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PRODUCT OVERVIEW

multiScan100

LiDAR sensors

SICK Sensor Intelligence



3D LIDAR SENSORS

multiScan100

Compact 3D LiDAR sensor with high detection reliability under harsh ambient conditions

The multiScan100 3D LiDAR sensor generates a large 3D point cloud in which people and objects can be detected. The point cloud makes the multiScan100 suitable for wide-area environment perception and therefore also for large machines. The sensor can be used for mobile and stationary applications and reliably detects drop-off edges and obstacles ahead. The multiScan100 can be individually configured and easily integrated into applications. High-resolution scan layers or large scanning ranges, among other things, can be selected during configuration. In addition to the device, there is a continuously growing modular software kit with apps and software add-ons. A system plug for common interfaces ensures quick and flexible sensor implementation.

multiScan100 AT A GLANCE

BENEFITS

- Using 16 scan layers, people and objects can be identified in detail and represented by the 3D point cloud
- Detection of large areas through 360° horizontal aperture angle and large vertical aperture angle
- Various configuration possibilities: e.g., high-resolution scan layers for localization, or uniform 3D point cloud for detecting distant objects
- Precise fine positioning through high measurement accuracy with low measurement noise
- Long service life, even in harsh environments, thanks to rugged design
- Individual configuration possible thanks to apps and software add-ons whose measurement data the sensor evaluates directly

FEATURES

- 16 scan layers, vertical aperture angle up to 65°
- Horizontal aperture angle of 360°
- High-resolution 0° scan layer or uniform horizontal and vertical resolution
- High measurement accuracy and low measurement noise
- Rugged design
- Multi-echo technology
- Selection of apps and software add-ons
- System plug, flexible mounting

TECHNICAL DATA OVERVIEW

Application	Outdoor / Indoor / Indoor / Outdoor
Measurement principle	Statistical measurement procedure
Integrated application	Output of measurement data, 3D Object Detection, 3D Object Detection Advanced, safe measurement data output with PL b, safe 3D object detection with PL b
Aperture angle	
Horizontal	360°
Vertical	42° ... 65°, 22.5° ... -42.5° (DIN ISO 8855), approx. –35.3°... +7.3° (DIN ISO 8855)
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	10 m ... 20 m [1]
At 10% reflection factor and 10 klx	12 m ... 25 m [1]
At 90% reflection factor and 100 klx	15 m ... 40 m [1]
At 90% reflection factor and 10 klx	30 m ... 62 m [1]
Amount of evaluated echoes	3
Scanning frequency	20 Hz, 40 Hz, between layer 4 and 13
Ambient operating temperature	–40 °C ... +60 °C [2]
Ethernet	✓
Weight	0.7 kg

[1] Detection probability > 99%.

[2] 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.

ADVANTAGES

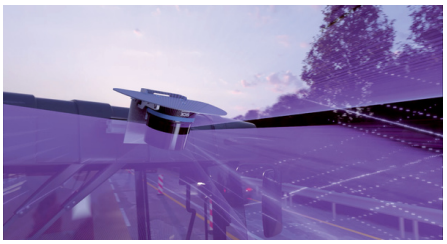


Wide range of applications

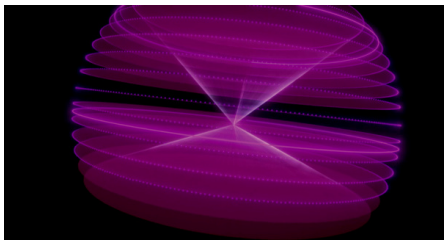
Whether for detection or localization: The multiScan100 3D LiDAR sensor is a good choice. With its 16 scan layers, the sensor has a large three-dimensional field of view. That means the multiScan100 can detect its environment not only vertically, but also horizontally in 3D. Some device variants have a high-resolution 0° scan layer and are therefore well suited for 2D localization. Even when it comes to 3D environment perception for mobile platforms, for example for collision avoidance, the multiScan100 is the right product.



3D performance in- and outdoors
Multi-echo technology and filter functions ensure the high performance of the multiScan100 – even under demanding ambient conditions thanks to the IP69K enclosure rating.

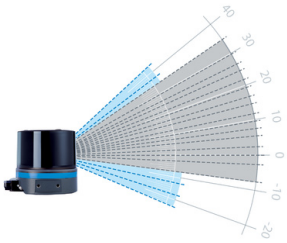


Large aperture angle
With its 360° horizontal aperture angle and up to 65° vertical aperture angle, the sensor gathers all the information necessary to make sure objects are correctly detected.

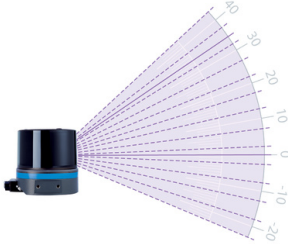


Precise 3D measurement data
The 16 fanned scan layers of the multiScan100 create a 3D point cloud using which it precisely detects obstacles.

→ One 3D-LiDAR sensor – many application possibilities: The multiScan100 detects nearly any object both in- and outdoors, and from the floor to the ceiling in indoor spaces.



Discover the outstanding services
The multiScan100 is currently available in two versions: With an optimized vertical scanning range and two different ranges, the multiScan100 sets new standards. Compared to the multiScan1x6, the multiScan165 offers you a focused field of view of 42°, which enables more precise and detailed detection. The multiScan1x6 has a wide field of view of 65°, ideal for three-dimensional environment detection directly in front of the sensor.



Experience the precision
The multiScan1x6 impresses with 2 high-resolution scan planes of 0.125° each and 14 further scan planes with a resolution of 1°. However, the multiScan165 goes one step further: all 16 scan planes offer a consistently high resolution of 0.5°. This ensures continuous, precise and detailed acquisition, particularly useful for easy integration into 3D measurement data. With the integrated interlaced mode, all scan planes can be output with a resolution of 0.125° depending on the output frequency. With the integrated interlaced mode, all scan planes can be output with a resolution of 0.125° depending on the output frequency.



Realizes numerous applications
Thanks to its long range and uniform scanning range, the multiScan165 is ideal for use on mobile machinery, for example. The multiScan1x6, on the other hand, is more tailored to mobile platforms. It offers a high-resolution 0° scan plane and is also characterized by a wide field of view at close range. Both devices are suitable for indoor and outdoor use as well as for mobile and stationary applications.

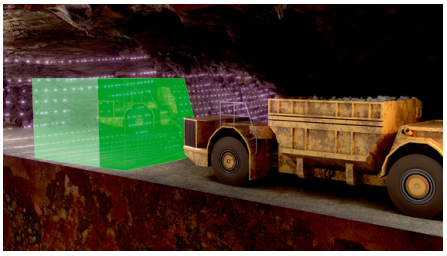
→ “Thanks to the combination of safe 2D LiDAR sensors and the high-precision 3D LiDAR sensor multiScan100 from SICK, our CR700 cleaning robot navigates safely, flexibly and fully automatically even in highly dynamic environments. The exact 3D point cloud enables the precise detection of inclines and obstacles in the vertical travel path, thereby optimizing the efficiency of the system. The multiScan100 also offers measurement capability without blind zones, allowing obstacles to be detected precisely down to zero meters. This ensures a seamless and optimal cleaning result.” - Dr. Siegfried Hochdorfer, CTO at ADLATUS Robotics GmbH, Germany

Integrated software solutions for safety-related applications

The multiScan100 measures reliably and overcomes complex challenges, even in safety-related systems. This solves applications – without the need for additional hardware. For example, the multiScan100 and the integrated SensorApp 3D Object Detection provide precise measurement data to prevent collisions with people and infrastructure in outdoor areas.



Safe Brake Assist
With the help of the multiScan100, the Safe Brake Assist safety system continuously monitors the distance between a vehicle and people and objects. The system continuously sends the distance values to the vehicle control system and reacts to obstacles in the route. If a collision is imminent, the control system then brakes the vehicle reliably and relieves the driver. Thanks to the sensor's reliable LiDAR technology, the system captures the vehicle's surroundings in three dimensions. Data processing is based on intelligent algorithms.
> Find out more
The safety-certified variants of the multiScan100 can be found in the multiScan100-S.
> Find out more



3D Object Detection
With the SensorApp 3D Object Detection, collisions between AGVs and AMRs can be effectively avoided. The software solution processes 3D raw data, recognizes objects and can identify them as obstacles. Up to 48 detection fields can be configured via the intuitive web interface. If an object is detected in a field, the digital outputs of the multiScan100 switch. The app runs directly on the sensor and is ideally adapted to its hardware. This ensures fast response times and enables trouble-free operation of your application.



LiDAR-LOC
The LiDAR-LOC application software can be used to achieve precise localization results based on natural environmental features. Environmental adjustments are not necessary for this. If the software is combined with the CODE-LOC application software, the localization accuracy increases even further. LiDAR-LOC can be expanded to include the “Virtual Line Navigation” function. It enables mobile robots of all kinds to navigate using virtual lines.
> Find out more



Sensor suitable for outdoor use with reliable measurement performance

Thanks to its robust design and intelligent software functions, the multiScan100 is ideal for numerous outdoor applications. The sensor reliably detects its surroundings, even in rain, fog, dust, strong sunlight or cold. The multiScan100 ensures high data availability, even in the event of shocks or vibrations. The electronics and mechanics are also robust. This not only ensures a long device service life but, together with the reliable measurement performance, also enables precise measurements.



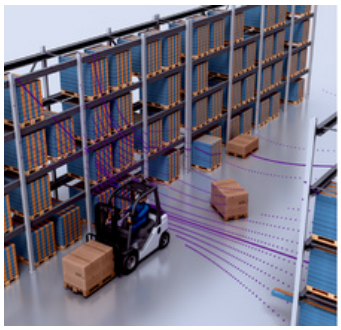
Rugged and reliable
Sensor electronics and hardware are characterized by a long service life and high reliability. The devices are insensitive to shocks, vibrations, ambient light and rapid temperature changes. Thanks to safety-related parameters, the sensors meet important safety requirements and comply with the EMC requirements for industrial and mobile applications in accordance with EN 61000-6, ISO 14982, 13766 and other standards.
Realistic temperature profiles with different temperatures are determined and provided for a reliable service life of the sensors for integration in the customer system.



Multi-echo technology
The multi-echo technology enables multiple echo signals per emitted measurement beam to be evaluated. Echoes caused by rain or fog, for example, can thereby be identified and, if necessary, blanked out.



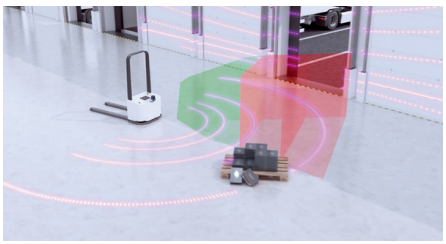
Integrated contamination detection
With integrated contamination detection and a detection probability of more than 99%, multiScan100 ensures reliable performance under different environmental conditions to realize the application with high availability.






A multi-talent in application scenarios

Thanks to its horizontal aperture angle of 360° and its precise measurement data, the multiScan100 is suitable for numerous indoor and outdoor applications. It delivers impressive performance in a variety of weather conditions: not only for industrial vehicles, mobile platforms and agricultural and working machines, but also when used for traffic monitoring and in smart cities. Using its measurement data, vehicles can, for example, easily avoid obstacles.



AGVs, AMRs, mobile platforms and service robots
The multiScan100 reliably detects objects, no matter whether they are standing on the ground or projecting into its field of view. This helps it avoid collisions. The sensor always “knows” exactly where a vehicle is.

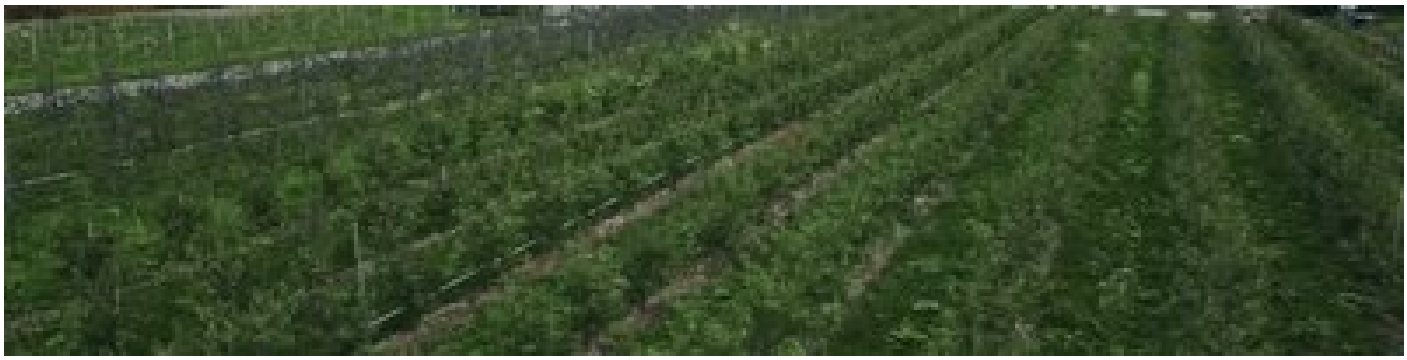


Agriculture and work machines
The multiScan100 is particularly impressive in outdoor applications: It delivers precise measurement data regardless of the weather conditions. Not to mention its high enclosure rating up to IP69K, resilience to shock and vibrations, and its various filter functions such as the multi-echo function.



Traffic monitoring and smart cities
The large horizontal 360° aperture angle enables detailed environment perception. That means the sensor is also a good choice for stationary applications.

→ Multi-talented multiScan100: The 3D LiDAR sensor that impresses with its versatile application options.



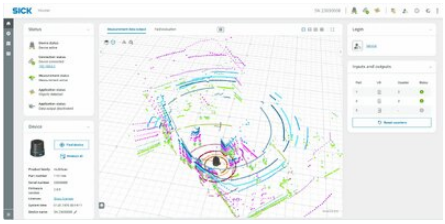
3D mapping thanks to accurate measurement data and low measurement noise

Thanks to modern measuring technology, the multiScan100 detects distances in its surroundings with high accuracy. The device is also characterized by very low measurement noise and efficient data processing. With the multiScan100, very precise maps for indoor and outdoor areas can be created even with just 16 scan planes, e.g. to navigate agricultural robots through dynamic and complex environments.

Many software solutions – quick and easy to integrate

In addition to the sensor properties already mentioned, simple parameterization and efficient data processing are important. SICK provides a broad portfolio of integrable application tasks, additional software functions and digital accessories for this purpose.







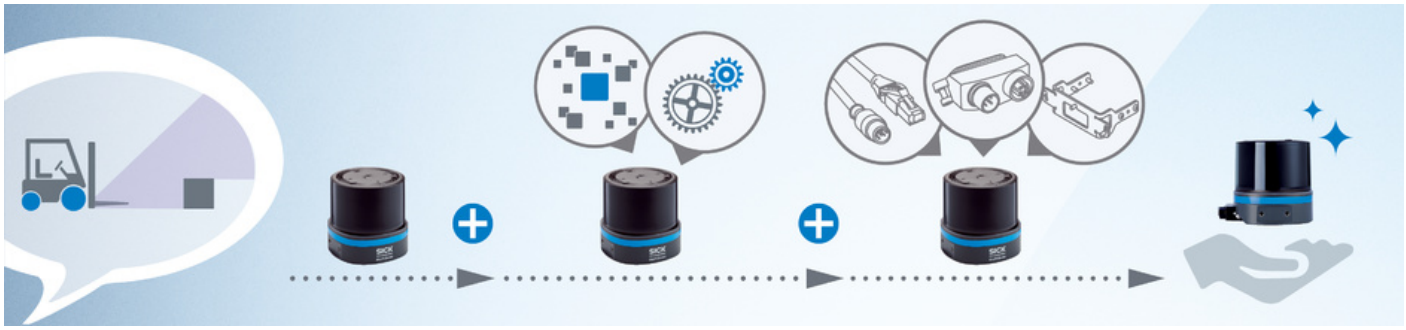
Reliable 3D environment perception
SICK offers you the option of downloading measurement data recorded in advance under real conditions from an ROS driver. They can be further processed in various ways. This allows you to evaluate whether a sensor is suitable for your application without having to use the device itself in the application. You can downloadthe data here.

SOPASair and Virtual Sensor Lab
SOPASair offers a modern, browser-based user interface for simple parameterization, configuration and diagnostics of many SICK sensors – completely without installation and independent of the operating system. The clear, intuitive operation enables fast and efficient work directly in the web browser.
The SICK Virtual Sensor Lab enables the interactive presentation and testing of the functional scope of virtual sensors. The simulated functions are based on the behavior of real devices, but may differ in scope and level of detail depending on the respective product variant and the activated license scopes.

Quick and easy integration of the LiDAR sensor
- Choice of drivers: ROS1, ROS2, C++ and Python
- Data formats: Compact and MSGPACK
- Parameterization options: SOPASair web server with user interface, SOPAS telegram, or REST API

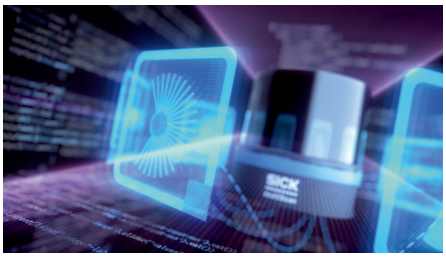
> Protocols and integration
Code examples are available on GitHub, so not all code needs to be created from scratch.
The multiScan100 is also available as a sensor model for NVIDIA Omniverse simulation environments, enabling fast integration and precise evaluation of sensor properties and the optimum mounting position in your application.

→ Reliable localization, time-saving integration and intuitive operation



One product – many possibilities

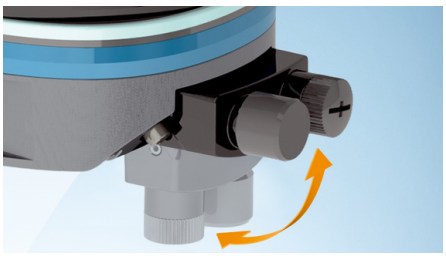
Thanks to the modular concept, the multiScan100 can be configured as desired. This is due to the fact that the hardware and software of this 3D LiDAR sensor from SICK can be adapted to the respective application-specific conditions. Additional digital functions can be activated with the online configurator to increase sensor performance. You can select the right apps and software add-ons for your application from a constantly growing modular software assembly. Commissioning is also easy as SICK can deliver the device with the customer-specific parameterization and the matching system plug on request. Another advantage for you: You only pay for what you actually need.



Modular software assembly
The sensor that fits your application: Choose between different software functions such as Streaming or 3D Object Detection. Various add-ons such as filter functions, multi-echo function, or reflector detection can also be added.



Advance parameterization included
Save valuable time during commissioning. When ordering, you can store predefined parameters or configurations with the SOPAS software. SICK imports them onto the device before delivery.



Modular system plug
Flexible: The system plug can be mounted either on the underside of the housing or on the back of the housing. The modular concept supports different interfaces for various applications.

→ Flexible. Modular. Future-proof.



SICK LifeTime Services

From consulting to modernization: SICK LifeTime Services increase the productivity of plants and machines, improve the safety of your employees, and provide a solid foundation for sustainable business operations. As a solution provider, SICK works with you to manage the holistic implementation of projects relating to industrial automation, safety and digitalization.

→ Comprehensive industry know-how and more than 75 years of practical experience create ideas and provide knowledge for your solutions. Find out more

Select the right product variant and accessories directly online. There you will also find example applications as well as downloads such as CAD dimensional models, operating instructions and software.
www.sick.com/multiScan100

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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 partnership with our customers is more than just a promise: Together, we optimize productivity, elevate quality, protect health and safety, and sustain the 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.

SICK

Sensor Intelligence