# SICK’s Extended Ruler3000 Family Focuses on the Finest Details

Waldkirch, June 2023. SICK has expanded its next-generation Ruler3000 family to focus the outstanding speed and precision of its top-flight 3D streaming cameras on the finest details of high-quality, high-resolution 3D inspection and measurement tasks. With the launch of three compact cameras, as well as an additional mid-range variant, the Ruler3000 cameras now span fields of view between 26.6mm and 1680mm, down to heights of 0.8 micrometers.

The SICK Ruler3000 has set a new standard by combining the outstanding image quality of SICK’s Ranger3 streaming camera with the convenience of a built-in laser, pre-selected optics and factory-calibrated fields of view. Since its launch two years ago, vision specialists all over the world have taken advantage of the Ruler3000’s unmatched processing speed and ease of integration. Already it has solved challenging 3D applications as diverse as inspecting railway tracks, windmill blades and tire walls, measuring and portioning meat products, and volume dimensioning of legal-for-trade freight.

**Conquering the finest 3D details**

Now, the SICK Ruler3002, 3004 and 3010 cameras open up the high performance of the Ruler3000 to guaranteed fields of view down to 26.6mm. The addition of a high-powered blue 3R laser gives the three smaller cameras the rapid exposure times necessary to capture the tiniest three-dimensional details at rapid production speeds. With more compact dimensions, these cameras therefore extend the capabilities of the Ruler3000 to the minutest details required to inspect electronics and consumer goods assemblies, printed circuit boards and semiconductors. The addition of the mid-range Ruler 3060, with a field of view of 740mm is targeted at applications in the automotive and consumer goods industries.

The SICK Ruler3000 achieves outstanding repeatability on light, reflective and metal surfaces, and a new patent-pending Surface+ technology adds another image dimension that reveals even the tiniest scratch on smooth, shiny metal surfaces such as battery housings. The Ruler3000 performs equally well with products with low light remissions, such as when inspecting tire walls.

**Outstanding image quality at rapid speeds**

By capturing 3D images, reflectance and scattered light measurements in a single scan at speeds of up to 46KHz, the Ruler3000 cameras can distinguish differing material properties, useful for example in the cutting of timber, and the portioning of meat. The cameras’ excellent light sensitivity and High Dynamic Range (HDR) also help optimize inspections independent of contrast, or widely differing light remissions, in a single scene.

The cameras are therefore ideal for verifying the correct shape and positioning during robot dispensing of glue beads in consumer goods assembly, for example. When inspecting the surfaces of shiny metal housings, welding seams or heat-conducting paste, the Ruler3000 achieves very high resolutions and inspection speeds. The SICK Ruler3002, 3004 and 3010 cameras will offer particular benefits for critical quality inspections such as completeness, correct component positioning, height and flatness measurements, e.g. during the assembly of smartphones or automotive electronics control units (ECUs).

The three new cameras have been designed with more compact dimensions than the rest of the Ruler3000 family, for integration into tight machine spaces. The Ruler3004, for example, measures 129.5 x 60.3mm x 100 mm (L x W x H). All Ruler3000 cameras are powered by SICK’s highly-sensitive CMOS sensor and innovative ROCC (Rapid On-Chip Calculation) technology. They extract the true 3D shape of an object, regardless of its contrast or color. They process up to 15.4Gp/s to enable up to 7000 full-frame 3D profiles per second.

Machine integration is made simple by SICK’s user-friendly Stream Setup interface. The SICK GenIStream API facilitates programming for C# and C++ users. Full compatibility with industry standards such as GigEvision and GenICam, provides plug and play access to third party software such as HALCON and LabVIEW. In addition, developers have all the flexibility of SICK’s AppSpace software platform with its wide range of image processing tools and application examples.

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Picture: Ruler3000 Family

Caption: The new Ruler3000: short exposure times thanks to blue 3R lasers at high production speeds.

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SICK is one of the world's leading solution providers for sensor-based applications for industrial applications. Founded in 1946 by Dr.-Ing. e. h. Erwin Sick and headquartered in Waldkirch im Breisgau near Freiburg, Germany, the company is one of the technology and market leaders and has a presence around the globe with more than 50 subsidiaries and affiliates as well as numerous representatives. SICK employs nearly 12,000 people worldwide and achieved consolidated sales of around EUR 2.2 billion in fiscal year 2022. For more information on SICK, visit www.sick.com.