



LMS531-10100 Security

LMS5xx

2D LIDAR SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
LMS531-10100 Security	1067356

Other models and accessories → www.sick.com/LMS5xx



Detailed technical data

Features

Variant	PRO
Application	Outdoor Security
Resolution power	Standard Resolution
Light source	Infrared (905 nm, ± 10 nm)
Laser class	1 (EN/IEC 60825-1:2014 (Ed.3), EN/IEC 60825-1:2007 (Ed.2) CAN/CSA-E60825-1:2015-11 (Ed.3))
Aperture angle	Horizontal 190°
Scanning frequency	
	25 Hz 35 Hz 50 Hz 75 Hz 100 Hz
Angular resolution	0.042°, interlaced 0.083°, interlaced 0.1667° 0.25° 0.333° 0.5° 0.667° 1°
Scan field flatness	Scan field flatness combined: ± 0.72° Typical conical error: 1 sigma value - 0.11° ± 0.1° Typical tilt: 1 sigma value + 0.15° ± 0.08°
Heating	Self-heating with additional integrated heating
Working range	1 m ... 80 m
Scanning range	At 10% remission 40 m
Measurement accuracy	
Spot size	Divergence: 11.9 mrad At the viewing window: 13.5 mm

	In 26 m: 322 mm In 40 m: 489 mm
Amount of evaluated echoes	5

Mechanics/electronics

Connection type	4 x M12 round connector (stainless steel)
Supply voltage	24 V DC, $\pm 20\%$
Power consumption	22 W, + 55 W heating (typical)
Housing	AlSi12
Housing color	Gray (RAL 7032)
Window material	Polycarbonate, scratch-resistant coating
Enclosure rating	IP65, IP67 (EN 60529, Section 14.2.7)
Protection class	III (IEC 61140:2016-11)
Weight	3.7 kg
Dimensions (L x W x H)	160 mm x 155 mm x 185 mm
MTBF	> 100 years

Safety-related parameters

MTTF_D	> 100 years
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Performance

Response time	≥ 10 ms
Detectable object shape	Almost any
Systematic error	± 25 mm (1 m ... 10 m) ± 35 mm (10 m ... 20 m) ± 50 mm (20 m ... 30 m) ¹⁾
Statistical error	6 mm (1 m ... 10 m) 8 mm (10 m ... 20 m) 14 mm (20 m ... 30 m) ¹⁾
Integrated application	Field evaluation with flexible fields Data output
Number of field sets	10 fields
Simultaneous evaluation cases	10
Filter	Echo filter Fog filter Particle filter Average filter Glare filter

¹⁾ Typical value; actual value depends on environmental conditions.

Interfaces

Ethernet	✓, TCP/IP
Function	Host and AUX, OPC, NTP
Data transmission rate	10/100 MBit/s
Serial	✓, RS-232, RS-422
Function	Host and AUX
Data transmission rate	9.6 kBaud ... 500 kBaud
CAN	✓
Function	Extension of outputs

Data transmission rate	20 kBit/s, 500 kBit/s, 1 MBit/s, Synchronization
USB	✓
Remark	Mini-USB
Function	AUX
Digital inputs	4 (digital)
Digital outputs	4 (4 digital outputs in relay function)
Optical indicators	5 LEDs (Additional 7-segment display)

Ambient data

Object remission	2 % ... > 1,000 % (reflectors)
Electromagnetic compatibility (EMC)	
Emitted radiation	Industrial environment (IEC 61000-6-3:2020 / EN IEC 61000-6-3:2007+A1:2011)
Electromagnetic immunity	Industrial environment (IEC 61000-6-2:2016 / EN IEC 61000-6-2:2019)
Vibration resistance	
Sine test	10 Hz ... 150 Hz, Amplitude 0.35 mm to 5 g, 20 cycles ¹⁾
Shock resistance	15 g, 11 ms, 6 single shocks/axis ²⁾ 10 g, 16 ms, 1,000 continuous shocks/axis ²⁾
Impact resistance	IK05, IK06, IK07 (DIN EN 50102:09-1997)
Ambient operating temperature	-40 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C
Ambient light immunity	70,000 lx

¹⁾ IEC 60068-2-6:2007-12.

²⁾ IEC 60068-2-27:2008-02.

General notes

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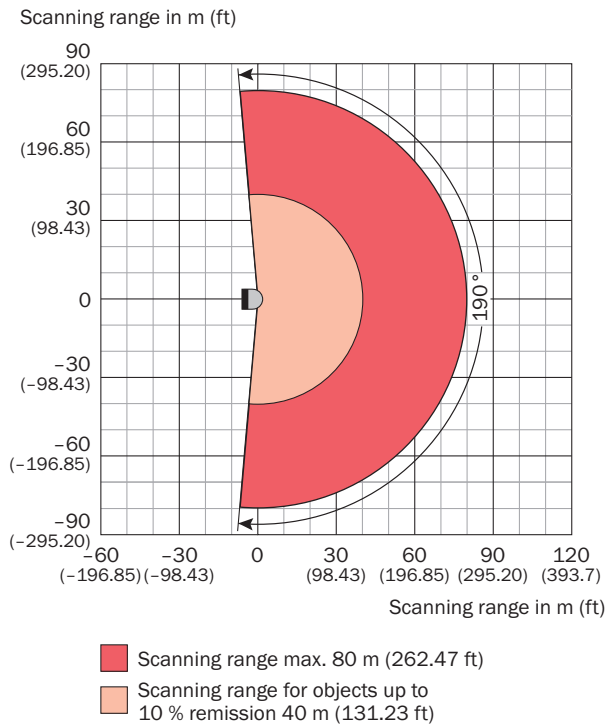
Classifications

eCl@ss 5.0	27270990
eCl@ss 5.1.4	27270990
eCl@ss 6.0	27270913
eCl@ss 6.2	27270913
eCl@ss 7.0	27270913
eCl@ss 8.0	27270913
eCl@ss 8.1	27270913
eCl@ss 9.0	27270913
eCl@ss 10.0	27270913
eCl@ss 11.0	27270913
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ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002550
ETIM 8.0	EC002550

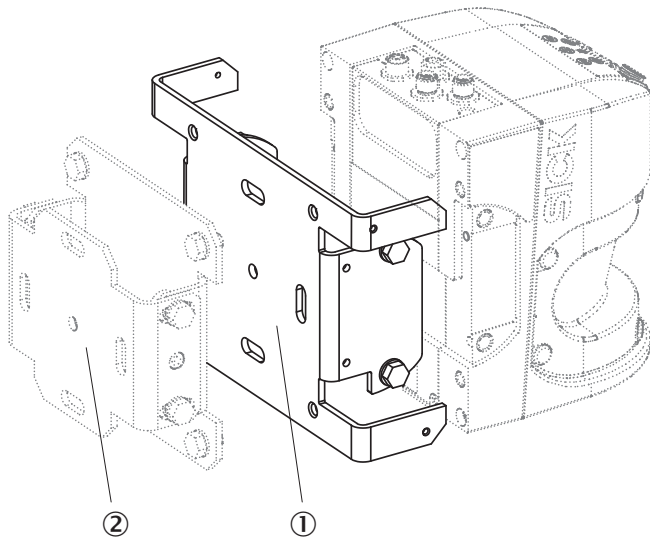
UNSPSC 16.0901

41111615

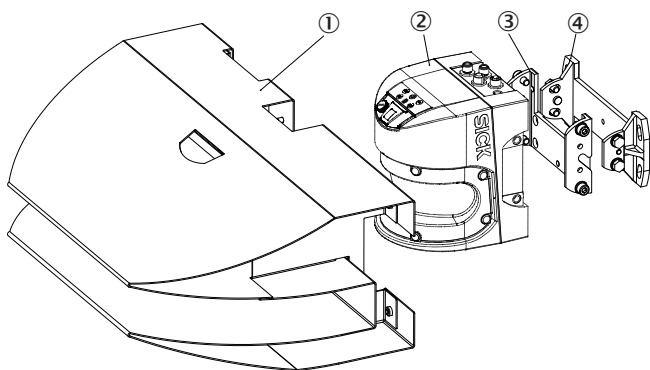
Working range diagram



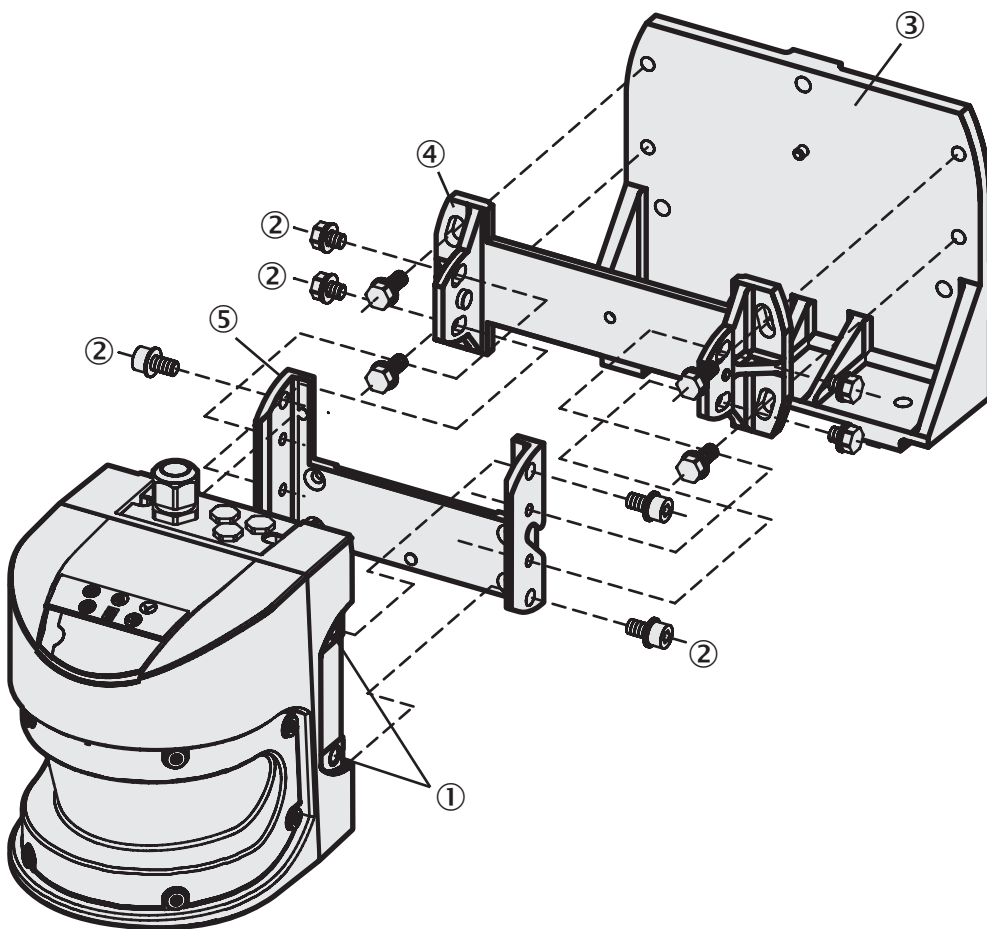
Assembly note



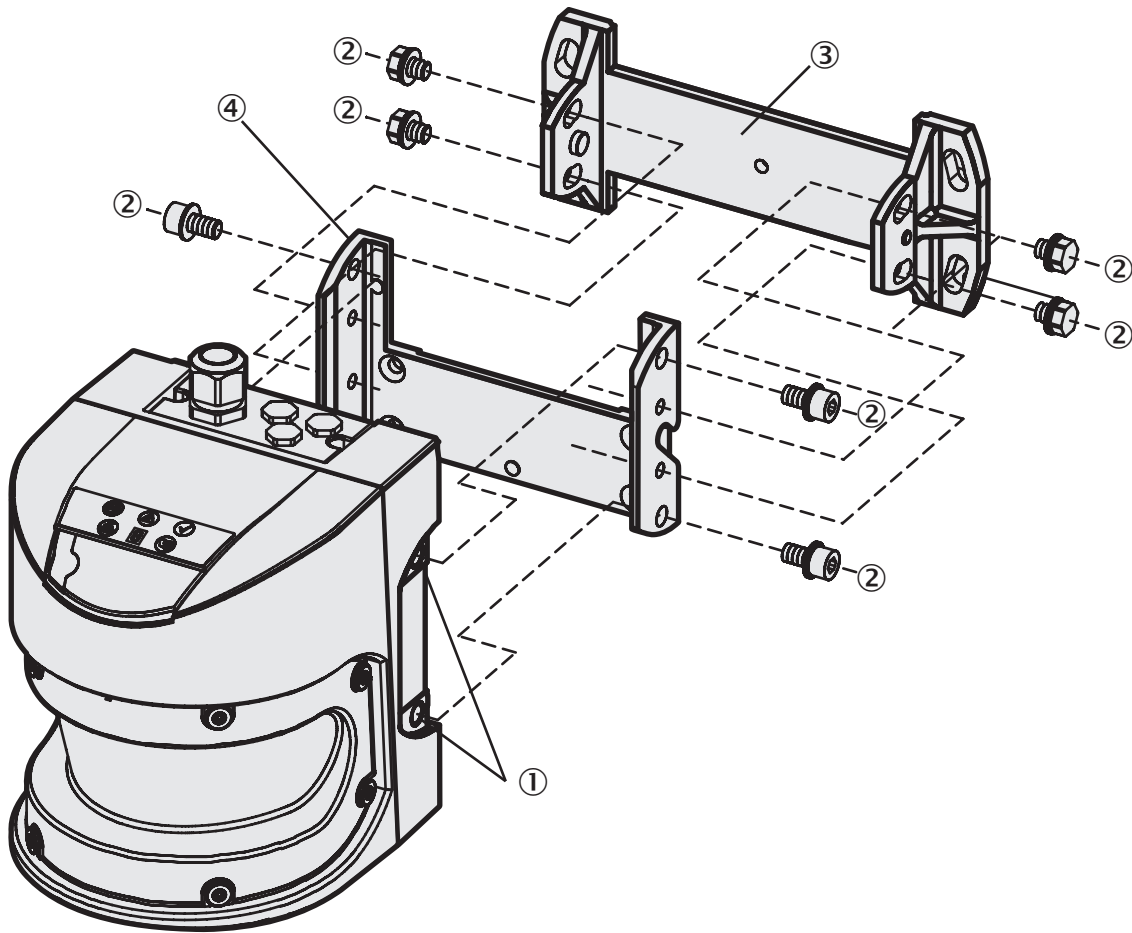
- ① Mounting bracket 2059271
- ② Mounting bracket 2018303



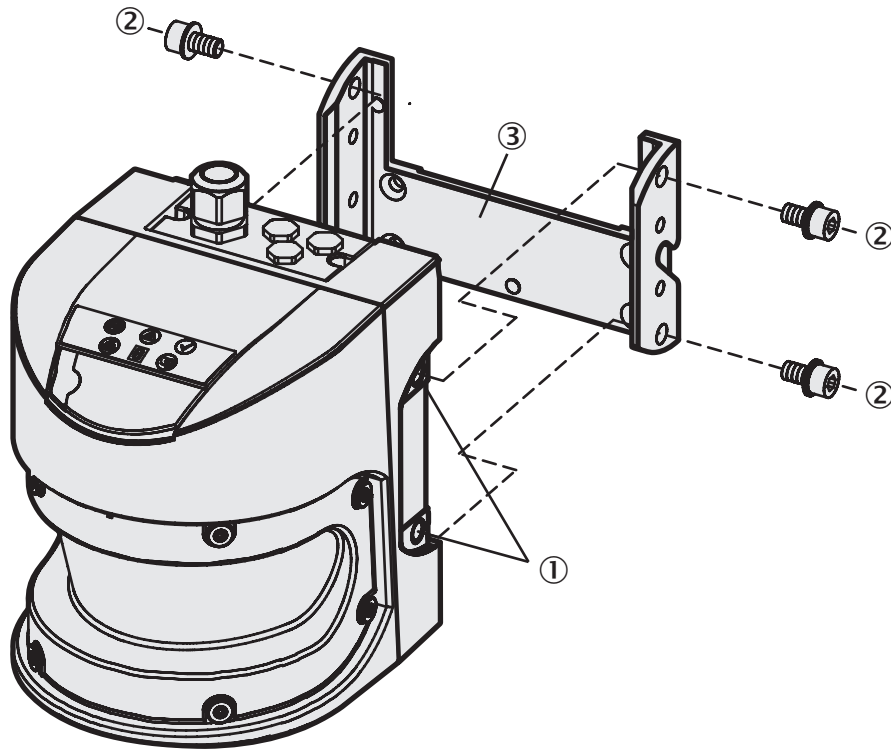
- ① Weather hood
- ② LMS5xx
- ③ Mounting kit 1
- ④ Mounting kit 2



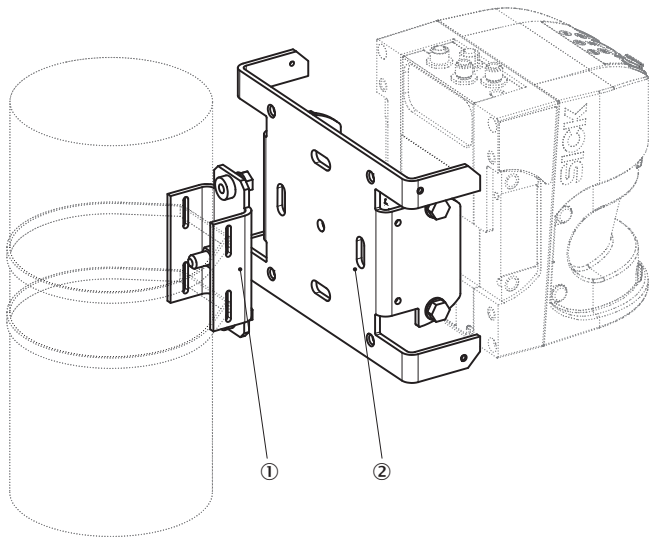
- ① Threaded holes M8x9
- ② Mounting screws
- ③ Mounting kit 3
- ④ Mounting kit 2
- ⑤ Mounting kit 1



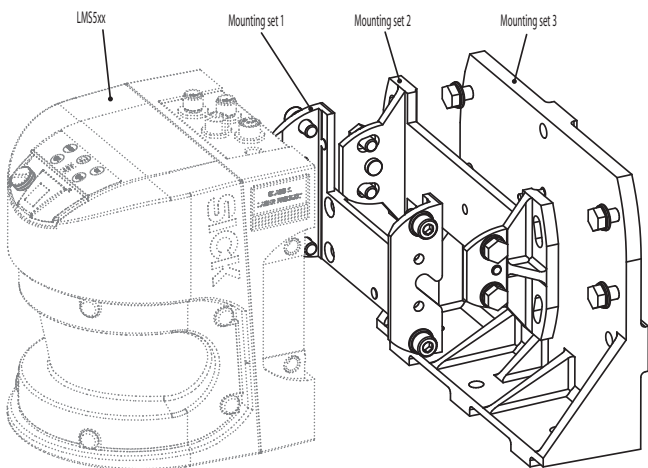
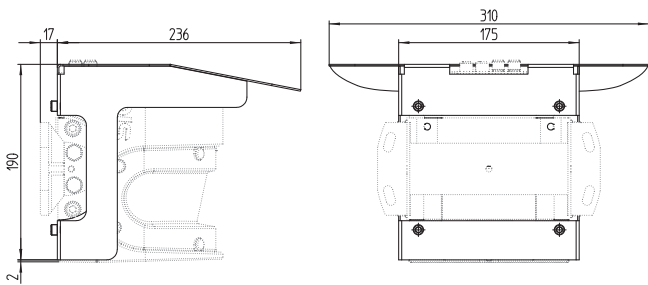
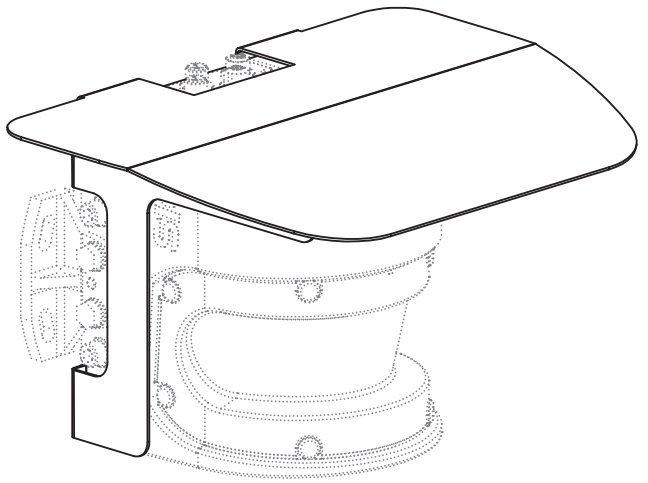
- ① Threaded holes M8x9
- ② Fixing screw
- ③ Mounting kit 2
- ④ Mounting kit 1



- ① Threaded holes M8x9
- ② Mounting screws
- ③ Mounting kit 1

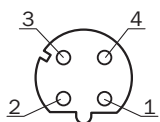


- ① Post bracket
- ② Mounting bracket 2059271



Connection type

Ethernet

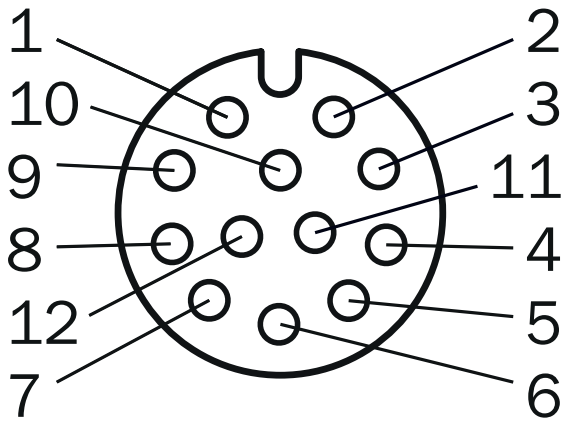


M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-
- ④ RX-

PIN assignment

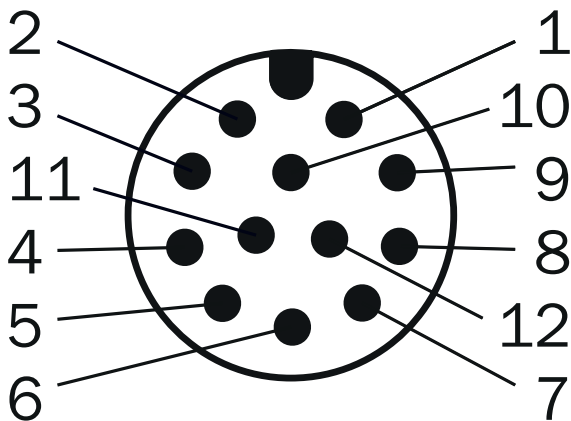
Alarms



M12, 12-pin female connector, A-coded

- ① Alarm A (OUT1)
- ② Sab A (OUT4)
- ③ Alarm B (OUT1)
- ④ Alarm R A
- ⑤ Error A (OUT2)
- ⑥ Alarm R B
- ⑦ Disq. A (OUT3)
- ⑧ Error B (OUT2)
- ⑨ Sab B (OUT4)
- ⑩ Disq. B (OUT3)
- ⑪ Sab R A
- ⑫ Sab R B

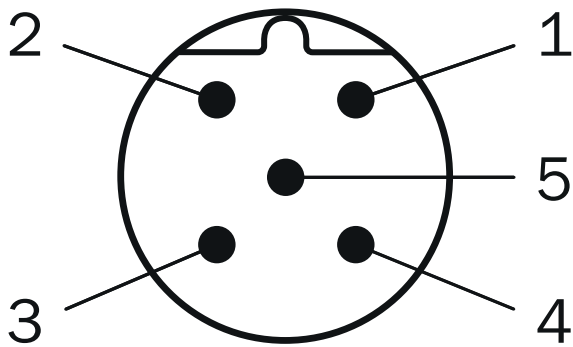
Inputs



M12, 12-pin male connector, A-coded

- ① A/DA (IN1)
- ② RD-/RxD
- ③ GND IN
- ④ GND RS/CAN
- ⑤ D/N (IN3)
- ⑥ WT (IN2)
- ⑦ TD-/TxD
- ⑧ TEACH (IN4)
- ⑨ RD+
- ⑩ TD+
- ⑪ CAN LOW
- ⑫ CAN HIGH

POWER connection







Male connector M12, 5-pin, A-coded

- ① V_s
- ② V_s Heat.
- ③ GND
- ④ Reserved
- ⑤ GND heat.

Recommended accessories

Other models and accessories → www.sick.com/LMS5xx

	Brief description	Type	Part no.
Device protection (mechanical)			
	Compact 190° weather hood, only suitable for overhead mounting of the LMS5xx, scanner must be mounted overhead, Stainless steel V4A 1.4404	Weather hood, 190°	2089593
Mounting brackets and plates			
	1 piece, mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable, Aluminum	Mounting kit 1	2015623
	1 piece, mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623), Aluminum	Mounting kit 2	2015624
Plug connectors and cables			
	Head A: female connector, M12, 12-pin, straight Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 5 m	DOL-1212-G05MACO	2094407

	Brief description	Type	Part no.
	Head A: male connector, M12, 12-pin, straight Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 5 m	STL-1212-G05MACO	2094409
	Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: PUR, halogen-free, shielded, 5 m	YF2A64-050UE1XLEAX	6054495
	Head A: male connector, M12, 4-pin, straight, D-coded Head B: male connector, RJ45, 8-pin, straight Cable: Ethernet, PUR, shielded, 5 m	YM2D24-050PN4MRJA4	6054493

Recommended services

Additional services → www.sick.com/LMS5xx

	Type	Part no.
Maintenance		
<ul style="list-style-type: none"> • 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 • Travel expenses: The prices do not include travel costs such as hotel, flight, travel time and expenses. 	Maintenance LMS/MRS/NAV/TiM/LRS/multiScan	1682593
Commissioning		
<ul style="list-style-type: none"> • 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 • Travel expenses: The prices do not include travel costs such as hotel, flight, travel time and expenses. • Duration: Additional work will be invoiced separately 	Commissioning LMS/MRS/NAV/TiM/LRS/multiScan (Prime package)	1680672
Extended warranty		
<ul style="list-style-type: none"> • Product area: Identification solutions, machine vision, Distance sensors, Detection and ranging solutions • 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:

Contacts and other locations –www.sick.com