Leuze

ROD 100/300/500

Switching and measuring laser scanners with LiDAR technology

The Sensor People

Maximum efficiency in manufacturing and logistics processes thanks to high scanning frequency and predictive maintenance

The ROD 100 series switching laser scanners are ideal for the simultaneous detection of several objects as well as for use in collision protection.
The measuring models in the ROD 300 series have been specially developed for precise contour measurements. The high-resolution ROD 500 series offers the ideal solution for demanding navigation tasks. All devices impress with their high scanning rates in combination with high angular resolution.

Manufacturing and logistics processes can thus be designed with maximum efficiency. With a scanning frequency of 80 Hz, even fast-moving objects can be reliably detected. The integrated window monitoring supports predictive maintenance and ensures high system availability.

Thanks to their compact design, the laser scanners can also be integrated into confined production environments and small automated guided vehicles (AGVs).

Your advantages at a glance

- **Maximum precision and attention to detail thanks to high angular resolution**
  The precise detection and contour measurement of different parts in production means that manufacturing processes can be carried out with maximum efficiency, including in terms of the use of resources. The high resolution also allows automated guided vehicles (AGVs) to be positioned very precisely.
- **Detection of fast objects thanks to high scanning frequency of 80 Hz**
  Thanks to the high scanning frequency of 80 Hz, fast-moving objects on continuous conveyors can be reliably detected, thus maximizing system efficiency.
- **High flexibility thanks to 16 switchable configurations**
  The configurable detection ranges enable adaptation to a wide variety of application environments. For example, different object sizes can be reliably detected. In applications with automated guided vehicles (AGVs), all directions of travel can also be mapped and monitored. This increases the system's ability to adapt to complex and dynamic environments.
- **Predictive maintenance through window monitoring**
  The integrated window monitoring allows soiling to be detected in good time and a high level of system availability to be achieved.
- **Excellent integration due to compact design**
  Thanks to its compact size of just 80 x 80 x 85 mm, the laser scanner can be integrated into the smallest installation spaces in production and intralogistics as well as in AGVs.
- **For use in high and low temperature ranges:**
  Whether for deep-freeze storage or applications with increased temperature requirements, the ROD can be used from –30 °C to +60 °C.
- **Robust design**
  The ROD laser scanner has a robust design thanks to protection class IP 67 and the built-in 905 nm laser diode.
- **With LiDAR technology (Light Detection and Ranging)**
  For highly accurate navigation as well as precise detection and localization of objects.

Applications

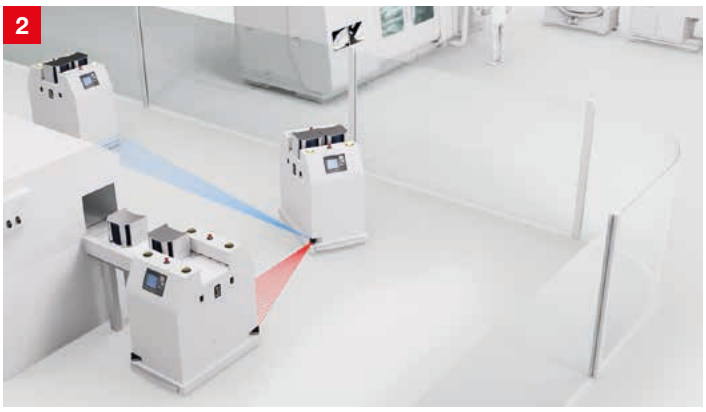
ROD 100: Projection monitoring for AGVs

Requirement: Automated guided vehicles (AGVs) must be designed to ensure that the load or parts of the load on the pallet do not shift to protrude out of the sides while moving.

Solution: The ROD 100 series laser scanners make it possible to monitor any protruding load on the AGV. If a shift in the load is detected, the warehouse staff can take corrective action.

ROD 100: Collision protection for AGVs

Requirement: Several automated guided vehicles (AGVs) transport goods autonomously during production operation. Integrated sensors must reliably prevent collisions and ensure a safe process.



Solution: Thanks to its high scanning frequency of 80 Hz, the ROD 100 is ideal for use in dynamic applications, especially for avoiding collisions in fast-moving AGVs.

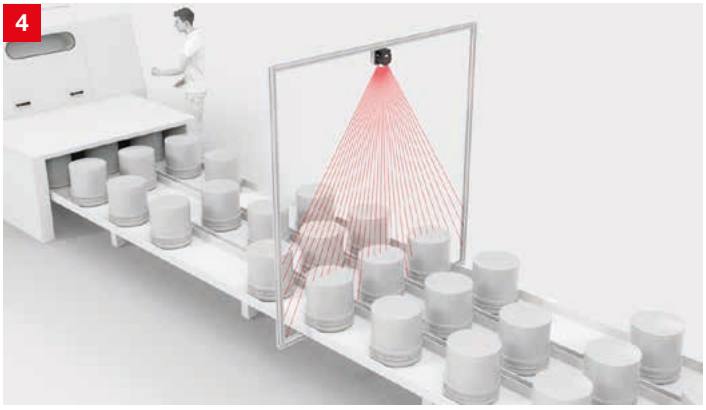
ROD 100: Collision protection for overhead transport systems

Requirement: In an automated conveyor system, the transport units are suspended overhead on a rail or rail system, where the individual units' travel speeds can differ. Sensors are used to prevent the transport units from colliding.

Solution: The ROD 100 switching laser scanner can be used to define a field within the braking area that is activated if a preceding transport unit blocks the path or parts of the system protrude into the conveyor system. This way, collisions can be avoided.

ROD 100: Simultaneous presence check on several lines

Requirement: Several lines on a conveyor line are to be checked simultaneously from a height of 2 m to ensure that all objects are present at the intended positions. If one or more objects are missing, a switching signal must be issued.



Solution: The ROD 100 switching laser scanner can carry out several presence checks simultaneously from a height of up to 25 m with three independent outputs at one beam level.

ROD 100/300: Height check at baggage drop-off at the airport

Requirement: For luggage height checks and to monitor passenger boarding, a flexibly configurable area is to be set up at the self-drop-off station and connected to the baggage check-in control system via sensor evaluation.

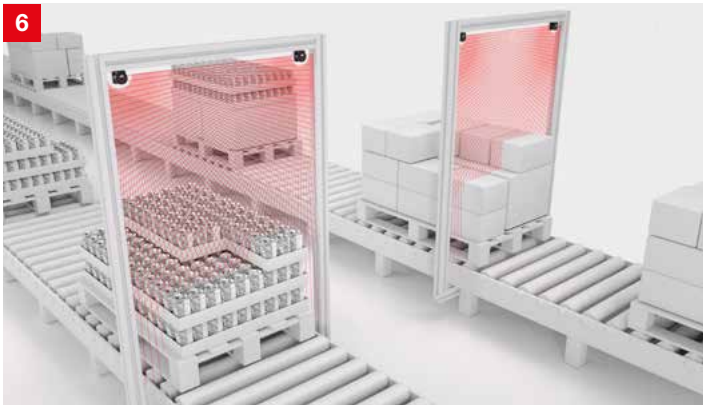
Solution: The ROD 100 / 300 area scanners with freely configurable detection fields and a detection angle of 275° are ideally suited here thanks to their Ethernet-based interfaces. Two devices are required for the application: one to verify the height of the luggage and another to monitor passenger boarding.

Applications

ROD 300: Contour detection in warehouse logistics

Requirement: In a logistics center, pallets need to be checked for contours during both storage and retrieval so that the subsequent logistics processes can be carried out smoothly. It must not matter whether pallets are loaded with a single or mixed type of goods, or by the surface of the goods.

6



Solution: Two ROD 300 series laser scanners are mounted above the continuous conveyor. This allows the contour of the pallets to be measured before they are stored or retrieved. The laser scanners deliver stable measured values regardless of the pallet load or the surface of the goods (high-gloss or matt).

ROD 300: Container checking

Requirement: In a logistics center, containers on the conveyor system are to be checked to see if they are filled with goods or not. The speed of the continuous conveyor should be maximized to achieve maximum system efficiency.

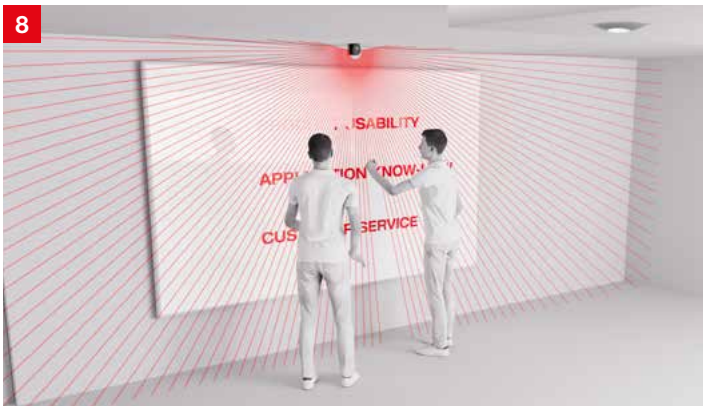
7

Solution: A ROD 300 series laser scanner is mounted above the conveyor system. The frequency of the individual scans of the ROD 300 can be increased so that the blind areas between two measurements are minimized and the objects can be detected even faster. This maximizes production throughput and system efficiency.

ROD 300: Media control

Requirement: A video wall is to be used interactively. The cursor movements of a classic mouse will be imitated by the user's hand or individual fingers. A sensor is needed to scan the entire interaction surface and output where the hands are located.

8

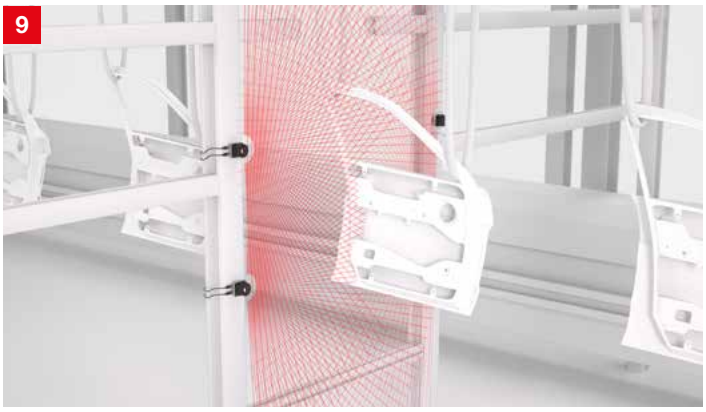


Solution: With its scan plane directly above the display, an ROD 300 laser scanner localizes all objects located in the scan area above a media wall. The scanner outputs the position of the objects and they are assigned to the hand movements via a conversion. This allows one person to control the media wall with the associated software.

ROD 500: Contour measurement in production

Requirement: Before parts are fed into an automated painting system, their contours must be measured so that the paint can then be applied in a targeted manner. The surface of the parts must not impact the precision of the contour determination.

9

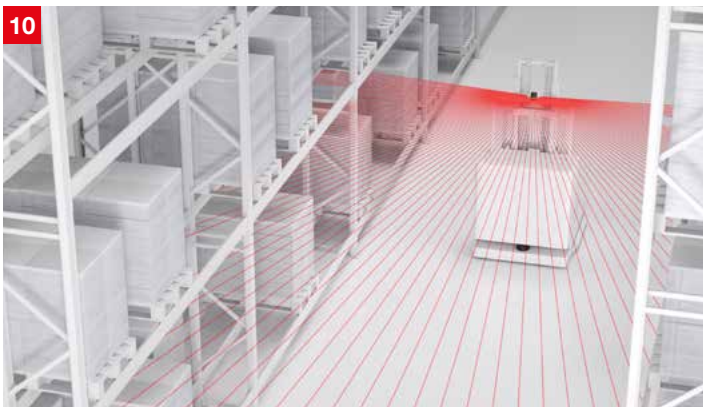


Solution: With their high resolution of 0.025°, the laser scanners of the ROD 500 series can precisely determine the contours of the parts, even with different surfaces (high-gloss or matt). The exact contour measurement allows the paint to be applied precisely to the object.

ROD 500: Navigation of automated guided vehicles (AGV)

Requirement: An AGV is to be used to transport materials in a warehouse. The first step is to map the environment before the AGV executes the goods movements.

10

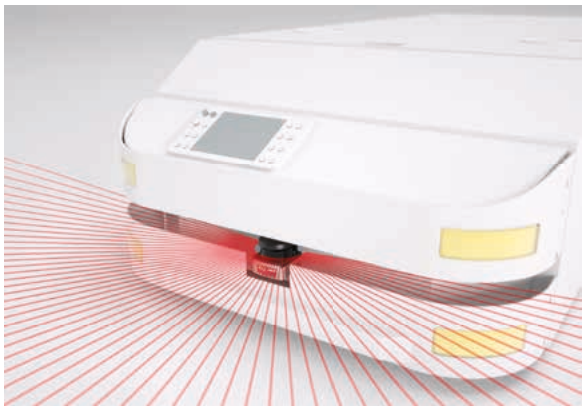


Solution: With their very high resolution of 0.025°, the ROD 500 series laser scanners can map their surroundings with extreme precision and thus create an initial map of the warehouse environment. During ongoing logistics operations, the ROD 500 is ideal for natural navigation of the AGV and for avoiding collisions.

Highlights

Predictive maintenance through window monitoring

The ROD series laser scanners can check the window for contamination by monitoring the window. If the set warning threshold is exceeded, a maintenance message is issued. Predictive maintenance allows a high level of system availability to be achieved.



Flexible integration thanks to compact design

Thanks to their compact design of 80 x 80 x 85 mm, the laser scanners are ideal for integration in small installation spaces in mobile vehicles and in applications where space is limited.

Robust design and wide temperature range

The ROD series laser scanners stand out for their robust housing and a wide temperature range. They can be used in environments from –30 °C to +60 °C and are suitable for applications at low temperatures in the deep-freeze sector as well as for high temperature requirements, such as those in battery production.

Overview of technical data

		ROD 100	ROD 300	ROD 500
Technical data	Scanning angle	275°	275°	275°
	Angular resolution	0.2° at 80 Hz	0.1° at 40 Hz 0.2° at 80 Hz 0.2° at 50 Hz	0.025° at 10 Hz 0.05° at 20 Hz 0.1° at 40 Hz 0.2° at 80 Hz 0.2° at 50 Hz
	Measuring distance	5.5 m at 2% diffuse reflection 15 m at 10% diffuse reflection 25 m at 90% diffuse reflection	5.5 m at 2% diffuse reflection 15 m at 10% diffuse reflection 25 m at 90% diffuse reflection	5.5 m at 2% diffuse reflection 15 m at 10% diffuse reflection 25 m at 90% diffuse reflection
	Interfaces	EtherNet (TCP / UDP) for configuration Inputs: 4 (PNP) Outputs: 3 (PNP) + 2 warning outputs	EtherNet (TCP / UDP) for configuration and data output	EtherNet (TCP / UDP) for configuration and data output
	Protection class	IP 67	IP 67	IP 67
	Dimensions	80 mm x 80 mm x 85 mm	80 mm x 80 mm x 85 mm	80 mm x 80 mm x 85 mm
	Temperature range	–30 … +60 °C	–30 … +60 °C	–30 … +60 °C
	LED wavelength	905 nm	905 nm	905 nm
	Function	Switching	Measuring	Measuring (high-resolution version)
	Tasks	Multiple object detection, collision protection	Contour measurement	Navigation

Our portfolio at a glance

Switching sensors
- Optical sensors
- Inductive sensors
- Capacitive sensors
- Ultrasonic sensors
- Laser scanners
- Fiber optic sensors
- Fork sensors
- Light curtains
- Special sensors

Measuring sensors
- Distance sensors
- Positioning sensors
- 3D sensors
- Laser scanners
- Light curtains
- Bar code positioning systems
- Fork sensors

Safety
- Safety Solutions
- Safety Laser Scanners
- Safety Light Curtains
- Single and Multiple Light Beam Safety Devices
- Safety Radar Sensors
- Secure Locking Devices, Switches and Proximity Sensors
- Safety Controllers and Relays
- Machine Safety Services

Identification
- Bar Code Identification
- 2D-Code Identification
- RF Identification

Data transmission
- Optical data transmission systems

Network and connection technology
- Connection technology
- Modular connection units

Industrial image processing
- Light section sensors
- Industrial IP cameras
- Vision sensors

Accessories and add-on products
- Signaling devices
- Mounting systems
- Reflectors

How to contact us

Leuze electronic GmbH + Co. KG
In der Braike 1, 73277 Owen, Germany
T +49 7021 573-0
F +49 7021 573-199
info@leuze.com
www.leuze.com

en 02-2025/08 1472
Subject to change without notice