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DATA SHEET

PICS150-01000 Core

picoScan100
2D LiDAR sensors

SICK Sensor Intelligence



2D LIDAR SENSORS

PICS150-01000 Core

ORDERING INFORMATION

Type	part no.
PICS150-01000 Core	1151314

Further device versions and accessories at www.sick.com/picoScan100

DETAILED TECHNICAL DATA

FEATURES

Application	Indoor, Outdoor
Technology	2D LiDAR
Variant	Standard (not pre-configured)
Measurement principle	HDDM+
Light source	Infrared (940 nm)
Spot divergence	
Vertical	4.8 mrad (0,27°)
Horizontal	4.8 mrad (0,27°)
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014+A11:2021)
Aperture angle	
Horizontal	276°
Scanning frequency	15 Hz 25 Hz Depends on the Dynamic Sensing Profile [1]
Angular resolution	
Horizontal	0.25° 0.33° 1° Depends on the Dynamic Sensing Profile [1]
Scan field flatness	± 1°
Working range	0.05 m ... 25 m [1]
Scanning range	
At 90% remission factor and 10 klx	25 m
At 10% remission factor and 10 klx	12 m
Spot size	On the front screen 8 mm
Amount of evaluated echoes	3
$MTTF_D$	> 100 years, at 25 °C ambient temperature (EN ISO 13849-1:2015)
Security Support Period	

[1] For details, see the working range diagram in the technical drawings section.

End date of the support period	2034-11

[1] For details, see the working range diagram in the technical drawings section.

MECHANICS/ELECTRONICS

Connection type	1 x “Ethernet” connection, 4-pin M12 female connector, D-coded 1 x “POWER” connection, 12-pin M12 plug, A-coded
System plug	See system plug 2130871, Assembled to the rear
Supply voltage	9 V DC ... 30 V DC
Power consumption	Typ. 4.5 W, max. 17 W with loaded digital outputs, see system plug 2130871
Output current	≤ 200 mA
Housing material	AlSi12, Optics cover: polycarbonate
Housing color	Anthracite gray (RAL 7016)
Enclosure rating	IP65 (IEC 60529:1989+AMD1:1999+AMD2:2013) [1] IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013) [1]
Protection class	III (IEC 61140:2016-11)
Electrical safety	IEC 61010-1:2010-06+AMD1:2016
Weight	220 g, without system plug
Dimensions (L x W x H)	60 mm x 60 mm x 82 mm
Ventilation element	Yes
MTBF	> 100 years

[1] With system plug connected.

FUNCTIONS

Digital add-ons	Reliability package Multi-echo technology

PERFORMANCE

Data output per scan segment	Segment size 30° at ≤ 25 Hz, Segment size 60° at ≥ 30 Hz
Scan/frame rate	12,546 measurement point/s ... 264,963 measurement point/s, Depends on the Dynamic Sensing Profile and number of echoes
Detectable object shape	Almost any
Systematic error	Typ. ± 20 mm [1] Max. ± 30 mm
Statistical error	≤ 2 mm (0.05 m ... 5 m) [2]
Integrated application	2D Object Detection
Number of field sets	48 fields
Simultaneous evaluation cases	Max. 20 (The number of simultaneous evaluation cases depends on the field geometry)

[1] Typical value; real value depends on ambient conditions and the selected Dynamic Sensing Profile.

[2] 10 klx and 100 klx; 1 σ.

INTERFACES

Ethernet	✓
Function	Field status information, DHCP, NTP
Data transmission rate	10 Mbit/s ... 100 Mbit/s, half/full-duplex
Digital inputs/outputs	6, customizable, see system plug 2130871
Optical indicators	2 LEDs
Configuration software	SOPAS Air (browser based) REST API
Driver	ROS1, ROS2, C++, Python

AMBIENT DATA

Remission factor	1.8 % ... > 1,000 % (Reflector)
Electromagnetic compatibility (EMC)	
Emitted radiation	Industrial environment (IEC 61000-6-4:2018 / EN IEC 61000-6-4:2019 / IEC 61000-6-4:2006+A1:2010 / EN 61000-6-4:2007+A1:2011)
Emitted radiation	Business and commercial areas as well as small enterprises (IEC 61000-6-8:2020 / EN IEC 61000-6-8:2020)
Electromagnetic immunity	Industrial environment (IEC 61000-6-2:2016 / EN IEC 61000-6-2:2019 / IEC 61000-6-2:2005 / EN 61000-6-2:2005 / EN 61000-6-2:2005/AC:2005)
Application areas	Automotive (UN ECE R10) [1]
Application areas	Agricultural and forestry machinery (ISO 14982-1, ISO 14982-2) [1] [2]
Application areas	Earthmoving and construction machinery (ISO 13766-1) [1] [2]
Vibration resistance	
Sine resonance scan	10 Hz ... 1,000 Hz, 1 g [3]
Sine test	10 Hz ... 500 Hz, 10 g, 10 frequency cycles [3]
Noise test	10 Hz ... 500 Hz, 13.5 g RMS, 5 h [4] Short restriction in measurement data availability possible during peak loads.
Shock resistance	100 g, 6 ms, ± 3 single shocks/axis [5] 40 g, 6 ms, ± 4,000 continuous shocks/axis [5] 50 g, 3 ms, ± 5,000 continuous shocks/axis [5] Short restriction in measurement data availability possible.
Ambient operating temperature	–33 °C ... +50 °C
Storage temperature	–40 °C ... +70 °C
Temperature change	–33 °C ... +50 °C, 10 cycles [6]
Damp heat	
Cyclical	+ 25 °C ... + 55 °C, 95 % RH, non-condensing (operation/storage/transport) (EN 60068-2-30)
Static	+ 40 °C, 93 % RH, non-condensing (operation) (EN 60068-2-78)
Relative humidity	
Operation/storage/transport	95 % RH, Non-condensing (EN 60068-2-30:2005)
Ambient light immunity	100 klx, indirect
Altitude (above sea level)	< 5,000 m

[1] Load dump: from ISO 16750-2 Test B Severity Level 4 passed for 12 V systems. Required in case of transient disturbances on the input filtering signal lines (debounce > 10 ms).

[2] The requirements of ISO 13766-1 and DIN EN ISO 14982-1 for immunity to electrostatic discharge (ESD) are only met in areas that can be easily touched from the outside.

[3] IEC 60068-2-6:2007.

[4] IEC 60068-2-64:2008.

[5] IEC 60068-2-27:2008.

[6] EN 60068-2-14:2009.

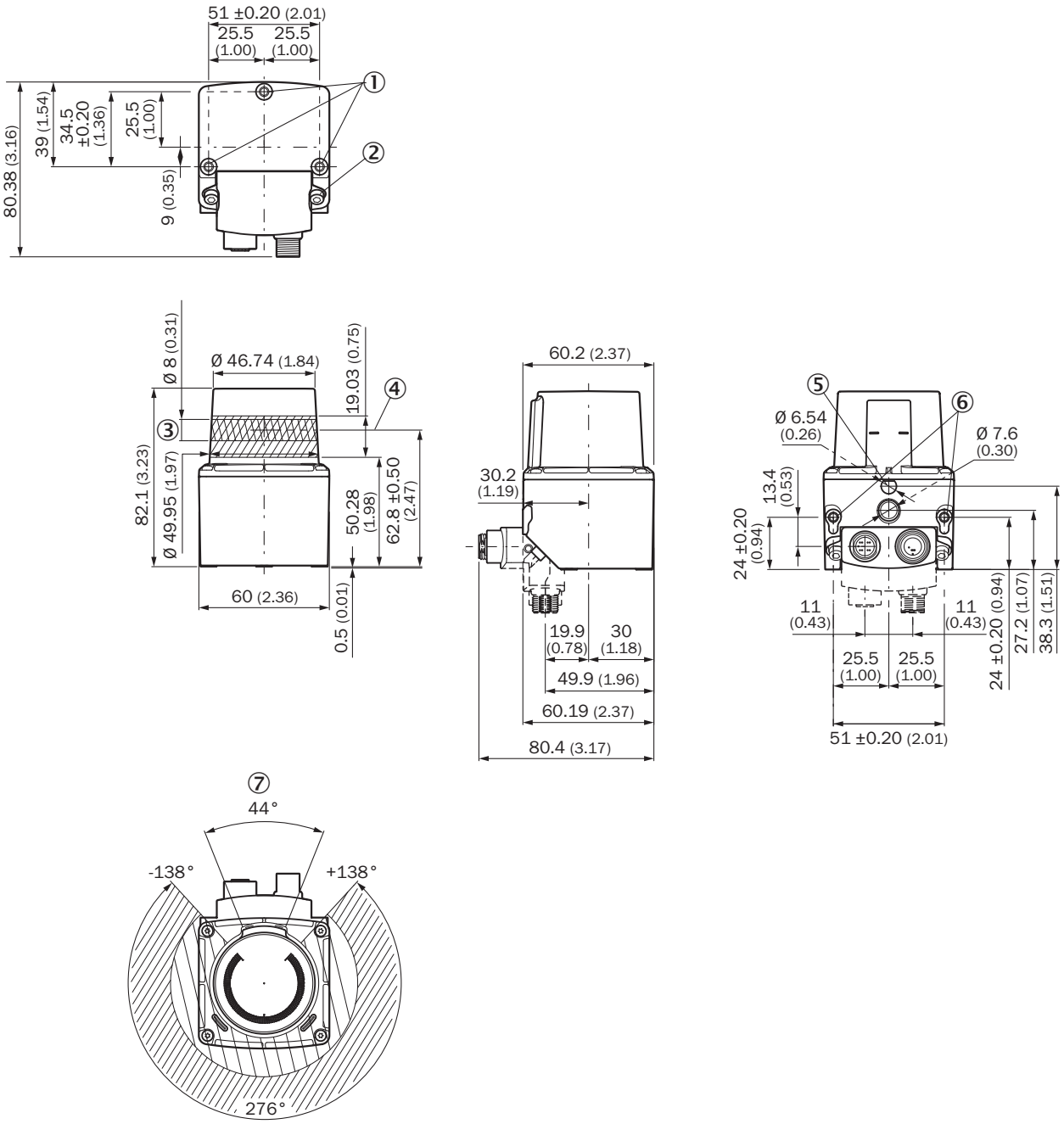
GENERAL NOTES

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

CERTIFICATES

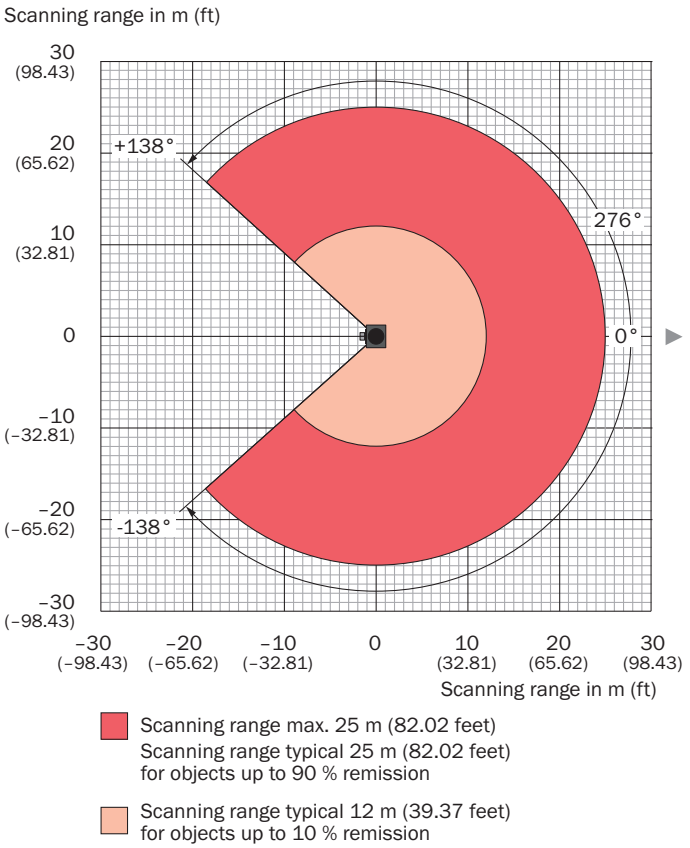
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING



Dimensions in mm (inch)
① M4 threaded mounting hole; 4.2 mm deep; tightening torque 2.5 nm
② Tightening torque 2.5 nm, screw included in plug unit
③ Sending area
④ Transmission axis
⑤ Support point
⑥ M4 threaded mounting hole; 5.4 mm deep, tightening torque 2.5 nm
⑦ Area in which no reflective surfaces are allowed for mounted devices

WORKING RANGE DIAGRAM WORKING RANGE FOR PICOSCAN150 CORE



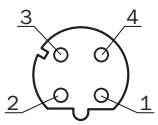
Scanning range max. 25 m (82.02 feet)
Scanning range typical 25 m (82.02 feet)
for objects up to 90 % remission

Scanning range typical 12 m (39.37 feet)
for objects up to 10 % remission

All specified working range values apply to the “Standard” sensitivity mode

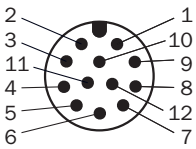
Dynamic Sensing Profile	Minimum		Typical			
	100 klx		10 klx		100 klx	
	10 %	90 %	10 %	90 %	10 %	90 %
15 Hz & 0.33°	10 m	25 m	12 m	25 m	10 m	25 m
15 Hz & 1°	10 m	25 m	12 m	25 m	10 m	25 m
25 Hz & 0.25°	10 m	25 m	12 m	25 m	10 m	25 m

CONNECTION TYPE ETHERNET



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

PIN ASSIGNMENT



① GND
② V_s
③ I/O 1
④ I/O 2
⑤ I/O 3
⑥ I/O 4
⑦ I/O 5
⑧ I/O 6
⑨ n.c.
⑩ I/O 7 (picoScan150: n.c.)
⑪ I/O 8 (picoScan150: n.c.)
⑫ n.c.

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/1151314

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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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