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DATA SHEET

MULS1AA-114322 multiScan165

multiScan100
3D LiDAR sensors

SICK Sensor Intelligence



3D LIDAR SENSORS

MULS1AA-114322 multiScan165

ORDERING INFORMATION

Type	part no.
MULS1AA-114322 multiScan165	1137723

Further device versions and accessories at www.sick.com/multiScan100

DETAILED TECHNICAL DATA

FEATURES

Application	Outdoor, Indoor
Technology	3D LiDAR
Variant	Standard (not pre-configured)
Measurement principle	Statistical measurement procedure
Light source	Infrared (905 nm)
Spot divergence	
Vertical	4.4 mrad (0,25°)
Horizontal	4.4 mrad (0,25°)
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014+A11:2021)
Aperture angle	
Horizontal	360°
Vertical	42°, approx. –35.3°... +7.3° (DIN ISO 8855)
Scanning frequency	20 Hz 40 Hz, between layer 4 and 13
Angular resolution	
Horizontal	0.5°, 16 scan layers
Vertical	2.5° [1] 5° [1]
Working range	0.05 m ... 62 m (For details, see the working range diagram in the technical drawings section)
Scanning range	
At 10% reflection factor and 100 klx	20 m [2]
At 10% remission factor and 10 klx	25 m [2]
At 90% reflection factor and 100 klx	40 m [2]
Spot size	13 mm
Amount of evaluated echoes	3
$MTTF_D$	> 100 years, at 25 °C ambient temperature (EN ISO 13849-1:2015)

[1] For details see operating instructions.

[2] Detection probability > 99%.

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 2130754
Supply voltage	9 V DC ... 30 V DC
Power consumption	Typ. 10 W, 22 W, Power-up max. 35 W for 5 s
Housing material	AlSi12, Optics cover: polycarbonate
Housing color	Anthracite gray (RAL 7016)
Enclosure rating	IP65 (IEC 60529:1989+AMD1:1999+AMD2:2013) IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013) IP69 (IEC 60529:1989+AMD1:1999+AMD2:2013) IPX9K (ISO 20653)
Protection class	III (IEC 61140:2016-11)
Electrical safety	IEC 61010-1:2010-06
Weight	0.7 kg
Dimensions (L x W x H)	100.3 mm x 100.3 mm x 98.5 mm
MTBF	> 50 years (at 25 °C ambient temperature)

FUNCTIONS

Digital add-ons	Data Reduction & Data Preparation package Reliability package Multi-echo technology Reflector detection Interlaced mode IMU (Inertial Measurement Unit) PTP

PERFORMANCE

Scan/frame rate	230,400 measurement point/s ... 691,200 measurement point/s, Depends on the number of echoes
Latency of the measurement data output	≤ 5 ms
Response time	≤ 50 ms
Systematic error	Typ. ± 20 mm Max. ± 35 mm
Statistical error	≤ 4 mm (0.05 m ... 20 m)
Integrated application	Output of measurement data 3D Object Detection
Number of field sets	48 fields
Simultaneous evaluation cases	20

INTERFACES

Ethernet	✓ , TCP/IP, UDP/IP
Function	Data interface (read result output), NTP, Measured data output (distance, RSSI)
Data transmission rate	100 Mbit/s
Digital inputs/outputs	8, customizable, see system plug 2130754
Optical indicators	4 LEDs
Configuration software	SOPAS Air (browser based) Sentio Creator

AMBIENT DATA

Remission factor	2 % ... > 1,000 % (Reflector)
Electromagnetic compatibility (EMC)	
Emitted radiation	Emissions in residential, commercial and light industrial environments (EN 61000-6-3:2007+A1:2011)
Electromagnetic immunity	Industrial environment (EN 61000-6-2:2005)
Application areas	Automotive (UN ECE R10) [1]
Application areas	Agricultural and forestry machinery (ISO 14982-1, ISO 14982-2) [1]
Application areas	Earthmoving and construction machinery (ISO 13766-1) [1]
Vibration resistance	
Sine resonance scan	10 Hz ... 1,000 Hz [2]
Sine test	10 Hz ... 500 Hz, 5 g, 10 frequency cycles [2]
Noise test	10 Hz ... 250 Hz, 4.24 g RMS, 5 h [3]
Shock resistance	50 g, 11 ms, ± 3 single shocks/axis [4] 25 g, 6 ms, ± 1,000 continuous shocks/axis [4] 50 g, 3 ms, ± 5,000 continuous shocks/axis [4]
Ambient operating temperature	–40 °C ... +60 °C [5]
Storage temperature	–40 °C ... +75 °C
Relative humidity	≤ 90 % RH, Non-condensing
Ambient light immunity	100 klx, indirect

[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] IEC 60068-2-6:2007.

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

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

[5] At operating temperatures above +50 °C, mechanical mounting of the device is required, preferably using the mounting accessories provided. Minimum switch-on temperature: –30 °C.

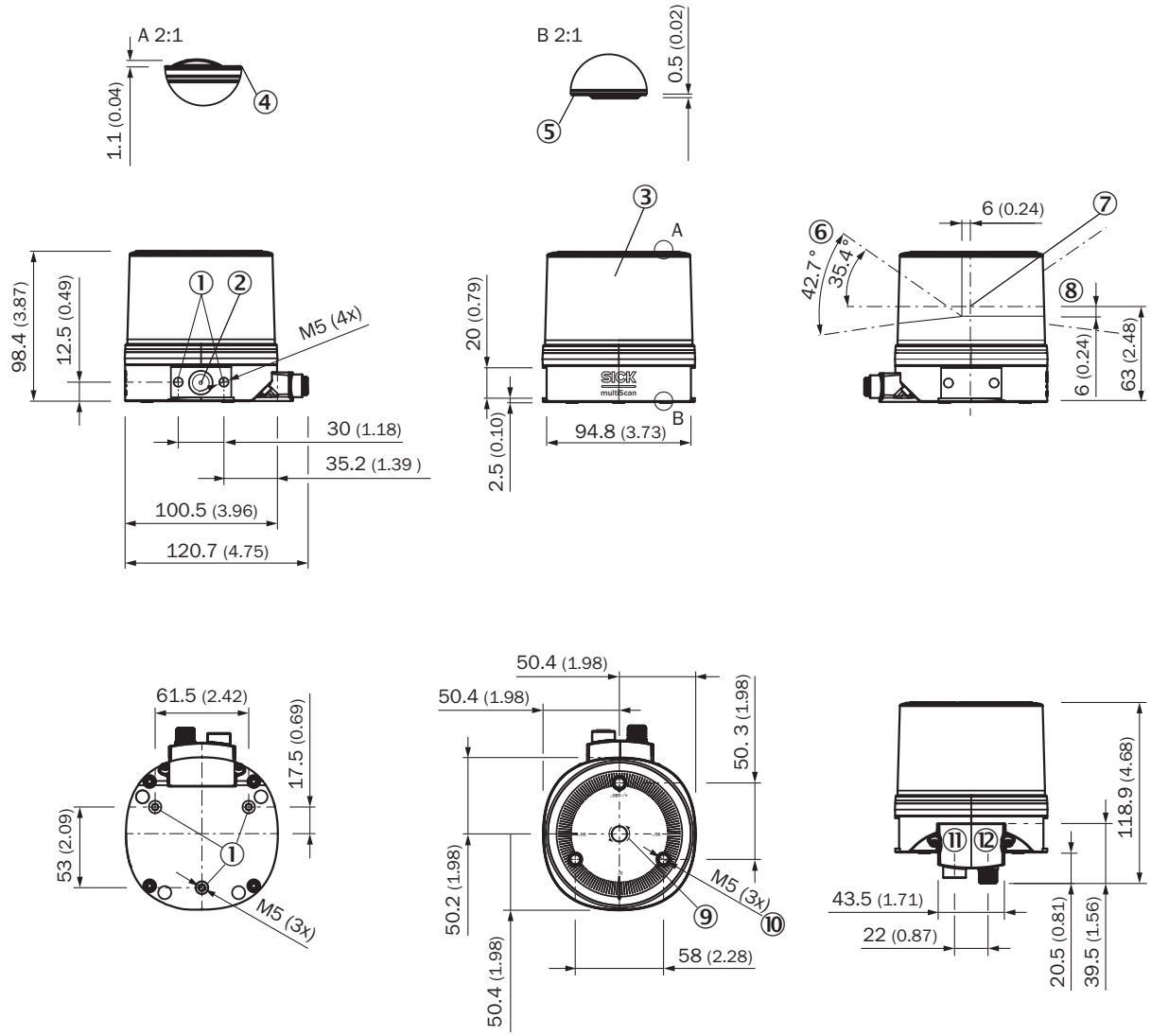
GENERAL NOTES

Items supplied	Hardware, software, Software license
Note on use	The sensor does not constitute a safety component as defined by relevant legislation on machine safety.

CERTIFICATES

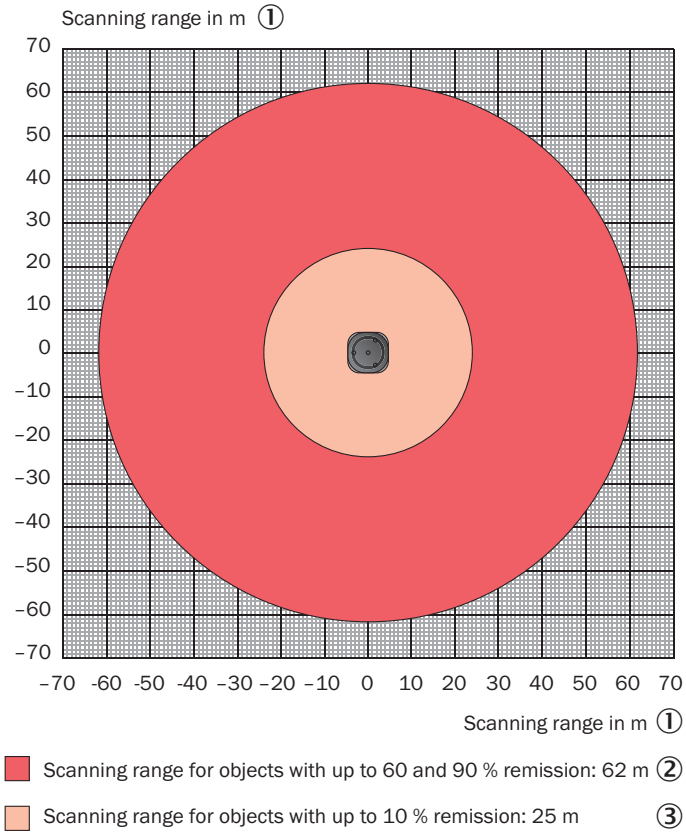
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING

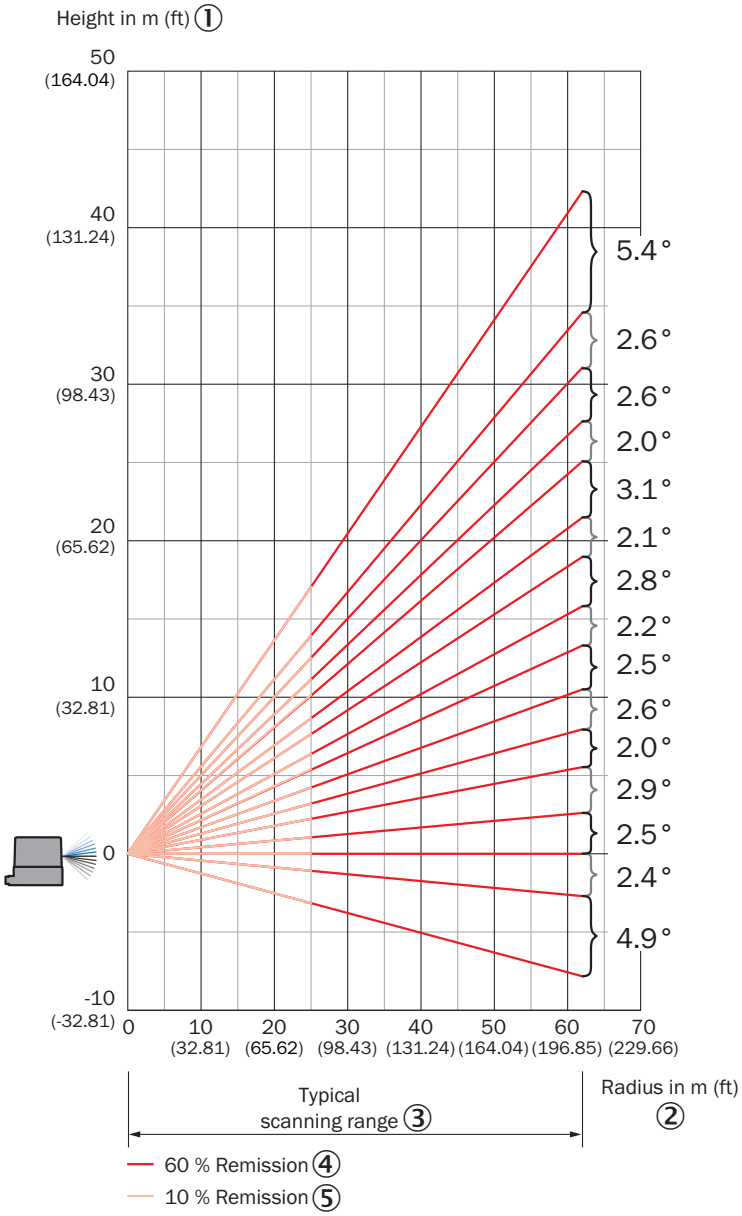


Dimensions in mm (inch)
① M5 threaded mounting hole, 6.4 mm deep; tightening torque ≤ 3 Nm; for mounting the device
② Ventilation element (membrane)
③ Optical hood
④ Top edge of the optics cover
⑤ Base of housing
⑥ Aperture angle (vertical viewing range)
⑦ Defined device origin
⑧ Visual zero position with maximum viewing range
⑨ direction of rotation
⑩ M5 threaded mounting hole; 6.4 mm deep; for accessories only
⑪ supply voltage connection
⑫ Ethernet connection

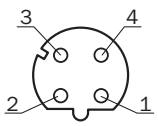
WORKING RANGE DIAGRAM



WORKING RANGE DIAGRAM

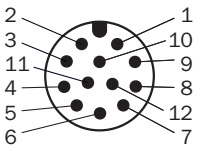


CONNECTION TYPE ETHERNET



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

PIN ASSIGNMENT



① I/O 1
② GND
③ I/O 2
④ I/O 7 (picoScan150: n.c.)
⑤ I/O 8 (picoScan150: n.c.)
⑥ I/O 3
⑦ I/O 4
⑧ I/O 6
⑨ V_s
⑩ I/O 5
⑪ 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/1137723

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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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