



## LMS100 Laser Measurement System

Convenient Measurement System with  
Double-pulse Technology

# The LMS100 Laser Measurement System: small and innovative

The LMS100 laser measurement system is the “small” and economical option in SICK’s family of laser measurement systems, and an alternative to other existing solutions, particularly when long ranges and speeds are not the highest priorities. The system is practical regarding dimensions and weight, space-saving (with its transmitter and receiver in a single housing), and has a low purchase price with low operating costs.

The innovation involved here, however, is “big”: double-pulse technology increases outdoor availability and even permits mounting behind glass.



IP 67

## Traffic telematics

The use of products with low operating costs is particularly important for increasing the efficiency of existing traffic infrastructures. The LMS100 laser measurement system is also particularly suitable here due to the possibility of mounting it directly below the roof and monitoring two lanes simultaneously with a single device. Thus neither supplementary installation of posts nor underground wiring effort are required.

## Special advantages in this application

- No wiring necessary between transmitter and receiver
- Installation position protected against weather and collisions
- Simple mounting due to low weight of device
- Separate field evaluation of two lanes with one device
- Configuration while mounted via M8 socket on front of device

IP 67



### Anti-collision

During the operating of loading cranes, e.g. at container ports, it is often not the visible elements but the hidden obstacles on the ground that make it difficult for the crane driver to avoid collisions and thus prevent damage. The LMS100 laser measurement system assists the crane driver in narrow aisles by offering definable monitoring fields (also dynamic fields).

### Special advantages in this application

- Housing alloy with excellent weather resistance
- Rugged housing with enclosure rating of IP 67
- Reasonably priced alternative when operating ranges of up to 18 m are sufficient on the ground
- Field evaluation using intelligent algorithms

IP 65



### Building security

It is impossible for the security staff at museums and exhibitions, who are supposed to prevent theft and vandalism, to keep their eyes on everything all the time. Monitored fields can be cleanly delineated with the LMS100 laser measurement system and, when a defined area is infringed, there is an immediate alarm when someone gets too close to the protected object.

### Special advantages in this application

- Small size for invisible mounting
- Connection to existing 12 V DC system possible
- Reduction of false alarms through precise teach-in of field limits
- Field evaluation using intelligent algorithms

# LMS100 product technology: overview and definitions



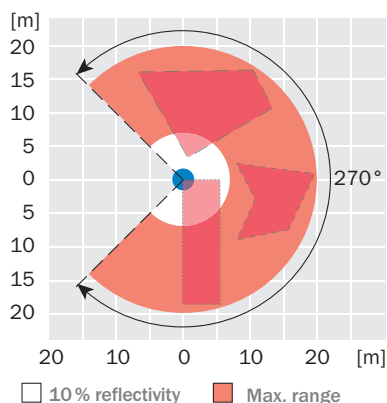
Safety note:  
LMS100 laser measurement systems are  
not devices for personal protection within the  
sense of valid safety standards for machines.

## The LMS100 at a glance:

- Small, light and economical measurement system
- Operation possible with supply voltages from 10.8 V DC
- Real-time output of measurement data via Ethernet interface
- Number of switching outputs can be expanded via external CAN modules
- Scanning frequency: 25 Hz to 50 Hz
- Power consumption: typically 8.4 W to 12 W
- Parameterisation interface accessible from the front while device mounted
- Further potential areas of use:
  - automated guided vehicles
  - automatic multi-storey car parks
  - indoor and outdoor equipment at buildings requiring security
  - use within other housings (incl. EX-Zones)

## Freely definable fields

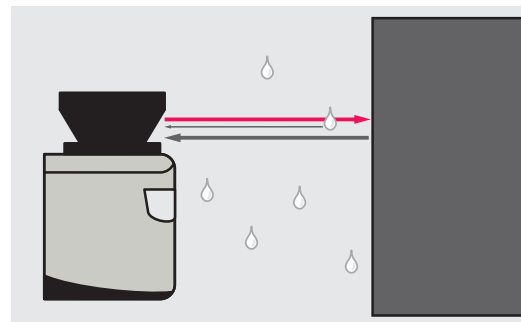
- Creation of evaluation strategies
- Dynamic field adaptation (e.g. dependent on vehicle speed)
- Object blanking possible
- Contour of surroundings is used as a reference



## Double-pulse technology

The distance between the LMS100 laser measurement system and an object is calculated from the time-of-flight of the emitted pulse. The LMS100 can evaluate two reception signals per emitted measurement beam.

- Protected mounting behind glass possible
- High availability during outdoor use






Raindrops reflect earlier, smaller pulses back to the LMS100 than the target object



## Technical features of LMS100 products

- Up to ten fields can be defined
- All fields are monitored in parallel
- Fields offer rectangular or free segmentation
- Speed-dependent dynamic fields can be defined
- Objects within fields can be blanked out
- Free selection of evaluation cycles per field
- Two inputs are available for switching on fields
- Fields can be logically linked (logical and/or)
- All outputs are potential-free (like relay contacts)
- Measurement data output is programmable
- Monitoring function in parameterisation software with counters for output

## Technical data

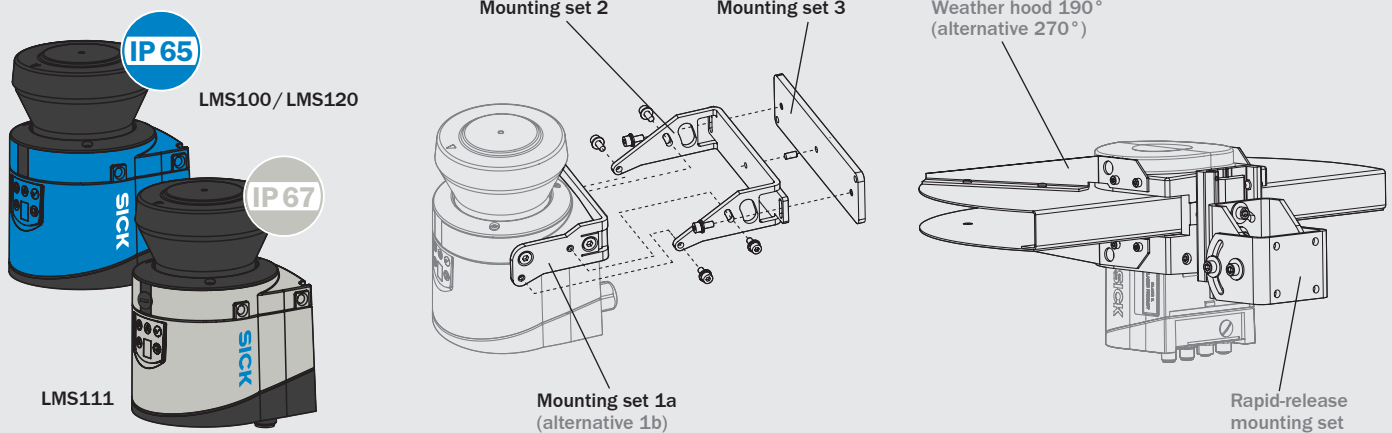
| Type  | LMS100-10000  | LMS111-10100  | LMS120-10000 <sup>1)</sup>  |
|---|--|---|--|
| Max. range                                    | 20 m / 18 m (at 10 % reflectivity)   |   |  |
| Scanning angle                                | Max. 270 °   |   |  |
| Angular resolution                            | 0.5 °/0.25 ° adjustable  |   |  |
| Scanning frequency                            | 50 Hz / 25 Hz  |   |  |
| Response time                                 | 20 ms / 40 ms  |   |  |
| Statistical error (1 s)                       | Typical 12 mm  |   |  |
| Systematic error                              | Typical ± 30 mm (temperature drift max. 0.32 mm / °C)  |   |  |
| Switching inputs/outputs                      | 2 / 3  |   |  |
| Data interfaces                               | Ethernet 100 Mbit TCP/IP, UDP; RS 232; CAN   |   |  |
| Supply voltage (electronics)                  | 10.8 V to 30 V DC  | 10.8 V to 30 V DC<br>heating 24 V DC  | 9 V to 30 V DC   |
| Laser Protection Class                        | Laser Class 1 (IEC 608251, corresponds to 21 CFR 1040.10 and 1040.11)                          |   |  |
| Enclosure rating                              | IP 65 acc. to EN 60529,<br>section 14.2.5  | IP 67 acc. to EN 60529,<br>section 14.2.7   | IP 65 acc. to EN 60529,<br>section 14.2.5  |
| Protection class                              | III acc. to EN 50178 (1997-10)   |   |  |
| EMC test                                      | Acc. to EN 61000-6-2 (2005-08), EN 61000-6-4 (2007-01)   |   |  |
| Housing alloy                                 | Excellent weather resistance acc. to DIN/EN 1061988, Table 3                                   |   |  |
| Dimensions (WxHxD)                            | 102 mm x 152 mm x 105 mm <sup>2)</sup>   | 102 mm x 162 mm x 105 mm  | 102 mm x 152 mm x 105 mm <sup>2)</sup>   |
| Weight <sup>3)</sup>                          | Approx. 1.1 kg   |   |  |
| Operating temperature                         | 0 °C to +50 °C   | -30 °C to +50 °C  | 0 °C to +50 °C   |
| Humidity                                      | Acc. to DIN EN 60068-2-61, Method 1 (taking into account operating temperature range)          |   |  |
| Vibration test                                | Acc. to EN 60068-2-6 (1995-04)   |   |  |
| Frequency range                               | 10 Hz to 150 Hz  |   |  |
| Amplitude                                     | Min. 5 g RMS   |   |  |
| Shock test                                    | Acc. to EN 60068-2-27 (1993-03), EN 60068-2-29 (1993-04)                                       |   |  |
| Single shock                                  | 15 g, 11 ms  |   |  |
| Continuous shock                              | 10 g, 16 ms  |   |  |
| Sender  | Pulsed laser diode   |   |  |
| Divergence of collimated beam<br>(full angle) | 15 mrad  |   |  |
| Light spot size at optical hood               | 8 mm   |   |  |

<sup>1)</sup> Available from 1<sup>st</sup> quarter 2009, building security variant; <sup>2)</sup> Without projecting cable gland / M12 socket; <sup>3)</sup> Without connection cables

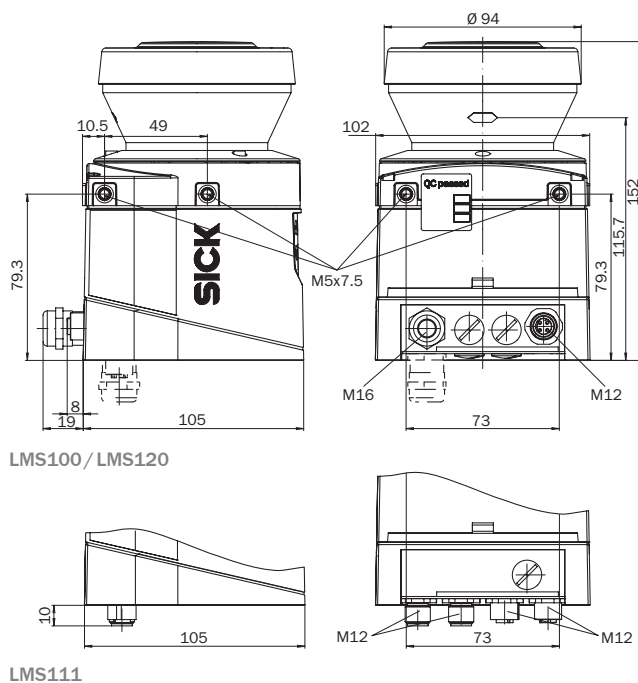


# Dimensional drawings and order information

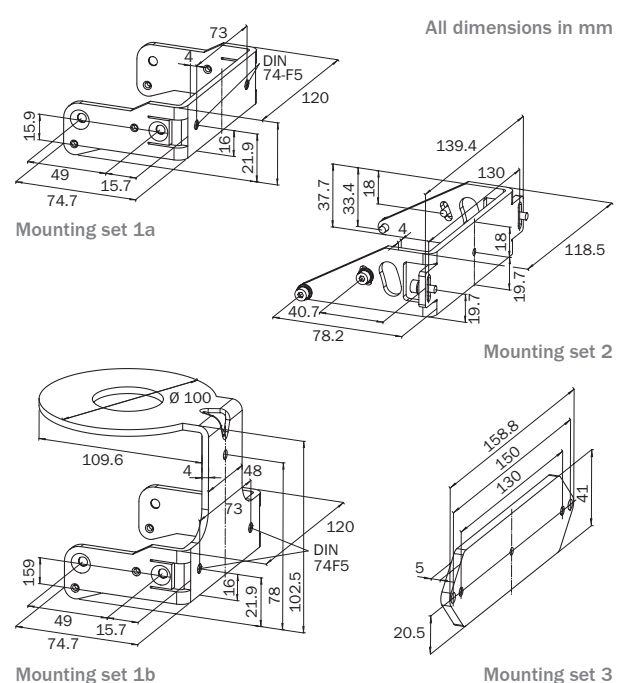
Select from the device variants, mounting sets, weather hoods and other accessories.



## Dimensional drawings, devices



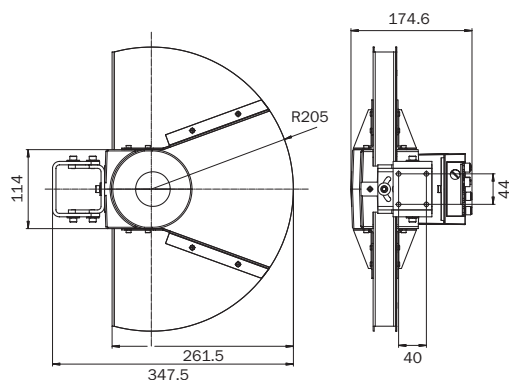
## Dimensional drawings, mounting sets



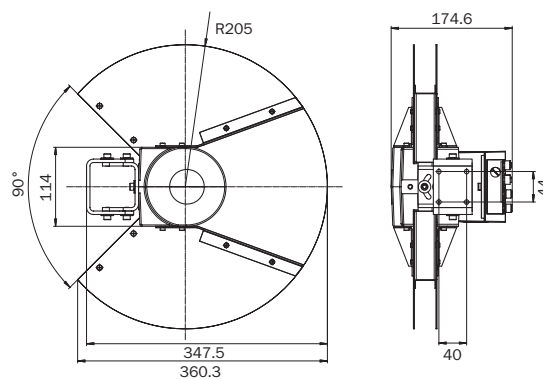


## Dimensional drawings, weather hoods

All dimensions in mm



Weather hood 190° (with standard mounting set)



Weather hood 270° (with standard mounting set)

## Order information, devices<sup>1)</sup>

| Part no. | Type                       | Description   |
|----------|----------------------------|---|
| 1041113  | LMS100-10000               | Indoor variant, IP 65, system plug with M16 screw cable gland/ threaded terminals and M12 socket (4-pin)            |
| 1041114  | LMS111-10100               | Outdoor variant with heating, IP 67, system plug with 2 x M12 plugs (5-pin/8-pin) and 2 x M12 sockets (4-pin/8-pin) |
| 1044321  | LMS120-10000 <sup>2)</sup> | Indoor variant for building security, IP 65, system plug as for LMS100-10000  |

<sup>1)</sup> Scope of delivery: ordered device and CD-ROM "Manuals & Software Auto Ident"; <sup>2)</sup> Available from 1<sup>st</sup> quarter 2009, building security variant

## Order information, accessories

| Part no.                     | Type                          | Description   |
|------------------------------|-------------------------------|---|
| 2034324                      | Mounting Set 1a <sup>3)</sup> | Bracket for mounting to wall or machine from the back   |
| 2034325                      | Mounting Set 1b <sup>3)</sup> | Bracket for mounting to wall or machine from the back, with cover protection  |
| 2039302                      | Mounting Set 2 <sup>3)</sup>  | Bracket, only in combination with bracket 1a or 1b, adjustment possible around transverse axis                                      |
| 2039303                      | Mounting Set 3 <sup>3)</sup>  | Retention plate, only in combination with bracket 2, adjustment possible around longitudinal axis                                   |
| 2046459                      |                               | Weather hood, 190°  |
| 2046458                      |                               | Weather hood, 270°  |
| 2046025                      |                               | Standard mounting set for 190°/270° weather hood  |
| 2046989                      |                               | Rapid-release mounting set for 190°/270° weather hood   |
| 6034415/ 6030928/<br>6036158 |                               | Ethernet M12x4/RJ-45 connection cable for connection of LMS Ethernet interface to PC Ethernet interface, 5 m/ 10 m/ 20 m            |
| 6036159/ 6036160/<br>6036161 |                               | Supply cable for LMS111-10100, M12x5, 4 open wires, 5 m/ 10 m/ 20 m   |
| 6036155/ 6036156/<br>6036157 |                               | I/O cable for LMS111-10100, M12x8, 8 open wires, 5 m/ 10 m/ 20 m  |
| 6036153/ 6028420/<br>6036154 |                               | RS 232 cable for LMS111-10100, M12x8, 8 open wires, 5 m/ 10 m/ 20 m   |
| 6021195/ 2027649             |                               | Connection cable M8x4/ D-Sub 9-pin (DIN 41642) for connection of serial auxiliary interface with the PC serial interface, 2 m/ 10 m |

<sup>3)</sup> Including mounting materials

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