Data sheet

LMS4521R-16000

LMS4000

2D LIDAR SENSORS

SICK
Sensor Intelligence.

Ordering information

Type	part no.
LMS4521R-16000	1086802

Other models and accessories ➜ www.sick.com/LMS4000

Detailed technical data

Features

Application	Indoor
Reading field	Front
Light source	Visible red light (660 nm)
Laser class	2 (IEC 60825-1:2014, EN 60825-1:2014)
Aperture angle	
Horizontal	70°
Scanning frequency	600 Hz
Angular resolution	
Horizontal	0.0833°
Working range	0.7 m ... 3 m
Scanning range	
At 2% remission	3 m
At 3,5% remission	3 m
At 10% remission factor	3 m

Mechanics/electronics

Connection type	1 x M12, 5-pin plug (CAN In) 1 x M12, 5-pin female connector (CAN Out) 1 x M12, 8-pin female connector (Ethernet) 1 x M12, 5-pin female connector (encoder + sync)
Supply voltage	24 V DC, ± 25 %
Power consumption	≤ 16 W, start-up phase max. 29 W
Output current	≤ 100 mA
Housing material	Aluminum die cast
Housing color	Light blue (RAL 5012)
Enclosure rating	IP65
Protection class	III
Electrical safety	IEC 61010-1:2011
Weight	3.7 kg
Dimensions (L x W x H)	397 mm x 370 mm x 107 mm
MTBF	80 years

Safety-related parameters

$MTTF_D$	> 100 years

Performance

Scan/frame rate	504,600 measurement point/s
Response time	≥ 4.8 ms
Detectable object shape	Almost any
Systematic error	± 1 mm [1]
Statistical error	1.5 mm [1]
Integrated application	Output of measurement data
Filter	Rectangular filter Edge filter Median filter Gloss compensation Average filter

[1] Typical value; actual value depends on environmental conditions.

Interfaces

Ethernet	✓ , TCP/IP
Function	Measurement data output (distance, RSSI, angle, quality)
Data transmission rate	100 Mbit/s ... 1,000 Mbit/s, half/full-duplex
CAN	✓
Function	SICK CAN sensor network CSN (secondary)
Data transmission rate	20 kbit/s ... 1 Mbit/s
Encoder inputs	2 (phase A, phase B)
Synchronization inputs/outputs	One (master / slave)
Optical indicators	4 LEDs
Configuration software	SOPAS ET
Maximum encoder frequency	Max. 50 kHz

Ambient data

Object remission	2 % ... 200 %
Electromagnetic compatibility (EMC)	EN 61000-6-3:2007+A1:2011 / IEC 61000-6-3:2006+AMD1:2010
Vibration resistance	EN 60068-2-6:2007
Shock resistance	EN 60068-2-27:2008
Ambient operating temperature	–10 °C ... +50 °C [1]
Storage temperature	–20 °C ... +70 °C
Permissible relative humidity	≤ 90 %, Non-condensing
Ambient light immunity	2,000 lx

[1] Initialization phase: 0 °C ... 50 °C.

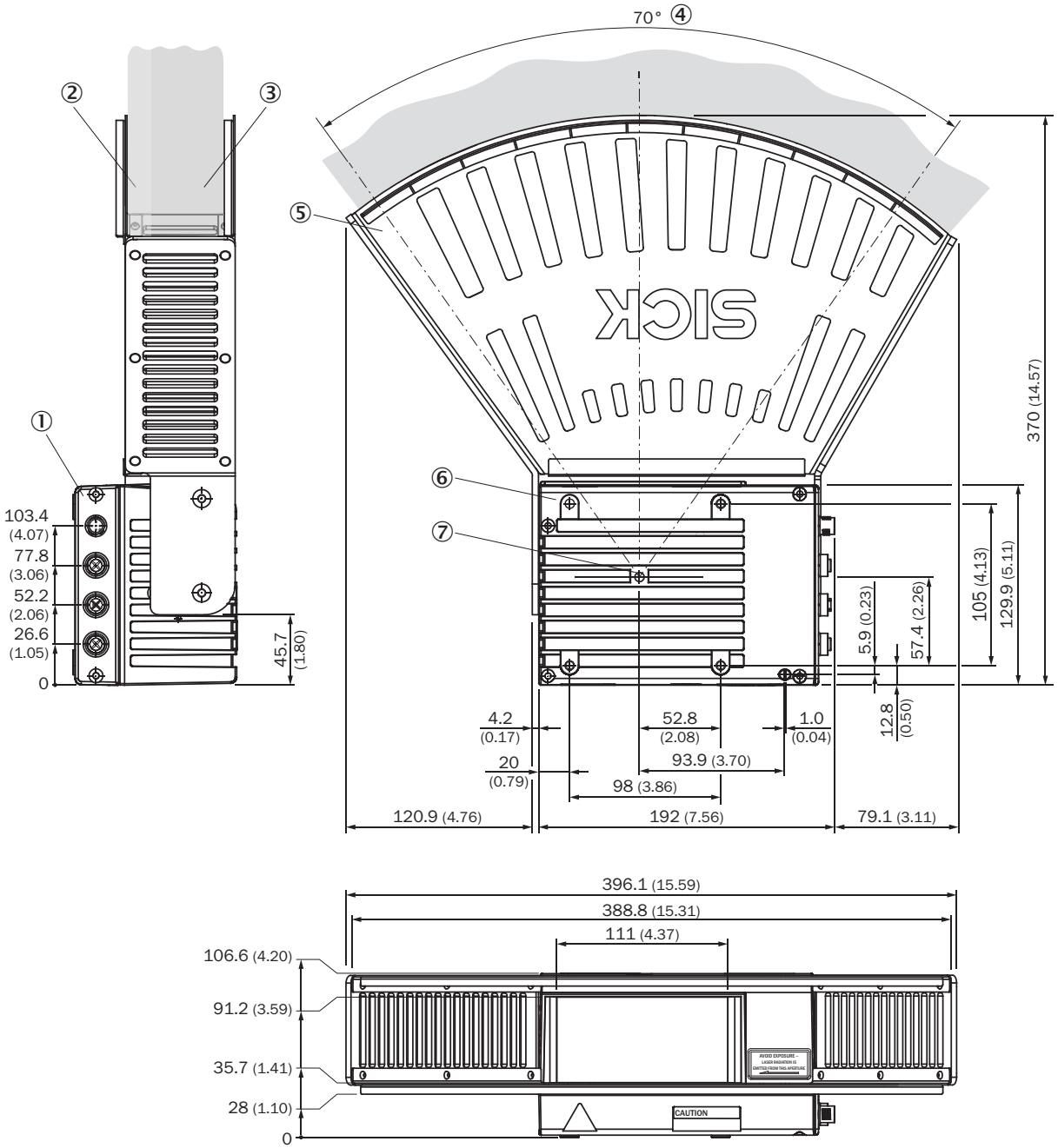
General notes

Note on use	The sensor does not constitute a safety component as defined by relevant legislation on machine safety. Use in legal-for-trade volume measurement systems (LFT) from SICK.

Classifications

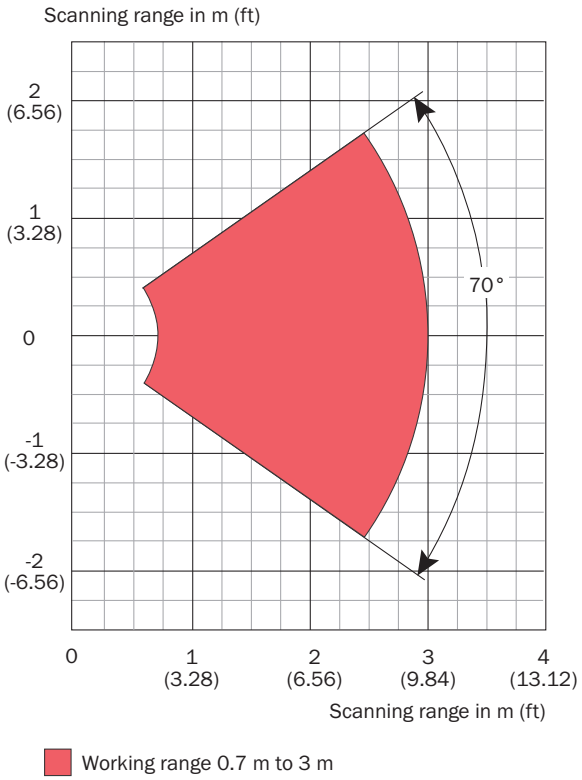
ECLASS 5.0	27270990
ECLASS 5.1.4	27270990
ECLASS 6.0	27270913
ECLASS 6.2	27270913
ECLASS 7.0	27270913
ECLASS 8.0	27270913
ECLASS 8.1	27270913
ECLASS 9.0	27270913
ECLASS 10.0	27270913
ECLASS 11.0	27270913
ECLASS 12.0	27270913
ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002550
ETIM 8.0	EC002550
UNSPSC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

Dimensional drawing LMS4x2x head with laser protection cover

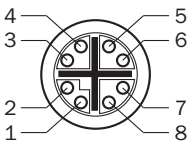


Dimensions in mm (inch)
① interfaces, types and number can vary
② Sending area
③ receiving area
④ aperture angle
⑤ Optical hood
⑥ reference boreholes
⑦ Distance measurement zero point

Working range diagram

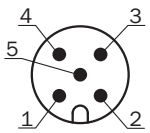


gigabit Ethernet



M12, 8-pin socket, X-coded (Gigabit Ethernet)
① TRD0_P
② TRD0_N
③ TRD1_P
④ TRD1_N
⑤ TRD3_P
⑥ TRD3_N
⑦ TRD2_P
⑧ TRD2_N

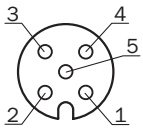
PIN assignment CAN In



Connector M12, 5-pin, A-coded
① shield

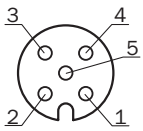
② 24 V DC ± 25 %
③ GND
④ CAN HIGH
⑤ CAN LOW

PIN assignment CAN Out



Female connector M12, 5-pin, A-coded
① shield
② 24 V DC ± 25 %
③ GND
④ CAN HIGH
⑤ CAN LOW

PIN assignment Encoders



Female connector M12, 5-pin, A-coded
① 24 V DC ± 25 %
② Encoders B
③ GND
④ Encoders A
⑤ SYNC

Recommended accessories

Other models and accessories ➜ www.sick.com/LMS4000

	Brief description	Type	part no.
connectors and cables			
	• **Connection type head A:** Female connector, M12, 5-pin, A-coded • **Connection type head B:** Flying leads • **Signal type:** Power, CAN • **Cable:** 5 m, 5-wire • **Description:** Power, unshielded, CAN	DOL-1205-G05M_Can	6021166
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded • **Signal type:** DeviceNet™, CANopen • **Cable:** 5 m, PUR, halogen-free • **Description:** DeviceNet™, shielded, CANopen	CAN cable (male connector - female connector)	6021168
	Strich		On request
	Strich		On request
	• **Connection type head A:** Male connector, M12, 8-pin, straight, X-coded • **Connection type head B:** Male connector, RJ45, 8-pin, straight • **Signal type:** Ethernet, Gigabit Ethernet • **Cable:** 5 m, 8-wire, PUR, halogen-free • **Description:** Ethernet, shielded, Gigabit Ethernet • **Application:** Zones with oils and lubricants	YM2X18-050EG1M-RJA8	2106259
Power supply units and power supply cables			
	Strich		On request
Mounting systems			
	• **Description:** Holder for Item Profile	Alignment bracket	2030421
Measuring wheel encoders			
	Strich		On request

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