
R2100 Multi-Ray LED Scanner
Pulse Ranging Technology (PRT) is an innovative measurement method from Pepperl+Fuchs and a well-established technology in many areas of automation. 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.

**True Time-of-Flight Technology**

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 m 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. This means PRT sensors can detect at significantly longer ranges with smaller housings.
The R2100 pushes the realm of possibility by combining our PRT with ultra-IR LEDs and multi-ray scan. Equipped with these breakthrough technologies, the R2100 is an economical solution with exceptional performance, flexibility, and durability.

**Technical Information**

- **Measurement range**: 0.2 ... 8 m
- **Light type**: Modulated infrared, 850 nm
- **Scan rate**: 50 Hz (1 scan = 11 measurements)
- **Scan range**: 88°
- **Resolution**: 1 mm
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 120 mA/24 V DC
- **Degree of protection**: IP67
- **Ambient temperature**: –30 ... 50 °C (–22 ... 122 °F)
- **Dimensions**: 157 mm × 81 mm × 45 mm

**Typical Applications**

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

**R2100 at a Glance**

**Durable**

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

**2D Measurement**

Multi-ray scan combined with an array of ultra-IR LEDs produces a wide sensing range for reliable measurement in 2D, no matter the shape of the object or surface.

**Eye-Safe**

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

**Tried-and-Tested Technology**

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

**Highlights**

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

The R2100 ensures collision protection of automated guided vehicles.
Monitoring Areas, Avoiding Collisions

The R2100 is the ideal solution for technologically challenging applications in mobile equipment, intralogistics, and specialty machines.

Collision Avoidance

The R2100 evaluates objects in two dimensions with multi-ray scan—evaluating a 2D area using an array of wide-beam LED emitters. Combining this technology with PRT ensures precise guidance and detection of equipment. 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.

Wide Detection Range, High Response Speeds

The intelligent sensor electronics provide detection over an 88-degree zone and lightning-fast response times. This ensures precise detection and extremely fast processing speeds.

Wide Detection Area

R2100 is ideal for automated storage and retrieval (ASRS) tasks in material handling and logistics applications. Multiple wide-beam emitter elements arranged side by side create a wide field of coverage, and lightning-fast PRT guarantees fast response times.

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.
Your automation, our passion.

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
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- Connectivity

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