Product data sheet

PICS150-01000 LOC Core

picoScan100

2D LIDAR SENSORS

SICK
Sensor Intelligence.

Ordering information

Type	Part no.
PICS150-01000 LOC Core	1141395

With purchase, you accept the General Terms and Conditions for the Provision of Software Products (SICK software GTCs).

To the SICK Support Portal

Other models and accessories ➜ www.sick.com/picoScan100

Detailed technical data

Features

Application	Indoor, Outdoor
Description	picoScan150 incl. software for contour- and code-based position determination of mobile platforms and incl. Virtual Line Navigation
Variant	Standard (not pre-configured)
Measurement principle	HDDM$^+$
Light source	Infrared (905 nm)
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°, At 25 Hz 0.33°, At 15 Hz
Scan field flatness	± 1°
Working range	0.05 m ... 25 m [1)]
Blind zone	0 m ... 0.05 m
Scanning range	
At 90% remission and 10 klx	25 m
At 10% remission and 10 klx	12 m
Spot size	Divergence, typ.: 4.8 mrad On the optics cover: 8 mm
Amount of evaluated echoes	3

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

Mechanics/electronics

Connection type	2 x M12 round connector
System plug	See system plug 2130754, 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 2116047
Output current	≤ 200 mA
Housing material	Aluminum with Suretec650 coating
Housing color	Anthracite gray (RAL 7016)
Optical hood	Polycarbonate, scratch-resistant coating
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.

Safety-related parameters

$MTTF_D$	> 100 years, at 25 °C ambient temperature (EN ISO 13849-1:2015)

Performance

Output data LiDAR-LOC	Position (x, y, direction angle)
Speed LiDAR-LOC	≤ 3 m/s, translatory ≤ 90 °/s, rotatory
Localization accuracy	Typ. < 10 mm, position Typ. < 0.25°, orientation
Beam deviation	Typ. 0.27° | 4.8 mrad
Data output per scan segment	Segment size 30° at ≤ 25 Hz
Scan/frame rate	12,546 measurement point/s ... 82,803 measurement point/s, Depends on the Dynamic Sensing Profile and number of echoes
Latency of the measurement data output	Segment size 30° at< 25 Hz: ≤ 10 ms (3 σ), 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	≤ 5 mm (0.05 m ... 5 m) [2]
Integrated application	2D Object Detection LiDAR-LOC 2 Virtual Line Navigation CODE-LOC Output of measurement data
Digital add-ons	Multi-echo technology, Data Reduction & Data Preparation package, Reliability package, LMD-scandata (data format), Reflector detection, IMU (Inertial Measurement Unit)

[1] Typical value; real value depends on ambient conditions and the selected Dynamic Sensing Profile.
[2] 10 klx and 100 klx.

Software functions

Dynamic Sensing Profile package	-
Data Reduction & Data Preparation package	Included (Moving average filter, Interval filter, Scan range filter, Rectangular filter, Distance filter)
Reliability package	Included (Fog filter, Particle filter)
Multi-echo technology	Included
LMDscandata (data format)	Included
Reflector detection	Included

Interfaces

Ethernet	✓, UDP/IP (Compact, MSGPACK), TCP/IP (LMDscandata)
Function	Data interface (read result output), OPC DA, NTP, Measured data output (distance, RSSI)
Data transmission rate	10 Mbit/s ... 100 Mbit/s, half/full-duplex
Digital inputs/outputs	6, customizable, see system plug 2130754
Output data	Position (x, y, direction angle)
Optical indicators	2 LEDs
Configuration software	SOPASair (web browser)SOPAS ET (software)REST API
Driver	ROS1, ROS2, C++, Python

Ambient data

Object remission	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]

[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.

	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 °C, non-condensing (operation) (EN 60068-2-78)
Permissible relative humidity	
Operation	< 80 %, Non-condensing (EN 60068-2-30:2005)
Storage	≤ 90 %, 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.

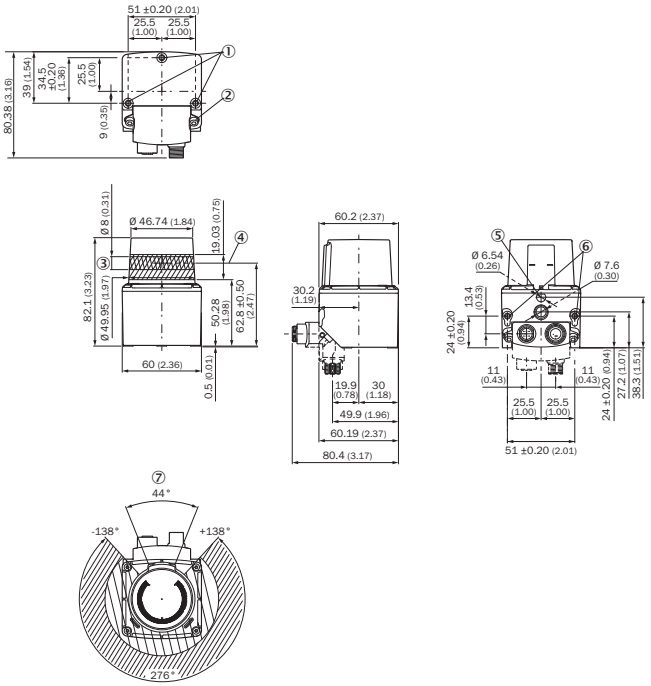
General notes

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

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

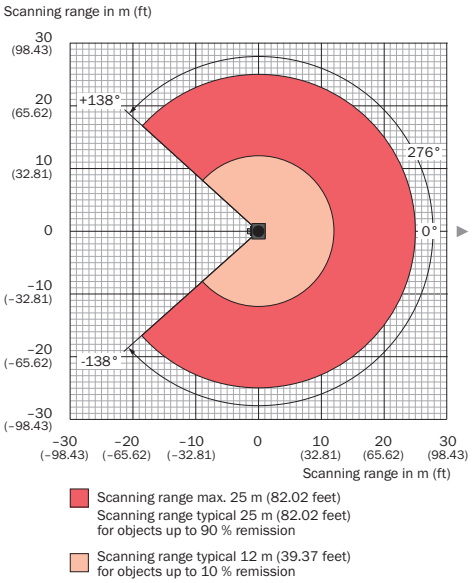
Dimensional drawing (Dimensions in mm (inch))



① 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



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
25 Hz & 0.25°	10 m	25 m	12 m	25 m	10 m	25 m

Recommended services

Additional services ➜ www.sick.com/picoScan100

	Type	Part no.
Maintenance		
• **Product area:** 2D LiDAR sensors, 3D LiDAR sensors • **Range of services:** Inspection, analysis and restoring of defined functions, Inspection and adaptation of basic settings, parameters of field application, filters for raw data output, and product-specific configuration • **Duration:** Additional work will be invoiced separately	Maintenance of LiDAR sensors	1682593
Commissioning		
• **Product area:** 2D LiDAR sensors, 3D LiDAR sensors • **Range of services:** Inspection of connection, fine adjustment, configuration of monitored areas, configuration and optimization of parameters as well as tests, Setup of previously defined functions of basic settings, parameters of field application, filters for raw data output and product-specific configuration • **Duration:** Additional work will be invoiced separately	Commissioning LiDAR sensors	1680672

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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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