LRS4581R-230001

LRS4000

2D LIDAR SENSORS

SICK
Sensor Intelligence.

LRS4581R-230001 | LRS4000

2D LIDAR SENSORS

Ordering information

Type	part no.
LRS4581R-230001	1098855

Other models and accessories ➜ www.sick.com/LRS4000

CE ☑ UK CA

Detailed technical data

Features

Application	Outdoor, Indoor
Light source	Infrared (886 nm, (max. output power 7.7 W; pulse duration 2.44 ns))
Laser class	1, Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed.3., as described in "Laser Notice No. 56" dated May 8, 2019 (IEC 60825-1:2014, EN 60825-1:2014)
Aperture angle	
Horizontal	360°
Scanning frequency	12.5 Hz 25 Hz
Angular resolution	
Horizontal	0.02°
	0.04°
	0.06°
	0.08°
	0.1°
	0.12°
	0.24°
Heating	Self-heating
Working range	0.2 m … 300 m
Scanning range	
At 10% remission factor	120 m
At 90% remission factor	250 m
Spot size	2.6 mrad x 0.4 mrad (Single spot) 2.6 mrad x 0.4 mrad (+ angular resolution for HDDM[+])
Amount of evaluated echoes	3

Mechanics/electronics

Connection type	3 x M12, stainless steel
Supply voltage	10 V DC … 30 V DC
Power consumption	Typ. 13 W, Max. 20 W

Output current	≤ 0.25 A
Housing material	AlSi12
Housing color	Gray (RAL 7042)
Optical hood	Polycarbonate (PC)
Enclosure rating	IP65 (IEC 60529:1989+AMD1:1999+AMD2:2013) IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013)
Protection class	III (IEC 61140:2016-11)
Electrical safety	IEC 61010-1:2010-06
Weight	1.7 kg
Dimensions (L x W x H)	151.9 mm x 150 mm x 126.7 mm

Performance

Scan/frame rate	37,500 measurement point/s … 225,000 measurement point/s
Response time	≥ 40 ms
Detectable object shape	Almost any
Systematic error	± 15 mm
Statistical error	< 10 mm
Temperature drift	± 0.2 mm/K
Integrated application	Field evaluation Output of measurement data
Number of field sets	16 fields
Filter	Median filter Average filter Particle filter

Interfaces

Ethernet	✓ , TCP/IP, UDP/IP
Function	Data interface (read result output)
Data transmission rate	10/100 MBit/s
Digital inputs/outputs	
Inputs	6
Outputs	6
Encoder inputs	2
Optical indicators	LEDs
Configuration software	Web server

Ambient data

Object remission	2 % … 1,000 % (Reflector)
Electromagnetic compatibility (EMC)	
Emitted radiation	Residential area (EN 61000-6-3:2007+AMD:A1:2011)
Electromagnetic immunity	Industrial environment (EN 61000-6-2:2005)
Vibration resistance	
Sine test	10 Hz … 500 Hz, 5 g, 10 frequency cycles [1]
Shock resistance	50 g, 11 ms, 6 shocks per axis [2]

[1] EN 60068-2-6:2007.

[2] EN 60068-2-27:2008.

	25 g, 6 ms, 1000 shocks per axis [2]
Ambient operating temperature	−30 °C … +50 °C
Storage temperature	−40 °C … +75 °C
Permissible relative humidity	≤ 90 %, Non-condensing
Ambient light immunity	80 klx

[1] EN 60068-2-6:2007.
[2] EN 60068-2-27:2008.

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)	✓

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
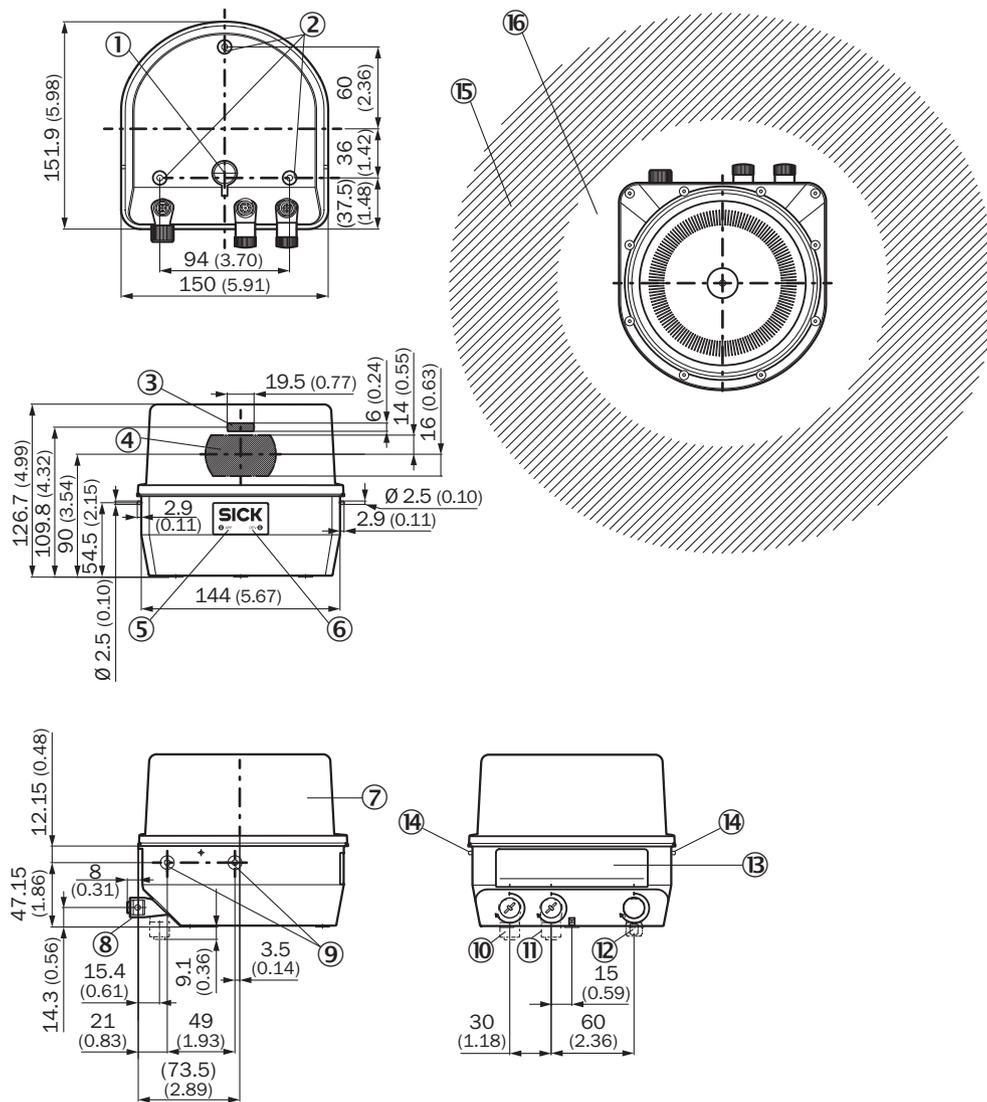
Dimensions in mm (inch)
① Gore-Tex membrane
② Fixing hole M5 x 7.5 (3 x)
③ sender
④ receiver
⑤ LED APP
⑥ LED DEV
⑦ Optical hood
⑧ Rotatable connections (max. 270°)
⑨ Fixing hole M5 x 7.5 (2 x)
⑩ Ethernet connection
⑪ I/O connection
⑫ POWER connection
⑬ type label
⑭ Locating pin for hooking into the bracket during mounting
⑮ Measuring range > 500 mm
⑯ Near range < 500 mm

Working range diagram

Scanning range in m ①

Scanning range in m ①
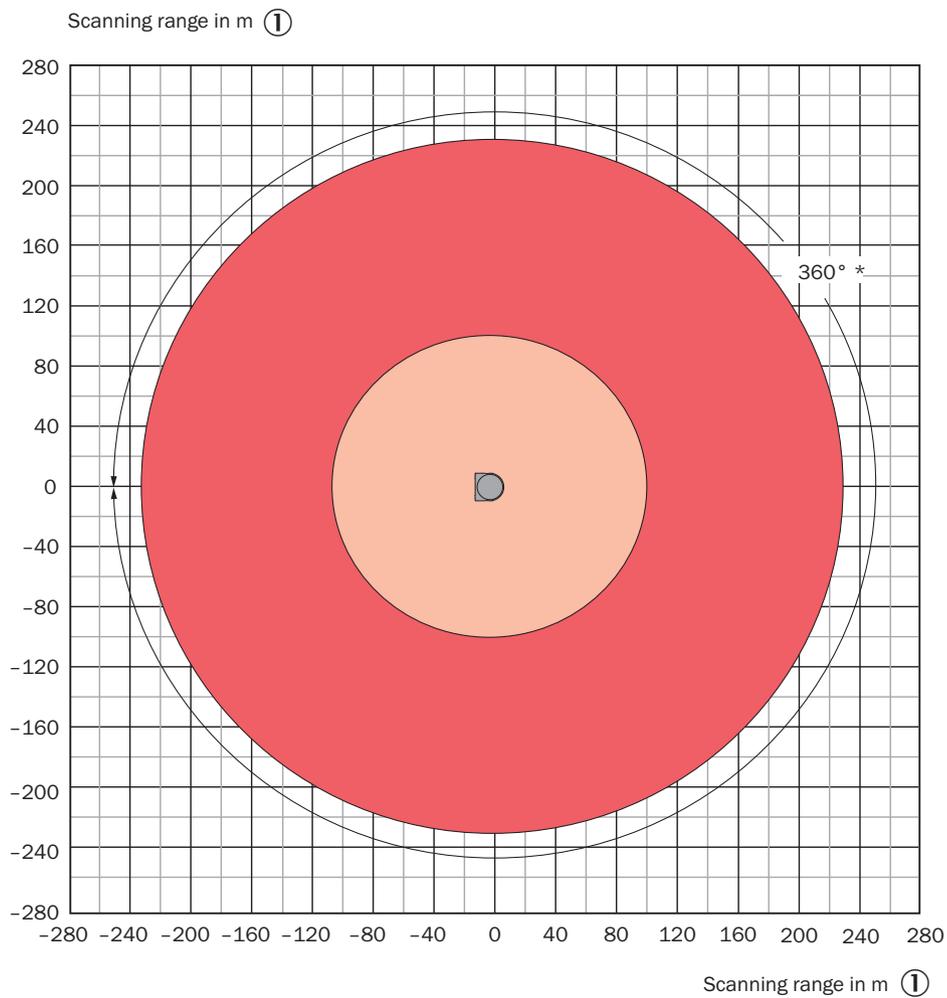
* With the angular resolution 0.02°/12.5 Hz and
0.04°/25 Hz, the aperture angle is limited to 288° ②

Scanning range max. for objects up to 90 % Remission 250 m ③

Scanning range for objects up to 10 % Remission 80 m ④

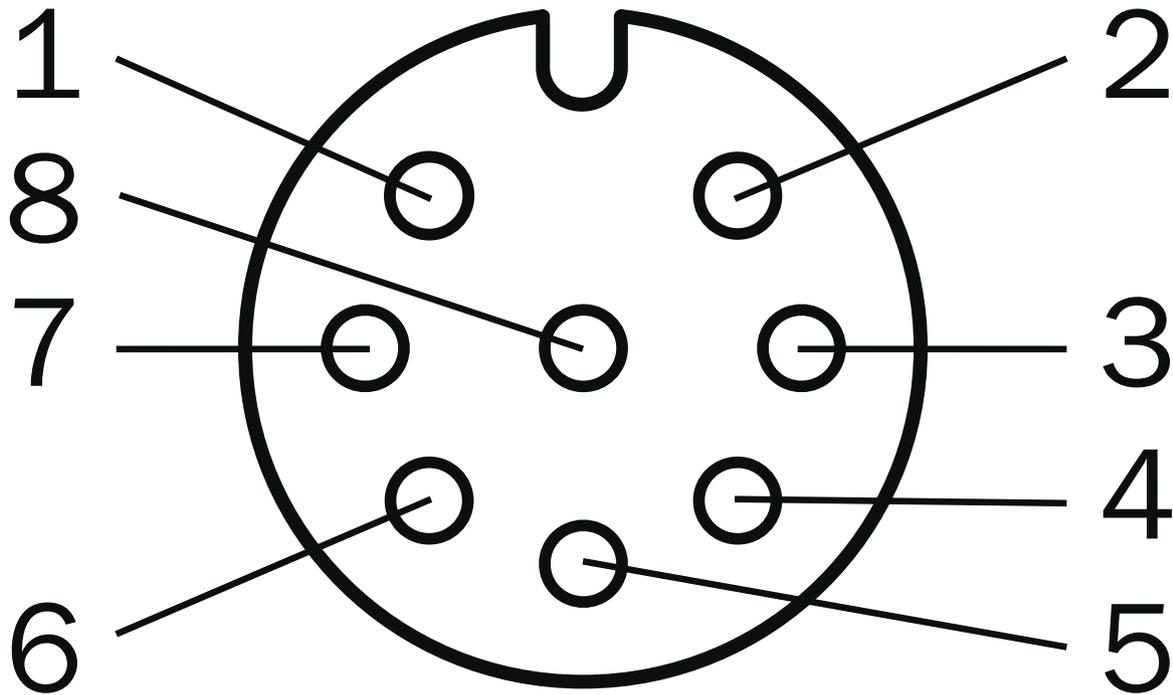① Scanning range in m
② The aperture angle is limited to 288° with angular resolution 0.020°/12.5 Hz and 0.040°/25 Hz
③ Scanning range for objects with up to 90% remission factor, 250 m
④ Scanning range for objects with up to 10% remission factor, 100 m

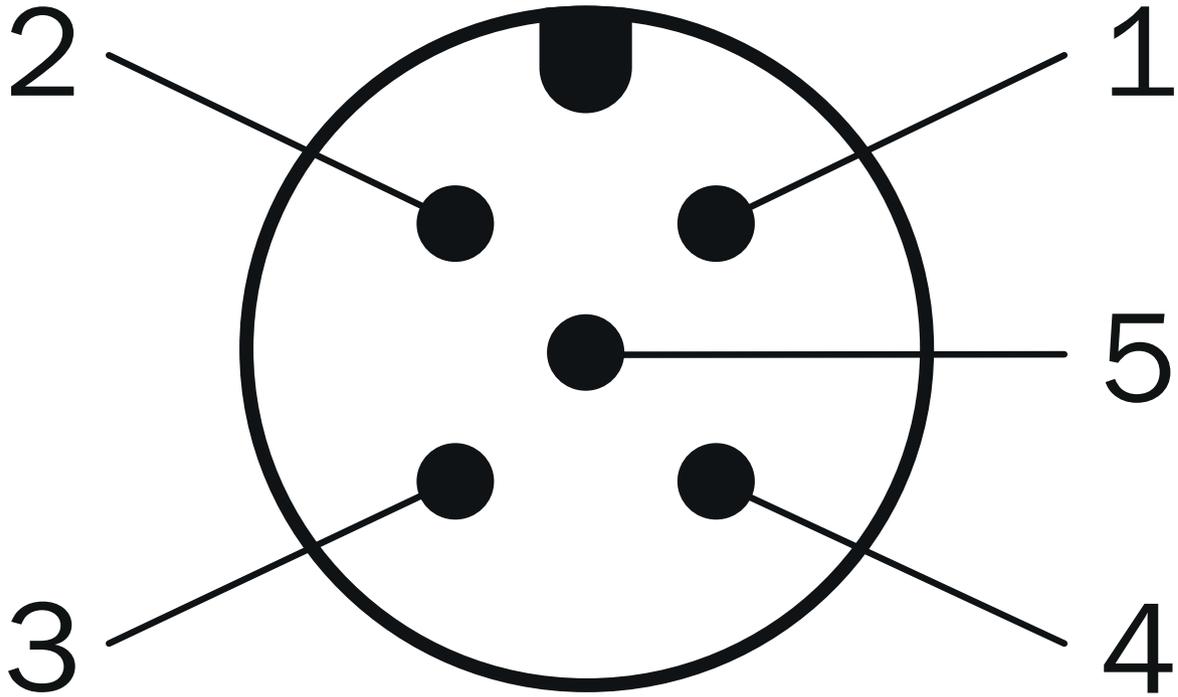## PIN assignment I/O connection

female connector M12, 8-pin, A-coded
① In$_1$
② In$_2$
③ IN3/OUT3
④ IN4/OUT4
⑤ IN5/OUT5
⑥ IN6/OUT6
⑦ GND INx/OUTx
⑧ IN7/OUT7

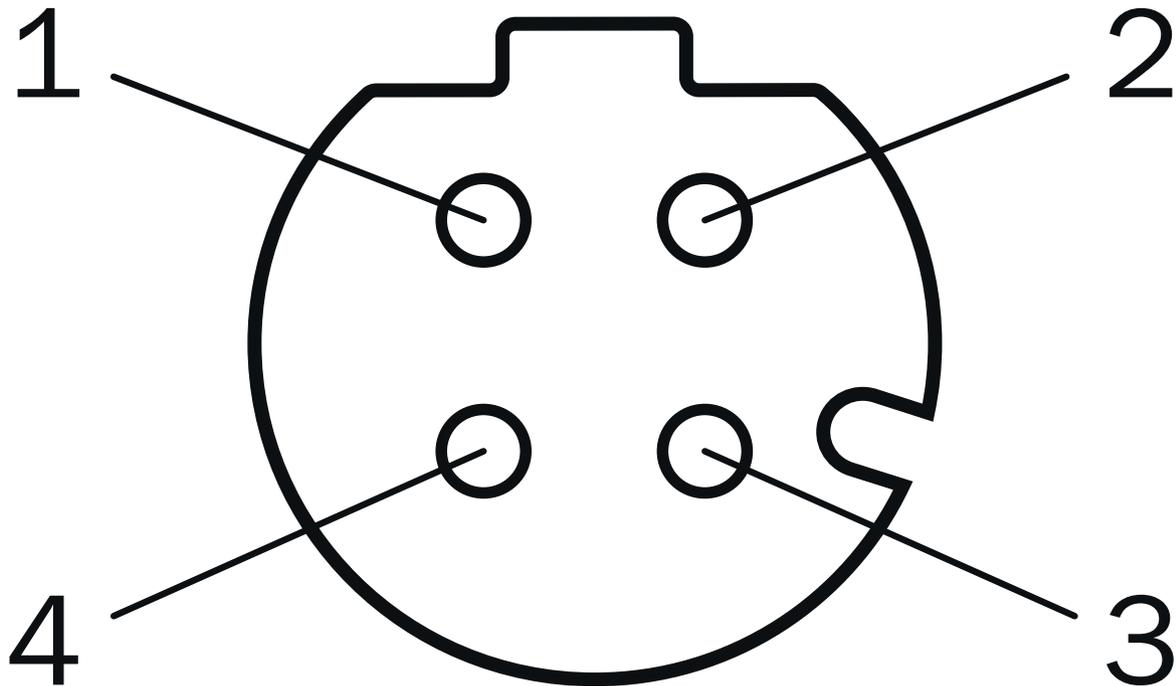## PIN assignment POWER connection

male connector M12, 5-pin, A-coded
① V_s
② Reserved
③ GND
④ IN8/OUT8
⑤ Reserved

PIN assignment "Ethernet" connection

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

Recommended accessories

Other models and accessories ➜ www.sick.com/LRS4000

	Brief description	Type	part no.
connectors and cables			
	• **Connection type head A:** Female connector, M12, 5-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 10 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, shielded • **Connection systems:** Flying leads • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A65-100UE2XLEAX	2093090
	• **Connection type head A:** Male connector, M12, 4-pin, straight, D-coded • **Connection type head B:** Male connector, RJ45, 4-pin, straight • **Signal type:** Ethernet, PROFINET • **Cable:** 10 m, 4-wire, CAT5, CAT5e, PUR, halogen-free • **Description:** Ethernet, shielded, PROFINET • **Application:** Cold bending resistant, Outdoor, Zones with oils and lubricants, seawater resistant	YM2D34-100P-N4MRJA4	6054492
	• **Connection type head A:** Male connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 10 m, 8-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, shielded • **Connection systems:** Flying leads • **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YM2A68-100UA6XLEAX	6054490
	• **Connection type head A:** Male connector, M12, 4-pin, straight, D-coded • **Connection type head B:** Male connector, RJ45, 4-pin, straight • **Signal type:** Ethernet, PROFINET • **Cable:** 30 m, 4-wire, CAT5, CAT5e, PUR, halogen-free • **Description:** Ethernet, shielded, PROFINET • **Application:** Cold bending resistant, Outdoor, Zones with oils and lubricants, seawater resistant	YM2D34-300P-N4MRJA4	2142315
Mounting systems			
	• **Description:** Easy Mount • **Dimensions (W x H x L):** 86 mm x 46 mm x 180 mm • **Material:** Stainless steel • **Details:** X6CRNITI1810 (1.4541) • **Items supplied:** Mounting kit 1a (2034324), 4 x M5 x 10 countersunk screws, stainless steel • **Suitable for:** LMS1000, MRS1000, LRS4000	Mounting kit 1a	2093194

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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