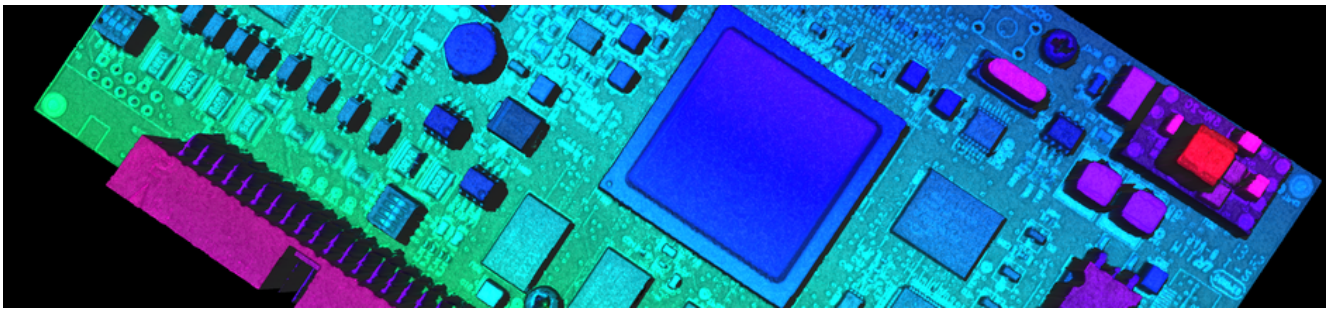
Product family overview

Ruler3000

The fast way to high-performance 3D

SICK
Sensor Intelligence.

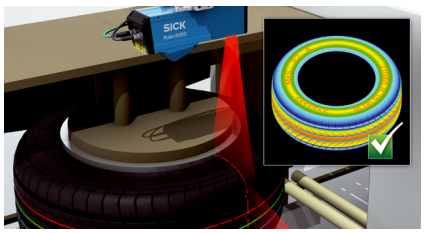
Advantages



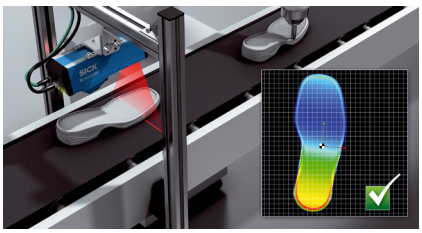
High-tech 3D machine vision made easy

The new 3D vision solution from SICK, Ruler3000, fits a wide variety of industrial needs. It is fast and offers high image quality. The 3D camera, built around the same CMOS sensor from SICK as the Ranger3 product family, offers superior image processing and reliable measurement results. Ruler3000 is easy to integrate and use. Its design is compact and the factory-calibrated camera has all the convenience features needed, including specific geometries for predefined fields of view.

Highly accurate and reliable 3D measurements in FoV, width from 27 mm up to 1.7 m.



The high light sensitivity of Ruler3000 ensures accurate inspection even of very dark materials. Ruler3020 in particular has a field of view that is ideal for tire side wall applications.

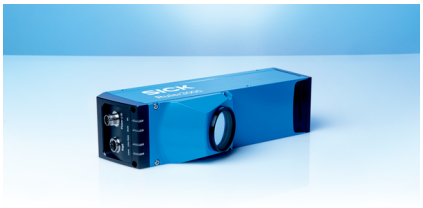


Ruler3000 can deliver millimeter-precise data as input to the robot, quickly and accurately guiding it through any dispensing application.

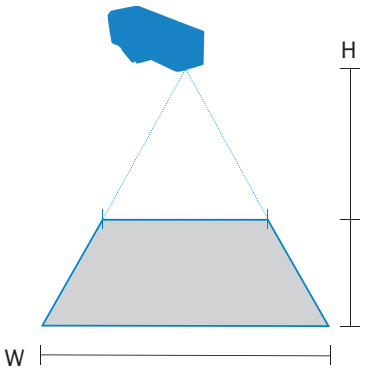
The new Ruler3000 3D camera from SICK is the perfect fit for a wide variety of applications in factory automation.

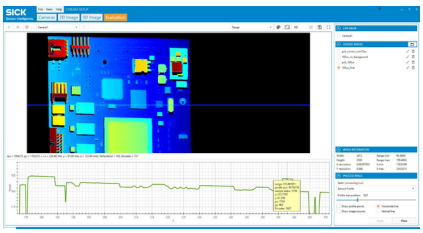
Keep it simple

The Ruler3000 3D camera offers ease of use and simplified integration into systems and machines using industry standards such as GigEVision and GenICam as well as SICK's own API GenIStream. In every aspect, simplicity is a given: A suitable lens and laser are already designed into the sensor and software is provided for easy setup.



Ruler3000
Guaranteed field of view





Ruler3000 comes factory-calibrated with a suitable laser and optics in a rugged housing. You can start the measuring directly.

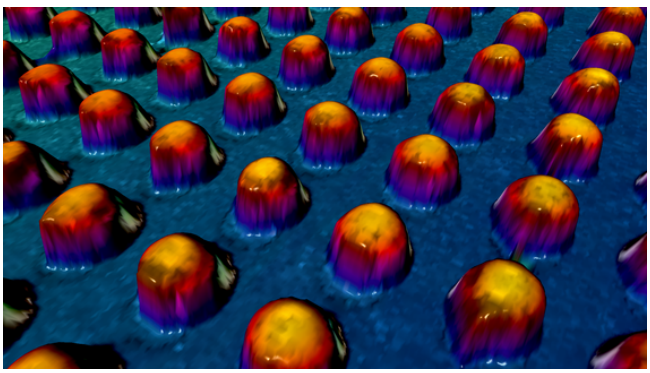
Thanks to the guaranteed field-of-view concept, commissioning is easy. You can quickly move from the lab to the factory floor.

The included software components, Stream Setup and the API GenIStream, are especially designed with simplicity in mind.

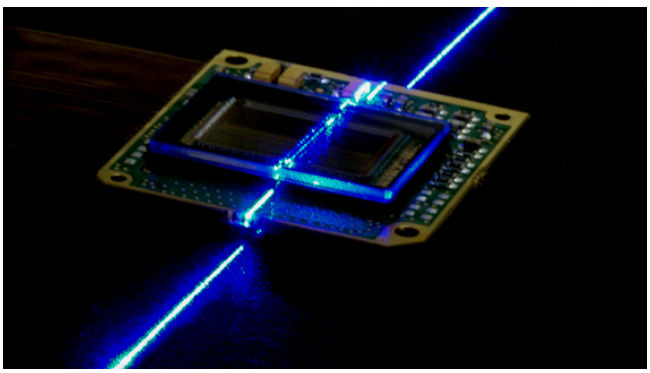
Ruler3000 enables you to easily solve complex inspection and measurement tasks.

Captures even very small object details with measurements in the micrometer range

Part of the Ruler3000 family is tailored to the electronics and semiconductor industries and is focused on capturing the really small details with micrometer measurements. Thanks to options for different fields of view, and blue or red lasers in laser class 2 or 3R, there are solutions for reliable results with challenging materials.

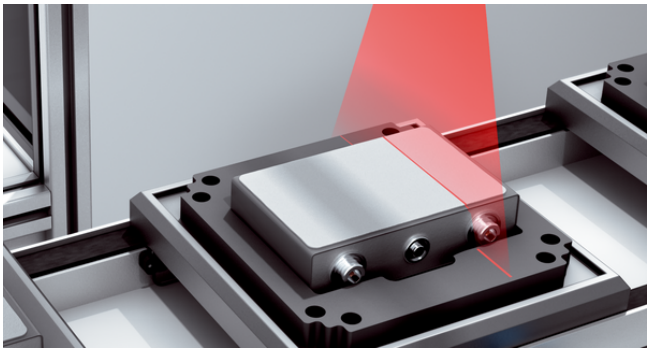


With accurate measurements down to 0.8 µm in height, even minuscule details are captured with accuracy.

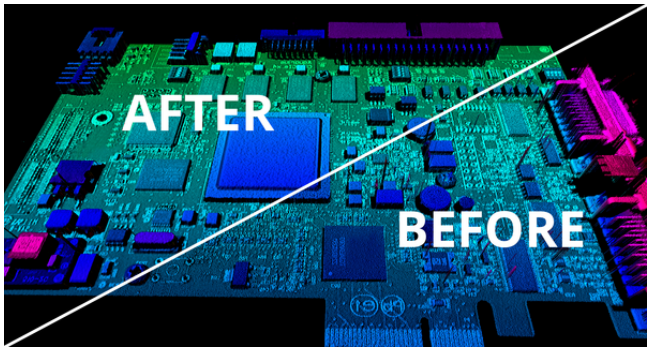


Ruler3000 has options for a blue 3R laser, which enables high-speed applications as well as better image quality on shiny surfaces.

Get high-quality data even for complex applications



The dual-exposure feature increases the image quality in high-contrast scenes with large variations in surface reflectivity, such as very dark and very shiny surfaces in the same scene. This means good image quality both on highly reflective, shiny surfaces as well as on surfaces with high contrast variation.



The Stream Setup configuration software provides user-friendly tools for noise reduction and false data removal.

The Ruler3000 offers solutions for reliable results with demanding materials

Surface+: More than meets the eye

Surface+ is a new patented technology that provides an additional image dimension to reveal even a very tiny scratch on a smooth surface. It can also be used for measuring the glossiness of surfaces to detect paint or coating defects, for example.

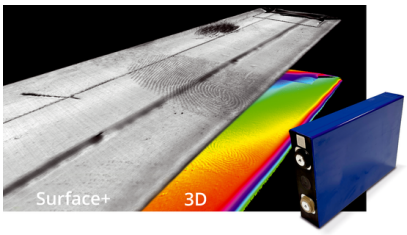
In most industries, standard surface inspection applications typically require both 3D and 2D data. The 3D data is used to measure the dimensions, finding dents and similar irregularities, while the 2D data is used to detect tiny scratches or gloss defects that are visible under specific illumination.

With Surface+, a new technology from SICK, both tasks are now completed with a single camera! Multiple images are acquired in both 2D and 3D in a single image capture. Not only that: The 2D and 3D data are even aligned along the same coordinate system.

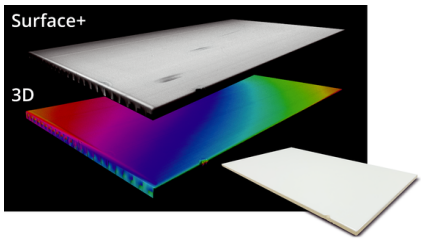
This makes Surface+ suitable for a wide range of applications, such as in consumer goods, the automotive sector, the electronics industry, and the processing of moving wood, metal or steel.

Surface+ is included in the scope of delivery of the Ranger3 and Ruler3000 – the result is a harmonious duo of great 3D data and Surface+ alignment.

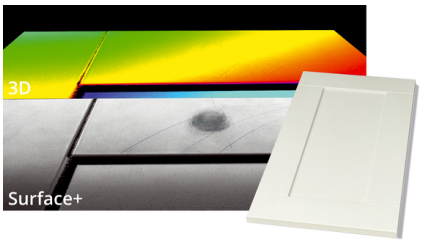
Find out more about Surface+ here



Inspection of battery foils
Battery production requires high-precision inspection for quality control. The Surface+ technology reveals unacceptable defects such as small scratches and dents that are not visible to the human eye. Even a light fingerprint becomes visible!



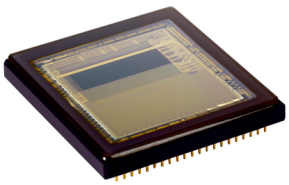
Inspection of ceramic tiles
Visual inspection of ceramic tiles is a critical process to ensure quality in every piece. The inspection must guarantee that each tile meets exact standards while detecting and rectifying any imperfections. With the Surface+ technology, defects like light scratches are reliably detected along with other imperfections on glossy surfaces, like dents.



Inspection of boards
Delicate wooden boards used in furniture or flooring production not only require high production speeds, the quality must also meet end-user standards. Tiny scratches or dents are easily discovered by the Surface+ technology, even on glossy surfaces and varnishes.

Setting a new standard for high-speed 3D

With ever-increasing needs for faster manufacturing processes, more accurate quality control, and shorter delivery times, each part must keep up to the speed with the others. The new 3D streaming cameras from SICK not only keep up, they exceed the pace – creating new opportunities in the area of machine vision for machine builders and system integrators in a wide range of industrial applications.



SICK CMOS 3D sensor.

Faster and more precise shape, volume, and position measurements with 3D cameras from SICK.

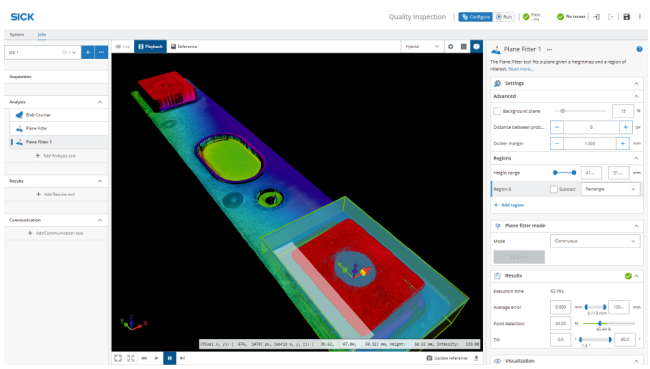
ROCC

Superior 3D performance with Rapid On-Chip Calculation technology (ROCC).

Highly accurate with an unmatched measurement speed, the new generation of 3D cameras support machine vision system integrators worldwide.

Nova Ruler3000 – The fast and easy way to high-performance 3D

The combination of Ruler3000 3D camera, the SIM2x00 Sensor Integration Machine and SICK Nova results in a solution with a high level of user-friendliness. The Ruler3000 provides excellent 3D data at high speed for detailed quality assurance.



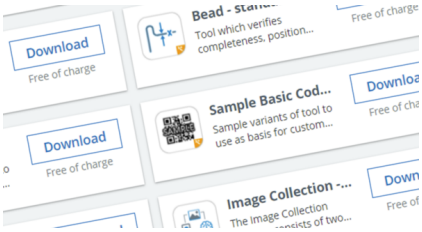
The user-friendly web interface with point-and-click configuration provides an intuitive 2D and 3D viewer, making the configuration quick and easy to use – even by non-experts.

Go one step further with SICK Nova

Machine vision applications are easily handled in a web browser using point-and-click configuration, giving users the freedom to combine tools for image processing and integration as they need. But the functionality does not end there: With SICK Nova, users can download additional Nova tools or develop their own, allowing them to quickly and conveniently extend functionality to fit the application — without limitations.

Quickly solve tasks with just the right tools at your fingertips, check out these Tutorials for how! Link to playlist

Choose the right sensor for the application and use the same familiar software.



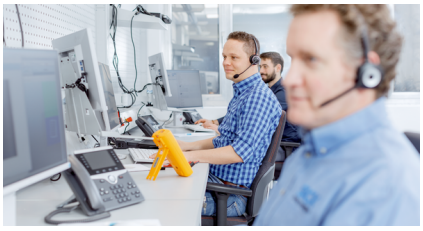
Rapidly create customized solutions with AppPool downloads or custom development.

Rapidly handle your applications like never before. Add, combine, and customize tools with ease.

SICK LifeTime Services

SICK's services increase machine and plant productivity, enhance the safety of people all over the world, provide a solid foundation for a sustainable business operation, and protect investment goods. In addition to its usual consulting services, SICK provides direct on-site support during the conceptual design and commissioning phases as well as during operation.

The range of services not only covers aspects like maintenance and inspection, but also includes performance checks as well as upgrades and retrofits. Modular or customized service contracts extend the service life of plants and therefore increase their availability. If faults occur or limit values are exceeded, these are detected at all times by the corresponding sensors and systems.



Consulting and design
Application-specific advice on the product, its integration and the application itself.

commissioning and maintenance
Application-optimized and sustainable — thanks to professional commissioning and maintenance by a trained SICK service technician.

service contracts
Extended warranty, SICK Remote Service, 24-hour helpdesk, maintenance, availability guarantees and other modular components can be individually combined on request.

Technical data overview

Technology	3D triangulation / 3D laser triangulation / image analysis (depending on type)
Scan/frame rate	7,000 3D profiles/s ... 46,000 3D profiles/s, In reduced ROI, full format
Scatter measurement	✓
Reflectance measurement	✓
3D measurement	✓
Factory calibrated	✓
Enclosure rating	IP65 / IP67 / IP65 (depending on type)
Configuration software	Stream Setup
Ethernet	✓ / UDP/IP / ✓ (4) / TCP/IP / FTP / OPC UA / MQTT / Configuration / image transmission / Data output / software updates (depending on type)
PROFINET	✓ (2), Dual port Ethernet-based fieldbus
EtherNet/IP™	✓ (2), Dual port Ethernet-based fieldbus

Product description

Highly accurate with an unmatched measurement speed, the new generation Ruler3000 3D cameras will be the number one choice for machine vision system integrators and industrial applications. Being powered by the unique 3D CMOS sensor from SICK tailored for superior image processing, their measurement results are very reliable. The factory-calibrated sensor extracts the true 3D shape of an object, regardless of its contrast or color. The numerous versions of Ruler3000 offer a solution for a wide range of challenges and can deliver accurate measurement values down to 0.8 µm in height with a resolution of 3200 data points per profile. Thanks to the guaranteed field-of-view concept, commissioning is easy. GigE Vision and GenICam compliance ensures cost-effective integration.

At a glance

- SICK's CMOS sensor with ROCC technology for superior 3D performance
- 3D profiles at up to 46 kHz in reduced ROI
- Easy commissioning with guaranteed FOV concept
- GigE Vision and GenICam compliant
- Accurate 3D, reflectance, and scattered light measurements in one device
- Modular industrial design, IP65/67

Your benefits

- Factory calibration shortens integration time
- The unique CMOS sensor enables fast 3D measurement speed for increased throughput
- Guaranteed field of view simplifies commissioning
- Suitable for batch size one and flexible production thanks to reliable and accurate measurements on dark and shiny surfaces
- High light sensitivity for 3D inspection with laser class 2 and 3R
- Standardized and cost-effective software integration with GigE Vision and GenICam
- Scalability by sharing software and feature set with Ranger3 3D vision cameras

Fields of application

- Assembly inspection of tablets and cell phones in the electronics industry
- Quality control of tires
- Weld seam inspection of batteries
- Packaging control and inline quality inspection of foodstuffs
- Inspection of boards and 3D log measurement in the timber industry
- Article identification in logistics
- Robot guided inspection

Ordering information

Other models and accessories ➜ www.sick.com/Ruler3000

Sub product family	Working distance	Internal lighting	Laser class	Window material	Type	Part no.
–	–	–	–	–	SIM2500-2AX1G10 Nova Ruler3000 QI	1140241
Ruler3000 3D Belt Pick	430 mm ... 1,445 mm	Red, laser, Visible, 660 nm, ± 15 nm	2	Float glass, anti-reflective coated	3D Belt Pick Ruler3000 Bundle	1128736
Ruler3002	46.7 mm ... 55.4 mm	Blue, laser, Visible, 450 nm, ± 10 nm	3R	Float glass, anti-reflective coated	V3DX3-002BR21A	1126985
Ruler3004	54.2 mm ... 71.8 mm	Blue, laser, Visible, 450 nm, ± 10 nm	3R	Float glass, anti-reflective coated	V3DX3-004BR21A	1126984
Ruler3008	99 mm ... 147.7 mm	Blue, laser, Visible, 450 nm, ± 15 nm	2	Float glass, anti-reflective coated	V3DU3-008BM21A	1115258
Ruler3010	99 mm ... 149 mm	Blue, laser, Visible, 450 nm, ± 10 nm	3R	Float glass, anti-reflective coated	V3DX3-010BR21A	1126983
Ruler3020	245.5 mm ... 370.5 mm	Red, laser, Visible, 660 nm, ± 15 nm	2	PMMA	V3DU3-020RM25A	1132219
				Float glass, anti-reflective coated	V3DU3-020RM21A	1106166
			3R	Float glass, anti-reflective coated	V3DU3-020RR21A	1135712
Ruler3060	395 mm ... 815 mm	Red, laser, Visible, 660 nm, ± 15 nm	2	PMMA	V3DU3-060RM25A	1132221
				Float glass, anti-reflective coated	V3DU3-060RM21A	1122973
			3R	Float glass, anti-reflective coated	V3DU3-060RR21A	1135714
Ruler3120	430 mm ... 1,445 mm	Red, laser, Visible, 660 nm, ± 15 nm	2	PMMA	V3DU3-120RM25A	1132220
				Float glass, anti-reflective coated	V3DU3-120RM21A	1115260
			3R	Float glass, anti-reflective coated	V3DU3-120RR21A	1135713

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