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DATA SHEET

LMS511-22100 Heavy Duty

LMS5xx
2D LiDAR sensors

SICK Sensor Intelligence



2D LIDAR SENSORS

LMS511-22100 Heavy Duty

ORDERING INFORMATION

Type	part no.
LMS511-22100 Heavy Duty	1071996

Further device versions and accessories at www.sick.com/LMS5xx

DETAILED TECHNICAL DATA

FEATURES

Application	Outdoor, Indoor
Variant	Heavy-Duty
Resolution power	High Resolution
Light source	Infrared (905 nm, ± 10 nm)
Laser class	1 (EN/IEC 60825-1:2014, EN 60825-1:2014+A11:2021)
Aperture angle	
Horizontal	190°
Scanning frequency	25 Hz 35 Hz 50 Hz 75 Hz 100 Hz
Angular resolution	
Horizontal	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	0.2 m ... 80 m
Scanning range	
At 10% remission factor	26 m
Measurement accuracy	± 12 mm
Spot size	Divergence: 4.7 mrad At the viewing window: 13.5 mm In 26 m: 136 mm In 40 m: 202 mm

Amount of evaluated echoes	5

MECHANICS/ELECTRONICS

Connection type	4 x M12 round connector (stainless steel)
Supply voltage	24 V DC, ± 20 %
Power consumption	22 W, + 55 W heating (typical)
Housing material	AlSi12
Housing color	Gray (RAL 7032)
Window material	Polycarbonate, scratch-resistant coating
Enclosure rating	IP65 (EN 60529, Section 14.2.7) 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
MTTFd	> 100 years

SAFETY-RELATED PARAMETERS

$MTTF_D$	> 100 years

PERFORMANCE

Response time	≥ 10 ms
Detectable object shape	Almost any
Systematic error	± 25 mm (1 m ... 10 m) ± 35 mm (10 m ... 20 m) [1]
Statistical error	7 mm (1 m ... 10 m) 9 mm (10 m ... 20 m) [1]
Integrated application	Field evaluation Output of measurement data
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, UDP/IP
	Function	Host and AUX, 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	Service interface
Digital inputs/outputs	
Inputs	4 (Digital, encoder (HTL), synchronization)
Outputs	6 (digital)
Optical indicators	5 LEDs (Additional 7-segment display)
Parameter storage	Integrated into system plug with cloning parameter memory

AMBIENT DATA

Remission factor	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.

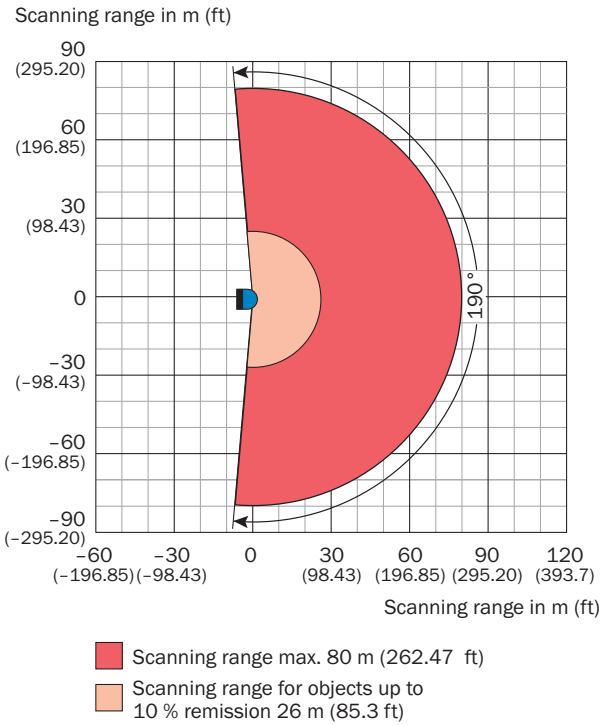
GENERAL NOTES

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

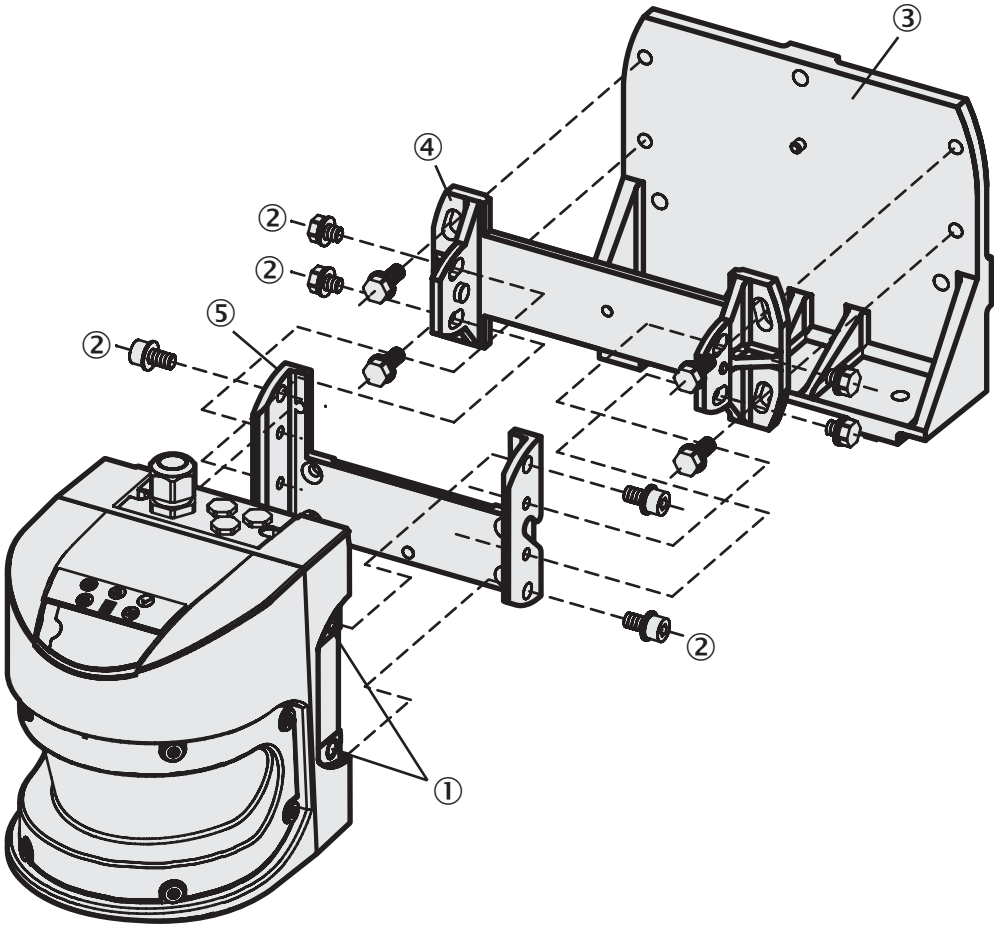
CERTIFICATES

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

WORKING RANGE DIAGRAM

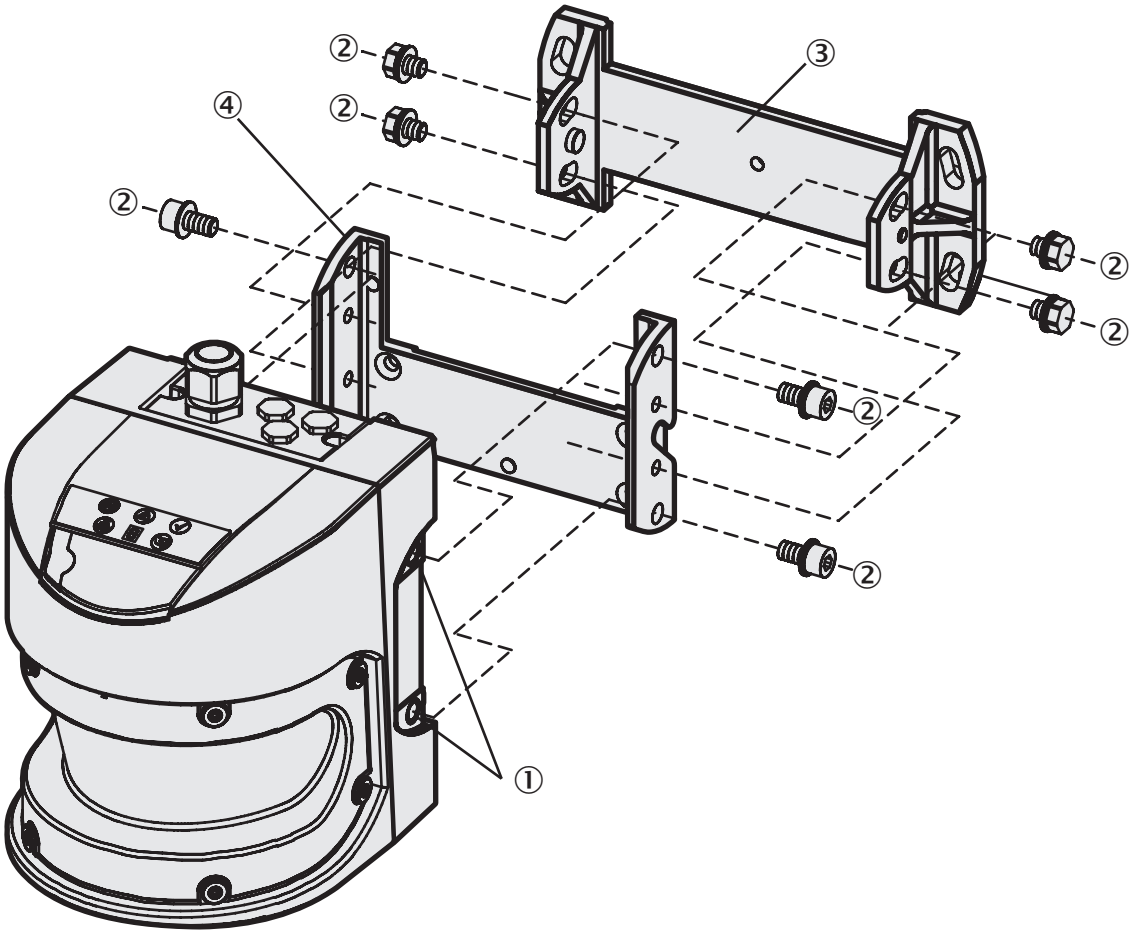


ASSEMBLY NOTE



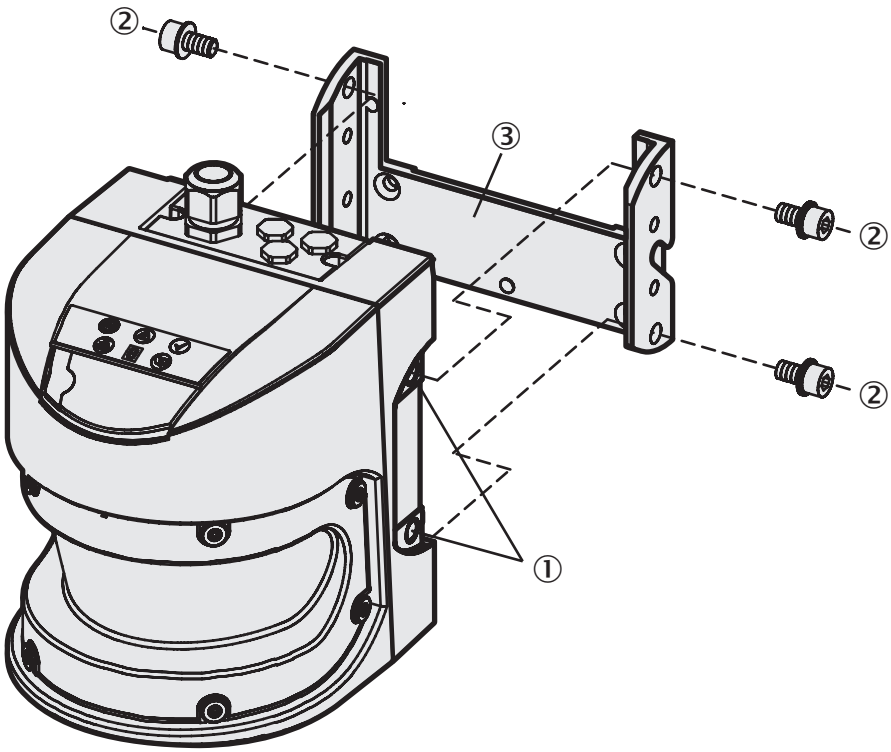
① threaded holes M8x9
② Mounting screws
③ Mounting kit 3
④ Mounting kit 2
⑤ Mounting kit 1

ASSEMBLY NOTE



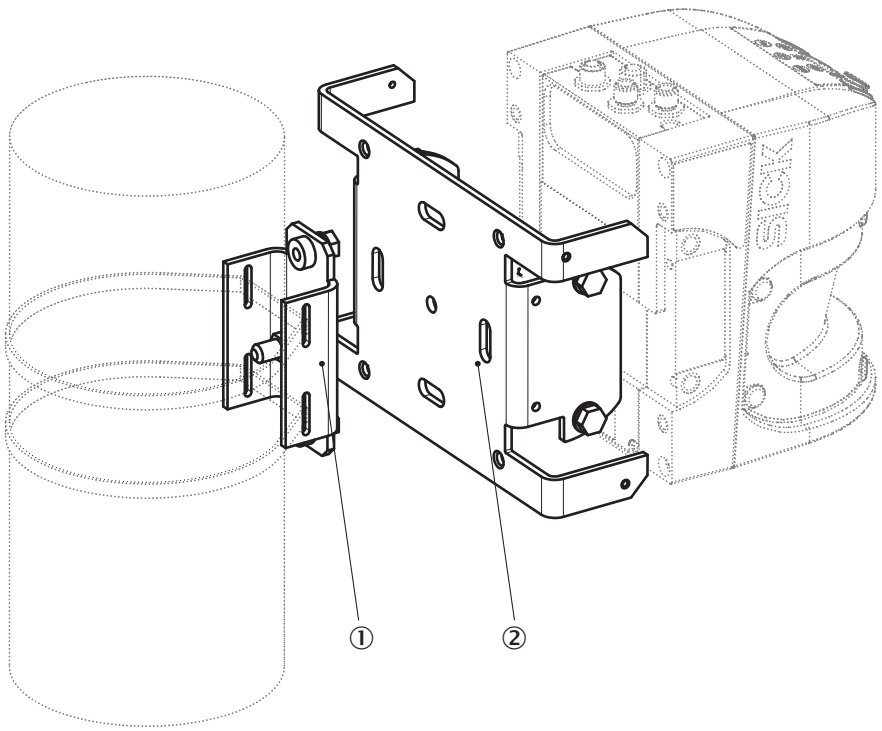
① threaded holes M8x9
② Fixing screw
③ Mounting kit 2
④ Mounting kit 1

ASSEMBLY NOTE



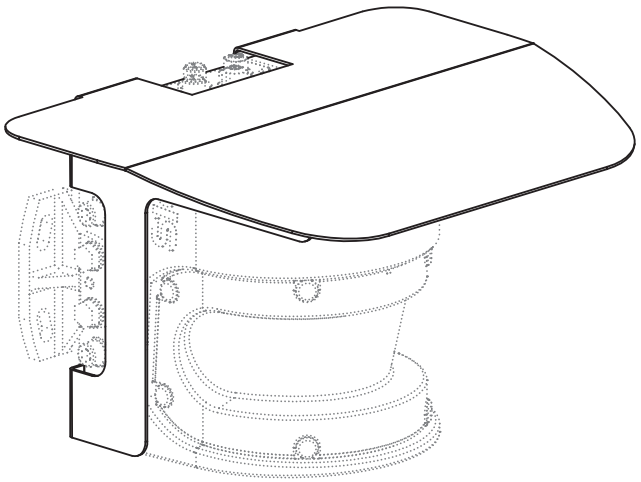
① threaded holes M8x9
② Mounting screws
③ Mounting kit 1

ASSEMBLY NOTE

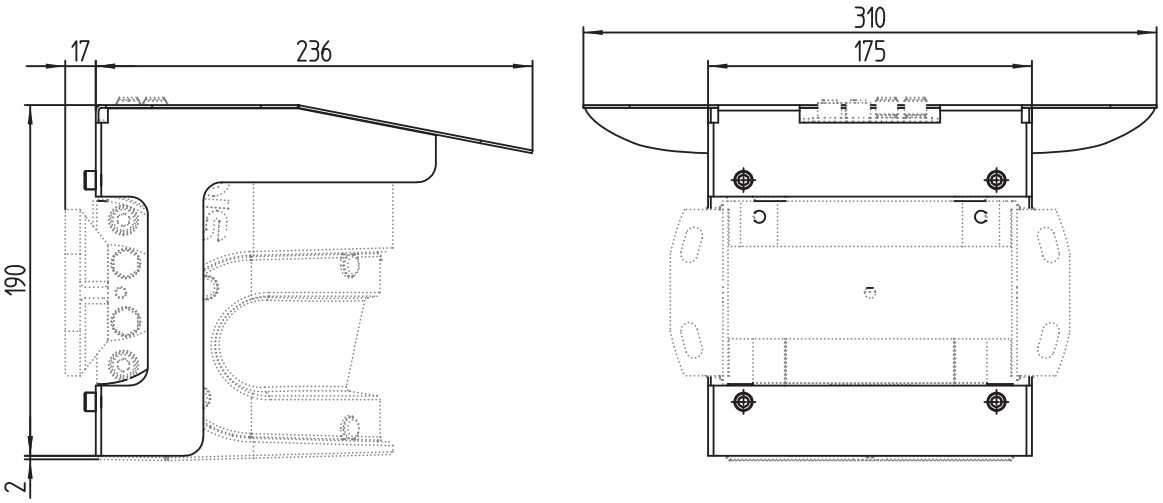


① Post bracket
② Mounting bracket 2059271

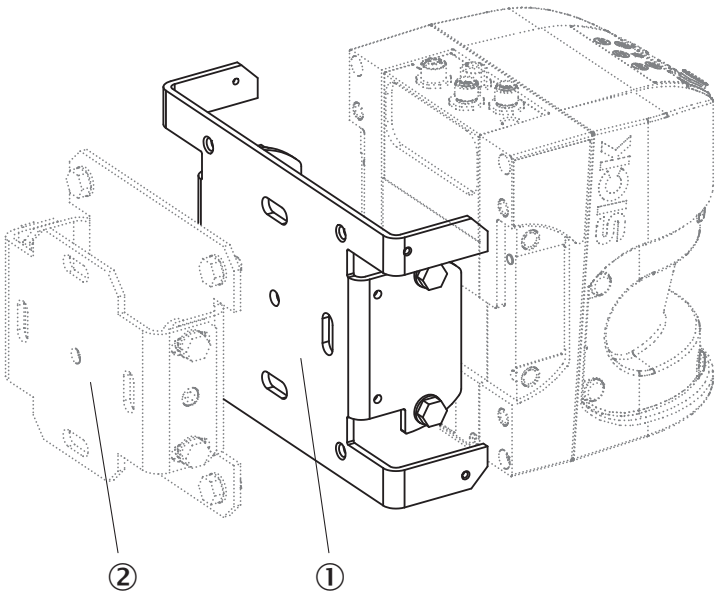
ASSEMBLY NOTE



ASSEMBLY NOTE

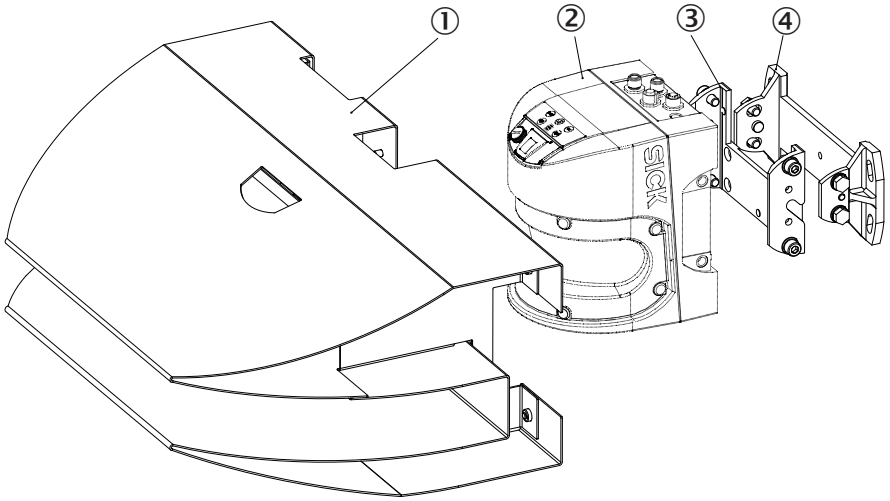


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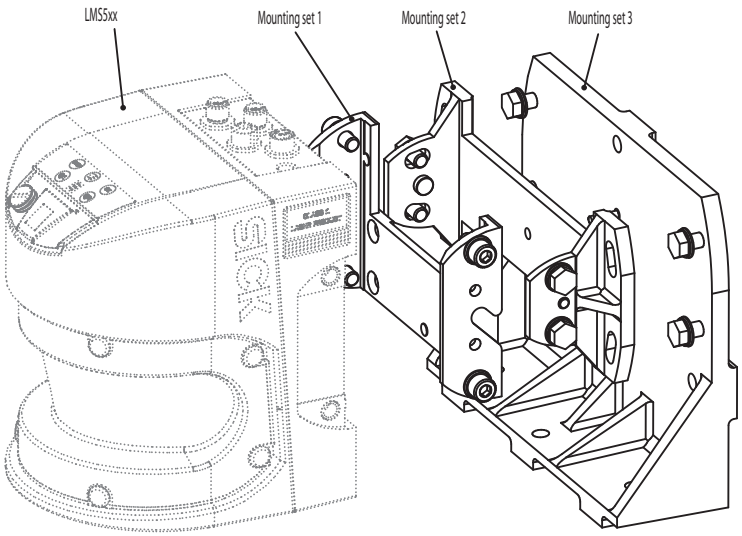
① Mounting bracket 2059271
② Mounting bracket 2018303

ASSEMBLY NOTE

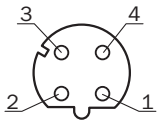


① Weather hood
② LMS5xx
③ Mounting kit 1
④ Mounting kit 2

ASSEMBLY NOTE

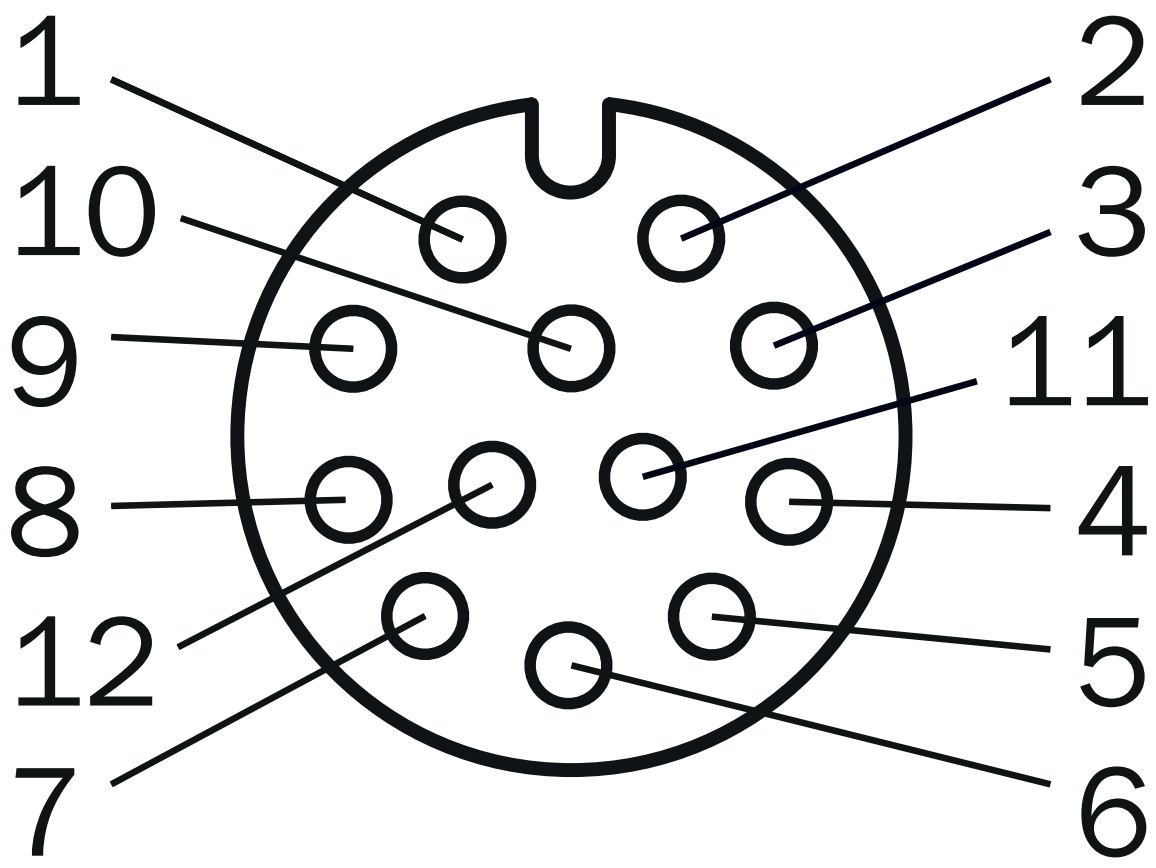


CONNECTION TYPE ETHERNET



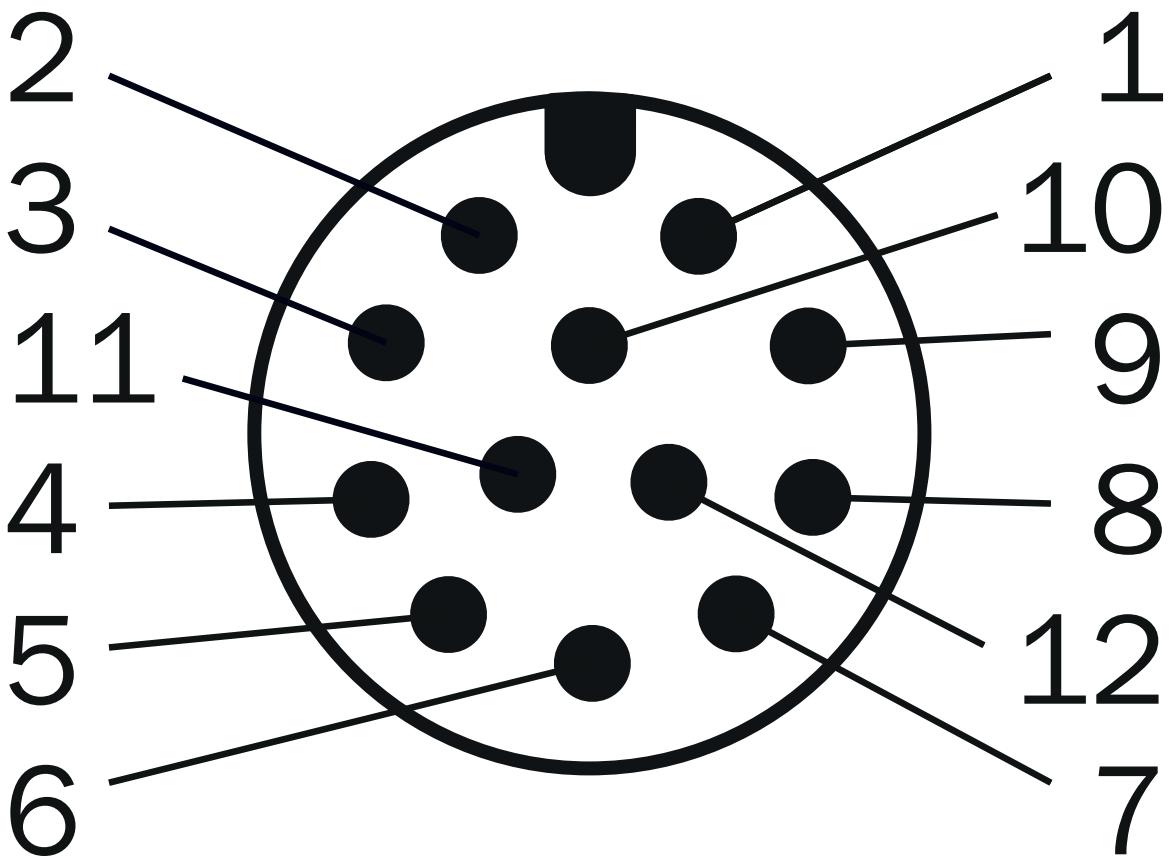
M12 female connector, 4-pin, D-coded
① TX+
② RX+
③ TX-
④ RX-

PIN ASSIGNMENT I/O



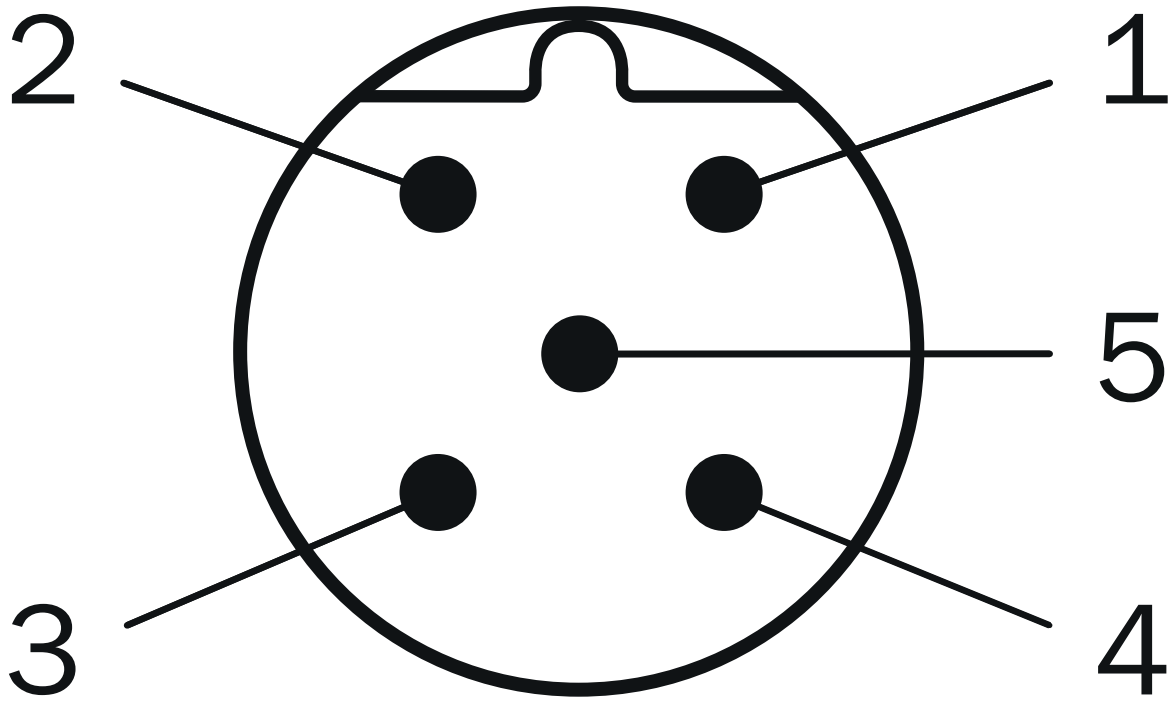
M12, 12-pin female connector, A-coded (I/O)
① V_S OUT
② GND IN1/2
③ In_1
④ GND IN3/4/IN Sync
⑤ In_2
⑥ In3
⑦ GND Out 3 ... 6
⑧ IN4/IN Sync
⑨ OUT3
⑩ OUT4
⑪ OUT5
⑫ OUT6/OUT Sync

PIN ASSIGNMENT DATA



M12, 12-pin male connector, A-coded
① V_S OUT
② RD-/RxD
③ OUT1
④ GND RS/CAN
⑤ OUT2
⑥ Reserved
⑦ TD-/TxD
⑧ Reserved
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.

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1071996

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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