# Safety laser scanner as enabling technology for robotics and mobile applications

microScan3 Pro for PROFINET and EtherNet/IP™ masters up to 128 monitoring scenarios

Waldkirch/ Hannover, April 2018 – The new microScan3 Pro safety laser scanner that SICK is presenting at the Hannover Messe 2018 for the first time is characterized by expanded functionalities for robotics applications and mobile use. It also offers interfaces for PROFINET Profisafe and for EtherNet/IP™ CIP Safety™ for even more flexible integration.

With up to eight simultaneous protective fields and 128 individual fields, the microScan3 Pro offers application-specific configuration with up to 128 monitoring scenarios. The movements of robots and vehicles can thus be monitored in extremely fine gradations – handling and transport processes can therefore be carried out with better movement continuity and fewer stops, increasing productivity. A special additional benefit for automated guided vehicles (AGVs) is the possibility of using the extremely precise measurement data of the microScan3 Pro safety laser scanner for vehicle navigation.

Its functionalities and integration potentials make the microScan3 Pro safety laser scanner from SICK an enabler for even more efficient application solutions.

**Expanded functions as enabler for future solutions**

With the help of up to 128 possible protective, warning and contour detection fields, the safe drive, braking and accelerating behaviors of autonomous vehicles will be automatically adapted to individual conditions – such as load, speed or path layout. This results in a smoother and more efficient vehicle driving performance, even in curves or when approaching transfer stations or detected obstacles. This increases the vehicle’s entire intralogistical productivity. Parallel to safety-oriented monitoring, the microScan3 Pro also delivers highly precise measurement values that can be used for vehicle navigation. The continuous contour detection of the safety laser scanner is the basis for vehicle positioning and navigation.

In robotics, the expanded functionalities also enable the more individual design of warning and protective fields as well as monitoring scenarios, and more finely gradated control of movement. This benefits, in particular, human-robot applications in which both participants share the same working space at the same time. The movement control of a robot within its planned operating area can be very precisely adapted to the position of a human with the help of the safety information provided by the microScan3 Pro. Depending on the speeds and the process paths, safety distances are permanently monitored and the robot slows, stops or changes its direction of movement according to the actual level of risk. The robot system can automatically revert to its usual speeds and process paths when the distance between the user and the machine increases beyond the minimum distance. This automatic adaptive behavior allows the entire human-robot application to achieve both maximum safety and maximum productivity with the assistance of the microScan3 Pro.

**Flexible network integration**

With the PROFINET PROFIsafe and EtherNet/IP CIP Safety network interfaces the microScan3 Pro safety laser scanner can be integrated in the communication structures common in robotics and AGVs. Whereby the Ethernet-based transfer of safety-oriented data and non-safe data to a safety controller takes place via a single shared cable. The connection possibilities of this safety laser scanner to a PROFIsafe or CIP Safety Master are interesting for robot producers, for example, because many robots have a slave/master function with Profisafe or CIP Safety. AGV producers also benefit from improved connectivity when, for example, they convert their vehicles’ control concept from a standard to a safety controller that supports safe fieldbuses. Finally, in both AGV and robotic applications, the interfaces for PROFINET Profisafe and EtherNet/IP CIP Safety offer the possibility of choosing between the automation systems of different producers – and thus implementing, for example, the definitions of automotive producers safely, functionally, and economically. A version of the microScan3 Pro safety laser scanner with a SICK-specific EFI-pro interface (based on EtherNet/IP CIP Safety) is already available for selected customers. It enables direct communication with the modular FlexiSoft safety controller, expanding the integration possibilities in safety-oriented applications and allowing even more efficient implementation of safe system solutions from SICK.

**Certified safety**

Like the Core variant of the microScan3 safety laser scanner, which has already been successfully placed on the market, the microScan3 Pro with its expanded range of functions (which will be available from June 2018) also complies with the relevant safety standards and performance characteristics: Type 3 acc. to IEC EN 61496-3, SIL2 acc. to IEC 61508 and SIL2CL2 acc. to EN 62061, Category 3 and Performance Level d acc. to EN ISO 13849.

**microScan3 – the safety benchmark for robotic and AGV applications**

The safety laser scanners of the microScan3 product family from SICK can be used for the horizontal and vertical protection of hazardous areas in stationary and mobile applications. Regardless of whether the Core or Pro variant, all devices offer ranges of up to 5.5 meters. Their protective fields offer application-specific configuration in graduated resolutions between 30 to 200 millimeters – whereby a microScan3 can operate with protective fields in different resolutions at the same time. One of the technological unique selling points of the microScan3 safety laser scanner in the market is its safeHDDM™ (High Definition Distance Measurement) scanning technology. This high-resolution digital process for safety-oriented time and distance measurement, with which 88,000 laser pulses are emitted (instead of only about 600 to 800 pulses for usual time-of-flight measurements), offers particular advantages, especially when safeguarding robots and AGVs. This multi-pulse process in combination with special digitalized evaluation enables the generation of considerably more stable measurement values – and thus more reliable detection than usual of the stipulated minimum reflectivity value of 1.8 percent. The risk of mutual interference in applications in which several microScan3 units are used simultaneously is reliably ruled out by encrypted and time-coded pulses. Finally, these safety laser scanners achieve a hitherto impossibly high level of ambient light immunity of up to 40,000 Lux (compared with the usual 3,000 lux) thanks to their safeHDDM™ scanning technology. They are therefore almost impossible to dazzle – either with bright daylight, with artificial high-frequency ambient lighting, or with light sources or reflections aimed directly at the optics. Evaluation of the safeHDDM™ also ensures that dust particles in the surroundings, or the formation of deposits on the sensors’ optical surfaces, cannot impair detection reliability and the dependable protective function. All this adds up to maximum safety and productivity in robotic and AGV applications, among others.

Picture: SICK\_microScan3.jpg
With up to eight simultaneous protective fields and 128 individual fields, as well as network interfaces for PROFINET and EtherNet/IP™, the microScan3 Pro safety laser scanner becomes an enabler for even more efficient application solutions.

SICK is one of the world’s leading producers of sensors and sensor solutions for industrial applications. The company, founded in 1946 by Dr. Erwin Sick and based in Waldkirch-im-Breisgau near Freiburg, is a technology and market leader with a global presence – with more than 50 subsidiaries and associated companies, as well as numerous sales offices. SICK achieved Group sales of about EUR 1.5 bn. in the 2017 fiscal year with almost 9,000 employees worldwide.

Further information on SICK is available at http://www.sick.com or by phone at +49 (0)7681 202-4345.