INDUSTRY OVERVIEW ELECTRONICS

EFFICIENT APPLICATION SOLUTIONS

Challenges in the Electronics industry

SICK
Sensor Intelligence.

CHALLENGES IN THE ELECTRONICS INDUSTRY

The electronics industry is a driving force of industrial progress and is greatly impacted by the pressure of the market. It must innovate – quickly, reliably and economically – while maintaining the lowest possible error rates. High-tech machines and production sites need to be equipped with state-of-the-art sensors to satisfy market requirements for quality and cost-effectiveness. SICK sensor technology has proven itself in all areas of the electronics industry - from chip production to complex assembly and inspection processes for computers, smart phones, tablets and other touchscreen devices.

Learn more about sensor solutions for the Electronics industry
➜ www.sick.com/electronics

Detecting and measuring

The short product life cycle of electronic devices requires flexible production lines with minimum downtime and a high diagnosability. Modern, intelligent sensors from SICK are able to store settings in memory and feature automatic teach-in and diagnostic capabilities, making a significant contribution towards meeting these challenges.

- Presence – Speed – Position – Contour

Protecting

Linking automated production equipment with semi-automated assembly cells requires intelligent and flexible safety designs. SICK safety solutions ensure the protection of operating personnel, optimizes production, and reduces the machine footprint and downtime.

- Hazardous point – Access – Safety controller

Monitoring and Inspecting

Electronic components are being used in a growing number of different applications. Reliability is an important requirement for all applications, posing a highly challenging task for quality control. SICK has industry-proven distance sensors, vision sensors and systems that support nearly every type of monitoring.

- Quality – Processes – Systems

Identifying

Reliable object identification is a requirement for smooth production flow and forms the basis for traceability and continuous quality improvement. SICK offers a wide range of both permanently installed and mobile readers for bar codes, 2D codes and RFID technology.

- Code – Plain text – Data carriers

DETECTING AND MEASURING

Presence – Position – Speed – Contour
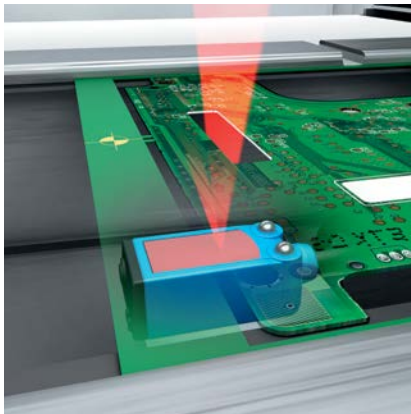
Reliable detection of circuit boards

Two sensors in a single housing intelligently linked to a logical evaluation unit: This is the solution for the improved detection of electronics cards with holes or gaps while they're on the production line!
The WTB4-3 modified photoelectric proximity sensor uses two line-shaped light spots to accomplish this task, thereby enabling reliable detection and increased machine availability. This reduces operator intervention on the production line, which leads to higher circuit board throughput with fewer mechanical defects.

• Miniature photoelectric sensor

➜ www.mysick.com/en/WTB4-3
➜ www.sick.com/multiline-video
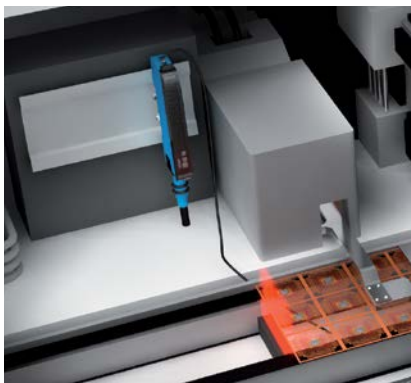
Presence detection in the wire bonder

Temperatures are very high in the area around the bonding head, making fiber-optic cable systems the most effective sensor for this application. With its 16 μs response time, the WLL180T works together with the LL3-TH fibers to supply the control unit with a precise signal for edge detection. The grippers move the thin substrate rack at extremely high speed, which means that maximum precision is a must.

• Fiber-optic sensor

➜ www.mysick.com/en/WLL180T
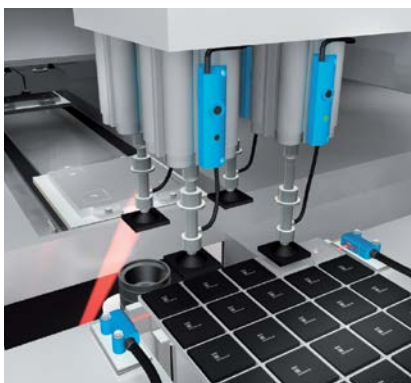
Flexible positioning of cylinders

The pick-and-place process involves processing very thin components. With a resolution of 0.05 mm and excellent repeatability, the MPS magnetic cylinder sensor operates reliably, cost-effectively and with maximum flexibility. An adjustable zero and endpoint can be taught via a single Teach-in button. High cycle times on the machine are achieved by sampling rates of 1 ms.

• Magnetic cylinder sensor

➜ www.mysick.com/en/MPS
➜ www.sick.com/mps-video

Positioning of the conveyor belt

The DFS60 incremental encoder relays the position of the belt, thereby ensuring the synchronization of both sensor signals. The wide range of different mechanical and electrical interfaces allows optimal matching of the encoder to the application-specific installation conditions.

• Incremental encoder

➜ www.mysick.com/en/DFS60
➜ www.sick.com/dfs-video

PROTECTING

Hazardous point – Access – Safety controller

Safety with a camera system

Handling robots work at high speeds. In the past, it was necessary to shield personnel from these robots using tall, expensive protective enclosures to prevent injuries. With the V300 Work Station Extended safety camera system, operator safety is maintained while using lower enclosures. This simplifies access for material loading and maintenance work considerably. Using only a camera and reflective tape, the V300 Work Station Extended offers flexible layout options in terms of machine design and access area.

• Safety camera system

→ www.mysick.com/en/V300_Work_Station_Extended
→ www.sick.com/v300-video

Safety down to the smallest detail

Miniaturized electronic products require sensor systems that are equally small. The miniTwin safety light curtain has the world's smallest design, making it the perfect solution for such applications. The sender and the receiver are housed in a single stick, reducing the number of components, and built-in alignment LEDs aid in installation and setup. Combined with the Flexi Soft safety controller, SICK offers a complete machine safety solution.

• Safety light curtain

→ www.mysick.com/en/miniTwin
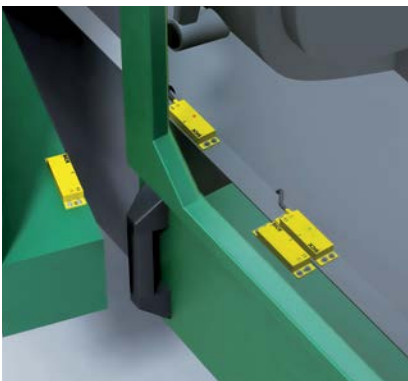
Monitoring of safety doors

Any door that has a protective function can be monitored by the non-contact RE1 or RE2 safety switches. Together with the Flexi Soft safety controller, these switches ensure that a machine cannot be started if any doors are open, and that a running machine is stopped whenever a door is opened. Different designs and contacts are available, depending on the application. High tolerances for door misalignment increase machine uptime.

• Non-contact safety switch

→ www.mysick.com/en/RE1
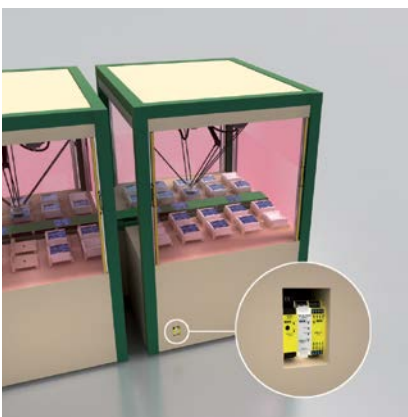
Safety for humans and machines

For certain types of assembly machines, operators must intervene to introduce material or correct a problem. A safety solution, such as the miniTwin safety light curtain, detects the intrusion and the robot or gripper is forced to stop or slow down at the exact moment of detection. Typically, individual machines are connected together and synchronized to form a main system. The Flexi Soft safety controller can monitor each tool independently, allowing adjacent machines to continue working. The safe signals from the individual machines can be connected using the Flexi Line expansion concept and cascaded or diagnosed with the Flexi Loop safe sensor cascade.

→ www.mysick.com/en/Flexi_Soft
→ www.sick.com/flexiline-video
→ www.sick.com/drivemonitor-video

• Safety controller

MONITORING AND INSPECTING

Quality – Processes – Systems

Inspection, positioning and measuring

When parts or components of semiconductors are delivered for further processing in trays or on roller conveyors, mis-alignment can lead to product defects and higher costs. As a stand-alone solution, the Inspector I40 vision sensor is more efficient and cost-effective than conventional, more complex 2D image processing solutions. An entire product family is available to handle inspection, positioning and measuring tasks.

- Vision sensor

→ www.mysick.com/en/Inspector
→ www.youtube.com/watch?v=AOn7DNPcL3k
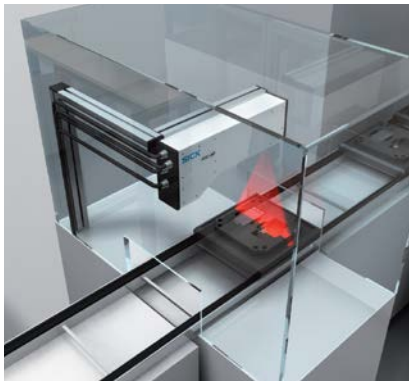
Final inspection with 3D camera

During final inspection of circuit boards, the IVC-3D smart camera ensures that even the smallest parts are mount-ed correctly. For example, the presence of seals can be checked and screws can be measured if they are screwed correctly in the housing. Errors are indicated in real time. The customer has the benefit of using a factory-calibrated, independently functioning integrated 3D smart camera that is linked to the machine over EtherNet/IP.

- Smart camera

→ www.mysick.com/en/IVC-3D

Inspection of components and layers

With its extremely small size and light weight, the OD Mini distance sensor opens up entirely new application possi-bilities. Mounted on the robot assembly arm or XY portal, it measures distances of up to 250 mm at resolutions in the µm range. It can detect missing parts or measure substrate coatings. An easy-to-use operating system and built-in display enable quick and efficient integration.

- Short-range distance sensor

→ www.mysick.com/en/OD_Mini
→ www.sick.com/odmini-video
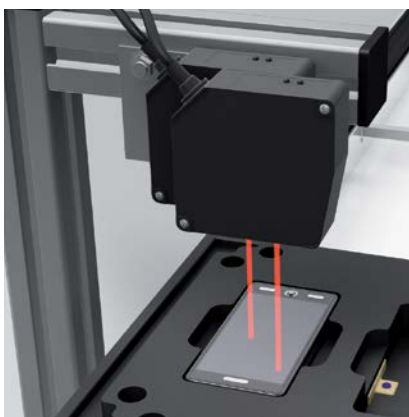
Measuring glass thickness or planarity

Many companies use two scanning, high-resolution distance sensors to measure the thickness of transpar-ent surfaces. This poses the problem of calibrating the sensors to one another to obtain accurate data. The OD Precision short-range distance sensor requires just one read head to meet this challenge. Up to three inde-pendent read heads can be connected to the separate evaluation unit for additional tasks such as measuring surface planarity.

- Short-range distance sensor

→ www.mysick.com/en/OD_Precision

IDENTIFYING

Code – Plain text – Data carriers

Advanced identification technology

The LECTOR®620 is used for the reliable identification of directly marked 2Ddata matrix codes on various circuit boards. The smart identification algorithms recognize low-contrast or damaged codes. The efficient auto setup function ensures quick and easy commissioning. For integration into a system, the device offers the following common field bus technologies: Ethernet TCP/IP, PROF-INET, EtherNet/IP, serial interfaces and CAN.

- Image-based code reader

➜ www.mysick.com/en/LECTOR62x
➜ www.sick.com/lector-video

Identification of objects

When it comes to identifying classic bar codes (1D), the CLV620 bar code scanner delivers outstanding read rates with its SMART620 code reconstruction technology – even for damaged codes. Integrated pushbuttons, an LED bar graph and smart auto setup make setup extremely easy, even without a PC. The scanner features integrated serial interfaces, CAN and Ethernet. The optional expansion interface can be used to provide solutions for special customer needs.

- Bar code scanner

➜ www.mysick.com/en/CLV620

Mobile identification solutions

The hand-held scanners from SICK show their strengths during the loading of component feeders. Reconstruction algorithms reduce manual input, and codes can be quickly identified with more than 500 scans/sec. The intuitive "good read" feedback occurs via vibration, beeper and LED. A rugged housing withstands high mechanical loads. The IDM devices are available with Bluetooth or WLAN and feature PS/2, USB or RS-232 interfaces.

- Hand-held scanner

➜ www.mysick.com/en/IDM160

Identification of workpiece trays

RFID technology offers many benefits in the area of product tracking through the use of its various transponders. Product information and customized commands on the transponders can be both read and written by the RFH620 read/write device at a frequency of 13.56 MHz. In addition, the device also offers a wide range of diagnostic functions.
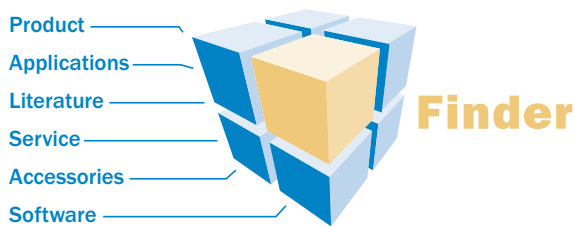
- RFID sensor

➜ www.mysick.com/en/RFH620

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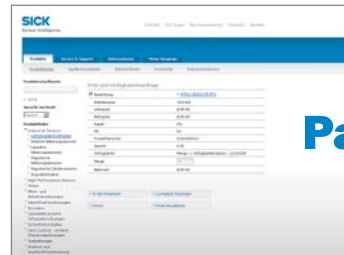
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FOR SAFETY AND PRODUCTIVITY: SICK LIFETIME SERVICES

SICK LifeTime Services is a comprehensive set of high-quality services provided to support the entire life cycle of products and applications from system design all the way to upgrades. These services increase the safety of people, boost the productivity of machines and serve as the basis for our customers' sustainable business success.

SICK LifeTime Services

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TRAIN

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Verification & Optimization
Checks and recommendations for increased availability

Upgrade & Retrofits
Uncovers new potential for machines and systems

Training & Education
Employee qualification for increased competitiveness

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for factory, logistics, and process automation. With more than 6,000 employees and over 40 subsidiaries worldwide, we are always close to our customers. 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 various 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 round out 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:

Australia, Belgium/Luxembourg, Brasil, Česká republika, Canada, China, Danmark, Deutschland, España, France, Great Britain, India, Israel, Italia, Japan, México, Nederland, Norge, Österreich, Polska, România, Russia, Schweiz, Singapore, Slovenija, South Africa, South Korea, Suomi, Sverige, Taiwan, Türkiye, United Arab Emirates, USA.

Please find detailed addresses and additional representatives and agencies in all major industrial nations at: **www.sick.com**

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