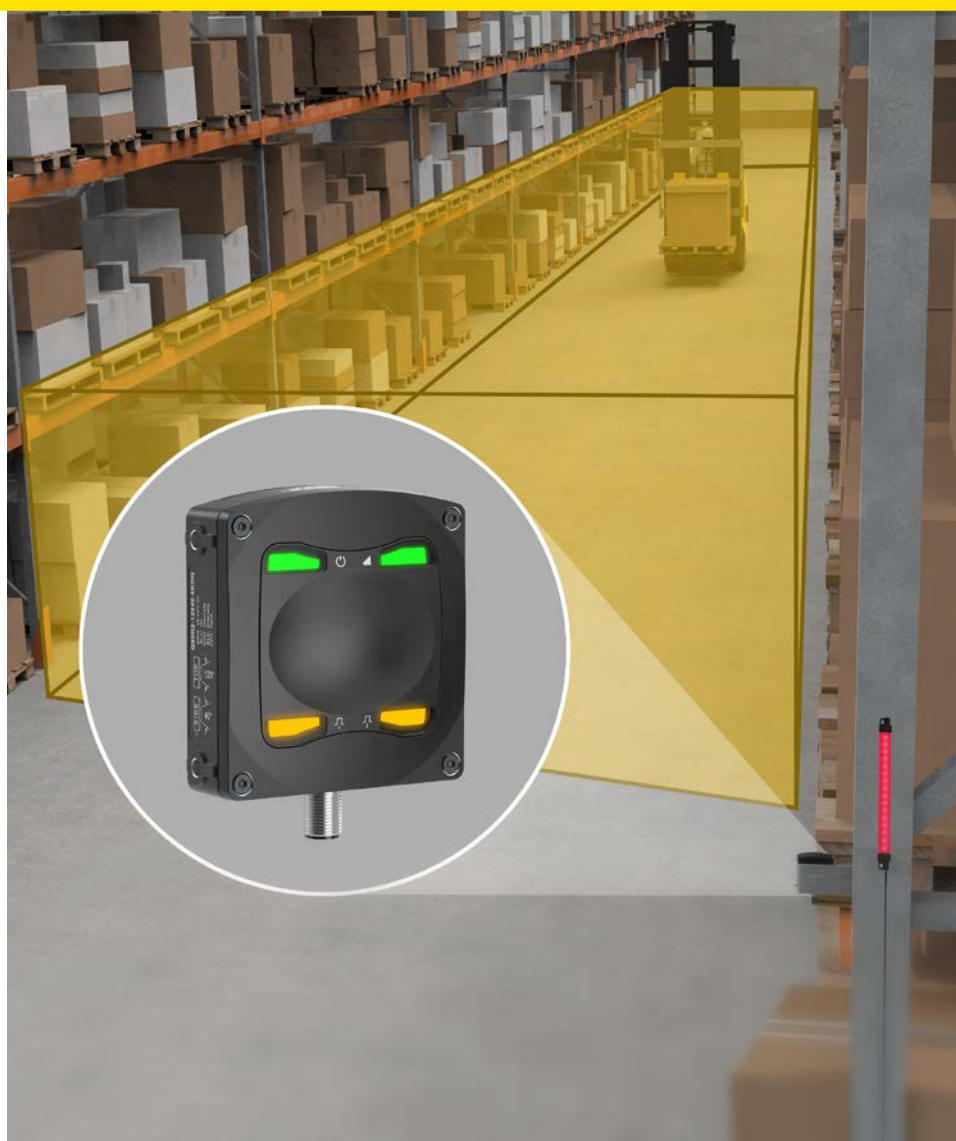


Radar Sensors for Vehicle Detection



Detect Any Vehicle in Any Environment

Reliable, real-time vehicle detection ensures that operations stay on track. From rainy loading docks and busy drive-thru lanes to active warehouses and high-traffic car washes, radar sensors provide the accuracy and dependability needed for enhancing efficiency and protecting equipment in any environment.

- Reliable vehicle detection indoors and out and in any weather condition
- Connect to lights for operator notification and driver aid to protect assets and improve efficiency
- Reduce installation complexity compared to other vehicle detection solutions



Traffic and Parking

Detection solutions in traffic and parking applications either require complex and invasive installations or their reliability suffers in harsh conditions. Discover how Banner radar sensors deliver a durable, easy-to-install alternative that is unaffected by environmental conditions.



Drive-Thru Lanes

Challenge

Commonly used in-ground loop detection systems require costly, invasive installation and maintenance methods, such as pavement cutting. Other detection sensors fail to perform reliably when mounted inside fixtures or exposed to inclement weather.

Solution

- The K50R Radar Sensor offers above-ground installation, eliminating the need for disruptive pavement cutting, while its ability to penetrate materials allows mounting inside enclosures or existing structures for a discrete installation
- Easily customizable 40° x 30° sensing zone with programmable background suppression and weather immunity provides complete detection where it's needed
- Discrete output allows easy integration with existing queue management systems



K50R
Radar Sensor



Car Wash Exits

Challenge

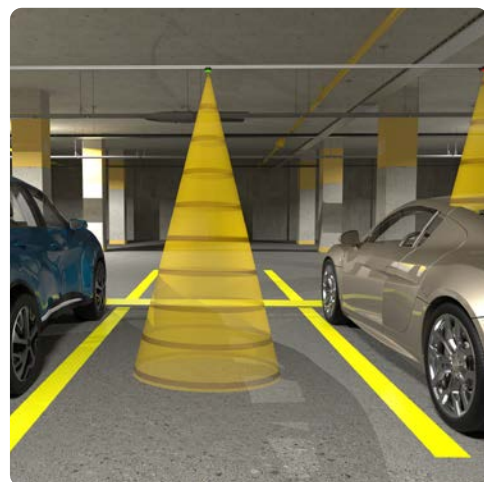
Automated car wash systems may prematurely advance the next vehicle if sensors do not reliably detect when a vehicle has fully exited, leading to costly collisions that damage vehicles and disrupt operations.

Solution

- A T30RW installed above the vehicle exit uses its 15° x 15° beam pattern to provide focused detection exactly where it's needed
- IP69K-rated rugged housing withstands exposure to water, detergents, and high-pressure sprays, ensuring long-term performance
- Unlike traditional emitter/receiver pairs, the T30RW's single-sided operation eliminates the need for additional components, simplifying the installation



T30RW
Washdown
Series
Radar Sensor



Parking Garages

Challenge

Installing a system that will provide both vehicle detection and easy-to-see indication to help drivers see available spots requires a complex system of sensors and separate indication devices, requiring hardware to connect detection and indication devices, leading to costly and complex installation and multiple maintenance points.

Solution

- The K50R Pro Sensor integrates vehicle detection and bright LED indication into a single unit, simplifying installation and reducing hardware costs
- Customizable LEDs provide clear, immediate visibility of available spaces, minimizing driver frustration and congestion (green for open, red for occupied, and blue for ADA)
- Banner Measurement Sensor Software provides a free, easy-to-use solution for batch configuration, enabling fast setup for large-scale systems, reducing deployment time and complexity



K50R Pro
Radar Sensor



Tolls and Gates

Challenge

Traditional in-ground loop detection systems require cutting into concrete and lane closures to install and maintain, disrupting traffic flow at tolls and gates, and the reliability of other detection sensors can be affected by weather conditions.

Solution

- The K50R Radar Sensor easily installs above-ground, preventing disruptive installation and maintenance
- Rugged IP67-rated housing and a wide -40 to 65 °C operating range provides dependable performance in outdoor environments
- 40° x 30° coverage detects all vehicle sizes, while programmable background suppression eliminates false triggers



K50R
Radar Sensor



K50 Pro Select
Indicator

Dock Door

Dock Door detection systems are often hindered by environmental interference, complex setups, or poor performance in demanding conditions. Explore how Banner radar sensors provide reliable, weather-resistant solutions customizable to dock configurations.



Under Eave Overhead Mounting

Challenge

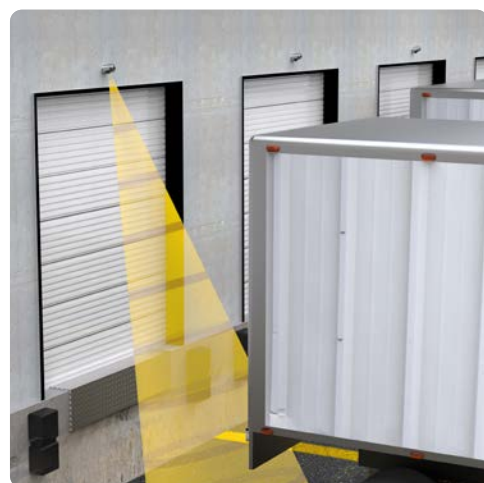
Mounting a sensor under an eave with its beam directed downward enables reliable detection. In this orientation, other sensor technologies are negatively affected by environmental conditions and disruptive false triggers due to activity in adjacent dock bays.

Solution

- The T30R Radar Sensor is easily programmed to create a custom detection zone, optimizing its narrow beam and eliminating false triggers from adjacent bays
- Rugged radar technology ensures reliable performance in challenging environmental conditions, including heavy winds
- The compact form factor makes installation under an eave practical without compromising detection accuracy



T30R
Long-Range
Radar Sensor



Angled Overhead Mounting

Challenge

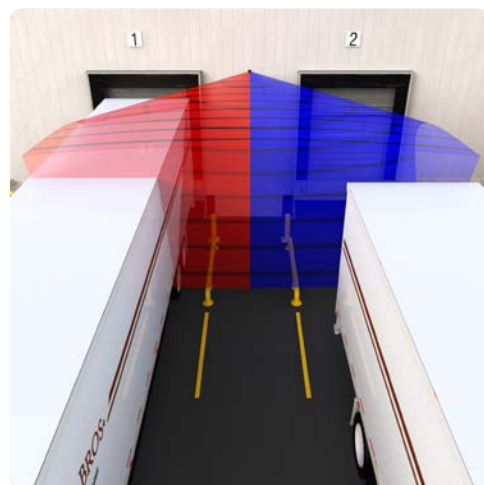
Mounting a sensor above a dock door using an angled wall mount can create blind spots if the detection zone isn't optimized. Many sensors struggle to provide reliable coverage in these installations, leading to missed or delayed vehicle detection, causing disruption, and reducing dock efficiency.

Solution

- The Q90R Radar Sensor delivers reliable detection with a wide 40° x 40° beam pattern, ensuring complete coverage in angled mounting configurations
- Banner Measurement Sensor Software allows quick setup and precise detection zone adjustments, ensuring accurate performance tailored to the dock layout
- Rugged radar technology provides consistent, all-weather operation, avoiding delays caused by unreliable or slow detection in challenging conditions



Q90R
High-Power
Multipurpose
Radar Sensor



In-Between Overhead Mounting with Dual-Zone Detection

Challenge

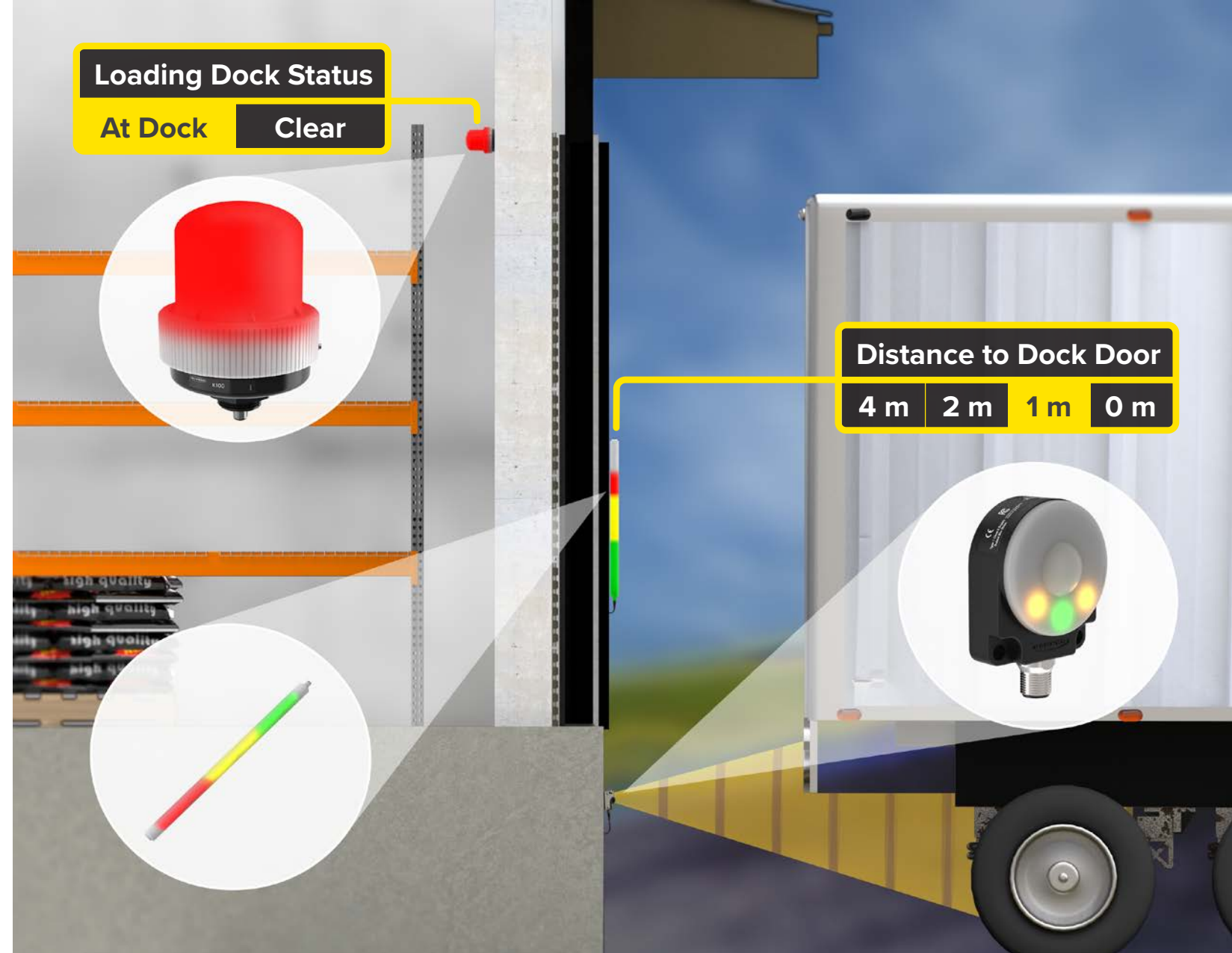
The common practice of installing individual sensors for each dock door requires significant material costs, complex installation, and additional maintenance points. For facilities managing multiple adjacent doors, this approach creates inefficiencies that can complicate inventory and maintenance.

Solution

- A single Q90R2 Radar Sensor uses two independent detection zones to monitor both dock doors, eliminating the need for separate sensors and reducing inventory
- Built for demanding environments, radar technology provides dependable performance regardless of weather or other environmental factors
- Banner Measurement Sensor Software enables quick setup and allows real-time adjustments for tailoring detection zones to specific dock configurations and adapting to changing needs



Q90R2
High-Power
Multipurpose
Radar Sensor



Loading Dock Status

At Dock Clear

Distance to Dock Door

4 m 2 m 1 m 0 m

Below Dock Mounting with Distance Indication

Challenge

Mounting sensors below dock doors allows convenient access for maintenance but introduces challenges. Environmental factors like noise and temperature fluctuations can disrupt detection, and low-visibility conditions in general can make it difficult for drivers to gauge distances, while dock staff rely on clear notifications to coordinate loading and unloading efficiently.

Solution

- The K50R Radar Sensor provides reliable detection and accurate distance measurement in all weather conditions, unaffected by noise or temperature changes
- Banner Measurement Sensor Software allows fast, customized detection zone setup for precise long-range performance tailored to dock layouts
- The WLS27 Strip Light with Pulse Pro I/O, mounted outside the building, gives drivers clear distance indication, improving efficiency and adding a layer of protection in low-visibility conditions
- The K100 Pro Beacon, mounted inside the dock, provides automated status indication, ensuring smooth coordination during loading and unloading operations



K50R
Radar Sensor



K100
Beacon



WLS27
Strip Light

Indoor Facilities

Vehicle detection in indoor facilities faces challenges from obstructed sightlines, low visibility, and tight spaces. Learn how Banner radar sensors paired with LED indication provide accurate detection and clear visual alerts, enhancing efficiency and simplifying installation.



Forklift Detection in Warehouse Aisles

Challenge

Mounting vehicle detection sensors centrally above warehouse aisles, to help prevent collisions and indicate vehicle presence to personnel, can obstruct vehicle movement and complicate access for high-reaching equipment. Some installations require additional support hardware, increasing installation complexity.

Solution

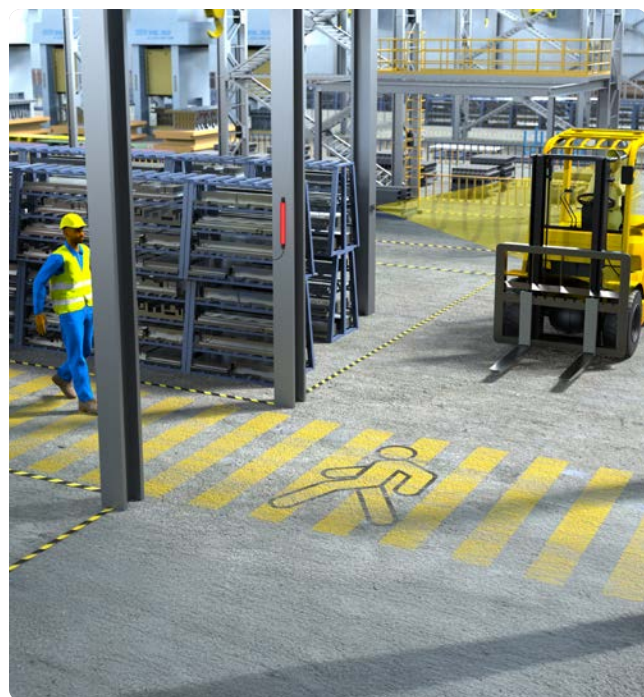
- The Q90R2 Radar Sensor is mounted a few feet above ground at the corner of the aisle, avoiding access obstructions
- Banner Measurement Sensor Software simplifies configuration for multiple devices or unique layouts, tailoring its 120° x 40° radar beam for full aisle coverage, reliably detecting all moving objects and speeding up installation and setup
- A WLS15 Pro Strip Light at the aisle entrance turns detection into indication, alerting personnel to vehicle presence



Q90R2
High-Power
Multipurpose
Radar Sensor



WLS15 Pro
Strip Light



AGV and Forklift Detection at an Intersection

Challenge

Low-light conditions and obstructed sightlines at warehouse intersections make it difficult for drivers and pedestrians to reliably see oncoming traffic. Traditional tools like mirrors and signage depend entirely on visibility, limiting their effectiveness and increasing the likelihood of collisions.

Solution

- A Q90R Radar Sensor monitors vehicle lanes before intersections, detecting oncoming vehicles and triggering indications instantly
- Discrete output allows easy implementation of an indication device, such as the WLS15 Strip Light, creating a dynamic alert system tailored to the site's needs
- Banner Measurement Sensor Software allows custom detection zones within the 40° x 40° beam pattern, ensuring detection only where it's needed



Q90R
High-Power
Multipurpose
Radar Sensor



WLS15 Pro
Strip Light



Position Feedback for Forklift Driver

Challenge

Limited visibility during forklift operation leads to frequent misalignment, accidental collisions, and time-consuming corrections. Conventional spotting systems require personnel to work near moving equipment, increasing risk and reducing efficiency.

Solution

- The K50R Radar Sensor detects vehicle presence and measures distance, producing a string of data that it transmits via Pulse Pro I/O to a WLS15 Pro LED Strip Light that transforms the data into real-time visual distance indication without the need for a PLC, eliminating the need for manual spotting and improving efficiency
- Banner Measurement Sensor Software allows quick configuration of the detection zone, enabling precise coverage in tight spaces



K50R
Radar Sensor



WLS15 Pro
Strip Light

Radar Sensors for Vehicle Detection



Q90R Series

Powerful Detection and Measurement in Nearly Any Environment

- Reliable vehicle detection and distance measurement in a wide range of applications
- Rugged IP67 and IP69K-rated housing for operation in harsh environments
- Intuitive interface enables simple integration and streamlines troubleshooting
- Enhance equipment performance with advanced configuration and detection adjustments and diagnostic viewing
- Radar Configuration Software, IO-Link, and remote teach input, for flexible set-up and configuration
- Pulse Pro output for direct integration with Banner lights; direct process feedback that only requires power; no controller needed



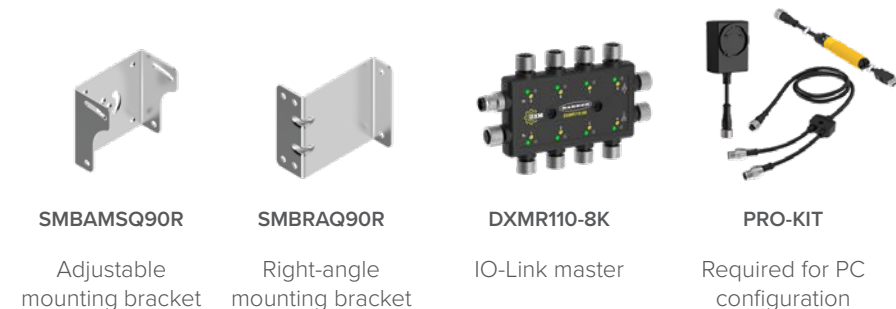
Q90R Models

Beam Pattern	Detection Range	Communication	Output	Model
40° x 40°	0.1 m–20 m	IO-Link	Dual discrete	Q90R-4040-6KDQ
			4-20 mA analog and selectable discrete	Q90R-4040-6KIQ
			0-10 V analog and selectable discrete	Q90R-4040-6KUQ

Q90R2 Model

Beam Pattern	Detection Range	Communication	Output	Model
120° x 40°	0.1 m–20 m	IO-Link	Dual discrete	Q90R2-12040-6KDQ

Accessories



SMBAMSQ90R

Adjustable mounting bracket

SMBRAQ90R

Right-angle mounting bracket

DXMR110-8K

IO-Link master

PRO-KIT

Required for PC configuration



T30R Series

Bridges the Gap Between Radar and Ultrasonics

- Reliable detection in a wide range of vehicle detection applications
- IP67-rated housing is unaffected by rain, wind, snow, fog, steam, sunlight, and has an operating temperature of -40 to 65 °C
- T30RW model features IP69K-rated housing for use in challenging environments
- Radar Configuration Software, IO-Link, remote teach input, and push buttons for flexible set-up and configuration
- Pulse Pro output for direct integration with Banner lights; direct process feedback that only requires power; no controller needed



T30R Models

Beam Pattern	Detection Range	Communication	Output	Model
15° x 15°	0.15–15 m	IO-Link	Dual discrete	T30R-1515-KDQ
			4-20 mA analog and selectable discrete	T30R-1515-KIQ
			0-10 V analog and selectable discrete	T30R-1515-KUQ
15° x 15°	0.1–6 m	IO-Link	Dual discrete	T30R-1515-CKDQ
			4-20 mA analog and selectable discrete	T30R-1515-CKIQ
			0-10 V analog and selectable discrete	T30R-1515-CKUQ
15° x 15°	0.15–25 m	IO-Link	Dual discrete	T30R-1515-LKDQ
			4-20 mA analog and selectable discrete	T30R-1515-LKID
			0-10 V analog and selectable discrete	T30R-1515-LKUQ

T30RW Models

Beam Pattern	Detection Range	Communication	Output	Model
15° x 15°	0.15–15 m	IO-Link	Dual discrete	T30RW-1515-KDQ
			4-20 mA analog and selectable discrete	T30RW-1515-KIQ
			0-10 V analog and selectable discrete	T30RW-1515-KUQ

Accessories



SMB30A

Right-angle bracket

SMB30MM

Right-angle bracket with curved mounting slots

SMB30FA

Swivel bracket with tilt and pan movement

SMBT30RTM

Tank mounting bracket

SAFT30R-PVC-G2

M30 to 2 in. NPT adapter

DXMR110-8K

IO-Link master

PRO-KIT

Required for PC configuration

Radar Sensors for Vehicle Detection



K50R Series

Reliable, Cost-Efficient Sensing for Short-Range Applications

- Superior and consistent operation in any environment
- Cost-efficient alternative to long-range ultrasonic sensors
- Simple integration and streamlined troubleshooting
- Easy set up and configuration with the Banner Measurement Sensor Software
- Bright, visible indication available in Pro models with configurable LEDs
- Base and flush mount options for versatile mounting
- Pulse Pro output for direct integration with Banner lights; direct process feedback that only requires power; no controller needed



Beam Pattern	Housing	Range	Type	Output	Model
40° x 30°	Flush mount	50 mm–5 m	Standard	Dual discrete	K50RF-4030-LDQ
				4–20 mA analog and selectable discrete	K50RF-4030-LIQ
				0–10 V analog and selectable discrete	K50RF-4030-LUQ
		50 mm–5 m	Pro with Configurable LEDs	Dual discrete	K50RPF-4030-LDQ
40° x 30°	Base mount	50 mm–5 m	Standard	Dual discrete	K50RB-4030-LDQ
				4–20 mA analog and selectable discrete	K50RB-4030-LIQ
				0–10 V analog and selectable discrete	K50RB-4030-LUQ
		50 mm–5 m	Pro with Configurable LEDs	Dual discrete and selectable discrete	K50RPB-4030-LDQ

Accessories



SMB30A

Right-angle mounting bracket



SMBK50RA

Right-angle mounting bracket



SMBAMSK50R

Adjustable mounting bracket



SMBT30RTM

Tank mounting bracket



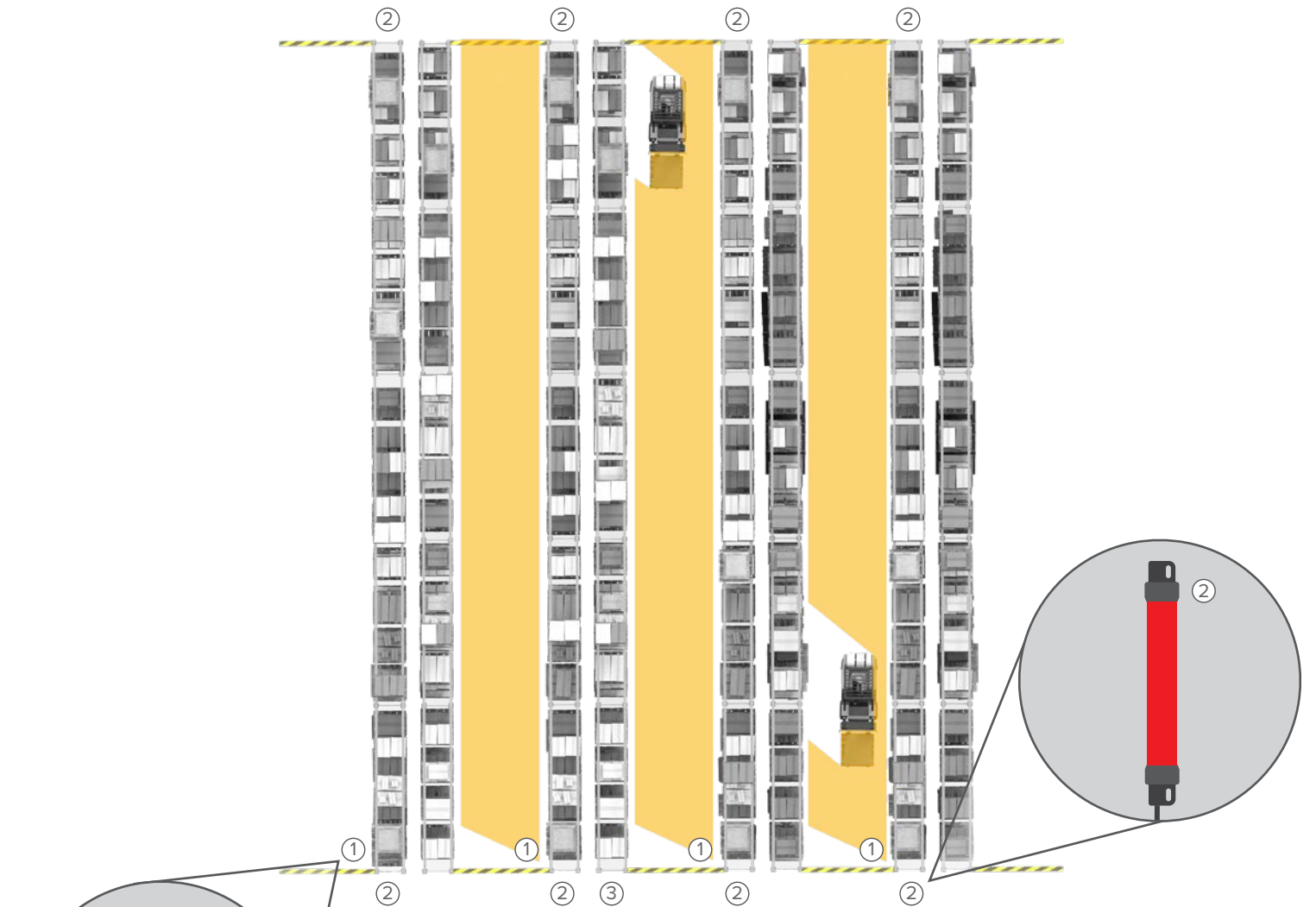
PRO-KIT

Required for PC configuration

IO-Link: Transform Basic Detection into Actionable Insights

Easily view vehicle detection status and access valuable data with IO-Link

- Simplifies communication and control across the system
- Optimize maintenance schedules with access to real-time diagnostics and performance trends
- Easily swap sensors with automatic setting import
- IO-Link-enabled strip lighting visually indicates real-time vehicle detection status locally

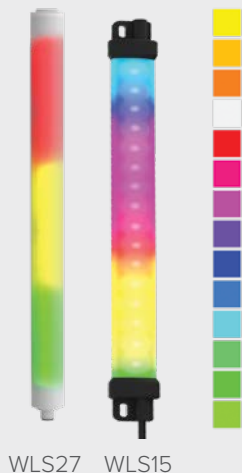
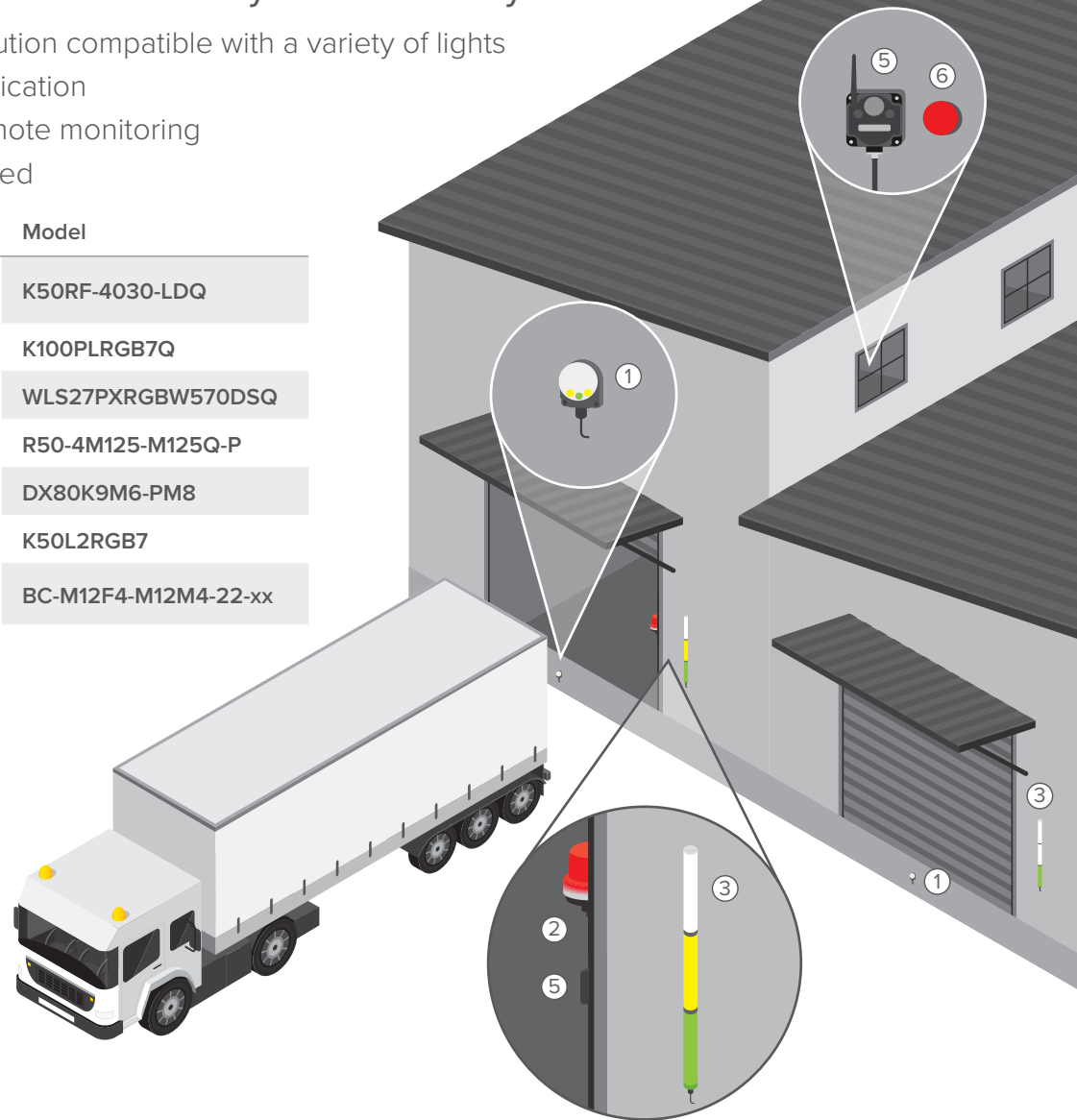


	Description	Model
1	Radar Sensor with IO-Link and configurable sensing zones	Q90R2-12040-6KDQ
2	Strip Light with IO-Link	WLS15PXRGB0360DSKQP
3	8 port IO-Link master	DXMR110-8K
4	M12 double ended extension cordset	BC-M12F4-M12M4-22-xx
5	24 V DC power supply	PSD-24-1

Combine Lights with Radar Sensors to See Vehicle Detection at a Glance Locally and Remotely

- Complete plug-and-play solution compatible with a variety of lights
- Bright, highly visible LED indication
- Wireless connectivity for remote monitoring
- No external controller required

	Description	Model
1	Radar sensor with 40 x 30 beam pattern	K50RF-4030-LDQ
2	Beacon indicator	K100PLRGB7Q
3	Heavy duty sealed light strip	WLS27PXRGBW570DSQ
4	Molded junction block	R50-4M125-M125Q-P
5	Wireless radio kit	DX80K9M6-PM8
6	Programmable indicator	K50L2RGB7
7	M12 double ended extension cordset	BC-M12F4-M12M4-22-xx
8	18-30 V DC power supply	



Visually Indicate Vehicle Status and Distance without a Controller

Pulse Pro I/O uses Pulse Frequency Modulation (PFM) to digitally represent distance measurement values from a discrete sensor. Banner Engineering uses this technology to simplify the connection and communication between a sensor and an indicator, providing an immediate visual representation of a distance measurement without the need for a controller. Installing a Pulse Pro I/O-enabled sensor and indicator in vehicle detection applications provides high-visibility detection and distance indication that enhances efficiency and equipment protection.



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