

**Revolutionizing 2D measurement.  
Maximizing longevity.  
Challenging expectations.**

R2100 Multi-Ray LED Scanner

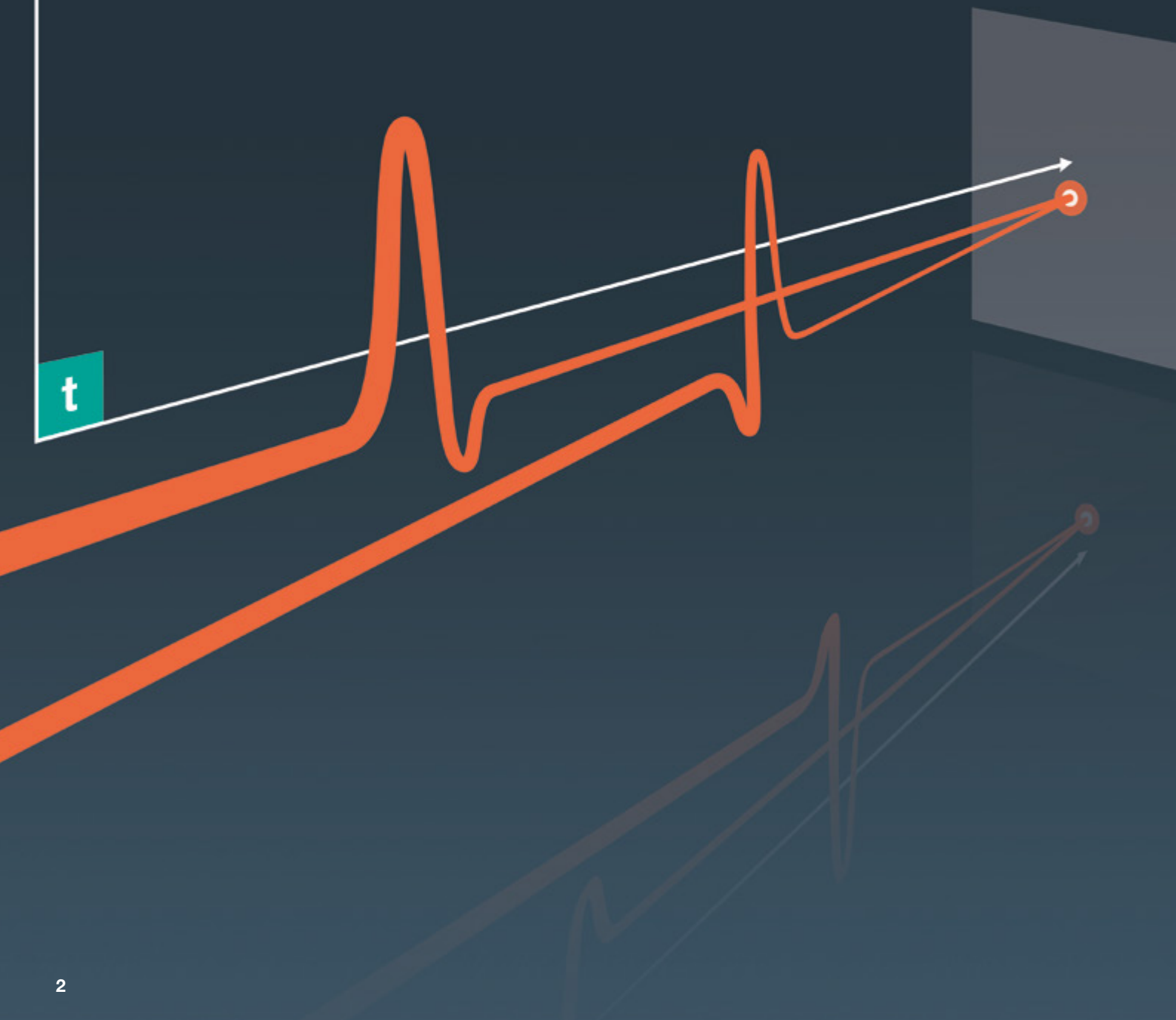


Your automation, our passion.

 **PEPPERL+FUCHS**

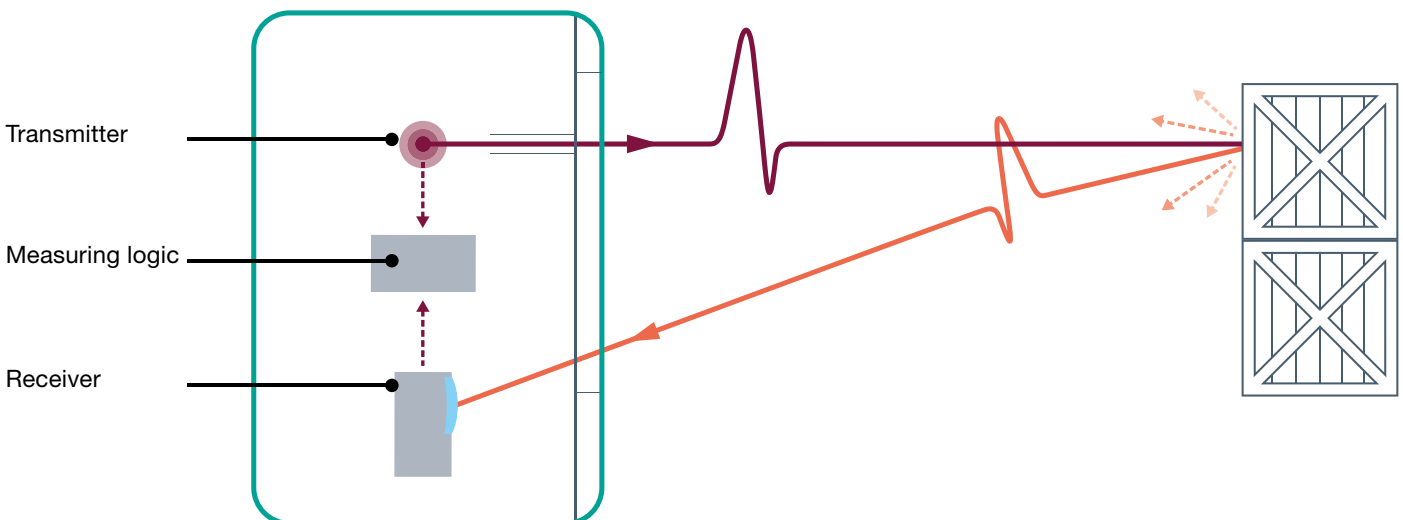
## A Distance Ahead: Your Crucial Edge in the Market

The new generation of distance-based photoelectric sensors from Pepperl+Fuchs is the first to combine measurement principles and the simplicity of standard sensing technology.



# Pulse Ranging Technology

Pulse Ranging Technology (PRT) is an innovative measurement method from Pepperl+Fuchs and is well established in many areas of automation technology. Now PRT is more powerful than ever before, providing two-dimensional measurement over an area instead of just one point. This creates new opportunities for a variety of applications.



Pulse Ranging Technology – true time-of-flight technology

## True time-of-flight technology

Sensors with PRT emit a very short, high-intensity light pulse and calculate object distance based on the speed-of-light constant and time of flight of the reflected light pulse.

Unlike other time of flight sensors that emit a continuous light beam, PRT sensors emit short pulses of high-intensity light at up to 250,000 times per second. Compared to a continuous source, the energy density of one PRT pulse can be up to 1,000 times greater, allowing stable and highly reliable detection, even at distances of 300 meters or more.

In contrast to triangulation-based sensors, the detection range of a PRT sensor is not limited by the geometrical layout of the sensor optics. Consequently, PRT sensors can take advantage of smaller housings while still providing significantly larger detection ranges.

# Sophisticated Design for Maximum Efficiency

The R2100 pushes the realm of possibility one step further by combining our PRT with ultra-IR LEDs and multiray scan. Equipped with these breakthrough technologies, the R2100 becomes an economic solution with exceptional performance, flexibility, and durability.



## R2100: Multi-Ray LED scanner + PRT in one device

Distance measurement over a wide area with no moving parts – these fundamental principles give the R2100 a distinct advantage over conventional laser scanners.

Unlike most 2D laser scanners that use a motorized system to rotate a mirror, the R2100 evaluates a 2D area over 88 degrees by employing multiple emitter elements arranged side by side. This results in a robust, fast, and cost-effective sensor solution.

## Highlights

- PRT provides reliable and precise distance measurement information
- Ultra-IR LEDs guarantee powerful performance and a long lifetime
- No moving parts for added durability in difficult application environments
- 2D measurement with multiray scan
- Multiple wide-beam emitters ensure reliable object detection regardless of surface texture
- Low current consumption reduces energy-related design and operating costs
- Fast response time for rapid processes

# The World's First Multi-Ray LED Scanner

## Durable and robust

R2100 delivers extra durability and ruggedness by eliminating the need for moving parts that can break down or wear out over time.

## 2D measurement

Multiray scan combined with an array of ultra-IR LEDs creates a wide sensing area for reliable measurement in 2D – even on irregularly shaped objects and surfaces.

## Mature technology

PRT is the most effective time-of-flight measurement technology for maximum precision and reliability over large distances, even in harsh ambient conditions.

## Always eye safe

Ultra-IR LEDs are inherently eye safe, yet still provide powerful performance and exceptional longevity over a wide range of operating temperatures.



## Reliable measurement results

For the first time, the power and flexibility of PRT is being harnessed for improved detection of objects with irregular surfaces. Multiple emitter elements arranged side by side create a wide field of coverage.

PRT ensures reliable and stable 2D measurement results, independent of the application environment. This makes the R2100 scanner a truly unique solution for a wide range of automation tasks.

## Technical Information

<b>Measurement range</b>	0.2 ... 8 m
<b>Light type</b>	Modulated infrared, 850 nm
<b>Scan rate</b>	50 Hz (1 scan = 11 measurements)
<b>Scan range</b>	88°
<b>Resolution</b>	1 mm
<b>Operating voltage</b>	10 ... 30 V DC
<b>No-load supply current</b>	≤ 120 mA/24 V DC
<b>Degree of protection</b>	IP67
<b>Ambient temperature</b>	-30 ... 50 °C (-22 ... 122 °F)
<b>Dimensions</b>	157 mm × 81 mm × 45 mm
<b>Model number (Interface/Protocol)</b>	OMD8000-R2100-R2-2V15 (RS-232/serial); OMD8000-R2100-B16-2V15 (CAN/CANopen)

# Innovative Technologies for Challenging Applications

Demanding tasks require robust sensors. The R2100 is the ideal solution for a multitude of technologically challenging applications in mobile equipment, intralogistics, specialty machines, and system engineering.



Reliable forklift detection at a transfer station

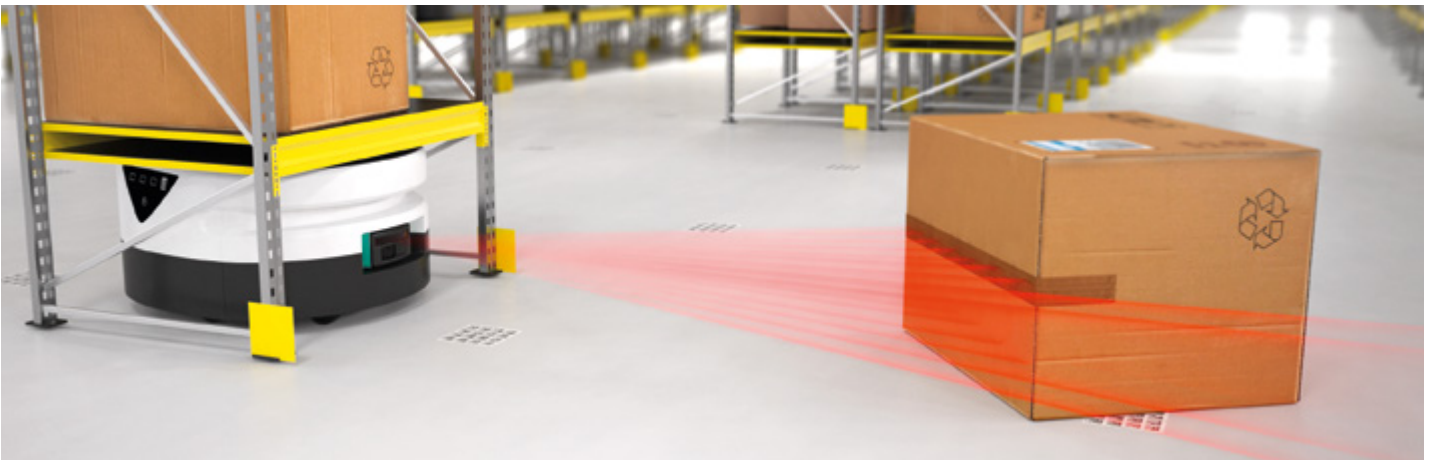
## For demanding applications

The R2100 evaluates objects in two dimensions with multiray scan – evaluating a 2D area using an array of wide-beam LED emitters. Combining this technology with PRT ensures reliable detection of any surface, regardless of shape or texture.

And with no moving parts to break down or wear out over time, the R2100 delivers the extra durability, ruggedness, and measurement stability that is critical in mobile equipment applications.

# High Response Speeds for Fast Processes

The intelligent sensor electronics allow the highest response rates. This guarantees very fast process times and maximum efficiency.



The R2100 ensures collision protection of automated guided vehicles



The R2100 detects empty storage bays in an ASRS facility

## Intelligent and fast measurement

R2100 is also ideal for automated storage and retrieval (ASRS) tasks in the material handling and logistics industry. Lightning-fast PRT guarantees fast response times for rapid processes.

Eye safe ultra-IR LEDs and no moving parts result in low power consumption and allow operation over a wide range of temperatures – without the need for additional cooling equipment.

## Typical applications

- Object detection and classification
- Collision protection
- Vehicle detection
- Empty storage detection

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## Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

## Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

### Pepperl+Fuchs Quality

Download our latest policy here:

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