Product overview

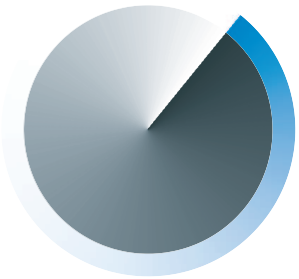
LRS4000

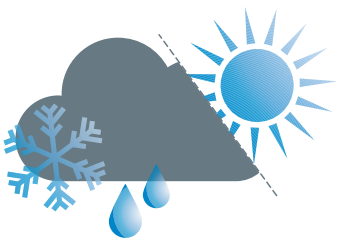
Rugged 2D LiDAR sensor for precise detection of small, far away objects

SICK
Sensor Intelligence.

Advantages

When developing its LiDAR sensors, SICK focuses on the requirements of a wide range of industries. This means the sensors are characterized by reliability and application-oriented properties. The LRS4000 is no exception: As a high-performance 2D LiDAR sensor, it is an important component for automating difficult outdoor applications.





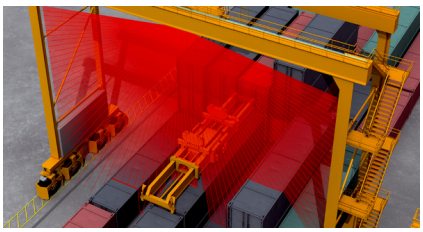
high resolution
With an angular resolution of up to 0.02°, the sensor clearly detects fine details and structures at a distance of up to 300 meters. Automation not only becomes more efficient with the LRS4000; the high frequency resolution ratio also accelerates many dynamic applications.

Maximum availability and reliable measurement data
To provide high availability and reliable measurement data even in adverse ambient conditions, the LRS4000 features special filters and measurement technologies such as HDDM$^+$ and multi-echo technology.

Developed for complex applications
Among other things, the LRS4000 was developed for complex port applications. As a result, the sensor meets particularly high demands on measurement and hardware performance and also allows for countless other applications in different industries.

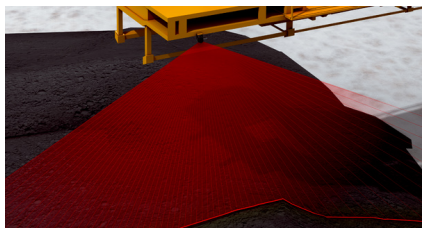
Special attention to detail thanks to outstanding angular resolution

Due to the excellent angular resolution combined with high frequency, the LRS4000 delivers the measurement performance required for difficult tasks such as the detection of container corner castings. This means that applications such as collision avoidance, monitoring of open spaces or 3D measurements of yard areas can be solved faster and more accurately than before.



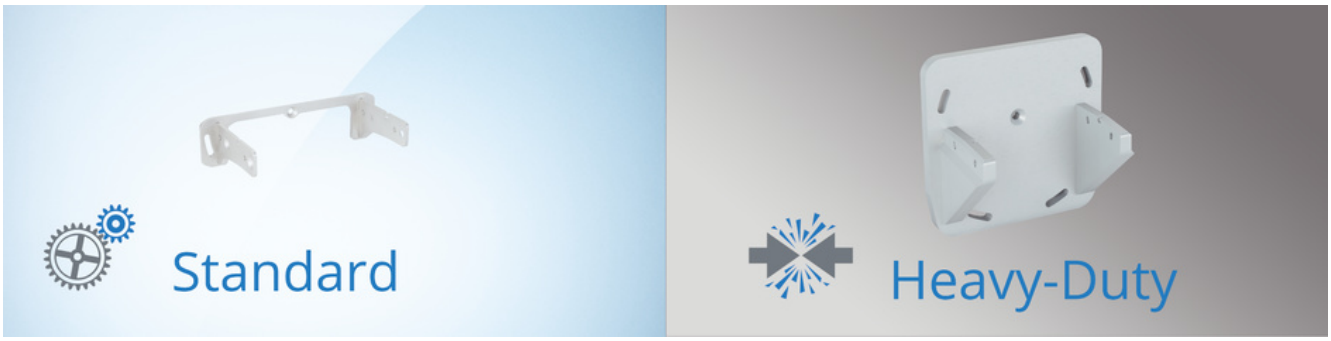
Horizontal container profile measurement
Due to the frequency resolution ratio of up to 25 Hz at an angular resolution of 0.04°, the LRS4000 provides particularly detailed scan data even at large scanning ranges.

supervision
The integrated field evaluation enables security applications to be implemented efficiently. Already at a large distance it detects small objects that enter the previously configured fields. Due to the small spot expansion, the scan plane can be precisely aligned even over long distances.



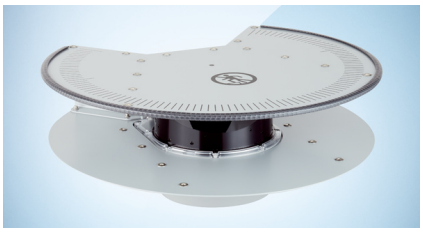
Stack profile and bulk material measurement
The LRS4000 also measures bulk materials with a low reflectivity, such as coal.

Detail recognition is the key to the automation of tomorrow



The optimal configuration for many applications

A dual accessory concept has been developed for the LRS4000. One accessory concept consists of standardized components, the other of heavy-duty components. They are designed for different ambient and application conditions. This is how the accessories can be perfectly configured for numerous applications. The standard accessories are suitable for many stationary applications. If, on the other hand, you want to use the sensor in challenging outdoor applications or in dynamic environments, the heavy-duty components offer high stability and resistance against harsh mechanical and natural ambient conditions. Both accessory concepts can be used very flexibly and save time and money.



Accessories for a wide range of applications
With the LRS4000, you can choose between two accessory concepts. From the mounting bracket to the weather protection housing, SICK offers suitable accessories for a wide range of applications.

Very good integration
The standardized connections provide a wide range of cables, power supply units and connection modules. Connected via Ethernet, the sensor can be commissioned quickly and conveniently using the integrated web server.

Very flexible
Thanks to the rotatable angled plug made of stainless steel, the LRS4000 can be installed quickly and easily in numerous positions and applications, both in- and outdoors.

Components can be integrated perfectly for a wide range of applications

Technical data overview

Application	Outdoor, Indoor
Integrated application	Field evaluation, output of measurement data
Aperture angle	
Horizontal	360°
Working range	0.2 m ... 300 m
Scanning range	
At 10% remission factor	120 m
At 90% remission factor	250 m
Amount of evaluated echoes	3
Scanning frequency	12.5 Hz 25 Hz
Heating	Self-heating
Ambient operating temperature	–30 °C ... +50 °C
Ethernet	✓
Digital inputs	6
Digital outputs	6
Weight	1.7 kg

Product description

The LRS4000 is a powerful 2D LiDAR sensor for large scanning ranges. It sets the benchmark for advanced outdoor automation by detecting particularly fine details and structures. In addition to its high angular resolution, the LRS4000 offers an outstanding frequency resolution ratio: This makes it possible to create more intelligent and reliable dynamic applications, and even accelerate them. The integrated field evaluation enables the efficient monitoring of configured fields over 360°. Rugged components ensure reliable performance and availability under nearly any conditions. Take advantage of excellent measurement performance, flexibility and durability: The LRS4000 – key technology from SICK for your outdoor automation needs.

At a glance

- Measuring range of 300 m and min. 120 m at 10% remission
- High angular resolution up to 0.02°
- Frequency resolution ratio up to 0.04° at 25 Hz
- HDDM$^+$ and multi-echo technology
- Up to 360° aperture angle, rotatable connections and other smart features
- Stainless steel plug and powder coating
- Compact, durable high-end LiDAR sensor

Your benefits

- Large scanning range even on difficult to detect surfaces
- Precise detail recognition for outdoor automation: Makes small objects visible, meaning localization is reliable and accurate
- Speed meets precision: Enables accelerated processes thanks to high measuring speed with high angular resolution
- High availability and performance, even under difficult ambient conditions
- Countless application options due to high flexibility
- Low maintenance costs even when operated under high mechanical loads
- Applications in a wide variety of areas thanks to intelligent features and secondary data

Fields of application

- Automation of container handling in ports
- Detection of bulk material stockpiles (volume determination)
- Determination of container data such as dimensions and position
- Monitoring of roof surfaces, facades, and other areas
- Collision avoidance

Ordering information

Other models and accessories ➜ www.sick.com/LRS4000

- **Working range:** 0.2 m ... 300 m
- **Integrated application:** field evaluation, output of measurement data

Enclosure rating	Color	Connection type	Scanning frequency	Type	Part no.
IP65, IP67	Gray (RAL 7042)	3 x M12, stainless steel	12.5 Hz 25 Hz	LRS4581R-230001	1098855

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com

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