



**Laser measurement systems.  
Measurably more cost-effective.**

**SICK**

# Monitor areas, secure buildings.

Indoor or Outdoor – SICK laser measurement technology leaves all your options open.

Those who want to stay one step ahead of the competition need to be quick, lean and efficient in crucial areas of the company. SICK laser measurement technology plays an important role in this.



## Collision prevention

Laser measurement systems are used wherever long-range collision prevention is required. Gap-free monitoring fields can be individually adapted to tackle even the most difficult tasks. The system reliably reports objects or obstacles infringing its optical field.

## Building protection

SICK laser measurement systems are employed where large areas require securing against unauthorised entry or access. Programmable fields solve even difficult object protection tasks. The system not only detects persons and objects but also shows their exact locations.

*Upgradable high-end technology with a far better price-performance ratio than other detection systems.*



## Typical applications

- Collision prevention for vehicles
- Checking for projections
- Monitoring security of buildings and spaces
- Detecting object positions
- Docking and handling functions

*The LMS 221 Outdoor ensures safe and rapid manoeuvring of vehicles at a container port.*



*Collision prevention in the vicinity of a crane – with the LMS 211.*



*SICK treats every new task as a challenge – finding the most cost-effective solution.*



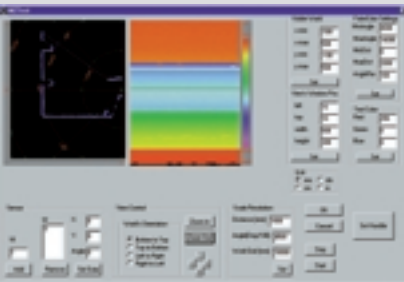
*Area monitoring at power stations.*



*Area monitoring of factory grounds.*

# Measure size, shape and position, monitor processes.

Detect and evaluate – SICK laser measurement technology leaves all your options open.



## Typical applications

- Determining object volumes
- Sorting and classifying objects
- Measuring filling levels
- Supporting navigation
- Positioning

### Economical thinking, forward-looking measurement: the MST 200 Software Tool

Customer-specific measurement tasks can be solved quickly and cost-effectively on a PC with the help of the MST 200 toolbox. Drivers for real-time communication with laser scanners are already implemented. Simple coordinate transformation and the definition of an application-specific measurement framework allow solution of the application to be started on right away.

### Complete measurement technology solutions: the LMI 200 Hardware Tool

The LMI 200 evaluation unit allows rapid and reasonably priced realisation of customer-specific measurement tasks. Application-specific process data is directly processed by the evaluation unit via digital and analog inputs and outputs. Measurement data from one or two LMS sensors can be processed in parallel in real time.

### Software and service to specification.

SICK, working together with skilled engineering partners, offers you complete measurement technology solutions with all the trimmings: consisting of the LMS scanning laser measurement system, the LMI interface, the MST 200 Software Tool, and application-specific software. If desired, each solution can be adapted to meet special demands.





### VMS 200 Volume Measurement System

For example, for determining the volumes of packages and pallets in the air cargo sector, for flight luggage, and freight containers. The volume data provided is processed automatically. The VMS 200 IPC is a standard solution meeting all the demands of automated volume determination.

### Autonomous navigation

Whether automated guided vehicles or special applications such as cleaning robots – the LMS supports safe navigation regardless of the surroundings involved. Any obstacles are detected, their position determined, and their presence taken into account in finding the optimum route.

### Vehicle detection and classification

The solution wherever traffic flow is to be measured or road tolls are collected. Cameras can be triggered using the LMS Stand Alone. Vehicle classes can be determined in moving traffic using appropriate software.

### Typical applications

- Classification in moving traffic
- Camera triggering at toll stations
- Identification and counting of vehicles





LMS 200 Indoor

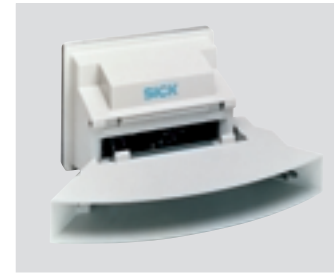
The LMS 200 is a non-contact laser measurement system that scans its surroundings two-dimensionally like laser radar. It operates within an ambient temperature range of between 0 °C and 50 °C and as an active scanning system requires no further passive components such as reflectors or position markers.

The LMS 200's high resolution allows it to take on tasks that were hitherto impossible or could only be handled with difficulty or at great cost.



LMS 220 Indoor

While the LMS 220 laser measurement system has the same functionalities as the LMS 200, it is characterised by an expanded permissible temperature range of from -30 °C to +50 °C. Furthermore, the housing is designed as IP 67.



LMS 211 Outdoor

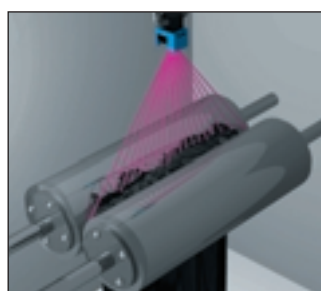
The LMS 211 is suitable for use outdoors in ambient temperatures of -30 °C to +50 °C. This is due to the heating integrated into the IP 67 housing, its heated front window, and internal fog correction. The system has a scanning angle of 100°. It is mainly used in applications involving container handling, object protection, vehicle detection and classification, and measuring bulk materials in bunkers.



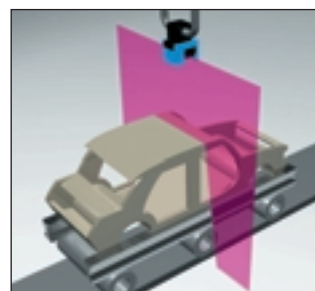
**Safety information:**  
LMS laser scanners are not devices for protecting persons as defined by current machine safety standards.

Technical data	LMS 200 ID	LMS 220 ID	LMS 211 OD
Range (max. / 10% reflectivity)	80 m/10 m	80 m/10 m	80 m/30 m
Scanning angle	max. 180°	max. 180°	max. 100°
Angular resolution	0.25°/0.5°/1° adjustable	0.25°/0.5°/1° adjustable	0.25°/0.5°/1° adjustable
Response time	53 ms / 26 ms / 13 ms	53 ms / 26 ms / 13 ms	53 ms / 26 ms / 13 ms
Resolution / systematic error	10 mm/typ. ± 15 mm	10 mm/typ. ± 15 mm	10 mm/typ. ± 35 mm
Data interface	RS 232 / RS 422	RS 232 / RS 422	RS 232 / RS 422
Switching outputs	3 x PNP; typ. 24 V DC	3 x PNP; typ. 24 V DC	3 x PNP; typ. 24 V DC
Laser protection class	1 (eye-safe)	1 (eye-safe)	1 (eye-safe)
Operating ambient temperature	0...+50 °C	-30...+50 °C	-30...+50 °C
Enclosure rating	IP 65	IP 67	IP 67/heated front window
Dimensions (W x H x D)	155 x 210 x 156 mm <sup>3</sup>	352 x 266 x 229 mm <sup>3</sup>	352 x 266 x 236 mm <sup>3</sup> *

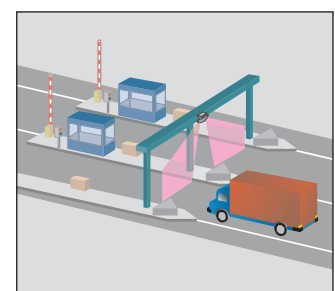
\* (w/o dust prevention shield)



e.g. determining filling levels



e.g. classifying bodywork



e.g. vehicle detection

Evaluation unit for  
measurement technologyEvaluation software for  
measurement technology

LMS 221 Outdoor

The LMS 221 is designed for outdoor use in ambient temperatures of  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ . The device is equipped with interior heating and internal fog correction. Unlike the LMS 211 Outdoor, the measurement system operates with an expanded scanning angle of  $180^{\circ}$ . Transport systems, building security, container handling, and traffic technology are among the LMS 221's main areas of use.



LMS 291 Outdoor

This laser measurement system has the same housing as the LMS 200 but is equipped for outdoor use with internal fog correction. This makes it particularly suitable for collision prevention on transport systems, and for vehicle control and checking for projections in automatic multi-storey car parks.



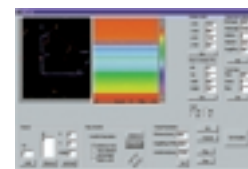
LMI 200

Customer-specific measurement tasks with one or two laser measurement systems can be solved quickly and cost-effectively with the LMI 200. Parameter setting and configuration is carried out with the LMI 200 BS user software provided, while programming is in the C++ programming language. Application-specific process data are integrated via analog and digital I/Os. Various standard interfaces are available for communication with a host computer.



MST 200

The MST 200 Measurement Software Tool allows customer-specific measurement tasks to be realised quickly, efficiently and thus also economically. This is achieved with the help of software function blocks that considerably accelerate and simplify software development on a standard PC or SICK evaluation unit (such as the LMI 200).



LMS 221 OD
80 m/30 m
max. $180^{\circ}$
0.25°/0.5°/1° adjustable
53 ms / 26 ms / 13 ms
10 mm/typ. $\pm 35$ mm
RS 232 / RS 422
3 x PNP; typ. 24 V DC
1 (eye-safe)
$-30\dots+50^{\circ}\text{C}$
IP 67
352 x 266 x 229 mm <sup>3</sup>

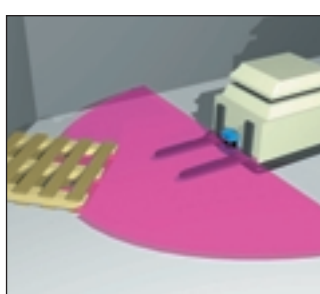
LMS 291 OD
80 m/30 m
max. $180^{\circ}$
0.25°/0.5°/1° adjustable
53 ms / 26 ms / 13 ms
10 mm/typ. $\pm 35$ mm
RS 232 / RS 422
3 x PNP; typ. 24 V DC
1 (eye-safe)
0...+50 °C
IP 65
155 x 210 x 156 mm <sup>3</sup>

LMI 200
<b>Evaluation functions:</b>
• MST 200 software library supplied
<b>Data interfaces:</b>
• 2 x RS 422, 500 KB; LMS
• 1 x RS 232/422; host
• 1 x RS 485; Bus connection
<b>Inputs/outputs:</b>
• 4 digital, 2 analog inputs
• 2 shaft encoder input pairs
• 8 digital, 4 analog outputs

MST 200
Software library of functions for setting up LMS measurement technology applications.
<b>PC Version</b>
Function blocks for Microsoft Visual C++ <sup>®</sup> programming language for implementation on a standard PC.
<b>LMI 200 Version</b>
Function blocks for the C++ programming language for implementation on SICK's LMI 200 evaluation unit.



e.g. securing open ground

e.g. detecting positions/  
collision prevention

e.g. detection and measurement tasks in robotics

# The dialogue continues.

Copy, complete and fax.

Company	
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Position/ Department	
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Post code/ Town	
Phone/Fax	
Industry/Field of application	

Yes, I would like to know more about:  
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I am interested in a detailed consultation with one of your project consultants. Please arrange an appointment for me.

Other product information as downloads at [www.sick.com](http://www.sick.com)

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|---|--|--|
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