Distance Measurement with Millimeter Precision for Automated Parking Solutions

The R1000 Ensures Precise Shuttle Positioning via Pulse Ranging Technology

At a Glance

- Positions shuttles with millimeter precision on multiple levels
- Reliable distance measurement with large detection ranges of up to 300 m
- Can be used in confined installation situations due to compact sensor design
- High process reliability under changing lighting conditions
- Smooth operation of automated parking solutions



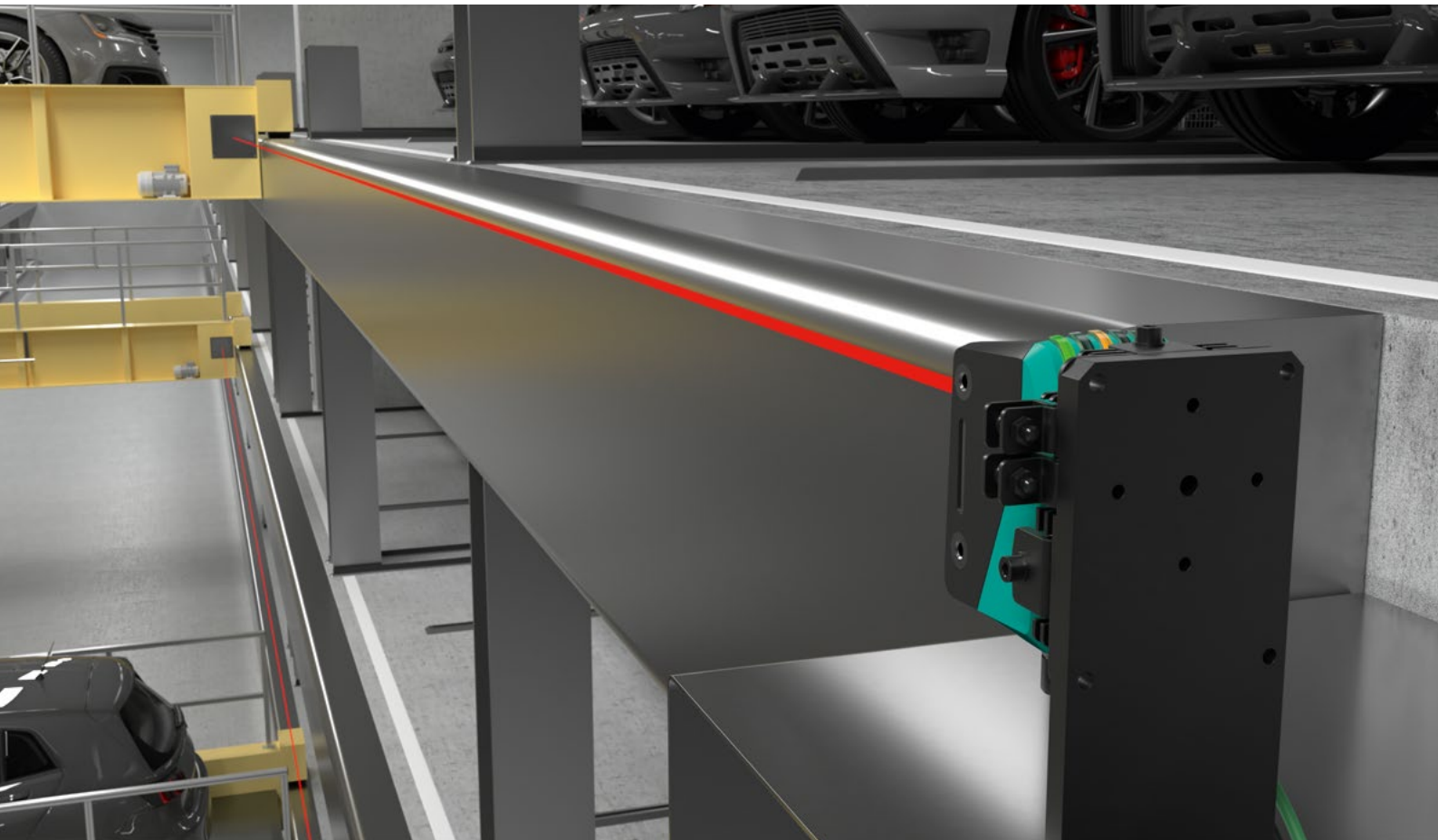
The Application

Driverless shuttles are responsible for the storage and retrieval of vehicles in automated parking systems. On each level, the shuttle systems move along defined travel paths and must approach stop and transfer positions precisely.

Automated parking solutions are gaining significance, especially in urban areas, since they use space more efficiently, optimize the flow of traffic in the building, and increase user convenience. Precise positioning of the vehicle shuttles is crucial for the safe functioning of these highly automated systems.

The Goal

The exact determination of shuttle positions is crucial for trouble-free operation. The goal is to avoid collisions or damage to vehicles while maintaining a high level of system availability. The measurement technology used must cover long distances, function reliably even in confined installation situations, and withstand changing ambient conditions—without compromising precision or speed.



The Solution

The distance sensors in the R1000 series with Pulse Ranging Technology enable high-precision distance measurement even over long distances. Their compact dimensions allow easy integration into the existing system design, including in confined spaces. The sensor is mounted at the end of the respective traverse path and aligned with a reflector located on the movable shuttle. This configuration enables continuous, exact positioning over the entire route. The rugged technology ensures that stable data is available despite the presence of ambient light, temperature changes, or high speeds.

The Benefits

The R1000 with Pulse Ranging Technology ensures high-precision, continuous position monitoring of shuttles in automated parking garages. This ensures smooth parking operations with minimal downtime and no risk of damage to vehicles. The rugged technology provides reliable measurement results in changing ambient light conditions and at high travel speeds—offering a key contribution to the operational safety and efficiency of modern parking solutions.

Technical Features

- Pulse Ranging Technology (PRT) for high-precision distance measurement
- Measuring range of up to 300 m, resolution of 0.1 mm
- Compact design for flexible mounting on shuttles
- Insensitive to ambient light up to > 80,000 lux
- Integrated PROFINET, SSI, or RS-422 interface
- IP67 housing for rugged operational conditions
- Control panel with display for easy parameterization



For more information, visit: **pepperl-fuchs.com/px-r1000**