Smart Sensor Solutions powered by IO-Link

Create efficient solutions for applications by integrating Smart Sensor Solutions into an automation network.

SICK
Sensor Intelligence.

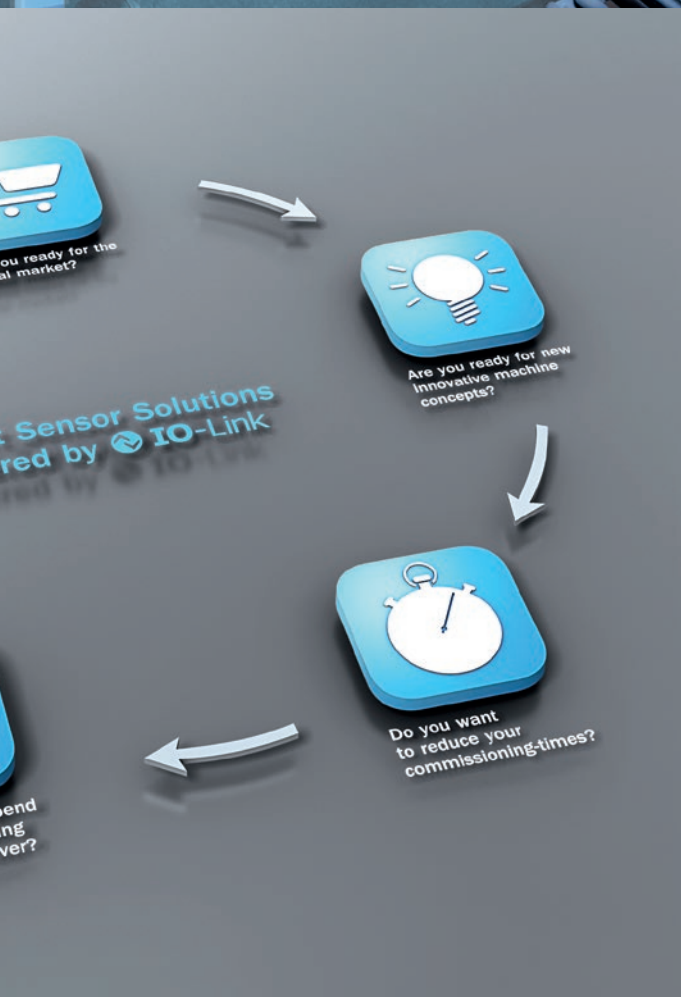
Smart Sensor Solutions.
Groundbreaking innovations.

For top production performance.

For years, end customers have been demanding more and more from machine manufacturers. Customers expect machines that offer excellent quality and longevity, meet regional or country-specific requirements, and allow productivity to grow continuously.

Due to these demands, machine manufacturers are faced with a whole host of challenges – and to overcome them, they are seeking out innovative automation technology solutions.

SICK is helping machine manufacturers meet customer expectations by continually investing in sensor innovations.
With its line of Smart Sensor Solutions powered by IO-Link, SICK is expanding the range of products it has to offer and is providing solutions that optimize the automation technology used in machines and systems.



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We deliver “Sensor Intelligence.”

SICK sensor solutions for industrial automation are the result of exceptional dedication and experience. From development all the way to service: The people at SICK are committed to investing all their expertise in providing with the very best sensors and system solutions possible.

A company with a culture of success

Over 5,800 people are on staff, with products and services available to help SICK sensor technology users increase their productivity and reduce their costs. Founded in 1946 and headquartered in Waldkirch, Germany, SICK is a global sensor specialist with nearly 50 subsidiaries and representations worldwide.

Our exemplary corporate culture fosters an optimum work-life balance, thus attracting the best employees from all over the world. SICK is one of the best employers – we have been among the winners of the prestigious German “Great Place to Work” award for many years in succession.

Innovation for the leading edge

SICK sensor systems simplify and optimize processes and allow for sustainable production. SICK operates at many research and development centers all over the world. Co-designed with customers and universities, our innovative sensor products and solutions are made to give a decisive edge. With an impressive track record of innovation, we take the key parameters of modern production to new levels: reliable process control, safety of people and environmental protection.

A corporate culture for sustainable excellence

SICK is backed by a holistic, homogeneous corporate culture. We are an independent company. And our sensor technology is open to all system environments. The power of innovation has made SICK one of the technology and market leaders – sensor technology that is successful in the long term.

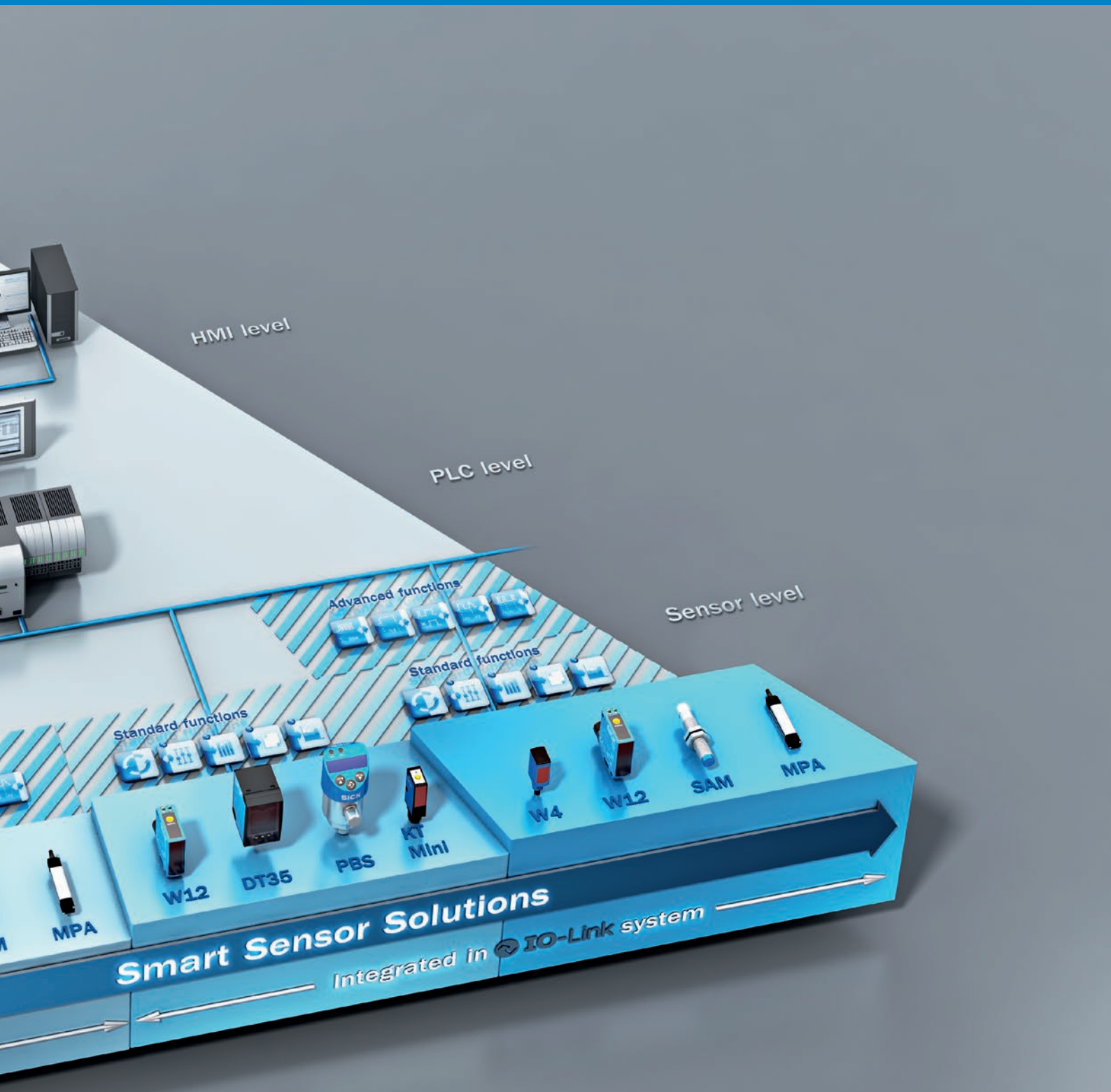
Smart Sensor Solutions powered by IO-Link

It is possible to achieve a consistent flow of information throughout the automation pyramid by integrating communication into the smallest automation elements such as sensors, actuators, and drives.

Process-related data concerning pressure, temperature, flow, end position, speed, and output state, for example, create more opportunities for helping the automation pyramid work at the peak of its capabilities.

With Smart Sensor Solutions, SICK offers innovative sensor technology that allows you to take advantage of innovative functions.

Integrate Smart Sensor Solutions seamlessly into an automation network and tap into new ways of increasing the flexibility, reliability, and efficiency of machines, as well as reducing the costs associated with them.

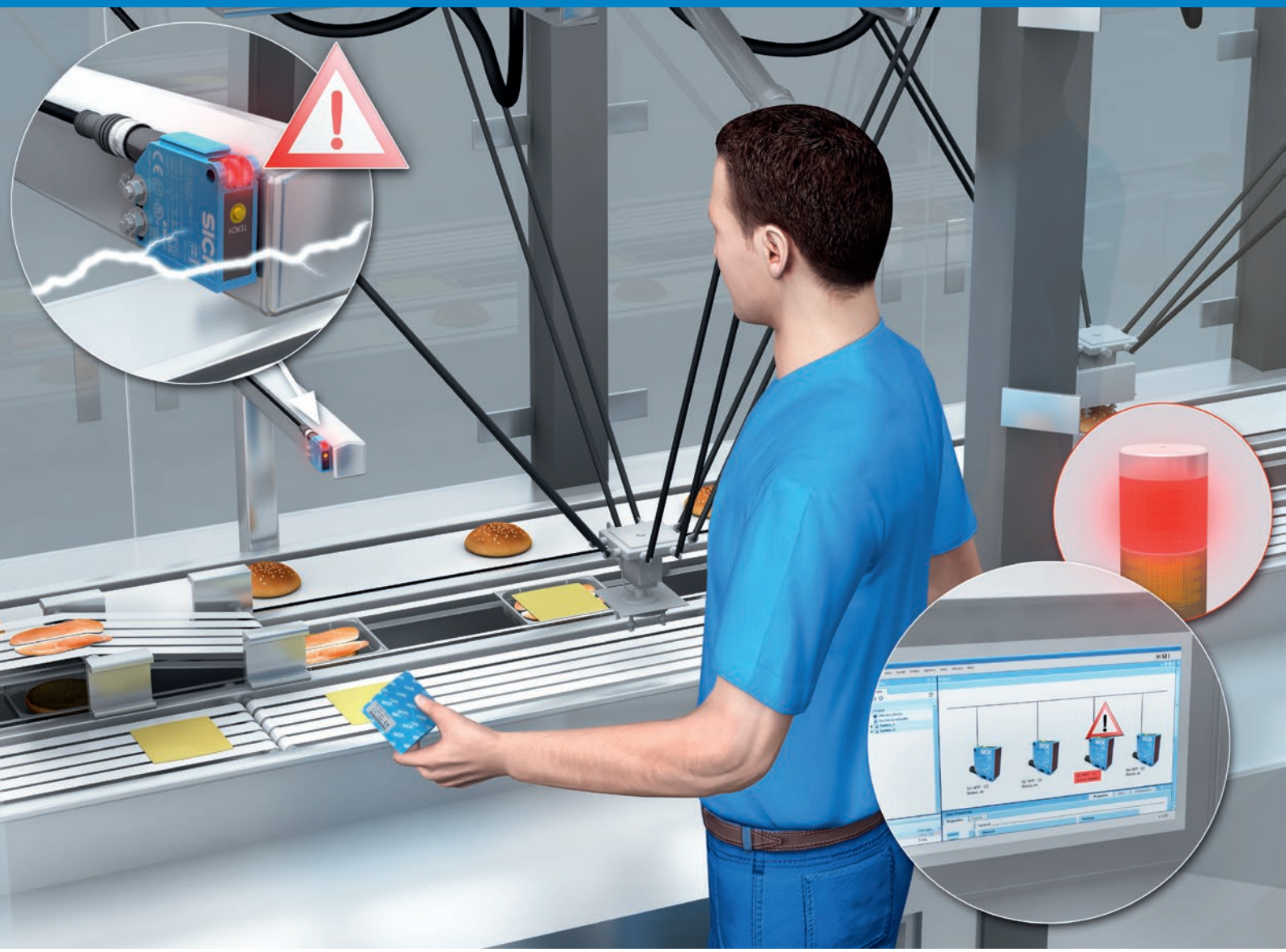


Smart Sensor Solutions
powered by IO-Link

With their performance improving all the time, sensors are opening up even more potential applications in mechanical engineering and are offering much more than just binary 0/1 switching signals.

Standard Functions

Standard Function 1
Easy Device Replacement



Easy Device Replacement

Sensors are used at the heart of manufacturing processes, including those taking place in tough environments. As a result, they are exposed to exceptional levels of stress from high temperatures, vibrations, mechanical shocks, or contamination. After being exposed to these harsh conditions over a long period of time, these sensors will need to be replaced.

High-performance sensors are able to reliably identify failures using self-diagnostics, and report them locally using LED information. This is useful for machine operators, as pinpointing the location of the defective sensor can be a laborious process if it is installed in a concealed place or if a system is using a large number of sensors.

After a sensor has been replaced, it needs to be configured specifically for the application (by pressing a teach-in button, for example).

This can result in the loss of valuable production time.

The solution: Easy device replacement

Using SICK Smart Sensor Solutions, the automation systems can display the exact location of a failure on the HMI. Once the device has been replaced, the automation system automatically recognizes that a new sensor has been connected. The application-specific parameters (such as basic configuration settings) are written to the sensor quickly and reliably, in a process known as parameter loading. The result is an efficient, documented replacement process that produces a sensor with an exact replica of the previous device settings.

Fields of application:

- System and machine operators with high numbers of sensors, sensor failures, and untrained operating personnel.
- Machine manufacturers with maintenance contracts and a spare parts service.

Example products:

IO-Link products (see page 40-60)

Machine reports a failure

- The failure is reported on the operating terminal (HMI) of the control system.
- A diagnostics message can be viewed on the HMI.
- The sensor type and its location are displayed.

Easy integration thanks to IO-Link technology and flexible machine and system adaptations.

Precise localization of the sensor within the machine and system.

Sensor is replaced

- The sensor is replaced by operating personnel.
- No additional manual settings (such as sensing range) need to be made on the sensor.

Sensors can be replaced safely without the need for additional tools or instructions, even if the personnel have not been trained in this area.

Automatic configuration prevents incorrect settings.

Machine is put into operation

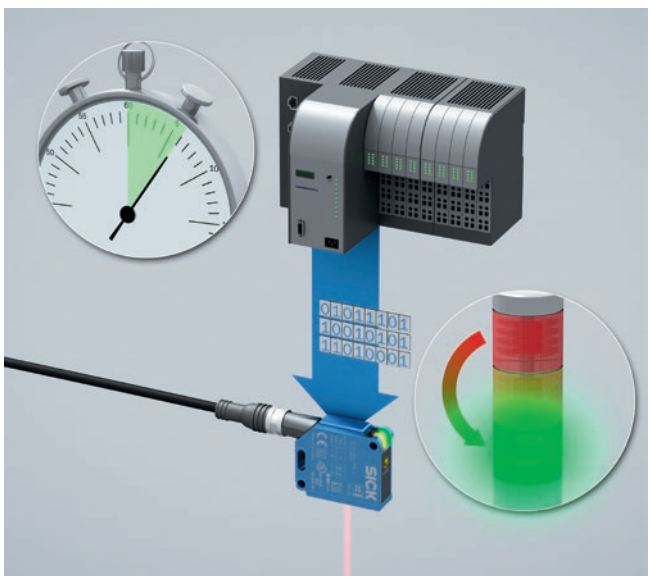
- The automation system checks that the new sensor is correct.
- Settings are automatically taken from the automation system, and a record of the replacement process can be created.
- The production process is restarted after a minimal downtime by means of acknowledgment on the HMI.

Replacement scenario precisely documented.

Reduction in expensive service work.

Minimized downtime periods.

Guaranteed machine throughput.



Flexible Sensor Adjustment

The flexibility of today's machines and systems aid in the development of a wide range of different product types. As a result, the manufacturing process requires order-specific formats and configurations for the products, and these may differ significantly from one another – particularly when it comes to a product's shape and surface properties.
Although sensors are well equipped to identify these differences, in many cases they require manual configuration (for the sensing range or threshold settings, for example) to ensure they can offer the best possible performance. This can result in the loss of valuable production time.

The solution: Flexible sensor adjustment
Now, parameters for specific formats and configurations can be stored in the sensors or automation system without manual intervention and activated quickly and automatically when a product change takes place, with full repeatability. The automation system provides the sensor with optimum application-specific parameters for the manufacturing process or the product being manufactured, such as the sensing range, hysteresis, or threshold.
These production parameters are managed by a server, for example, activated by operating personnel, and transferred to the sensor quickly and reliably.

Fields of application:
- System and machine operators with high numbers of format changes, configurations, and product variants.
- Machine manufacturers that only want sensor settings to be made by the PLC.

Example products:
IO-Link products (see page 40-60)

Operating personnel receive a new production order

- The machine has to produce a new product.
- The operator activates the new machine configurations by pressing a button.
- The application-specific sensor parameters are automatically loaded to the sensors.

Automatic configuration prevents incorrect settings.

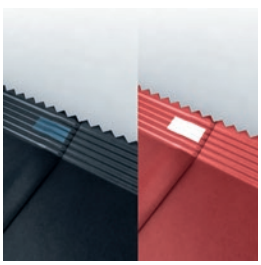
Product-specific parameter settings

A number of factors determine what the best settings for the sensors are:

Shape and size

Sensing range/hysteresis
e.g., DT35

Color and contrast



Color and contrast threshold
e.g., KTM

Surface

Switch-on/switch-off delay
e.g., WT12

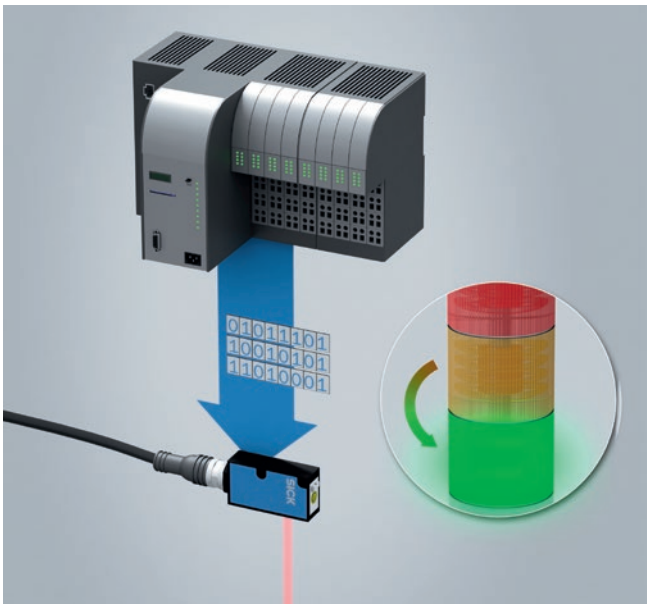
Machine is put into operation

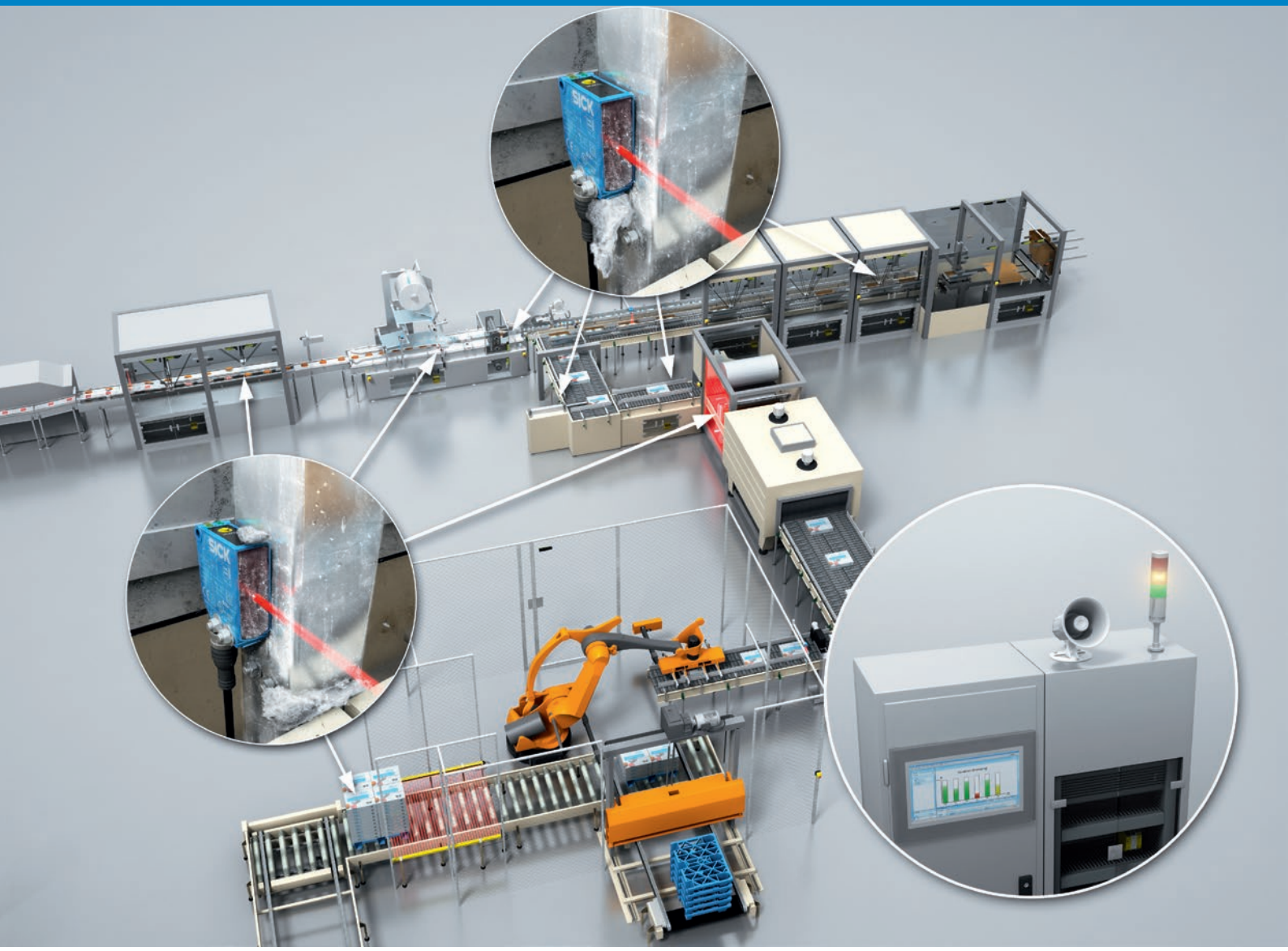
- The system performs a self-test to ensure that the sensors are working correctly.
- The operating terminal (HMI) verifies the production process has been restarted.

Reduction in downtime periods when product changes take place.

More machine flexibility.

Increase in the variety of products a machine can handle.





Condition Monitoring/Diagnostics

Sensors, which are often mounted in the most active production areas, are continually exposed to the effects of their surroundings.
Due to dust, water, vibrations, and other harsh environmental conditions, cleaning and maintenance are required to keep sensors performing reliably and to ensure the system or machine stays up and running.
Environment-related sensor failures – as well as the downtime associated with them – are particularly unwelcome when systems are working at a high level of production capacity.

The solution: Condition monitoring/diagnostics
Thanks to implemented diagnostics and self-test options, sensors are able to provide information regarding the presence of contamination. The monitoring capabilities of the sensors also enable preventive maintenance to be carried out using a precise maintenance plan. This ability to predict machine status even extends across area boundaries.

One example of these functions is remote maintenance, which provides a continuous way of identifying the areas requiring maintenance and whether a maintenance job should be performed during a scheduled downtime period (such as the weekend).

Fields of application:
- System and machine operators who undertake frequent cleaning processes and use large numbers of concealed sensors in tough working environments.
- Machine manufacturers with maintenance contracts and spare parts service, which guarantee machine throughput.

Example products:
IO-Link products (see page 40-60)

Preventive maintenance

- The staff member in charge of production creates a tailored maintenance plan using the condition monitoring data that is available, and hands over this maintenance job to the service technician.

Minimized risk of failure.

Optimization of maintenance and servicing periods.

Service technician can prepare for maintenance using remote diagnostics.

Maintenance is carried out on the system

- The service technician carries out the maintenance work specific to that particular job within the scheduled time frame.

Trained personnel carry out the maintenance work.

The service technician can identify critical sensor statuses and rectify any potential problems before a failure happens.

Enhanced maintenance contracts that include process monitoring are available.

System is put into operation

- The system performs a self-test to ensure that the sensors are working correctly.
- The operating personnel commence production as scheduled, without any delays.
- The maintenance work is accepted by the operating personnel.

Optimized production times.

Ensures functionality of the sensors.

E-Parts List/E-Inventory

- Electronic documentation for all sensors in the as-delivered state of the machine/system can be created quickly and automatically.
- IO-Link technology enables IO-Link sensors to be identified automatically on a machine and shows them by their names (device IDs).

Avoids redundant work and additional expenditure.

Increases transparency in the electronic documentation for installed sensors.

Prevents time-consuming troubleshooting resulting from different documentation versions.

Ensures error-free, straightforward documentation of the as-delivered state of the machine/system.

Example products:
IO-Link products (see page 40-60)

Sensor Visualization and Configuration

- The sensor is connected to the PC via a configuration box and a USB link.
- Visualization software is used to display sensor-specific data such as particular vendor IDs, device IDs, SICK serial numbers, teach-in values, hysteresis, and switching characteristics.

Comprehensive diagnostics options for the sensor.

The visualization software allows advanced functions to be configured (see page 18).

Quality values and performance reserve of a sensor signal can be checked and optimized.

Easier to select the functions and levels of performance required of the sensor to provide a solution for the application.

Straightforward sensor configuration using a PC.

Example products:
IO-Link products (see page 40-60)

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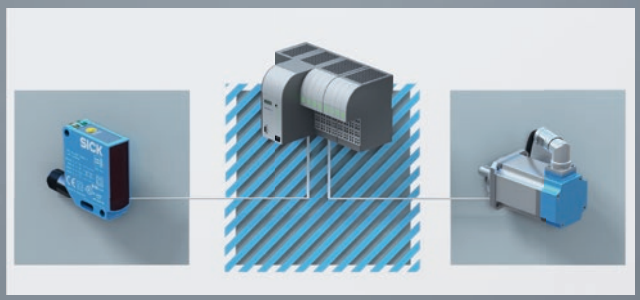
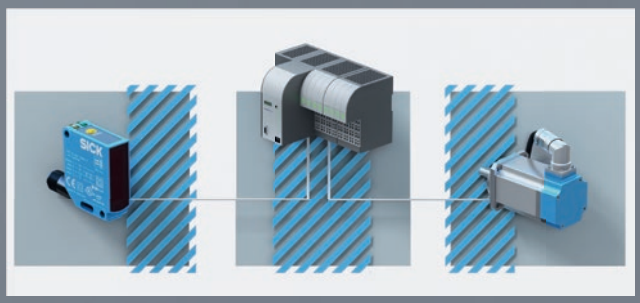
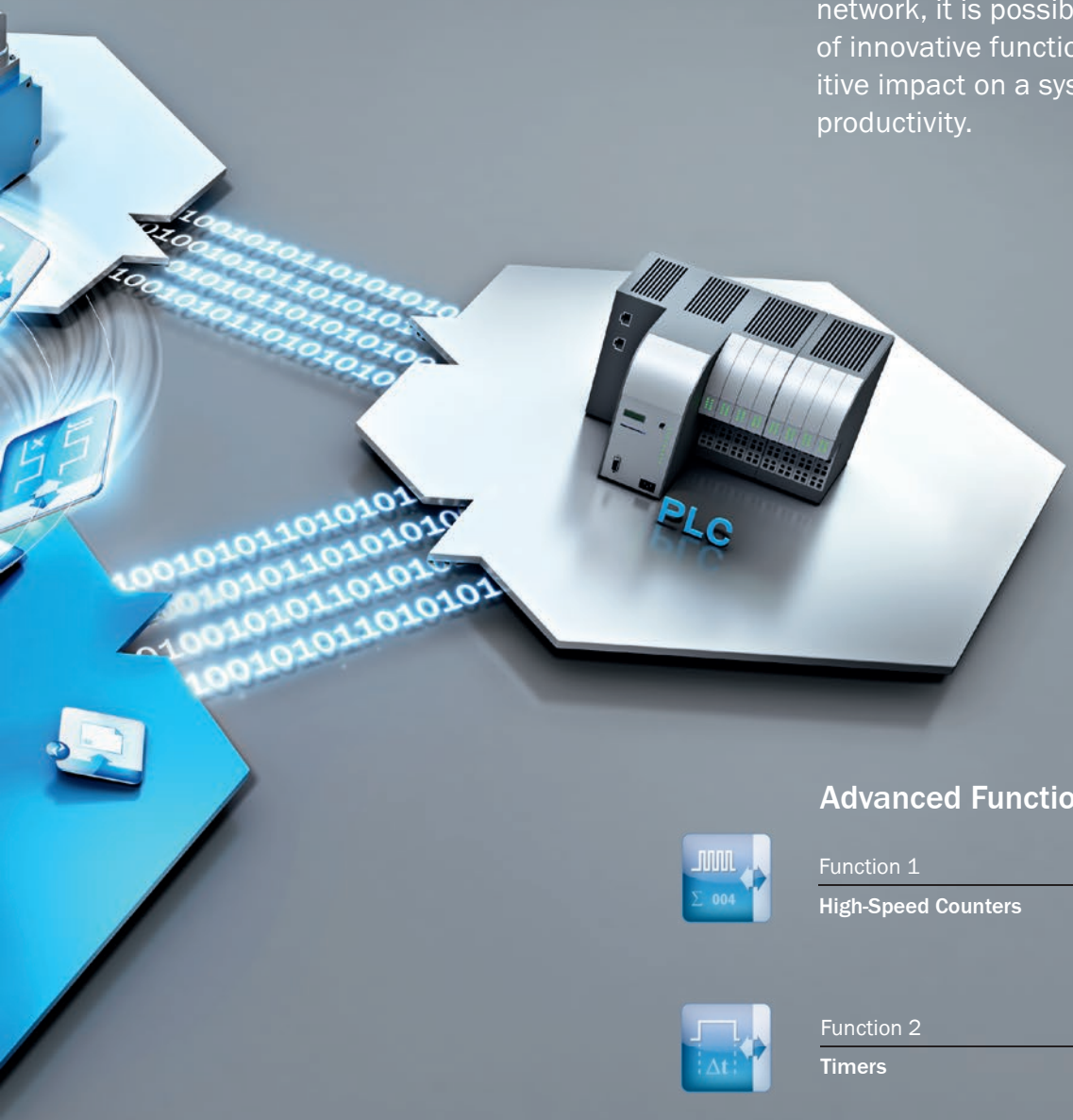
Boosting the productivity of systems and machines requires automation networks that offer performance and control systems that are getting more powerful all the time.



One option for helping automation networks perform better is to place intelligent functions in remote locations.
The various ways in which sensors and control systems can work together opens up new possibilities for enhancing productivity.



By using state-of-the-art sensor technology and integrating it into an automation network, it is possible to take advantage of innovative functions that have a positive impact on a system or machine's productivity.



Advanced Functions

High-Speed Counters

Some systems and machines have to know how fast conveying equipment is moving in order to carry out control tasks, or they need to ensure that the speed of a roller stays within defined limits.
Embedding a counting function in the sensor makes it possible to carry out these automation tasks and others with maximum efficiency.
The microcontroller of a sensor can use its maximum clock frequency to optimize the detection process.
This makes high-speed counting in the sensor an alternative to the central counter module.

Fields of application:

- Systems and machines that require a mechanically rugged, yet inexpensive method of counting value detection and speed measurement.
- Systems and machines that would benefit from the direction of rotation.

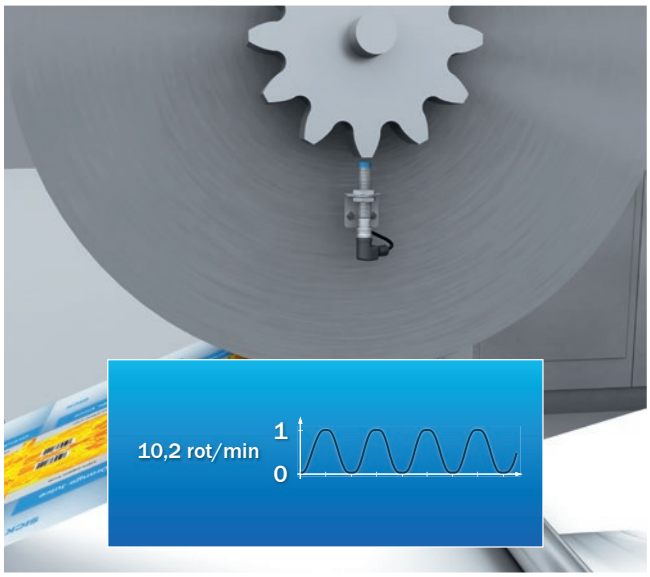
Example products:
SAM inductive proximity sensor, W4S-3 and W12-3 photoelectric sensors (see page 41, 42)

Speed monitor

- The inductive sensor detects the teeth of a gear-wheel and monitors the speed of the roller.
- Any deviations that extend beyond the speed tolerances are communicated to the PLC.

High-speed counting in the sensor provides an alternative to the central counter module.

Cost reduction.

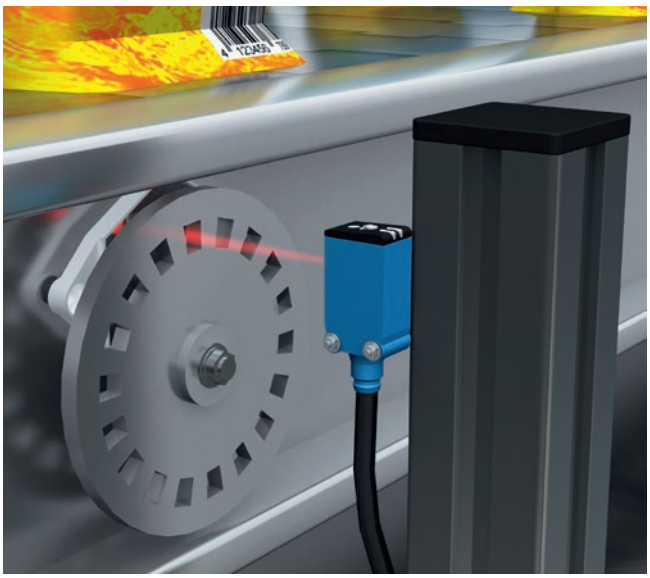


Speed measuring

- The optical sensor detects and counts the holes of a perforated disk.
- Parameters specified by the control system are used to convert the counter value into a speed.
- The speed per minute is transferred to the control system cyclically.

Easy and precise speed measuring.

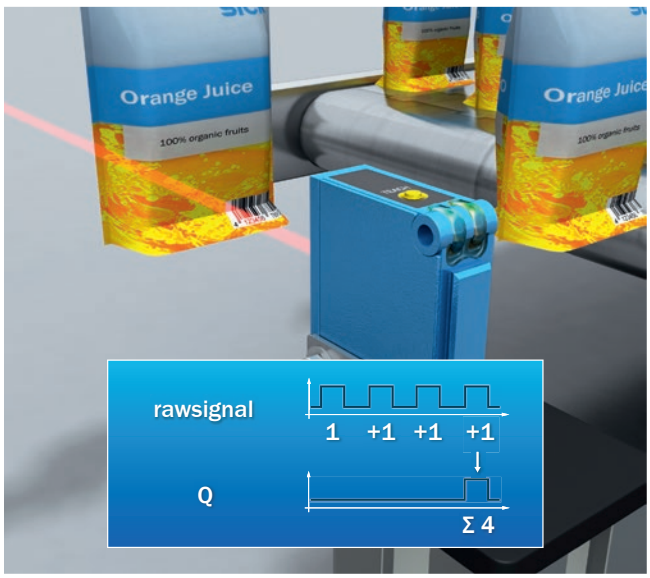
Option of linking a sensor with an additional sensor in order to determine the direction of rotation. The sensor then sends information on the direction of rotation and speed cyclically to the PLC.



Precise detection and counting

- The optical sensor detects and processes a parameter-specific counting function.
- The counting results are transferred to the control system cyclically.
- The counting value is reset via the control system or an optional sensor input.

High-performance detection and counting within the sensor instead of the PLC.



Timers

In some systems and machines, objects being transported to another destination must be checked to ensure they are the right size or in the right position on the conveying equipment.
If this equipment is moving at high speeds, however, conventional detection methods that use a sensor as well as time evaluation in the control system often cannot provide the level of accuracy required. These methods are typically constrained by the control system's computing capacity and the speed of the network.
Innovative sensors, however, measure the time window directly and with high precision, as well as provide the measurement result in the format required by the control system so that this information can undergo further processing.

Fields of application:

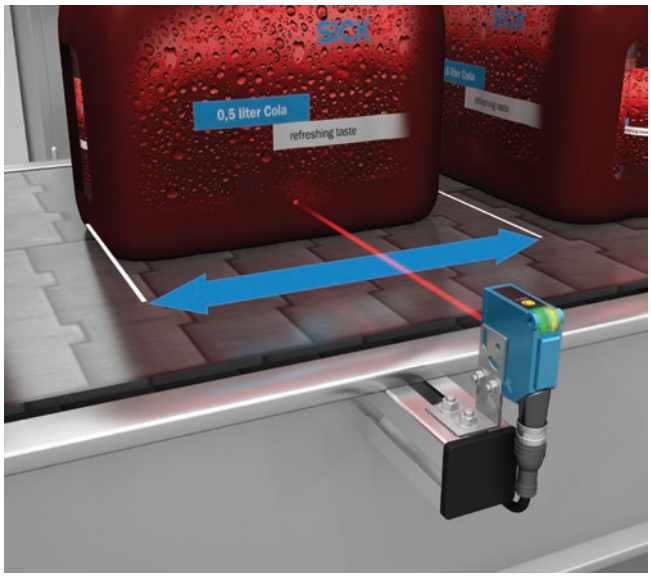
- Systems and machines that require more precise time detection for object lengths; for example, as a means of enhancing production quality or increasing the number of cycles.
- Systems and machines that involve precise product distance monitoring.
- Systems and machines that require slip monitoring.

Example products:
W4S-3 photoelectric sensor, MPA magnetic cylinder sensor (see page 41, 47)

Product length measurement

- Using a high-precision method, the sensor detects the product passing by on the conveyor.
- The time between the rising and falling edges is determined using the maximum internal clock frequency.
- The product length is calculated in the PLC based on the time value determined in the sensor and the belt speed.
- If the belt speed is constant, the length can also be calculated in the sensor. The sensor receives the parameters it needs from the PLC.

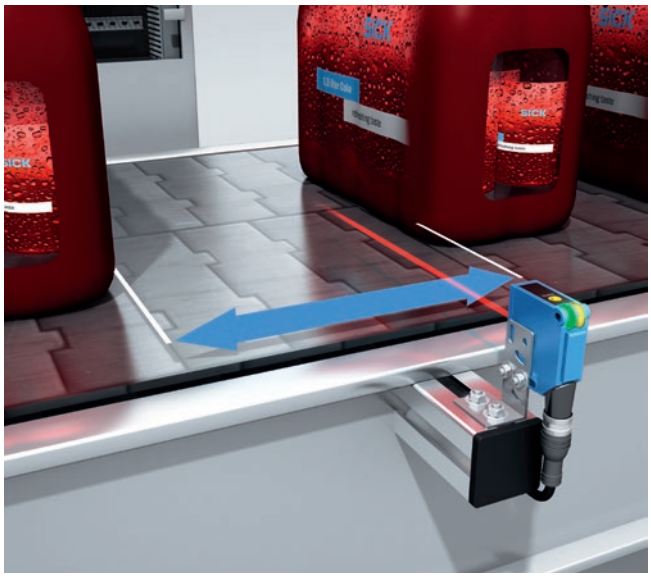
⊕ Simple and extremely precise time measurement provides the capability to calculate product lengths.



Distance measurement between two products

- Using a high-precision method, the sensor detects the gap between two products passing by on the conveyor.
- The time between the falling and rising edges is determined using the maximum internal clock frequency.
- The distance between the two products is calculated in the PLC based on the time value determined in the sensor and the belt speed.
- If the belt speed is constant, the distance can be calculated in the sensor. The sensor receives the parameters it needs from the PLC.

⊕ Simple and extremely precise time measurement provides the capability for distance calculations.

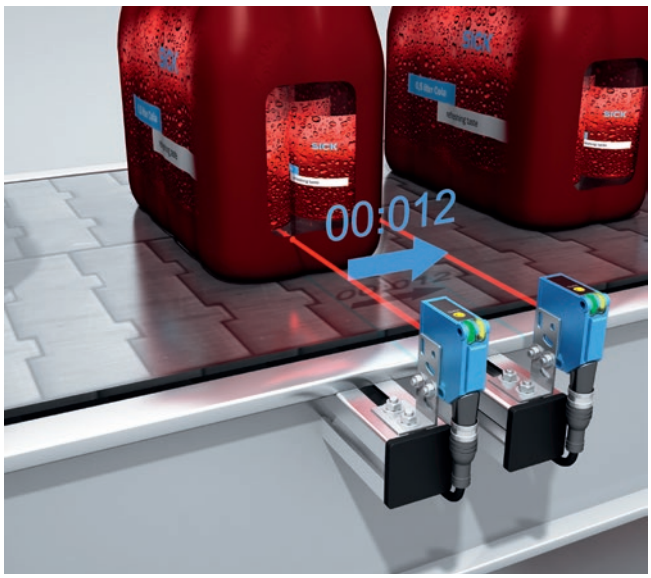


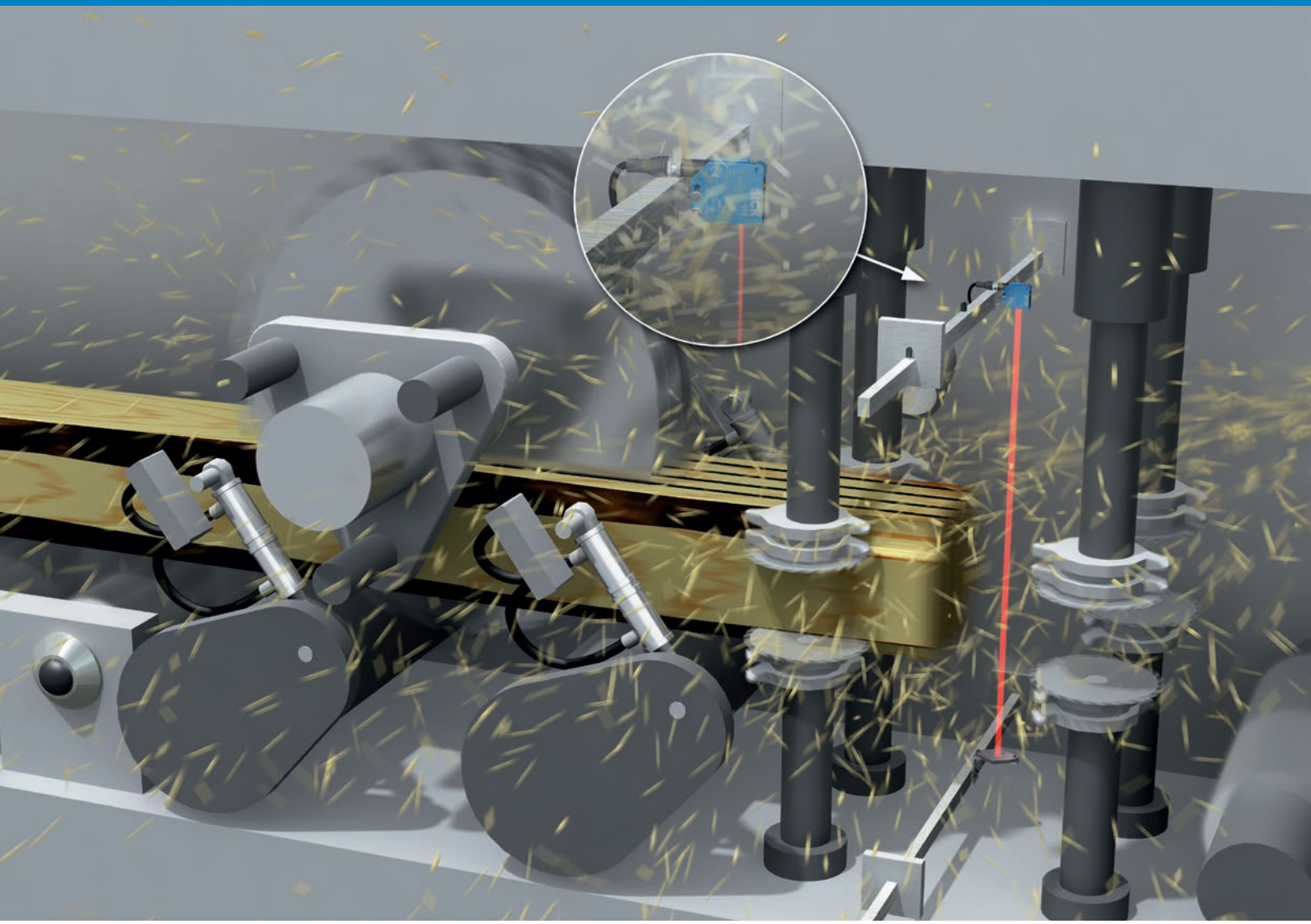
Speed measuring

- Linking a sensor to an additional sensor makes it possible to determine the speed of the product on the belt without a PLC.
- The time between the rising edge for sensor 1 and the rising edge for sensor 2 is determined using the maximum internal clock frequency of the sensor and converted into a speed.
- Since belt speed information is not required to calculate the speed, it does not matter if there is any slip between the belt and product.
- The sensor cyclically sends product speed information to the PLC.

⊕ **Easy and precise speed measuring.**

⊕ **Slip-free speed measuring.**





False Tripping Suppression (Debouncing)

For some systems and machines, maintaining productivity levels requires sensors to know which detection signals are disturbances, and to suppress those disturbances using additional detection information. In the wood processing industry, for example, it is possible for sensors to identify any signal change of less than 5 ms as irrelevant and reliably suppress it. This prevents the control system from being burdened with information that will disrupt the process. The automation system manages the disturbance suppression parameters in a way that is specific to the application concerned.

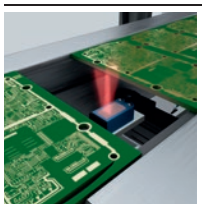
Fields of application:

- Systems and machines affected by large numbers of disturbance signals, resulting from either the process or the environment.
- Systems and machines that require lean control technology.

Application possibilities for False Tripping Suppression (Debouncing)

Undefined leading edges on objects

Unexpected gaps and holes in PCBs



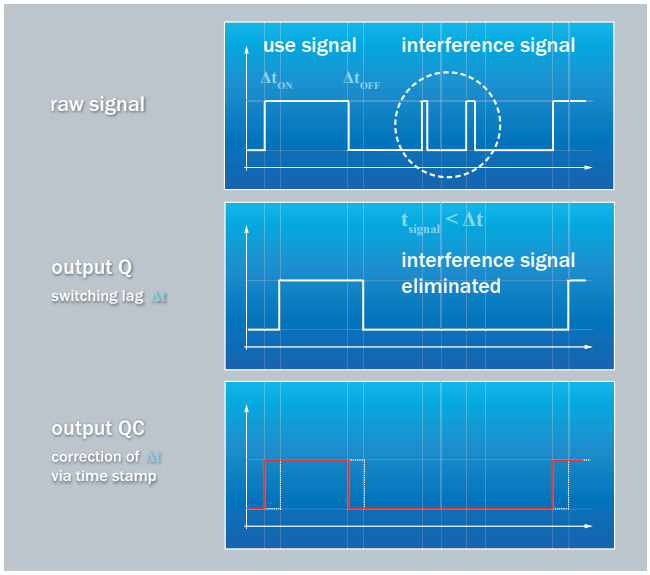
Chips, dust, dirt particles

Example products:
W4S-3, WTB12-3 and WL12-3 photoelectric sensors (see page 41, 42)

Debouncing

- Every object that enters a sensor's field of view causes the sensor signal to switch on.
- As soon as the sensor can no longer see the object, it switches off. Because of the time delay involved in switching the signal (debouncing), brief disturbance variables do not cause the sensor to switch. Therefore, signal switching will not take place if the delay time (debounce time) is longer than the disturbance variable. The debounce time can be configured for rising and falling edges independently.
- If time stamping is also being used, the time delay can be corrected as the sensor internally identifies the time until each rising or falling edge.

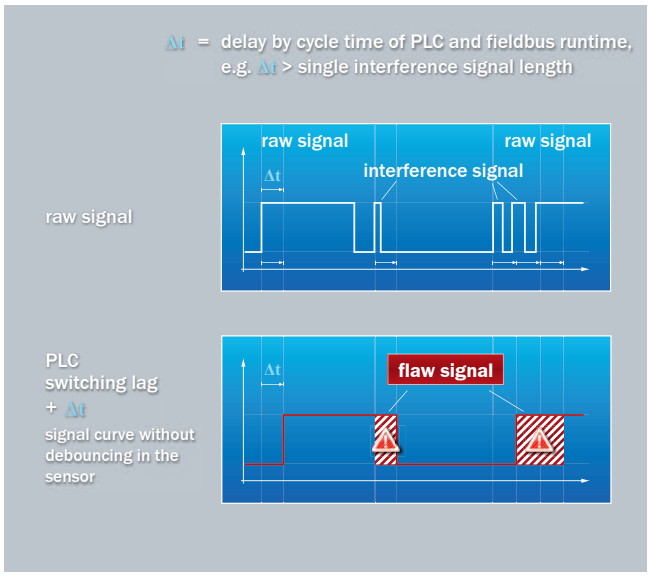
Reliable detection of objects in harsh environments



Debouncing in the sensor instead of the PLC

- Debouncing takes place where the signal is picked up.
- Debounce times can be implemented independently of cycle times, bus runtimes, and input delays.
- Debouncing uses the speed of the sensor controller (e.g., 5 kHz).
- Precise leading edge and trailing edge detection for objects, as disturbance variables bouncing off an object are detected in even the smallest of gaps and do not extend the switching signal.
- The sensor is provided with a production-specific debounce value (e.g., 3 ms).
- The sensor debounces interference effects and detection errors, and sends a clean signal back to the PLC.

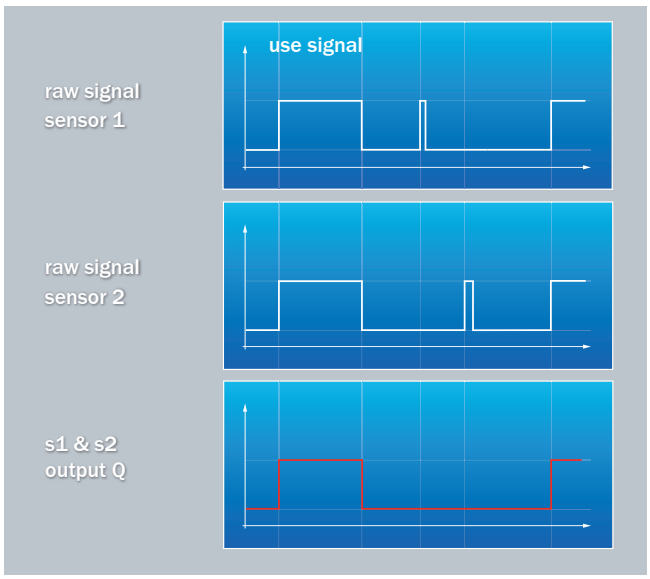
Sensor debounces what it really "sees"; it is not the switching signal that is debounced.
Increased machine speed.
More precise detection.

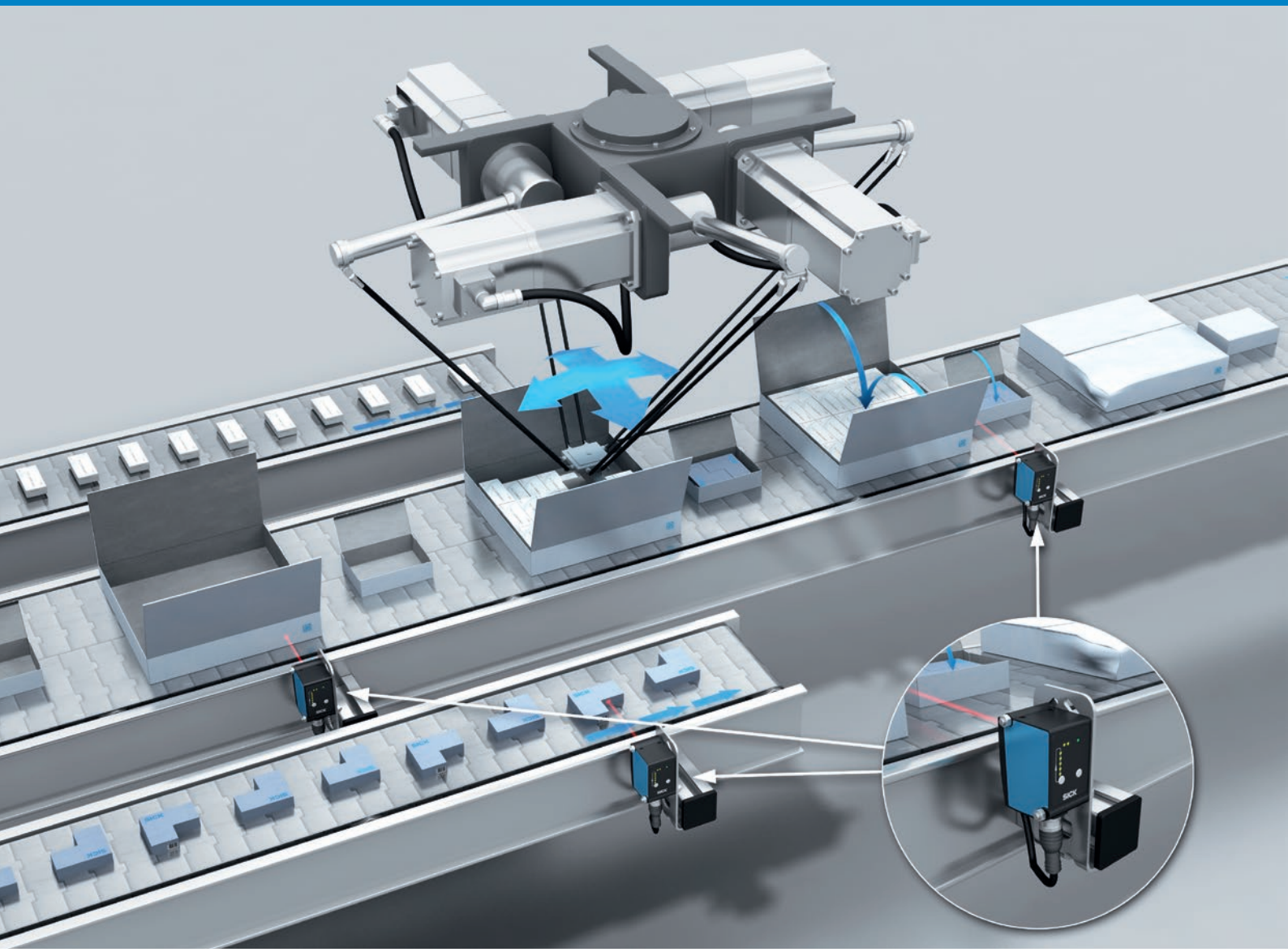


Linking sensors

- To improve reliability, a second signal can be read in on the sensor (IO-Link sensor) as an addition to debouncing.
- The two raw signals are compared and only the signal that is cleaned by means of the logic (AND, OR, etc.) is output to the PLC.
- The two raw signals can be debounced independently of one another.

Maximum signal quality combined with reliable detection in harsh environments.





Profile Recognition/Verification

In some systems and machines, it is necessary to check that an object being transported to another destination is in the right shape or in the right position on the conveying equipment, particularly if this equipment is moving at high speeds. Conventional detection methods that use a distance sensor and contour analysis in the control system, however, require complex technology for this type of application.

These systems are often limited by the control system's computing capacity and the speed of the network. Smart sensors, however, measure the actual profile directly, and evaluate the result internally by comparing the shape and measured values with a desired profile that has been configured or taught in.
The control system simply receives a discrete signal in order to process this information further.

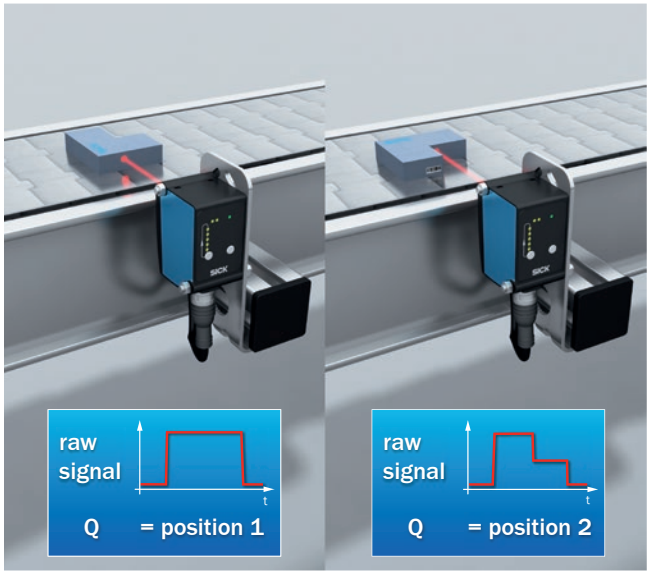
Fields of application:

- Systems and machines that require profile recognition; for example, as a means of enhancing production quality or increasing the number of cycles.
- Profile measurement for position detection in systems and machines.
- Sorting by means of product features in systems and machines.
- High-speed profile verification in systems and machines, without significant demands being placed on the PLC.

Container position detection

- The sensor receives the corner points of the profile by means of a teach-in process.
- The tolerances are defined using configuration settings (e.g., +/-5 mm).
- While the machine is operating, the sensor simply tells the control system whether the position of the container is "right" or "wrong."

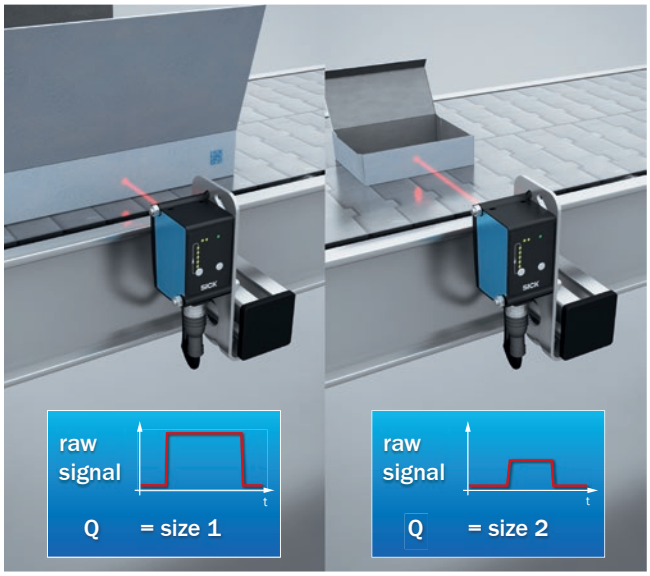
Use of sensors in a way that provides an alternative to high-precision sensors (with analog output and an analog PLC input card).



Differentiation between types of packaging

- The sensor receives multiple corner points of the profile by means of a teach-in process or configuration.
- The tolerances for the relevant profiles are defined using configuration settings.
- While the machine is operating, the sensor tells the PLC which profile has been recognized.

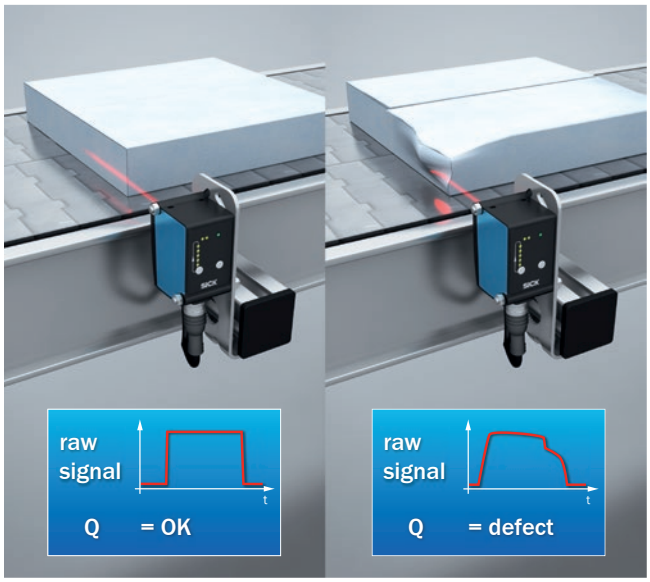
Increased machine flexibility.

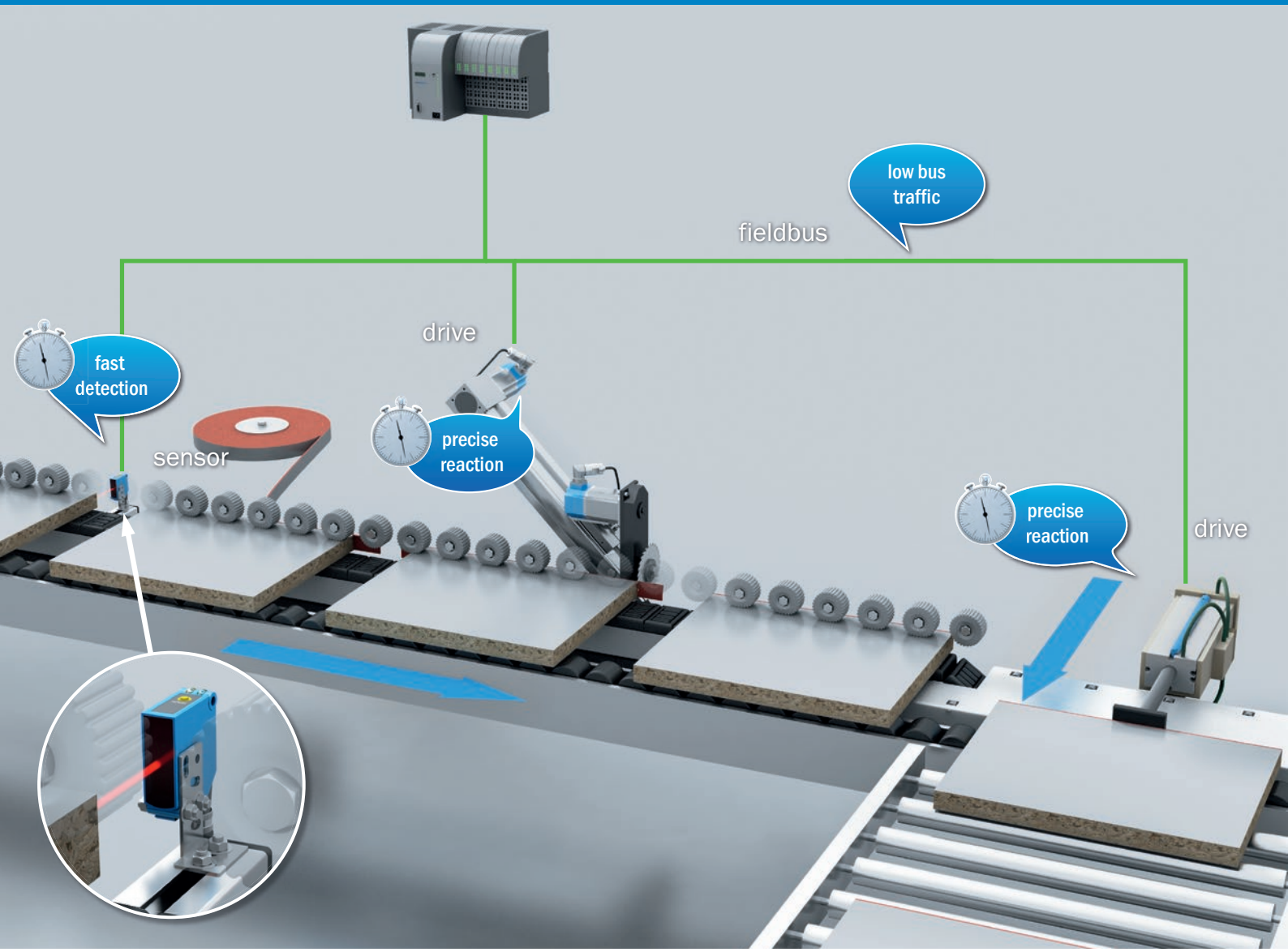


Detecting deviations in shapes/ product errors

- Profile corner points on the packaging or box are entered using the PLC's configuration tool.
- Tolerances are defined using configuration settings (e.g., +/-1 mm).
- While the machine is operating, the sensor simply detects the deviation in shape and reports the packaging error to the control system.

Optimized allocation of PLC resources.





Product Track and Trace using Time Stamps

The fast, precise process of product detection that a sensor carries out during production can be linked to a time value. The result is a highly accurate method of specifying a position based on time stamping.
The time at which the product is detected is precisely synchronized with the automation system's real time. This synchronization typically takes place in the PLC.
Areas of inaccuracy (jitter) that occur when the switching signal is being transmitted to the PLC (e.g., on the bus) and when a program is being executed are added together.
Synchronization with real time takes place in the sensor instead of in the PLC; in other words, at the location where things are "seen" in real time.

Fields of application:

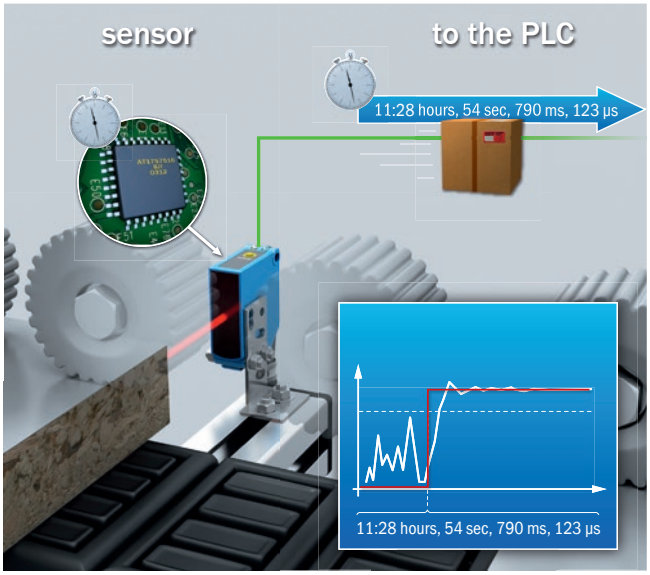
- Production lines with high productivity levels and high production speeds.
- Precise production systems and machines.
- Functional synchronization with sensor/actuator units.

Example products:
W4S-3, WTB12-3 photoelectric sensors and MPA magnetic cylinder sensors (see page 41, 42, 47)

Fast detection

- Every object that enters a sensor's field of view generates a rising/falling edge and time stamps that are set internally.
- If the signal proves to be the result of correct detection (after debouncing, for example), then the relevant time stamp is transmitted to the control system.

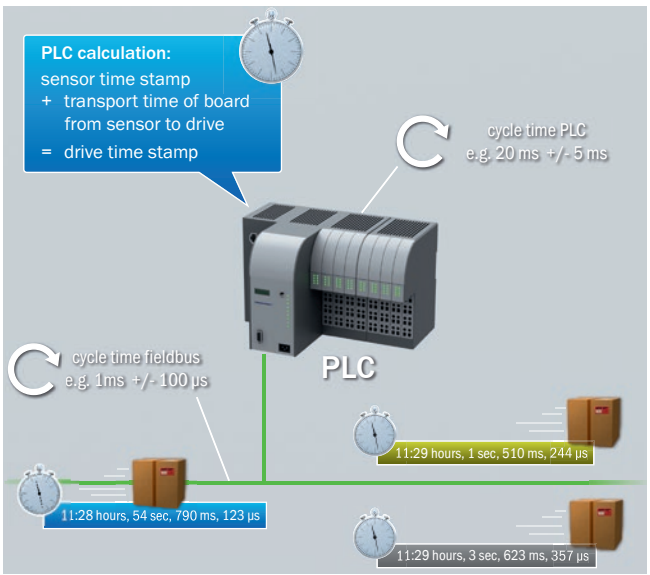
Increase in machine speed thanks to more precise detection.



PLC calculations

- The PLC receives the sensor time stamp and calculates the actuator time stamp based on this information. The distance between the sensor and actuator corresponds to the offset (time difference) between the sensor and actuator time. The PLC cycle time that is affected by jitter and the bus runtime are not taken into account when the actuator time stamp is calculated.

Optimized signal processing reduces strain on the network structure.

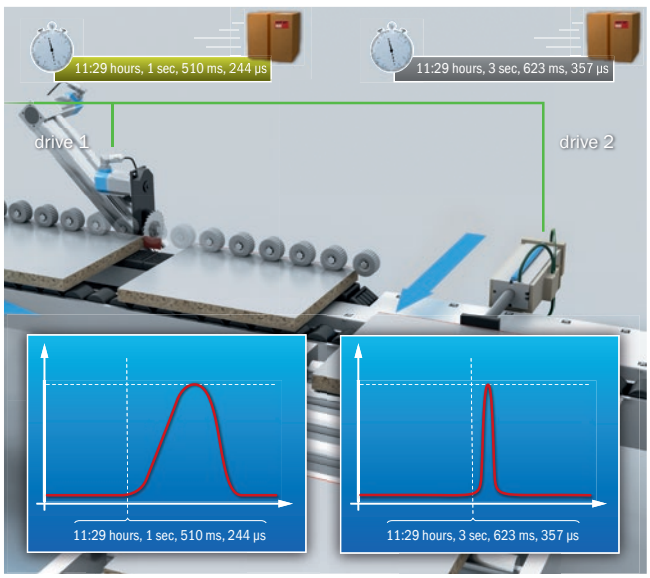


Precise reaction of actuators

- The actuator is informed early on about the time at which it has to execute a desired action. For this purpose, a rising edge for controlling a valve, for example, plus the associated time stamp are transmitted to the actuator. Another time stamp and the "falling edge" signal are used to reset the valve.
- In the case of a pneumatic cylinder, a cylinder switch continually monitors the throughput time, for example. If the environmental conditions change and the throughput time slows down, the actuator can automatically correct the start time so that the action can be performed at the right point.

Functional synchronization with sensor/actuator units.

Guaranteed machine performance.



Clearing the final hurdles

A consistent communication concept right down to the lowest field level is key to using the features and technologies of state-of-the-art sensors and actuators, and making machines and systems more productive as a result.
Through IO-Link, leading automation manufacturers have managed to establish a standard that solves the problem of clearing those final hurdles in the communication chain.

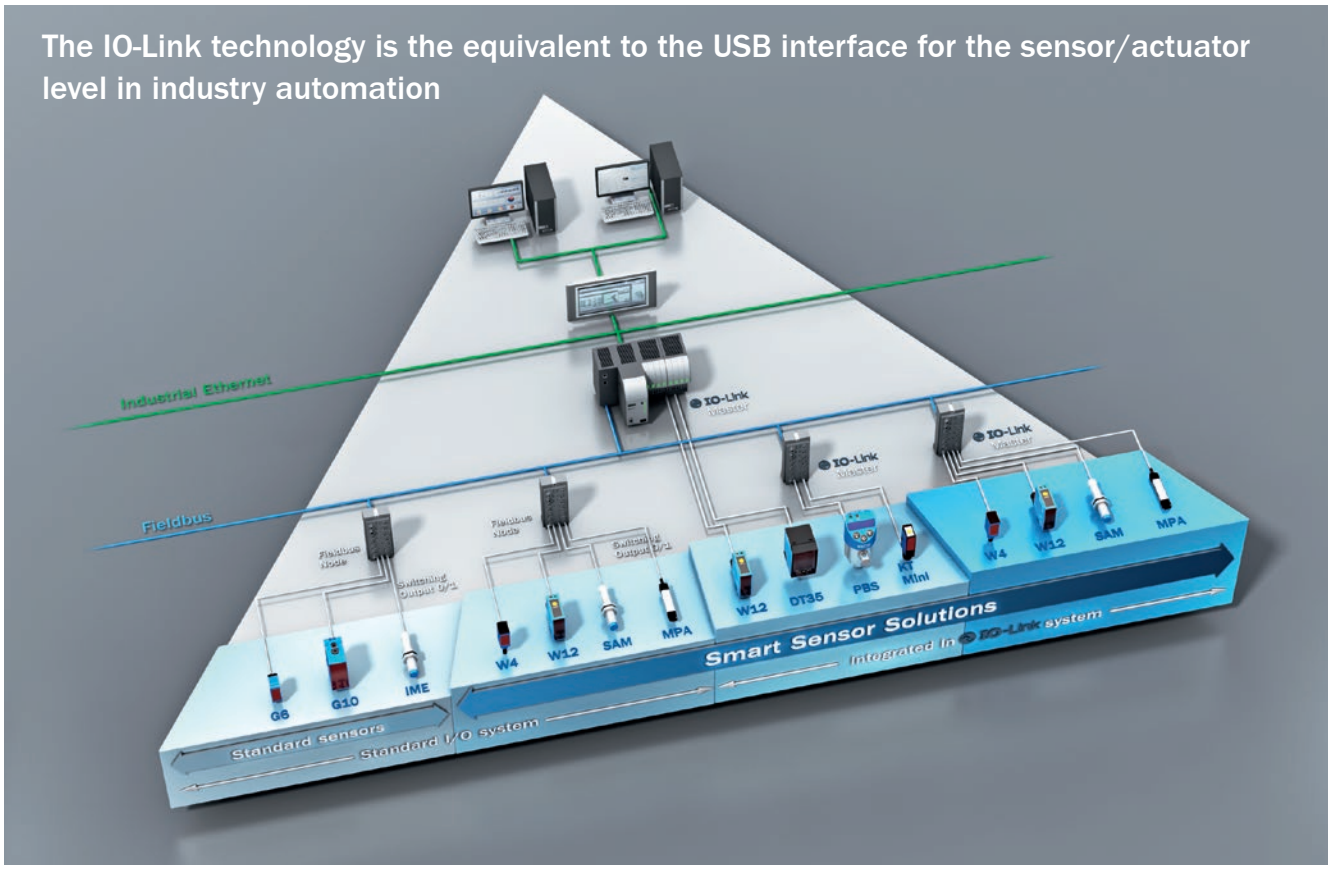
The standard interfaces that have been used on the sensor/actuator level up to now have not allowed the exchange of any data besides the actual process value. With sensors and actuators using integrated intelligence to perform increasingly complex functions, these straightforward output state or measured value interfaces have restricted communication and even curbed innovation in this area.
In fact, transparent networking of all levels with one another is essential if we want to look at a machine as a whole and, in this context, think about how we can optimize it. It must be possible to depict every component in the entire system network in terms of the information depth that it requires.

Spurring on innovation: The lowest field level

In an effort to promote more innovation, leading automation manufacturers have used IO-Link to define an open interface between sensors/actuators and I/O modules. This process has also taken into account current standards for I/O networking via a point-to-point connection, and the result is a connection channel that enables consistent transmission of process, parameter, and diagnostics data.

IO-Link involves a point-to-point connection that may be located underneath any given networks. Being an integral part of the I/O module, the IO-Link master is installed either in the control cabinet or directly in the field as a remote I/O with an IP 65/67 enclosure rating.
The IO-Link device is coupled with the master using a standard sensor/actuator cable measuring up to 20 m in length. The device – which may be any sensor, any actuator, or a combination of the two – produces and consumes signals (binary switching, analog, input, output) that are transmitted directly via IO-Link in a digitized format.
To facilitate data transmission between the master and device, the technology specifies a three-wire design that is

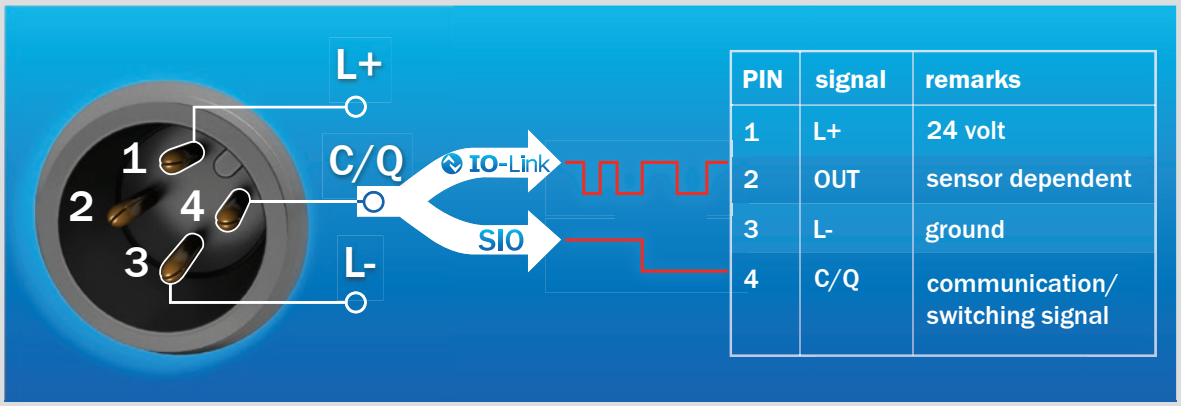
The IO-Link technology is the equivalent to the USB interface for the sensor/actuator level in industry automation



already familiar from the conventional world of sensors and actuators. This uses a standard UART protocol that represents data in what are known as data frames. To provide effective support for the various ways of implementing IO-Link devices, the technology specifies a range of data frames that may contain service data only, process data only, or a combination of the two. Various transmission rates are available for communication between the master and device on the physical layer.

Working on the basis of this technology, it is possible to implement sensors with configuration properties (receivers of service data or producers of process data) using just a few bits of user data. In addition, the technology allows the representation of signal bundles or complex hybrids such as analog input data or binary input and output data. Plus, IO-Link sensors with one switching bit are consistently compatible with standard sensors.

Overview of IO-Link communication

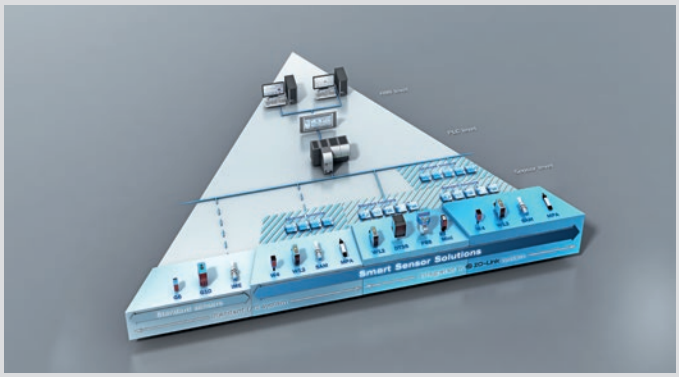


PIN	signal	remarks
1	L+	24 volt
2	OUT	sensor dependent
3	L-	ground
4	C/Q	communication/ switching signal

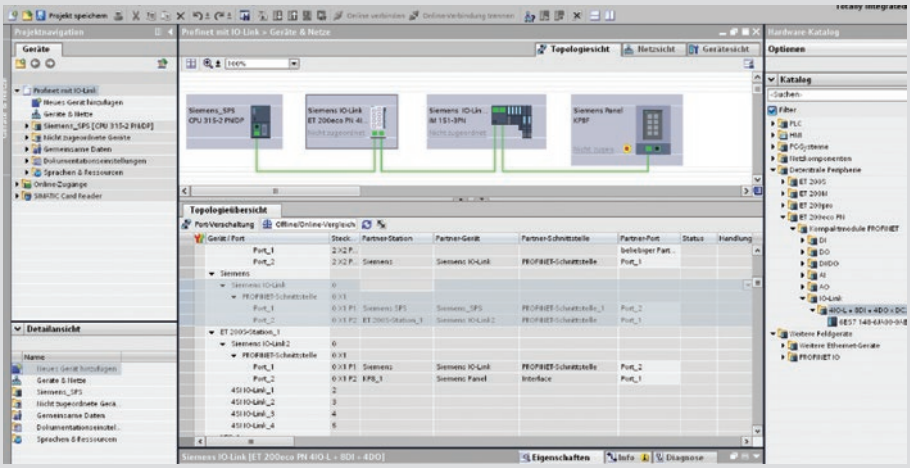
- Serial, bidirectional point-to-point connection for signal transmission and power supply – and no new bus system!
- Backward-compatible with discrete PNP output sensors.
- Operating modes: standard I/O mode (SIO), IO-Link mode
- Three transmission rates: 4,800 (COM 1), 38,400 (COM 2), 230,400 baud as an option (COM 3)
- Unshielded, standard 3-wire industrial cable for connections
- M12 plug connector
- Pin assignment: pin 1: 24 V, pin 3: 0 V, pin 4: switching and communication cable (C/Q)
- Maximum cable length: 20 m
- Maximum power consumption for power supply: 200 mA
- Process data (such as switching signals or distance values) is transmitted cyclically; service data (such as parameters) is transmitted acyclically

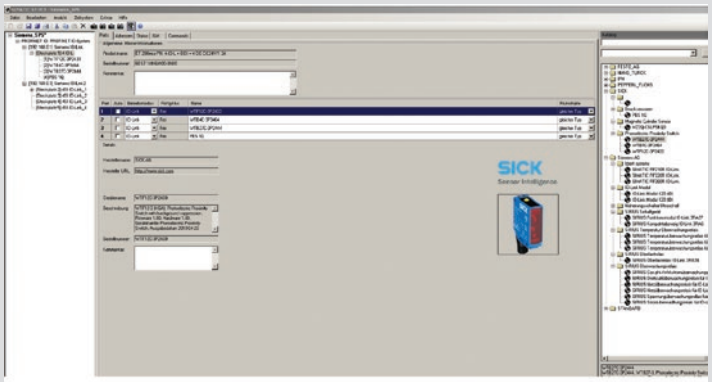
IO-Link communication: Getting started

The information below describes how to integrate an IO-Link sensor into the overall automation concept, using examples to illustrate the process.

Step 1: Hardware		Example
1.1	**Sensor with IO-Link communication** 	WL12GC-3P2472A03 Photoelectric sensor with M12 standard connection cable
1.2	**IO-Link master with connection to a higher-level fieldbus** 	Fieldbus node ET200ecoPN IO-Link master Modular I/O system IO-Link master of ET200S
1.3	**PLC network structure** 	Peripherals Connection to PLC via Profinet, Profibus, Ethercat, or another fieldbus

An overview of IO-Link device suppliers is available in the competency matrix at www.io-link.com

Step 2: Design and hardware configuration		Example
2.1	**The PLC master manufacturer provides an engineering tool for design and configuration purposes.** During the process of configuring the automation structure, the required fieldbus nodes are defined in the engineering tool and the communication relationships are configured.	If a SIMATIC S7 control system from Siemens is being used, then the STEP7 engineering tool is used for configuration purposes.
2.2	**Designing/configuring the fieldbus connection in the IO-Link system** The fieldbus nodes are integrated using a device description file (GSD, FDCML, GSDML, etc.). In the configuration, the IO-Link system is represented by the IO-Link master. The IO-Link master may be a fieldbus node itself, or part of a modular I/O system that is connected to the fieldbus. For each IO-Link master, the address ranges may be defined for the purpose of exchanging cyclic data (process values). These address ranges are where the IO-Link master places the process values that it receives from the IO-Link device (IO-Link sensor/actuator); it also provides the control system with the values. Cyclic data exchange also takes place in the opposite direction, from the control system to the IO-Link device (IO-Link sensor/actuator). A Profinet configuration is then displayed; an IO-Link master of an ET 200ecoPN and an IO-Link master of an ET 200S is integrated into this.  Fig. 1: Configuration of a Profinet network with elements, including a subordinate IO-Link master	GSD, FDCML, GSDML, etc. files are available for download from the manufacturer's website. Fieldbus node: ET 200ecoPN IO-Link master Modular I/O system: IO-Link master of ET200S

Step 2: Design and hardware configuration		Example
2.3	**Design/configuration of IO-Link system/IO-Link device** An IO-Link engineering tool is required for designing and configuring the IO-Link system. In this engineering tool, once the IO-Link master has been selected it is possible to assign the required IO-Link devices (sensors and actuators) to the master's IO-Link ports. In some cases, engineering tools make it possible to scan a fieldbus for IO-Link masters and their connected IO-Link devices. The IODD (IO Device Description) is used for specific configuration of IO-Link devices. It contains information on identification, device parameters, process and diagnostics data, communication properties, and more. To carry out configuration, the relevant devices and their IODDs are selected from the device catalog and dragged to the IO-Link master port.  Fig. 2: Configuration of an IO-Link master with an IO-Link sensor The user is provided with the following standard information: • Higher-level fieldbus and overview/structure of subordinate IO-Link master • Detailed information relating to selected IO-Link master • Current configuration of IO-Link ports for selected IO-Link master • Detailed information relating to selected IO-Link devices, for example: - Manufacturer - Device name - Description - Order number - Device image • Device catalog with the IODDs for the IO-Link devices of various manufacturers.	The engineering tool S7-PCT (Port Configuration Tool) is used from within STEP7. Beckhoff TWIN CAT Sensor and actuator suppliers provide device-specific IODDs for download from their websites.
2.4	**IO-Link device parameter settings** Setting up the IO-Link device – in other words, adapting sensors/actuators to the application task concerned – requires specific parameter settings. The parameters and setting values are included in the IODD of each device and can be set in the IO-Link engineering tool of the IO-Link master manufacturer. This involves selecting the relevant device in the port configuration and adapting it under "Parameters." Based on the default settings displayed there, the values can be changed and saved within a defined value range.	

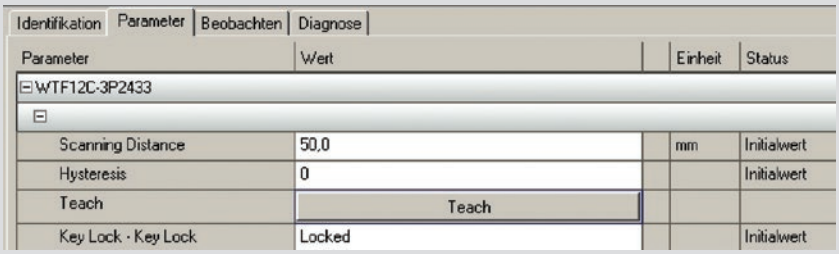


Fig. 3: Setting the parameter values of an IO-Link sensor

Step 3: Programming

3.1 Using IO-Link device data in the PLC program and the HMI

IO-Link communication enables the use of process data (cyclic communication)

- Switching signals
- Analog values
- Results of advanced functions (such as speed counters and timers)

However, IO-Link also enables service data to be communicated (acyclic communication)

- Parameter values
- Configuration settings
- Identification
- Diagnostics
- Monitoring
- Configuration and monitoring of advanced functions

3.2 Using an IO-Link device-specific function block to simplify programming

SICK provides a device-specific function block for each IO-Link device.

Function block:

- Simplifies acyclic communication between the PLC and IO-Link device
  ⊕ No knowledge of IO-Link communication required
- Simplifies service data communication
  ⊕ Reduces amount of programming work
- Provides device parameters
  ⊕ No laborious searches for device parameters
- Provides the correct device data types
  ⊕ No knowledge of device data types required
- Translates the parameters provided into indices and subindices
  ⊕ No knowledge of parameter addressing required

Versatile product range for industrial automation

From the simple acquisition task to the key sensor technology in a complex production process: With every product from its broad portfolio, SICK offers a sensor solution that best combines cost effectiveness and safety.

www.sick.com/products

Photoelectric sensors

- Miniature photoelectric sensors
- Small photoelectric sensors
- Compact photoelectric sensors
- Fiber-optic sensors and fibers
- Cylindrical photoelectric sensors
- MultiTask photoelectric sensors

Proximity sensors

- Inductive proximity sensors
- Capacitive proximity sensors
- Magnetic proximity sensors

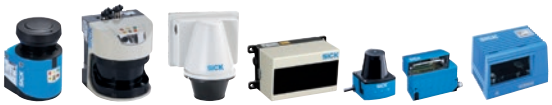
Magnetic cylinder sensors

- Analog positioning sensors
- Sensors for T-slot cylinders
- Sensors for C-slot cylinders
- Sensor adapters for other cylinder types

Identification solutions

- Bar code scanners
- Image-based code readers
- Hand-held scanners
- RFID

Detection and ranging solutions



- Laser measurement technology

System solutions

- Volume measurement systems
- Code reading systems
- Dimension weighing scanning systems
- Vision systems

Fluid sensors

- Level sensors
- Pressure sensors
- Flow sensors
- Temperature sensors

Registration sensors

- Contrast sensors
- Color sensors
- Luminescence sensors
- Fork sensors
- Array sensors
- Register sensors
- Markless sensors

Distance sensors

- Short range distance sensors (displacement)
- Mid range distance sensors
- Long range distance sensors
- Linear measurement sensors
- Ultrasonic sensors
- Double sheet detector
- Optical data transmission
- Position finders

Automation light grids

- Advanced automation light grids
- Standard automation light grids
- Smart light grids

Vision

- Vision sensors
- Smart cameras
- 3D cameras

Opto-electronic protective devices

- Safety laser scanners
- Safety camera systems
- Safety light curtains
- Multiple light beam safety devices
- Single-beam photoelectric safety switches
- Mirror and device columns
- Upgrade kits

Safety switches

- Electro-mechanical safety switches
- Non-contact safety switches
- Safety command devices

sens:Control – safe control solutions

- Safety relays
- Safety controllers
- Network solutions

Motor feedback systems

- Interfaces: incremental, HIPERFACE® and HIPERFACE DSL®
- Safety motor feedback systems
- Rotary and linear motor feedback systems for asynchronous, synchronous motors and linear motors

Encoders

- Absolute encoders
- Incremental encoders
- Linear encoders
- Wire draw encoders

Analyzers and systems

- Gas analyzers
- Dust measuring devices
- Analyzer systems
- Liquid analyzers
- Data acquisition systems
- Tunnel sensors

Gas flow measuring devices

- Gas flow meters
- Mass flow meters
- Volume flow measuring devices

Software

- Safexpert® safety software

At a glance

- Best background suppression sensor in its class
- Universal use of PinPoint LED technology in all models
- BGS proximity sensor with laser-like light spot for precise detection tasks
- Reliable setting via 5-turn potentiometer, teach-in pushbutton, teach-in via cable or IO-Link
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Application versatility due to reliable detection of shiny, transparent or jet-black objects
- Very quick and easy alignment due to the highly visible, intense PinPoint LED light spot
- Rugged mounting system with M3 threaded metal inserts reduces maintenance costs due to a long service life
- Background suppression sensors with a laser-like light spot reduce costs and installation of additional protective measures by replacing laser sensors
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks

→ **www.mysick.com/en/W4S-3**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/W4S-3

- **IO-Link:** Standard functions
- **Output type:** PNP
- **Switching mode:** Light/dark-switching
- **Connection:** Connector M8, 4-pin

Sensor principle	Detection principle	Sensing range max.	Adjustment	Advanced functions	Model name	Part no.
Photoelectric proximity sensor	Background suppression	4 mm ... 500 mm [1]	Single teach-in button	–	WTB4SC-3P2262	1042033
				Timer, False Tripping Suppression (Debouncing)	WTB4SC-3P2262A70	1067756
				High-Speed Counter, False Tripping Suppression (Debouncing)	WTB4SC-3P2262A71	1067757
				Time Stamp, False Tripping Suppression (Debouncing)	WTB4SC-3P2262A91	1067758
Photoelectric retro-reflective sensor	Autocollimation	0 m ... 5 m [2]	Single teach-in button	–	WLG4SC-3P2232	1057177
				Timer, False Tripping Suppression (Debouncing)	WLG4SC-3P2232A70	1067763
				High-Speed Counter, False Tripping Suppression (Debouncing)	WLG4SC-3P2232A71	1067765
				Time Stamp, False Tripping Suppression (Debouncing)	WLG4SC-3P2232A91	1067766

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

Sensor principle	Detection principle	Sensing range max.	Adjustment	Advanced functions	Model name	Part no.
Through-beam photoelectric sensor	–	0 m ... 5 m	–	–	WSE4SC-3P2230	1067767
				Timer, False Tripping Suppression (Debouncing)	WSE4SC-3P2230A70	1067768
				High-Speed Counter, False Tripping Suppression (Debouncing)	WSE4SC-3P2230A71	1067769
				Time Stamp, False Tripping Suppression (Debouncing)	WSE4SC-3P2230A91	1067770

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

Accessories

Accessory family	Accessory type	Description	Material	Dimensions	Model name	Part no.
Mounting brackets/ plates	Mounting brackets	Mounting bracket for wall mounting	Stainless steel 1.4571	–	BEF-W4-A	2051628
		Mounting bracket for floor mounting	Stainless steel 1.4571	–	BEF-W4-B	2051630
Reflectors	Angular	Rectangular, screw connection	PMMA/ABS	38 mm x 15 mm	PL20A	1012719
				80 mm x 80 mm	PL80A	1003865
Fine triple reflectors	Angular	Rectangular, screw connection	PMMA/ABS	47 mm x 47 mm	P250F	5308843
				76 mm x 45 mm	PL81-1F	5325060

At a glance

- Best-in-class optical performance due to superior OES technology
- Autocollimation with retro-reflective sensors
- Background and foreground suppression with second emitter LED on proximity sensors
- Highly visible, precise light spot and high-energy IR transmitters
- Rugged die-cast zinc housing, optional with Teflon® coating
- Mounting options with through holes, base blind holes, oblong through holes and dovetail
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Reliable detection due to superior ASIC (application-specific integrated circuit) technology and immunity to optical interference factors from the industrial environment
- PinPoint LED technology provides a bright, small and precise light spot that enables quick and easy sensor alignment
- Precise switching characteristics ensure reliable object detection, reducing downtime caused by re-adjusting sensors during recipe changes
- Wide range of products enclosed in a rugged metal housing enables application flexibility in a broad range of industrial environments
- Flexible mounting options reduce installation time
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks

→ **www.mysick.com/en/W12-3**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/W12-3

- **IO-Link:** Standard functions
- **Output type:** PNP
- **Switching mode:** Light/dark-switching
- **Connection:** Connector M12, 4-pin

Sensor principle	Detection principle	Sensing range max.	Adjustment	Advanced functions	Model name	Part no.
Photoelectric proximity sensor	Background suppression	20 mm ... 350 mm [1]	Single teach-in button	–	WTB12C-3P2432	1067771
				Timer, False Tripping Suppression (Debouncing)	WTB12C-3P2432A70	1067772
				High-Speed Counter, False Tripping Suppression (Debouncing)	WTB12C-3P2432A71	1067773
				Time Stamp, False Tripping Suppression (Debouncing)	WTB12C-3P2432A91	1060222
Photoelectric retro-reflective sensor	Autocollimation	0 m ... 4 m [2]	Single teach-in button	–	WL12GC-3P2472	1054087
				Timer, False Tripping Suppression (Debouncing)	WL12GC-3P2472A70	1067778
				High-Speed Counter, False Tripping Suppression (Debouncing)	WL12GC-3P2472A71	1067779
				Time Stamp, False Tripping Suppression (Debouncing)	WL12GC-3P2472A91	1061063

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

Sensor principle	Detection principle	Sensing range max.	Adjustment	Advanced functions	Model name	Part no.
Through-beam photoelectric sensor	–	0 m ... 20 m	–	–	WSE12C-3P2430	1067780
				Timer, False Tripping Suppression (Debouncing)	WSE12C-3P2430A70	1067781
				High-Speed Counter, False Tripping Suppression (Debouncing)	WSE12C-3P2430A71	1067782
				Time Stamp, False Tripping Suppression (Debouncing)	WSE12C-3P2430A91	1067783

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

Accessories

Accessory family	Accessory type	Description	Material	Dimensions	Model name	Part no.
Mounting brackets/ plates	Mounting brackets	Mounting bracket, large	Stainless steel	–	BEF-WG-W12	2013942
Reflectors	Angular	Rectangular, screw connection	PMMA/ABS	38 mm x 15 mm	PL20A	1012719
				80 mm x 80 mm	PL80A	1003865
Fine triple reflectors	Angular	Rectangular, screw connection	PMMA/ABS	47 mm x 47 mm	P250F	5308843
				76 mm x 45 mm	PL81-1F	5325060

At a glance

- Speed and acceleration monitoring
- Monitoring range: 6 to 12,000 pulses/min. and 0.1 to 2 pulses/sec.²
- Switching and pulse output
- Intelligent start-up delay
- Speed monitoring can be flexibly configured via two thresholds
- Flexible sensor settings, monitoring, extended diagnostics, and visualization thanks to IO-Link
- Types M18 and M30
- Sensing ranges of up to 10 mm flush

Your benefits

- Speed-independent detection of speed changes
- Faster detection of speed changes than conventional speed monitors
- No readjustment after speed changes necessary
- Precise and convenient configuration via software
- IO-Link provides easy data access from the PLC
- No time-consuming, individual configuration of start-up delay feature necessary
- Reliable output signal thanks to adjustable speed thresholds (hysteresis)
- No expensive counter cards necessary in PLC

→ **www.mysick.com/en/SAM**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/SAM

- **IO-Link:** Standard functions
- **Speed range:** 6...12,000 impulses/min
- **Acceleration range:** 0.1...2 impulses/sec²
- **Connection:** Connector M12, 4-pin

Housing	Sensing range S_n	Advanced functions	Model name	Part no.
M18 x 1	7 mm	Pulse and acceleration monitoring	IMC18-07BPDZC0SA05	1061987
M30 x 1.5	10 mm	Pulse and acceleration monitoring	IMC30-10BPDZC0SA05	1061704

Accessories

- **Accessory type:** Mounting brackets

Accessory family	Material	Description	Model name	Part no.
Mounting brackets/plates	Steel, zinc coated	Mounting bracket, M18 thread	BEF-WN-M18	5308446
		Mounting bracket, M30 thread	BEF-WN-M30	5308445

IO-Link

At a glance

- Analog positioning sensor for pneumatic and hydraulic cylinders with T-slot
- Measuring lengths from 32 mm to 256 mm in 32 mm steps
- Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Superior precision: 0.05 mm resolution typ., 0.1 mm repeatability typ., 0.3 mm linearity typ., 1 ms measurement rate typ.
- Electric setting of zero point and end point via teach-in button (optional)

Your benefits

- Convenient installation and sensor replacement due to drop-in installation
- Maximum flexibility through measuring ranges from 32 mm to 256 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Easy analog output setup: adjustable zero and end point can be taught via single button
- Selectable installation direction to optimize cabling
- Simple commissioning due to "in-range" indicator
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link save time and money

→ **www.mysick.com/en/MPS**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/MPS

- **IO-Link:** Standard functions
- **Teach-in:** ✔
- **Output function:** Analog
- **Cylinder type:** T-slot
- **Connection:** Cable with connector M12, 4-pin, 0.3 m (Do not bend below 0 °C.)

Measuring range	Housing length	Model name	Part no.
32 mm [1]	45 mm	MPS-032TLTQ0	1062506
64 mm [1]	77 mm	MPS-064TLTQ0	1062507
96 mm [1]	109 mm	MPS-096TLTQ0	1062508
128 mm [1]	141 mm	MPS-128TLTQ0	1062518
160 mm [1]	173 mm	MPS-160TLTQ0	1062521
224 mm [1]	237 mm	MPS-224TLTQ0	1062522
256 mm [1]	269 mm	MPS-256TLTQ0	1062520

[1] ± 1 mm.

Accessories

Accessory family	Accessory type	Description	Model name	Part no.
Brackets for cylinder sensors	For SMC rails CDQ2 (T-/C-slot)	Mounting bracket for mounting on SMC rails CDQ2 (T-slot)	BEF-KHZ-TT2	2046440
	For SMC rails ECDQ2 (T-/C-slot)	Mounting bracket for mounting on SMC rails ECDQ2 (T-slot)	BEF-KHZ-TT1	2046439
	For cylinders with dovetail-slot	Mounting bracket for cylinder with dovetail slot	BEF-KHZ-ST1	2022703

At a glance

- Analog positioning sensor that can be mounted with adapters on various cylinders thanks to its universal housing, e.g., cylinders with T-slot, round and tie rod cylinders
- Measuring lengths from 107 mm to 1,007 mm in 36 mm steps
- Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Linearity of 0.5 mm at a sample rate of 1.15 ms and an resolution of 0.06 mm
- Electric setting of zero point and end point via teach-in button
- IP 67 enclosure rating

Your benefits

- Maximum flexibility through measuring ranges from 107 mm to
- 1,007 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Saves time due to configurable start and end points via intelligent Teach Pad
- A rugged aluminum housing, the capacitive Teach Pad and the anti-kink cable guarantees a long operational lifetime of the sensor and reduces maintenance costs
- Time savings through simple commissioning and diagnostics thanks to a 4-color LED display
- Analog power, voltage signal and IO-Link in a single sensor reduces the range of variants and thereby lowers warehousing costs
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link save time and money

→ **www.mysick.com/en/MPA**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/MPA

- **IO-Link:** Standard functions
- **Teach-in:** ✔
- **Output function:** Analog
- **Connection:** Cable with connector M8, 4-pin, 0.3 m (Do not bend below 0 °C.)

Measuring range	Housing length	Advanced functions	Model name	Part no.
107 mm [1]	109 mm	–	MPA-107THTP0	1059442
215 mm [1]	217 mm		MPA-215THTP0	1059448
323 mm [1]	325 mm		MPA-323THTP0	1059454
503 mm [1]	505 mm		MPA-503THTP0	1059464
755 mm [1]	757 mm		MPA-755THTP0	1059472
1,007 mm [1]	1,009 mm		MPA-1007THTP0	1059479
107 mm [1]	109 mm	Time measurement / Timer, Time Stamp	MPA-107THTP0B01	1067049
575 mm [1]	577 mm		MPA-575THTP0B01	1062570

[1] ± 1 mm.

Accessories

Accessory family	Material	Description	Model name	Part no.
Brackets for cylinder sensors	Stainless steel V2A (bracket/mounting screw), Brass (fixing screw/sliding nut)	For T-slot cylinders	BEF-KHZT01MPA	2065575
	Aluminum alloy (adapter), Stainless steel V2A (mounting-/fixing screw)	For tie-rod cylinder (diameter tie-rod max. 18 mm)	BEF-KHZPZ1MPA	2065578
	Stainless steel V2A	For round body cylinders with diameter up to 135 mm	BEF-KHZR135MPA	2066627

At a glance

- Magnetic cylinder sensor for pneumatic and hydraulic cylinders with C-slot
- Simple 2-point teach-in procedure
- Detection zone up to 50 mm stroke
- Drop-in mounting from above
- Sensor fully recessed in slot
- Two versions available for Festo and SMC C-slots
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- One sensor with two programmable switching points reduces installation time
- Fewer mounting and cabling requirements – saves installation time, mounting space, and money
- Maximum flexibility: programmable detection zone up to 50 mm stroke
- Suitable for precise pneumatic applications due to simple and precise definition of two switching points
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks
- Easy device replacement and identification

→ **www.mysick.com/en/MZ2Q-C**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/MZ2Q-C

- **Cylinder type:** C-slot
- **Output type:** PNP
- **Output function:** NO
- **Connection:** Cable with connector M12, 4-pin, 0.3 m
- **IO-Link:** Standard functions

For SMC cylinder	For Festo cylinder	Model name	Part no.
✔	–	MZ2Q-CSLPSKQ0	1043696
–	✔	MZ2Q-CFLPSKQ0	1043697

Accessories

Accessory family	Description	Material	Model name	Part no.
Brackets for cylinder sensors	Mounting bracket for integrated profile cylinder/ tie-rod cylinder	Zinc diecast	BEF-KHZ-PT1	2022702
	Mounting bracket on round body cylinder with diameter of 8 mm to 63 mm	Plastic, nickel silver	BEF-KHZ-RT1-63	5311172

At a glance

- Magnetic cylinder sensor for pneumatic and hydraulic cylinders with T-slot
- Simple 2-point teach-in procedure
- Detection zone up to 50 mm stroke
- Drop-in T-slot mounting from above makes assembly easy
- Sensor fully recessed in slot
- For all commonly used cylinders with T-slots, e.g., Festo or SMC and it can be applied to multiple cylinders types such as round, tie-rod, integrated profile or dove-tail cylinders with mounting brackets
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- One sensor with two adjustable switching points reduces installation time and cost
- Detection zone up to 50 mm stroke provides maximum application flexibility
- Ideal for precise pneumatic applications due to the definition of two switching points
- Drop-in T-slot mounting from above makes assembly easy
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks
- Easy device replacement and identification

→ **www.mysick.com/en/MZ2Q-T**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/MZ2Q-T

- **For SMC cylinder:** ✔
- **Cylinder type:** T-slot

Output type	Output function	IO-Link	Connection	Model name	Part no.
PNP	NO	Standard functions	Cable with connector M12, 4-pin, 0.3 m	MZ2Q-TSLPS-KQ0	1042228

Accessories

Accessory family	Description	Material	Model name	Part no.
Brackets for cylinder sensors	Mounting bracket for integrated profile cylinder/ tie-rod cylinder	Zinc diecast	BEF-KHZ-PT1	2022702
	Mounting bracket on round body cylinder with diameter of 8 mm to 63 mm	Plastic, nickel silver	BEF-KHZ-RT1-63	5311172

At a glance

- Established mini housing
- High grayscale resolution
- Increased dynamic range means reliable detection of contrasts on shiny materials
- Static and dynamic teach-in in one variant
- Switching frequency 15 kHz (type-dependent)
- KTM Core for standard applications
- KTM Prime with IO-Link function
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Mini housing makes use in tight spaces possible
- Three-color LED technology allows a reliable process, with contrast marks detected even in conditions with weak contrast ratios
- Good contrast resolution and an increased dynamic range ensure good performance on shiny materials, thus increasing the range of applications in the industry
- High flexibility during commissioning thanks to various teach-in methods
- Extended diagnostics, visualization, and quick and simple format changes by downloading the parameter settings via IO-Link
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks

→ **www.mysick.com/en/KTM**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/KTM

- **Light source:** LED red, green, blue (Average service life of 100,000 h at T_A = +25 °C .)(Wave length: 470 nm, 525 nm, 625 nm.)
- **Light spot direction:** vertical (In relation to long side of housing.)
- **Light spot size:** 1 mm x 3 mm
- **Switching frequency:** 15 kHz (With light/dark ratio 1:1.)
- **Response time:** 35 µs (Signal transit time with resistive load.)
- **Adjustment:** 2-point teach-in static/dynamic + close to mark
- **IO-Link:** Standard functions

Switching output	Connection	Type	Part no.
NPN, IO-Link	Connector M8, 4-pin	KTM-WN117A1P	1061787
PNP, IO-Link	Connector M8, 4-pin	KTM-WP117A1P	1061770

Accessories

Accessory family	Description	Material	Model name	Part no.
Mounting brackets/plates	Mounting bracket for wall mounting	Stainless steel	BEF-W100-A	5311520

IO-Link

At a glance

- Simple teach-in
- Operating range up to 250 mm
- Version with IO-Link for remote monitoring
- Bar graph display provides information about the luminescence intensity
- High speed (6.5 kHz), standard (2.5 kHz), high resolution (500 Hz) models
- Additional optical filters suppress background luminescence
- Fiber-optic cable connection (with 20 mm lens)
- Switching and analog output

Your benefits

- Simple sensitivity adjustment via teach-in for optimum adaptation to the application
- Long sensing distance tolerance leads to less mechanical height adjustments of the sensor on the machine
- Using IO-Link, the sensor can be configured and monitored by the central control system, enabling simple, cost-effective diagnostics and data collection
- Bar graph display provides continual process control through easy visualization of the luminescence intensity
- Filters ensure that background luminescence is reliably suppressed, ensuring greater process reliability
- Interchangeable lenses for different sensing distances and the second light exit provide flexibility
- High detection reliability ensures the process and reduces downtime
- Select speed or high resolution, making it ideal for any application.

→ **www.mysick.com/en/LUT9**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/LUT9

- **Light source:** UV-LED (Average service life of 100,000 h at T_A = +25 °C .)(Wave length: 375 nm.)
- **Light emission:** long side
- **Receiving range:** 450 nm ... 750 nm
- **Receiving filters:** KV 418 (standard)
- **IO-Link:** Standard functions

Sensing distance	Operating range	Light spot size	Switching output	Type	Part no.
20 mm [1]	10 mm ... 40 mm	3 mm x 9 mm	PNP, IO-Link	LUT9U-P120L	1046188
			NPN, IO-Link	LUT9U-N120L	1046189
50 mm [1]	20 mm ... 70 mm	5 mm x 15 mm	PNP, IO-Link	LUT9U-P130L	1045606
			NPN, IO-Link	LUT9U-N130L	1046190

[1] From front edge of lens.

Accessories

Accessory family	Description	Model name	Part no.
Terminal and alignment brackets	Plate G for universal clamp bracket	BEF-KHS-G01	2022464
	Plate K for universal clamp bracket	BEF-KHS-K01	2022718
	Universal clamp bracket for rod mounting	BEF-KHS-KH1	2022726

At a glance

- Maximum reliability, immunity to ambient light, and best price/performance ratio thanks to HDDM™ technology
- Measuring range of 0.05 m to 12 m for natural objects or 0.2 m to 35 m on reflective tape
- Devices with analog and switching output, or just switching
- Infrared or red laser in class 1 or class 2
- Repeatability: 0.5 mm to 5 mm
- Small housing size
- IO-Link

Your benefits

- Precise and reliable measurement regardless of object color extends run time and process quality
- A small size and blind zone make flexible mounting possible when space is limited
- Optimum solution thanks to flexible settings for speed, range and repeatability
- Flexible interface use: 4 mA to 20 mA, 0 V to 10 V, PNP output, NPN output, or IO-Link – making machine integration simple
- Offering easy alignment, optimal performance or inconspicuous measurement, versatile light senders make it an ideal solution for all scenarios
- Low investment costs and high performance levels guarantee a quick return on investment
- IO-Link offers full process control, from commissioning to service
- A wide variety of control options ensures rapid commissioning and fast batch changes

CDRH

IO-Link

→ **www.mysick.com/en/Dx35**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/Dx35

Measuring range[1]	Analog output[2]	Switching output [3] [4]	Response time [5] [6]	Variant	Model name	Part no.
50 mm ... 12,000 mm, 90 % remision	1 x 4 mA ... 20 mA (≤ 450 Ω) / 1 x 0 V ... 10 V (≥ 50 kΩ) / -	1 x / 1 x / 2 x push-pull: PNP/NPN (100 mA), IO-Link [2]	2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Red laser, class 2	DT35-B15251	1057652
50 mm ... 5,300 mm, 18 % remission			4.5 ms / 12.5 ms / 24.5 ms / 48.5 ms / 192.5 ms	Red laser, class 1	DT35-B15551	1057651
50 mm ... 3,100 mm, 6 % remission			2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Infrared laser, class 1	DT35-B15851	1057653
200 mm ... 35,000 mm, on „Diamond Grade“		1 x / 1 x / 2 x push-pull: PNP/NPN (100 mA), IO-Link		Red laser, class 1	DL35-B15552	1057657
				Infrared laser, class 1	DL35-B15852	1057658
	–	2 x push-pull: PNP/NPN (100 mA), IO-Link		Red laser, class 1	DR35-B15522	1057659
				Infrared laser, class 1	DR35-B15822	1057660

[1] For speed setting Super Slow.
[2] Output Q_2, selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output.
[3] Output Q, short-circuit protected.
[4] Voltage drop < 3 V.
[5] Dependent on the set speed: Super Fast ... Super Slow.
[6] Lateral entry of object into measuring range.

Measuring range[1]	Analog output[2]	Switching output [3] [4]	Response time [5] [6]	Variant	Model name	Part no.
50 mm ... 12,000 mm, 90 % remision	-	2 x push-pull: PNP/NPN (100 mA), IO-Link	2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Red laser, class 2	DS35-B15221	1057655
50 mm ... 5,300 mm, 18 % remission			4.5 ms / 12.5 ms / 24.5 ms / 48.5 ms / 192.5 ms	Red laser, class 1	DS35-B15521	1057654
50 mm ... 3,100 mm, 6 % remission			2.5 ms / 6.5 ms / 12.5 ms / 24.5 ms / 96.5 ms	Infrared laser, class 1	DS35-B15821	1057656

[1] For speed setting Super Slow.

[2] Output Q_2, selectable: 4 mA ... 20 mA / 0 V ... 10 V / switching output.

[3] Output Q, short-circuit protected.

[4] Voltage drop < 3 V.

[5] Dependent on the set speed: Super Fast ... Super Slow.

[6] Lateral entry of object into measuring range.

Accessories

Accessory family	Description	Model name	Part no.
Mounting brackets/ plates	Mounting bracket: horizontal sending axis for ceiling or floor installation or vertical sending axis for wall installation, steel, zinc coated, incl. mounting material	BEF-WN-DX35	2069592
Terminal and alignment brackets	Alignment unit, steel, zinc coated, mounting hardware for the sensor included	BEF-AH-DX50	2048397
Reflectors	Reflector plate, reflective tape „Diamond Grade“, 330 mm x 330 mm, material base plate: aluminum, screw connection	PL240DG	1017910

At a glance

- Reliable measurement independent of material color, transparency, gloss and ambient light
- Four ranges up to 1,300 mm
- Short M18 metal housing with a length of 41 mm
- Straight or right-angle versions
- Analog voltage, analog current or push-pull (PNP/NPN in one) switching output with IO-Link available
- Set-up via IO-Link and/or teach-in via multifunction input
- High immunity to dirt, dust, humidity and fog

Your benefits

- Ranges up to 1,300 mm offer plenty of options for flexible use
- Easy machine integration due to short M18 housing available in straight or right-angle versions
- Intelligent measurement filters ensure reliable measurement results for highest process stability
- Integrated temperature compensation ensures high measurement accuracy at any time for best process quality
- Solid, one-piece metal housing secures highest machine availability
- Synchronization or multiplexing allow simultaneous use of up to 10 sensors, which improves application flexibility and process stability
- Unintentional adjustments to sensor settings are eliminated since teach-in process is done with an external wire
- Devices with switching output and IO-Link allow highest machine flexibility while offering easy machine operation

→ **www.mysick.com/en/UM18-2_Pro**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/UM18-2_Pro

- **Switching output:** 1 x push-pull: PNP/NPN (100 mA); IO-Link, output Q short-circuit protected. Push-Pull: PNP/NPN HIGH = U_V - (< 4 V) / LOW < 2 V.

Working range, limiting range	Output rate	Ultrasonic frequency (typical)	Sending axis	Weight	Response time	Switching frequency	Hysteresis	Model name	Part no.
20 mm ... 150 mm, 250 mm	8 ms	380 kHz	Straight	25 g	32 ms	25 Hz	2 mm	UM18-21712A211	6048384
			Angled	30 g	32 ms	25 Hz	2 mm	UM18-21712A212	6048385
30 mm ... 250 mm, 350 mm	8 ms	320 kHz	Straight	25 g	32 ms	25 Hz	3 mm	UM18-21112A211	6048390
			Angled	30 g	32 ms	25 Hz	3 mm	UM18-21112A212	6048391
65 mm ... 350 mm, 600 mm	16 ms	400 kHz	Straight	25 g	64 ms	12 Hz	5 mm	UM18-21212A211	6048396
			Angled	30 g	64 ms	12 Hz	5 mm	UM18-21212A212	6048397
120 mm ... 1,000 mm, 1,300 mm	20 ms	200 kHz	Straight	25 g	80 ms	10 Hz	20 mm	UM18-21812A211	6048402
			Angled	30 g	80 ms	10 Hz	20 mm	UM18-21812A212	6048403

Accessories

Accessory family	Description	Model name	Part no.
Mounting brackets/plates	Mounting plate for M18 sensors, without mounting hardware	BEF-WG-M18	5321870
	Mounting bracket, M18 thread, without mounting hardware	BEF-WN-M18	5308446
Terminal and alignment brackets	Plate H for universal clamp bracket, universal clamp and mounting hardware included	BEF-KHS-H01	2022465

At a glance

- Electronic pressure switch with display for monitoring pressure in liquids and gases
- Precise sensor technology with stainless steel membrane
- Integrated process connections manufactured from high-quality stainless steel
- Pressure values indicated on display. Output states are indicated separately via wide-angle LEDs.
- Unit of pressure value in display can be switched
- Min/max memory
- Password protection

Your benefits

- Quick and easy setup and operation due to three large pushbuttons and clear display
- Perfect display readability and optimal cable routing due to rotatable housing
- No compromises: Individual solutions through a variety of configurations
- Universal application due to fully welded, highly durable stainless steel membrane
- Saves space and costs: no adapters required due to broad range of standard process connections
- Highly reliable due to application of proven technologies and high-quality materials, water resistance according to IP 65 and IP 67 as well as excellent overpressure safety
- Ultimate system availability: IO-Link enables fast, reliable parameter setting when changing over products

→ **www.mysick.com/en/PBS**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/PBS

- **Accuracy:** ≤ ± 1 %
- **Process temperature:** –20 °C ... +85 °C
- **Pressure port:** Standard
- **Electrical connection:** M12 x 1, 4-pin, IP 67

Output signal	Process connection	Seal	Pressure type	Measuring range	Type	Part no.
IO-Link/PNP + PNP	G 1/4 female	Without sealing	Compound pressure	-1...9 bar	PBS-CB010SG2SS0LMA0Z	6050041
			Gauge pressure	0...1 bar	PBS-RB1X0SG2SS0LMA0Z	6050308
				0...10 bar	PBS-RB010SG2SS0LMA0Z	6041418
				0...100 bar	PBS-RB100SG2SS0LMA0Z	6041419
				0...250 bar	PBS-RB250SG2SS0LMA0Z	6041626
				0...400 bar	PBS-RB400SG2SS0LMA0Z	6045069
	G 1/4 A according to DIN 3852-E	NBR	Compound pressure	-1...9 bar	PBS-CB010SG1SSNLMA0Z	6042806
			Gauge pressure	0...1 bar	PBS-RB1X0SG1SSNLMA0Z	6050369
				0...10 bar	PBS-RB010SG1SSNLMA0Z	6044040
				0...100 bar	PBS-RB100SG1SSNLMA0Z	6050370
				0...250 bar	PBS-RB250SG1SSNLMA0Z	6050371
				0...400 bar	PBS-RB400SG1SSNLMA0Z	6050372
IO-Link/PNP + 4...20 mA			Compound pressure	-1...9 bar	PBS-CB010SG1SSNNMA0Z	6050373
			Gauge pressure	0...1 bar	PBS-RB1X0SG1SSNNMA0Z	6050374
				0...10 bar	PBS-RB010SG1SSNNMA0Z	6044974
				0...100 bar	PBS-RB100SG1SSNNMA0Z	6050375
				0...250 bar	PBS-RB250SG1SSNNMA0Z	6050376
				0...400 bar	PBS-RB400SG1SSNNMA0Z	6050377

At a glance

- No mechanical moving parts
- Manually cutable and exchangeable monoprobe with lengths from 200 mm up to 2,000 mm
- Immune to deposit formation
- Process temperature up to 100 °C; process pressure up to 10 bar
- Small inactive areas, ideal for small containers
- Accurate measurement, even when liquid type changes
- 3 in 1: combined display, analog output (acc. NAMUR NE 43) and binary output
- High enclosure rating of IP 67, rotatable housing

Your benefits

- Rugged design increases service life
- High flexibility due to cutable and exchangable monoprobe
- Cost savings due to multiple output signals: one system for both level detection and continuous level monitoring
- Time and cost savings due to low maintenance and quick commissioning
- No calibration or recalibration required for commissioning, thus saving time and costs
- Compact and rotatable housing ensures flexible installation
- No crosstalk when several sensors are mounted next to each other
- Advanced technology enables adjustment-free measurement of oil- and water-based liquids

→ **www.mysick.com/en/LFP_Cubic**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/LFP_Cubic

- **Enclosure rating:** IP 67: EN 60529
- **Output signal:** 1x PNP + 1x PNP/NPN + 4 mA ... 20 mA / 0 V ... 10 V
- **Process temperature:** –20 °C ... +100 °C
- **Process pressure:** –1 bar ... 10 bar
- **Housing material:** Plastic PBT
- **Electrical connection:** Round connector M12 x 1, 5-pin

Process connection	Probe length	Model name	Part no.
G ¾ A	400 mm	LFP0400-A4NMB	1057075
	800 mm	LFP0800-A4NMB	1057079
	1,200 mm	LFP1200-A4NMB	1057083
	1,600 mm	LFP1600-A4NMB	1057087
	2,000 mm	LFP2000-A4NMB	1057091
¾" NPT	400 mm	LFP0400-B4NMB	1057094
	800 mm	LFP0800-B4NMB	1057098
	1,200 mm	LFP1200-B4NMB	1057102
	1,600 mm	LFP1600-B4NMB	1057106
	1,800 mm	LFP1800-B4NMB	1057108
	2,000 mm	LFP2000-B4NMB	1057110

Accessories

Accessory category	Brief description	Type	Part no.
Terminal and alignment brackets	Centering for bypass- and immersion tube installation with diameter 40 mm ... 100 mm	BEF-FL-BYRD40-LFP1	2059612

At a glance

- Level monitoring in hygienic applications
- Manually cutable monoprobe made from stainless steel 1.4404 up to 2,000 mm long with Ra ≤ 0.8 µm
- Process temperature up to 150 °C, process pressure up to 16 bar
- CIP/SIP resistant
- IP 67 and IP 69K enclosure rating
- Interchangeable hygienic process connections
- 3 in 1: combined display, analog output and binary output
- Analog output 4 mA ... 20 mA / 0 V ... 10 V, switchable, plus two binary outputs

Your benefits

- Robust design increases service life
- High flexibility due to cutable probe and interchangeable connection concept
- Cost savings due to multiple output signals: one system for both level detection and continuous level monitoring
- Time and cost savings due to low maintenance and quick commissioning
- No calibration or recalibration required for commissioning, thus saving time and costs

→ **www.mysick.com/en/LFP_Inox**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/LFP_Inox

- **Enclosure rating:** IP 67: EN 60529, IP 69K: EN 40050
- **Process connection:** G ¾ A
- **Output signal:** 1x PNP + 1x PNP/NPN + 4 mA ... 20 mA / 0 V ... 10 V
- **Process temperature:** –20 °C ... +150 °C
- **Process pressure:** –1 bar ... 16 bar
- **Housing material:** 303
- **Electrical connection:** Round connector M12 x 1, 5-pin

Housing design	Probe length	Model name	Part no.
With PMMA viewing window	400 mm	LFP0400-G1NMB	1052069
	800 mm	LFP0800-G1NMB	1052073
	1,200 mm	LFP1200-G1NMB	1052077
	1,600 mm	LFP1600-G1NMB	1052081
	2,000 mm	LFP2000-G1NMB	1052085
With closed cover	400 mm	LFP0400-G2NMB	1056225
	800 mm	LFP0800-G2NMB	1056291
	1,200 mm	LFP1200-G21NMB	1056294
	1,600 mm	LFP1600-G2NMB	1056298
	2,000 mm	LFP2000-G2NMB	1056302

Accessories

Accessory category	Brief description	Type	Part no.
Flanges	Hygienic process connection adapter, collar connector (DIN 11864-1) DN 25 Form A with grooved union nut	BEF-HA-641D25-LFP1	2058795
	Hygienic process connection adapter, collar connector (DIN 11864-2) DN 25 Form A	BEF-HA-642D25-LFP1	2058823
	Hygienic process connection adapter, collar clamp connector (DIN 11864-3) BKS DN 25 Form A	BEF-HA-643D25-LFP1	2058821
	Hygienic process connection adapter, conical connector (DIN 11851) DN 25 with grooved union nut	BEF-HA-851D25-LFP1	2058138
	Hygienic process connection adapter, conical connector (DIN 11851) DN 40 with grooved union nut, material 1.4404 (Ra<= 0.8 µm)	BEF-HA-851D40-LFP1	2058139
	Hygienic process connection adapter, conical connector (DIN 11851) DN 50 with grooved union nut	BEF-HA-851D50-LFP1	2058141
	Hygienic process connection adapter, Tri-Clamp 1'' and 1 ½''	BEF-HA-TCLI10-LFP1	2058808
	Hygienic process connection adapter, Tri-Clamp 2"	BEF-HA-TCLI20-LFP1	2058824

At a glance

- Housing made of 316L stainless steel
- Two electrical output versions available
- Commissioning without filling
- Process temperature up to 150 °C
- Immune to deposit formation
- Very high repeatability
- Aseptic versions with polished surface, CIP and SIP resistant
- Tube extension up to 6 m

Your benefits

- Easy installation and commissioning, no calibration necessary
- Easy operation and integration, saves time
- Maintenance-free sensor, reduces downtime
- Testing in place possible – no mounting required, which reduces installation time
- Flexible and robust system for a multitude of applications
- Universal technology works in all kinds of liquids
- Economical solution for vertical mounting
- Can be used in containers and pipes regardless of the mounting situation

→ **www.mysick.com/en/LFV200**
For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Ordering information

Other models available at www.mysick.com/en/LFV200

LFV200

- **Process pressure:** –1 bar ... 64 bar
- **Housing material:** Stainless steel 1.4404, PEI

Enclosure rating	Process connection	Output signal	Process temperature	Electrical connection	Probe length	WHG approval	Model name	Part no.
IP 65	G ½ A PN 64	1x PNP with IO-Link	–40 °C ... +100 °C	Round connector M12 x 1, 4-pin	38 mm	–	LFV200-XXSGHIPM	6048862
	½'' NPT PN 64	1x PNP with IO-Link	–40 °C ... +100 °C	Round connector M12 x 1, 4-pin	38 mm	–	LFV200-XXSNHIPM	6048863

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 plant walk-through 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.

The benefit of SICK services

Each of our products and solutions is accompanied by a comprehensive range of services tuned precisely to the requirements of the product or solution – along its entire life cycle. Backed by extensive industry expertise and more than 60 years of experience, LifeTime Services stand for maximum availability and an exceptional service life of our products and solutions.

Consulting & Design

- Plant walk-through
- Risk assessment
- Safety concept
- Feasibility studies
- Software and hardware design

Verification & Optimization

- Inspection
- Maintenance
- Barcode checks
- Accident investigation
- Stoptime measurement
- Machine safety inspection

Training & Education

- User training
- Seminars
- WebTraining

Product & System Support

- Commissioning
- Exchange units and repairs
- Remote support
- Hotline

Upgrade & Retrofits

- Machine conversion
- Sensor upgrades
- Retrofitting of technology

www.sick.com/services

Simple integration into your automation world

Our intelligent sensor solutions and safety controllers make available different integration technologies that allow easy access – from HMI, PLC, and engineering tools – to data from our sensors. In this way, we support you towards solving your application rapidly and easily and increase machine availability with a continuous diagnostic concept.

Industrial communication

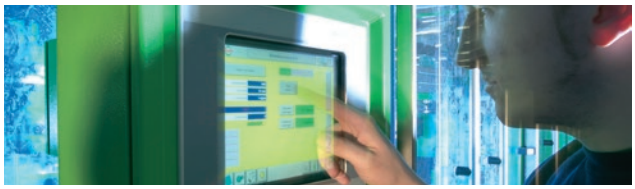
SICK's fieldbus and network solutions allow sensors and safety controllers from SICK to be connected to all common automation systems. This guarantees simple and fast access to all available data and information.

CANopen® · DeviceNet · DeviceNet Safety · EtherNet/IP · EtherCAT · HIPERFACE® by SICK · HIPERFACE DSL · IO-Link · MODBUS TCP · PROFIBUS · PROFINET · SSI

PLC and engineering tool integration

Whether the issue is generic integration using device description files, standardized interfaces (e.g. TCI, FDT/DTM) for diagnosis or integration into the PLC program via function blocks – the user-friendly tools from SICK support you in implementation.

HMI integration



SICK offers a wide range of means to integrate process, status, and diagnostic data from SICK sensors into a visualization system. Tools such as OPC servers, web servers, or SCL allow simple and fast integration into your individual HMI solution – independent of the technology used.

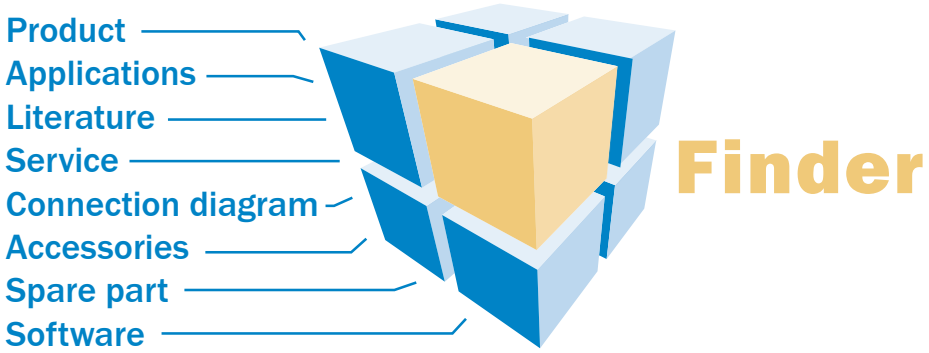
Software and tools

Our software tools support you in establishing connections, parameterizing and diagnosing sensors and safety controllers from SICK. The intuitive user interface permits simple and fast designing and realization of the application required.

www.sick.com/industrial-communication

Notes

Search online quickly and safely with the SICK „Finders“



Product Finder: We can help you to quickly target the product that best matches your application.

Applications Finder: Select the application description on the basis of the challenge posed, industrial sector, or product group.

Literature Finder: Go directly to the operating instructions, technical information, and other literature on all aspects of SICK products.

These and other Finders at www.mysick.com

Efficiency – with SICK e-commerce tools

Partner Portal
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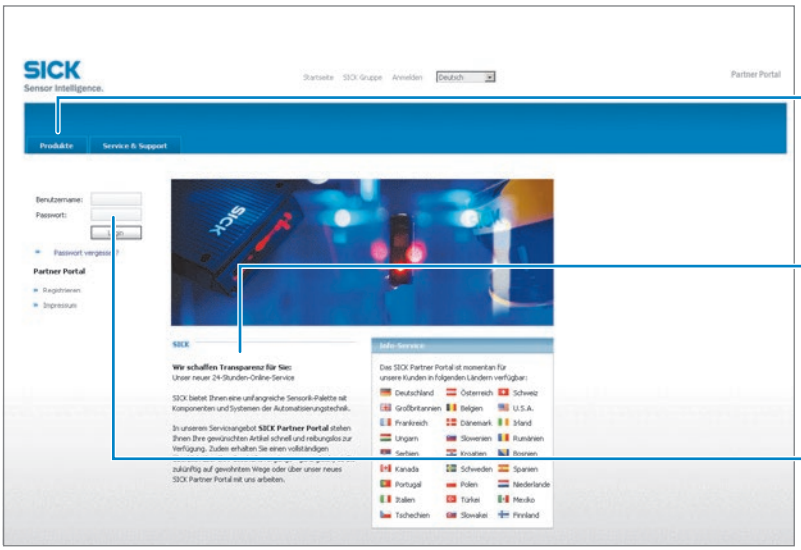

Clearly structured: You can find everything you need for your sensor planning under the menu items Products, Information, and My Account.

Available 24 hours a day: Regardless of where you are in the world or what you would like to know – everything is just a click away at www.mysick.com.

Safe: Your data is password-protected and only visible to you. With the individual user management, you define who can see what data and who can execute what actions.

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You can go through the ordering process in just a few steps.

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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

SICK
Sensor Intelligence.