



**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](http://www.sick.com/MRS1000)



### Detailed technical data

#### Features

<b>Measurement principle</b>	HDDM <sup>+</sup>
<b>Application</b>	Indoor
<b>Light source</b>	Infrared (850 nm)
<b>Laser class</b>	1 (IEC 60825-1:2014, EN 60825-1:2014)
<b>Aperture angle</b>	Horizontal 275° Vertical 7.5° (Over 4 scan layers)
<b>Scanning frequency</b>	50 Hz, 4 x 12.5 Hz
<b>Angular resolution</b>	0.25° 0.125°, interlaced 0.0625°, interlaced 2.5°, vertical
<b>Heating</b>	Self-heating
<b>Working range</b>	0.2 m ... 64 m
<b>Scanning range</b>	At 10% remission factor 16 m At 90% remission factor 30 m
<b>Spot size</b>	10.4 mrad x 8.7 mrad
<b>Amount of evaluated echoes</b>	3

#### Mechanics/electronics

<b>Connection type</b>	M12 round connectors with swivel connector
<b>Supply voltage</b>	10 V DC ... 30 V DC
<b>Power consumption</b>	37 W, typ. 13 W, Start-up phase max. 30 W for 1 s
<b>Housing</b>	AlSi12, Optics cover: polycarbonate
<b>Housing color</b>	Light blue (RAL 5012)
<b>Enclosure rating</b>	IP65 (IEC 60529:1989+AMD1:1999+AMD2:2013)
<b>Protection class</b>	III (IEC 61140:2016-11)
<b>Electrical safety</b>	IEC 61010-1:2010-06
<b>Weight</b>	1.2 kg
<b>Dimensions (L x W x H)</b>	151.9 mm x 150 mm x 92.5 mm

<b>MTBF</b>	50 years
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## Safety-related parameters

<b>MTTF<sub>D</sub></b>	> 100 years
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## Performance

<b>Scan/frame rate</b>	55,000 measurement point/s ... 165,000 measurement point/s
<b>Response time</b>	4 layers, typ. 20 ms <sup>1)</sup> 1 layer, typ. 80 ms
<b>Systematic error</b>	± 60 mm
<b>Statistical error</b>	≤ 30 mm
<b>Integrated application</b>	Field evaluation with flexible fields on 4 levels Data output
<b>Number of field sets</b>	Up to 64 fields
<b>Simultaneous evaluation cases</b>	Up to 16 evaluations
<b>Filter</b>	Fog filter Particle filter Average filter Median filter Ground reference evaluation Edge filter Echo filter
<b>Output data LiDAR-LOC</b>	Contamination indication, IMU (secondary sensor data)

<sup>1)</sup> Depending on the selected filter settings and the object size.

## Interfaces

<b>Ethernet</b>	✓, TCP/IP, UDP/IP
Function	Data interface (read result output), OPC, NTP, Measured data output (distance, RSSI)
Data transmission rate	10/100 MBit/s
<b>Digital inputs/outputs</b>	I/O (8 (Multiport))
<b>Output data</b>	Contamination indication IMU (secondary sensor data)
<b>Optical indicators</b>	2 LEDs
<b>Configuration software</b>	SOPAS ET Web server (display)

## Ambient data

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

<sup>1)</sup> IEC 60068-2-6:2007.

<sup>2)</sup> IEC 60068-2-27:2008.

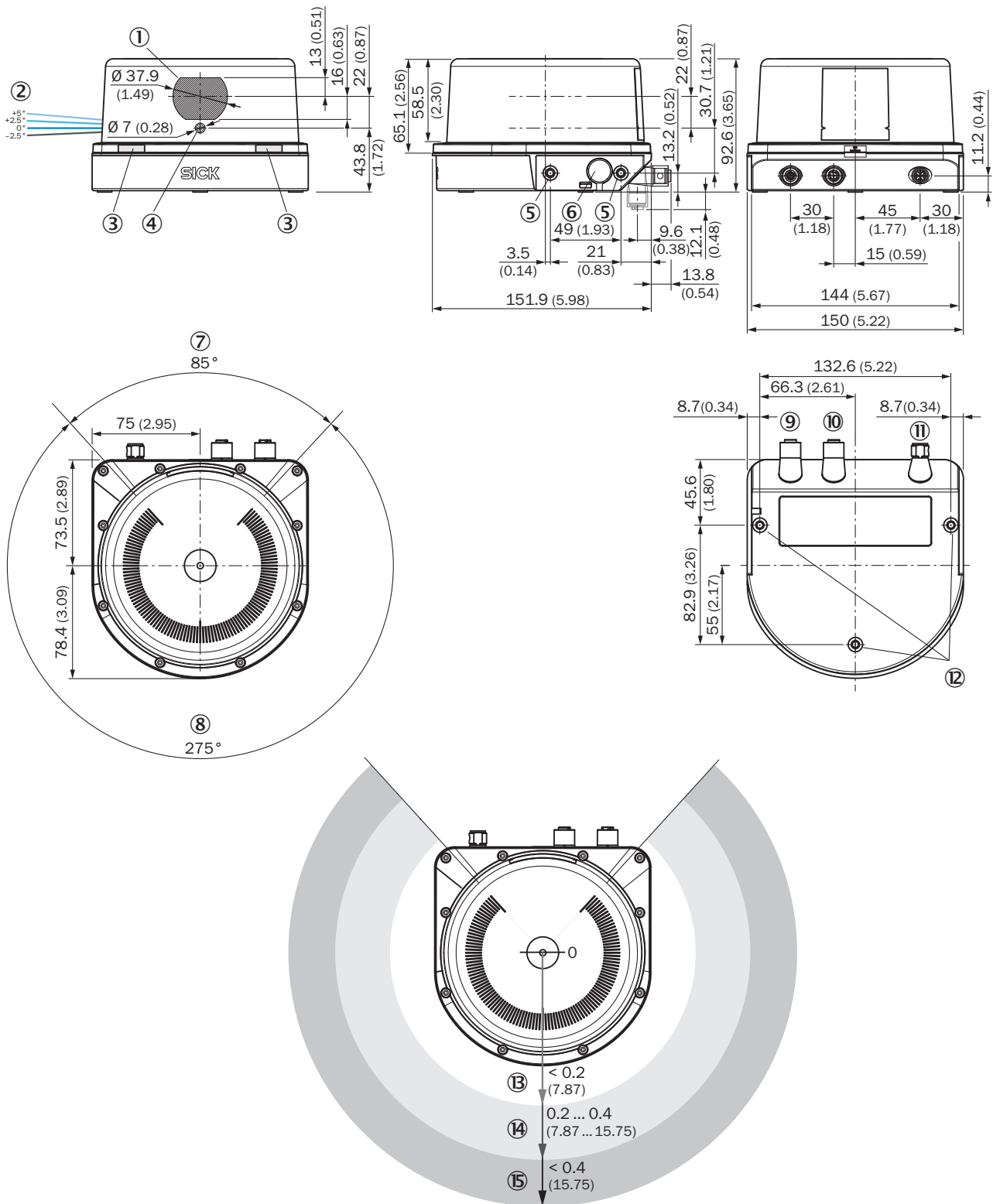
### General notes

<b>Note on use</b>	The sensor does not constitute a safety component as defined by relevant legislation on machine safety.
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### Classifications

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

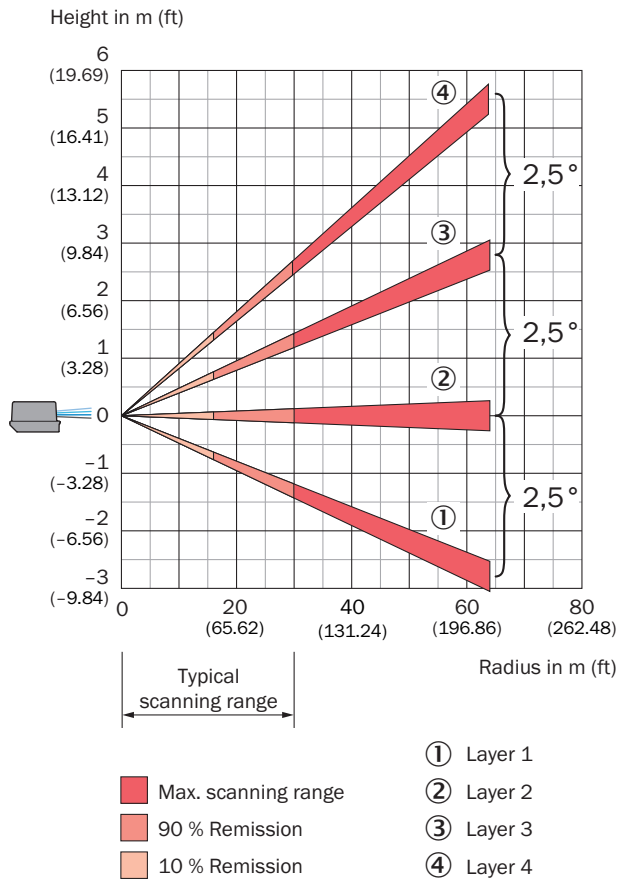
Dimensional drawing (Dimensions in mm (inch))



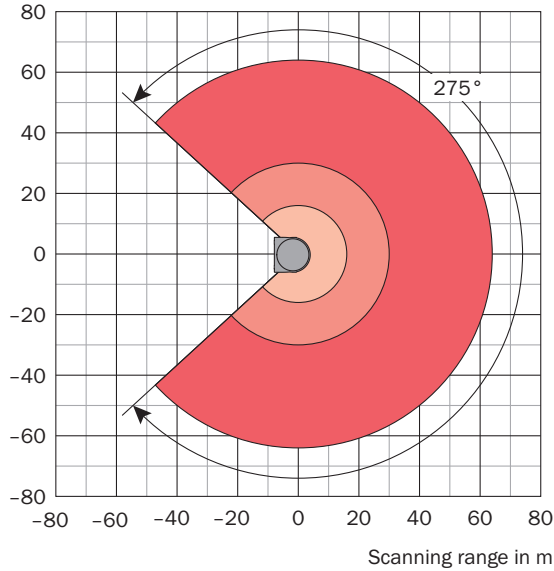
- ① Receiver
- ② Laser aperture angle, layers 1 to 4
- ③ Status LEDs
- ④ Sender
- ⑤ Mounting hole M5 x 7.5
- ⑥ Pressure compensation element

- 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



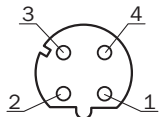
Scanning range in m



- 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

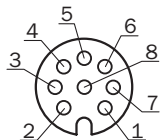
Ethernet



M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

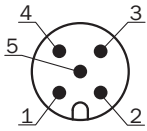
I/O



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 IN<sub>x</sub>/OUT<sub>x</sub>
- ⑧ IN7/OUT7

### 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](http://www.sick.com/MRS1000)

	Brief description	Type	Part no.
Plug connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 5-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>	YF2A25-050UB6XLEAX	2095733
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 8-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>	YM2A28-050UA6XLEAX	6036155
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li>• <b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li>• <b>Signal type:</b> Ethernet, PROFINET</li> <li>• <b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Ethernet, PROFINET, shielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YM2D24-050PN1MRJA4	2106184
Terminal and alignment brackets			
	Easy Mount, X6CRNIT1810 (1.4541), Mounting kit 1a, 4 x M5 x 10 countersunk screws, stainless steel	Mounting kit 1a	2093194



## Recommended services

Additional services → [www.sick.com/MRS1000](http://www.sick.com/MRS1000)

	Type	Part no.
<b>Maintenance</b>		
<ul style="list-style-type: none"> <li>• <b>Product area:</b> 2D LiDAR sensors, 3D LiDAR sensors</li> <li>• <b>Range of services:</b> 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</li> <li>• <b>Duration:</b> Additional work will be invoiced separately</li> <li>• <b>Travel expenses:</b> The prices do not include travel costs such as hotel, flight, travel time and expenses.</li> </ul>	Maintenance of LiDAR sensors	1682593
<b>Commissioning</b>		
<ul style="list-style-type: none"> <li>• <b>Product area:</b> 2D LiDAR sensors, 3D LiDAR sensors</li> <li>• <b>Range of services:</b> 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</li> <li>• <b>Travel expenses:</b> The prices do not include travel costs such as hotel, flight, travel time and expenses.</li> <li>• <b>Duration:</b> Additional work will be invoiced separately</li> </ul>	Commissioning LiDAR sensors	1680672
<b>Extended warranty</b>		
<ul style="list-style-type: none"> <li>• <b>Product area:</b> Identification solutions, machine vision, Detection and ranging solutions, safety camera sensors, Safety laser scanners, Safety radar sensors</li> <li>• <b>Range of services:</b> The services correspond to the scope of the statutory manufacturer warranty (SICK general terms of delivery).</li> <li>• <b>Duration:</b> Five-year warranty from delivery date.</li> </ul>	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:

Contacts and other locations –[www.sick.com](http://www.sick.com)