Data sheet

MRS1104A-111011S01

MRS1000

3D LIDAR SENSORS

SICK
Sensor Intelligence.

Ordering information

Type	part no.
MRS1104A-111011S01	1112242

Other models and accessories ➜ www.sick.com/MRS1000

Detailed technical data

Features

Measurement principle	HDDM$^+$
Light source	Infrared (850 nm)
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014+A11:2021)
Aperture angle	
Horizontal	275°
Vertical	7.5°, Over 4 scan layers
Scanning frequency	50 Hz, 4 x 12.5 Hz
Angular resolution	
Horizontal	0.0625°, interlaced
	0.125°, interlaced
	0.25°
Vertical	2.5°
Heating	Self-heating
Working range	10 m (Width of the counting range)
Scanning range	
At 10% remission factor	16 m
At 90% remission factor	30 m
Spot size	10.4 mrad x 8.7 mrad
Amount of evaluated echoes	3

Mechanics/electronics

Connection type	M12 round connectors with swivel connector (stainless steel)
Supply voltage	10 V DC ... 30 V DC
Power consumption	≤ 13 W, Start-up phase max. 30 W for 1 s
Housing material	AlSi12, Optics cover: polycarbonate
Enclosure rating	IP65 (IEC 60529:1989+AMD1:1999+AMD2:2013) IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013)
Protection class	III (IEC 61140:2016-11)
Electrical safety	IEC 61010-1:2010-06
Weight	1.2 kg
Dimensions (L x W x H)	151.9 mm x 150 mm x 92.5 mm

MTBF	50 years
MTTFd	> 100 years

Safety-related parameters

$MTTF_D$	> 100 years

Performance

Output data LiDAR-LOC	IMU (secondary sensor data)
Scan/frame rate	55,000 measurement point/s ... 165,000 measurement point/s
Response time	4 layers, typ. 20 ms [1)] 1 layer, typ. 80 ms
Systematic error	± 60 mm
Statistical error	≤ 30 mm
Integrated application	People counting
Number of field sets	Up to 64 fields
Simultaneous evaluation cases	Up to 16 evaluations
Filter	Fog filter Particle filter Average filter Median filter Ground reference evaluation Edge filter Echo filter

[1)] Depending on the selected filter settings and the object size.

Interfaces

Ethernet	✓ , TCP/IP, UDP/IP
Data transmission rate	10/100 MBit/s
Digital inputs/outputs	I/O (8 (Multiport))
Output data	IMU (secondary sensor data)
Optical indicators	2 LEDs
Configuration software	SICK AppStudio

Ambient data

Remission factor	2 % ... > 1,000 % (Reflector)
Electromagnetic compatibility (EMC)	EN 61000-6-2:2005 / EN 61000-6-3:2007+A1:2011
Vibration resistance	
	10 Hz ... 150 Hz, 5 g, 20 frequency cycles [1)]
Shock resistance	15 g, 11 ms, 6 single shocks/axis [2)] 10 g, 16 ms, 1,000 continuous shocks/axis [2)]
Ambient operating temperature	–30 °C ... +50 °C
Storage temperature	–40 °C ... +75 °C
Ambient light immunity	80 klx

[1)] IEC 60068-2-6:2007.
[2)] IEC 60068-2-27:2008.

General notes

Note on use	The sensor does not constitute a safety component as defined by relevant legislation on machine safety.

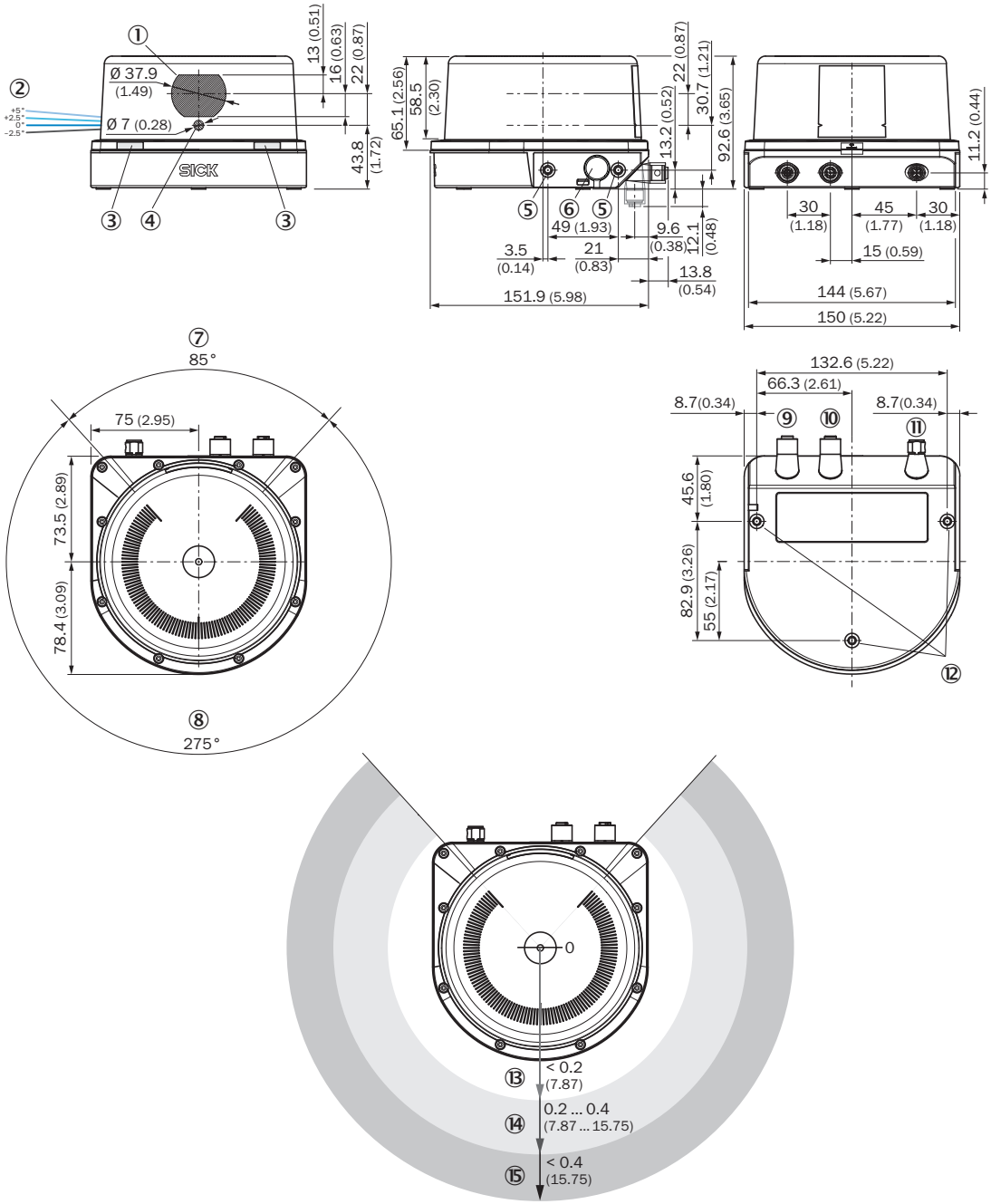
Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

ECLASS 5.0	27270990
ECLASS 5.1.4	27270990
ECLASS 6.0	27270913
ECLASS 6.2	27270913
ECLASS 7.0	27270913
ECLASS 8.0	27270913
ECLASS 8.1	27270913
ECLASS 9.0	27270913
ECLASS 10.0	27270913
ECLASS 11.0	27270913
ECLASS 12.0	27270913
ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002550
ETIM 8.0	EC002550
UNSPSC 16.0901	41111615

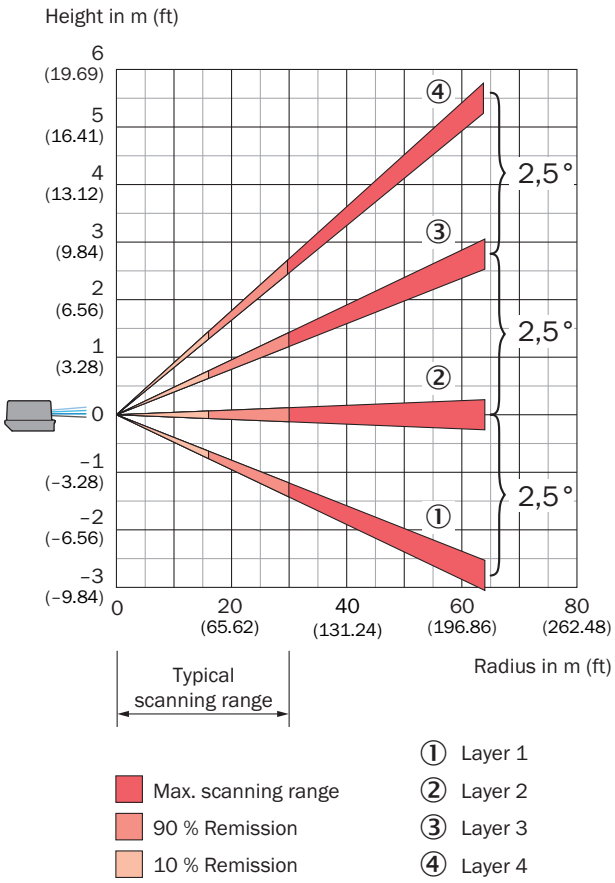
Dimensional drawing



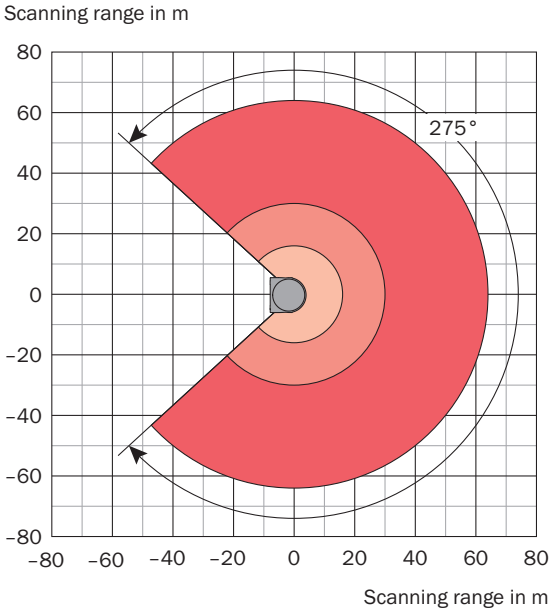
Dimensions in mm (inch)
① receiver
② Laser aperture angle, layers 1 to 4
③ status LEDs
④ sender
⑤ Mounting hole M5 x 7.5
⑥ Pressure compensation element
⑦ Blind zone
⑧ Field of view
⑨ Ethernet connection
⑩ I/O connection
⑪ POWER connection
⑫ Mounting hole M5 x 7.5

⑬ Close range (no detection or measurement possible)
⑭ Detection zone
⑮ measuring range

Working range diagram



Working range diagram

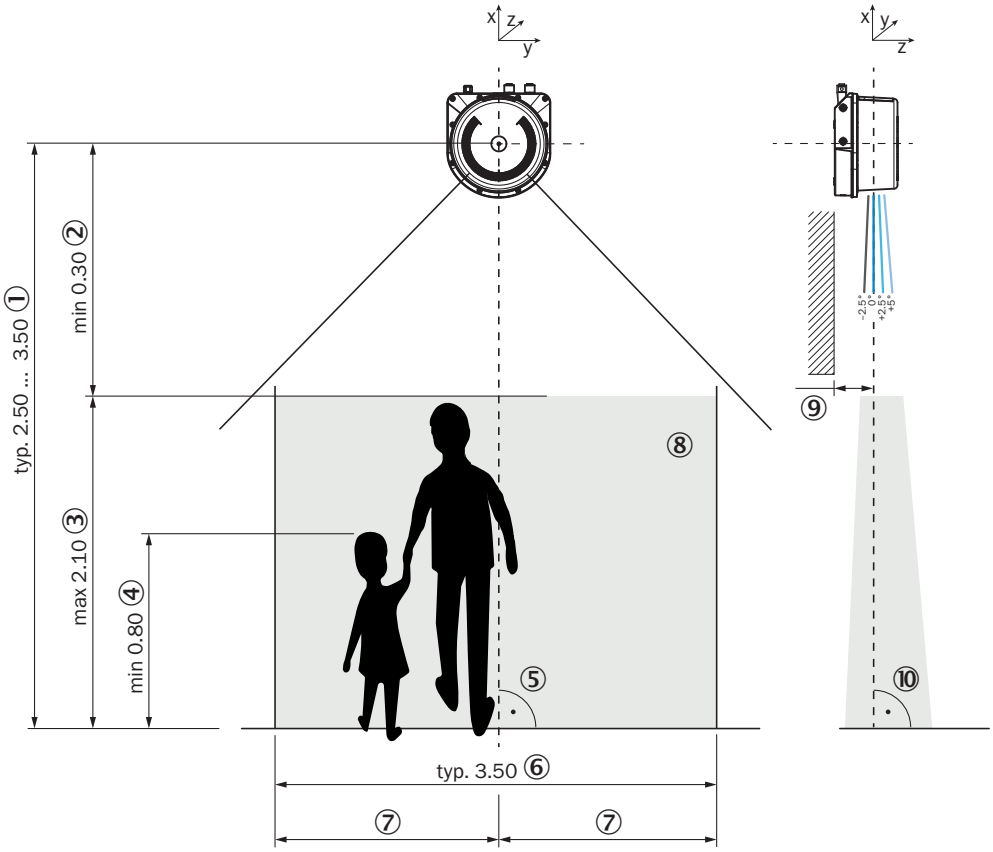


Scanning range max. 64 m

Scanning range for objects up to 90 % remission 30 m

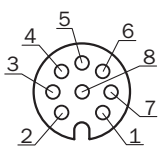
Scanning range for objects up to 10 % Remission 16 m

Assembly note



① Mounting height 2 m ... 5 m (typ. 2.5 m ... 3.5 m)
② Minimum distance from origin of measurement to people
③ Size of person: max. 2.1 m
④ Size of person: min. 0.8 m
⑤ Tilt of device around y-axis: typically 0°; max. ± 10°
⑥ Horizontal detection area: typically 3.5 m; max. 10 m
⑦ Position of the device over the detection area: typically central to prevent shading by people walking by
⑧ Detection area: typically 3.5 m x 2.1 m (W x H); max. 10 m x 2.1 m (W x H)
⑨ distance of the device to objects (e.g. walls): observe scan plane angle (-2.5°/0°/+2.5°/+5°), if needed increase distance or tilt device around y-axis
⑩ Tilt of device around y-axis: typically 0°; max. ± 10°

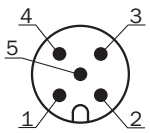
Connection type I/O



female connector M12, 8-pin, A-coded
① IN1/OUT1
② IN2/OUT2
③ IN3/OUT3
④ IN4/OUT4
⑤ IN5/OUT5
⑥ IN6/OUT6

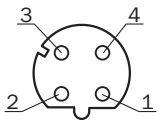
⑦ GND INx/OUTx
⑧ IN7/OUT7

Connection type Power



Connector M12, 5-pin, A-coded
① VS 10...30 V
② Reserved
③ GND
④ IN8/OUT8
⑤ Reserved

Connection type Ethernet



M12 female connector, 4-pin, D-coded
① TX+
② RX+
③ TX-
④ RX-

Recommended accessories

Other models and accessories ➜ www.sick.com/MRS1000

	Brief description	Type	part no.
Mounting systems			
	• **Description:** Easy Mount • **Dimensions (W x H x L):** 86 mm x 46 mm x 180 mm • **Material:** Stainless steel • **Details:** X6CRNITI1810 (1.4541) • **Items supplied:** Mounting kit 1a (2034324), 4 x M5 x 10 countersunk screws, stainless steel • **Suitable for:** LMS1000, MRS1000, LRS4000	Mounting kit 1a	2093194

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