



# MULS1AA-112211 multiScan136

multiScan100

3D LIDAR SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
MULS1AA-112211 multiScan136	1140110

Other models and accessories → [www.sick.com/multiScan100](http://www.sick.com/multiScan100)



### Detailed technical data

#### Features

<b>Application</b>	Indoor, Outdoor								
<b>Variant</b>	Standard (not pre-configured)								
<b>Measurement principle</b>	Statistical measurement procedure								
<b>Light source</b>	Infrared (850 nm)								
<b>Laser class</b>	1 (IEC 60825-1:2014, EN 60825-1:2014+A11:2021)								
<b>Aperture angle</b>	<table border="0"> <tr> <td>Horizontal</td> <td>360°</td> </tr> <tr> <td>Vertical</td> <td>65°, 22.5° ... -42.5°, DIN ISO 8855</td> </tr> </table>	Horizontal	360°	Vertical	65°, 22.5° ... -42.5°, DIN ISO 8855				
Horizontal	360°								
Vertical	65°, 22.5° ... -42.5°, DIN ISO 8855								
<b>Scanning frequency</b>	20 Hz								
<b>Angular resolution</b>	<table border="0"> <tr> <td>Horizontal</td> <td>0.125°, 2 high-resolution scan layers 1°, 14 scan layers 0.5°, 14 scan layers, interlaced 0.125°, 14 scan layers, interlaced</td> </tr> <tr> <td>Vertical</td> <td>Approx. 2.5° <sup>1)</sup> Approx. 5° <sup>1)</sup></td> </tr> </table>	Horizontal	0.125°, 2 high-resolution scan layers 1°, 14 scan layers 0.5°, 14 scan layers, interlaced 0.125°, 14 scan layers, interlaced	Vertical	Approx. 2.5° <sup>1)</sup> Approx. 5° <sup>1)</sup>				
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Vertical	Approx. 2.5° <sup>1)</sup> Approx. 5° <sup>1)</sup>								
<b>Working range</b>	0.05 m ... 60 m								
<b>Scanning range</b>	<table border="0"> <tr> <td>At 10% reflection factor and 100 klx</td> <td>10 m <sup>2)</sup></td> </tr> <tr> <td>At 10% reflection factor and 10 klx</td> <td>12 m <sup>2)</sup></td> </tr> <tr> <td>At 90% reflection factor and 100 klx</td> <td>15 m <sup>2)</sup></td> </tr> <tr> <td>At 90% reflection factor and 10 klx</td> <td>30 m <sup>2)</sup></td> </tr> </table>	At 10% reflection factor and 100 klx	10 m <sup>2)</sup>	At 10% reflection factor and 10 klx	12 m <sup>2)</sup>	At 90% reflection factor and 100 klx	15 m <sup>2)</sup>	At 90% reflection factor and 10 klx	30 m <sup>2)</sup>
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At 90% reflection factor and 10 klx	30 m <sup>2)</sup>								

<sup>1)</sup> For details see operating instructions.

<sup>2)</sup> Detection probability > 99%.

<sup>3)</sup> In the scan direction.

<b>Spot size</b>	5.3 mrad (0,3 °) 7.5 mrad (0,3 ° + 0,125 °) <sup>3)</sup>
<b>Amount of evaluated echoes</b>	3

<sup>1)</sup> For details see operating instructions.

<sup>2)</sup> Detection probability > 99%.

<sup>3)</sup> In the scan direction.

### Mechanics/electronics

<b>Connection type</b>	1 x "Ethernet" connection, 4-pin M12 female connector, D-coded 1 x "POWER" connection, 12-pin M12 plug, A-coded
<b>System plug</b>	See system plug 2130754 Assembled to the rear
<b>Supply voltage</b>	9 V DC ... 30 V DC
<b>Power consumption</b>	Typ. 10 W, 22 W, Power-up max. 35 W for 5 s
<b>Housing material</b>	AISI12, Optics cover: polycarbonate
<b>Housing color</b>	Anthracite gray (RAL 7016)
<b>Enclosure rating</b>	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)
<b>Protection class</b>	III (IEC 61140:2016-11)
<b>Electrical safety</b>	IEC 61010-1:2010-06
<b>Weight</b>	0.7 kg
<b>Dimensions (L x W x H)</b>	100.3 mm x 100.3 mm x 98.5 mm
<b>MTBF</b>	50 years
<b>MTTFd</b>	> 100 years (at 25 °C ambient temperature), EN ISO 13849-1:2015

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	> 100 years, at 25 °C ambient temperature (EN ISO 13849-1:2015)
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### Functions

<b>Digital add-ons</b>	Reliability package Multi-echo technology IMU (Inertial Measurement Unit)
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### Performance

<b>Scan/frame rate</b>	216,000 measurement point/s ... 648,000 measurement point/s
<b>Response time</b>	≤ 50 ms Field evaluation, typ. 100 ms
<b>Systematic error</b>	± 50 mm
<b>Statistical error</b>	≤ 15 mm
<b>Integrated application</b>	3D Object Detection
<b>Number of field sets</b>	48 fields
<b>Simultaneous evaluation cases</b>	20

### Interfaces

<b>Ethernet</b>	✓, TCP/IP, UDP/IP
Function	Data interface (read result output), NTP, Measured data output (distance, RSSI)
Data transmission rate	100 Mbit/s

<b>Digital inputs/outputs</b>	8, customizable, see system plug 2130754
<b>Optical indicators</b>	4 LEDs
<b>Configuration software</b>	SOPAS Air (browser based) SOPAS ET

### Ambient data

<b>Remission factor</b>	2 % ... > 1,000 % (Reflector)
<b>Electromagnetic compatibility (EMC)</b>	
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) <sup>1)</sup>
Application areas	Agricultural and forestry machinery (ISO 14982-1, ISO 14982-2) <sup>1)</sup>
Application areas	Earthmoving and construction machinery (ISO 13766-1) <sup>1)</sup>
<b>Vibration resistance</b>	
Sine resonance scan	10 Hz ... 1,000 Hz <sup>2)</sup>
Sine test	10 Hz ... 500 Hz, 5 g, 10 frequency cycles <sup>2)</sup>
Noise test	10 Hz ... 250 Hz, 4.24 g RMS, 5 h <sup>3)</sup>
<b>Shock resistance</b>	50 g, 11 ms, ± 3 single shocks/axis <sup>4)</sup> 25 g, 6 ms, ± 1,000 continuous shocks/axis <sup>4)</sup> 50 g, 3 ms, ± 5,000 continuous shocks/axis <sup>4)</sup>
<b>Ambient operating temperature</b>	-40 °C ... +60 °C <sup>5)</sup>
<b>Storage temperature</b>	-40 °C ... +75 °C
<b>Permissible relative humidity</b>	≤ 90 % RH, Non-condensing
<b>Ambient light immunity</b>	100 klx

<sup>1)</sup> 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 (de-bounce > 10 ms).

<sup>2)</sup> IEC 60068-2-6:2007.

<sup>3)</sup> IEC 60068-2-64:2008.

<sup>4)</sup> IEC 60068-2-27:2008.

<sup>5)</sup> 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

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

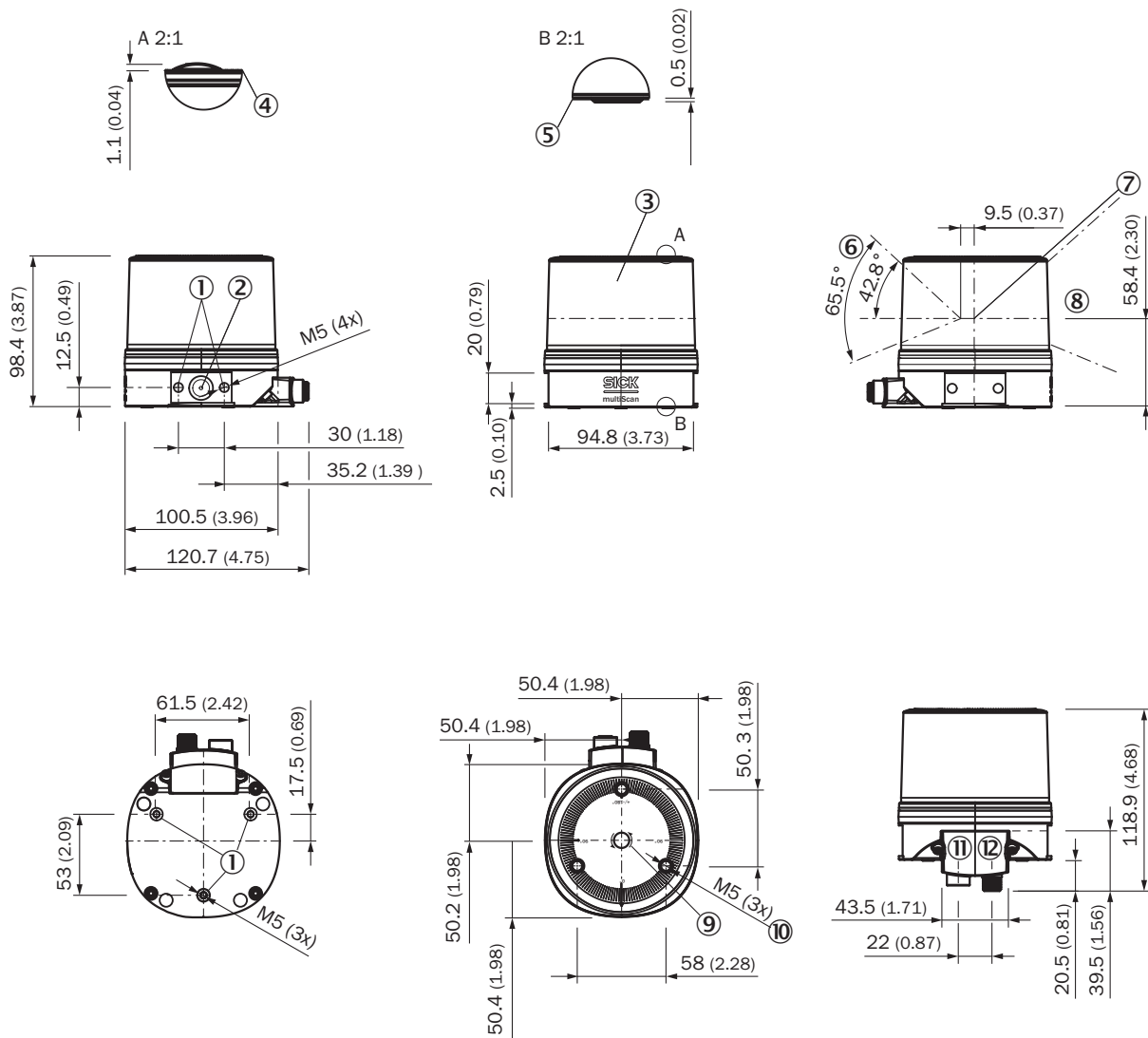
### Certificates

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

## Classifications

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

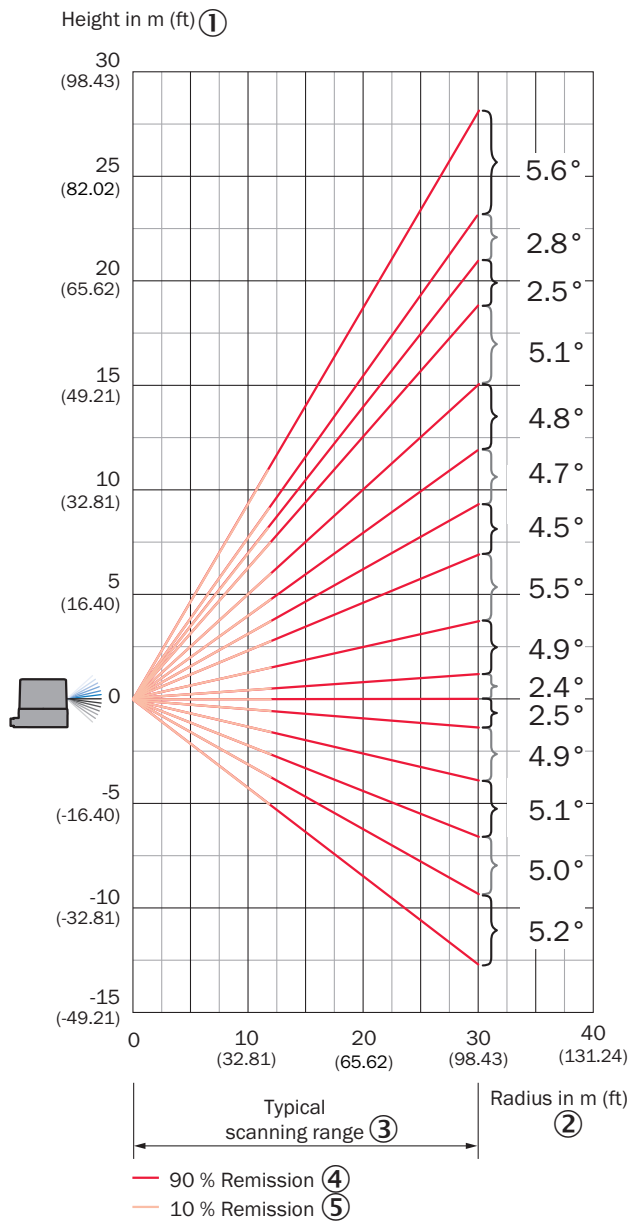
### Dimensional drawing



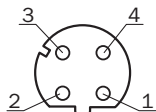
Dimensions in mm (inch)

- ① M5 threaded mounting hole, 6.4 mm deep; tightening torque  $\leq 3$  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



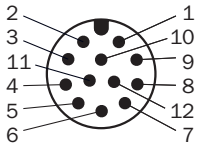
Connection type Ethernet



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<sub>s</sub>
- ⑩ I/O 5
- ⑪ n.c.
- ⑫ n.c.

### Recommended accessories

Other models and accessories → [www.sick.com/multiScan100](http://www.sick.com/multiScan100)

	Brief description	Type	part no.
system plugs and extension modules			
	<ul style="list-style-type: none"> <li><b>Description:</b> 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</li> </ul>	SYSPLG DCT M12-5 3IO DCT M12D ETH	2116047
Mounting systems			
	<ul style="list-style-type: none"> <li><b>Description:</b> Simple mounting bracket for multiScan100 with alignment function</li> <li><b>Dimensions (W x H x L):</b> 78 mm x 42 mm x 134 mm</li> <li><b>Material:</b> Stainless steel</li> <li><b>Details:</b> Stainless steel 1.4547</li> <li><b>Items supplied:</b> Simple bracket, 4 x M5 x 8 countersunk screws, stainless steel</li> <li><b>Suitable for:</b> multiScan100</li> </ul>	Simple bracket	2128226
	<ul style="list-style-type: none"> <li><b>Description:</b> Fine adjustment bracket for multiScan100 with tilt and pitch function</li> <li><b>Dimensions (W x H x L):</b> 85 mm x 42 mm x 134 mm</li> <li><b>Material:</b> Stainless steel</li> <li><b>Details:</b> Stainless steel 1.4547</li> <li><b>Items supplied:</b> Fine adjustment bracket, 4 x M5 x 12 countersunk screws, stainless steel</li> <li><b>Suitable for:</b> multiScan100</li> </ul>	Mounting bracket alignment	2124591
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shielded, PROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YM2D24-020P-N1MRJA4	2106182
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 3 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shielded, PROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)