

Radar Sensors for Vehicle Detection



Detect Any Vehicle in Any Environment. By Design.

Reliable, real-time vehicle detection ensures that operations stay on track. From windy 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 regardless of shape, size, and color
- Improve efficiency and protect equipment with real-time LED indication
- Advanced configuration for smarter solutions



Traffic and Parking



Drive Thru

Challenge

Drive-thru lanes need reliable vehicle detection to provide efficient service and track wait times. Common detection solutions like in-ground loops require pavement cutting and are costly to install and maintain.

Solution

- A K50R Radar Sensor ensures consistent detection in challenging weather conditions that would reduce the reliability of other sensing technologies
- Above-ground installation prevents costly, disruptive installation and maintenance
- Detect vehicles even while mounted inside of existing fixtures or enclosures
- Discrete output allows easy integration with existing queue management systems
- 40 x 30 degree coverage detects all vehicle sizes, while programmable background suppression eliminates false triggers



**K50R
Radar Sensor**



Vehicle Exit Detection with Radar Sensor

Challenge

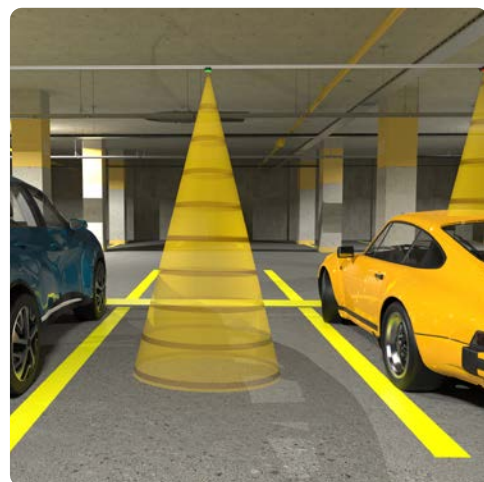
Sensors at a car wash exit need to reliably detect when a vehicle has fully exited, otherwise the automated system may prematurely advance the next vehicle. This can lead to costly collisions which damage vehicles and disrupt operations.

Solution

- A T30RW installed above the vehicle exit uses its 15 x 15 beam pattern to provide focused detection exactly where it's needed
- Unaffected by environmental conditions, radar provides reliable vehicle detection to the automated system, preventing collisions and keeping the operation running smoothly
- IP69K-rated rugged housing ensures dependable performance in the harshest conditions



**T30RW
Washdown
Series
Radar Sensor**



Parking Lots

Challenge

High-traffic parking garages frequently experience congestion during peak hours, causing delays as drivers search for open spaces. Frustration and distraction increase the risk of accidents, and congested traffic makes inefficient use of available spaces.

Solution

- The K50R Pro provides real-time vehicle detection and indication with its integrated LED, simplifying the parking experience
- Customizable LED status indication, such as green for open spaces, red for occupied, and blue for ADA spaces, makes space identification easier
- Banner Measurement Sensor Software and Remote Teach simplify installation and/or integration into an existing system



**K50R Pro
Radar Sensor**



Tolls and Gates

Challenge

Toll and gate systems require reliable vehicle detection for smooth traffic flow and efficient access control. Many sensor technologies can be affected by environmental conditions, and in-ground loops require pavement cutting to install and maintain.

Solution

- A K50R Radar Sensor ensures reliable detection in challenging weather conditions
- Above-ground installation prevents costly, disruptive installation and maintenance
- Rugged IP67-rated housing and a wide -40 to 65 °C operating range provides dependable performance in outdoor environments
- Detect vehicles even while mounted inside of existing fixtures or enclosures
- 40 x 30 degree coverage detects all vehicle sizes, while programmable background suppression eliminates false triggers



**K50R
Radar Sensor**



**K50 Pro Select
Indicator**

Dock Door



Overhead Straight Down (Under Eave)

Challenge

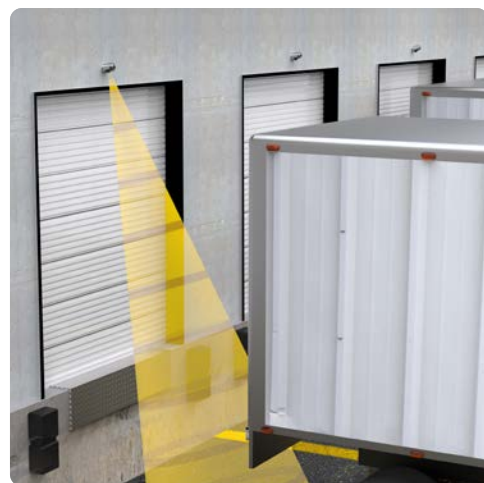
Optimizing efficiency in shipping and receiving operations requires dependable, immediate detection of truck arrival. Sensors make detection fast and easy, but installation constraints can limit effective mounting options. Where installation requires mounting so that the sensor's beam is directed straight down, some technologies may be affected by environmental conditions, such as heavy winds or vehicles in adjacent dock bays.

Solution

- A T30R detects vehicles only within its narrow beam, eliminating false detection caused by adjacent vehicles
- Radar technology is unaffected by weather conditions, providing reliable detection in any environment



T30R
Long-Range
Radar Sensor



Above (Angled Wall Mount)

Challenge

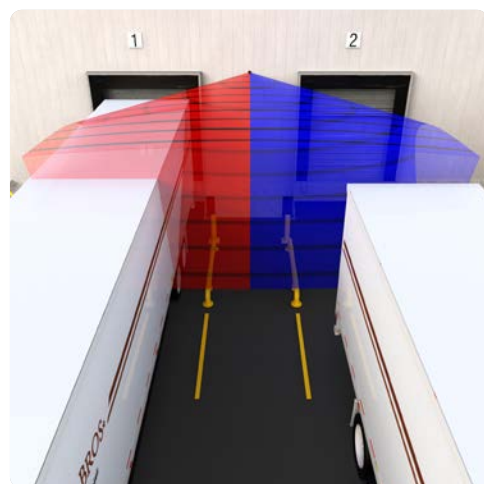
Efficient shipping and receiving operations require reliable, instant detection of truck arrival. Sensors make detection fast and easy, but installation constraints can limit effective mounting options. Where the most practical installation option requires an angled wall mount, sensor technologies like ultrasonic can leave blind spots, which can produce unreliable and delayed detection.

Solution

- A Q90R is installed above the dock door using an angled wall mount, its wide 40 x 40 beam pattern ensures reliable detection
- Banner Measurement Software enables quick-and-easy custom zone setup for dependable all-weather detection exactly where it's needed



Q90R
High-Power
Multipurpose
Radar Sensor



In-Between

Challenge

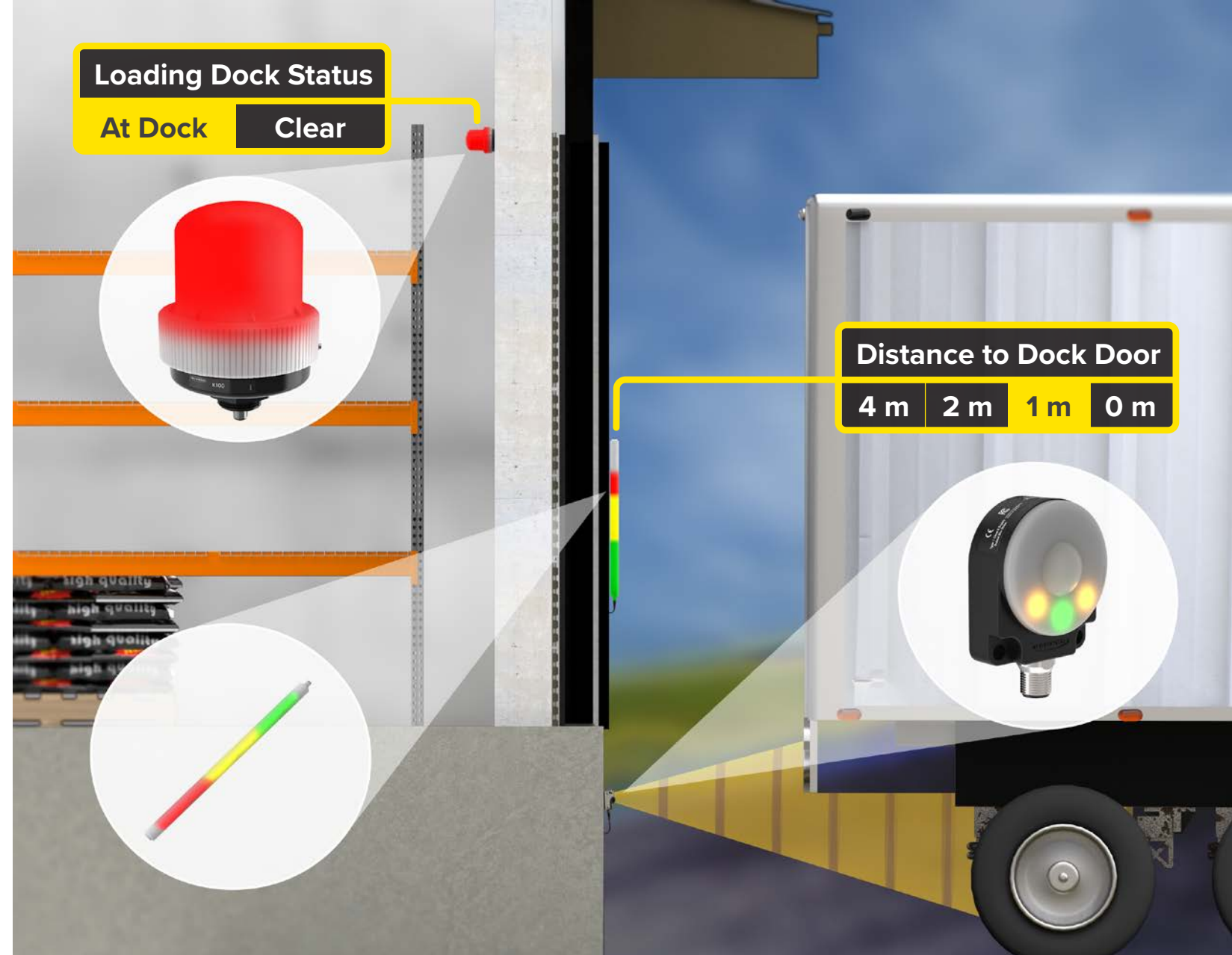
The common approach to monitoring multiple dock doors requires all the added materials, installation complexity, expanded inventory, and maintenance points that come with installing a dedicated sensor on each dock door. The ability to monitor more with less would reduce inventory and simplify operations.

Solution

- A single Q90R2 mounted between two dock doors reliably detects vehicles at both bays using its dual independent detection zones, reducing inventory and simplifying installation
- Unaffected by environmental conditions, radar technology provides reliable detection and monitoring in demanding conditions
- Banner Measurement Sensor Software enables quick setup and real-time adjustments, optimizing detection at both bays while providing an intuitive, flexible system that can be adapted to changing needs



Q90R2
High-Power
Multipurpose
Radar Sensor



Indoor and Outdoor Dock Indication

Challenge

Dependable detection and indication of dock status is crucial for efficient shipping and receiving operations. Sensors make detection fast and easy, and an automated indication solution would simplify notification. Sensor installation location presents a challenge for many sensor types. When mounting below a dock door, a sensor that is unaffected by noise and temperature variation is needed.

Solution

- A K50R Radar Sensor reliably detects approaching trucks and measures distance in all weather conditions
- Banner Measurement Software enables a customized detection zone, ensuring long-range detection where it's needed
- A WLS27 Strip Light mounted outside the building translates data from the K50R, giving drivers a visual indication of distance in low-visibility conditions
- A K100 Pro Beacon mounted inside the loading dock provides automated indication of loading dock status



K50R
Radar Sensor



K100
Beacon



WLS27
Strip Light

Indoor Facilities



Forklift Detection in Warehouse Aisles

Challenge

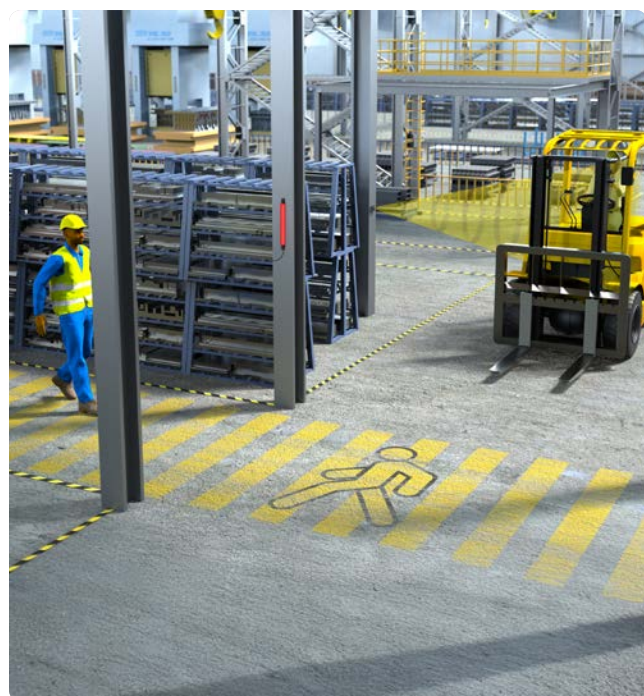
Warehouse aisles require monitoring of forklifts and other equipment to prevent collisions, notify personnel, and ensure smooth operations. Mounting a sensor centered above an aisle can block access and requires considerable time and material to accomplish.

Solution

- A Q90R2 is mounted a few feet above ground on the corner of an aisle
- Area coverage of the 120 x 40 radar beam pattern is configured to reliably detect any moving object in the aisle's area
- A WLS15 Pro installed at the aisle entrance indicates vehicle presence
- Banner Measurement Software allows the same settings to be applied to multiple devices or customized for unique situations, making setup fast and easy



Q90R2
High-Power
Multipurpose
Radar Sensor



AGV and Forklift Detection at an Intersection

Challenge

Warehouse vehicle traffic presents a persistent and serious challenge for facilities. Intersections are particularly challenging. Common solutions like domed mirrors and signage rely entirely on personal observation, which is made more challenging in low-light environments.

Solution

- A Q90R Radar Sensor monitors a vehicle traffic lane before intersections, detecting oncoming vehicles, instantly triggering an indication device, and giving pedestrians advance cautionary notice
- Discrete output allows easy implementation of indication devices, such as the TL50 Tower Light or the WLS15 Strip Light, creating a dynamic alert system that helps protect equipment
- Banner Measurement Sensor Software enables a customized detection zone within the wide 40 x 40 beam pattern, enabling detection exactly where it's needed
- IO-Link simplifies installation and provides a powerful tool for accessing traffic flow trends



Q90R
High-Power
Multipurpose
Radar Sensor



Forklift at Palletizer

Challenge

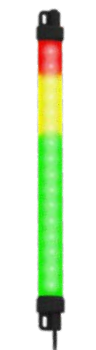
Loading material onto a palletizer with a forklift requires precise navigation. Forklift drivers often have a restricted field of view when loading pallets onto a palletizer, which increases the risk of misalignment, collision with the palletizer, or the need for time-consuming corrections. Positioning a spotter close enough to gauge distance creates a safety risk, is inefficient, and requires persistent focus.

Solution

- The K50R Radar Sensor, mounted to a fixed post, measures forklift distance with precision and reliability, unaffected by dust, debris, or lighting conditions
- The WLS15 Pro LED Strip Light receives the distance data from the K50R and transforms it into a dynamic visual-guidance tool. From the bottom up: green to advance forward, yellow to prepare to stop, and red to stop and lower the load



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

DXMR90-4K

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



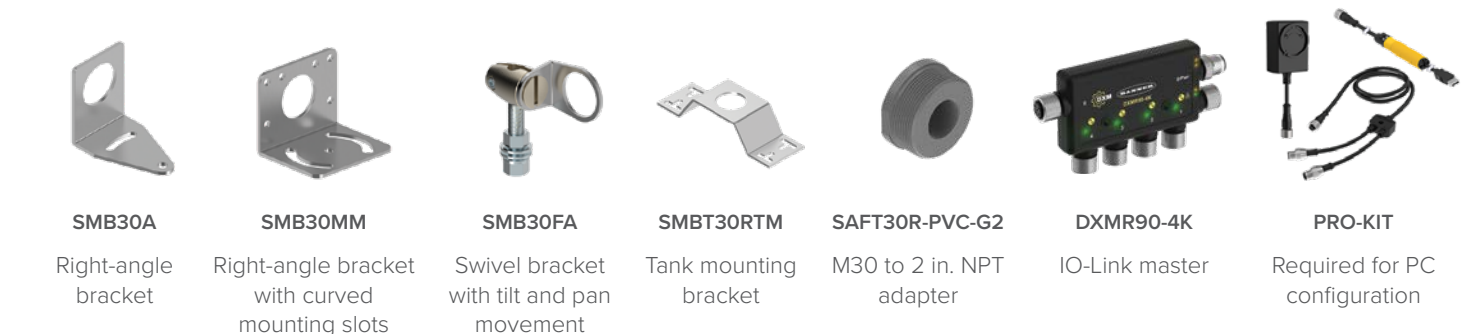
T30R Models

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

DXMR90-4K

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

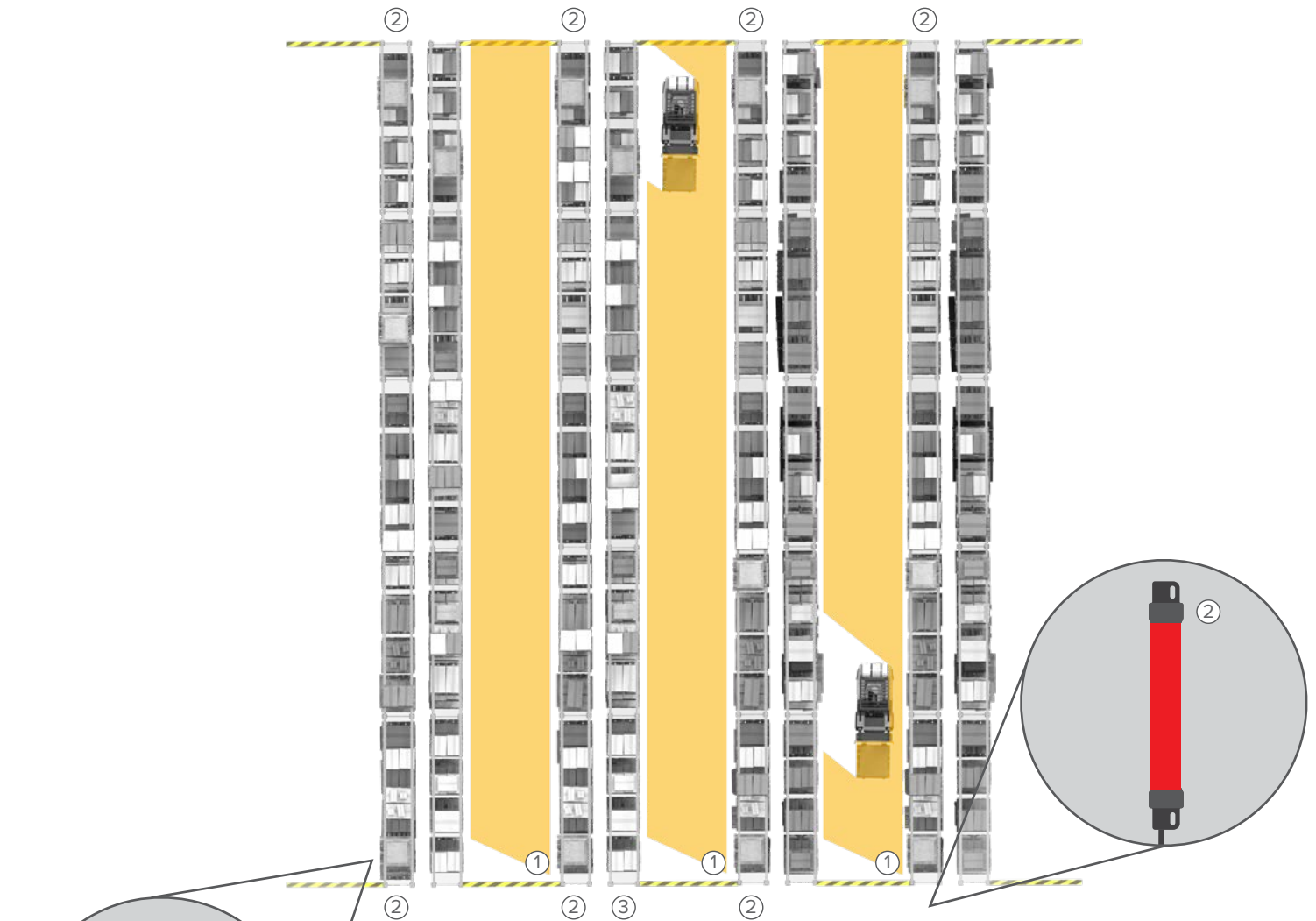


PRO-KIT
Required for PC configuration

IO-Link: Vehicle Traffic Detection and Indication

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

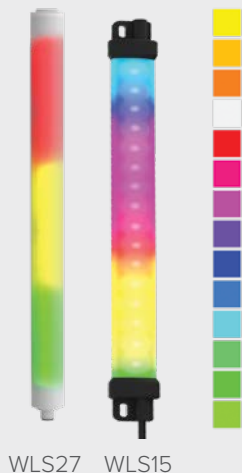
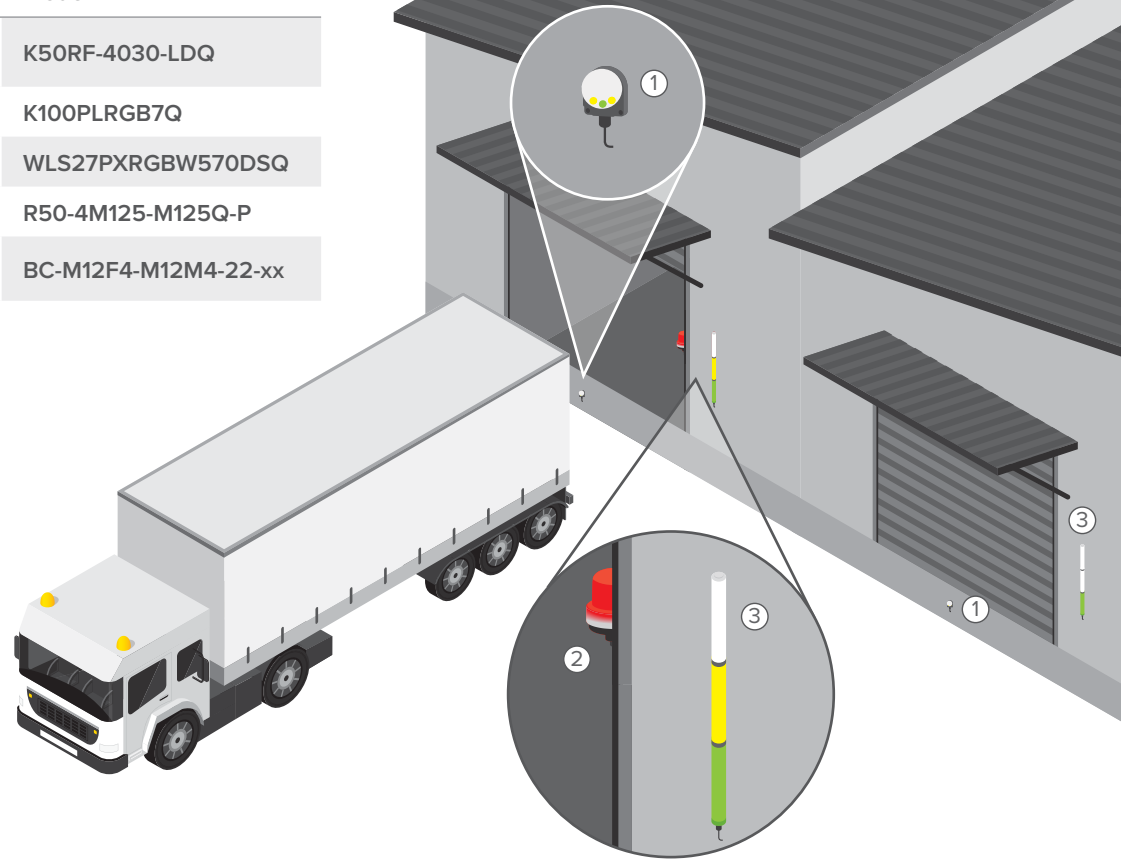


	Description	Model
1	Radar Sensor with IO-Link and configurable sensing zones	Q90R2-12040-6KDQ
2	Strip Light with IO-Link	WLS15PXRGB0360DSKQP
3	8 port IO-Link master	DXMR110-8K
4	M12 double ended extension cordset	BC-M12F4-M12M4-22-xx
5	24 V DC power supply	PSD-24-1

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

- Complete plug-and-play solution compatible with a variety of lights
- Bright, highly visible LED indication
- 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	M12 double ended extension cordset	BC-M12F4-M12M4-22-xx
6	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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