Port Machinery Sensing Solutions

BANNER®

more sensors, more solutions

Banner Radar Sensors for Crane Collision Avoidance

Harbour cranes such as STS, RTG, RMG represent an expensive investment. Banner Engineering's R-GAGE radar-based sensor is the perfect solution for crane-to-crane, or crane-to-obstacle collision avoidance applications, and can operate in harsh weather conditions like strong winds, heavy rain, direct sunlight, hot & cold temperatures.

Radar sensors use Frequency Modulated Continuous Wave (FMCW) technology to reliably detect moving or stationary targets, including cranes, cars, trains, trucks and cargo in extreme weather conditions.

Features:

- FMCW (true-presence) radar detects moving and stationary objects
- Sensing functions are not affected by wind, falling rain or snow, fog, light, humidity or air temperatures
- Easy configuration using DIP switches, no PC required
- Adjustable sensing field – ignores objects beyond the setpoint
- Detects vehicles at distances up to 40 m
- Includes DIP switches for sensing distance, sensitivity and output configuration
- Operates at 24 GHz in the Industrial, Scientific and Medical (ISM) telecommunication band; no special licensing required
- Operating temperature range of -40° to +65° C
- Operates at 12 to 30 VDC with bipolar PNP and NPN output
- Rugged IP67 housing withstands harsh environments

FMCW Radar-Based Detection Sensors

QT50R-EU-AFHQ

Standard Wide Angle

- Adjustable sensing field
- Detects objects up to 24 m
- One single detection zone
- Total beam angle 90° (± 45)

QT50R-EU-AF2WQ

Dual-Zone Narrow-Beam

- Adjustable sensing field with detection up to 24 m
- Two independent adjustable sensing zones
- Total beam angle 20° (± 10)

Q120RA-EU-AF2Q

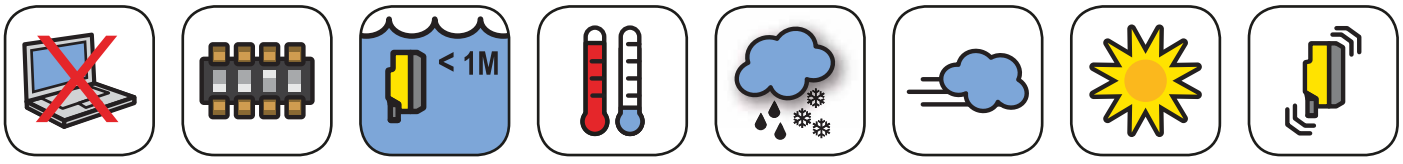
Long Range, High Sensitivity

- Two independent adjustable sensing zones, detects objects up to 40 m
- Narrow total beam pattern: horizontal: 20° (± 10), vertical: 50° (± 25)
- 3x more sensitive than standard model

QT50R-EU-RHQ

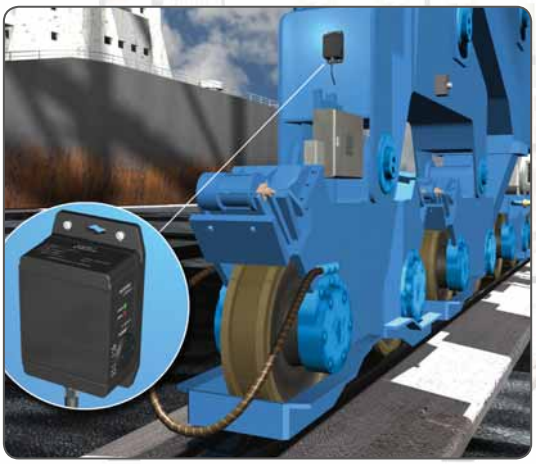
Retroreflective

- Use of retroreflective target enables reliable detection of weak targets in the foreground
- Detects objects up to 12 m
- Effective beam angle equals size of retro target



No PC Required | Easy Configuration | IP67 | Extreme Temperatures | Snow, Fog, Heavy Rain & Humidity | Strong Wind | Sunlight Immune | Vibration Resistant

Typical Applications



STS Collision Avoidance

Radar sensing with dual detection zones with a range up to 40 m allows to slow down or stop cranes on rails when approaching an obstacle.

RTG Collision Avoidance

The dual detection zones allow high speed gantry cranes to slow down or stop when approaching an obstacle or another crane.

Crane-to-Crane Collision Avoidance

Radar sensors can reliably detect the presence of another crane or obstacle and activate stop or warning signals.

Spreader Control to Crane

Radar sensors detect the presence of a container and reduce the spreader dropping speed when approaching the container.

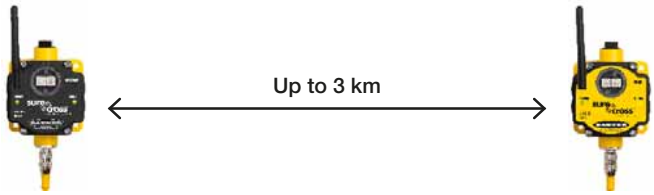
Train Detection

Radar sensors detect the presence of container trains while the radar sensor output activates (measuring) equipment such as RFID antennas, Gamma Ray Gates…

Truck Detection

Radar sensors act as a trigger at entrance/exit portals to activate cameras and lights to capture container and truck ID markings. The radar system replaces road sensing loops.

SureCross Wireless I/O

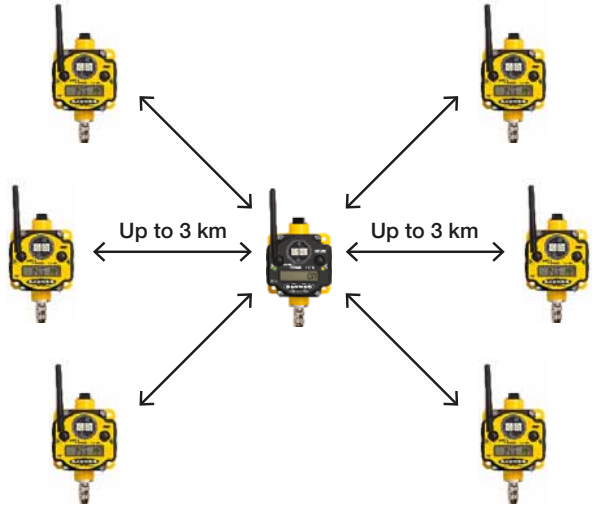


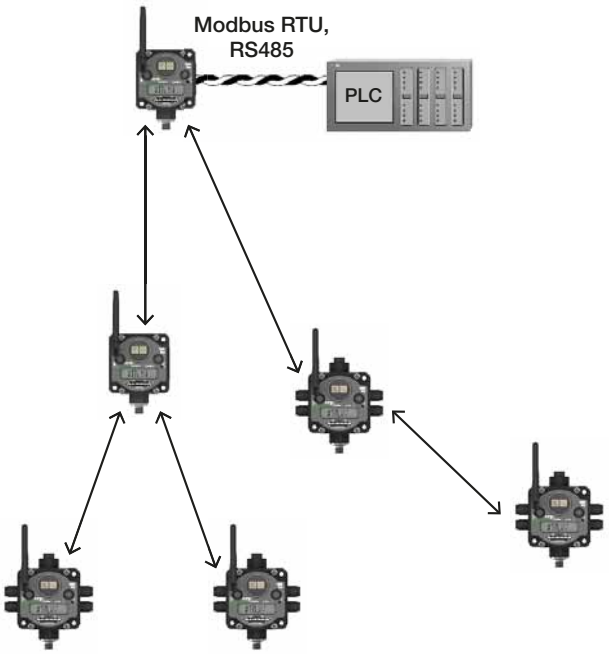
DX70 Point to Point

- Direct I/O mapping; no software required
- Digital and analogue I/O available on each device
- Unlimited pairs in the same location
- Integrated LEDs provide real-time RF link indication
- 10 to 30 VDC

DX80 Star Topology

- Gateways offer I/O and serial communication output (Modbus RTU or Ethernet available)
- Free software offers simple user configuration and I/O mapping
- Digital, analogue, temperature and counter inputs available at the Node
- Up to 48 Nodes per Network/Gateway
- Unlimited networks in the same location
- 10 to 30 VDC, solar panel or battery option



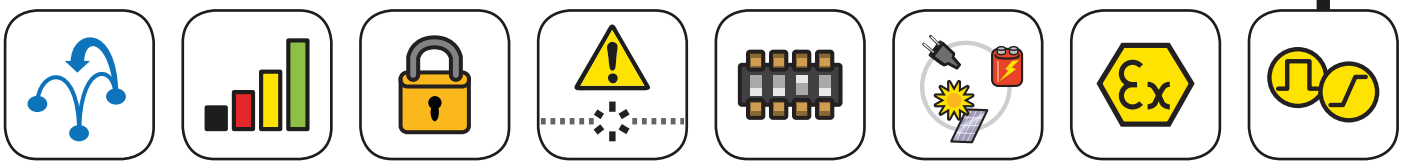


No range limit, can be extended with repeaters

MultiHop Network with Data and I/O Capabilities

- Host Controlled network with repeater architecture built-in
- Every radio can be set up as a master, repeater or slave through integrated DIP switches
- Digital, analogue, temperature, counter and more I/O options available on each device
- Up to 50 slaves per network master
- Unlimited networks in the same location
- 10 to 30 VDC, solar panel or battery option

0 - 20 mA
0 - 10 VDC
PNP - NPN
Frequency Counter
Thermistor
RTD
PT100
Bridge
RS485 - RS232, ...



FHSS Communication | Built-in Signal Strength | Proprietary Protocol | Link Loss Output | Configurable & Mapped I/O | Multiple Power Possibilities | ATEX Solutions | Multiple Signals, Digital and Analogue

Typical Applications

Data Synchronisation

Overhead crane controllers communicate position data to synchronise independent or tandem movement control.

Crane-to-Crane Communication

Wireless solutions allow transmission of distance data between cranes so multiple cranes can service the same area while avoiding collisions.

Four Load Cells on Spreader

Load cells communicate weight information and the status of the twist locks to the cabin to ensure even distribution of weight before lifting a container.

Load Cell – Hook to Cabin

Wireless I/O provides cable-free data communication between the hook and the cabin with a long-lasting, battery-powered solution.

Work Area Conditions

Wind speed data is transmitted without cables from the field sensing device to the cab and operator control room.

Loading Dock Notification

Truck detection via the Wireless M-GAGE automatically alerts operators that a truck has arrived at a loading dock.

Indicator Lights, Detection & Measuring Sensors

EZ-LIGHT Beacon Light

Robust Housing | Vibration Resistant

- Intense levels of light output are highly visible during daylight and perfect for outdoor applications
- Perimeter and top view models available
- Rugged, sealed thermoplastic housing rated for IP67 and IP69K
- 12 to 30 VDC operation, depending on model

EZ-LIGHT Traffic Light

IP69K Models Available | Long Life LED | Daylight Visible | Various Colours

- Preassembled indicators for signalling and traffic control, available with one, two or three indicators
- Intense levels of light output are highly visible during daylight and perfect for outdoor applications
- Controlled field of view for signage and narrow lane use
- Rugged, cost-effective and easy-to-install
- Compact devices are completely self-contained – no controller needed
- Immune to EMI and RFI interference

Work Light WLS28

IP69K Models Available | Long Life LED

- Extremely long-lasting LED technology for greater than 50 000 hours of continuous working life
- High power solid state LED array with cool white light
- Designed for enclosure or area lighting
- Rugged aluminium housing with narrow 28 mm total width
- Lighted lengths available from 145 mm to 1130 mm
- Illuminates a large area with an even pattern of light and no shadows
- Low power consumption; less than 9 W per 30 cm

QT50U Ultrasonic Sensor

Robust Housing | IP67 | Integrated TEACH

- Extended sensing range of up to 8 m
- Features ultrasonic dead-zone of only 2,5% of the total range
- Available in analogue or discrete DC models and in AC/DC universal voltage models with electromechanical relay output
- Features a completely sealed, shock-resistant housing that is ideal for monitoring levels of liquids as well as solids
- Uses a narrow sensing beam to detect targets at long range within confined areas
- Compensates for temperature, for greatest sensing accuracy
- Simplifies setup with push-button and remote TEACH-mode programming
- Shows status during setup and operation, using highly visible LED indicators

LT3 Time-of-Flight Sensor

Bright Laser Spot | Integrated TEACH | IP67

- Available in diffuse mode with 5 m range and retroreflective mode with 50 m range
- Offered in dual-discrete or analogue/discrete models
- Features push-button TEACH-mode programming for custom sensing windows
- Includes push-button programming for three output response speeds
- Uses rugged construction to withstand demanding sensing environments – rated IEC IP67

Typical Applications

Loading Dock

The bright SP250 indicator traffic lights signal truckers which dock to use and, inside the building, that a truck has docked.

Reach Stacker

Intensely bright beacon lights are highly visible during daylight and indicate the condition of the spreader twist locks to the operator cabin.

Beacon Light on Spreader

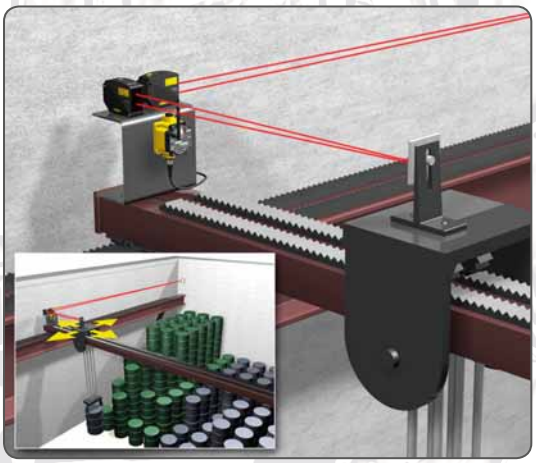
With top and perimeter models, the beacon light indicates the status of the ship-to-shore crane spreader to the operator cabin.

Cabinet Lighting

Rugged work area lights brightly illuminate and conveniently fit in the designated work area or control panel.

Obstacle Detection

Ultrasonic sensing from crane-to-crane or crane-to-obstacle provides a distance range in analogue outputs (4 to 20 mA) to prevent collision during operation.



Overhead Crane Position

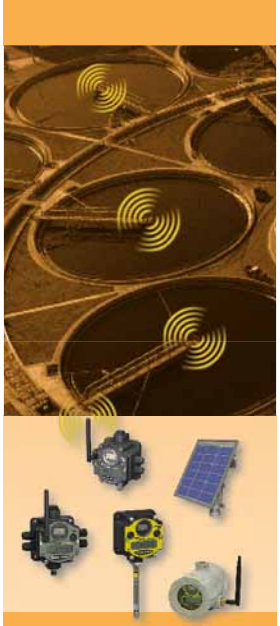
The LT3 time-of-flight laser sensor reliably detects and measures the position of the crane as it moves back and forth on the rails, and measures load position in ranges from 5 to 50 m.

Sensors

- Presence/Absence Detection
- Foreground & Background Suppression
- GO/NO GO Inspection
- Gating and Triggering
- Parts Counting
- Level and Distance Measurement
- Positioning
- Contrast and Colour Sensing
- Vehicle Detection (Radar, Ultrasonic & Magnetic Technology)

Vision

- Vision Sensors with Onboard User Interface
- Pattern Recognition
- Traceability (Barcode, Datamatrix and Text Reading)
- OCR/OCV
- Complex Part Inspection
- Part Orientation
- Assembly Verification
- Colour Inspections



Wireless I/O

- Slip Ring Replacement
- Tank Farm Monitoring
- Livestock Environmental Monitoring
- Water and Wastewater Treatment
- HVAC Remote Monitoring
- Traffic Monitoring & Control
- Remote Sensing in Process Automation
- Cable Replacement
- ATEX Approved Solutions

Lighting & Indicators

- Bin & Part Picking
- Error/Mistake Proofing
- Pick-to-Light & Put-to-Light
- Operator Guidance
- Call for Parts
- Incorrect Pick Signal
- Remote Start/Stop Indication
- Work Station Lighting
- Mobile Equipment Work Lights
- Production Machine and Cabinet Lighting

Machine Safety

- Safety Light Screens
- Ergonomic Two-Hand Control Devices
- Safety Modules
- Emergency Stop Devices
- Safety Interlocking
- Laser Scanners for Safety Applications
- Programmable Safety Controllers
- Enabling Devices

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