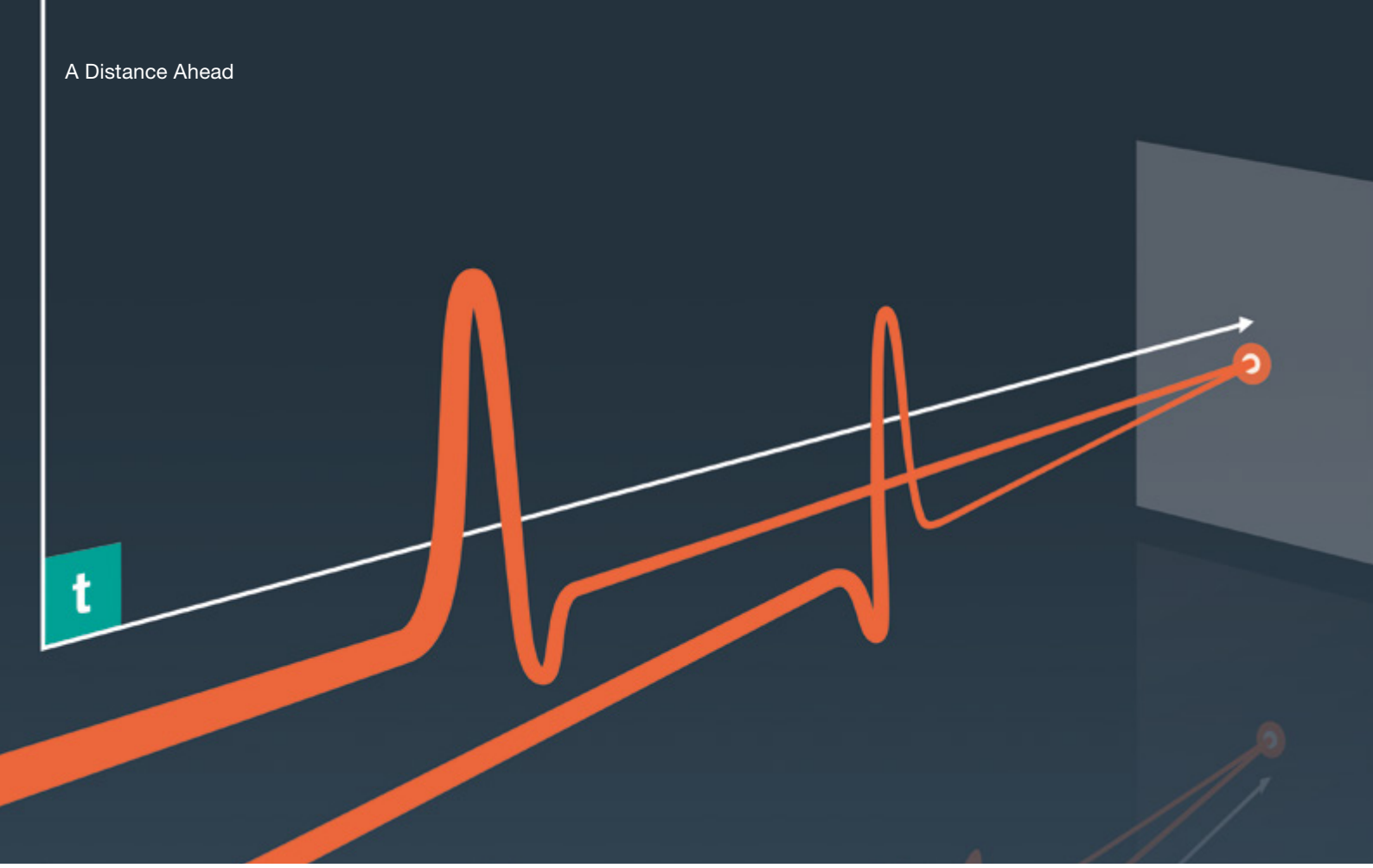
Providing unmatched precision. Delivering 360° performance. Ensuring unrivaled longevity.

R2000
2-D Laser Scanner

Your automation, our passion.

PEPPERL+FUCHS

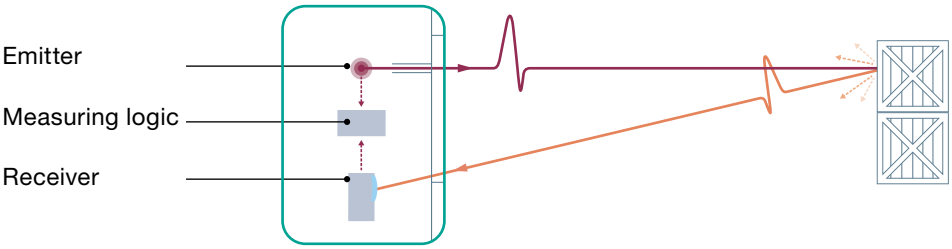


A Distance Ahead:
A Distinctive Market Advantage

A new generation of distance-based photoelectric sensors from Pepperl+Fuchs is the first to combine standard photoelectric technology with accurate, state-of-the-art measuring methods.

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.

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



Pulse Ranging Technology – true time-of-flight technology

2-D Laser Scanner with 360° All-Round Visibility

The innovative R2000 2-D laser scanner is the perfect combination of modern technology and design elements that raises the bar in scanning technology. This opens up a range of interesting new applications for the R2000.

One Series, Multiple Versions

The R2000 is capable of extremely accurate measurements at fast scan rates. An interactive display with text and graphical information about the application, combined with simple configuration, make it incredibly user-friendly. And PRT allows reliable and precise measurements in industrial environments. Very small objects are consistently detected, even at long distances.

Several versions of the R2000 are available for your applications. The R2000 UHD is suitable for complex measuring tasks and navigation. The R2000 HD is used for object profiling and robotic applications. The R2000 Detection is an easy-to-use laser scanner for demanding field monitoring applications.

General Technical Data	
Detection/ measuring range	0.1 ... 30 m to object; 0.1 ... 100 m to reflector
Light type	Red laser light, infrared (IR) laser light; laser class 1
Light spot diameter	< 15 mm at 10 m; 25 mm x 105 mm at 10 m (IR)
Rotational speed/ detection rate	R2000 UHD 10–50 Hz 600–3,000 RPM R2000 HD 10–50 Hz 600–3,000 RPM R2000 Detection 10–30 Hz 600–1,800 RPM
Dimension (W x H x D)	106 x 116.5 x 106 mm
Operating voltage	10 V ... 30 V

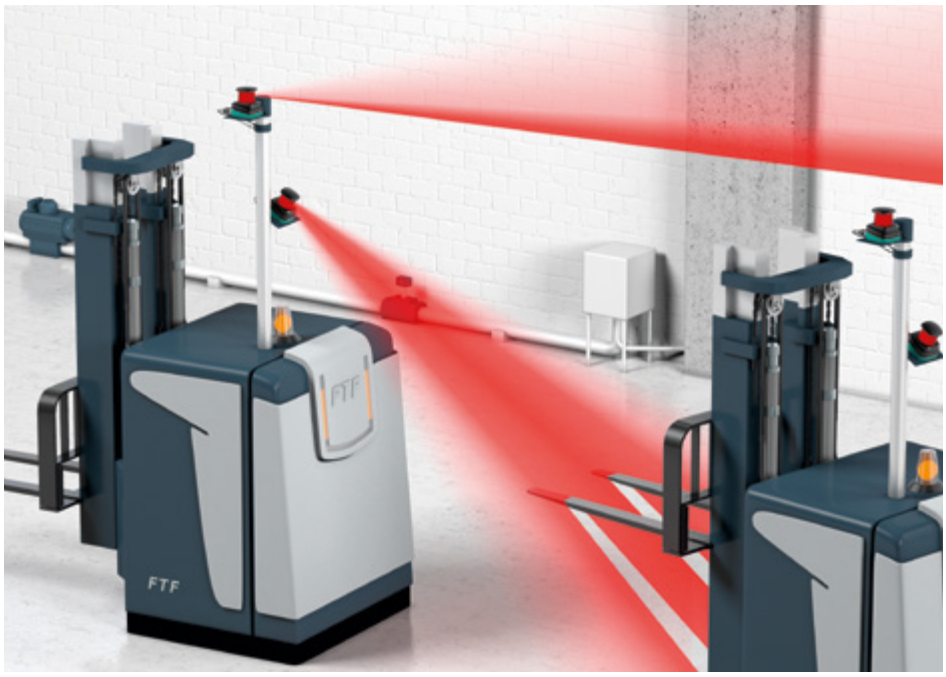
Accessories	Description
PACT*ware*	FDT framework
Device Type Manager	DTM R2000 Series
MH-R2000	Mounting aid
V1SD-G-ABG-PG9	Field-attachable male connector
V1-G-5M-PUR	Female connector
V1SD-G-2M-PUR-ABG-V45-G	Connection cable 2 m
V1SD-G-5M-PUR-ABG-V45-G	Connection cable 5 m
V17-G-2M-PUR	Connection cable 2 m (R2000 Detection)
V17-G-5M-PUR	Connection cable 5 m (R2000 Detection)

R2000 Series Highlights

- Pulse Ranging Technology for high precision and reliability
- Sharp, pinpoint light spot allows detection of small objects, reflectors, or edges
- 360° measurement for all-round visibility
- Compact design for simple mechanical integration
- Interactive, wrap-around LED display provides easy-to-see status information

Excellent Performance: The Intelligent R2000 UHD for Complex Tasks

In addition to exact distance and angle measurement, the R2000 UHD (Ultra High Density) can differentiate between natural objects and reflectors. An accurate time stamp in the measurement data allows precise integration into dynamic measurement tasks.



R2000 UHD provides distance, angular, and signal data for navigation

R2000 UHD

The R2000 UHD combines speed with high resolution. It offers an unmatched angular resolution down to 0.014° and a fast scan rate of 50 revolutions per second. This provides 250,000 scan points per second, making it ideal for high-speed applications even at long distances.

R2000 UHD is available with a visible red laser (OMD10M) or infrared laser (OMD30M). The R2000 with infrared laser provides up to 30 m range to natural objects and 100 m range to reflectors.

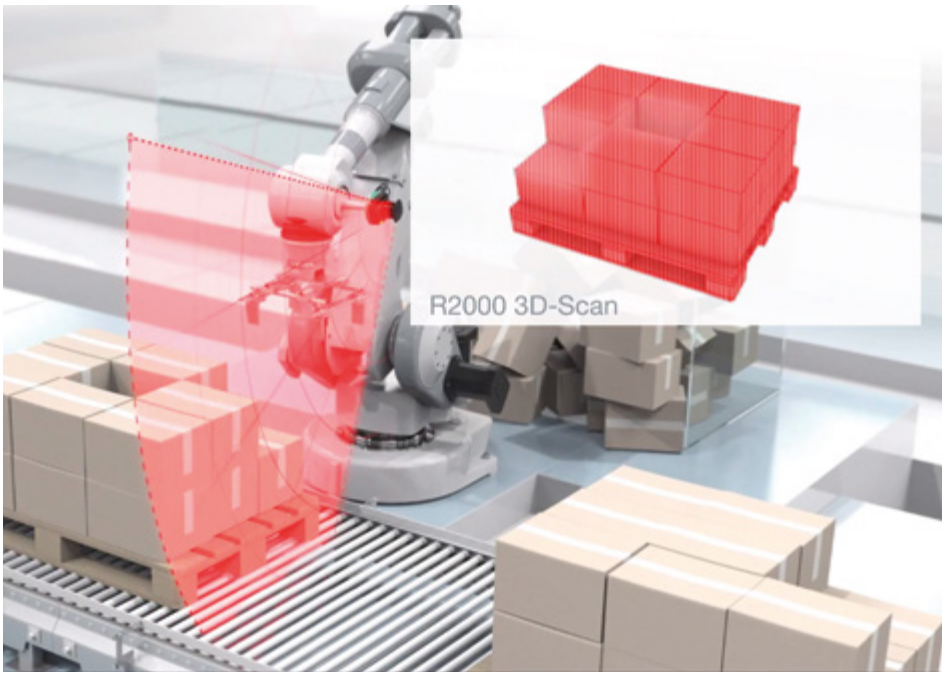
R2000 UHD Highlights

- Suitable for high-speed applications due to a rapid scan rate of 50 Hz
- Best angular resolution on the market of 0.014° ensures extremely accurate navigation and positioning
- Extended-range version with infrared laser provides up to 100 m range

Technical Data R2000 UHD OMD10M-R2000-B23-V1V1D OMD30M-R2000-B23-V1V1D-1L	
Detection/ measuring range	10 m to object/60 m to reflector (OMD10M); 30 m to object/100 m to reflector (OMD30M)
Repeatability	< 12 mm
Resolution	1 mm
Angle resolution	≥ 0.014°
Measuring rate	Up to 250,000 measure-ments/s
Interface	Ethernet TCP/IP, UDP, 100 Mbit/s
Output data	Distance/angle/signal/ time stamp

Specialized Features: The R2000 HD is Optimized for Object Profiling and Robotics

The measuring sensor R2000 HD (High Density) is the ideal solution for tasks in robotics and excels due to its reliable object profiling.



R2000 HD is optimized for object profiling and robotics

R2000 HD

The R2000 HD is optimized for applications in the field of robotics. It is available with an infrared laser (OMD30M* HD) and provides high-precision contour measurement data up to 30 m to a reflector and natural objects.

With its 360° measurement angle, this 2-D laser scanner meets the requirements of typical robotic applications by providing 84,000 scan points per second and an angular resolution down to 0.043° to ensure precise object profiling.

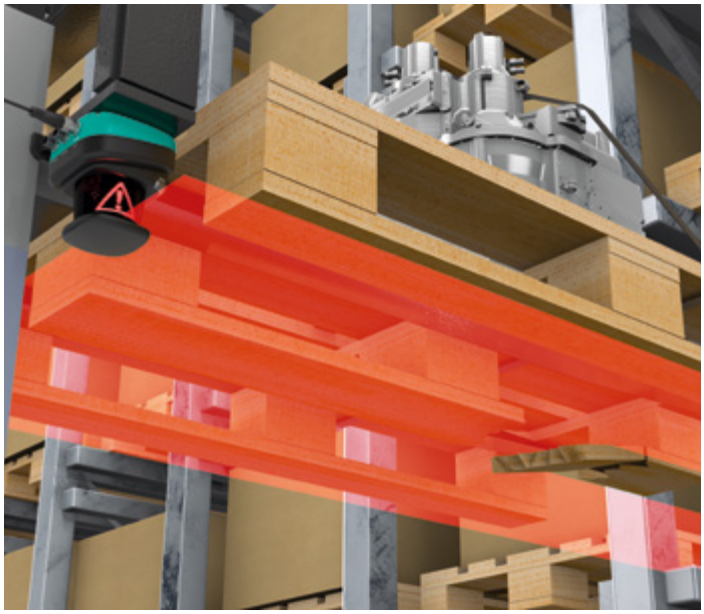
Technical Data R2000 HD OMD30M-R2000-B23-V1V1D-HD-1L	
Detection/ measuring range	30 m to object/ 30 m to reflector
Repeatability	< 12 mm
Resolution	1 mm
Light type	Infrared (IR) laser light
Angle resolution	≥ 0.043°
Measuring rate	Up to 84,000 measurements/s
Interface	Ethernet TCP/IP, UDP, 100 Mbit/s
Output data	Distance/angle/signal/time stamp

R2000 HD Highlights

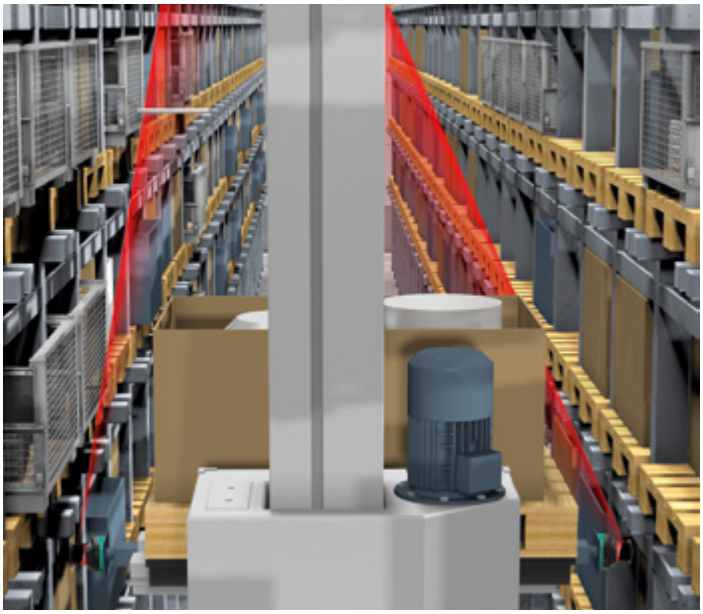
- Optimized for object profiling and robotic applications
- Angular resolution of 0.043° ensures precise contour measurement and object localization

For Fast Applications and the Smallest Objects: The R2000 Detection for Demanding Field Monitoring Applications

The R2000 Detection laser scanner offers four user-configurable detection fields. With user-friendly software, each field can be edited and assigned to a specific output. Also, a sharp, pinpoint light spot enables precise detection of small objects and edges.



Detection of small overhangs such as damaged pallets

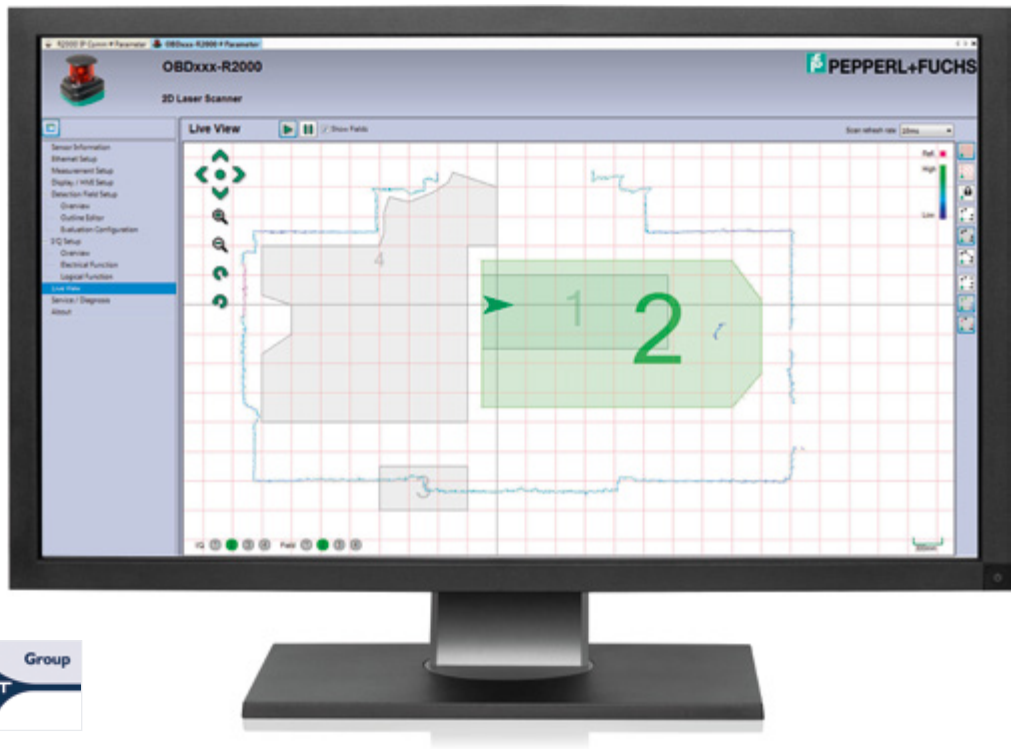


Detection of protrusions or obstacles over large areas

R2000 Detection

Combining simple configuration with a razor-sharp, 2-D scan plane that enables object detection only a few millimeters above a surface, the R2000 Detection provides an ideal solution for application tasks that include gap control, empty storage bay detection in an ASRS plant, and collision avoidance in AGV and stacker cranes.

R2000 Detection is available with a visible red laser (OBD10M) or infrared laser (OBD30M). The R2000 with infrared laser allows you to monitor an area with a radius of up to 30 m to natural objects.



Simple to Use – Four User-Defined Detection Fields

The four detection fields are quickly and easily defined with the intuitive field editor of the device type manager (DTM). Fields and inputs are linked logically to the outputs and make configuration very simple and user-friendly.

PACT*ware* and R2000 DTM software are free to download at:
www.pepperl-fuchs.com/dtm-r2000

Technical Data R2000 Detection OBD10M-R2000-4EP-V1V17 OBD30M-R2000-4EP-V1V17-1L	
Detection/measuring range	10 m to object/30 m to reflector (OBD10M); 30 m to object/30 m to reflector (OBD30M)
Min. object width	≥ 1 mm
Angle resolution	≥ 0.071°
Repeatability	12 mm
Signal output	4x push-pull inputs/outputs (selectable)
Number of switching fields	4 user-defined fields
Configuration	R2000 DTM software

R2000 Detection Highlights

- A stable, wobble-free scanning axis guarantees precise monitoring of the scan surface
- Highest angular resolution of any digital I/O scanner on the market – 0.071° – ensures detection of extremely small objects
- Simple handling – four freely configurable detection fields easily link to the digital outputs
- Extended-range version with infrared laser provides up to 30 m range to natural objects

Your automation, our passion.

Explosion Protection

- Intrinsically Safe Barriers
- Signal Conditioners
- Fieldbus Infrastructure
- Remote I/O Systems
- HART Interface Solutions
- Wireless Solutions
- Level Measurement
- Purge and Pressurization Systems
- Industrial Monitors and HMI Solutions
- Electrical Explosion Protection Equipment
- Solutions for Explosion Protection

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- AS-Interface
- Identification Systems
- Logic Control Units

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