Data sheet

MULS1AA-114322 multiScan165

multiScan100

3D LIDAR SENSORS

SICK
Sensor Intelligence.

Ordering information

Type	part no.
MULS1AA-114322 multiScan165	1137723

Other models and accessories ➜ www.sick.com/multiScan100

Detailed technical data

Features

Application	Indoor, Outdoor
Variant	Standard (not pre-configured)
Measurement principle	Statistical measurement procedure
Light source	Infrared (905 nm)
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014+A11:2021)
Aperture angle	
Horizontal	360°
Vertical	42°, 7.5° ... –35°, DIN ISO 8855
Scanning frequency	20 Hz 40 Hz, between layer 4 and 13
Angular resolution	
Horizontal	0.125°, 16 scan layers, interlaced
	0.25°, 16 scan layers, interlaced
	0.5°, 16 scan layers
Vertical	Approx. 2.5° [1]
	Approx. 5° [1]
Working range	0.05 m ... 62 m
Scanning range	
At 10% reflection factor and 100 klx	20 m [2]
At 10% reflection factor and 30 klx	22 m [2]
At 10% reflection factor and 10 klx	25 m [2]
At 60% reflection factor and 10 klx	62 m [2]
At 90% reflection factor and 100 klx	40 m [2]

[1] For details see operating instructions.
[2] Detection probability > 99%.
[3] In the scan direction.

At 90% reflection factor and 30 klx	60 m [2]
At 90% reflection factor and 10 klx	62 m [2]
Spot size	5.3 mrad (0,3 °) 7.5 mrad (0,3 ° + 0,125 °) [3]
Amount of evaluated echoes	3

[1] For details see operating instructions.
[2] Detection probability > 99%.
[3] In the scan direction.

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

Safety-related parameters

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

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
Response time	≤ 50 ms
Systematic error	± 35 mm
Statistical error	≤ 10 mm
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) SOPAS ET

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

[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

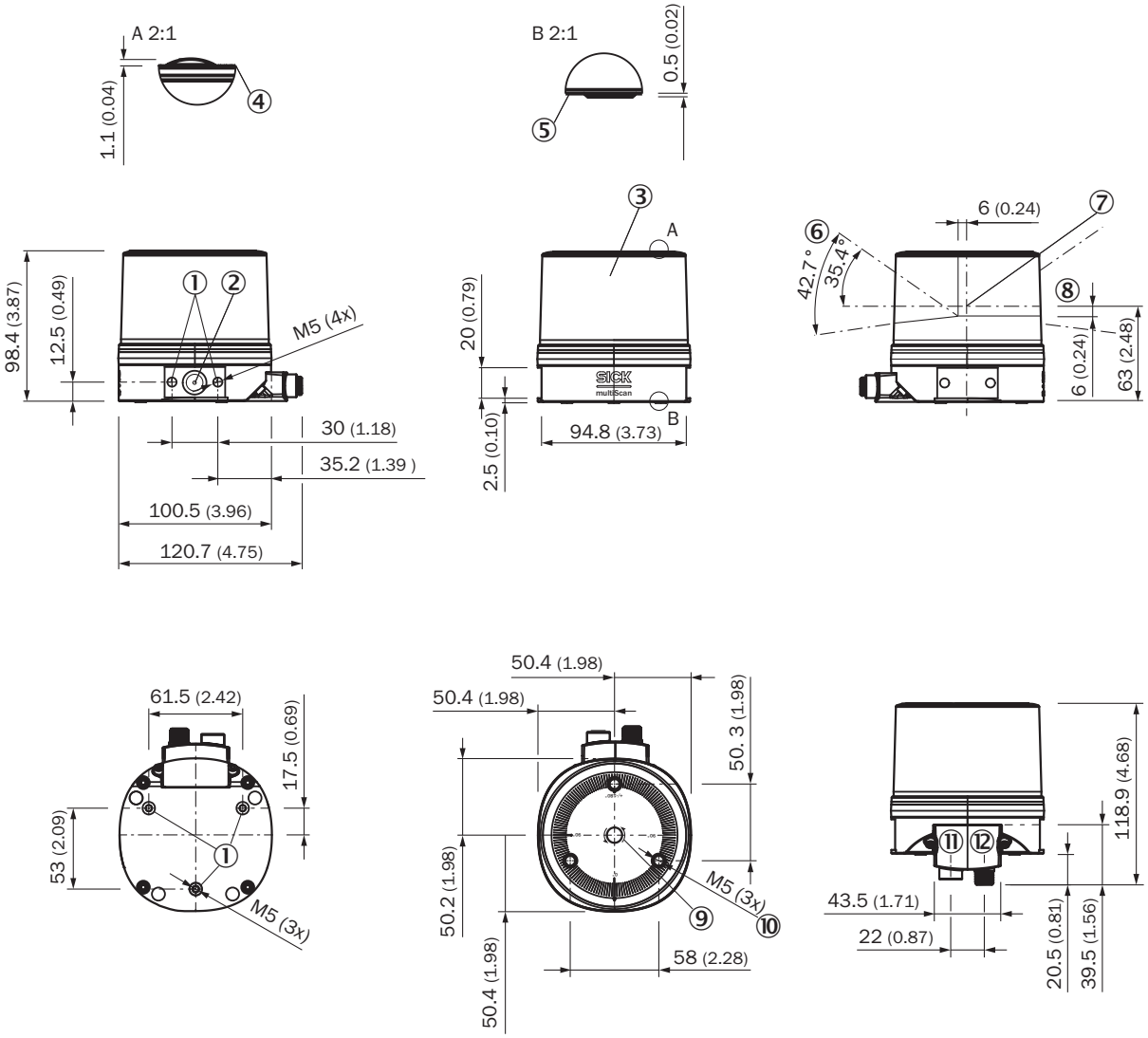
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓

cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

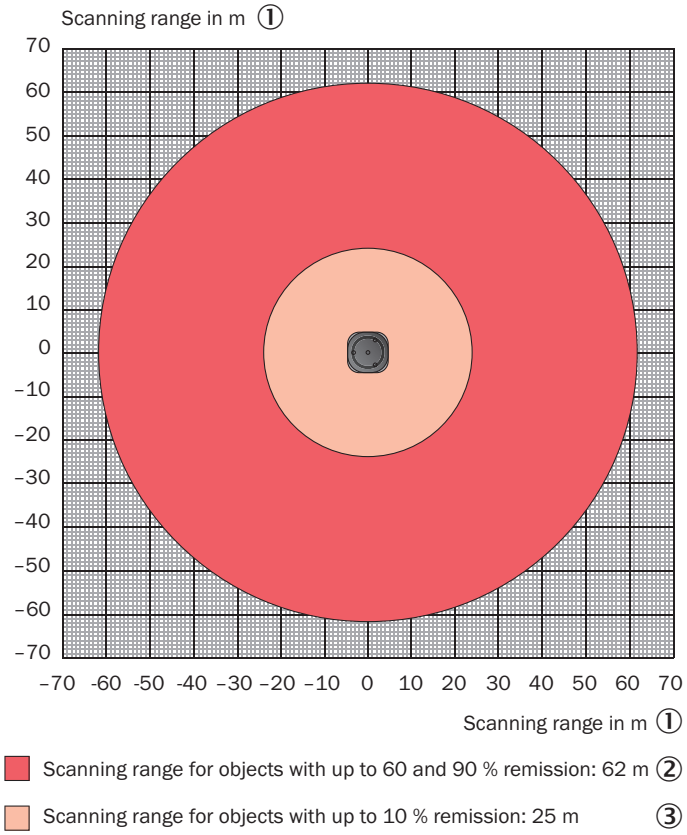
ECLASS 5.0	27270990
ECLASS 5.1.4	27270990
ECLASS 6.0	27270913
ECLASS 6.2	27270913
ECLASS 7.0	27270913
ECLASS 8.0	27270913
ECLASS 8.1	27270913
ECLASS 9.0	27270913
ECLASS 10.0	27270913
ECLASS 11.0	27270913
ECLASS 12.0	27270913
ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002550
ETIM 8.0	EC002550
UNSPSC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

Dimensional drawing



Dimensions in mm (inch)
① 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

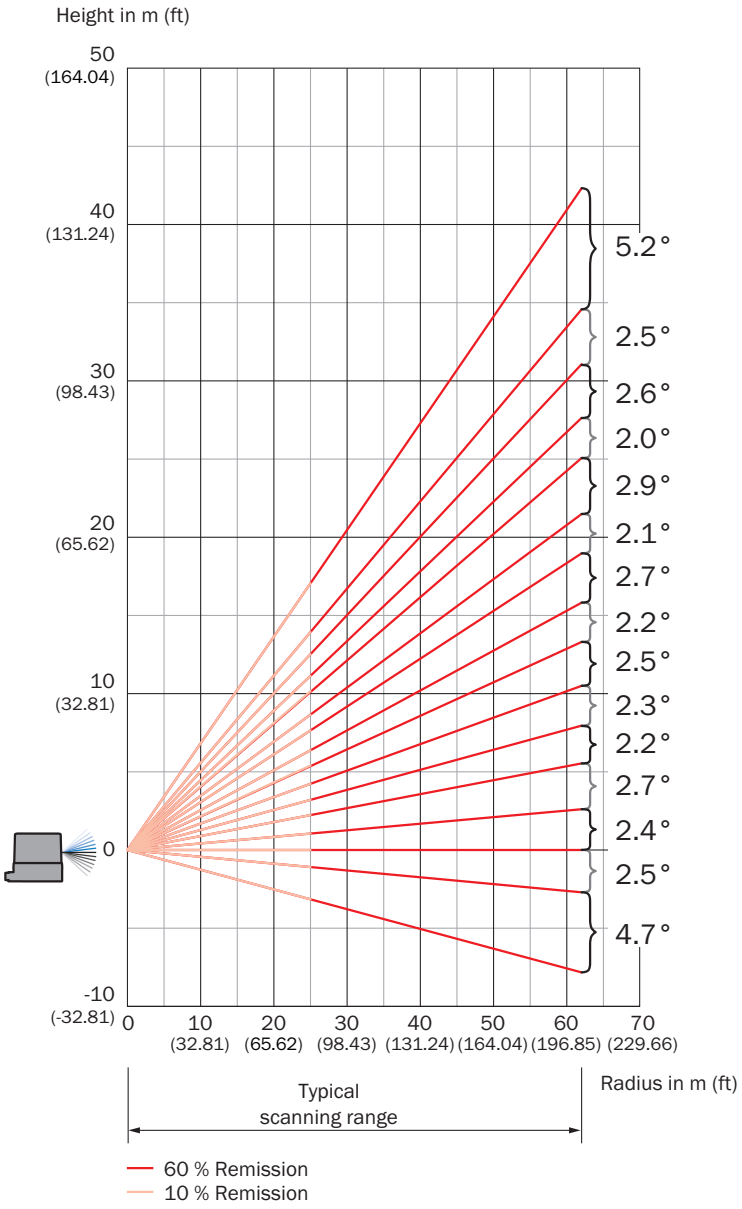
Working range diagram



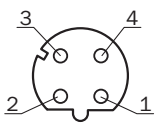
Scanning range for objects with up to 60 and 90 % remission: 62 m ②

Scanning range for objects with up to 10 % remission: 25 m ③

Working range diagram

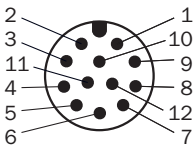


Connection type Ethernet



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.

Recommended accessories

Other models and accessories ➜ www.sick.com/multiScan100

	Brief description	Type	part no.
system plugs and extension modules			
	• **Description:** System plug spare part kit. For use with multiScan100 and picoScan150. The warranty is retained when the system plug is replaced. The system plug can be replaced and reinstalled by following the mounting instructions. 1 x "Ethernet" connection, 4-pin M12 female connector, D-coded 1 x "Power" connection, 5-pin M12 male connector, A-coded	SYSPLG DCT M12-5 3IO DCT M12D ETH	2116047
Mounting systems			
	• **Description:** Simple mounting bracket for multiScan100 with alignment function • **Dimensions (W x H x L):** 78 mm x 42 mm x 134 mm • **Material:** Stainless steel • **Details:** Stainless steel 1.4547 • **Items supplied:** Simple bracket, 4 x M5 x 8 countersunk screws, stainless steel • **Suitable for:** multiScan100	Simple bracket	2128226
	• **Description:** Fine adjustment bracket for multiScan100 with tilt and pitch function • **Dimensions (W x H x L):** 85 mm x 42 mm x 134 mm • **Material:** Stainless steel • **Details:** Stainless steel 1.4547 • **Items supplied:** Fine adjustment bracket, 4 x M5 x 12 countersunk screws, stainless steel • **Suitable for:** multiScan100	Mounting bracket alignment	2124591
connectors and cables			
	• **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:** 2 m, 4-wire, PUR, halogen-free • **Description:** Ethernet, shielded, PROFINET • **Application:** Drag chain operation, Zones with oils and lubricants	YM2D24-020P-N1MRJA4	2106182
	• **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:** 3 m, 4-wire, PUR, halogen-free • **Description:** Ethernet, shielded, PROFINET • **Application:** Drag chain operation, Zones with oils and lubricants	YM2D24-030P-N1MRJA4	2106183

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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