LD-LRS
Laser Measurement System

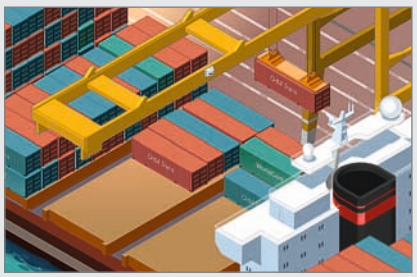
Long ranges for special tasks involving collision prevention, automation, the measurement of bulk material profiles, and building security

SICK
Sensor Intelligence.

Prevent collisions, measure profiles, protect buildings ...

The powerful LD-LRS laser measurement system has been in successful use for many years. In order to meet growing demands, SICK now offers it in seven variants with additional features for indoor and outdoor applications.

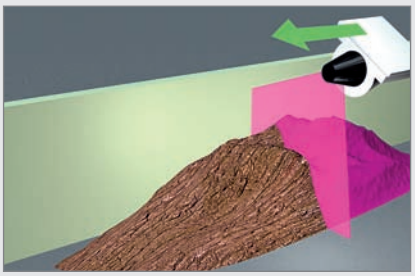
COLLISION PREVENTION AND AUTOMATION



LD-LRS laser measurement systems are used for automating ship-to-shore cranes for the loading or unloading of ships. Direct mounting on the boom often gives the measurement system a better view of the container than the crane operator.

- Ranges of up to 250 m
- Prevention of dangerous collisions causing serious damage
- Increased handling reliability
- Improved mounting possibilities due to long range
- Time savings due to high automation potentials

MEASUREMENT OF BULK MATERIAL PROFILES



The LD-LRS displays two of its strengths during the measurement of bulk materials in outdoor storage areas: In addition to the detection of dark objects with high resolution results, it provides accurate measurements at long ranges – far from sources of dirt, dust and vibrations.

- Protected mounting possible thanks to long ranges
- Data further processed in real time
- IP 67 enclosure rating
- IEC 68 resistance to shock and vibration
- Enables optimum removal of material

BUILDING SECURITY

The LD-LRS laser measurement system is indispensable for the reliable monitoring of buildings requiring special protection. It detects persons or objects regardless of the time of day or weather, and immediately alerts the operator. The output data can be used to guide cameras.

- Low false alarm rate thanks to precisely defined fields
- Vertical or horizontal monitored fields can be set up with scanning angles of up to 290°
- Long range permits mounting on existing structures
- Low installation costs due to large monitored fields

... with the LD-LRS laser measurement system.

In addition to the actual measurements, further developed technology now allows the creation of 2D profiles which can be assigned to monitored field switching outputs. This results in greater speed, greater reliability, and greater precision.

Outdoor variant

Indoor variant

Safety note:
LD-LRS laser measurement systems are not devices for personal protection within the sense of valid safety standards for machines.

The LD-LRS at a glance:

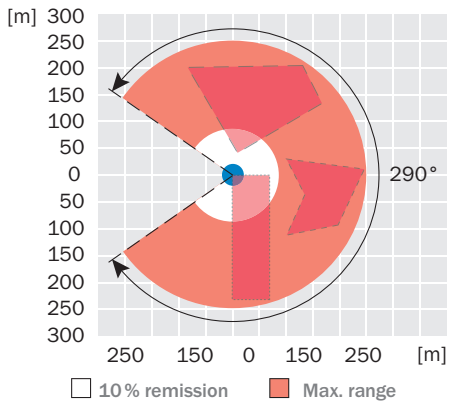
- Set up fields according to the 2D profiles created
- Ranges up to 250 m
- 360°/300° actual scanning angle for measurement applications
- Scanning angle of up to 290° for monitoring fields
- Real-time output of measurement data via Ethernet interface
- Operating ambient temperature: –25 °C to +50 °C
- Improved mounting possibilities due to long range
- Use within other housings (incl. EX-Zones)
- Freely definable fields (see fig. below)
  - Creation of evaluation strategies
  - Object blanking possible
  - Contour of surroundings is used as a reference

Overview of available device variants[1)]

LD-LRS	1000	2100	2110	3100	3110	4100	5100
Area of use							
Indoor	●						
Outdoor		●	●	●	●	●	●
Meas. area[2)]							
80 m/250 m	●	●		●		●	●
150 m/250 m			●		●		
Data interfaces							
Ethernet	●	●	●	●	●	●	●
CAN	●	●	●	●	●	●	●
RS 232	●	●	●			●	
RS 422	●			●	●		●
Outputs							
Switch. outputs	●	●	●	●	●	●	●
Relay outputs						●	●

[1)] Please unfold page for detailed technical data and order information
[2)] At 10% remission/distance max.

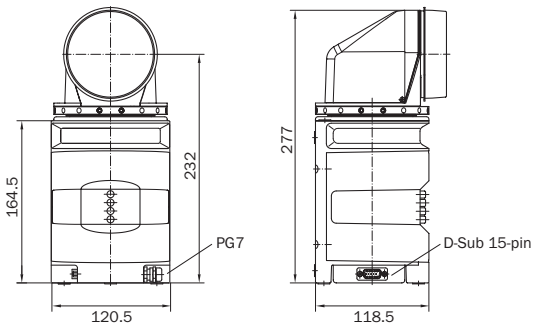
Freely definable fields



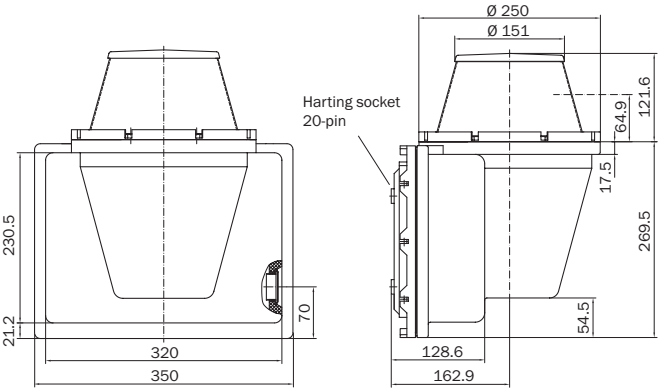
Dimensional Drawings, Technical Data and Ordering Informations

Dimensional drawings

All dimensions in mm



Indoor variant LD-LRS1000



Outdoor variants LD-LRS2100/2110/3100/3110/4100/5100

Technical data

Type	LD-LRS1000	LD-LRS2100	LD-LRS2110	LD-LRS3100	LD-LRS3110	LD-LRS4100	LD-LRS5100
Measurement area[1)]							
Distance max.	250 m						
At 10 % remission	0.5 m to 80 m	2.5 m to 80 m	2.5 m to 150 m	2.5 m to 80 m	2.5 m to 150 m	2.5 m to 80 m	
At 20 % remission	0.5 m to 114 m	2.5 m to 114 m	2.5 m to 210 m	2.5 m to 114 m	2.5 m to 210 m	2.5 m to 114 m	
Effective scan angle	360°	300°					
Angular resolution (step width)	0.125°; can be selected between 0.125° to 1.5°						
Scanning frequency	5 to 10 Hz ± 5 % in steps of 1 Hz						
Measurement resolution	3.9 mm (1/256 m)						
Systematic error[1)]	± 38 mm at 20 % to 90 % remission (± 63 mm with 80 m distance or more)						
Statistical error[1)] (1 Sigma)	30 mm at 20 % to 90 % remission						
Beam divergence	2.8 mrad (0.160°)						
Data interfaces	Ethernet, CAN, RS 232/422	Ethernet, CAN, RS 232		Ethernet, CAN, RS 422		Ethernet, CAN, RS 232	Ethernet, CAN, RS 422
Switching outputs	4 x (OUT1 to OUT4)					1 x (OUT3)	
Relay outputs	–					2 x (REL1, REL2)	
Laser class	Class 1 (acc. to EN/IEC 60825-1), eye safe						
Switching voltage	24 V DC ± 15 %	Electronic: 24 V DC ± 15 %; heating: 24 V DC (max. 6 V residual ripple)/max. 6 A cyclic					
Enclosure rating	IP 65 acc. to EN 60529	IP 67 acc. to EN 60529					
Weight	Approx. 4.1 kg	Approx. 9.1 kg					
Operating temperature	0 °C to +50 °C	–25 °C to +50 °C					

[1)] Condition: laser beam completely incident on the object, warm-up time of 30 min observed

Order information, devices[2)]

Part no.	Type	Description
1028941	LD-LRS1000	Indoor variant, IP 65, measurement area[3)] 80 m / 250 m, Ethernet / CAN / RS 232 / RS 422 data interface
1029041	LD-LRS2100	Outdoor variant, IP 67, measurement area[3)] 80 m / 250 m, Ethernet / CAN / RS 232 data interface
1045645	LD-LRS2110	Outdoor variant, IP 67, measurement area[3)] 150 m / 250 m, Ethernet / CAN / RS 232 data interface
1029042	LD-LRS3100	Outdoor variant, IP 67, measurement area[3)] 80 m / 250 m, Ethernet / CAN / RS 422 data interface
1046011	LD-LRS3110	Outdoor variant, IP 67, measurement area[3)] 150 m / 250 m, Ethernet / CAN / RS 422 data interface
1029037	LD-LRS4100	Outdoor variant, IP 67, measurement area[3)] 80 m / 250 m, Ethernet / CAN / RS 232 data interface, 2 relay outputs
1029038	LD-LRS5100	Outdoor variant, IP 67, measurement area[3)] 80 m / 250 m, Ethernet / CAN / RS 422 data interface, 2 relay outputs

[2)] Scope of delivery: ordered device and CD-ROM “Manuals & Software LD-LRS1000...5100”
[3)] At 10 % remission / distance max.

Order information, accessories for indoor variant LD-LRS1000

Part no.	Description
5311055	Fixing bracket, complete with mounting material, see fig.
6032508	RS 232 null modem cable, 3-core, 3 m, twisted-pair, screened, 15-pin D-Sub HD socket to 9-pin D-Sub socket for configuration using PC
6032509	Ethernet cross-over cable, 3 m, twisted-pair, screened, 15-pin D-Sub HD socket to 8-pin RJ-45 plug for configuration using PC


Fixing bracket (5311055)

Order information, accessories for outdoor variants LD-LRS2100/2110/3100/3110/4100/5100

Part no.	Description
2018303	Adjustable bracket for wall mounting, metal, weight approx. 1.6 kg (incl. mounting material), see fig.
2018304	Mast bracket, metal, weight approx. 400 g (incl. mounting material), see fig.
5306222	Steel clamping strip for mast bracket (by the metre), 19 mm x 0.7 mm
5306221	Steel clamping strip lock
6032770	Y version configuration cable with 20-pin Harting socket. Comprising an adapter cable for RS 232 / RS 422 / CAN / Ethernet, screened, 0.2 m, as well as a power supply cable for the electronics with open wires, screened, 3 m


Adjustable bracket (2018303)


Mast bracket (2018304)

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