



# LMS531-15100 Heavy Duty Extended Range Security

LMS5xx

2D LIDAR SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
LMS531-15100 Heavy Duty Extended Range Security	1128609

Other models and accessories → [www.sick.com/LMS5xx](http://www.sick.com/LMS5xx)



### Detailed technical data

#### Features

<b>Application</b>	Outdoor, Security, Indoor
<b>Variant</b>	PRO
<b>Resolution power</b>	Standard Resolution
<b>Light source</b>	Infrared (905 nm, ± 10 nm)
<b>Laser class</b>	1 (EN/IEC 60825-1:2014, EN 60825-1:2014+A11:2021)
<b>Aperture angle</b>	
	Horizontal 190°
<b>Scanning frequency</b>	25 Hz 35 Hz 50 Hz 75 Hz 100 Hz
<b>Angular resolution</b>	
	Horizontal 0.042°, interlaced 0.083°, interlaced 0.1667° 0.25° 0.333° 0.5° 0.667° 1°
<b>Scan field flatness</b>	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°
<b>Heating</b>	Self-heating with additional integrated heating
<b>Working range</b>	1 m ... 130 m
<b>Scanning range</b>	
	At 10% remission factor 52 m

<b>Measurement accuracy</b>	± 24 mm
<b>Spot size</b>	Divergence: 11.9 mrad At the viewing window: 13.5 mm In 26 m: 322 mm In 40 m: 489 mm
<b>Amount of evaluated echoes</b>	5

### Mechanics/electronics

<b>Connection type</b>	4 x M12 round connector (stainless steel)
<b>Supply voltage</b>	24 V DC, ± 20 %
<b>Power consumption</b>	22 W, + 55 W heating (typical)
<b>Housing material</b>	AISI12
<b>Housing color</b>	Gray (RAL 7032)
<b>Window material</b>	Polycarbonate, scratch-resistant coating
<b>Enclosure rating</b>	IP65 (EN 60529, Section 14.2.7) IP67 (EN 60529, Section 14.2.7)
<b>Protection class</b>	III (IEC 61140:2016-11)
<b>Weight</b>	3.7 kg
<b>Dimensions (L x W x H)</b>	160 mm x 155 mm x 185 mm
<b>MTBF</b>	> 100 years
<b>MTTFd</b>	> 100 years

### Safety-related parameters

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

<b>Response time</b>	≥ 10 ms
<b>Detectable object shape</b>	Almost any
<b>Systematic error</b>	± 25 mm (1 m ... 10 m) ± 35 mm (10 m ... 20 m) ± 50 mm (20 m ... 30 m) <sup>1)</sup>
<b>Statistical error</b>	6 mm (1 m ... 10 m) 8 mm (10 m ... 20 m) 14 mm (20 m ... 30 m) <sup>1)</sup>
<b>Integrated application</b>	Field evaluation Output of measurement data
<b>Number of field sets</b>	10 fields
<b>Simultaneous evaluation cases</b>	10
<b>Filter</b>	Echo filter Fog filter Particle filter Average filter Glare filter

<sup>1)</sup> Typical value; actual value depends on environmental conditions.

### Interfaces

<b>Ethernet</b>	✓, TCP/IP
Function	Host and AUX, NTP
Data transmission rate	10/100 MBit/s

<b>Serial</b>	Function	✓ , RS-232, RS-422
	Data transmission rate	Host and AUX 9.6 kBaud ... 500 kBaud
<b>CAN</b>	Function	✓
	Data transmission rate	Extension of outputs 20 kBit/s, 500 kBit/s, 1 MBit/s, Synchronization
<b>USB</b>	Remark	✓ Mini-USB
	Function	Service interface
<b>Digital inputs/outputs</b>	Inputs	4 (digital)
	Outputs	4 (4 digital outputs in relay function)
<b>Optical indicators</b>		5 LEDs (Additional 7-segment display)

### Ambient data

<b>Remission factor</b>		2 % ... > 1,000 % (reflectors)
<b>Electromagnetic compatibility (EMC)</b>	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)
<b>Vibration resistance</b>	Sine test	10 Hz ... 150 Hz, Amplitude 0.35 mm to 5 g, 20 cycles <sup>1)</sup>
		15 g, 11 ms, 6 single shocks/axis <sup>2)</sup> 10 g, 16 ms, 1,000 continuous shocks/axis <sup>2)</sup>
<b>Shock resistance</b>		
<b>Impact resistance</b>		IK05, IK06, IK07 (DIN EN 50102:09-1997)
<b>Ambient operating temperature</b>		-40 °C ... +60 °C
<b>Storage temperature</b>		-40 °C ... +70 °C
<b>Ambient light immunity</b>		70,000 lx

<sup>1)</sup> IEC 60068-2-6:2007-12.

<sup>2)</sup> IEC 60068-2-27:2008-02.

### 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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### Certificates

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

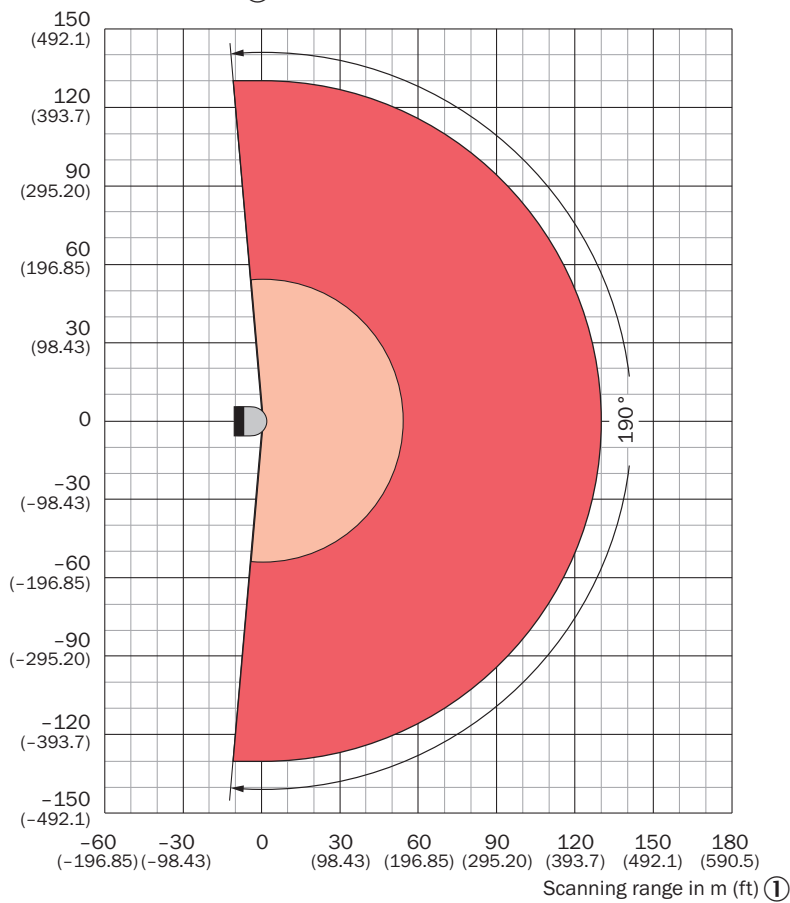
### Classifications

<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

### Working range diagram

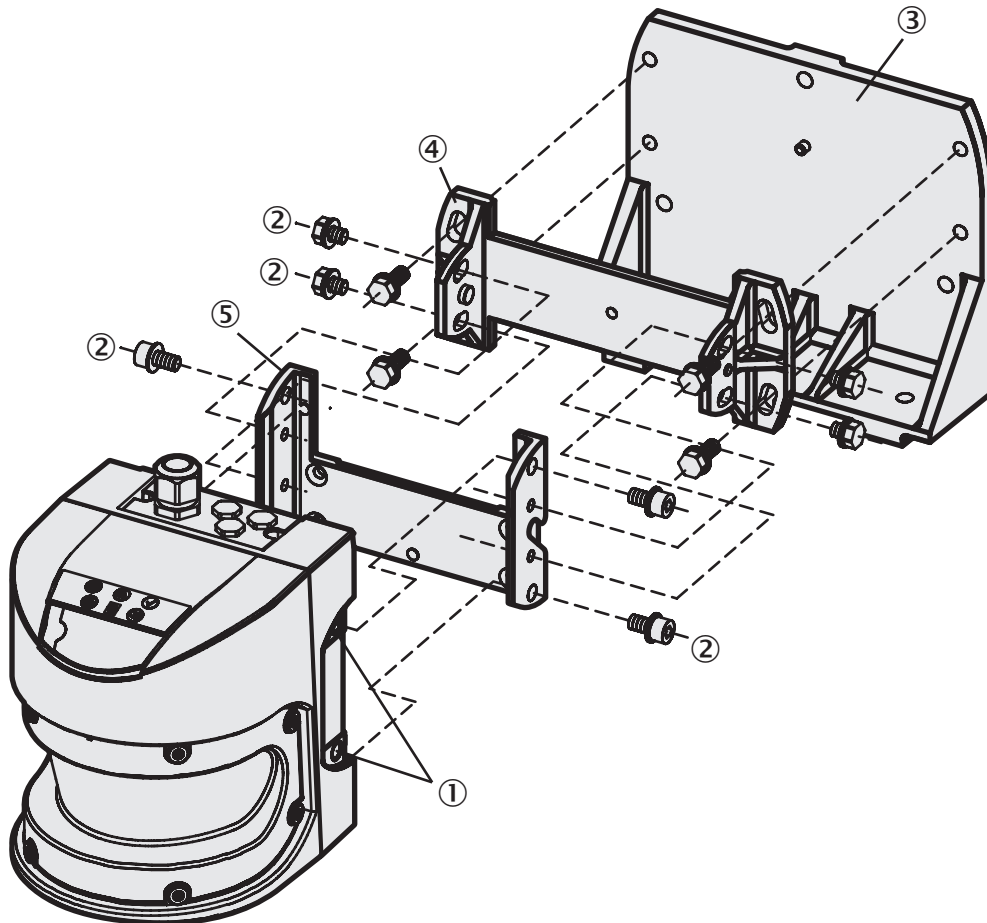
Scanning range in m (ft) ①



- Scanning range max. 130 m (426.50 ft) ②
- Scanning range for objects up to 10 % remission 52 m (170,60 ft) ③

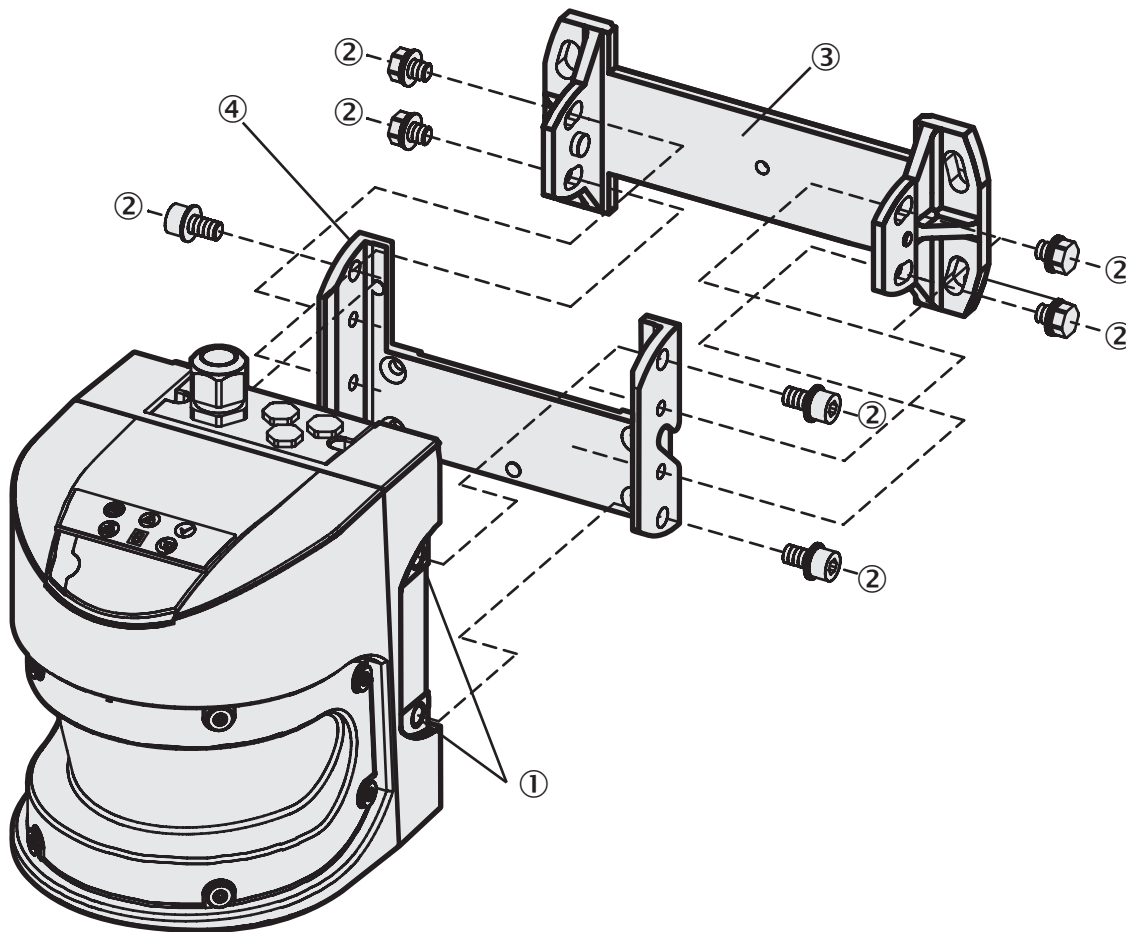
- ① Scanning range in m
- ② Max. scanning range: 130 m
- ③ Scanning range for objects up to 10% remission factor: 52 m

### Assembly note



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

### Assembly note



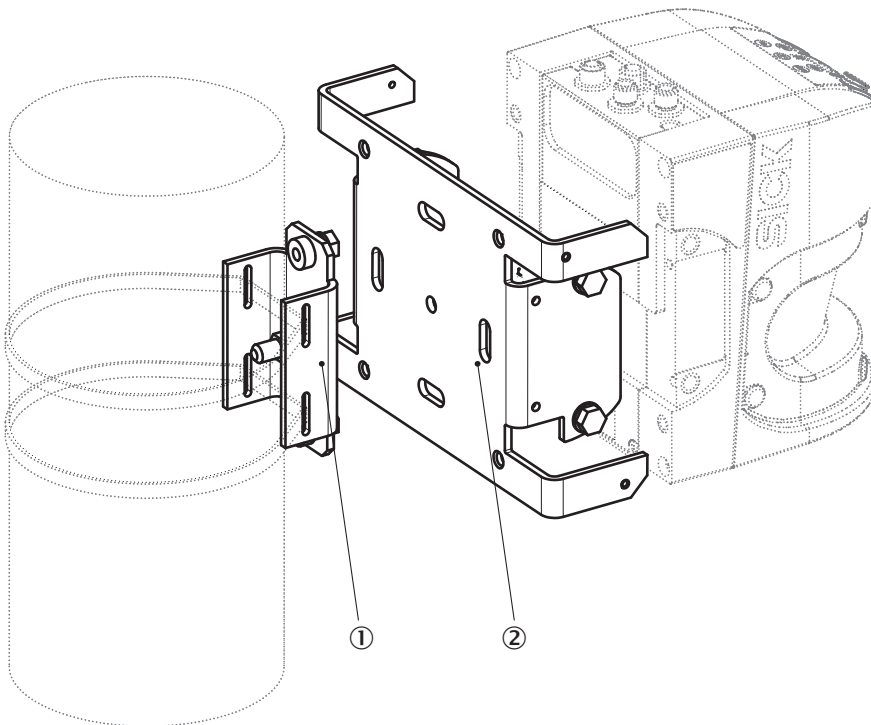
- ① threaded holes M8x9
- ② Fixing screw
- ③ Mounting kit 2
- ④ Mounting kit 1

### Assembly note



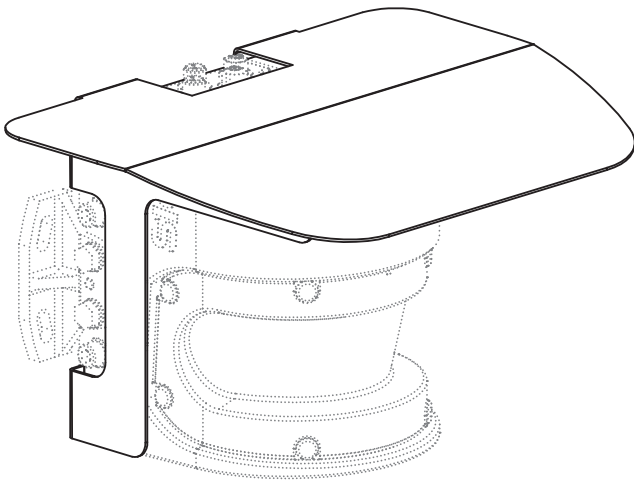
- ① threaded holes M8x9
- ② Mounting screws
- ③ Mounting kit 1

### Assembly note

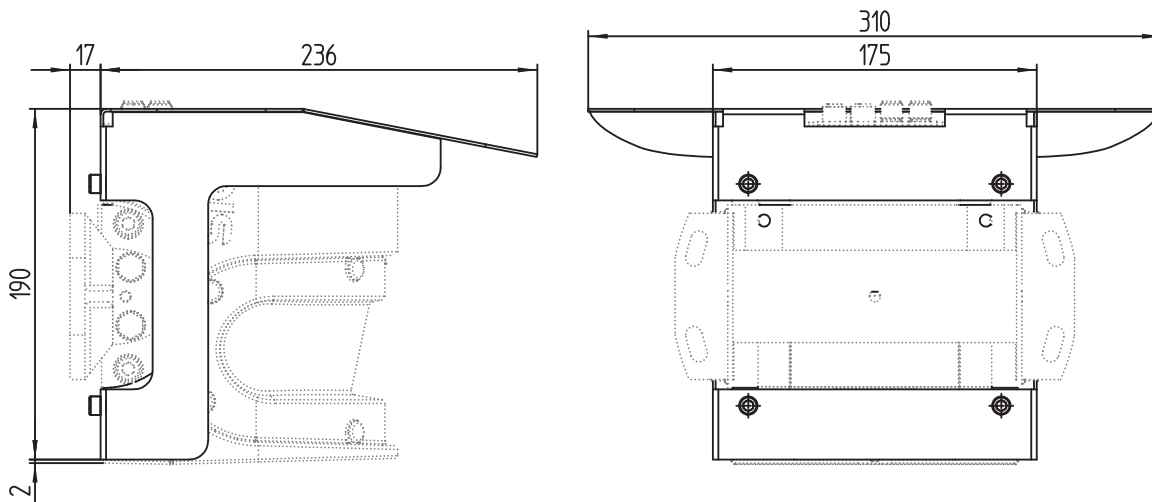


- ① Post bracket
- ② Mounting bracket 2059271

### Assembly note



### Assembly note

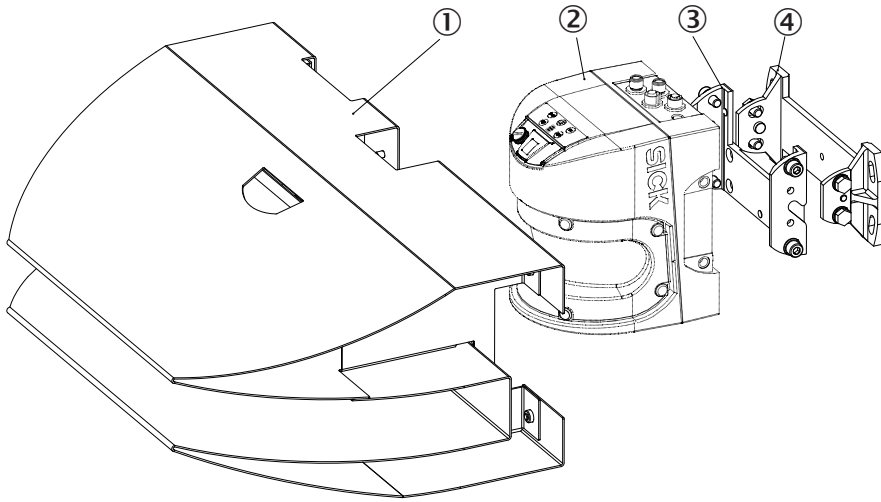


### Assembly note



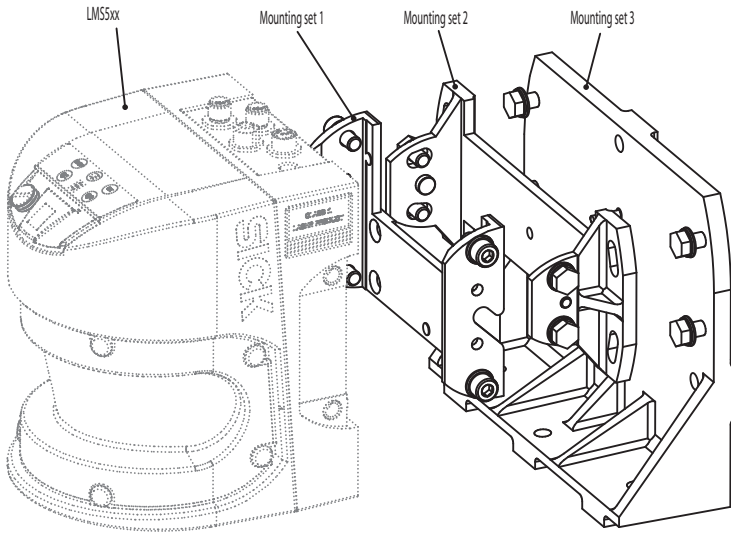
- ① Mounting bracket 2059271
- ② Mounting bracket 2018303

### Assembly note

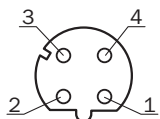


- ① Weather hood
- ② LMS5xx
- ③ Mounting kit 1
- ④ Mounting kit 2

### Assembly note



### Connection type Ethernet

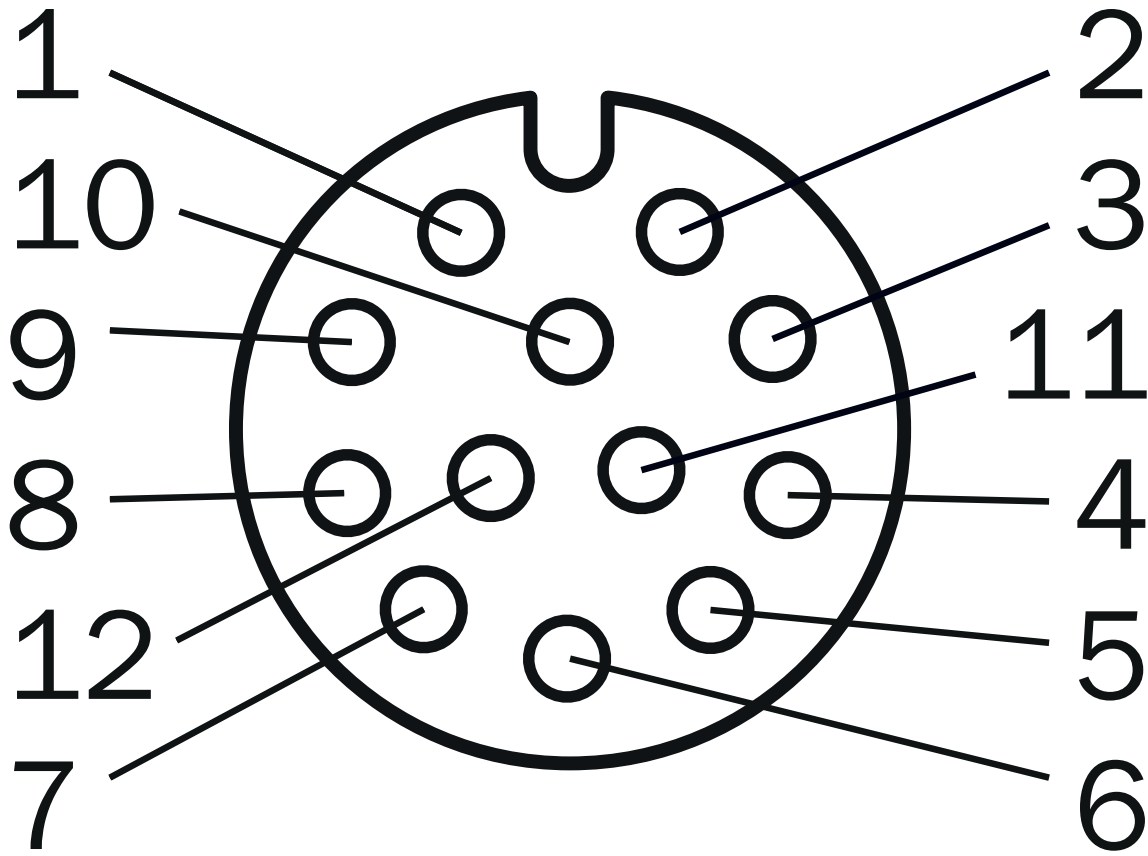


M12 female connector, 4-pin, D-coded

- ① TX+
- ② RX+
- ③ TX-

④ RX-

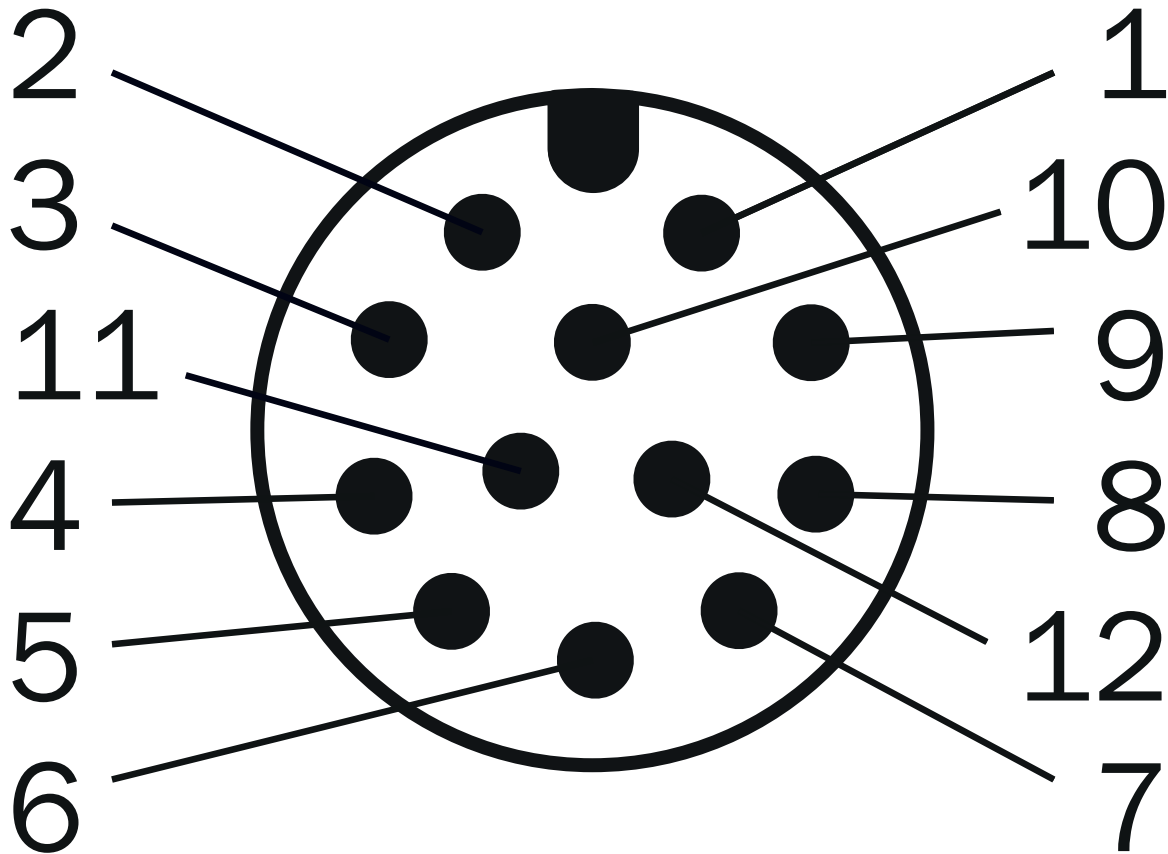
### PIN assignment Alarms



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

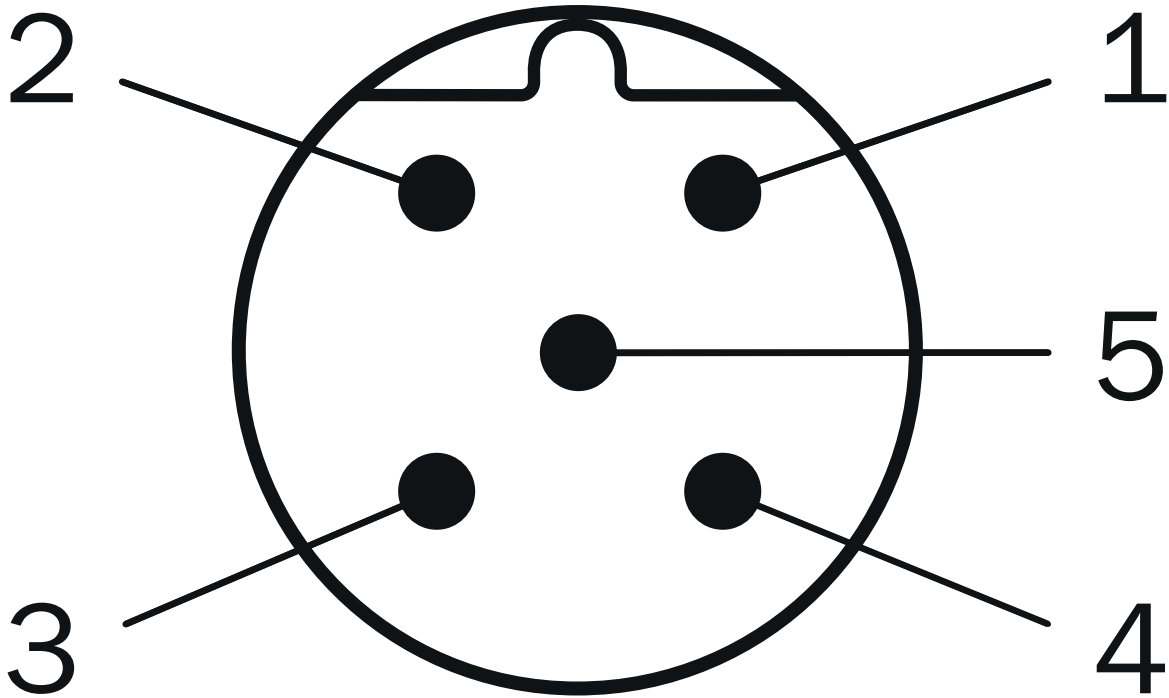
## PIN assignment Inputs



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

### PIN assignment 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](http://www.sick.com/LMS5xx)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable</li> <li><b>Material:</b> Aluminum</li> <li><b>Details:</b> Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> </ul>	Mounting kit 1	2015623
	<ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)</li> <li><b>Material:</b> Aluminum</li> <li><b>Details:</b> Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> </ul>	Mounting kit 2	2015624

	Brief description	Type	part no.
device protection and care			
	<ul style="list-style-type: none"> <li><b>Description:</b> Compact 190° weather hood, only suitable for overhead mounting of the LMS5xx, scanner must be mounted overhead</li> <li><b>Material:</b> Stainless steel V4A 1.4404</li> </ul>	Weather hood, 190°	2089593
connectors and cables			
	<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, CAT5, CAT5e, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shielded, PROFINET</li> <li><b>Application:</b> Cold bending resistant, Outdoor, Zones with oils and lubricants, seawater resistant</li> </ul>	YM2D34-050P-N4MRJA4	6054493
	<ul style="list-style-type: none"> <li><b>Description:</b> Shielded</li> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A64-050UE1XLEAX	6054495
	<ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, shielded</li> <li><b>Connection type head A:</b> Male connector, M12, 12-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, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Outdoor, Outdoor</li> </ul>	YM2A6B-050UD3XLEAX	2131103
	<ul style="list-style-type: none"> <li><b>Description:</b> Sensor/actuator cable, shielded</li> <li><b>Connection type head A:</b> Female connector, M12, 12-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, 12-wire, PUR, halogen-free</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Outdoor, Outdoor</li> </ul>	YF2A6B-050UD3XLEAX	2131105

## 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.”

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