Product data sheet

MRS1104C-011010

MRS1000

3D LIDAR SENSORS

SICK
Sensor Intelligence.

Ordering information

Type	Part no.
MRS1104C-011010	1075367

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

Detailed technical data

Features

Application	Indoor
Measurement principle	HDDM$^+$
Light source	Infrared (850 nm)
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014)
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	0.2 m ... 64 m
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
Supply voltage	10 V DC ... 30 V DC
Power consumption	Typ. 13 W Max. 37 W Start-up phase max. 30 W for 1 s
Housing material	AlSi12, Optics cover: polycarbonate
Housing color	Light blue (RAL 5012)
Enclosure rating	IP65 (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

Safety-related parameters

$MTTF_D$	> 100 years

Performance

Output data LiDAR-LOC	Contamination indication, 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	Field evaluation Output of measurement data
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
Function	Data interface (read result output), OPC, NTP, Measured data output (distance, RSSI)
Data transmission rate	10/100 MBit/s
Digital inputs/outputs	I/O (8 (Multiport))
Output data	Contamination indication IMU (secondary sensor data)
Optical indicators	2 LEDs
Configuration software	SOPAS ET Web server (display)

Ambient data

Object remission	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)]

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

Ambient operating temperature	–10 °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.

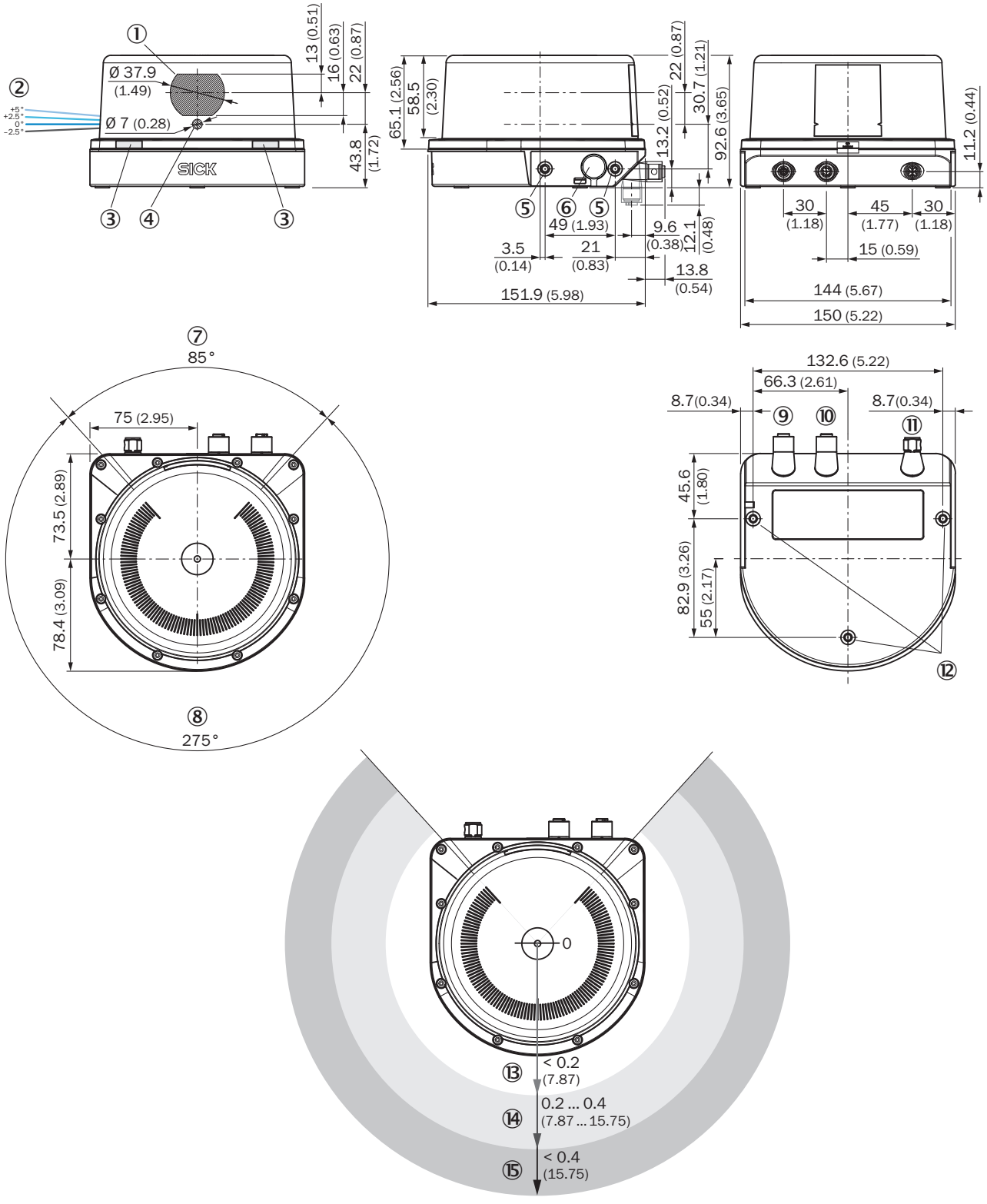
General notes

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

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

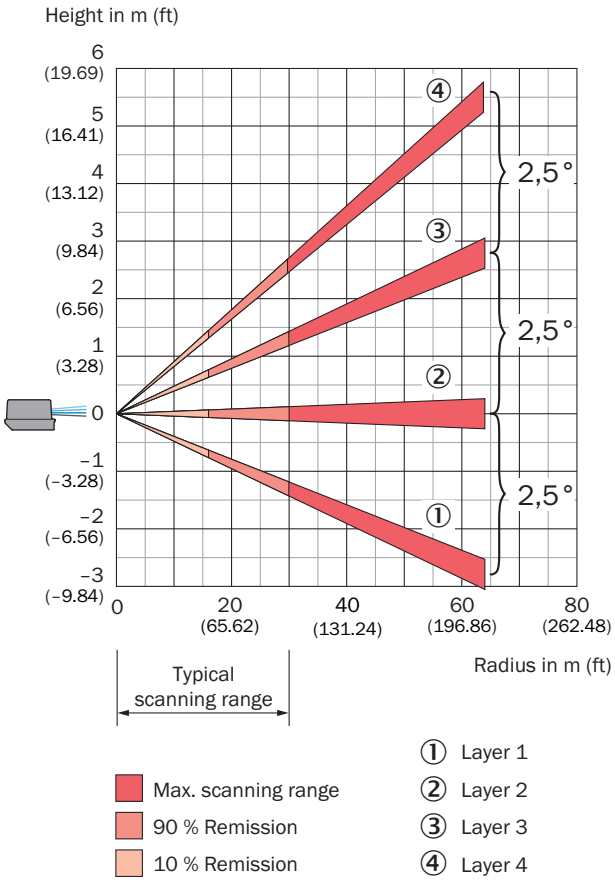
Dimensional drawing (Dimensions in mm (inch))



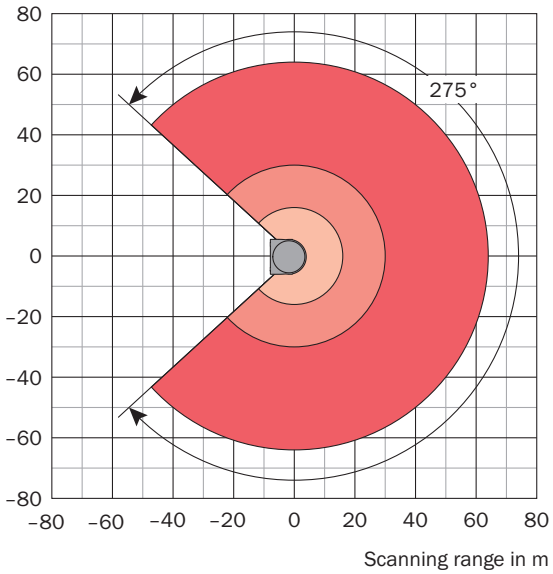
① Receiver
② Laser aperture angle, layers 1 to 4
③ Status LEDs
④ Sender
⑤ Mounting hole M5 x 7.5
⑥ Pressure compensation element

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



Scanning range in m



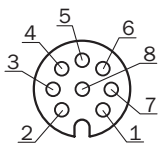
Scanning range max. 64 m

Scanning range for objects up to 90 % remission 30 m

Scanning range for objects up to 10 % Remission 16 m

Connection type

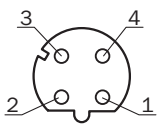
I/O



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

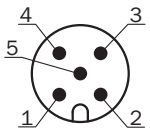
Ethernet



M12 female connector, 4-pin, D-coded

① TX+
② RX+
③ TX-
④ RX-

Power



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

Recommended accessories

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

	Brief description	Type	Part no.
Terminal and alignment brackets			
	Easy Mount, X6CRNITI1810 (1.4541), Mounting kit 1a (2034324), 4 x M5 x 10 countersunk screws, stainless steel	Mounting kit 1a	2093194
Others			
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, shielded • **Application:** Zones with oils and lubricants, Drag chain operation, Robot	YF2A25-050UB6XLEAX	2095733
	• **Connection type head A:** Male connector, M12, 8-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 8-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, shielded • **Connection systems:** Flying leads • **Application:** Zones with oils and lubricants, Drag chain operation	YM2A28-050UA6XLEAX	6036155
	• **Connection type head A:** Male connector, M12, 4-pin, straight, D-coded • **Connection type head B:** Male connector, RJ45, 4-pin, straight • **Signal type:** Ethernet, PROFINET • **Cable:** 5 m, 4-wire, PUR, halogen-free • **Description:** Ethernet, PROFINET, shielded • **Application:** Drag chain operation, Zones with oils and lubricants	YM2D24-050PN1MRJA4	2106184

Recommended services

Additional services ➜ www.sick.com/MRS1000

	Type	Part no.
Maintenance		
• **Product area:** 2D LiDAR sensors, 3D LiDAR sensors • **Range of services:** Inspection, analysis and restoring of defined functions, Inspection and adaptation of basic settings, parameters of field application, filters for raw data output, and product-specific configuration • **Duration:** Additional work will be invoiced separately	Maintenance of LiDAR sensors	1682593
Commissioning		
• **Product area:** 2D LiDAR sensors, 3D LiDAR sensors • **Range of services:** Inspection of connection, fine adjustment, configuration of monitored areas, configuration and optimization of parameters as well as tests, Setup of previously defined functions of basic settings, parameters of field application, filters for raw data output and product-specific configuration • **Duration:** Additional work will be invoiced separately	Commissioning LiDAR sensors	1680672
Extended warranty		
• **Product area:** Machine vision, LiDAR sensors, safety camera sensors, Safety laser scanners, Safety radar sensors, Radar sensors, Fixed mount barcode scanners, Image-based code readers, RFID, Mobile handheld scanners • **Range of services:** The services correspond to the scope of the statutory manufacturer warranty (SICK general terms of delivery). • **Duration:** Five-year warranty from delivery date.	Extended warranty for a total of five years from delivery date	1680671

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:

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