

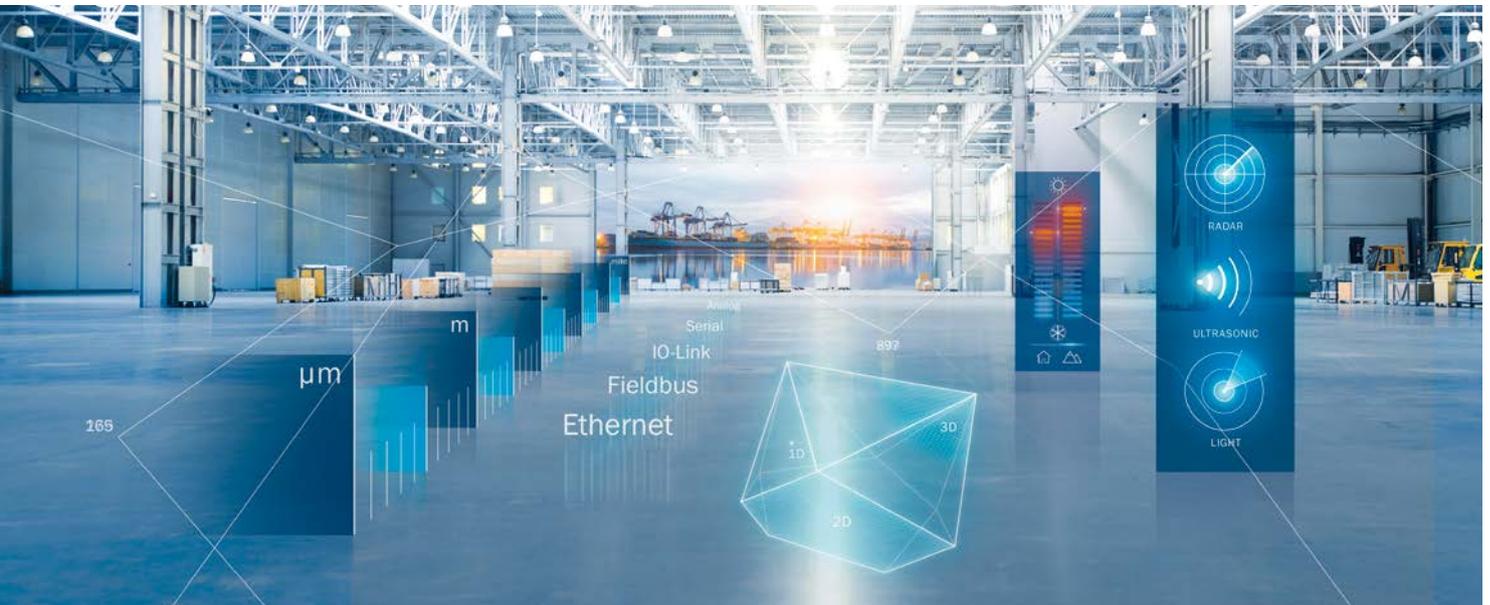


DETECTION AND RANGING SOLUTIONS

COMPACT, RELIABLE DETECTION AND DISTANCE MEASUREMENT

2D LiDAR sensors, 3D LiDAR sensors, radar sensors

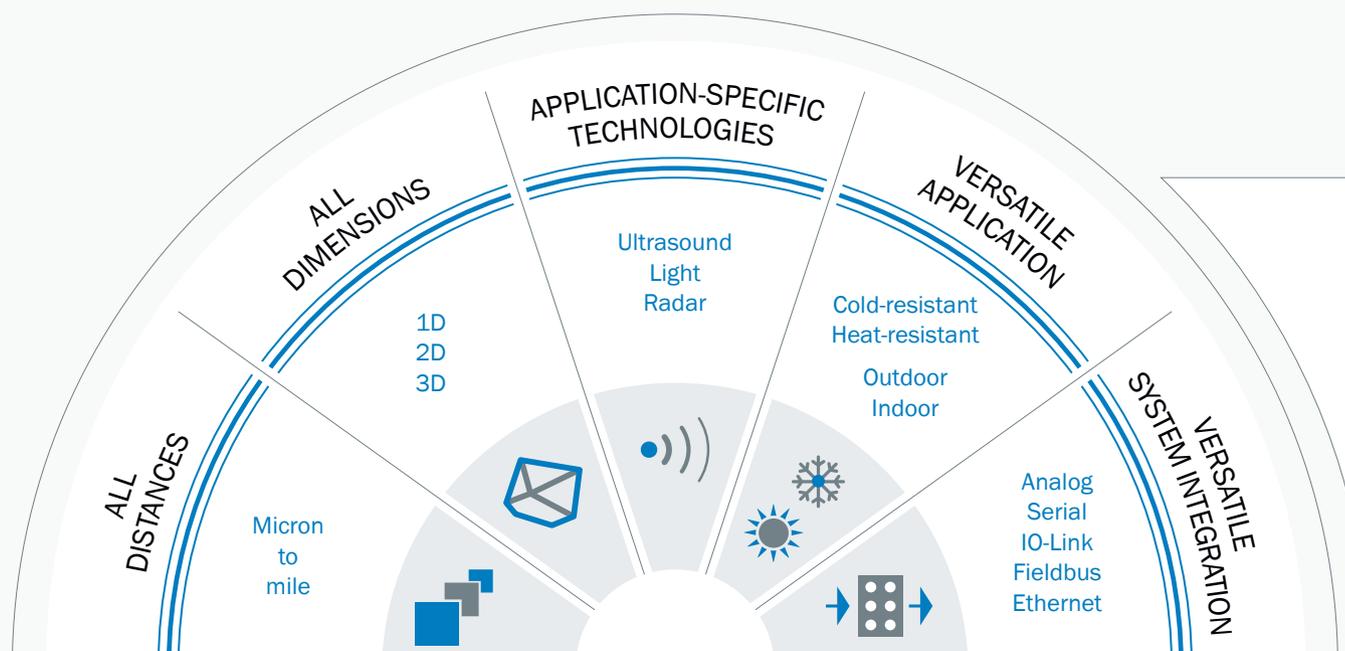
SICK
Sensor Intelligence.



FROM MICRON TO MILE. IN ALL DIMENSIONS.

Distance sensors and LiDAR sensors from SICK: range in all dimensions, precise results in all environments

Automation is forging ahead in all industries with no sign of stopping. And right at the forefront are distance sensors and detection and ranging solutions from SICK. As intelligent sources of data, they deliver precise information for nearly any application. Over any distance, in all environments. Equipped with high-developed technologies and a wide range of interfaces. Discover a unique portfolio unparalleled throughout the world which unites diverse industry knowledge and extraordinary capacity for innovation in all dimensions. Comprehensive performance and boundless flexibility – combined for your success.





Electronics

Innovative sensor solutions save time and ensure a high quality standard in the electronics production process.



Automated guided vehicle systems

LiDAR and distance sensors enable efficient operation of automated guided vehicle systems.



Storage and conveyor

Sensors ensure precise position determination, reliable empty bay detection and exact contour measurement in storage and conveyors.



Traffic

With safety and free travel: sensors retain a synoptic view in road traffic applications.



Ports

Intelligent automation ensures high handling capacity, increased efficiency and disruption-free port operation.



Additional industrial areas of application in which automated solutions control production and processes.

www.sick.com/industries-overview

Excellent performance over any distance, in all dimensions

For more details

3D LiDAR sensors scan with high point density.

Individual sensor solutions

SICK AppSpace combines software, programmable sensors and a dynamic developer community.

Effective for both indoor and outdoor applications

The versatile HDDM+ distance measurement method reliably determines distances.

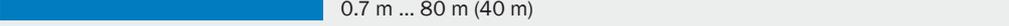
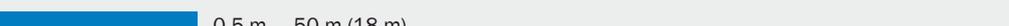
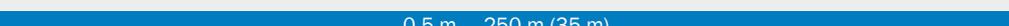
Detecting changes in real time

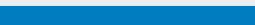
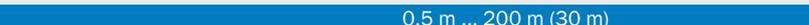
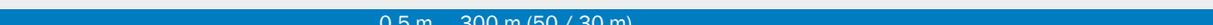
2D LiDAR sensors detect details in moving road traffic. They have the clear advantage when it comes to detection and classification of vehicles.

www.sick.com/micron-to-mile

Product		Principle of operation				Applications										
		Navigation	Detection	Measurement	Multi-echo technology	Level measurement	Checking height	Area monitoring	Checking presence	Collision prevention	Position detection	Electronic routing	Range finding	Shape recognition	Classification	
2D LiDAR sensors																
	TiM1xx		■					■	■	■						
	TiM3xx		■				■	■	■	■						
	TiM5xx			■			■	■		■	■	■				
	S100		■						■	■						
	LMS1000		■	■	■	■	■	■	■	■	■	■	■	■	■	
	LMS1xx		■	■	■	■	■	■	■	■	■	■	■	■	■	
	LMC1xx		■	■	■			■	■							
	LMS4000			■		■	■		■				■			
	LMS5xx		■	■	■	■	■	■	■	■	■	■	■	■	■	
	LD-OEM		■	■		■	■	■	■	■	■		■	■		
	LD-LRS		■	■		■	■	■	■	■	■		■	■		
		NAV2xx	■	■	■							■	■	■	■	
		NAV3xx	■	■	■							■	■	■	■	
NAV-LOC		■	■	■							■	■	■	■		
3D LiDAR sensors																
	MRS1000		■	■	■	■	■	■	■	■	■	■	■	■	■	
	MRS6000		■	■	■	■	■	■	■	■		■	■	■	■	
	LD-MRS		■	■	■	■	■	■		■	■	■	■	■	■	
Radar sensors																
	RMS3xx		■	■				■	■	■			■			
	RAS4xx		■					■	■	■			■			

Working ranges (with 10 % remission)														Page
20 m	40 m	60 m	80 m	100 m	120 m	140 m	160 m	180 m	200 m	220 m	240 m	260 m	280 m	

 0.05 m ... 10 m (3 m)	→ 6
 0.05 m ... 10 m (8 m)	→ 6
 0.05 m ... 25 m (8 m)	→ 7
 0.05 m ... 10 m (4.5 m)	→ 7
 0.2 m ... 64 m (16 m)	→ 8
 0.5 m ... 50 m (30 m)	→ 8
 0.5 m ... 20 m (18 m)	→ 9
 0.7 m ... 3 m (3 m)	→ 9
 0.7 m ... 80 m (40 m)	→ 9
 0.5 m ... 250 m (55 m)	→ 10
 0.55 m ... 250 m (80 / 120 m)	→ 10
 0.5 m ... 50 m (18 m)	→ 11
 0.5 m ... 250 m (35 m)	→ 11
 0.5 m ... 250 m (35 m)	→ 11

 0.2 m ... 64 m (16 m)	→ 12
 0.5 m ... 200 m (30 m)	→ 12
 0.5 m ... 300 m (50 / 30 m)	→ 13

 1 m ... 45 m	→ 14
 0.2 m ... 20 m	→ 14



TiM1xx

Sensor for area monitoring:
small, simple, cost-effective

TiM3xx

The safe and reliable detection solution

Technical data overview

Application	Indoor	Indoor / Outdoor
Aperture angle	200°	270°
Angular resolution	1°	0.33°, 1°
Working range	0.05 m ... 10 m	0.05 m ... 10 m, > 50% remission
Scanning range At 10% remission	1.2 m ... 3 m, depending on the angle	2 m ... 8 m
Scanning frequency	14.5 Hz	15 Hz
Ambient operating temperature	-10 °C ... +50 °C	-25 °C ... +50 °C
IO-Link	✓	-
Ethernet	-	✓
Serial	-	-
USB	-	✓
CANopen	-	-
Max. switching inputs / outputs	1 / 2	4 / 3
Weight	90 g / 122 g	150 g / 250 g

At a glance

- Small, simple, and cost-effective sensor for area monitoring
- Low weight of just 90 g
- Field evaluation using integrated software algorithms
- Low power consumption of typically 2.2 W
- Configuration and cloning using IO-Link
- Industrial design



- Incredibly compact, light, and economical sensor
- Field evaluation using intelligent software algorithms
- Configuration interface accessible from the side, when the device is mounted
- Low power consumption (typically 4 W)
- TiM3xxS only: Certified to DIN EN ISO 13849-1:2015



Detailed information → www.sick.com/TiM1xx → www.sick.com/TiM3xx



TiM5xx

Complete measurement accuracy



S100

Easy for anticollision

Indoor / Outdoor
270°
0.33°, 1°, 3°
0.05 m ... 25 m

2 m ... 8 m
15 Hz
-25 °C ... +50 °C

-
✓
✓
✓
-
- / 1

150 g / 250 g

Indoor
270°
0.5°, 1°
0 m ... 10 m

4.5 m
25 Hz
-10 °C ... +50 °C

-
-
✓
-
✓

5 / 5

1.2 kg

- Monitoring area of up to 1,470 m² with just one sensor
- High ambient light tolerance due to HDDM technology
- Rugged housing with up to an IP 67 enclosure rating
- Low power consumption (typ. 4 W)
- Compact design with a housing height of just 86 mm maximum
- Integrated Ethernet interface
- Long sensing range of up to max. 25 m
- Industry-standard design and M12 male connector



→ www.sick.com/TiM5xx

- Small, lightweight and economical measurement sensor
- Field evaluation using intelligent algorithms
- Parameter setting interface is accessible from the front while the device is mounted



→ www.sick.com/S100

	 <p style="text-align: center;">LMS1000</p>	 <p style="text-align: center;">LMS1xx</p>	
	Lightning-fast measurement – in record time!	Compact and economical, even in harsh environments	

Technical data overview			
Application	Outdoor	Indoor / Outdoor / Security	
Aperture angle	275°	270°	
Angular resolution	0.75°	0.25°, 0.5°	
Working range	0.2 m ... 64 m	0.5 m ... 50 m	
Scanning range At 10% remission	16 m	18 m ... 30 m	
Scanning frequency	150 Hz, 4 x 37,5 Hz	25 Hz / 50 Hz	
Ambient operating temperature	-30 °C ... +50 °C	-40 °C ... +60 °C	
Ethernet	✓	✓	
Serial	-	✓	
USB	-	-	
CAN	-	✓	
Max. switching inputs / outputs	8	4 / 3	
Weight	1.2 kg	1.1 kg	

At a glance

<ul style="list-style-type: none"> • Efficient sensor with integrated high-speed evaluation • High weather resistance and reliability through HDDM* with multi-echo technology • Field evaluation and measured data in one sensor • Easy configuration, with the ability to adapt to a changing environment • Convenient and simple diagnostics via web server <div style="text-align: center;">  </div>	<ul style="list-style-type: none"> • Efficient and cost-effective 2D LiDAR sensors for measuring ranges of up to 50 m • Outstanding performance whatever the weather, thanks to multi-echo technology and intelligent algorithms • Rugged, compact housing with enclosure rating up to IP 67, integrated heating, and a temperature range up to -40 °C and +60 °C • Variants for security applications with relay outputs and VdS certification available • Measurement data output via Ethernet interface in real time • Number of switching outputs can be expanded via external CAN modules <div style="text-align: center;">  </div>	
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Detailed information	→ www.sick.com/LMS1000	→ www.sick.com/LMS1xx	
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LMC1xx

Laser Measurement Certified (LMC) - intelligent and flexible security



LMS4000

Laser measurement without compromise - precise, fast and reliable



LMS5xx

Reliable and precise, even over long distances

Security Indoor / Security Outdoor	Indoor	Indoor / Outdoor / Security
270°	70°	190°
0.25°, 0.5°	0.0833°	0.167°, 0.25°, 0.333°, 0.5°, 0.667°, 1°
0.5 m ... 20 m	0.7 m ... 3 m	0.7 m ... 80 m
18 m	3 m	26 m ... 40 m
50 Hz	600 Hz	25 Hz / 35 Hz / 50 Hz / 75 Hz / 100 Hz
-30 °C ... +50 °C	-10 °C ... +50 °C	-40 °C ... +60 °C
✓	✓	✓
✓	-	✓
-	-	✓
✓	-	✓
4 / 3	2 / 3	4 / 6
1.1 kg	2.4 kg / 3.7 kg	3.7 kg

- The only 2D LiDAR sensor on the market with a VdS certificate
- Highest class "C" with environmental class II or IVa
- Flexible connection to DC 9 V up to 30 V
- 2 isolated relays (alarm) and 1 manipulation output
- High detection range of 20 m both horizontal and vertical
- Up to 10 freely definable monitoring fields, intelligent analysis algorithms
- Certified quick start menu



→ www.sick.com/LMC1xx

- Precise measurement, even with very dark or glossy objects
- Fine angular resolution for high measurement point density
- High speed measurement with 600 Hz and fast data transmission with Gigabit Ethernet
- Synchronization of devices without mutual interference
- Industry-grade M12 connections



→ www.sick.com/LMS4000

- Powerful, efficient 2D LiDAR sensor for measuring ranges up to 80 m
- Excellent performance even under unfavorable weather conditions due to multi-echo technology
- Compact housing up to enclosure rating IP 67 and integrated heating for outdoor devices
- Low power consumption
- Quick signal processing
- Several inputs and outputs
- Synchronization of several sensors possible



→ www.sick.com/LMS5xx

	
LD-OEM	LD-LRS
Long-range laser technology for use in harsh industrial environments	High-Performance, Long-distance Laser Scanner for Outdoor Areas

Technical data overview			
Application	Indoor	Indoor / Outdoor	
Aperture angle	360°	360°	
Angular resolution	0.125°, 0.1875°, 0.25°, 0.375°, 0.5°, 0.75°, 1°, 1.5°, interlaced: 0.0625 °	0.125°, 0.1875°, 0.25°, 0.375°, 0.5°, 0.75°, 1°, 1.5°, interlaced: 0.0625 °	
Working range	0.5 m ... 250 m	0.5 m ... 250 m	
Scanning range At 10% remission	55 m	80 m ... 120 m	
Scanning frequency	5 Hz ... 20 Hz	5 Hz ... 15 Hz	
Ambient operating temperature	-25 °C ... +50 °C	-25 °C ... +50 °C	
Ethernet	✓	✓	
Serial	✓	✓	
CAN	-	✓	
Max. switching inputs / outputs	- / 4	- / 4	
Weight	2.4 kg / 7.4 kg	4.1 kg / 9.1 kg	

At a glance		
	<ul style="list-style-type: none"> • Long sensing range even when detecting dark surfaces • Eye-safe laser technology • High angular resolution of up to 0.125 degrees • High level of immunity to solar radiation and other infrared light sources • Synchronous monitoring of up to six freely definable fields • Real-time output of measurement data via Ethernet interface • Gap-free scanning with uniform laser spot over the full 360-degree angle 	<ul style="list-style-type: none"> • Long sensing range even when detecting dark surfaces • High angular resolution of up to 0.0625 degrees • High immunity to solar radiation • Synchronous monitoring of up to six different fields • Small laser spot diameter even at long distances
		

Detailed information	→ www.sick.com/LD-OEM	→ www.sick.com/LD-LRS
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NAV2xx

Position determination and navigation – even in highly demanding conditions



NAV3xx

Precise laser navigation for maximum efficiency



NAV-LOC

Precise localization on the basis of natural landmarks

Indoor / Outdoor	Indoor / Outdoor	Localization to contour data
270°	360°	360°
0.001°, on reflectors 0.25°, on raw / contour data	0.125°, 1.875°, 0.25°, 0.375°, 0.5°, 0.75°, 1°	0.001°
0.5 m ... 50 m, 30 m on reflectors	0.5 m ... 250 m, 0.5 m ... 70 m on reflectors	0.5 m ... 250 m
18 m	35 m	35 m
≥ 25 Hz	5 Hz ... 20 Hz, 8 Hz, ± 5 %	8 Hz
-30 °C ... +50 °C	0 °C ... +50 °C	0 °C ... +50 °C
✓	✓	✓
✓	✓	-
-	-	-
- / 1	- / 1	- / 4
1.1 kg	2.4 kg	3.9 kg

- Integrated data evaluation for determining reflector positions
- Scanning range of up to 30 m on reflectors, up to 18 m on black (10 % remission), maximum of up to 50 m
- Collection angle: 270°
- Scanning frequency: 25 Hz
- Angle resolution on reflectors: 0.001°
- Temperature resistant from -30 °C to +50 °C
- IP 67 enclosure rating and integrated heating



→ www.sick.com/NAV2xx

- Mixed-mode navigation provides both spatial contour data and reflector data
- Long scanning range: up to 70 m on reflectors (up to 35 m on black targets)
- High internal computing power and individual AGV configuration
- Measurement, navigation, and determination of position with highest level of precision from three visible reflectors
- Angular resolution of up to 0.1 degrees
- Navigation, spatial and contour data, reflector marks, angular position and/or raw data collection



→ www.sick.com/NAV3xx

- Integrated evaluation of contour data
- Precise position determination
- High repeatability of position
- Accurate distance resolution with a high angular resolution
- 360° measurement with 8 Hz
- High sensitivity and long sensing range when working with black surfaces
- Can be used as a complete solution or for retrofitting existing vehicles



→ www.sick.com/NAV-LOC



MRS1000

Outdoor is our fourth dimension



MRS6000

Make the difference visible with multi layers

Technical data overview

Application	Indoor / Outdoor	Outdoor
Aperture angle		
Horizontal	275°	120°
Vertical	7.5°, over 4 measurement levels	15°
Angular resolution	0.25°, horizontal 2.5°, vertical	0.13°, horizontal 0.625°, vertical
Working range	0.2 m ... 64 m	0.5 m ... 200 m
Scanning range		
At 10% remission	16 m	30 m
At 90% remission	30 m	75 m
Scanning frequency	50 Hz, 4 x 12.5 Hz	10 Hz
Ambient operating temperature	-30 °C ... +50 °C	-20 °C ... +60 °C
Ethernet	✓	✓
Serial	-	-
CAN	-	-
Max. switching inputs / outputs	8	-
Weight	1.2 kg	2.2 kg

At a glance

- Four spread layers and a 275° aperture angle
- High weather resistance and reliability through HDDM* with multi-echo technology
- Field evaluation and measured data in one sensor
- Easy configuration, with the ability to adapt to a changing environment
- Convenient and customer-friendly diagnostics via web server



Detailed information

→ www.sick.com/MRS1000

- Gap-free detection across 24 scanning layers at an aperture angle of 120°
- Fine angular resolution with high scanning point density
- Reliability thanks to multi-echo technology
- Convenient and customer-friendly web server interface for configuration



→ www.sick.com/MRS6000



LD-MRS

Rugged multi-layer scanner for harsh environments

Outdoor

85° ... 110°
3.2° / 4.2° ... 6.4° (± 0.2°)

0.125°, 0.25°, 0.5°

0.5 m ... 300 m

30 m ... 50 m
90 m ... 150 m

12.5 Hz ... 50 Hz, object tracking at 12.5 Hz

-40 °C ... +70 °C

✓

✓

✓

-

0.77 kg / 1 kg

- Simultaneous measurements on up to 8 scan planes
- Weatherproof thanks to multi-echo technology and IP69K enclosure rating
- Lightweight, compact design: Approx. 0.77 kg / 1 kg
- Wide temperature range: -40 °C to +70 °C
- Low power consumption: 8 watts
- Different angular resolutions in the scanning range are available
- Integrated object tracking



→ www.sick.com/LD-MRS

	 <p>RMS3xx</p>	 <p>RAS4xx</p>
	Radar technology for quick object detection in harsh environments	Extensive sensing range and large-scale coverage for collision avoidance

Technical data overview		
Frequency band	24.05 GHz ... 24.25 GHz	24 GHz ... 24.25 GHz 24.05 GHz ... 24.25 GHz
Aperture angle		
Horizontal	± 50°	± 3.5°
Vertical	± 8°	± 14°
Working range	1 m ... 45 m	0.2 m ... 20 m
Response time	< 60 ms	< 0.5 s
Number of field sets	Up to 6 fields	3 fields
Ethernet	✓	-
CANopen	✓	-
USB	-	✓
Max. switching inputs / outputs	2 / 4	- / 3
Enclosure rating	IP67	IP65
Ambient operating temperature	-40 °C ... +65 °C	-20 °C ... +60 °C
Dimensions	85 mm x 97 mm x 60.75 mm	101 mm x 151 mm x 60 mm
Weight	500 g	580 g ... 1,480 g

At a glance

- Detection of static and movable objects
- 4 freely programmable transistor switching outputs
- Output of identification number, speed, direction of movement of the object via Ethernet
- Large scanning range for detection angles of ± 50° (azimuth) and ± 8° (elevation)
- Dust-free, waterproof housing (IP67)
- Up to 6 individually scalable detection and monitoring areas



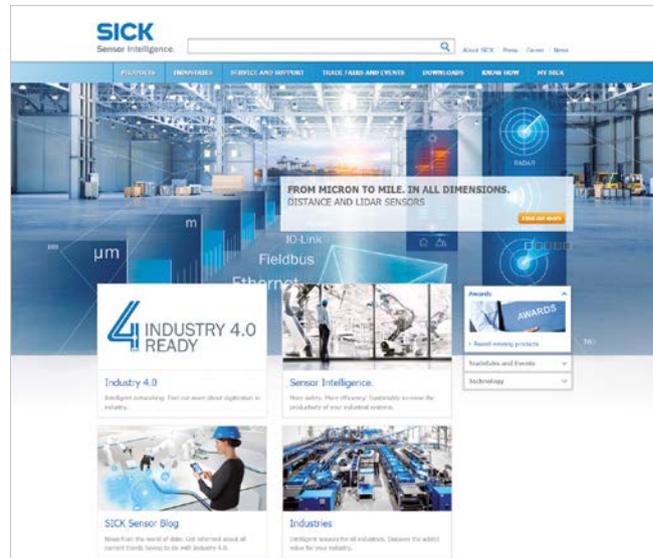
- Optional and simple sensing range adjustment of up to 20 m
- High level of availability even with contamination and in poor weather conditions
- Simple mounting and adjustment
- Additional sender / receiver modules



Detailed information	→ www.sick.com/RMS3xx	→ www.sick.com/RAS4xx
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REGISTER AT WWW.SICK.COM TO TAKE ADVANTAGE OF OUR FOLLOWING SERVICES FOR YOU

- ✔ Access information on net prices and individual discounts.
- ✔ Easily order online and track your delivery.
- ✔ Check your history of all your orders and quotes.
- ✔ Create, save, and share as many wish lists as you want.
- ✔ Use the direct order to quickly order a big amount of products.
- ✔ Check the status of your orders and quotes and get information on status changes by e-mail.
- ✔ Save time by using past orders.
- ✔ Easily export orders and quotes, suited to your systems.



SERVICES FOR MACHINES AND PLANTS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.



- 
Consulting and design
 Safe and professional
- 
Product and system support
 Reliable, fast, and on-site
- 
Verification and optimization
 Safe and regularly inspected
- 
Upgrade and retrofits
 Easy, safe, and economical
- 
Training and education
 Practical, focused, and professional

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 8,800 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. 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.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the 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 SICK a reliable supplier and development partner.

Comprehensive services round out the offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

That is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com