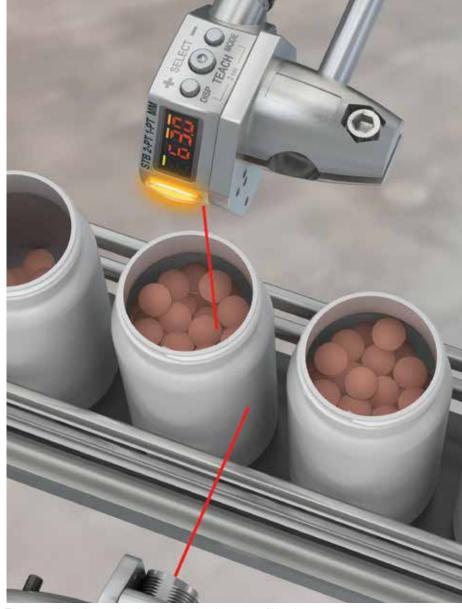
- Fill level indication
- Roll diameter
- Loop control
- Thickness/height verification



Height: 57.4 mm Width: 18 mm Depth: 44.3 mm

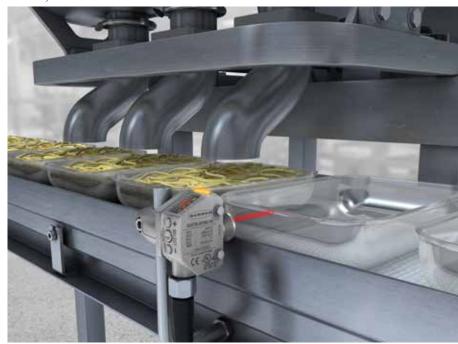


more information



Trigger mode and averaging feature to determine proper fill level

Clear tray detection



# LE Series

#### Laser Measurement Sensor

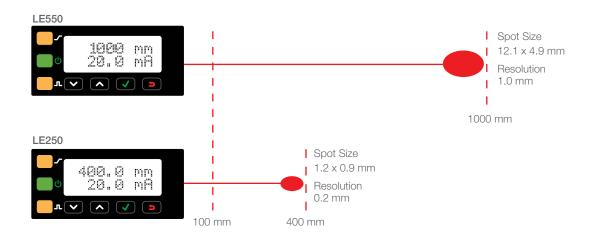


#### Easy-to-Use

- Ready to measure right out of the box
- Easy alignment with a visible laser
- Multiple teach options simplifies setup for any application
- Convienient setup with a two-line, eight-character display

#### Superior Performance

- Measurement range up to 1 m
- Measurement resolution down to 0.02 mm
- Excellent repeatability and accuracy for challenging targets, from black rubber to shiny metal
- Smaller laser spot for detecting small features or larger spot for averaging across uneven surfaces
- Advanced measurement modes reduce PLC programming required to find average, minimum or maximum measurements



Model	Output
LE250D	(2) NPN/PNP discrete
LE250I	4 to 20 mA analog and (1) NPN/PNP discrete
LE250U	0 to 10 V analog and (1) NPN/PNP discrete
LE550D	(2) NPN/PNP discrete
LE550I	4 to 20 mA analog and (1) NPN/PNP discrete
LE550U	0 to 10 V analog and (1) NPN/PNP discrete

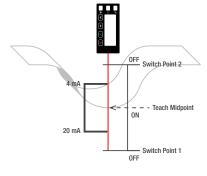
#### Versatile

#### Outputs

- Analog (voltage and current options) and discrete models
- Dual discrete models
- User-configurable NPN/PNP settings

#### **Applications**

- Presence or absence detection
- Roll diameter monitoring
- Loop tension control
- Part size verification
- Part positioning



Tension Control
Analog Output [A\_OUT]

Detect Faulty
or Broken Loop
Discrete Output [ D\_OUT ]

Loop control applications



Height: 77.2 mm Width: 26 mm Depth: 56 mm



more information



Measuring box width for sorting

#### Monitoring sheet metal roll diameter



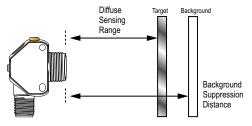
# Q3X Series

#### Versatile, Rugged, Laser Contrast Sensor

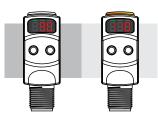


#### Easy-to-Use

- Save time and simplify setup with two tactile buttons
- The three-digit display can be inverted for a clear readout during setup or inspections
- Easy mounting and precise alignment with an adjustable mounting bracket



Ignores backgrounds including shiny metal while reliably detecting small contrast changes (by model)



Can detect small changes in contrast from up to 300 mm away

## High-Performance Detection

- High-speed part detection as fast as 250 µs, capturing up to 2,000 events per second
- Angled three-digit display shows a **clear intensity readout** that is easily viewed from multiple vantage points
- Short-range models available with both discrete and fixed background suppression making them two sensors in one
- Bright laser spot for easy setup





High-speed registration mark detection

Bottle label verification with background suppression

Model	Contrast Sensing Range	Background Suppression Distance
Q3XTBLD-Q8	0 to 300 mm	NA
Q3XTBLD50-Q8	0 to 50 mm	60 mm
Q3XTBLD100-Q8	0 to 100 mm	120 mm
Q3XTBLD150-Q8	0 to 150 mm	190 mm
Q3XTBLD200-Q8	0 to 200 mm	280 mm

Versatile

- Fixed-field models with background suppression capabilities are adjustable for many applications
- A remote teach line can perform useful functions including laser power inhibit and cross-talk avoidance
- Both NPN and PNP outputs on all models





Height: 48.6 mm Width: 18 mm Depth: 36.5 mm



information

# **DF-G Series**

#### Fiber Amplifiers



## Easy-to-Use

- Simple push button Teach
- Rocker switch for manual adjustment
- Easy-to-read display shows both the current signal strength and switching threshhold

## Precise Detection

- Low-contrast sensing
- Small object detection
- Fast response time—10 µs
- Cross talk avoidance algorithm allows multiple sensors to work in close proximity

## Stable Operation

 Auto threshhold adjustment



## Problem-Solving Models

**DF-G1 General Purpose** 



DF-G2 High-Speed, High-Performance



**DF-G1 Light Receiver Amplifier** 



**DF-G2 Small Object Detection** 



DF-G1 I/O Link

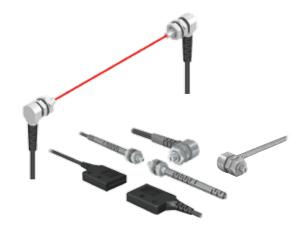


**DF-G2 Multiple Color LED** 



## Vantage Plastic Fiber Line

- High optical performance
- Overmolded flex relief
- Economical solution
- Stainless steel jacket models available



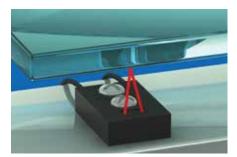
#### Specialty Fibers







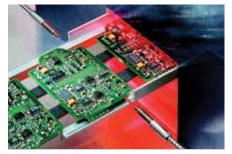
Durabend & High Flex



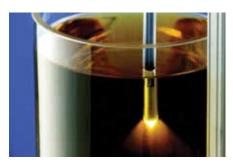
Convergent



STEELSKIN



High Temperature



Specialty

#### **Fibers**

#### Thousands of Fibers—Find Yours Easily.

Banner's fiber selection guide helps narrow down the fiber offering by allowing you to select sensing type, end assembly and length. If you do not see what you are looking for, contact Banner's Application Engineers and learn about our rapid customization. http://www.bannerengineering.com/selectionguide/plastic\_fibers



more information



Fiber Brochure PN 164979

# iVu Gen2 TG Series

#### Multi-Purpose Vision Sensor



#### Vision Made Simple

- Replace multiple sensors with one easy-to-use vision sensor
- Installs and configures in only four easy steps
- Integrated touch screen means no PC required to configure, change or monitor inspections
- Online editing to eliminate downtime and sensor emulator to test inspections
- All inclusive image sensor with multiple ring light options for detection of difficult targets













Infrared Ultraviolet

#### New Gen2 Features

- Selectable coarse (320 x 240 pixels) or fine (752 x 480 pixels) inspection resolution
- Masking feature now available to increase inspection robustness



Variety of replaceable lenses to customize your sensor for any application. C-mounts available for long-range applications

#### Connectivity and Added Versatility

- Industrial communications including TCP/IP, EtherNet/IP, Modbus/ TCP and **PROFINET** available on Plus models
- Store up to 30 inspections for quick and easy product changeover available on Plus models



\* PROFINET® is a registered trademark of PROFIBUS Nutzerorganisation e.V





required



configuration



IP67



flashdrive

## Four Tools to Choose From to Suit All Your Application Needs

#### **Match Tool**

Compares a part to a reference image

#### Area Tool

Detects whether a feature is present

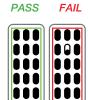
#### Blemish Tool

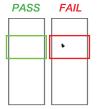
Finds flaws or defects on parts

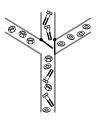
#### Sort Tool

Recognizes and sorts up to ten different patterns in the same inspection









#### Match Inspection

A single tool verifies placement and orientation of a label

#### **Multi-Point Inspection**

Using multiple tools the iVu is able to verify the presence of numerous features on metal fixtures













# iVu Gen2 BCR Series

#### Barcode Reader Sensor



#### Easy-to-Use

- Installs and configures in only four easy steps
- Advanced barcode reading capabilities in a compact metal housing
- Integrated touch screen means no PC required to configure, change or monitor inspections
- All inclusive image sensor with multiple ring light options for detection of difficult targets













Infrared Ultraviolet

#### New Gen2 Features

- Selectable coarse (320 x 240 pixels) or fine (752 x 480 pixels) inspection resolution
- Faster 2D barcode reading



Variety of replaceable lenses to customize your sensor for any application. C-mounts available for long-range applications

#### Connectivity and Added Versatility

- Industrial communications including TCP/IP, EtherNet/IP, Modbus/ TCP and **PROFINET** available on Plus models
- Online editing to eliminate downtime and sensor emulator to test inspections available on Plus models



more information



\* PROFINET® is a registered trademark of PROFIBUS Nutzerorganisation e.V



required



configuration



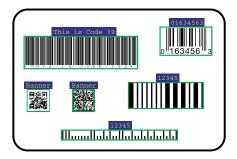
IP67



flashdrive

# Industry-Supported Barcodes

- DataMatrix (ECC 200) barcodes
- QR Code (QR and Micro QR)
- Linear barcodes: Code128, Code39, CODABAR, Interleaved 2 of 5, EAN13, EAN8, UPCE, Postnet, IMB, and Pharmacode





iVu Plus integrated display performing IMB barcode reading

iVu Plus Gen2 with remote display performing 2D barcode reading





# **TCNM**

#### Laser Barcode Scanner

The TCNM can detect over a dozen of the most commonly used linear barcode symbols.

- Performs up to 1000 scans per second for a very fast reading rate.
- Larger barcode working range of up to 600 mm



more information



Label verification



# WLB32 Series

## Industrial LED Light Bar



#### High-Quality LED Lighting

- Ultra-bright LED fixture with even light output to eliminate glare
- Energy efficient for overall cost savings
- Hi/Low/Off switch allows users to customize light levels
- Available as cascadable models for a continuous length of lighting, with minimal wiring
- Fast repositioning during product changeover with optional magnetic brackets
- Metal housing, shatterproof window
- Available in ac or dc models

#### **Applications**

- Automated inspection lighting
- Workstation lighting
- Enclosure lighting

Lighted Length (mm)	(Typical @ 25 °C)  Daylight White	AC Models Typical Wattage* (Watts)	DC Models Typical Wattage* (Watts)
285	600	9	7.4
570	1200	18	14.8
850	1800	27	22.2
1130	2400	36	29.6

<sup>\*</sup> Typical operating wattage is measured at 120 V ac or 24 V dc, depending on model



AC models



DC models



Length: 285 - 1130 mm Width: 32 mm

Depth: 46 mm





more information

# WLB92 Series

## Industrial LED Light Bar



## High-Quality LED Lighting

- Increase worker productivity and ergonomics with bright, high-quality, uniform light
- Durable light stands up to difficult environments with a rugged metal housing and shatterproof light cover
- Energy efficient for overall cost savings
- Easy installation with a variety of mounting brackets: surface, swivel, snap and hanging
- All models include built in dimmable control
- AC models are DLC qualified with a five year warranty

#### **Applications**

- Economical lighting solution for low and mid bay areas
- Machine and work cell illumination
- Quality inspections requiring bright even lighting

Lighted Length (mm)	Lumens (Typical @ 25 °C) Daylight White	AC Models Typical Wattage* (Watts)	DC Models Typical Wattage* (Watts)
550	3130	34	35
1100	6500	70	70

<sup>\*</sup> Typical operating wattage is measured at 120 V ac or 24 V dc, depending on model



DC models



AC models



AC Conduit models



Length: 651 or 1206 mm Width: 97 mm Depth: 104 mm





more information

# WLS28-2 Series

#### Industrial LED Light Bar





- Models with built-in motion detection available for additional energy savings
- Optional three-position switch for manual color selection
- Rugged, water-resistant IP69K option
- Energy efficient: less than 9 watts per foot
- Increase customization by connecting to any local power source for fast and simple illumination
- Cascade models for connecting multiple lights end-to-end, minimizing wiring
- Eight different lengths available

## **Applications**

- Cabinet illumination requiring low-profile design
- Harsh environments involving frequent machine wash down
- Visible machine status with dual color options (Five color options available)

















Models







Lensed Models

	Length	Lumens* (Typical @ 25 °C)						Typical
(mm)		Cool White	Warm White	Red	Green	Blue	Yellow	Wattage** (Watts)
	145	325	325	55	180	40	50	3.6
	285	650	650	110	360	80	100	7.2
	430	975	975	165	540	120	150	11.0
	570	1300	1300	220	720	160	200	14.6
	710	1625	1625	275	900	200	250	18.5
	850	1950	1950	330	1080	240	300	22.1
	990	2275	2275	385	1260	280	350	25.9
	1130	2600	2600	440	1440	320	400	29.8

<sup>\*</sup>Lumen values lowered by 35% on diffused window models

<sup>\*\*</sup>Typical operating wattage is measured at 24 V dc



Length: 194 - 1192 mm Width: 28 mm Depth: 21 - 32 mm









# WLS27 Series

## Industrial LED Light Bar



#### Advanced Design

- Rugged, water-resistant IP67, IP68G and IP69K design
- Cascade models for connecting multiple lights end-to-end, minimizing wiring
- Energy efficient for overall cost savings
- Optional snap clips for easy installation and repositioning
- Ability to adjust the lights to Hi/Lo/Off
- Automatic temperature protection built into the unit extends the life of product
- Eight different lengths available

## **Applications**

- Laminar airflow applications requiring a round shape
- Marine environments
- Car wash
- Food and beverage processing equipment

Length	Lumens* (Typical @ 25 °C)						Typical
(mm)	Cool White	Warm White	Red	Green	Blue	Yellow	Wattage** (Watts)
145	300	300	50	165	35	45	3.6
285	600	600	100	330	70	90	7.2
430	900	900	150	495	105	135	11.0
570	1200	1200	200	660	140	180	14.6
710	1500	1500	250	825	175	225	18.5
850	1800	1800	300	990	210	270	22.1
990	2100	2100	350	1155	245	315	25.9
1130	2400	2400	400	1320	280	360	29.8

<sup>\*</sup>Lumen values lowered by 35% on diffused window models

<sup>\*\*</sup>Typical operating wattage is measured at 24 V dc



Length: 217 - 1192 mm Width: 27 mm

Depth: 27 mm





more information

# WLC60 & WLC90

#### Heavy-Duty LED Lights



## Superior Performance

- Rugged, water- and oil-resistant IP67, IP68G and IP69K design
- High brightness paired with advanced glare-reducing optics for increased visibility
- Resistant to vibration and shock
- Several discrete intensity level settings available
- Pan-and-tilt brackets for versatile mounting to direct the light in any direction
- Polycarbonate window or borosilicate glass options available for enhanced chemical and thermal resistance
- Stainless steel models available for severe applications
- Flush-mount models available



#### **Applications**

- Washdown Environments
- Machine drilling or welding stations
- CNC machines

WLC60 Lighted Length (mm)	Lumens (Typical @ 25 °C)	Typical Wattage* (Watts)
	Cool White	
340	1300	14.2
640	2600	28.1

<sup>\*</sup> Typical operating wattage is measured at 24 V dc



WLC60

Length: 340 and 640 mm Width: 61 mm

Depth: 31.3 mm



Length: 89 mm Width: 91 mm Depth: 28.2 mm







information

#### Large, Domed, Multicolor Indicator Light



#### K90L

- Smooth 90 mm diameter dome available with up to five colors in one device
- Rugged IP67-rated design
- Illuminated dome provides easy-to-see operator guidance
- Alternate between colors or flash colors when multiple inputs are active





information



# K50L & K30L Hazardous Area

#### Domed Indicator Lights



#### K50 & K30 Hazardous Area

- Smooth 50 or 30 mm diameter dome rated IP67 and IP69K for harsh environments
- Up to three colors in one device with five colors choices
- Unique design appears gray when off, eliminating false indication from ambient light
- Models available for use in classified zones or areas
- Worldwide IECEx approval for quicker access into countries outside Europe and North America



Height: 44.5 mm Width: 30 mm Depth: 30 mm



Height: 69 mm Width: 50 mm Depth: 50 mm



more information

# K50L Modbus

#### LED Indicator Lights



#### K50L Modbus

- Modbus RTU communication minimizes the cabling requirements
- Rugged, compact multicolor indicators in several package types
- Built-in flashing and strobing capability
- High intensity models for outdoor applications
- Fully encapsulated IP67/IP69K construction
- Sensor models for pick-to-light applications



more information

# TL50C

#### Compact Tower Lights



#### Highly Visible Status Indication

- Bright, uniform lighted segments at only half the height of standard TL50 models
- Rugged, cost-effective and easy-to-install multi-segment indicators
- Illuminated segments provide easy-to-see operator guidance and indication of equipment status
- Up to five colors available in universal voltage and seven colors available in standard voltage models
- Available in black or light gray housing
- Audible models available with standard, sealed or omni-directional audible element
- Compact devices are completely self-contained with no controller needed





# **Tower Lights**

## Banner's Full Offering of Tower Lights

#### **Tower Lights**

Banner's Signal Tower Lights are premium LED-based products that are designed for long life and no maintenance.

- Preassembled or modular models to suit application needs
- Extensive range of mounting accessories, which allows for a quick and easy installation process
- Choice of ac or dc supply power
- Standard or high-intensity models available
- Up to six color segments in one light
- Housings available in either black or gray.



more information

#### Audible Segments





## **TL70**

## Large, Modular Tower Lights



#### Superior Design

- Preassembled or modular models to suit application needs
- Light segments have user-selectable solid ON or flashing
- Up to five colors plus audible in one device
- Rugged, water-resistant IP65 housing with UV-stabilized material
- Bright, uniform indicator segments appear gray when off to eliminate false indication from ambient light
- Housings available in either black or gray.



Height: 46-243 mm Width: 70 mm Depth: 70 mm



more information

## The Easiest Tower Light to Install

The TL70 tower light design is user friendly with just a few easy steps to complete installation.



#### 1. Module settings

- Assign module position (switches 1-6)
- Assign flash rate or audible tone (switches 7-8)



## 2. Assemble

- Align segment markings
- Press together
- Twist to lock



#### 3. Apply Power

- M12 quick-disconnect cable
- Flying lead cable
- Terminals

# **TL70 Wireless**

## Modular Tower Lights with Wireless Communication



#### Wireless Status Indication

- Two-way wireless communication eliminates costly wiring
- 900 MHz or 2.4 GHz models available
- Preassembled or modular models to suit application needs
- Simple push-button binding to system Gateway
- Gateway for discrete, analog, and Ethernet interface

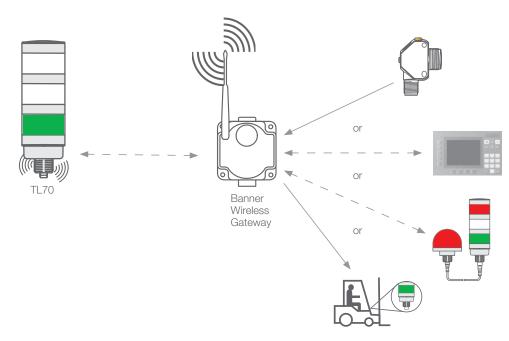


more information

1-Way Communication —

The TL70 relays machine status to a remote device

The TL70 relays a status to a remote device AND receives input from a remote device



# Gateways & Nodes

#### Simple Wireless Networks



#### Easy to Deploy

- Replaces discrete, analog, serial and Ethernet signal wires without setup software
- Secure, proprietary protocol
- License-free operation
- 902 to 928 MHz and 2.4 to 2.5 GHz
- Rugged for extreme environments
- High interference immunity
- · Communicates over long distances

#### **Network Configurations**



Point-to-Point The most basic form of a radio network.



Point-to-Multipoint Connect multiple radios to a single point.

#### Solutions for...

- · Call for parts
- Machine status
- Remote indication
- Supervisory control
- Digital or analog wire replacement
- Level, pressure & temperature monitoring
- Robotic equipment monitoring
- Tank level monitoring
- Door monitoring
- · Humidity monitoring

- · Facility access
- · Eyewash/safety shower monitoring
- Water flow and pressure
- Predictive maintenance

## **PM Series**

#### Replacing Wire with Wireless



#### Premapped I/O Solutions

- Sure Cross® PM Series radios easily replace discrete and analog signal wires with no setup software required
- Eight LCD menu selectable I/O mapping options
- IP67-rated housing for use in demanding environments
- One Gateway can support up to six Nodes
- Each Node is capable of either: Inputs: four selectable discrete and two 0-20 mA analog Outputs: four sourcing discrete and two 0-20 mA analog



more information

## **Data Radios**



Ethernet Data Radio and Serial Wire Replacement

Sure Cross® MultiHop Ethernet Data Radios are wireless industrial communication devices used to extend the range of serial communication networks.



Serial Data Radio Serial Wire Replacement

Sure Cross® MultiHop Serial Data Radios are wireless industrial communication devices used to extend the range of serial communication networks.



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.



# M12FTH4Q

## Temperature & Humidity Monitoring



## Temp Humidity

- Provides temperature and humidity measurements in a variety of environments
- Robust metal housing
- Connects to a Banner DX80 Node via a 1-wire serial interface
- Battery-powered option
- Traceable to NIST standards; cerificate of factory calibration included



information

## **Applications**

- Warehouse temperature monitoring
- Cold storage
- Quality control process
- Factory temperature monitoring

#### Environment monitoring



#### Wireless Network





Choose the Node that is right for your application



Choose a matching Gateway (Modbus/TCP to Ethernet/IP converter, user-selectable serial interface)

# QM42VT1

## Vibration & Temperature Monitoring



## Vibration Monitoring

- **Predictive maintenance** made easy by high accuracy vibration (RMS velocity) and temperature measurements
- Easily monitor machine health by sending information wirelessly
- Detect problems earlier to avoid machine failures and delays
- Manufactured with a robust zinc alloy housing



more information

#### Wireless Network



QM42VT1 mounted on your machine



Choose the Node that is right for your application



Choose a matching Gateway (Modbus/TCP to Ethernet/IP converter, user-selectable serial interface)

## **Applications**

- Motors
- Compressors
- Blowers

- Pumps
- Fans
- Gear boxes

#### Motor vibration detection



# XS26-2

#### Expandable Safety Controller



## XS26-2 Expandable Safety Controller

- Up to eight expansion I/O modules can be added as your automation needs grow or change
- Choose from six expansion module models available to suit your application with a variety of safety inputs, solid-state safety outputs and safety relay outputs
- Simulation mode and live display feature allows testing and active monitoring of I/O on a PC
- Free configuration software
- Standard communications including EtherNet/IP and Modbus/TCP

# SC26-2

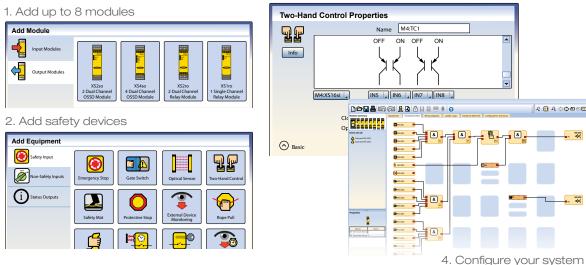
#### Safety Controller

- Designed for smaller applications where cost is at a premium
- Intuitive programming includes logic functions for easy implementation
- Non-expandable controller includes two dual-channel safety outputs and 26 input terminals (eight convertible to outputs)

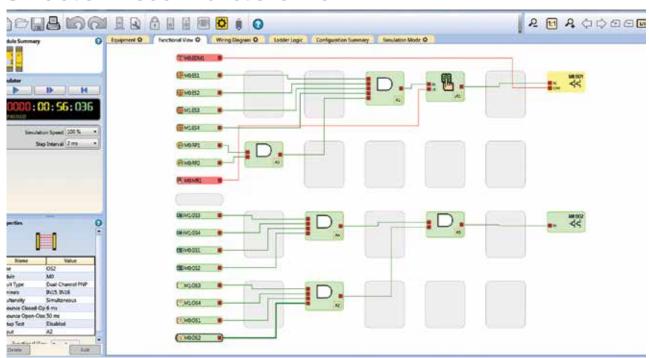


# Build Your System & Select Equipment Configure a system in minutes

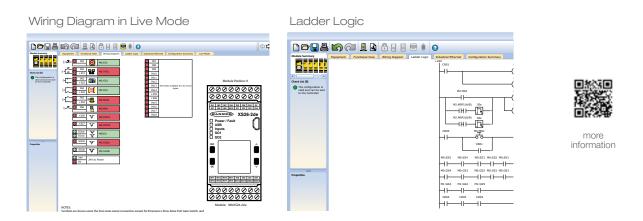
3. Select safety device properties



#### Simulation Mode - Functional View



The icon based configuration environment allows straightforward machine safeguarding development which can be tested on your PC by activating the Simulation Mode feature.



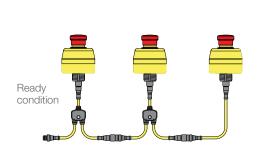
# E-Stop Buttons

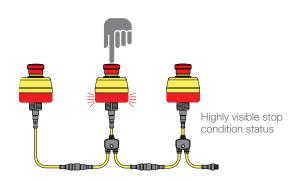
Illuminated and Locking E-Stop Buttons



## Illuminated E-Stop Buttons

- Easy identification of which E-stop in a string has been activated
- Easy installation with no assembly or individual wiring required via quick-disconnect connection
- Push-to-stop, twist-to-release or pull-to-release operation per IEC 60947-5-5
- Models available to interface with safety networks
- Lockable models available in flush mount series











Height: 102 mm Width: 80 mm Depth: 110 mm



Height: 120 mm Width: 80 mm Depth: 80 mm



more information

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