INDUSTRY GUIDE

HANDLING AND ASSEMBLY TECHNOLOGY

EFFICIENT APPLICATIONS SOLUTIONS

SICK
Sensor Intelligence.

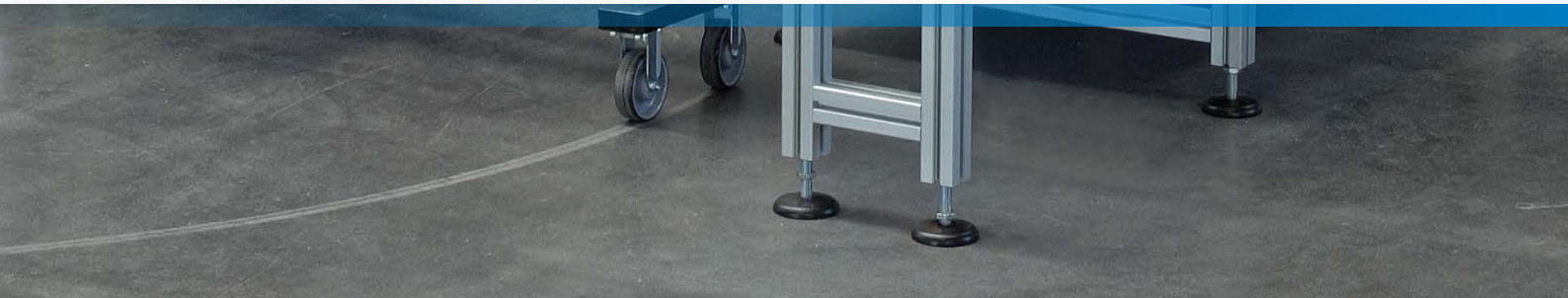
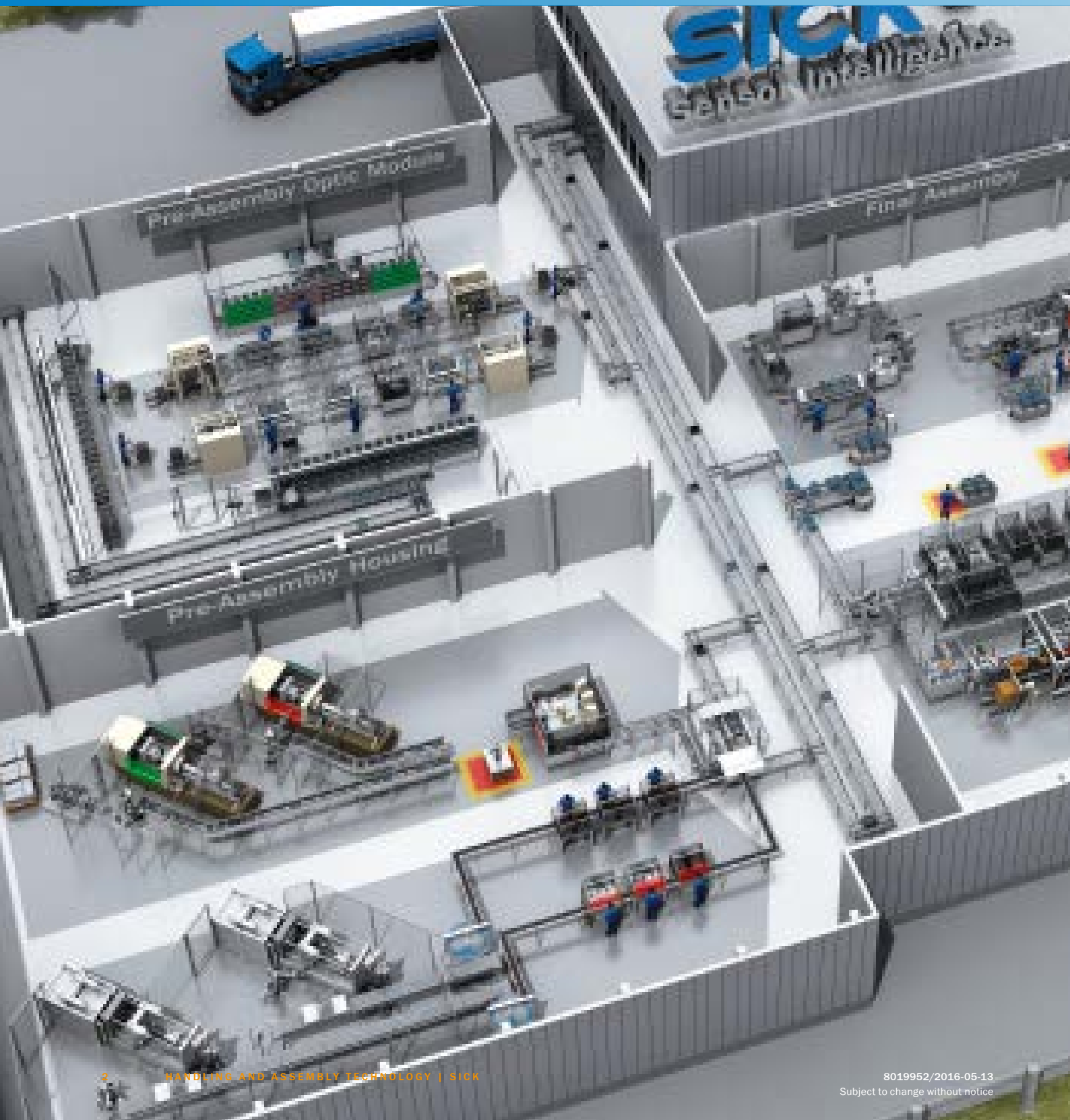


TABLE OF CONTENTS



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CHALLENGES

Challenges in handling and assembly technology

Many industries such as automotive, electronics, metal, machine tools, and medical engineering can be identified as the driving force behind handling and assembly technology. They rely heavily on automated handling and assembly processes that in turn contribute to streamlining high quality and accuracy and improving productivity and PSDI times. Developing more intelligent machines by using a larger number of sensors leads to new applications, improved quality assurance, and even more flexible production. At an early stage, SICK recognized the trend towards implementing more intelligence and functionality in the field level, making its sensor technology ideal for meeting the requirements of handling and assembly applications.

Monitoring and controlling

Assembly processes are strongly influenced by the product and require flexibility and openness to develop and implement individual processes. Reliability is an important requirement for each of these different processes, posing a highly challenging task for quality control. SICK's distance sensors, vision sensors and systems support nearly every type of monitoring.

Protecting

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

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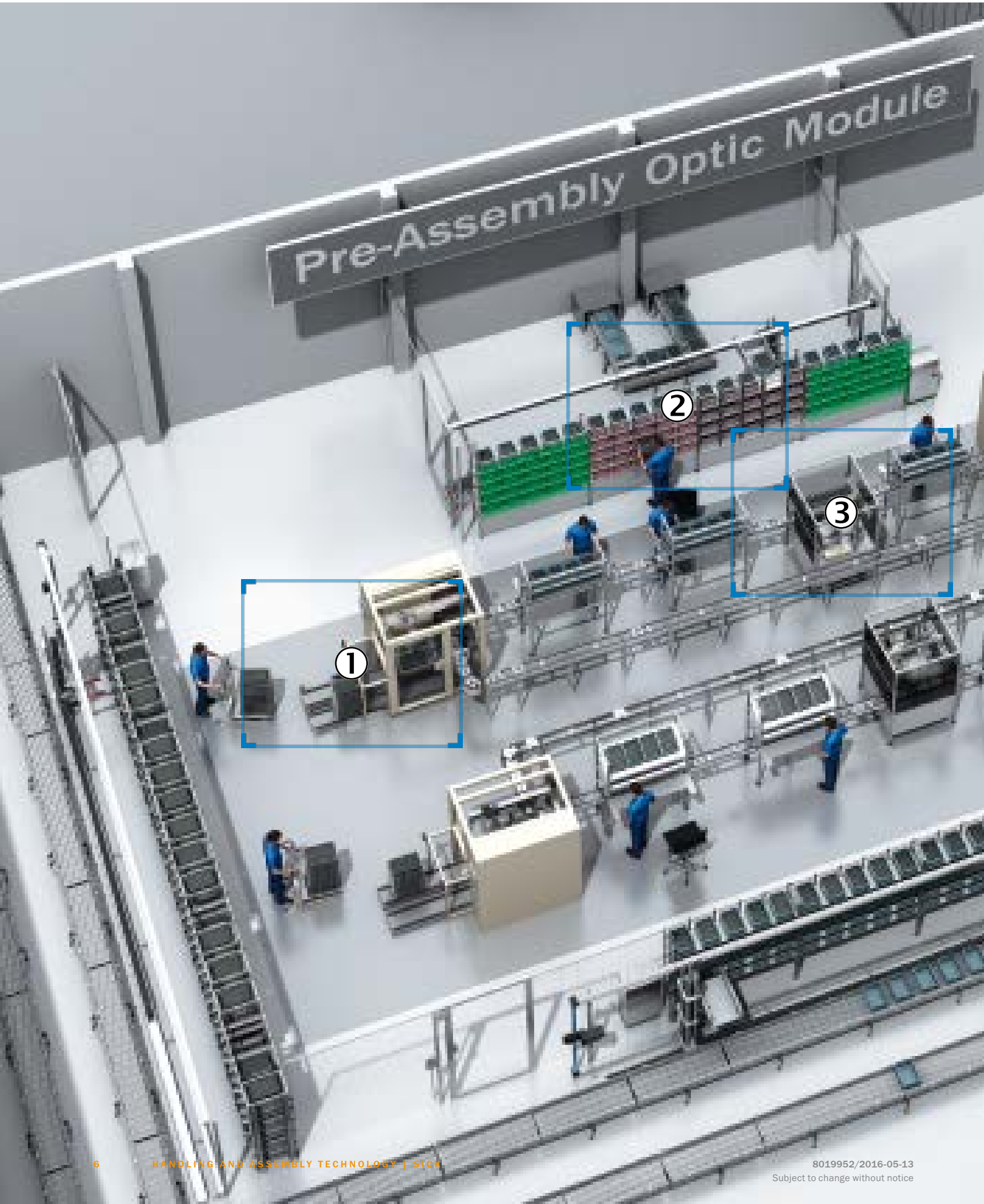
Data management and identification

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

Detecting and measuring

The automation of assembly and handling processes under the most stringent accuracy requirements needs high resolution positioning systems, flexible production lines, and high diagnostic abilities. Modern, intelligent sensors from SICK are able to store settings, use automatic teach-in and diagnostic capabilities, and independently evaluate and relay the sensor data in the process, thus making a significant contribution towards meeting these challenges.



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Small part assembly: Example of pre-assembly involving an optics module

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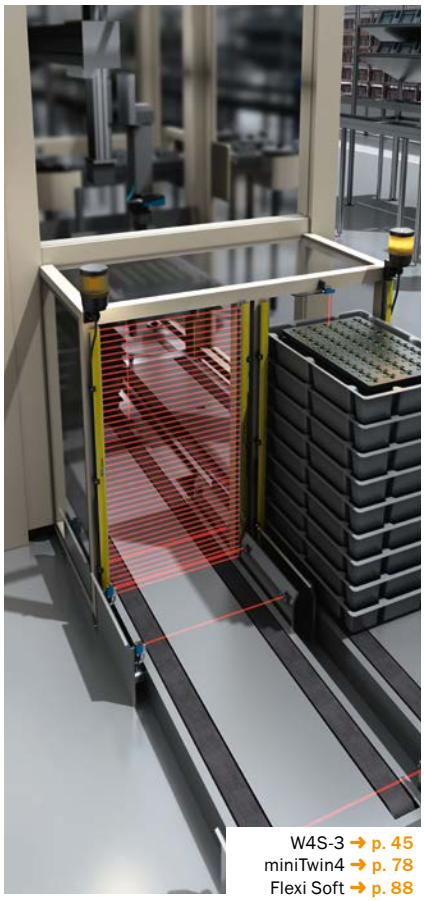
① Access protection with muting on belt conveyors

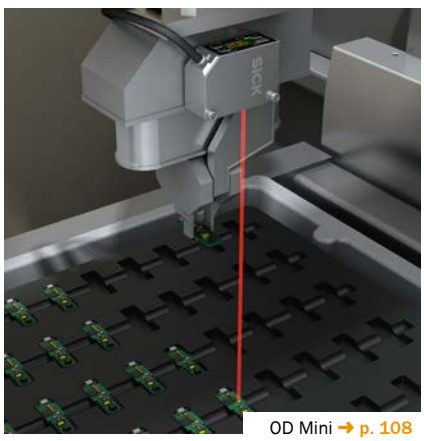
Tray stacks are automatically fed to the pallet handling machine using the (dual) belt conveyor. During this process, a miniTwin safety light curtain reliably secures access to the conveying line. The benefits of the miniTwin are its lack of blind zones and the various different brackets that allow quick and easy mounting. The muting function is used during the interaction between the light curtain and Flexi Soft safety controller in order to properly differentiate between people and materials. Four muting sensors allow flexible setup for inlet and exit monitoring.



W4S-3 ➜ p. 45
miniTwin4 ➜ p. 78
Flexi Soft ➜ p. 88

② Height control for tray stacks and printed circuit boards

A gripper arm removes the top tray from the tray stack and lifts it into an intermediate position before the printed circuit boards are feed to the assembly line. To ensure that the gripping arm grasps the right part of the printed circuit board, the OD Mini short-range distance sensor detects the height of the tray stack using distance measurement technology. The sensor then transmits the measured data to the pallet handling machine control.



OD Mini ➜ p. 108

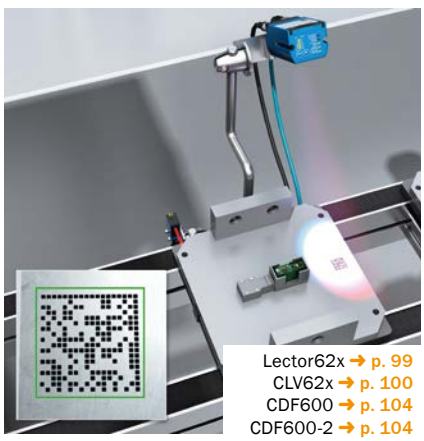
③ Singulation of printed circuit boards

The Inspector PI50 2D vision sensor provides precise detection of the registration marks on different printed circuit boards, thereby accurately determining the position of the individual boards in the tray. This means that an offset in the x- and y-direction, as well as the rotational position, can be detected and automatically corrected. As a result, the gripping system can pick the printed circuit boards and place them on the downstream workpiece carrier transfer system with millimeter accuracy.

Inspector ➜ p. 105

④ Advanced identification technology

Alongside the laser scanners of the CLV62x product family, the Lector 62x image-based code reader also belongs to the group of 4Dpro devices. These devices deliver reliable reading of 1D and 2D codes and output the results via serial interfaces, Ethernet or CAN. The built-in SMART intelligent code reconstruction technology identifies even partially covered or damaged codes. Additional bus interfaces are also optionally available via CDF connection modules.



Lector62x ➜ p. 99
CLV62x ➜ p. 100
CDF600 ➜ p. 104
CDF600-2 ➜ p. 104

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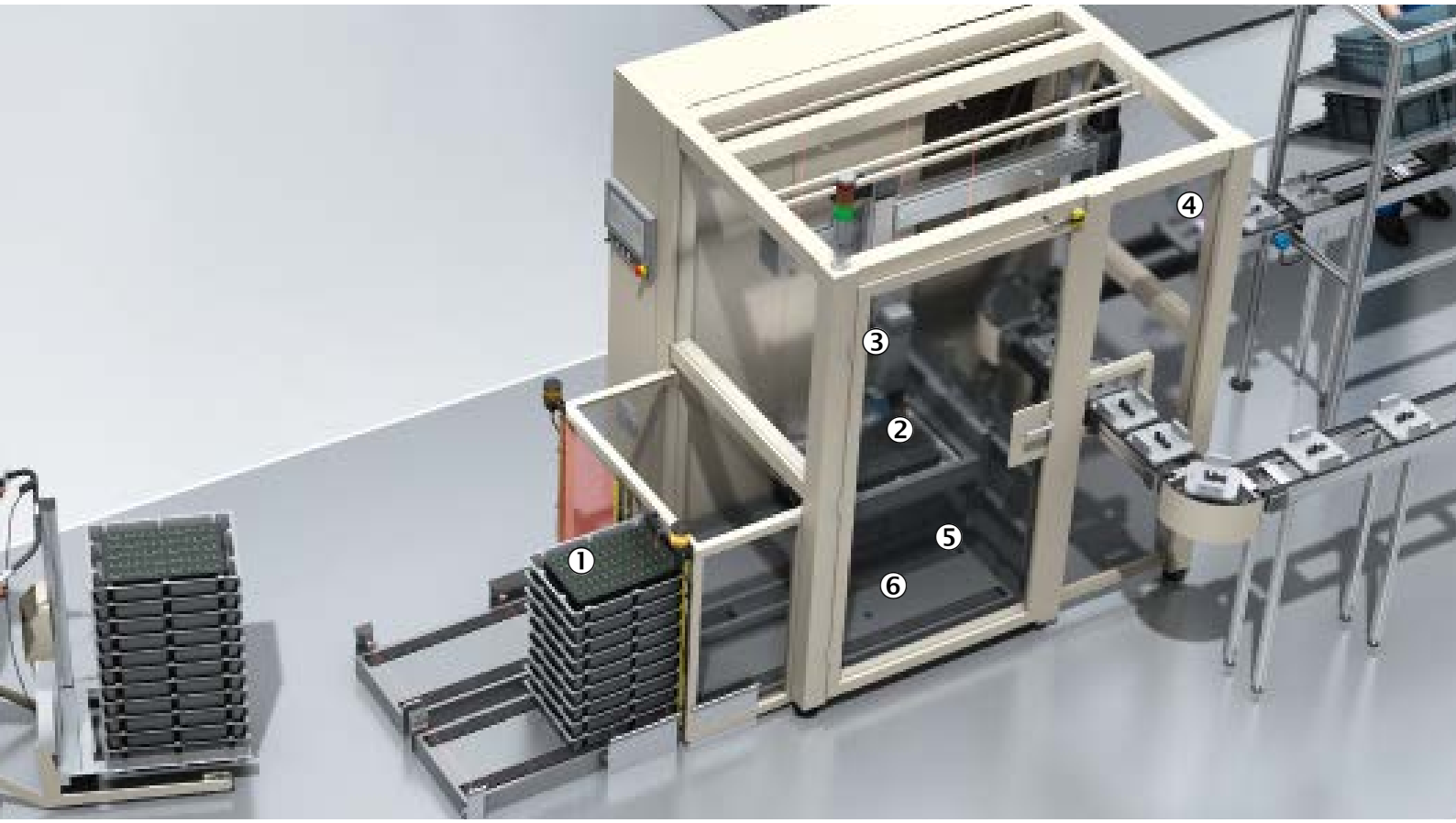
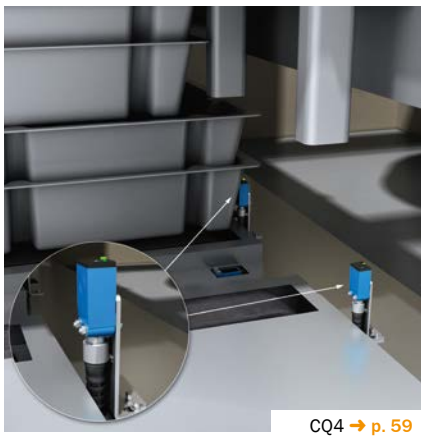


⑤ Positioning tray stacks

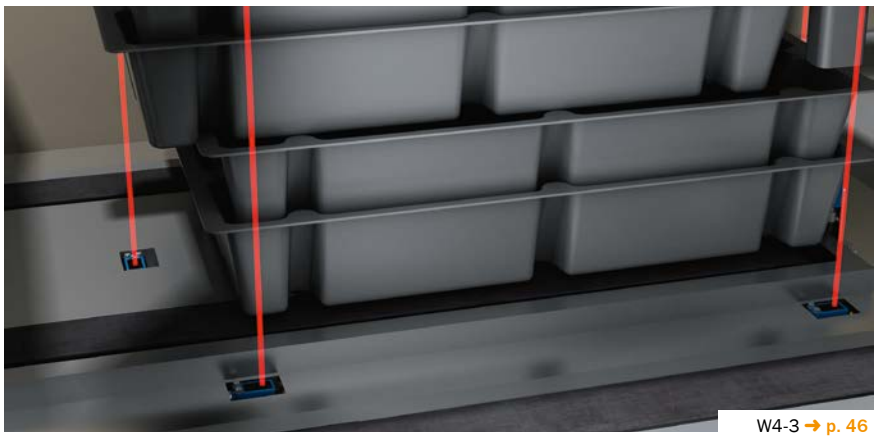
The tray stacks must be precisely positioned on the belt conveyor to allow a gripping arm to supply or remove trays. This task is handled by the CQ4 capacitive proximity sensor. With its small sensing range and compact form, the sensor can be integrated in the direct vicinity of the process, even where little space is available. The capacitative sensor technology enables a material-independent and safe detection of trays, no matter what object properties they have.

⑥ Protrusion monitoring on the tray stack

Four W4-3 photoelectric retro-reflective sensors embedded in the floor check the tray stack for protrusions and tilted trays. Two additional photoelectric retro-reflective sensors detect any workpieces protruding past the front or back of the pallet in the direction of feed. Photoelectric retro-reflective sensors with IO-Link are especially well suited for this task. Their internal microcontroller delivers optimal processing of the detection sequence with maximum frequency, thereby eliminating the need for time-consuming signal processing. W4-3 photoelectric retro-reflective sensors offer impressive performance thanks to a light spot that is highly visible, small and precise. This feature allows the sensors to “see through” covers and gaps between belts during operation. To prevent a collision, an additional photoelectric proximity sensor monitors the tray stack height as the stack is moved into the pallet handling machine.



CQ4 ➜ p. 59



W4-3 ➜ p. 46

① Measuring the conveying speed of a roller conveyor

The conveying speed of a roller conveyor is controlled with the help of the position detection feature of a programmable incremental encoder DBS60. With its high 16-bit resolution, the encoder ensures maximum repeatability. The encoder can be easily mounted to the roller conveyor via a belt drive. SICK offers a large number of encoder variants to accommodate virtually any mechanical and electrical interface.

DBS60 Core ➜ p. 97

② Detection on the load-carrying unit

Before a tote is transported onto the load-carrying unit, G6 photoelectric retro-reflective sensors check that the unit is free. Depending on the length of the totes, multiple positions may need to be checked. IQ08 inductive proximity sensors control the positioning of the telescopic arm in the direction of travel. UC4 ultrasonic sensors with analog output handle the task of laterally positioning the telescopic arm to accommodate different tote sizes.

G6 ➜ p. 47
IQ Miniature ➜ p. 56
UC4 ➜ p. 112

③ Automated tote identification with RFID

The compact RFID read/write devices feature an integrated antenna and a definable reading field, ensuring that RFID tags are correctly assigned even when objects follow one another in rapid succession. The devices are compatible with 4Dpro products and can be easily integrated into industrial networks thanks to a universal connection concept, making them perfect for all common fieldbusses. The configurable data output formats also enable integration into existing IT infrastructures.

RFU62x ➜ p. 102

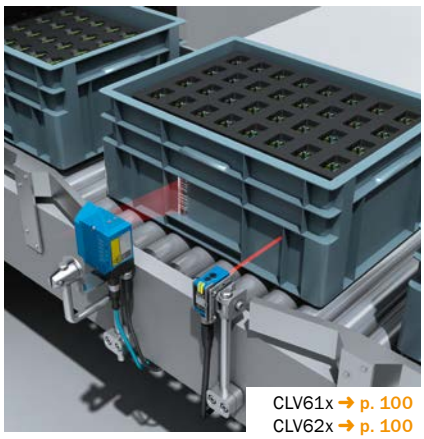
④ Positioning small load carriers

In order for the storage and retrieval system's load-carrying unit to be able to precisely grip totes, an accurate stop position for the small load carrier must be defined on the roller conveyor. A G10 photoelectric proximity sensor detects the presence of the small load carrier and stops it in a precise manner using a stopping cylinder. With the innovative Q-Lock mounting system, the photoelectric proximity sensor is quickly installed, which saves time during sensor mounting and commissioning steps.

G10 ➜ p. 48

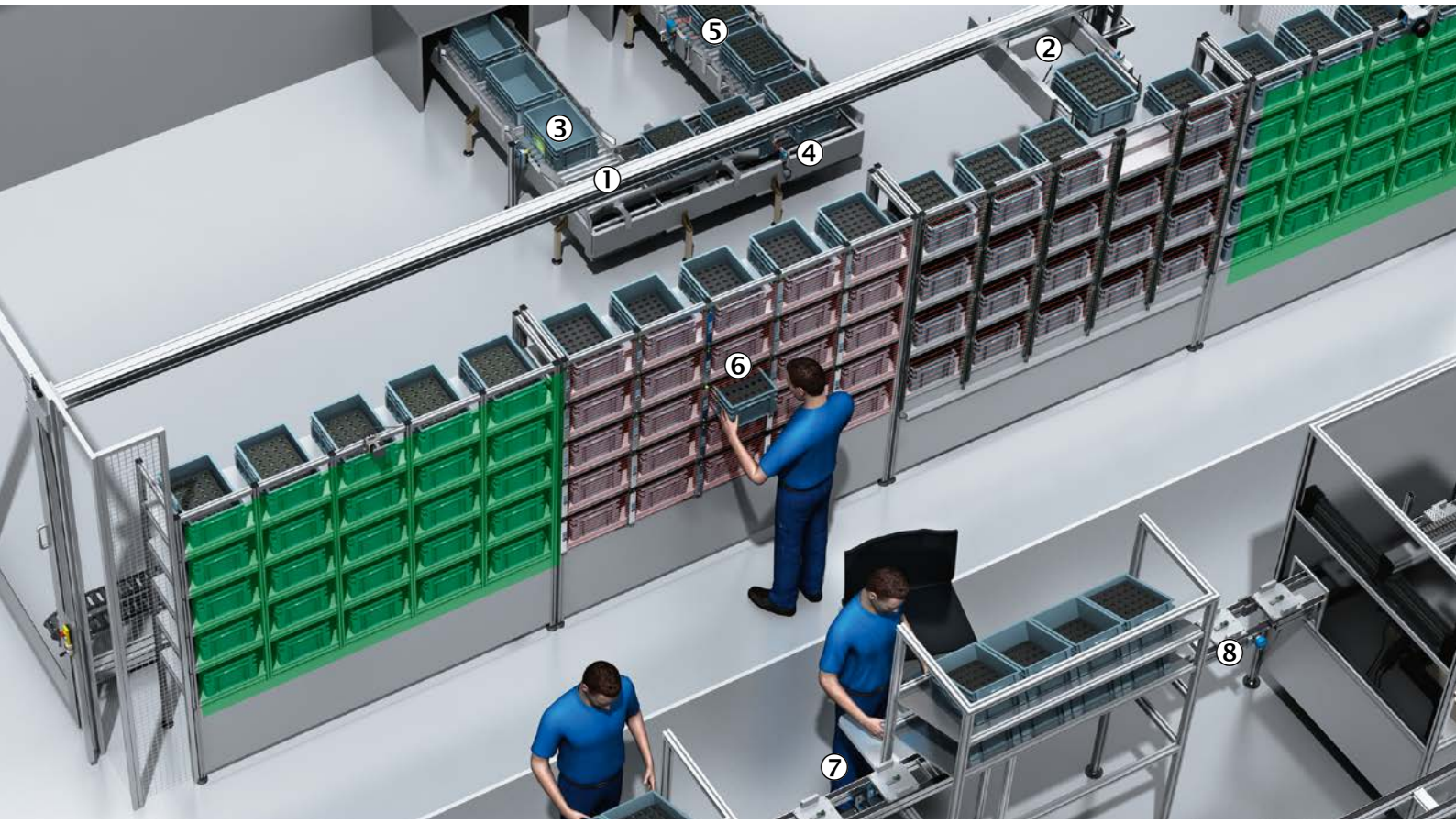
⑤ Automated tote identification with bar codes

Bar code scanners with a reading field optimized for identifying totes on belts allow quick and easy integration into your assembly system when combined with the intuitive SOPAS user interface. The CLV61x and CLV62x bar code scanners can be equipped with a fixed focus, variable focus or auto focus and are thus able to be used for virtually any reading distance. They enable track and trace, product routing and the assignment of totes to rack spaces.



CLV61x ➜ p. 100
CLV62x ➜ p. 100

8019952/2016-05-13



⑥ Worker guidance with pick-to-light

For many years, SICK has been a leader in the development of worker guidance systems. The PLG automation light grid guides the worker to the correct pickup shelf. Visible from every angle, the green job LED is easily recognized by the worker, who is thus routed to the proper shelf for pickup. If the worker reaches into the wrong shelf, the PLG triggers an acoustic signal. As an alternative, the slim SPL automation light grid and the TiM5xx or LMS1xx 2D laser scanner can also be used to guide the worker.

ⓘ Patent EP 0994761 B1 is to be observed for the laser scanner solutions.

PLG ➜ p. 69
TiM5xx ➜ p. 114
LMS1xx ➜ p. 114

⑦ Identifying workpiece carriers

The RFH620 RFID read/write device reads the product information encoded in the RFID tag on the workpiece carrier. In combination with the PLG automation light grid, the parts required for the individual assembly processes are defined and visually presented to the worker. Using the RFH620 RFID read/write device, product information and instructions can be read on the transponder and written to the tag at a frequency of 13.56 MHz.

PLG ➜ p. 69
RFH6xx ➜ p. 102

⑧ Measuring the conveying speed of a belt conveyor

SICK developed an incremental encoder with measuring wheel system specifically to provide slip-free speed measurements on the belt conveyor or dual belt transport system. This makes controlling the assembly line a breeze. Because the pulse value, electrical interface and other functions can be freely programmed, the DFS60 incremental encoder in combination with the measuring wheel system can be used in a large number of applications.

DFS60 ➜ p. 97

① Gripper positioning of the 3-axis gantry robot

The 3-axis gantry robot removes the component from the workpiece carrier and precisely supplies it to the joining process. Here, it is critical that the movements necessary for positioning within the process are carried out with a high degree of accuracy. The EKM36 motor feedback system with a digital HIPERFACE DSL® interface determines the actual position at a resolution of up to 20 bits per revolution and thus positions the gripper with extreme accuracy. Automatic synchronization with the controller clock optimizes the control loop in the drive. Thanks to the integration of the encoder communication in the motor line, HIPERFACE DSL® reduces cabling needs by 50%. This is an extremely useful benefit, especially for moving axes.

EKS/EKM36 ➜ p. 93

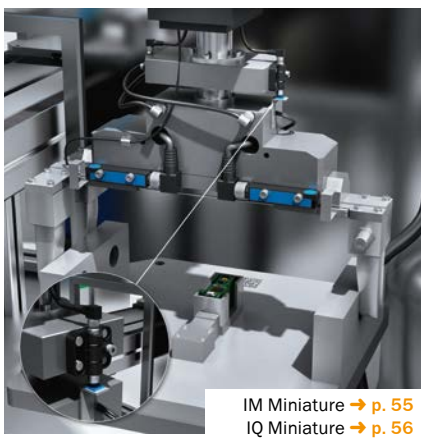
② Positioning workpiece carriers

Workpiece carriers transport components and assemblies over transfer lines and move them into position for the next work step with pinpoint accuracy. An IME inductive proximity sensor detects the presence of these carriers. Its trigger signal is used to control and activate the stopping cylinder at the relevant assembly station.

③ Monitoring the gripper position

Inductive proximity sensors such as the IQ08 are used to determine gripper positions. Thanks to this sensor's miniature design, it is extremely easy to install in applications, even where there is little room to spare. By detecting the gripper's end positions, the IQ08 is able to identify whether the gripper is opening and closing properly. Thanks to its rugged housing made of brass and plastic, the IQ08 is no match for vibrations, dust and water, which means that it delivers high process reliability. On swivel grippers, IM Miniature inductive sensors safely detect the gripper's swivel position (cam). The WLL180T fiber-optic sensor is perfectly suited for use with miniaturized grippers. It emits light via an LL3 optical fiber and uses the reflected light to detect the distance to the reflective surface and the positions of the gripper fingers.

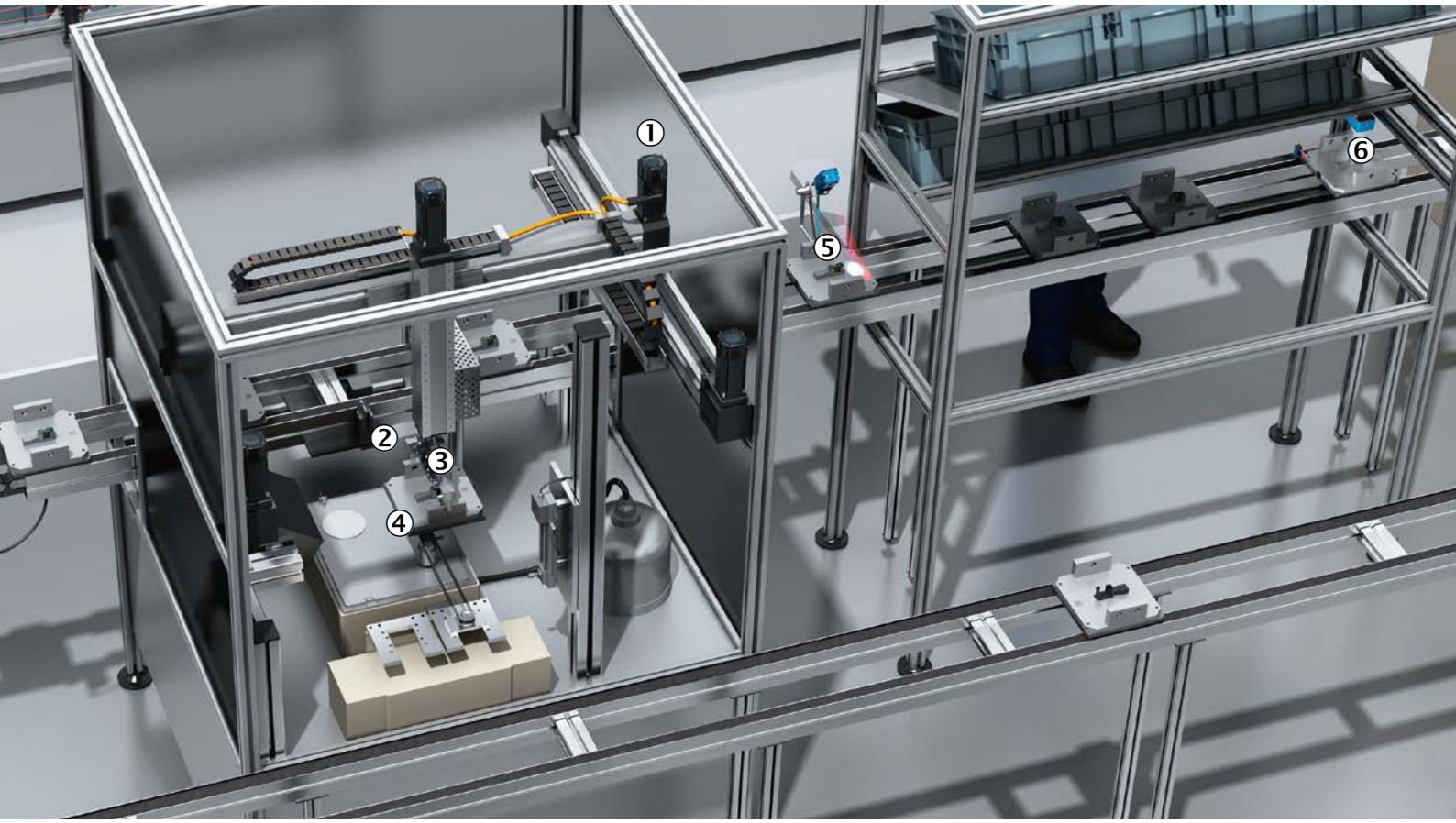
IME ➜ p. 55



IM Miniature ➜ p. 55
IQ Miniature ➜ p. 56

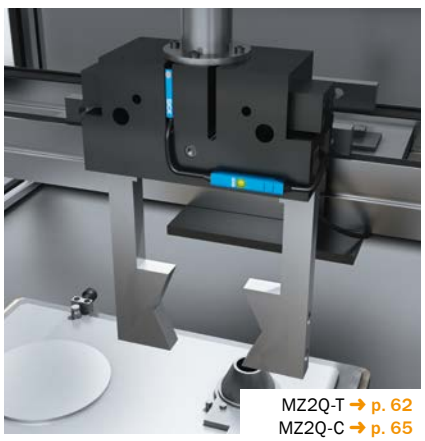
WLL180T ➜ p. 52
LL3 ➜ p. 53

8019952/2016-05-13



④ Part differentiation during gripping

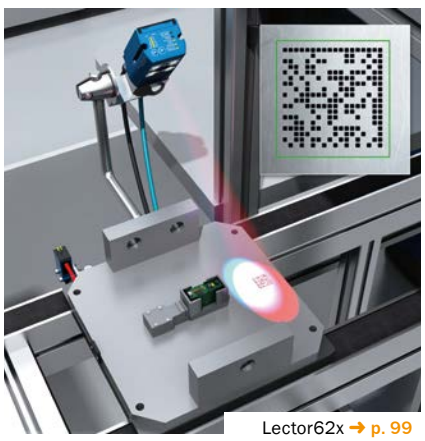
When it comes to providing information about the gripped part in addition to the position of the gripper itself, programmable magnetic cylinder sensors are the right tool for the job. The MZ2Q magnetic cylinder sensor features two adjustable switching points that can be programmed in no time using teach-in buttons. Adjustable hysteresis allows the reliable retrieval of position information, even for extremely small strokes, and gives the gripper the ability to differentiate between workpieces of different sizes.



MZ2Q-T ➜ p. 62
MZ2Q-C ➜ p. 65

⑤ Reliable workpiece carrier identification

Before printed circuit boards are populated with discrete components, an inspection must ensure that the parts match the corresponding board on the workpiece carrier. For this purpose, a 2D code is affixed to the workpiece carrier, and then the code is reliably detected by the Lector62x image-based code reader. In addition, the code reader provides superior system throughput, as data and parameter sets are retained even in the event of a mains voltage failure.

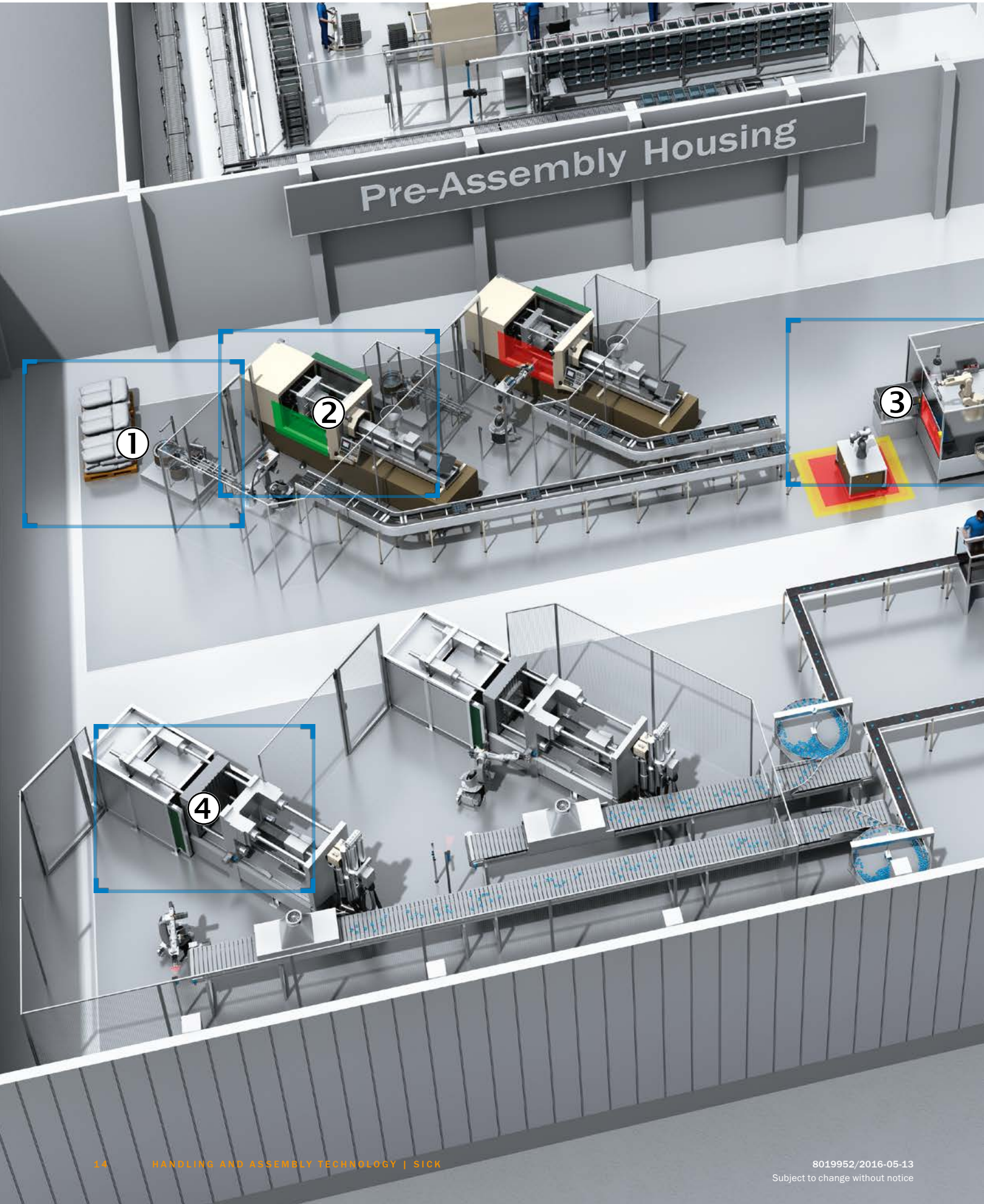


Lector62x ➜ p. 99

⑥ Optical inspection

Once the optical components have been manually fitted in place, the Inspector PIM60 2D vision sensor checks the pieces to ensure they have a tight fit and are complete. The optical components are then transported to final assembly. The PIM60 features flexible measuring tools for an incredibly simple pass/fail test of the components' size using digital outputs, and it supplies accurate measured values via Ethernet.

Inspector PIM-series ➜ p. 105



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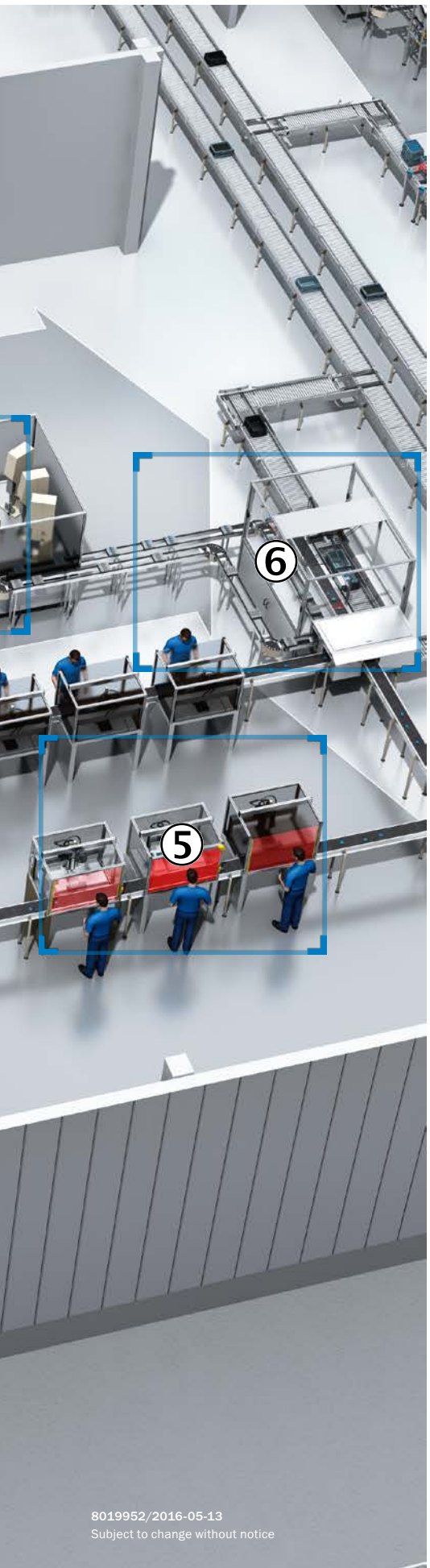

Small part assembly: Example of pre-assembly involving a housing assembly

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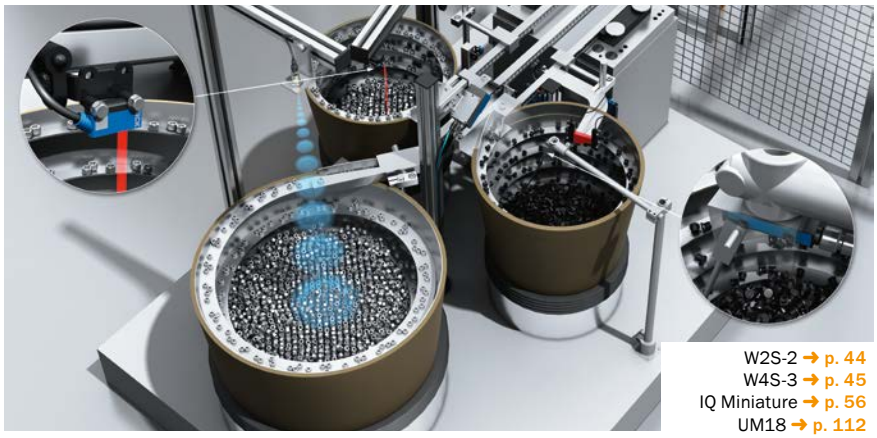
① Checking the presence and level in a vibratory bowl feeder

In a vibratory bowl feeder, small parts in the form of bulk materials are sorted and automatically presented in the proper position for additional processing steps. To prevent the vibration drives of both the bowl feeder and the connected linear conveyor from running in constant operation, the presence and level of the bulk material must be measured. To achieve this, the UM18-2 Pro ultrasonic level sensor checks the level of the vibratory bowl feeder. Alternatively, WTB2S-2 or WTB4-3 miniature photoelectric sensors with background suppression or an IQ08 inductive proximity sensor integrated into a pendulum can be used to monitor the level of the vibratory bowl feeder. The bowl feeder is switched on or off depending on the measured level.



W2S-2 ➜ p. 44
W4S-3 ➜ p. 45
IQ Miniature ➜ p. 56
UM18 ➜ p. 112

② Level monitoring via two switching points

The PowerProx MultiTask photoelectric sensor detects different levels in the vibratory bowl feeder using two switching points. This means that the PowerProx first issues a warning message when the measured value drops below a limit value and then outputs an error message to the machine controller when the vibratory bowl feeder is empty. This error message causes the machine to stop. As an alternative option, this monitoring task can also be handled by the UM30 ultrasonic sensor.

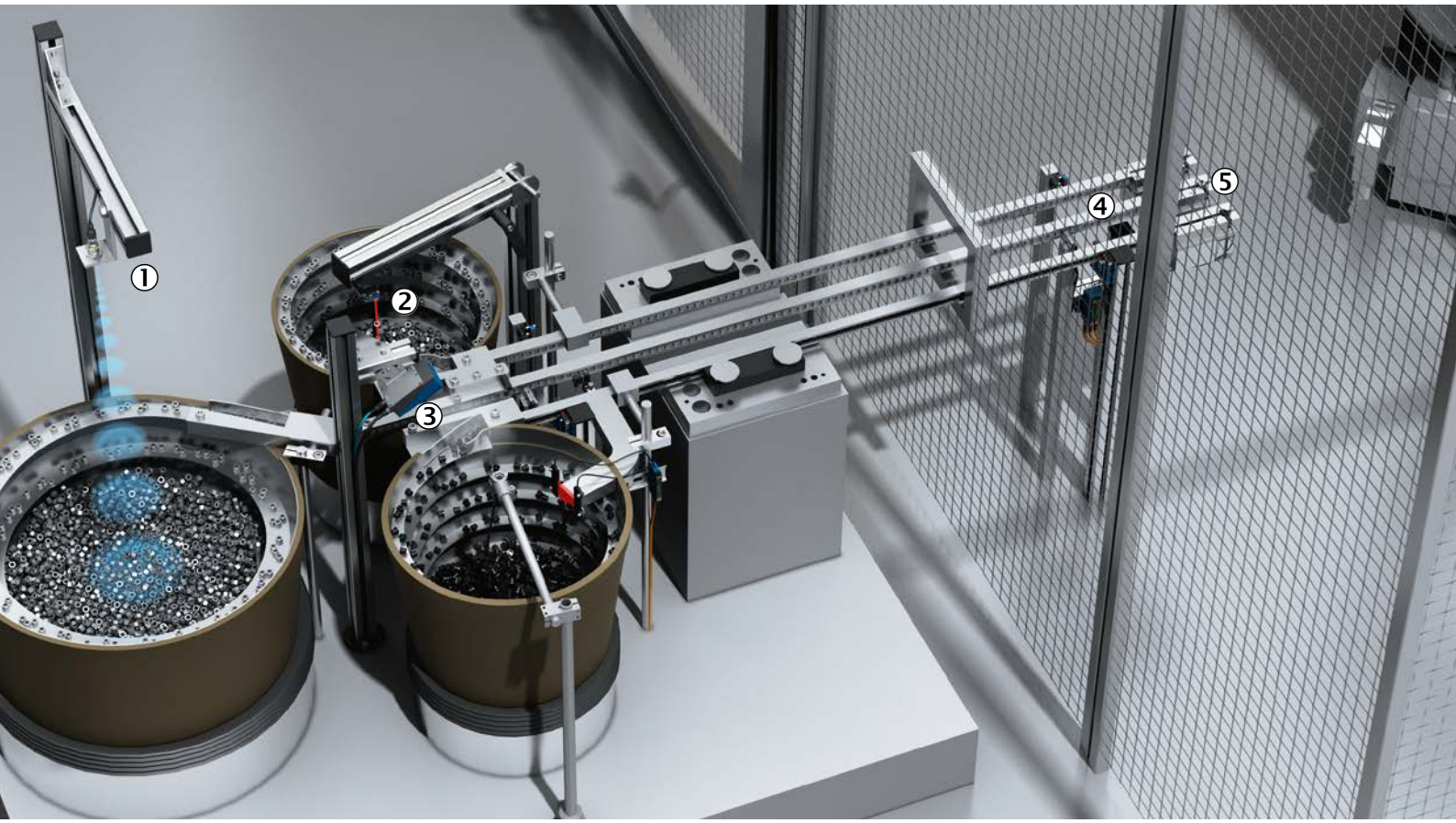
PowerProx ➜ p. 54
UM30 ➜ p. 113

③ Automated discharge of defective parts from the singulation system

A bowl feeder singulates small parts and transfers them to a vision system so that their position can be checked. The Inspector I40 2D vision sensor provides a quick, accurate and fully automated way to check the shape and control the quality of the small parts. After evaluating the gathered images, the evaluation unit makes an inspection decision. Parts found to be defective are separated out (discharged) by pneumatic pressure mechanisms, which blow these parts, or any parts aligned incorrectly, off the singulation system. The parts then fall down a slide into a funnel and back into the bowl feeder. LL3-TS40 fibers are ideal for detecting the defective parts that fall out of the funnel and for measuring their quantity. Alternatively, the FLG automation light grid is the perfect choice for area detection.

LL3 ➜ p. 53
FLG ➜ p. 70
Inspector ➜ p. 105

8019952/2016-05-13
Subject to change without notice

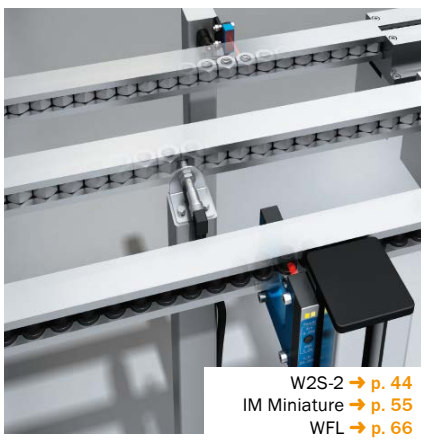


④ Checking presence and monitoring accumulation on singulation system

The presence of conveyed items at different points on the singulation system must be checked to monitor the accumulation of these items and to control the upstream vibratory bowl feeder. Here, the easy-to-align WFL fork sensor detects whether or not the linear track is at full capacity. For applications with little available space, the W2S-2 miniature photoelectric sensor is the ideal choice. For metallic objects, the IH04 or IM05 inductive proximity sensors can alternatively be used.

⑤ Monitoring part presence and end position in the loading plate

At the end of the singulation conveyor, a loading pallet serves as a transfer station to the handling robot. The robot's insertion and removal gripper requires a trigger signal to pick the parts out of the loading pallet. The WLL180T fiber-optic sensor is able to monitor the presence of the parts in the loading pallet, even where space is severely limited. There, the MZ2Q magnetic cylinder sensor monitors the pneumatic short stroke cylinder, which raises the parts for their removal from the pallet. This sensor has two switching points, which means that one unit is enough to monitor both of the cylinder's end positions.

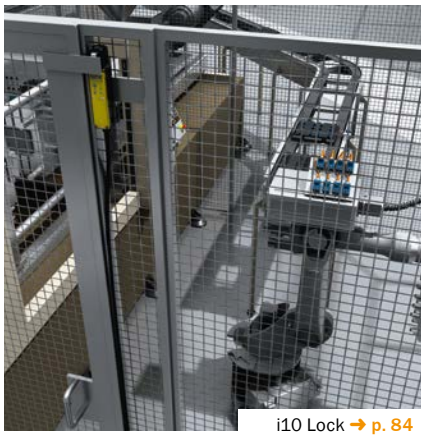


W2S-2 → p. 44
IM Miniature → p. 55
WFL → p. 66

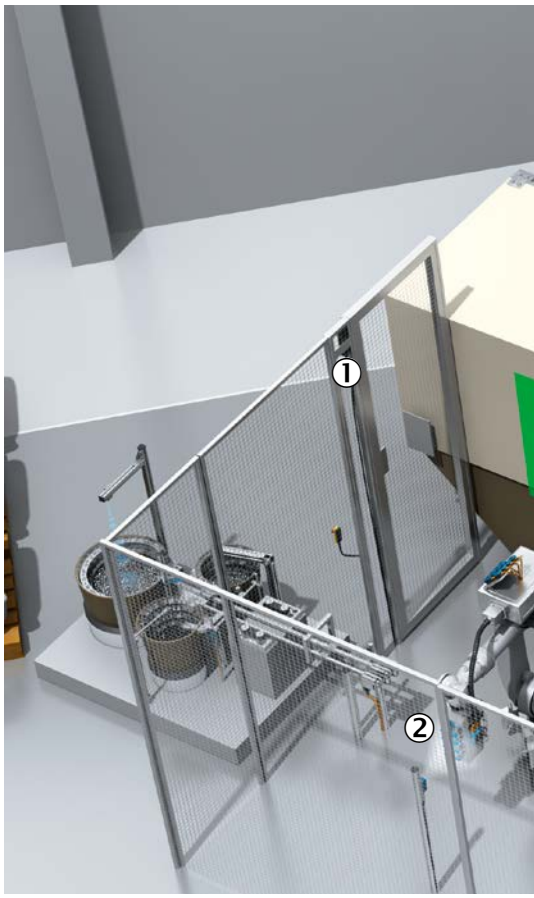
WLL180T → p. 52
MZ2Q-T → p. 62
MZ2Q-C → p. 65

① Access protection at a robot cell

The rugged i10 Lock safety locking device securely closes the door to the robot cell and ensures that all process steps are completed before the door can be opened. Only when all robot axes are at rest can the door be unlocked. When the door is open, the i10 Lock prevents a system startup. The door must be closed again for the robot cell to restart.



i10 Lock ➜ p. 84



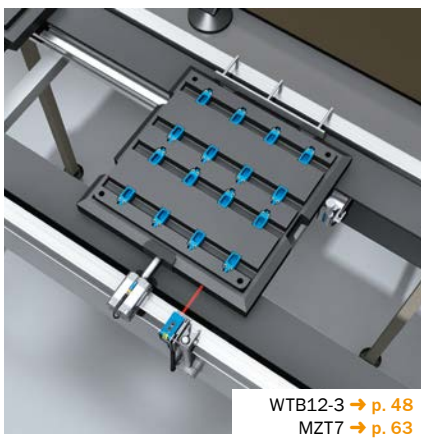
② Removal and inline quality control

The process of producing injection-molded plastic parts is affected by many influences, such as temperature fluctuations and differences in the quality of plastic granules. Errors such as the overfilling or underfilling of molds, as well as cracks, are detected by the Inspector vision sensor. This means that defective parts can be safely separated and discharged.

Inspector ➜ p. 105

③ Checking the presence and position of trays

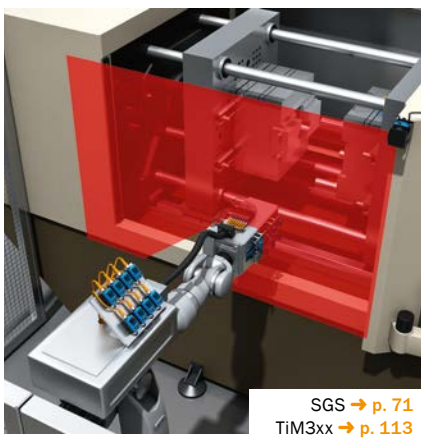
To control the conveying line, it is necessary to check whether the trays being transported are present and in the correct position. This job is handled by the G10 small photoelectric sensor. This photoelectric sensor also detects their position using the background suppression function. To ensure that parts are removed securely, the trays are centered by two pneumatic cylinders. The MZT7 magnetic cylinder sensor reliably detects the piston position in the pneumatic cylinder.



WTB12-3 ➜ p. 48
MZT7 ➜ p. 63

④ Collision protection between the robot and injection molding tool

Closing the injection molding tool while a robot is accessing it results in damage to both the tool and the robot. That's why an SGS switching automation light grid, or alternatively a TiM3xx 2D laser scanner, reliably monitors the area of access to the injection molding tool.



SGS ➜ p. 71
TiM3xx ➜ p. 113

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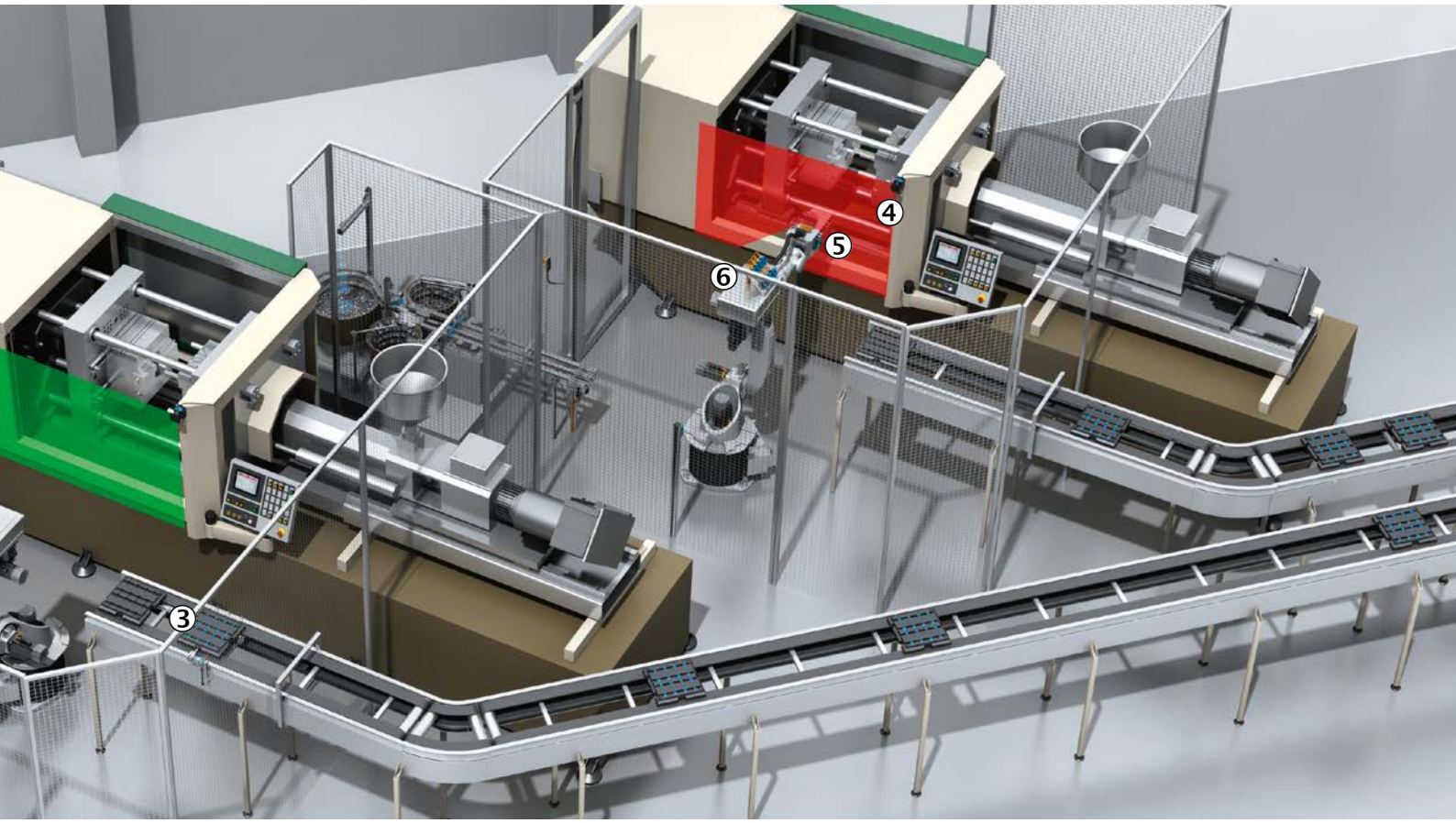
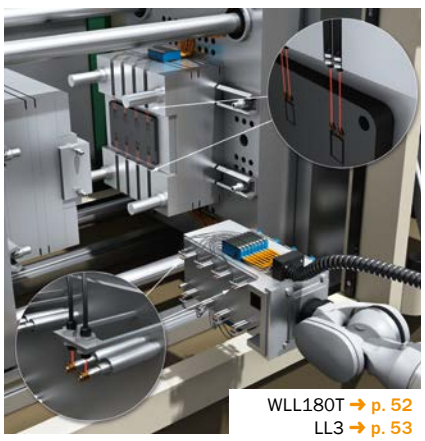


⑤ Presence monitoring in the insertion grippers and injection molding tool

Neither the robot's gripper hand nor the injection molding tool have very much space to accommodate sensors. For this reason, the WLL180T fiber-optic sensor for the detection of inserts is excellently equipped for placement in both the gripper hand and the injection molding tool. The highly temperature-resistant LL3 fiber is the perfect choice for use in injection molding tools.

⑥ Pressure monitoring in the vacuum removal gripper

Finished parts are removed from the mold by the vacuum removal gripper on a robot. With its positive and negative pressure ranges, the PAC50 pressure sensor is well suited for determining and monitoring the suction pressure in the gripper. The analog output signals of the PAC50 can be inverted specifically for negative measuring ranges.



WLL180T ➜ p. 52
LL3 ➜ p. 53

PAC50 ➜ p. 116

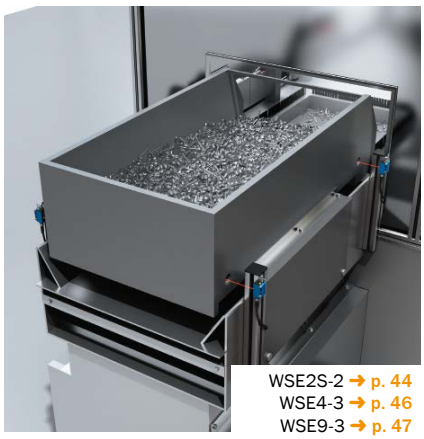
① Part localization in the AnyFeeder

An AnyFeeder machine conveys and flips small parts without refeeding and without the use of belts. In this case, small parts are randomly aligned. The IVC-2D 2D vision sensor quickly and safely detects the parts' position and transmits data for the position and rotation of properly aligned parts to the robot control system. Using this information, the robot is able to pick the properly aligned parts and feed them to the next process. Any parts that are not properly aligned are ignored. Once the properly aligned parts have been removed, the remaining components in the pick zone are realigned by a pulsed vertical oscillation.

IVC-2D ➜ p. 106

② Level monitoring in the parts bunker

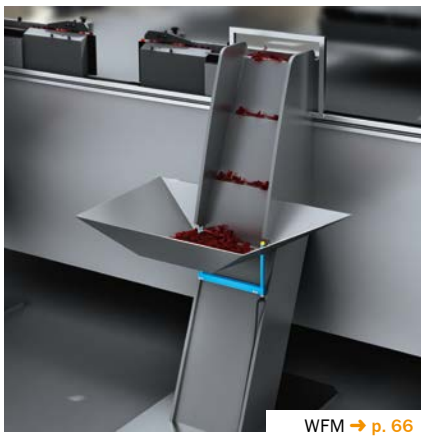
Integrated in the AnyFeeder, a parts bunker with a vibratory conveyor surface provides a continuous supply of small parts. The WSE2S-2 miniature photoelectric sensor or the WSE4-3 and WSE9-3 small photoelectric sensors monitor the level in the parts hopper and transmit an appropriate signal to the control system when the level drops below a certain height. This makes it possible to refill the hopper ahead of time and thus prevents interruptions in the production process.



WSE2S-2 ➜ p. 44
WSE4-3 ➜ p. 46
WSE9-3 ➜ p. 47

③ Level monitoring for the step conveyor

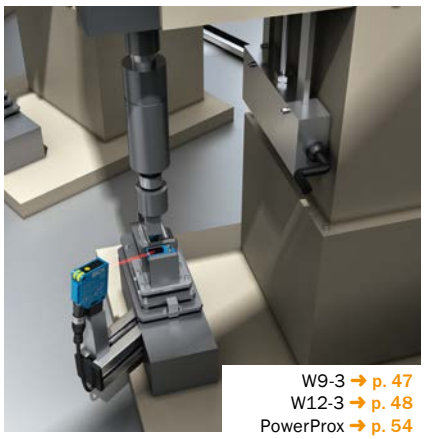
Step conveyors are used for the singulated, position-based loading of irregularly shaped small parts into downstream machines. The level of small parts in the upstream bunker magazine must be monitored to ensure the fully automated clocking of the machine. The WFM fork sensor monitors the level in the step conveyor's feeder hopper and can then control the supply of small parts. The highly visible receive indicator on the WFM enables constant process control.



WFM ➜ p. 66

④ Presence monitoring in an ultrasonic welding station

With their precise light spot, the fast W9-3 and W12-3 small photoelectric sensors detect the presence of housing assemblies in clamping devices, no matter what color the assemblies might be. If two different products need to be processed simultaneously in a rotary machine, the PowerProx MultiTask photoelectric sensor (WTT12) is the perfect choice for the job. With its two output signal switching devices, this sensor is capable of detecting different housing designs and can thus save valuable time.



W9-3 ➜ p. 47
W12-3 ➜ p. 48
PowerProx ➜ p. 54

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⑤ Presence monitoring in the magazining station

In flexible robot cells, workpieces are stocked and made available with the aid of magazining stations. WLL180T fiber-optic sensors check that the workpieces are present in the magazining station. The sensors' anti-interference logic prevents the mutual interference caused when fiber-optic heads are installed in close proximity to one another.

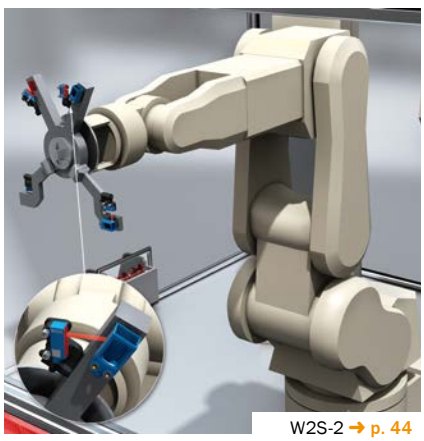
⑥ Monitoring part picking

The articulated arm robot in the rotary machine transports the workpieces to the processing stations arranged in a circle. The W2S-2 miniature photoelectric sensor monitors the part-picking process, from their transport to their safe delivery. Thanks to its ultra-small housing, the photoelectric sensor can be mounted directly on the robot's suction gripper in order to save space. Featuring a vibration-resistant housing and soft cable entry, this sensor is perfectly equipped for use in gripper arms and robot applications.

⑦ Hazardous area protection on a mobile robot

Flexible material transportation to the rotary machine is carried out using a mobile robot. Thanks to its compact dimensions, the S300 Mini safety laser scanner can be optimally integrated into small mobile units. The S300 Mini provides non-contact detection of any people or objects that are in the robot's path. As a result, the mechanical damage experienced when using switching strips and bumpers can be eliminated.

WLL180T ➜ p. 52



W2S-2 ➜ p. 44

S300 Mini Remote ➜ p. 72

① Motorized mold height adjustment

In order to produce the locking force necessary for a closed mold, the closing stroke of the machine must be matched to the current mold height, which can differ for each individual mold. To achieve this, it must be possible to move the entire mold-closing unit lengthwise. This typically occurs by means of a mold height adjuster that is powered by a hydraulic motor and acts on all four columns of the machine. The AFS/AFM60 PROFINET encoder is used to provide the accompanying path measurement system for controlling the mold closing unit. This absolute encoder delivers high-precision detection of the position and status of the closing axis at a resolution of up to 30 bits.

AFS/AFM60 PROFINET ➜ p. 95

② Presence monitoring in the robot gripper

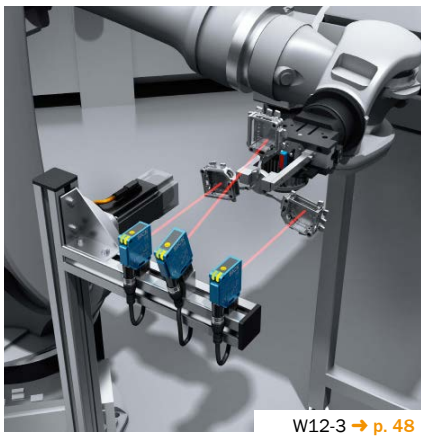
The robot gripper grabs finished cast parts at the sprue and removes them from the die cast. The W2S-2 miniature photoelectric sensor monitors the presence of gripped cast parts and sends a start signal to the robot control so that the robot can remove the die cast part. With its PinPoint LED, the photoelectric sensor provides a highly visible light spot, which makes it easier to align the sensor on the gripper and also enables the precise detection of the cast parts.

W2S-2 ➜ p. 44

③ Inline quality control on a sensor rake

A sensor rake monitors whether the cast part removed from the die casting machine by the robot is complete and whether any overflow is present. If the part is acceptable, it is placed on a synchronized slat conveyor, where a blower cools the cast part. Depending on the particular cast part, the sensor rake can consist of multiple W12-3 photoelectric proximity sensors. Thanks to the background blanking feature, the robot is able to work in extremely close proximity to the sensor without causing faulty switching. Where there is an additional need for accurate parts monitoring using a 3D vision system, the TriSpector1000 is the right choice. It detects volumetric surface errors and separates and discharges the cast parts showing any surface errors of this type.

TriSpector1000 ➜ p. 107



W12-3 ➜ p. 48

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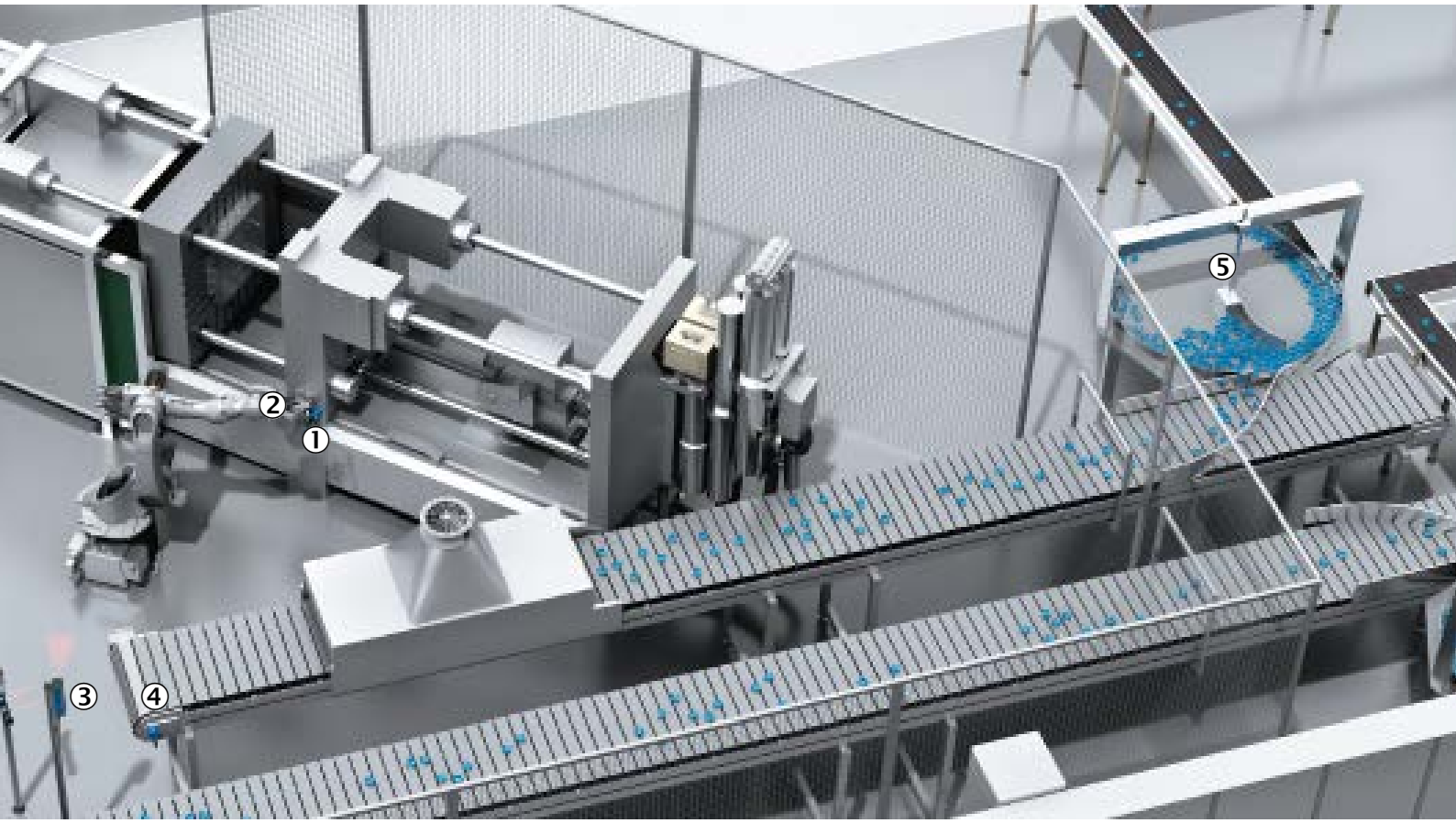


④ Speed measurement on the slat conveyor

In order to synchronize the product transport with subsequent processing steps, an encoder mounted directly on the drive shaft must measure the conveyor speed. The rugged DBS60 Core incremental encoder is the ideal product for this task. With its wide range of flange and shaft designs, this encoder can be perfectly integrated into various different belt types.

⑤ Detection on the rotary magazine table

Rotary magazine tables serve as intermediate storage for workpieces in cases where upstream and downstream assembly processes have different cycle times. The continuous rotation of the rotating plate allows the workpieces to be evenly distributed on the rotary magazine table. The inlet and outlet of the table are equipped with WFM fork sensors, which count the workpieces and thus determine the table's storage capacity. The highly visible receive indicator on the WFM enables constant process control. As an alternative option, a CQ35 capacitive proximity sensor mounted at the center of the rotary magazine table can also be used for this application. This sensor emits a signal when the table's storage capacity has been reached.

DBS60 Core ➜ p. 97

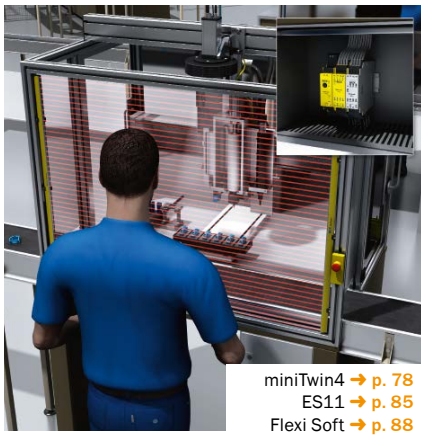
CQ35 ➜ p. 59
WFM ➜ p. 66

Focus 5: Dispensing for housing assemblies at a joining station

SMALL PART ASSEMBLY: EXAMPLE OF PRE-ASSEMBLY INVOLVING A HOUSING ASSEMBLY

① Hazardous point protection at a joining station

The miniTwin safety light curtain secures access at a joining station to prevent human intervention during an active process. The benefits of this light curtain include its small size and adjustable holders, as well as a lack of blind zones. The combined use of a safety relay or the Flexi Soft safety controller allows the simple configuration of safety functions and the integration of additional sensors, such as the ES11 emergency stop pushbutton.



miniTwin4 ➜ p. 78
ES11 ➜ p. 85
Flexi Soft ➜ p. 88

② Tip compensation

Tip compensation involves the automatic detection and measurement of the dispensing tip position on all three coordinate axes: X, Y and Z. For this purpose, a mechanical touch point is set to measure the length of the tip. The positional deviation in the X and Y directions is determined using one WFL precision laser fork photoelectric sensor for each axis, and the corresponding offset is automatically compensated in the system. This results in increased process reliability and decreased downtime following a changeover involving materials or tips.

WFL ➜ p. 66

③ Workpiece positioning

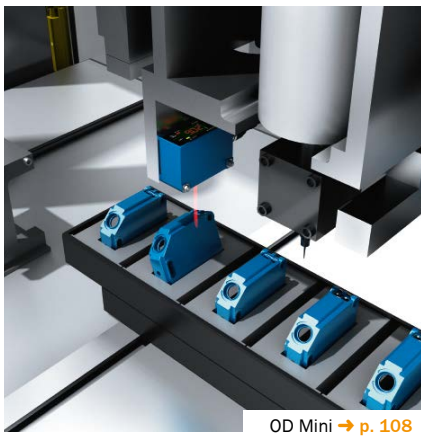
In automated dispensing processes, the OD Mini distance sensor uses a laser scanner with a resolution of up to 1 µm to automatically detect the workpieces that are to be bonded. If it identifies an incorrectly positioned part, the distance sensor responds with an error message. The worker can then intervene in the process to properly insert the workpiece.

④ Stationary monitoring of adhesive beads

Once the joining process is complete, it is no longer possible to assess the quality of an object without damaging it. Using a pattern, optical monitoring systems compare the position, gaps and quality of the adhesive used in the joining process and document any errors. The IVC-2D 2D vision sensor allows complete contour inspection and workpiece monitoring immediately after the adhesive is applied.

⑤ Level monitoring for the adhesive cartridge

In the dispensing process, the level of adhesive in the cartridge must be continuously monitored so that the adhesive is properly dispensed and rejects are prevented. This monitoring task is handled by the MQ10 magnetic proximity sensor. It reliably detects permanent magnets located inside the cartridge, even through aluminum or plastic, and thus enables the stable non-contact measurement of the adhesive level.



OD Mini ➜ p. 108

IVC-2D ➜ p. 106

MQ10 ➜ p. 60

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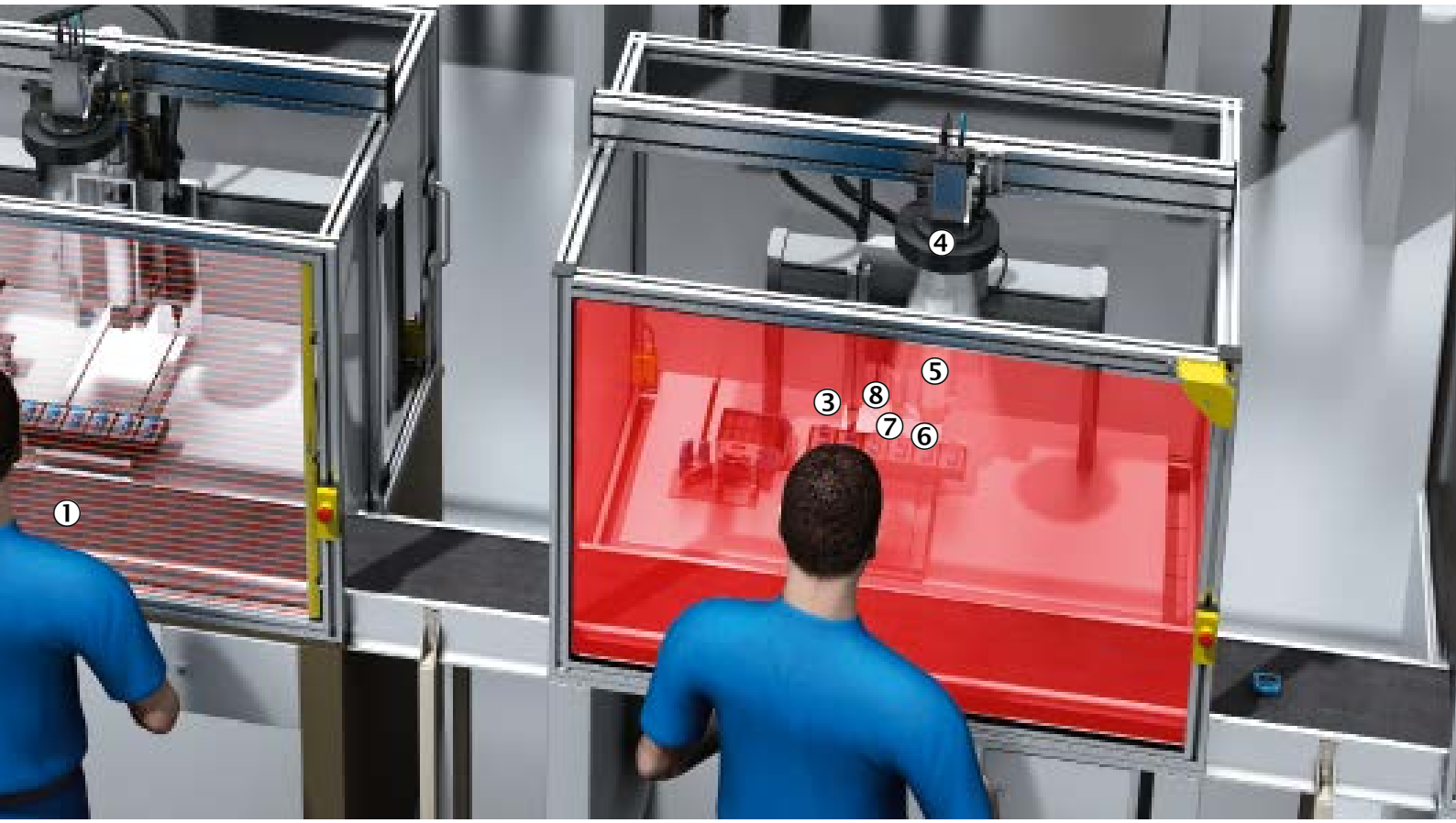
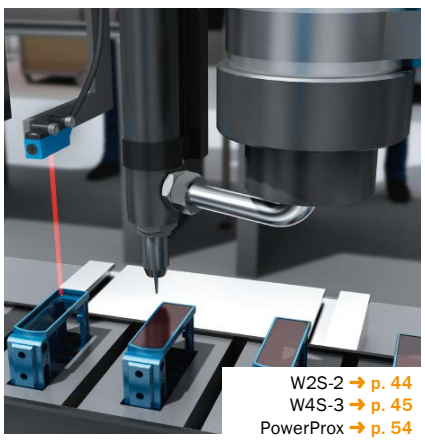


⑥ Presence control at the dispenser

The W2S-2 and W4S-3 miniature photoelectric sensors detect the presence of workpieces that are to be processed. If they properly identify a workpiece, the dispensing process will commence. Thanks to their small size, these sensors can be mounted in close proximity to the dispensing head. If no space is available on the dispensing head for design-related reasons, the PowerProx (WTT12), which features a sensing range of up to 1.8 m, can be used for presence monitoring at the dispenser.



W2S-2 ➜ p. 44
W4S-3 ➜ p. 45
PowerProx ➜ p. 54

⑦ Online adhesive bead monitoring

In order to ensure adequate quality of the adhesive connection, the adhesive bead most be monitored. If a Profiler™ 2 short-range distance sensor is directly mounted on the dispensing head, the online evaluation of the position, profile and quality of the adhesive bead is possible at the adhesive area. The Profiler™ 2 then immediately indicates whether the parts were properly or improperly bonded. This saves time and prevents defective parts, which would otherwise have to be sorted out of the process at a later stage.

Profiler™ ➜ p. 110

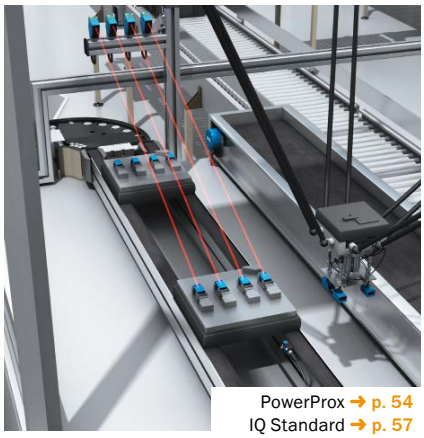
⑧ End position monitoring of gripping modules

After the dispensing process, a pneumatic gripping module positions the front screen of a sensor above the corresponding housing and adheres both parts together. MZC1 magnetic cylinder sensors provide reliable and precise detection of the gripping module's end positions inside the pneumatic cylinder in preparation for the gripping of the front screen. Thanks to the simple mounting and installation by drop-in and combination screw, this sensor is an excellent choice for applications in cylinders.

MZC1 ➜ p. 64

① Detecting workpiece carriers and part presence

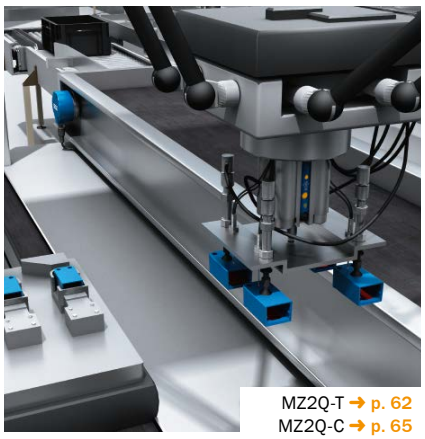
The IQ06 and IQ10 inductive proximity sensors monitor workpiece carriers along the production line and signal the presence of a carrier to the pick-and-place robot. The ASIC technology from SICK ensures high accuracy of the effective sensing range. The large sensing range and flexible mounting options allow for significant flexibility in terms of machine design. Using an output signal switching device, the PowerProx MultiTask photoelectric sensor (WTT12) can signal the presence of parts on the workpiece carrier to the robot controller, even from greater distances.



PowerProx ➜ p. 54
IQ Standard ➜ p. 57

② One sensor with two switching positions for end position monitoring

In processes where parts are picked by a pick-and-place robot, the MZ2Q magnetic cylinder sensor with its two freely programmable switching points is an ideal choice for monitoring end positions in the pneumatic cylinders. Thanks to these two freely programmable switching points, this application now only requires a single sensor where two sensors were previously necessary.



MZ2Q-T ➜ p. 62
MZ2Q-C ➜ p. 65

③ Safe detection in tight spaces, without interference

Suction grippers pick parts off of the belt and place them in boxes. For some suction grippers, the installation of multiple sensors is necessary to be able to monitor the presence of the picked parts. However, these multiple sensors can interfere with one another. With its high resistance to interference, the bus version of the WLL180T fiber-optic sensor is therefore the perfect choice for this application. It enables the precise transmission of switching signals.

WLL180T ➜ p. 52
LL3 ➜ p. 53

④ Traceability within the assembly process

RFID technology offers many benefits for product traceability applications. Both product information and related individual production commands on the tag in the workpiece carrier can be read from and written to the tag using the RFH630 read/write device. Where space is limited, the compact RFA312 passive antenna is an ideal solution and can be connected to the RFH630 read/write device.

RFH6xx ➜ p. 102

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⑤ Quality and position monitoring on belts

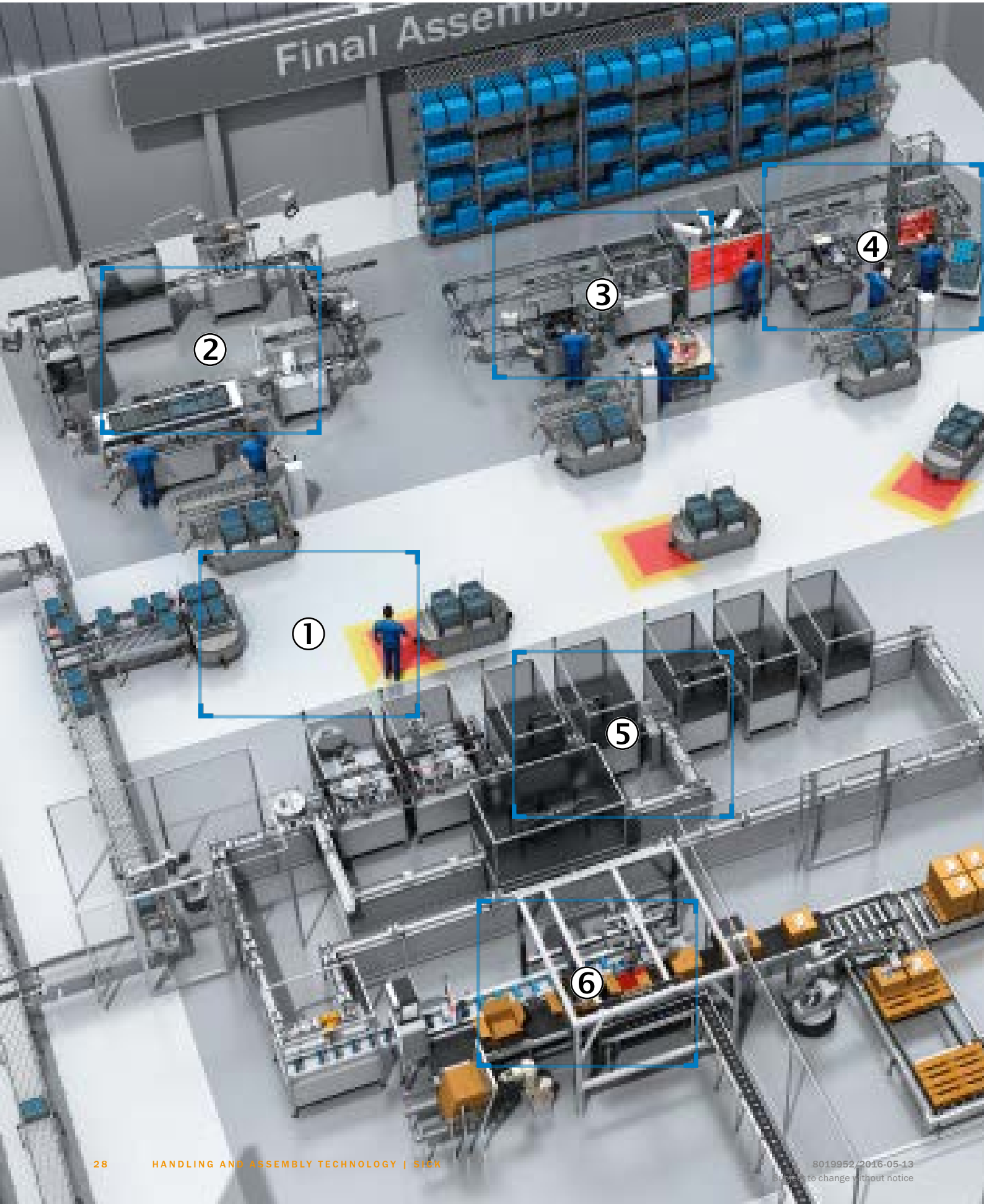
In order to grip objects on moving belts, a pick-and-place robot requires an image processing system that gives it the ability to "see." However, these objects often differ from one another. The IVC-3D 3D vision sensor is the reliable solution for object detection under these difficult conditions. The sensor supplies every piece of object information needed by the robot to securely grip the objects, including their position and alignment on the belt. The pick-and-place robot uses the transport speed, which is precisely determined by an incremental encoder DFS60, together with this information to perform its gripping tasks quickly and with accuracy down to the millimeter. The WLL180T fiber-optic sensor serves as a trigger photoelectric sensor and is directly connected to the IVC-3D.

WLL180T ➜ p. 52
LL3 ➜ p. 53
DFS60 ➜ p. 97
IVC-3D ➜ p. 106

⑥ Protrusion monitoring in tote conveying

The G6 and W100 photoelectric retro-reflective sensors check whether totes exceed a predetermined maximum height. The control system can then use a corresponding sensor signal to discharge totes that are too high or for a stop function, for example. SICK offers the G6 and W100 in a wide range of variants featuring laser light or red light, which means that these photoelectric sensors can be used in many different applications.

W100-2 ➜ p. 46
G6 ➜ p. 47



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Small part assembly: Example of final assembly involving a sensor

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① Safety along the conveying line

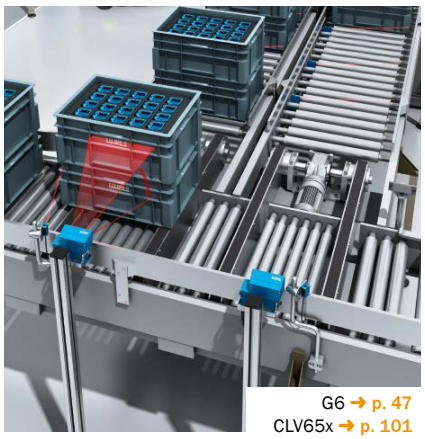
The safety of operating personnel is governed by numerous standards and regulations. As one of the world's leading manufacturers of industrial safety technology, SICK offers proven components for standard-compliant hazard protection with its range of emergency stop pushbuttons and cable operated emergency stop switches. The i110RP rope pull switch is the ideal safety solution for longer conveyor systems since its switching function can be triggered from any point throughout the system. Additional signaling contacts (normally open) visualize the output state and thus rapidly localize the source of any errors.

i110RP ➜ p. 86

(!) This graphic is not presented in the overview.

② Automatic identification of stacked totes with bar codes

Where applications call for bar codes to be read on stacked totes, bar code scanners with oscillating mirrors are the ideal choice. A G6 trigger photoelectric sensor activates the CLV65x bar code scanner after detecting the tote. The CLV65x uses a horizontal scan line and the vertically oscillating mirror to scan the entire side of the stacked totes, even if they are positioned at varying read heights. This means that every tote quickly and securely makes its way to the correct transport vehicle.



G6 ➜ p. 47
CLV65x ➜ p. 101

③ Zero pressure accumulation and zone control on belts

Zero pressure accumulation ensures a controlled material flow on a belt. The individual zones are controlled by MultiTask photoelectric sensors, either with or without a control unit. The ZoneControl solutions feature minimal blind zones, low black/white shift and extremely effective detection of even dark objects. ZoneControl is available in three variants: for mounting between belt rollers (IR/R), on the belt's side frame (ZLM) or above the belt (WLR).

ZoneControl ➜ p. 54

④ Automated tote identification with RFID

The compact RFU62x RFID read/write devices, which feature an integrated antenna and definable reading field, then ensure the proper assignment of the RFID tag when material totes follow one another in rapid succession on the belt. This means that every tote is quickly and reliably transported to the correct assembly line. RFU62x units are compatible with all 4Dpro devices and can be easily integrated into industrial networks.

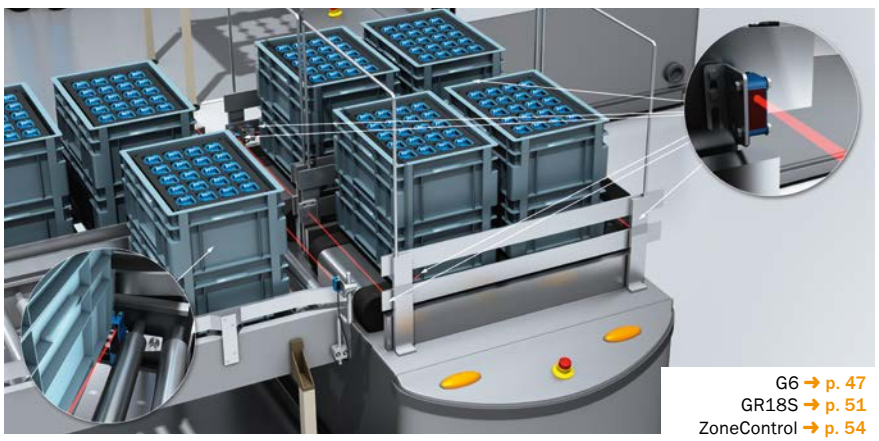
RFU62x ➜ p. 102

8019952/2016-05-13

⑤ Automatic load picking and transfer

GL6 or GRL18S photoelectric retro-reflective sensors are used on automated guided vehicles (AGV) for position and protrusion monitoring and in other tasks related to tote load picking and transfer. An IRT photoelectric proximity sensor between the rollers of the infeed starts or stops the transport of the totes. As the totes are transferred from the belt to the vehicle, SICK sensors perform the following checks:

1. A photoelectric sensor aligned diagonally across the loading surface detects whether the loading surface is free.
2. One photoelectric sensor at the end of the roller conveyor and one sensor on the AGV monitor whether the gap between the belt and the vehicle is clear and check that the AGV can move away without causing damage.
3. One photoelectric sensor each on the right and left sides of the AGV checks whether the item is positioned on the AGV without protruding.



G6 ➜ p. 47
GR18S ➜ p. 51
ZoneControl ➜ p. 54

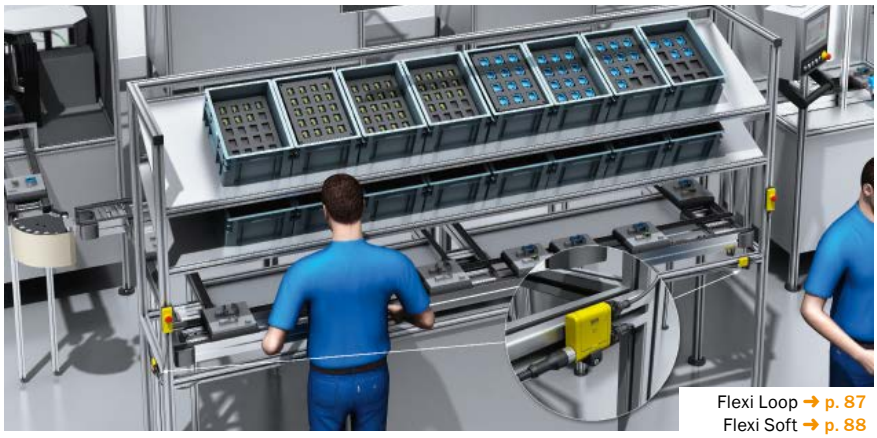
⑥ Mobile hazardous area protection on transport vehicles

The flexible material transportation to the partially automated final assembly line is carried out by small automated guided vehicles (AGV). Thanks to its compact dimensions, the S300 Mini safety laser scanner can be optimally integrated into small vehicles. The S300 Mini delivers non-contact detection of people and objects that are in the path of an AGV. As a result, the mechanical damage experienced when using switching strips and bumpers can be eliminated.

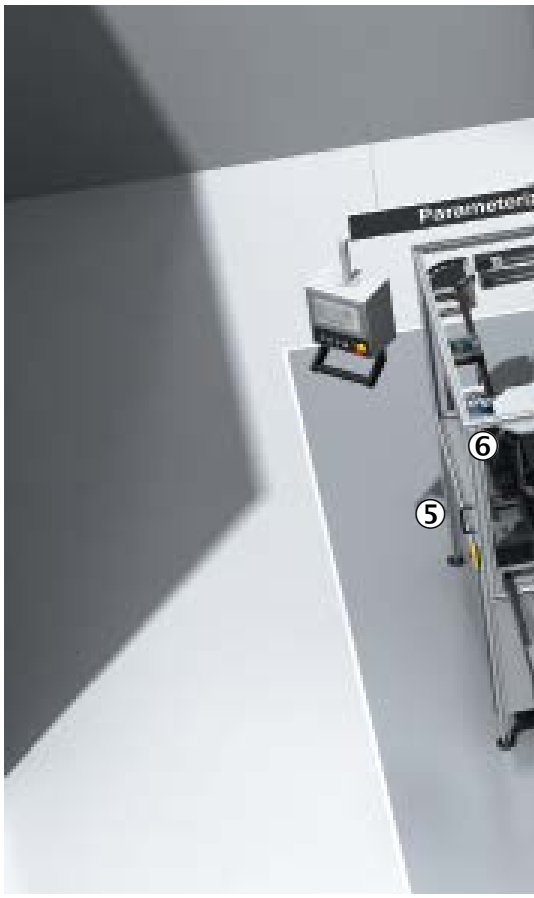
S300 Mini Standard ➜ p. 71

① Monitoring all safety functions on a final assembly line

The modular Flexi Soft safety controller handles the full range of monitoring duties for all of the safety functions in a partially automated final assembly system. With Flexi Loop safe sensor cascades, signals from all safety components in the final assembly line, e.g., door switches, emergency stop pushbuttons and opto-electronic protective devices, can be linked to one another. This is a cost-efficient way to integrate all signals into the Flexi Soft system. Flexi Loop is compatible with sensors made by other manufacturers. Continuous diagnostics for all safety components minimizes downtime in the final assembly system.



Flexi Loop ➜ p. 87
Flexi Soft ➜ p. 88



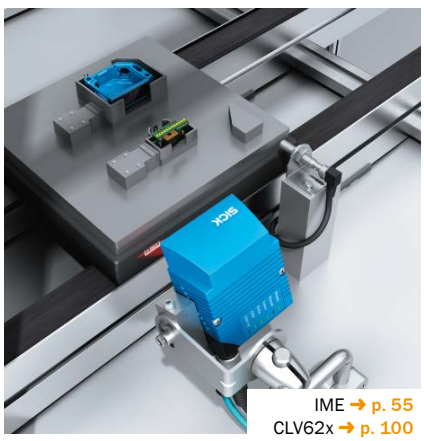
② E-card variant detection on workpiece carriers

The particular variant of e-card on a workpiece carrier must be identified so that the carrier can be transported to the correct soldering station. The IVC-2D vision sensor detects the different shapes and sizes of the e-cards and thereby assigns the individual workpiece carriers to the appropriate soldering station. This 2D vision sensor allows image detection and image evaluation to be handled by a single device. Once the sensor has been set up, it can be used as part of a production network.

IVC-2D ➜ p. 106

③ Identifying bar codes on workpiece carriers

CLV62x bar code scanners read the bar codes on workpiece carriers that are transported on conveyor belts. Among other things, these bar codes contain information about the next assembly station to which the individual workpiece carrier is assigned. The conveyor belt's diverters are controlled according to the analysis of this information. After detecting a workpiece carrier, an IME08 inductive proximity sensor transmits a trigger signal to begin the bar code reading.



IME ➜ p. 55
CLV62x ➜ p. 100

④ Monitoring of clamping cylinders

The carriers must be stopped at the joining station, where they then need to be moved into position. This is accomplished using vertically gripping indexing instruments. Additional clamping cylinders secure the workpiece carriers in preparation for the joining process. MZC1 magnetic cylinder sensors cover short stroke paths and provide high-precision detection of the position of the clamping cylinders. In the ultrasonic welding station, IH04 inductive proximity sensors monitor the distance from the sonotrodes to the workpiece.

IM Miniature ➜ p. 55
MZC1 ➜ p. 64

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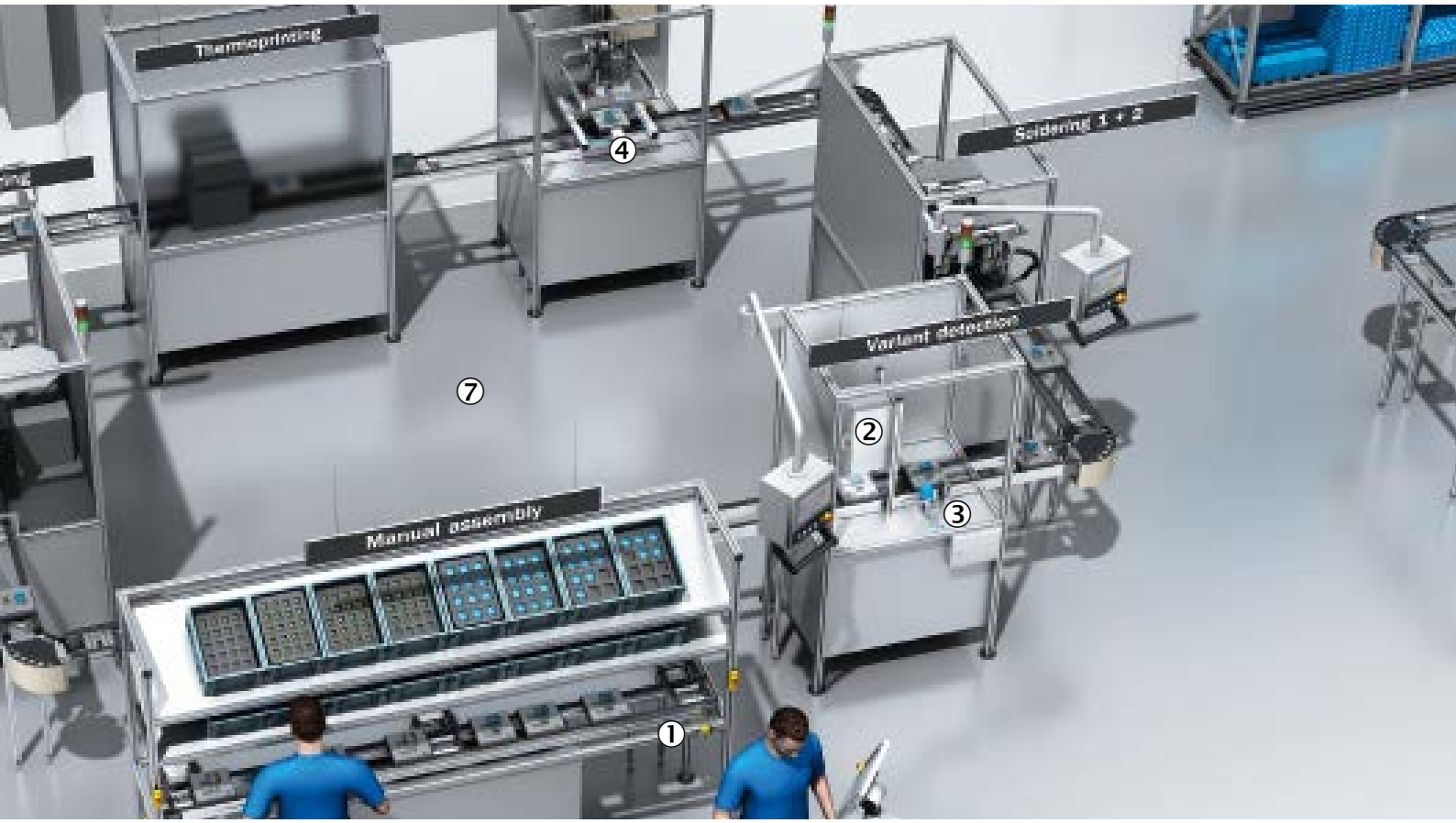
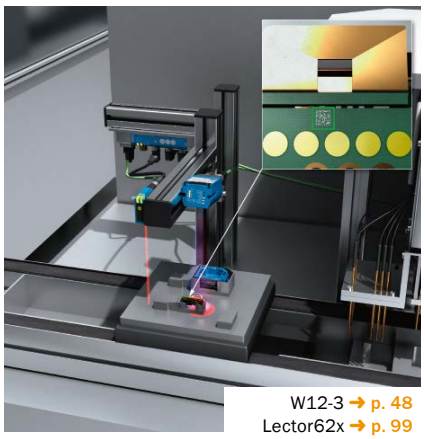


⑤ Identifying directly marked 2D codes

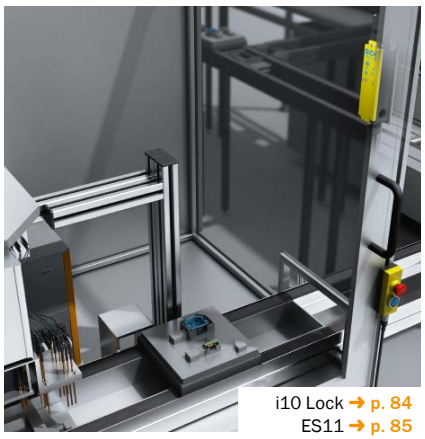
For the ASIC configuration in the assembly station, a Lector620 image-based code reader reads a directly marked 2D code on the e-card. The correct program for the ASIC configuration is selected based on the code information. A large selection of communication interfaces simplifies the code reader's integration into different assembly lines. After detecting the test object on the workpiece carrier, the W12-3 small photoelectric sensor supplies a trigger signal to the Lector620.



W12-3 ➜ p. 48
Lector62x ➜ p. 99

⑥ Access protection at joining stations

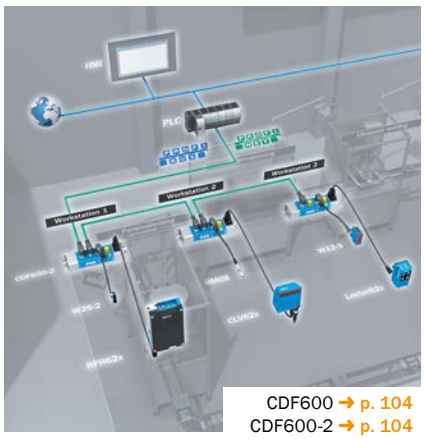
Safety doors located at joining stations must be access-protected when the stations are in active operation. i10 Lock safety locking devices protect and lock these doors. Access to the joining station is only possible if both the station and the belts are switched off. In this case, the operator can press a release button on the safety door to release the lock. In addition one ES11 emergency stop pushbutton allows a manual shutdown of the entire joining station in the event of danger.



i10 Lock ➜ p. 84
ES11 ➜ p. 85

⑦ Networking 4Dpro devices in an assembly line

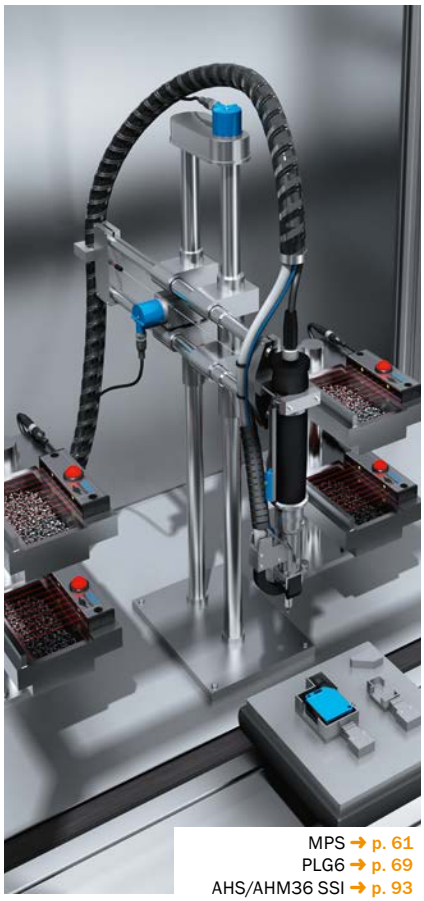
The CDF600 fieldbus module enables the networking of 4Dpro devices, such as bar code scanners, RFID systems and hand-held scanners, in PROFIBUS, PROFINET-IO or EtherCAT® networks. This ensures continuous communication by the individual devices with the higher-level control system of the assembly line. As a result of the proxy operating mode integrated in the CDF600-2, only the 4Dpro device is visible to the control, not the CDF600-2.



CDF600 ➜ p. 104
CDF600-2 ➜ p. 104

① Screw gun guidance and monitoring screw-in depth

To guide screw guns at precise angles, the carrying arms for the horizontal projection and the rotation axis are each equipped with an AHM36 absolute encoder. This ensures that components are screwed together in the accurate position. During screw-in depth monitoring, the MPS analog positioning sensor checks whether the screws have been screwed in properly. The MPS monitors the screw-in depth of the screws within an accuracy of plus/minus 0.1 mm. The PLG6 switching automation light grid ensures that the worker takes the right screws for the assembly process out of the tote. A red job LED is integrated into the front of the PLG6 housing. This LED is highly visible for the worker and notifies him/her of any errors or of the proper “pick” position.



MPS ➜ p. 61
PLG6 ➜ p. 69
AHS/AHM36 SSI ➜ p. 93

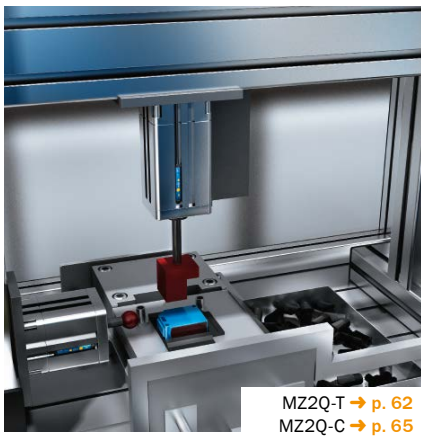
② Monitoring safety doors

At joining stations where manual intervention by the operator is necessary, the RE2 magnetic safety switch delivers non-contact monitoring for doors with a protective function. Thanks to its sensing range, the RE2 compensates for position tolerances and the door offset, thus increasing the machine’s availability. The safety status of the doors can be checked directly on the protective device using the LED status display.

RE2 ➜ p. 82

③ Monitoring of clamping cylinders

For the assembly of male connectors, workpiece carriers must be positioned in the joining station. This task is performed by pneumatic clamping cylinders. The MZ2Q magnetic cylinder sensor detects the position of these clamping cylinders. Thanks to its two switching points, a single cylinder sensor is all that is needed to determine the front and rear end positions of the cylinders. This advantage means that the sensor is also well suited for extremely small clamping cylinders with minimal available space.



MZ2Q-T ➜ p. 62
MZ2Q-C ➜ p. 65

④ Safety at a barrier-free reworking station

Protection for a hazardous point at a reworking station can be set up in a U-shape by mounting miniTwin safety light curtains in opposite corners without any blind zones. This enables the ergonomic and barrier-free protection of the reworking station. Thanks to its precise length steps and small size, the miniTwin safety light curtain can be individually adapted to the design of the machine. The light curtain features an adjustable holder which allows it to be quickly mounted on any machine.

miniTwin4 ➜ p. 78

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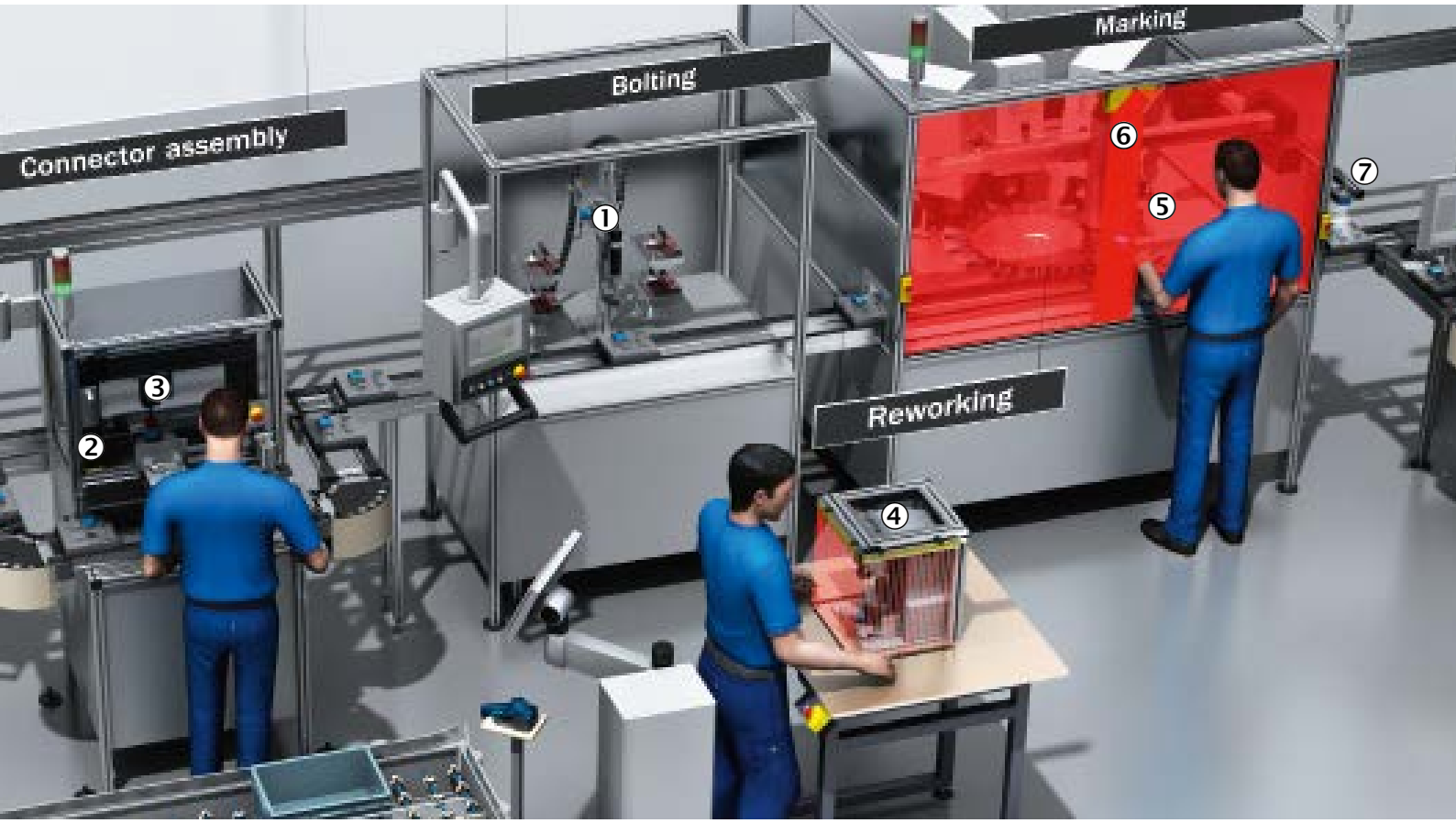


⑤ Checking a printed image

Immediately after the sensor is labeled, the printed image is checked. The Lector620 OCR image-based code reader is the ideal choice for this task. It provides reliable detection of plain text and the 2D code on the sensor housing. With the aid of the integrated match code comparison function, the code reader even handles the job of checking the scanned codes against the master code. The PowerProx MultiTask photoelectric sensor detects the presence of the workpiece and is used to trigger the printed image check.

PowerProx ➜ p. 54
Lector620 OCR ➜ p. 99

⑥ Hazardous point protection with a safety camera system

For maintenance purposes or when processes are interrupted, operators must reach into the assembly station. The V300 Work Station Extended safety camera system detects this manual interruption and transmits a stop signal to the assembly station. Thanks to its compact triangular design, the V300 Work Station Extended can be mounted to the steel or utility profile frame in the assembly station using just two screws, thereby ensuring unimpeded access.

V300 Work Station Extended ➜ p. 79

⑦ Inline quality control in final assembly

The fully assembled sensor must be inspected as part of a complete quality control check. The Inspector vision sensor checks the shape and contour of the sensor housing and line connections and compares the resulting shape and contour data with a dataset that was already taught-in. This approach ensures that defective parts are identified and removed from the process.

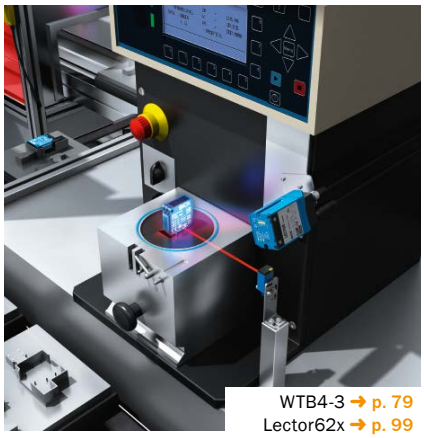
Inspector ➜ p. 105

Focus 4: Semi-automated assembly line for final inspection

SMALL PART ASSEMBLY: EXAMPLE OF FINAL ASSEMBLY INVOLVING A SENSOR

① Identifying workpieces

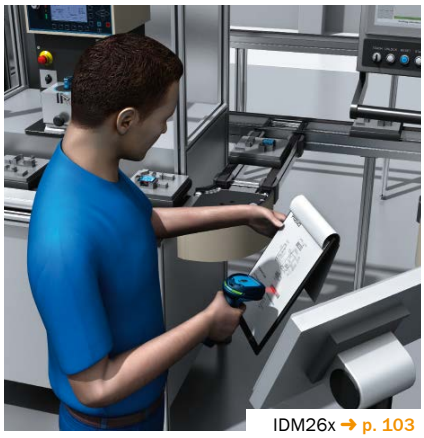
The Lector62x image-based code reader reliably identifies the sensor type using 2D codes located on the sensor housing. The scanned information is transmitted to the control system so that the right program can be selected for performing the leak test on the sensor. The WTB4-3 photoelectric proximity sensor with background suppression reliably detects the sensor once the worker has placed it in the testing apparatus, and it then sends a digital trigger signal to the code reader.



WTB4-3 ➜ p. 79
Lector62x ➜ p. 99

② Mobile identification of inspection data

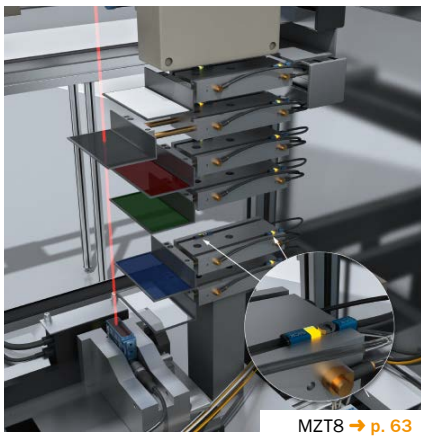
The rugged IDM26x hand-held scanner reads 1D or 2D codes from an order sheet which contain information for inspecting the sensor. The IDM26x then wirelessly transmits the data to the base station. On the display, the operator then receives all the information necessary for the production series. For simple and flexible integration into industrial fieldbus networks, connection modules form SICK are the optimal solution.



IDM26x ➜ p. 103

③ End position monitoring on pneumatic cylinders

In preparation for final sensor inspection, pneumatic cylinders move light filters into position in the inspection station. MZT8 magnetic cylinder sensors deliver precise detection of the end positions of these piston rod cylinders. Patented GMR technology (GMR = giant magneto-resistive) and ASIC technology from SICK (ASIC = application specific integrated circuit) ensure that the MZT8 only needs one attempt to deliver precise switching. Multiple switching operations are suppressed, which results in increased machine performance. Thanks to the simple mounting and installation by drop-in and combination screw (fastened with a mere quarter turn), this sensor is perfectly suited for use in pneumatic cylinders with a T-slot.



MZT8 ➜ p. 63

④ Color monitoring of status display LEDs

As part of the final inspection, the sensors' status display LEDs must be checked for proper functioning. With its large field of view, the CVS2 2D vision sensor is able to securely detect bi-color objects. Using the evaluation mode on the CVS2, one step is all it takes to detect both colors of the two status display LEDs and to check for the proper color combination. The CVS2 can store

CVS ➜ p. 105

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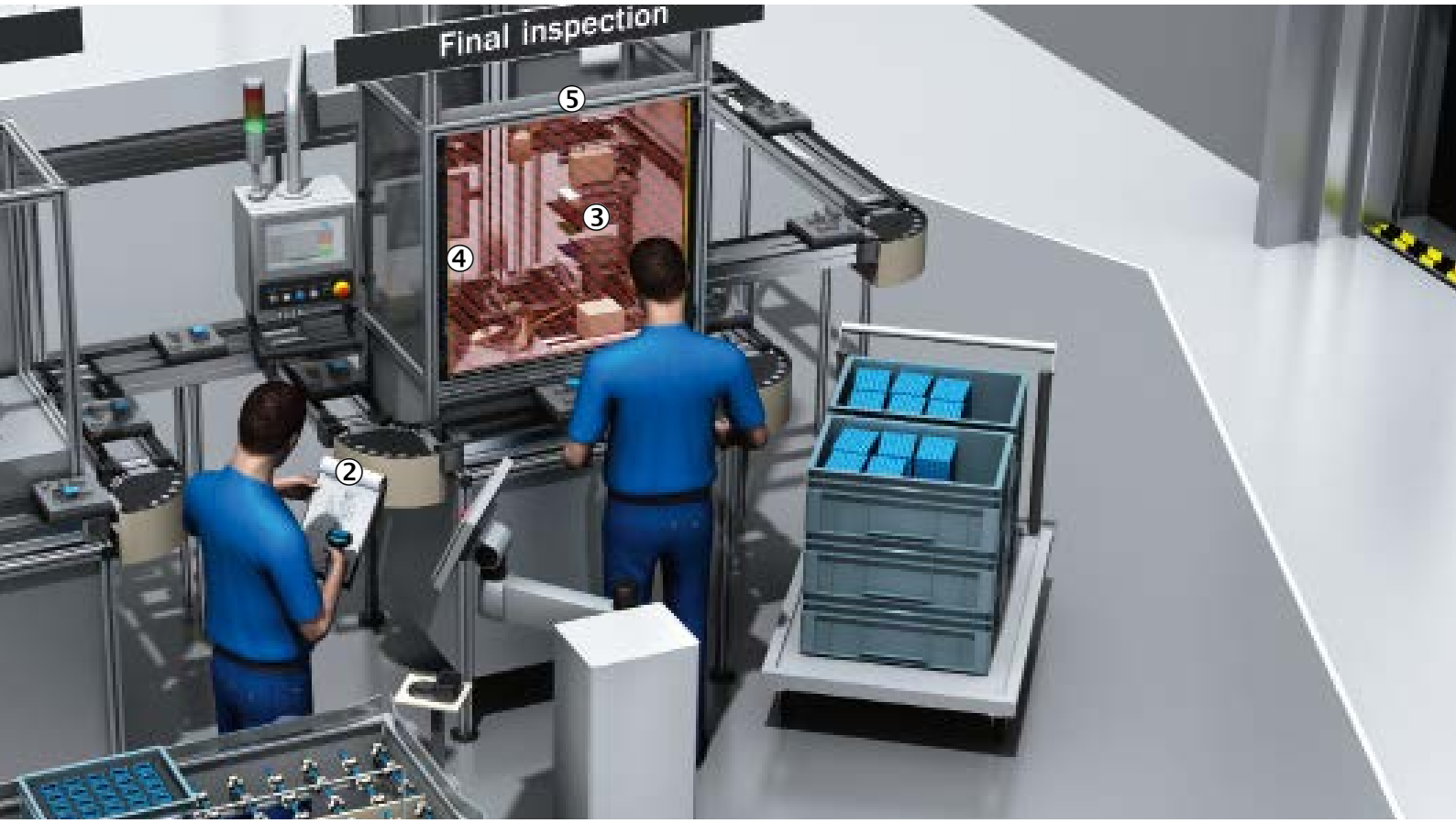
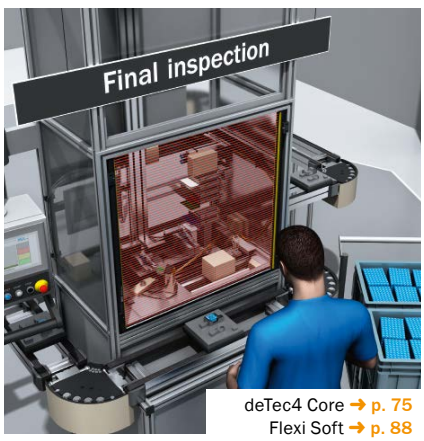


up to fifteen reference colors for detection, verification and sorting. The 2-color match feature enables reliable detection to assure that two predefined colors are present. It is only necessary to teach-in the colors during initial commissioning, which means that the 2D vision sensor does not need to be taught-in again for a new production batch.

⑤ Hazardous point protection at a final inspection station

The deTec4 Core safety light curtain secures access at an assembly station for final inspection, since workers at this station are required to insert and then remove parts for the inspection process. With its small size, adjustable mount and lack of blind zones, the deTec4 Core is easily integrated into the assembly station. Used in combination with a safety relay or the Flexi Soft safety controller, it allows safety functions to be configured easily. Where assembly or final inspection stations are designed to have intervention windows of differing sizes, the V300 WS Extended safety camera system is the perfect choice. At the press of a button, the V300 can be adjusted to fit any opening with a height of up to 1.5 m, a diagonal length of up to 2.12 m and an aspect ration of 2:1.



deTec4 Core ➜ p. 75
Flexi Soft ➜ p. 88

V300 Workstation Extended ➜ p. 79

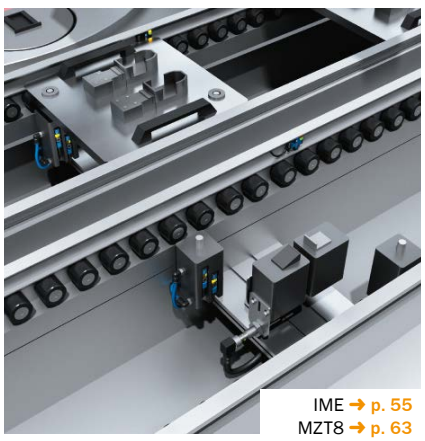
① Flexible material flow monitoring

Integrated into the frame of the belt, ultra-thin WT2 Flat photoelectric proximity sensors enable flexible, non-contact monitoring of material flow and accumulation. The belt is divided into defined zones, and each zone is equipped with a WT2 Flat sensor. Thanks to its rapid response time and precise switching points, the WT2 Flat ensures high repetition accuracy during detection. The WT2 Flat features a rugged housing with metal-reinforced fixing holes and can be easily mounted and adjusted on the frame of the belt.

W2 Flat ➜ p. 44

② Position monitoring at an indexing station

The indexing station moves the workpiece carrier on which the workpiece is located into a predefined position either along the conveying line or in the assembly station, where it then fixes the carrier in place for further processing. To achieve this, the workpiece carrier is lifted off the belt conveyor by pneumatic indexing cylinders and pressed against an upper limit in the carrier. What are known as singulators or stoppers are used to stop the workpiece carriers. These singulators are designed to operate either mechanically or pneumatically. Both in the indexing cylinder and in the pneumatic stopper, there are one or two integrated MZT8 magnetic cylinder sensors which detect the upper and lower position of the piston rod. In the case of a mechanical stopper, the position is determined using an IME inductive proximity sensor.



IME ➜ p. 55
MZT8 ➜ p. 63

③ Measuring the conveying speed on a rotary indexing table

To ensure the precise control of the individual rotary machine processes, the speed of the rotary indexing table must be continuously monitored. For this purpose, an SEK160 motor feedback system is mounted directly on the drive shaft of the table's torque motor, which eliminates the need for transmission elements such as timing belts belts or couplings. The SEK160 is equipped with the HIPERFACE® industrial interface and thus compatible with all common drive systems.

SEK160 ➜ p. 92

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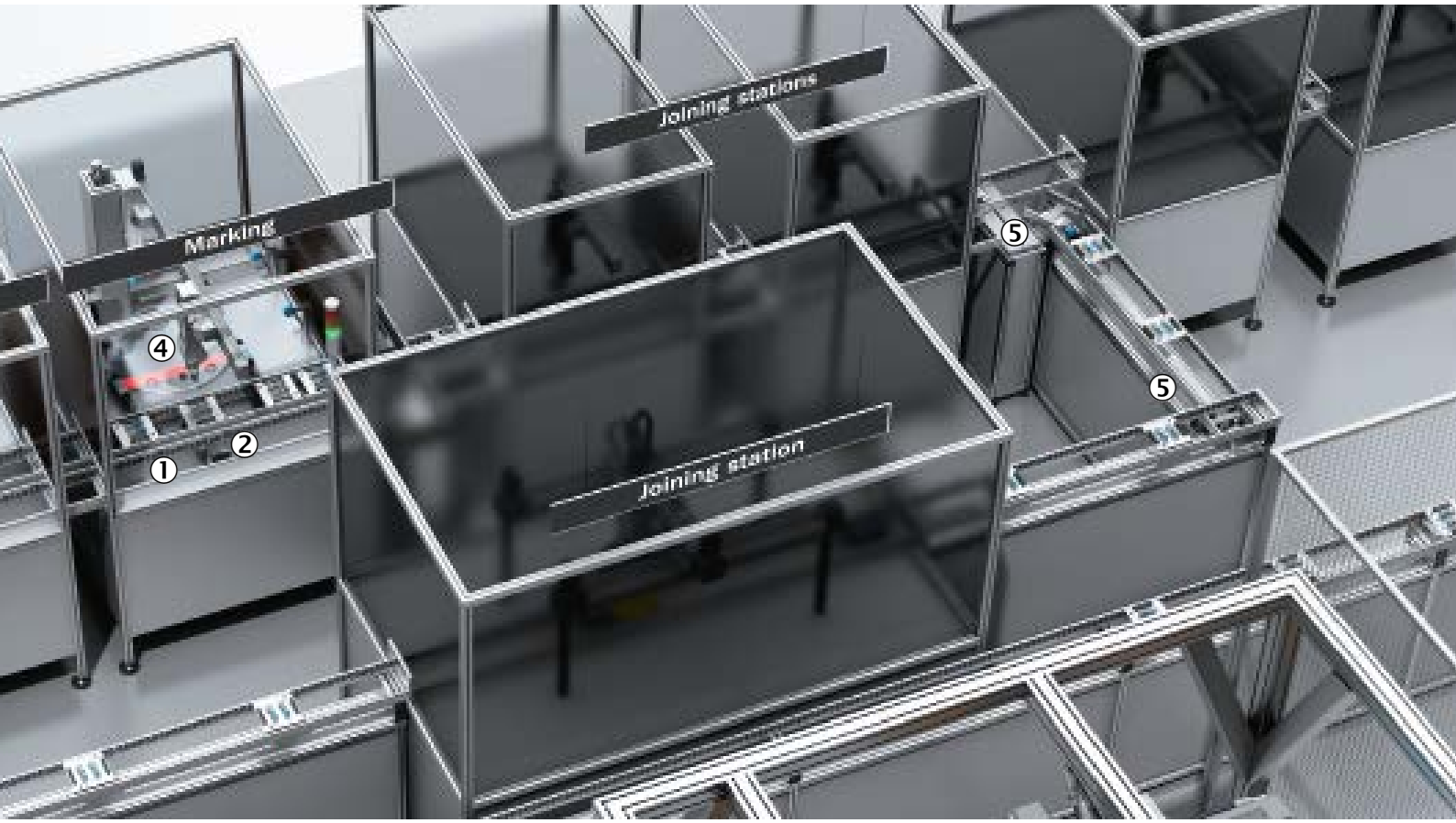


④ Collision protection and presence monitoring on a labeling machine

The gripper arms in the labeling machine must not be allowed to collide with the rotating plate. The HLG automation light grid provides this collision protection and prevents the plate from moving whenever a gripper arm comes too close. With a rapid response time of just 3 ms, the rotary plate drive is released again as soon as the gripper arm leaves the hazardous area. The PowerProx MultiTask photoelectric sensors (WTT12) detects the presence of a workpiece from a distance of up to 1.8 m.

⑤ Determining position in modular transfer systems

For the flexible adaptation of modular transfer systems to different assembly systems, these transfer systems incorporate the use of what are known as corner rotate units, lift and transfer modules or shuttle transfer units. These elements make it possible to rotate the workpiece carriers 90 or 180 degrees. This repositioning of the carriers is typically carried out using electric DC or stepper motors or with pneumatic lifting cylinders. DBS36 Core incremental encoders determine the position of the electric axes. These encoders are available in models featuring a blind hollow shaft or a face mount flange with a solid shaft. In pneumatic lifting cylinders on the other hand, MZT8 magnetic cylinder sensors are the optimal choice for precise position sensing.

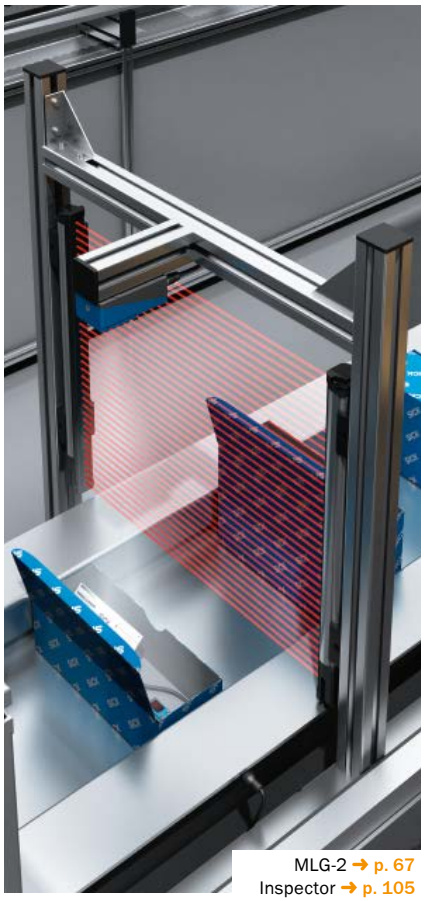
PowerProx ➜ p. 54
HLG ➜ p. 70

MZT8 ➜ p. 63
DBS36 Core ➜ p. 96

DBS36 Core ➜ p. 96

① Checking for completeness in the packaging unit

When different types of packaging are processed by the same system, both the packaging and its contents must be checked for correctness and completeness. The MLG-2 automation light grid is ideally suited to this task. This light grid features an incredibly simple teach-in process to accommodate different object heights and object patterns. Teaching-in the height classification can be easily performed by the push of a button on the light grid or by using the SOPAS configuration software. A different output signal switching device is activated depending on the object height or object pattern. The Inspector vision sensor detects the exact width and length of the packaging and checks for the correct contents. The Inspector is easy to install and set up, even without extensive image processing knowledge.



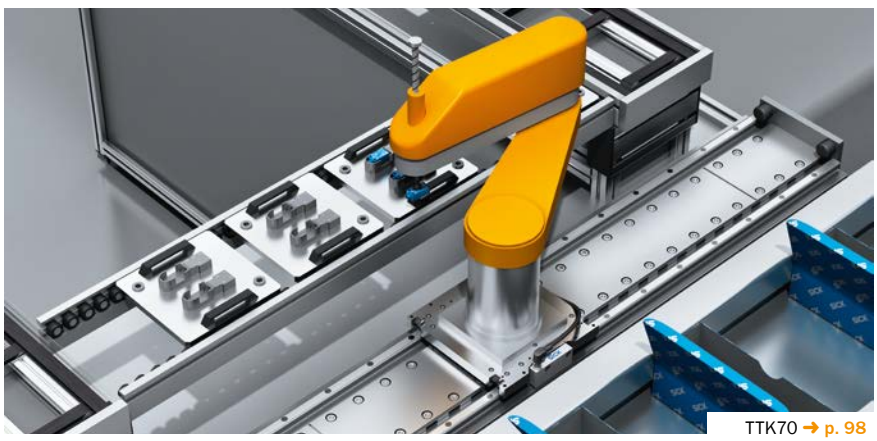
MLG-2 ➜ p. 67
Inspector ➜ p. 105

② Positioning the SCARA robot at the belt

The SCARA robot must move in sync with the conveyor speed so that it can remove the workpieces from the belt. The TTK70 linear encoder determines the absolute position of the SCARA robot. This encoder consists of a compact read head and a piece of magnetic tape that serves as a reference scale. The non-contact principle of operation means that the position is determined without causing any wear. Using a unique code pattern, the encoder gathers information about the absolute position along the reference scale and transmits this data directly to the evaluation electronics. Once it has been installed, the system is immediately available and completely maintenance-free, which saves time and reduces costs.

③ Identifying 2D codes on shipping cartons

The Lector62x image-based code reader reliably reads 2D codes located on shipping cartons. This information is sent to a printer connected to the network in order to print the matching operating instructions for the sensor. This printer is located directly on the assembly line.



TTK70 ➜ p. 98

Lector62x ➜ p. 99

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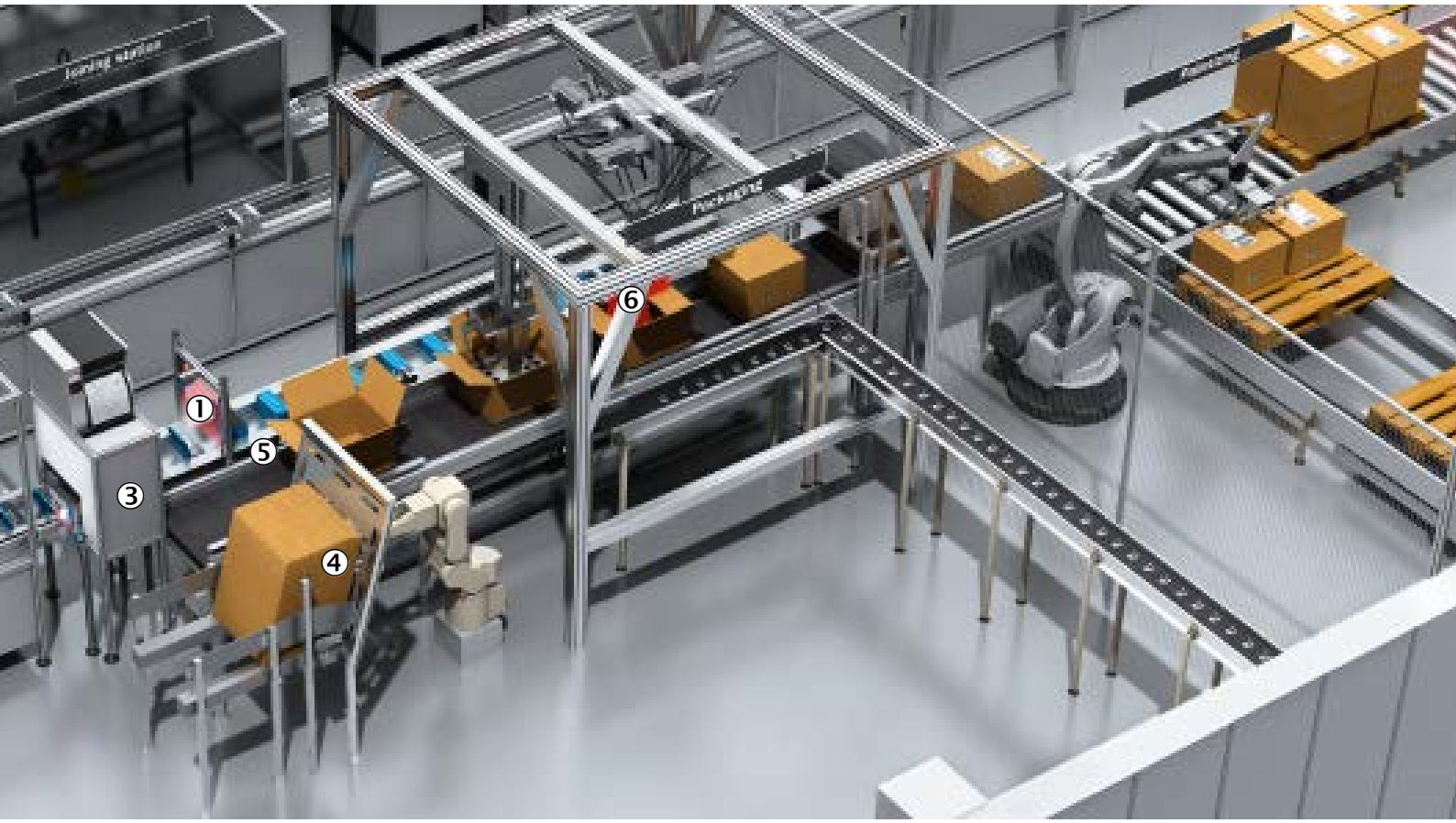


④ Presence and sensor monitoring during boxing

At the infeed for unfolded cardboard packages, it may be necessary for the operator to intervene in certain circumstances. With its integrated watchdog function, the MultiPulse photoelectric proximity sensor reliably monitors the presence of unfolded cardboard packaging in the box supply line. This function informs the robot controller that the sensor has detected the object with 100% certainty and thus that no defects, such as a wire break or sensor malfunction, have occurred.

⑤ Detecting packaging

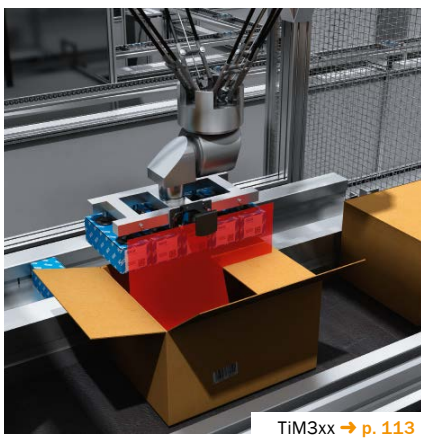
The CM18 capacitive proximity sensor reliably detects the presence of packaging and is easy to mount thanks to its M18 housing. Capacitive sensors are ideal for short sensing ranges and for detecting non-metallic objects. These sensors are also suitable for applications in which response time and positioning accuracy are not a significant factor.

⑥ Collision protection during automated boxing

The TiM3xx 2D laser scanner monitors whether the box can be freely accessed by the delta robot and whether the box's side covers are blocking the path of the robot arm. The TiM3xx thus reliably prevents collisions between the box and the robot arm, which in turn minimizes downtime and costs. Thanks to the "touch and teach" function, the monitored area can be set up without a computer.

MultiPulse ➜ p. 53

CM ➜ p. 59



TiM3xx ➜ p. 113

PRODUCT OVERVIEW

8019952/2016-05-13
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W2S-2 – At a glance

- Sensor with background suppression and without any significant black/white shift
- PinPoint 2.0 LED with extended sensing distances and high operating reserves
- A variety of application possibilities thanks to clearly-defined laser-like or line-shaped light spots
- Detection of highly-transparent and reflective objects using sensors with V-optics
- Photoelectric retro-reflective sensor with autocollimation and a clearly visible light spot

Your benefits

- Machine design flexibility: the ultra-compact sensors offer above-average sensing distances and provide space-saving installation
- Remote setup: sensors installed in confined spaces can be set and monitored remotely via IO-Link.
- High operational reliability: ultrablack objects are detected with a degree of reflection of 1%
- Maximum reliability during object detection and option of a space-saving machine design without reflectors or through-beam systems
- Quick and easy commissioning: the photoelectric retro-reflective sensor with autocollimation provides a clearly visible light spot for high process reliability
- Universal application options: wide range of models enclosed in a rugged housing
- Proven mounting and housing design

→ www.mysick.com/en/W2S-2

For more information, simply 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.

W2 Flat – At a glance

- One of the smallest photoelectric sensors in the world
- No external amplifier required
- Variant designed to detect transparent and glossy objects
- Rugged housing with metal-reinforced fixing holes

Your benefits

- High-performance solutions for very tight spaces provide increased application flexibility
- Fast response times with a high level of accuracy and precise switching points
- The high enclosure rating and the rugged housing offer a long service life that withstands harsh environmental conditions
- Quick and easy installation since sensors can be mounted directly on machine parts

→ www.mysick.com/en/W2_Flat

For more information, simply 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.

W4S-3 – 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, simply 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.

W4S-3 Glass – At a glance

- Continuous threshold adaption of the switching threshold compensates for environmental changes
- Single-lens autocollimation optics
- Simple setting either via teach-in pushbutton, cable or IO-Link
- PinPoint LED technology with a small, highly visible, well-defined light spot enables high reserve levels when using small reflectors
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Optimal detection of any kind of transparent object
- Quick and easy operation via the push of a button – automatic setting of the correct switching threshold
- Less downtime due to a Continuous Threshold Adaption which compensates for changing environmental conditions, including temperature, dust and drift effects
- The well-defined, highly visible intense light spot provides quick and reliable alignment
- 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/W4S-3_Glass

For more information, simply 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.

W4-3 – At a glance

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

Your benefits

- Low-cost integration due to optimal machine integration in areas with limited space
- Application versatility due to reliable detection of shiny or jet-black objects
- Rugged mounting system with M3 threaded metal inserts reduces maintenance costs due to a long service life
- High immunity to ambient light reduces downtime caused by false trips
- Clearly visible light spot simplifies alignment
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks

→ www.sick.com/W4-3

For more information, simply 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.

W100-2 – At a glance

- Reliable detection behavior, rugged housing and immunity to ambient light
- WT100-2 photoelectric proximity sensor (energetic or with background blanking)
- WL100-2 photoelectric retro-reflective sensor; variant available for detecting transparent objects
- WS/WE100-2 through-beam photoelectric sensor
- Various connection types available (standard: 2 m cable; M8 male connector, 3-pin; M8 male connector, 4-pin; male cable connector available on request)
- Light/dark switching and sensitivity adjustment possible
- Wide range of accessories

Your benefits

- Reliable detection in standard applications
- Short downtime and high throughput thanks to reliable object detection
- Ability to handle a wide range of detection principles within a single standardized housing, reducing the number of model variants
- Simple commissioning thanks to easily visible display LEDs
- Easy to set up thanks to user-friendly potentiometer (dependent on model)
- Standard housing that is compatible with many commonly used mounting systems
- Easy mounting thanks to 1-inch hole spacing
- High level of operating reserve minimizes susceptibility to contamination

→ www.sick.com/W100-2

For more information, simply 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.

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G6 – At a glance

- PinPoint LED for a bright, precise light spot
- Durable metal threaded inserts
- SICK ASIC technology - the result of decades of experience in photoelectric sensors
- Large, user-friendly potentiometer
- Large, bright indicator LEDs
- IP 67 enclosure rating

Your benefits

- Easy alignment and precise object detection due to a highly visible PinPoint LED
- Quick and easy mounting and high durability due to threaded metal inserts
- SICK ASIC technology provides high performance and excellent reliability
- Easy to adjust due to large, user-friendly potentiometers
- Easy to monitor due to large, bright indicator LEDs
- Easy installation with SICK accessories

→ www.mysick.com/en/G6

For more information, simply 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.

W9-3 – At a glance

- High-performance sensor in ultra-rugged VISTAL™ housing
- PinPoint LED for highly visible and precise light spot
- Two emitter LEDs for best-in-class background suppression
- Variable mounting with M3 or M4 hole pattern
- Wide range of connection options

Your benefits

- Robustness with the VISTAL™ housing
- Best in class performance
- Wide variance in connection, mounting and optic

→ www.mysick.com/en/W9-3

For more information, simply 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.

G10 – At a glance

- Long sensing ranges: 1,200 mm with background suppression; 15 m on PL80A reflector
- PinPoint LED with bright and precise light spot
- Small housing design
- 10 ... 30 VDC or 24 ... 240 VAC/VDC power supply with PNP/NPN or relay output
- Rugged sensor housing with metal-reinforced holes for assembly
- Q-Lock assembly system for mounting the sensor within a few seconds

Your benefits

- Long sensing ranges for maximum operating reserves
- Efficient installation: The G10 and the Q-Lock assembly system save valuable hours when mounting and commissioning multiple sensors
- A single sensor family for all industrial and commercial fields of application
- Universal DC or AC/DC power supply for even greater application flexibility
- Highly reliable and durable despite optical interference or mechanical loads
- Wide range of accessories simplifies sensor integration: aids for assembly, connecting cables, and reflectors

→ www.mysick.com/en/G10

For more information, simply 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.

W12-3 – 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, simply 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.

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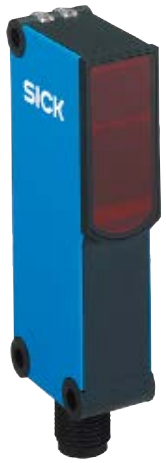

W18-3 – At a glance

- Best-in-class optical performance due to superior OES technology
- Autocollimation optics
- Background suppression with second sender LED
- Slim, durable plastic housing
- Operation via double teach-in push-button or potentiometer
- Wide variety of options for operation, connection, and optics
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization

Your benefits

- Reliable object detection due to best-in-class background suppression and resistance to ambient light
- A wide range of product variants provides increased user flexibility
- Less downtime in industrial environments
- 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/W18-3

For more information, simply 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.

W27-3 – At a glance

- Intense visible red emitter LED with consistent light spot for PinPoint versions
- Long sensing ranges with IR LED achieve up to 2500 mm
- Precise background suppression for detection of multi-colored objects
- Universal DC or DC/AC supply voltage
- Operating temperature: –40 °C – +60 °C
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization

Your benefits

- Quick and easy commissioning due to a highly visible red PinPoint LED
- PinPoint technology can replace laser photoelectric proximity sensors in some applications. No laser safety regulations and a longer operating life due to PinPoint technology
- Resistant to ambient light, optical reflections, and crosstalk from other photoelectric devices
- Less contamination due to high operating reserves, reducing downtime
- Resistant to vibrations, reducing downtime
- Operation in harsh environments with temperatures as low as –40 °C
- IO-Link provides easy data access from the PLC
- Quick and easy configuration

→ www.mysick.com/en/W27-3

For more information, simply 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.

V12-2 – At a glance

- M12 metal housing with an IP 67 enclosure rating
- Long sensing distances, short response times
- 2 teach-in modes: Standard teach mode for basic applications and precise teach mode with small hysteresis for special applications
- Adjustable light or dark switching as complementary outputs
- PNP or NPN output available
- Complements inductive sensor portfolio with an M12 housing
- 4-pin M12 connector or 2 m cable

Your benefits

- Standard M12 miniature housing saves installation space on the machine
- Simple design and time-saving installation due to a standard M12 housing
- Operating reserve display simplifies commissioning and saves maintenance time
- Standardized connection technology and broad application use
- Fast response times ensure reliable detection of objects at high speeds, increasing machine throughput
- Tough metal housing provides a long service life, reducing maintenance time and costs

→ www.mysick.com/en/V12-2

For more information, simply 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.

V180-2 – At a glance

- Low-cost M18 housing sensor on the market
- Long sensing distances: 100 mm, 400 mm, 800 mm (proximity sensor), 300 mm (proximity sensor with BGS), 6 m (retro-reflective sensor) and 20 m (through-beam sensor)
- Bright power and signal LEDs with 360° visibility
- Wide product portfolio solves a broad range of applications
- High switching frequencies up to 1000 Hz
- Available in a metal housing for applications in harsh environments
- Optical axis selectively axial or radial (90°)

Your benefits

- Cost-effective cylindrical M18 sensor lowers installation costs
- Brightly lit red emitter LED simplifies alignment and saves mounting time
- Bright status display with 360° visibility enables quick and easy troubleshooting and thus reduces maintenance costs and time
- The flat, smooth front screen reduces the accumulation of dust and dirt. This ensures reliable operation and reduces both maintenance and costs

→ www.mysick.com/en/V180-2

For more information, simply 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.

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GR18 – At a glance

- Economical M18 cylindrical sensors with standard housing design
- Choice of plastic and metal housing variants with straight optical output
- Very bright and highly visible PinPoint LEDs
- Highly visible status indicator
- IP67 enclosure rating

Your benefits

- A whole range of mounting options thanks to the different housing types
- Simple alignment and precise detection using PinPoint LEDs
- Easy to mount with simple M18 hole mounting. No special mounting brackets required.
- Rugged and reliable operation due to proven SICK sensing technology
- Clearly visible status display reduces maintenance and service time

→ **www.mysick.com/en/GR18**

For more information, simply 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.

GR18S – At a glance

- Low-cost cylindrical M18 sensor with extra short housing
- Five different housing styles
- Variety of plastic and metal housing styles, with straight or right angle optics
- Bright and highly visible PinPoint-LED
- Potentiometer for adjustment of switching threshold (depending on type)
- Special flush type, one-piece metal housing
- Highly visible signal indicator LED
- IP 67 rating

Your benefits

- Space-saving solution due to short housing
- Flexible mounting options due to versatile housing styles
- Easy installation and precise detection due to PinPoint LED
- Reduced maintenance costs due to high tightening torque of single piece flush metal housing
- Rugged and reliable with proven SICK technology
- Highly visible signal indicator LED saves maintenance and commissioning time

→ **www.mysick.com/en/GR18S**

For more information, simply 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.

SureSense – At a glance

- The most flexible and complete portfolio of hybrid sensors
- New and intuitive light strip
- Best background suppression in the sector
- Detection of transparent objects with AutoAdapt technology
- VISTAL housing

Your benefits

- Solve the vast majority of a customer's applications with a single sensor family
- Standardize mounting designs, accessories, set-up procedures and suppliers
- Fast and simple alignment during installation
- Continuous indication of signal strength
- Reliably sense objects of varying colors and materials
- Transparent object detection in tough environments with minimal need for additional cleaning
- Reduce replacement costs and down time due to damages during installation or use

→ **www.mysick.com/en/SureSense**

For more information, simply 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.

WLL180T – At a glance

- Selectable response time up to 16 µs
- Sensing range up to 20 m (through-beam system); up to 1,400 mm (proximity system)
- Bus-compatible with anti-interference
- 2 x 4-digit digital display
- Adjustable hysteresis
- Rotatable display screen
- High-resolution signal processing
- Programmable time delays

Your benefits

- Reliable, rapid process detection, even under the most difficult ambient conditions, such as dust, spray or mist
- Easy commissioning and product changeover due to external teach-in
- Cross-talk is eliminated when utilizing bus configuration option
- Quick, easy setup and adjustment due to an intuitive operating menu
- Flexible parameter adjustment due to high-resolution signal processing. Hysteresis and time delays can be adapted to suit the application, e.g., when detecting tiny or transparent objects
- Easy-to-read display, even under difficult installation conditions

→ **www.mysick.com/en/WLL180T**

For more information, simply 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.

LL3 – At a glance

- Very large selection of plastic and glass fiber-optic cables.
- Fiber-optic cables resistant to chemicals and high temperature
- Threaded and smooth sleeves, bands of light (array), 90° reflection versions available
- Focused optics
- Proximity and through-beam versions available
- Plastic, protective metal or Teflon sheathing available

Your benefits

- Very large selection of fiber-optic cables with plastic and glass fibers, giving users more application flexibility
- Resistant to damage caused by mechanical and chemical stress, as well as high temperatures
- Standard and customer-specific types
- Simple installation saves time
- For detection of objects, surfaces, leading edges, and fluid levels

→ www.mysick.com/en/LL3

For more information, simply 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.

MultiPulse – At a glance

- Object detection and sensor monitoring
- Verification that the object is present and the sensor has not experienced a malfunction
- The space-saving miniature housing allows the sensor to be integrated in the tightest machine environments
- Precise background suppression ensures that all types of objects are reliably detected regardless of their surface and properties
- Operating range from 3 to 150 mm
- A range of variants with and without settings, line-shaped light spot, and window function (30 mm ... 150 mm) are available

Your benefits

- Increase in productivity through sensor monitoring. The machine controller monitors the status of the sensor including wire breakage and short-circuits.
- Reduction in costs: object detection and sensor monitoring takes place via a single output
- High operational safety and reliability thanks to SIRIC® chip technology from SICK
- Quick and easy commissioning due to bright and highly visible PinPoint light spots

→ www.mysick.com/en/MultiPulse

For more information, simply 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.

PowerProx – At a glance

- Time-of-flight technology
- Laser class 1
- Sensing range for object detection: 5 cm to 3.8 m
- Switching frequencies up to 1,000 Hz
- Smallest minimum distance between the object and background: 15 mm
- VISTAL™ housing
- 1 or 2 switching points which can be adjusted independently
- IO-Link available as an option (distance value, 8 switching points, smart sensor functions)

Your benefits

- Reliable object detection over large sensing ranges, e.g., even with shiny or jet-black surfaces and background reflections
- Highly visible light spot simplifies alignment of the photoelectric proximity sensor
- Precise and simple adjustment with potentiometer or teach-in button
- Eye-safe thanks to laser class 1
- Extremely reliable and durable. Rugged even under high mechanical loads thanks to VISTAL™ housing.
- Smallest housing of its kind worldwide offers great flexibility in terms of machine design
- IO-Link extends functionality

→ www.mysick.com/en/PowerProx

For more information, simply 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.

ZoneControl – At a glance

- Three mounting types: mounting between the rollers (R/IR), mounting on the side frame (ZLM), or mounting above the belt (WLR)
- Three types of logic: single feed, single feed with sleep function, block (slug) feed
- Up to 50 ZoneControl solutions can be connected in series.
- Fully animated simulation to ease selection and implementation
- Standard cut lengths of 1 m (3 ft) or 2 m (6 ft)

Your benefits

- Largest Zero Pressure Accumulation portfolio on the market gives users a wide variety of choices for their application
- SICK ZoneControl solutions control the flow of packages a on conveyor without a PLC or other external control
- Quick setup since no programming, no laptop, and no PLC interfacing are required
- With 20 years of ZoneControl experience and personal support from SICK experts, all application and product issues are quickly addressed
- Quick expansion or modification of the conveyor due to the modular design

→ www.mysick.com/en/ZoneControl

For more information, simply 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.

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IM Miniature – At a glance

- M4 and M5 sizes available
- Small housing sizes and light weight
- Integrated LED indicator
- Rugged stainless steel housing

Your benefits

- Trouble-free installation in space-critical applications provides a high degree of design freedom, saving machine space
- Reliable detection of rapid handling and assembly processes increases throughput
- High-visibility indicator LED for simple monitoring of operational state reduces commissioning time
- High positioning accuracy increases machine throughput
- High resistance to shock and vibrations reduces maintenance costs

→ **www.mysick.com/en/IM_Miniature**

For more information, simply 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.

IME – At a glance

- Types: M08 to M30
- Extended sensing ranges: 1.5 mm to 38 mm
- Electrical wiring: DC 2, 3, and 4-wire
- Enclosure rating: IP 67
- Temperature range: –25 °C to 75 °C
- Nickel-plated brass housing, plastic sensing face

Your benefits

- Reliable processes thanks to extended, highly precise sensing ranges enabled through the use of the latest SICK ASIC technology
- Reduced machine downtimes thanks to longer sensor service life
- High level of cost-effectiveness thanks to low acquisition costs
- Comprehensive standard product portfolio
- Easy to implement customer-specific variants within the standard product portfolio

→ **www.mysick.com/en/IME**

For more information, simply 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.

IMB – At a glance

- Types M08 to M30
- Extended sensing ranges: 2 to 20 mm
- Electrical wiring: DC 2/3/4-wire
- Enclosure rating: IP 68, IP 69K
- Temperature range: –40 °C to 100 °C
- Rugged stainless steel housing, sensing face made of plastic (LCP)
- Visual installation aid, IO-Link-compatible
- Resistant to oils and cooling lubricants; suitable for use outdoors

Your benefits

- Straightforward product selection as fewer sensor variants are required – one sensor suits a whole range of applications
- Stable processes thanks to extended, highly precise sensing ranges enabled through the use of the latest SICK ASIC technology
- Reduced machine downtimes thanks to longer sensor service life, even in harsh working conditions
- Quick and easy installation thanks to visual installation aid and self-locking nuts
- High degree of flexibility and communication options thanks to IO-Link
- Easy to implement customer-specific variants within the standard product portfolio

→ www.mysick.com/en/IMB

For more information, simply 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.

IQ Miniature – At a glance

- Long sensing range
- Rugged metal and plastic housings
- Narrow design: 5 x 5 or 8 x 8 mm
- Compact, space-saving design

Your benefits

- Trouble-free installation in space-critical applications
- Reliable detection of fast processes
- Quick installation without any fine adjustments
- Long sensing range reduces mechanical damage
- Maintenance cost reduction due to increased sensor life
- High resistance to shock and vibrations

→ www.mysick.com/en/IQ_Miniature

For more information, simply 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.

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IQ Flat – At a glance

- Flat, compact design
- Long sensing range up to 7mm
- Easily visible indication LEDs
- Available in a plastic (IQ04 and IQ06) and metal housing (IQ20 and IQ25)

Your benefits

- Reduced mechanical damage due to space-saving flat housing, which does not protrude from sensor
- Time-saving simple installation with one or two screws
- No restrictions on machine design

→ www.mysick.com/en/IQ_Flat

For more information, simply 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.

IQ Standard – At a glance

- Long sensing range up to 60 mm
- DC, AC and AC/DC versions available
- Wide range of housing and mounting options
- Variety of connection options including terminal, cable (flying leads) and connector types
- Customer-specific models and value add options are available

Your benefits

- Increased machine throughput with less machine downtime
- Maintenance cost reduction and reduced mechanical damage due to long sensing range
- Reduced maintenance cost due to longer service life
- Time-saving quick and easy installation

→ www.mysick.com/en/IQ_Standard

For more information, simply 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.

IH Miniature – At a glance

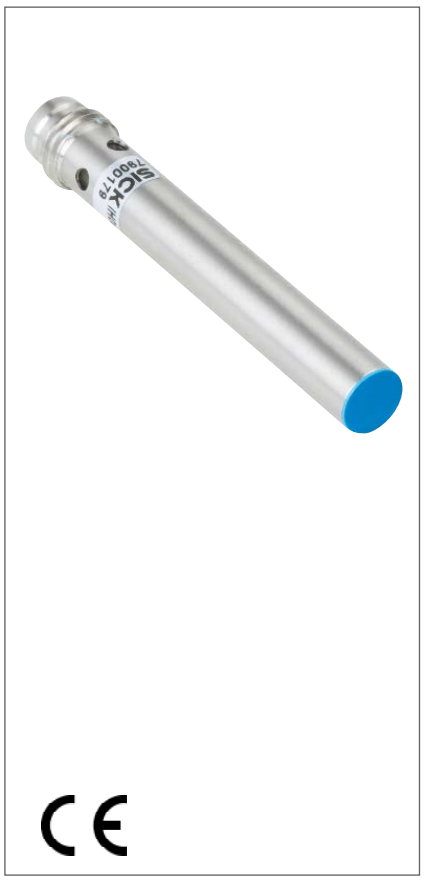
- Small housing and light weight
- Housing diameters of 3 and 4 mm
- Integrated LED indicator
- Rugged IP 67- rated stainless steel housing
- Flexible connectivity via connecting cable or connector

Your benefits

- Space-saving installation in space-critical applications provides a high degree of design freedom
- Reliable detection of high-speed processes increases machine throughput
- High-visibility indicator LED ensures simple monitoring of the operational state
- High positioning accuracy
- High resistance to shock and vibrations increases service life and reduces maintenance and replacement costs

➜ **www.mysick.com/en/IH_Miniature**

For more information, simply 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.



IH Standard – At a glance

- Operating range up to 30 mm
- High switching frequencies up to 5 kHz
- DC and AC/DC versions available
- Plastic and stainless steel housing
- Available in short and standard housing lengths

Your benefits

- Reliable detection of high-speed processes increases machine throughput
- High-visibility indicator LED ensures simple monitoring of the operational state
- High resistance to shock and vibrations increases service life and reduces maintenance and replacement costs

➜ **www.mysick.com/en/IH_Standard**

For more information, simply 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.

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CM – At a glance

- Cylindrical housing
- Detects powders, granulates, liquids and solids
- Extremely high electromagnetic compatibility
- Electrical configuration: DC 2 and 4 wire
- Supply voltage: 10 V ... 36 V DC
- Short-circuit protection (pulsed)
- LED status indicator
- IP 67 protection class

Your benefits

- Rugged and thus reliable in harsh industrial applications, reducing maintenance costs and,machine downtime
- Quick and easy adjustment via potentiometer saves installation and setup time
- Very flexible in practical applications
- Can be used to detect all manner of media
- High shock and vibration resistance increases sensor life and reduces machine maintenance costs
- Non-contact level measurement, even through container or tank walls, reducing the time and money spent on installation

→ www.mysick.com/en/CM

For more information, simply 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.

CQ – At a glance

- Rectangular housing
- Detects powders, granulates, liquids and solids
- Extremely high electromagnetic compatibility
- Electric version: DC, 4 cables
- Supply voltage: 10 V ... 36 V DC
- Short-circuit protection (pulsed)

Your benefits

- Non-contact level measurement, even through container or tank walls, which eliminates drilling holes and thus reduces installation time
- Durable housing withstands harsh industrial applications, reducing maintenance costs
- Quick and easy adjustment of the switching point - via pushbutton, remote teach for the CQ28 and via potentiometer for CQ35 - saves time
- Simple and safe detection alternative to photoelectric and inductive sensors in applications such as detecting product in a sealed box, container or tank

→ www.mysick.com/en/CQ

For more information, simply 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.

MM – At a glance

- Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood
- Precise switching point and exact hysteresis
- Reliable object detection in high temperature zones
- Small housing design with large operating ranges
- Resistant to dust, dirt, and vibrations, increasing sensor life and reducing maintenance costs

Your benefits

- Non-contact operation eliminates interference from dirt, dust and vibrations, increasing sensor life and reducing maintenance costs
- Space-saving installation due to small design
- Large operating ranges with reliable switching increase throughput
- Non-contact, universal detection through several substances, including plastic containers and pipes protective PTFE walls and non-magnetic metal walls

→ www.mysick.com/en/MM

For more information, simply 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.

MQ – At a glance

- Long sensing range in a small, compact rectangular plastic housing with an IP 67 enclosure rating
- Detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic, or wood
- Solves high-temperature applications by installing the temperature-resistant magnet in the high-temperature area and the sensor behind an insulated area
- Non-contact operation that is resistant to dust, dirt, shock and vibration
- Precise switching point and hysteresis
- Sensing range up to 60 mm
- High switching frequency
- Short-circuit, reverse polarity protection and power-up pulse suppression

Your benefits

- Non-contact operation eliminates interference from dirt, dust, shock and vibrations, reducing maintenance costs
- Long sensing range with reliable switching reduces miscounts and increases machine throughput
- Easy to install, low-cost sensor solution saves installation time and costs
- Compact plastic housing saves machine space

→ www.mysick.com/en/MQ

For more information, simply 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.

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IO-Link

MPS – At a glance

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

Your benefits

- Straightforward and time-saving installation as well as sensor replacement by means of drop-in sensor mounting
- High flexibility through measuring ranges from 32 mm through 256 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Measuring range can be customized using the teach function
- Freely selectable installation direction, enabling optimized cabling
- Easy commissioning thanks to "In-range" display
- Flexible sensor settings, monitoring, advanced diagnostics, and display thanks to IO-Link saves time and money

→ www.mysick.com/en/MPS

For more information, simply 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.

IO-Link

MPA – At a glance

- Analog positioning sensor, can be mounted on a vast range of cylinders (e.g., cylinders with T-slots, round cylinders, and tie rod cylinders) thanks to its universal housing with adapters
- Measured lengths from 107 mm to 1,007 mm in 36 mm increments
- Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Linearity of 0.5 mm (typ.) at a sampling rate of 1.15 ms (typ.), and a resolution of 0.06 mm (typ.)
- Electric setting of zero point and end point via teach pushbutton
- IP 67 protection class

Your benefits

- High 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 guarantee the sensor a long service life and reduce maintenance costs
- Time savings thanks to simple commissioning and diagnostics using 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 display thanks to IO-Link saves time and money

→ www.mysick.com/en/MPA

For more information, simply 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.

MZT1 – At a glance

- Compact housing design
- Complete range with PNP / NPN, PUR and PVC cable, M8 and M12 connector
- LED function indicator
- 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

Your benefits

- Economic solution providing reliable switching performance
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement.
- Resistant to shock, vibration and liquids, enlarging sensor life time

→ www.mysick.com/en/MZT1

For more information, simply 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.

MZ2Q-T – At a glance

- Magnetic cylinder sensor for all conventional pneumatic cylinders, linear slides, and grippers with T-slots
- Easy adjustment of two switching points via teach-in pushbutton
- Detection range up to 50 mm stroke
- Drop-in mounting from above simplifies handling and assembly

Your benefits

- One sensor with two adjustable switching points reduces installation time and costs
- Highest levels of flexibility thanks to a detection range up to 50 mm
- Reliable solution for precise pneumatic applications due to intuitive and accurate definition of two switching points
- Convenient installation and sensor replacement due to drop-in installation
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

→ www.mysick.com/en/MZ2Q-T

For more information, simply 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.

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MZT7 – At a glance

- Can be used in all standard cylinders, linear slides, and grippers using the T-slot and – with the help of adapters – in round rod, tie-rod, and profile cylinders, and cylinders with a dove-tail groove
- Easy to insert the sensor into the slot
- Fixing screw combines hexagon socket screw and slotted screw elements
- LED for indicating the output state
- IP 67 enclosure rating

Your benefits

- A sensor for a wide range of applications: The sensor design fits into all standard T-slots used around the world, regardless of the cylinder profile or make
- Simple mounting: Thanks to the retaining ribs on the side, the sensor holds its position even before the screw is tightened, ensuring that it does not fall out
- Fast mounting: The sensor is fixed quickly and securely in the slot simply by rotating the fixing screw a quarter turn
- The rugged fixing screw holds the sensor in the required position, even when exposed to shocks and vibrations
- It is easy to replace the sensor during servicing without removing the end caps

→ www.mysick.com/en/MZT7

For more information, simply 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.

MZT8 – At a glance

- High-temperature variants: temperature-resistant up to 100 °C
- Combination screw for quick mounting
- Enclosure ratings: IP 67, IP 68, IP 69K
- Very short sensor housing for use in short stroke cylinders
- PNP or NPN switching output, PUR or PVC cable, M8 or M12 connection can be selected
- Can be used in all cylinders, linear slides, and grippers with T-slots and with many round body, tie-rod, and dove-tail groove cylinders using an adapter

Your benefits

- Can be used in temperatures up to 100 °C
- Very rugged housing with enclosure rating IP 67, IP 68, or IP 69K extends the service life of the sensor
- Increases machine performance thanks to precise, single switching
- Quick and easy mounting using Allen wrench or flat head screwdriver
- Saves time during initial installation and when replacing the device, as the sensor is very easy to insert in the slot from above. No need to dismantle the cylinder end caps
- Low maintenance costs, as the sensor is resistant to shocks and vibrations and therefore does not move out of its position in the slot

→ www.mysick.com/en/MZT8

For more information, simply 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.

RZT1 – At a glance

- Compact housing design
- Complete range with Reed 3-wire, Reed 2-wire, and Reed 230 V version
- LED function indicator
- 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

Your benefits

- Drop-in T-slot mounting from above makes assembly easy
- Easy installation with Allen wrench
- Resistant to shock, vibration and liquids, enlarging sensor life time

→ www.mysick.com/en/RZT1

For more information, simply 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.

MZC1 – At a glance

- Can be used in all standard cylinders, linear slides, and grippers with C-slot
- Complete range with PNP/NPN, PUR, and PVC connection, M8 and M12 connectors
- Combined fixing screw (hexagon socket screw and slotted screw elements)
- Very short sensor housing, making it easier to install on short stroke cylinders
- LED function indicator
- IP67/IP68/IP69K enclosure rating (depending on connection type)

Your benefits

- Reduced maintenance costs, as the sensor is resistant to shock and vibration and thus will not slip in the slot
- Increased machine throughput thanks to SICK' s proprietary GMR (giant magneto-resistive) technology as well as the SICK ASIC (application-specific integrated circuit) that ensure precise one-time switching while eliminating false signals
- Flexible mounting with a hex key or flathead screwdriver
- Time-saving single-hand mounting with ¼-turn installation
- Straightforward and time-saving installation as well as sensor replacement by means of drop-in sensor mounting – the cylinder end caps do not have to be removed
- Extremely rugged VISTAL® housing - IP67 or IP68 and IP69K enclosure rating, extending sensor service life

→ www.mysick.com/en/MZC1

For more information, simply 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.

MZ2Q-C – At a glance

- Magnetic cylinder sensor for all conventional pneumatic cylinders, linear slides, and grippers with C-slots
- Easy adjustment of two switching points via teach-in pushbutton
- Detection range up to 50 mm stroke
- Drop-in mounting from above simplifies handling and assembly

Your benefits

- One sensor with two adjustable switching points reduces installation time and costs
- Highest levels of flexibility thanks to a detection zone up to 50 mm
- Reliable solution for precise pneumatic applications due to intuitive and accurate definition of two switching points
- Convenient installation and sensor replacement due to drop-in installation
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

→ www.mysick.com/en/MZ2Q-C

For more information, simply 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.

WF – At a glance

- Infrared light source
- Simple and accurate adjustment via teach-in or manually via “+”/”–” buttons
- Fast response time (max. 100 µs)
- PNP and NPN switching output
- Light/dark switching function
- 21 different models with different fork widths and depths
- Rugged, IP 65 aluminum housing

Your benefits

- Fast response time and fine resolution ensure reliable detection even at very high speeds
- Infrared light source provides excellent ambient light immunity
- User-friendly setting via teach-in or with “+”-/”–” pushbutton
- A wide range of different fork sizes enables flexible installation
- The aluminum housing meets all requirements for use in harsh industrial conditions

→ www.mysick.com/en/WF

For more information, simply 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.

WFL – At a glance

- High-precision laser (Class 1)
- Simple and precise setting via teach-in
- Fast response time (max. 100 µs)
- Minimum detectable object size of just 0.05 mm
- PNP and NPN output signal switching device
- Light/dark switching function
- 21 different models with different fork widths and depths
- Rugged, IP 65 aluminum housing

Your benefits

- A highly precise laser beam ensures consistent measurement accuracy along the entire measuring range and reliable detection of the smallest objects
- A visible laser light spot enables easy alignment and fast adjustment
- Reliable and simple setting via teach-in ensures high process reliability
- A wide range of different fork sizes increases installation flexibility
- The aluminum housing meets all requirements for use in harsh industrial conditions

→ www.mysick.com/en/WFL

For more information, simply 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.

WFM – At a glance

- Highly visible red emitted light
- No setup, out-of-the-box operation
- 360° output indicator
- 5 fork sizes: maximum depth 120 mm, maximum width 180 mm
- Rugged, IP 67 aluminum housing

Your benefits

- Fixed housings guarantee a high level of operational safety with simple commissioning
- A visible red light enables easy alignment and fast adjustment
- The 360-degree yellow output indicator makes continual process control possible
- A wide range of different fork sizes increases installation flexibility
- The aluminum housing meets all requirements for use in harsh industrial conditions

→ www.mysick.com/en/WFM

For more information, simply 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.

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Ax20 – At a glance

- Proximity contrast line sensor in a compact housing
- Application-specific sensor functions
- Detect position of edge of material
- Diameter, width and gap detection of different objects
- Very high reproducibility of 0.03 mm
- Large measurement range: 30 mm
- Visible white LED light spot to enable accurate alignment
- Simple setup, no teach-in necessary

Your benefits

- Cost-effective solution to reliably determine edge position and width measurement
- Easy-to-integrate, compact housing can be mounted over the web so less downtime is required for maintenance
- No reflector is required, reducing maintenance and providing greater product reliability. Reduces downtime. Only array sensors available in diffuse mode, making them ideal for environments where dirt and dust can interfere with other types of solutions that require a reflector.
- High reproducibility of 0.03 mm and industry-leading resolution enable greater accuracy and quality control
- Highly visible white LED light spot ensures fast and accurate alignment, reducing time-consuming fine adjustment
- No teach, program or menu activities make setup virtually hassle free

→ **www.mysick.com/en/Ax20**

For more information, simply 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.

MLG-2 Prime – At a glance

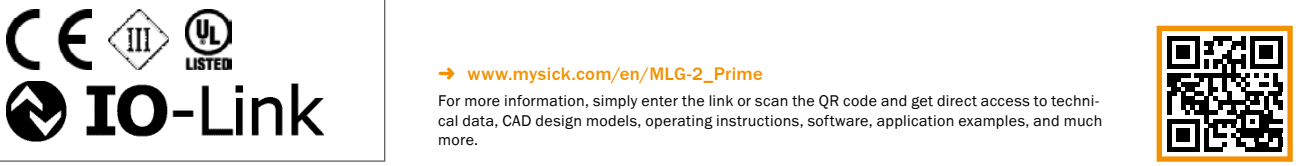
- High-resolution light grid: Available with beam separation of 5 mm, 10 mm, 25 mm, and 50 mm
- Available with three push-pull switching outputs or two analog outputs
- Display configuration with selected, pre-programmed measuring functions
- Monitoring height up to 3.2 m
- Operating range up to 8.5 m
- Optical synchronization of sender and receiver
- Cloning function via IO-Link
- Temperature range from –30 °C to +55 °C

Your benefits

- Easy concept: Time and cost savings due to simple configuration and quick commissioning
- Modular concept offers the perfect solution every time from a single source
- Two optical synchronization beams increase operational safety
- Simple maintenance without the need for specialist staff thanks to the cloning function with IO-Link
- Direct configuration on the device display for quick commissioning
- IO-Link as an interface for configuration, measured data transfer and diagnostics
- Minimal specialist knowledge required by the user thanks to the intuitive arrangement of the most essential functions
- Extremely high operational safety due to rugged aluminum housing

→ **www.mysick.com/en/MLG-2_Prime**

For more information, simply 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.



MLG-2 Pro – At a glance

- High-resolution light grid: With beam separation of 2.5 mm, 5 mm, 10 mm, 25 mm, and 50 mm
- "High-speed scan" function with triple scanning speed
- "Transparent mode" function for detecting transparent materials
- Can be switched to high-resolution evaluation with accuracy levels of up to 2 mm
- Data compression: Run length coding

Your benefits

- "High-speed scan" function offers short response times for safely detecting objects traveling at high speeds
- Modular concept offers the perfect solution every time from a single source
- "High measurement accuracy" function for detecting small objects reliably
- "Transparent mode" function for reliably detecting and measuring transparent objects
- Integrated bus interfaces and accompanying functional modules reduce the time and effort involved in the commissioning process
- SOPAS configuration software with menu-driven wizard saves time during the configuration process
- Simple maintenance without the need for specialist staff thanks to the cloning function with IO-Link
- High reliability due to ambient light immunity

IO-Link

→ www.mysick.com/en/MLG-2_Pro

For more information, simply 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.

ELG – At a glance

- Up to 128 beams
- Different beam resolutions 10 mm / 30 mm and 60 mm
- High functional reserve (gain) for ranges up to 12 m
- Potentiometer for sensitivity setting
- Ambient light up to 200,000 lx
- Tough, aluminum housing
- PNP/NPN, relay output and a test input
- Optical synchronization

Your benefits

- Insensitive to ambient light when exposed to direct sunlight, strobe lights, and highly reflective objects, eliminating false trips
- High functional reserve (excess gain) ensures operation even if it gets dirty, dusty, or misaligned, reducing maintenance costs
- Efficient and effective way to combine multiple sensors in one housing with one connector
- Simple commissioning thanks to a larger optical aperture angle and manual fine adjustment option
- Optical synchronization enables quick installation and cost-effective connection
- The sensitivity adjustment can be used to detect or ignore translucent materials to reduce production problems

→ www.mysick.com/en/ELG

For more information, simply 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.

PLG3 – At a glance

- 360° visible job LED
- Range up to 2 m
- Flexible detection heights from 120 mm to 420 mm
- Immune to reflected and ambient light
- Switchable job LED: permanently lit or flashing
- Optically confirms the right bin was picked

Your benefits

- The integrated job LED reduces the order picker's search time
- Low assembly costs thanks to the PLG's clever design
- High availability thanks to an integrated polarizing filter
- Tough aluminum housing ensures that sensor damage is kept to a minimum and helps reduce repair costs
- Reflective tape on the sensor avoids additional assembly and cabling costs

→ www.mysick.com/en/PLG3

For more information, simply 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.

PLG6 – At a glance

- 360° visible job LED
- Detection height 60 mm
- Optically confirms the right bin was picked
- The smallest pick-to-light light grid

Your benefits

- The integrated job LED reduces the order picker's search time
- Low assembly costs thanks to the PLG's clever design
- Tough aluminum housing ensures that sensor damage is kept to a minimum and helps reduce repair costs
- Reflective tape on the sensor avoids additional assembly and cabling costs

→ www.mysick.com/en/PLG6

For more information, simply 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.

HLG – At a glance

- 2 mm resolution
- Response time 3 ms
- Detection height 50 mm
- Cable synchronization
- PNP or NPN with both Q and Qnot outputs (NO/NC)
- 1 x test, 1 x teach-in input
- Connector M12, 8-pin

Your benefits

- Reliable object detection throughout the entire working range ensures consistent and reliable operation
- High availability thanks to its ability to detect very flat objects
- The HLG's short response time allows the use of higher conveyor speeds directly leading to higher throughput
- Cable synchronization provides more reliable use and higher machine uptime
- Highest measurement resolution provides smallest minimum detectable object size, for exact counting and true leading edge detection of conveyed objects, for more machine control and increased throughput

→ www.mysick.com/en/HLG

For more information, simply 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.

FLG – At a glance

- Dynamic or static operating mode, switchable
- Simple adjustment
- Adjustable sensitivity
- Adjustable pushbutton lock
- Rugged metal housing
- Adjustable pulse lengthening
- Switchable NO/NC

Your benefits

- Simple installation and alignment due to sender and receiver in one housing
- The adjustable pushbutton lock protects against unwanted changes to parameters and manipulation during operation
- The device's adjustable sensitivity, operating mode and pulse lengthening features enable individual parameter changes to fit the requirements of your
- Application
- Also available as an one side open version for simple integration into your application environment
- Large monitoring area, so only one device is required for monitoring small and large parts
- Using the sensitivity setting, it is possible to hide falling debris and only recognize objects that are relevant to detect

→ www.mysick.com/en/FLG

For more information, simply 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.

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SGS – At a glance

- Variable detection lengths from 600 mm up to 1,400 mm (in 160 mm increments)
- Simple teach-in setup via cable
- Optional parameter setting with teach-in button, no PC required
- Maximum range 10 m
- Response time 18 ms
- 25 mm or 45 mm MDO possible
- Highly immune to sunlight at 150,000 lx
- Small blind zone < 11 mm

Your benefits

- Small, slim and sleek design enables easy integration into applications
- Slim and flat models offer flexible mounting options and optimize shelf/bin space while reducing damage
- Customized preset configurations or set parameters via one-touch teach-in with no PC
- Optical synchronization eliminates the need to lay cables, saving time
- Optional: Capacitive teach-in button and LEDs make commissioning easier for complex solutions
- Auto-teach and auto-muting enable Plug & Play. And, an alignment aid and “Click & Go” provide faster installation.

→ www.mysick.com/en/SGS

For more information, simply 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.

S300 Mini Standard – At a glance

- Ultra-compact design
- 1 m, 2 m, or 3 m protective field range
- 270° scan angle
- 1 field set
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)
- Easy-to-configure fields and functions

Your benefits

- Simple integration due to ultracompact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scan angle allows complete application protection with only two scanners
- Safety engineering – with no loss of productivity
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Easy to manage, reducing costs and work time
- Reduction of downtime and brake wear thanks to triple field function
- Simple alignment and safe operation in vertical mode

→ www.mysick.com/en/S300_Mini_Standard

For more information, simply 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.

S300 Mini Remote – At a glance

- Can only be used in EFI system network, e.g., with a Flexi Soft safety controller or another safety laser scanner
- Ultra-compact design
- 2 m or 3 m protective field range
- 270° scan angle
- Up to 16 switchable field sets
- Selectable resolution for hand, leg or body detection
- Extended system solutions in combination with Flexi Soft safety controller

Your benefits

- Simple integration due to ultracompact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scan angle allows complete application protection with only two scanners
- Variety of field sets guarantees safety and productivity when protecting vehicles or moving machine parts
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.mysick.com/en/S300_Mini_Remote

For more information, simply 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.

S300 Advanced – At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scan angle
- 4 switchable field sets
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications

Your benefits

- Simple integration due to compact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scan angle allows complete application protection with only two scanners
- Safety engineering – with no loss of productivity
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.mysick.com/en/S300_Advanced

For more information, simply 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.

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S300 Expert – At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scan angle
- 16 switchable field sets
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Extended measured data output via RS-422 with landmark recognition

Your benefits

- Simple integration due to compact design
- Unbeatable cost-effectiveness – 270° scan angle allows complete application protection with only two scanners
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Variety of field sets ensures safety and productivity when protecting vehicles or moving machine parts
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- The correct protective field at any speed avoids unnecessary stops.
- Personnel protection and navigation support in one device

→ www.mysick.com/en/S300_Expert

For more information, simply 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.

S3000 Standard – At a glance

- 4 m, 5.5 m or 7 m protective field range
- 1 field set
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Safety technology – with no loss of productivity
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and reliable operation in vertical mode

→ www.mysick.com/en/S3000_Standard

For more information, simply 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.

S3000 Expert – At a glance

- 4 m, 5.5 m or 7 m protective field range
- 32 switchable field sets
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Extended measured data output via RS-422 with field marker detection
- Simultaneous monitoring of up to 4 protective fields

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Variety of field sets ensures safety and productivity when protecting vehicles or moving machine parts
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Quick recommissioning via configuration memory
- Having the correct protective field at any speed prevents unwanted stops
- Navigation support and personal protection in one device
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions

→ www.mysick.com/en/S3000_Expert

For more information, simply 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.

S3000 PROFINET IO Advanced – At a glance

- Direct integration in PROFINET IO safe bus system
- 4 m, 5.5 m or 7 m protective field range
- 4 switchable field sets
- Managed 2-Port switch for copper or optical fiber based conductors
- Configuration memory integrated in the system plug
- Remote diagnostics and configuration through safety controller
- Simultaneous monitoring of 2 protective fields

Your benefits

- Reliable, fault-tolerant communication with FPLC control system using state-of-the-art optical fiber technology
- Efficient, cost-effective protection – networking through direct integration into PROFINET IO networks
- Rapid diagnostics using remote access prevents downtime
- Standardized integration in FPLC controllers thanks to GSDML generic station description
- Large protective field range of 7 m enables a large variety of applications
- Quick recommissioning via configuration memory
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions

→ www.mysick.com/en/S3000_PROFINET_IO_Advanced

For more information, simply 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.

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deTec4 Core – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2.100 mm
- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of –30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic measurement of protective field range up to 10 m sensing range
- Simply safe: rugged and reliable thanks to enclosure rating IP67 and an ambient operating temperature down to –30 °C, enabling use in harsh ambient conditions
- Intelligently standardized: M12 connectivity, 5-pin, for cost reductions and a safe series connection with Flexi Loop
- Basic function with minimal configuration effort enables quick replacement when servicing is required

→ **www.mysick.com/en/deTec4_Core**

For more information, simply 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.

deTec4 Prime – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Resolution: 14 mm, 30 mm; protective field height: 300 mm to 2,100 mm
- Ambient operating temperature: –30 °C to +55 °C; enclosure rating: IP 65, IP 67
- Option of cascading up to three deTec4 Prime safety light curtains, beam coding
- Restart interlock, external device monitoring, status output
- Scanning range up to 21 m, integrated laser alignment aid
- Flexi-Loop-ready

Your benefits

- Ideal for use in harsh environments
- Easy installation without blind zones thanks to universal brackets and interchangeable M12 system plugs
- Rapid status feedback due to comprehensive diagnosis: Alignment display, laser alignment aid, LED displays along the protective field
- Saves time as configuration does not require a computer: DIP switch in the system plug, and automatic measurement of protective field range
- Beam coding to protect against mutual interference if machines are located side by side
- Less space in the control cabinet: fewer safety inputs as a result of cascading up to three deTec4 Prime safety light curtains

→ **www.mysick.com/en/deTec4_Prime**

For more information, simply 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.

C4000 Standard – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Configuration and diagnostics via PC
- Cascade up to three systems
- ADO (Application Diagnostic Output) signaling output for contamination indicator
- Accessory Clone Plug – for configuration memory

Your benefits

- Time-saving alignment and diagnostics by means of 7-segment display
- Beam coding protects the systems against mutual interference and thus offers a high level of availability
- Increased flexibility and reduced wiring complexity via cascading of up to a maximum of three systems
- Quick and easy commissioning by means of pre-configuration of the systems or clone plug
- Convenient configuration anddiagnostics ensure increased availability

→ www.mysick.com/en/C4000_Standard

For more information, simply 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.

C4000 Advanced – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Various options for blanking objects: fixed, floating, or teach-in
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Beam coding for correct system allocation
- Configuration and diagnostics via PC
- Cascade up to three systems

Your benefits

- Blanking functions enable reliable and safe object detection and thus increase productivity
- Time-saving alignment and diagnostics by means of 7-segment display
- Beam coding protects the systems against mutual interference and thus offers a high level of availability
- The clone plug can duplicate configurations quickly and easily, thus saving time and money
- Increased flexibility and reduced wiring complexity via cascading of up to a maximum of three systems
- Convenient configuration anddiagnostics ensure increased availability

→ www.mysick.com/en/C4000_Advanced

For more information, simply 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.

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C4000 Fusion – At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking for application-specific access protection
- Hand and area protection in dirty environments
- Multiple sampling
- Reduced resolution
- Fixed blanking
- Two virtual photoelectric sensors
- Integrated laser alignment

Your benefits

- Increased system productivity, since the safety light curtain is not shut down as a result of falling chips
- Dependable: skids are detected, interference objects such as cables are blanked
- Cost-effective due to the savings made on additional muting sensors or other protective measures
- Maximum safety for access protection with automated material transport – the system reliably differentiates between man and material
- Easy integration and quick commissioning save time and costs since secondary sensors are not required
- Safe: also offers protection in areas where there is no object, in contrast to conventional muting solutions
- The integrated laser alignment aid enables time-saving alignment of the sender and receiver

→ **www.mysick.com/en/C4000_Fusion**

For more information, simply 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.

C4000 Palletizer – At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking detects goods and pallets
- Direction recognition
- Multiple sampling
- Reduced resolution
- Muting alternative
- Beam coding
- Object gap suppression

Your benefits

- Cost-effective due to the savings made on additional muting sensors or other protective measures
- A compact sensor pair significantly reduces mounting effort – additional muting sensors are not required
- With the dynamic and self-teaching blanking function, the system can reliably differentiate between man and material – this provides maximum safety
- Mixed pallet operation allows mesh boxes, Euro pallets, and half pallets to pass, significantly increasing system throughput
- Saves storage space: pallets can be parked permanently in the protective field
- One system monitors multiple conveyor belts, reducing sensor costs
- Quick commissioning: Detects Euro pallets, mesh boxes etc. without any programming

→ **www.mysick.com/en/C4000_Palletizer**

For more information, simply 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.

miniTwin2 – At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Blind-zone-free device concept with compact cross section (15 mm x 32 mm)
- Twin stick: sender and receiver in a single housing – cascadable
- Tailored protective field heights in 60-mm increments: from 120 mm to 1,200 mm
- Typical sensing ranges of 0 m ... 8 m
- Intelligent, software-free configuration of external device monitoring and reset function
- M12 connecting device, 5-pin

Your benefits

- Cost-effective machine integration: the miniature design, cascading, and fine stepping of the protective field lengths enable flexible adaptation to the machine design
- Standardization saves time and resources by making logistics, order processing, and service more straightforward
- Exemplary handling: software-free, almost fully automatic commissioning and intuitive operation with sustainable optics
- LED-guided start-up together with colored LEDs for quick alignment and unequivocal protective field visualization ensure rapid diagnostics
- A continuous protective field for cascade applications eliminates blind zones, reduces the safety distance, and thereby increases productivity
- Application-specific brackets increase mounting flexibility, while reducing the mounting time

→ www.mysick.com/en/miniTwin2

For more information, simply 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.

miniTwin4 – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Compact cross section (15 mm x 32 mm) with no dead zones
- Cascadable twin stick design – sender and receiver in a single housing
- Customized protective field heights in 60-mm increments from 120 mm to 1,200 mm
- Typical scanning ranges 0 m ... 5 m
- Intelligent, software-free configuration of external device monitoring (EDM) and reset function (RES)
- M12, 5-pin device connection

Your benefits

- Cost-effective machine integration: the miniature design, cascading, and fine stepping of the protective field lengths enable flexible adaptation to the machine design
- Standardization saves time and resources by making logistics, order processing, and service more straightforward
- Exemplary handling: software-free, almost fully automatic commissioning and intuitive operation with sustainable optics
- LED-guided start-up together with colored LEDs for quick alignment and unequivocal protective field visualization ensure rapid diagnostics
- A continuous protective field for cascade applications eliminates blind zones, reduces the safety distance, and thereby increases productivity
- Application-specific brackets increase mounting flexibility, while reducing the mounting time

→ www.mysick.com/en/miniTwin4

For more information, simply 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.

V300 Work Station Extended – At a glance

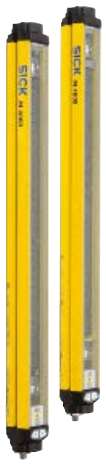
- Type 3 (IEC 61496), SIL2 (IEC 61508), PL d (EN ISO 13849)
- Protective field size from 0.4 m x 0.4 m to 1.5 m x 1.5 m
- Resolution 20 mm, 24 mm, and 30 mm
- One device only: integrated sender and receiver
- Intuitive one-button operation
- Automatic alignment
- Synchronization of 2 systems
- Restart/Reset, EDM integrated

Your benefits

- Individual definition of protective fields allows high flexibility for machine design
- Quick commissioning without additional software
- Intuitive, time-saving operation
- No variants: one-device concept for all aperture sizes
- Reduced storage, logistics and commissioning costs
- No expert knowledge for commissioning required
- High machine availability and simple maintenance

→ www.mysick.com/en/V300_Work_Station_Extended

For more information, simply 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.



M4000 Standard – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- Wide scanning range, up to 70 m
- External device monitoring (EDM), restart interlock and application diagnostic output
- Standardized M12 connectivity
- 7-segment display
- Configuration keys located directly on the device
- Optional integration features: laser alignment aid, LED or AS-i interface

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customized protection field adaption with deflection mirror reduces installation costs
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Mounting grooves on three housing sides ensure more flexibility during mounting and simplify machine integration
- Fast start-up times due to easy alignment, using the optional laser alignment aid and performing configuration directly on the device
- Reduced downtime through 360° visible LED and diagnostics displays

→ www.mysick.com/en/M4000_Standard

For more information, simply 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.

M4000 Advanced A/P – At a glance

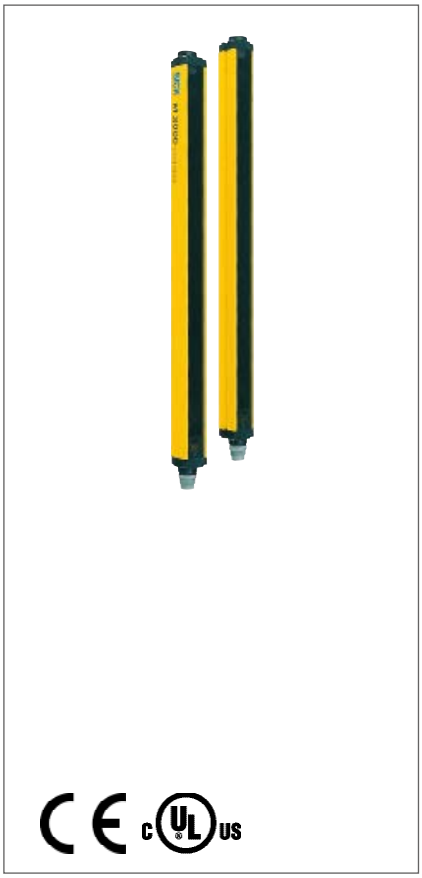
- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Sender/receiver in a single housing, scanning range up to 7.5 m
- External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface
- Muting in combination with the UE403 muting switching amplifier
- 7-segment display
- Configuration and diagnostics via PC
- Optional integrated: LED

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Mounting grooves on three housing sides ensure more mounting flexibility and simplify machine integration
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- For 2- and 4-sensor muting, the on-site connection of the muting signals significantly minimizes wiring costs and simplifies commissioning and maintenance
- Reduced downtime due to 360° visible LED, diagnostics displays and configuration memory in the UE403 muting switching amplifier

→ www.mysick.com/en/M4000_Advanced_A_P

For more information, simply 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.



M2000 Standard – At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Robust, industrial housing
- Wide scanning range, up to 70 m
- External device monitoring (EDM) and internal self-testing configurable without PC
- Standardized M12 connectivity available
- 7-segment display
- Beam coding for correct system allocation

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customized protection field adaption with deflection mirror reduces installation costs
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Reduced downtime due to diagnostics displays located directly on the device
- Fast start-up times due to easy alignment using the optional laser alignment aid (separate accessories)

→ www.mysick.com/en/M2000_Standard

For more information, simply 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.

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L41 – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft
- Small M18 sensors with ranges up to 10 m
- Compact M30 sensors with ranges up to 60 m
- Enclosure rating IP 67
- Temperature range from –40 °C ... +55 °C
- Radial optics (90° deflector mirror)

Your benefits

- Easy integration due to small, compact versions with maximum range
- Directly connect to a safey controller – reducing costs
- Flexible device integration makes it possible to set up individual access protections
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture

→ www.mysick.com/en/L41

For more information, simply 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.

L21 – At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction suitable testing device, e.g., Flexi Classic or Flexi Soft
- Small M18 sensors with ranges up to 10 m
- Compact M30 sensors with ranges up to 60 m
- Enclosure rating IP 67
- Temperature range from –40 °C ... 55 °C
- Metal and plastic version
- Radial optics (90° deflector mirror)
- Straightforward diagnostics and service

Your benefits

- Easy integration due to small, compact versions with maximum range
- Directly connect to a safety controller – reducing costs
- Flexible device integration makes it possible to set up individual access protections
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture

→ www.mysick.com/en/L21

For more information, simply 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.

RE1 – At a glance

- Response range up to 7 mm
- 2 or 3 contacts
- Up to performance level PL e (EN ISO 13849)
- Sensors with plug connector or connected cable
- Flexi Loop-compatible M12 plug connector (depending on variant)

Your benefits

- Long service life due to durable and low-maintenance design
- Space-saving mounting due to compact housing design
- Just one safety switch in conjunction with a suitable safety module makes it possible to solve applications up to PL e and Cat. 4 (EN ISO 13849)
- High level of machine availability due to high tolerances for door misalignment
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.mysick.com/en/RE1

For more information, simply 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.

RE2 – At a glance

- Response range of up to 9 mm
- 2 or 3 contacts
- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- Sensors with plug connector or connected cable
- LED status indicator (RE27)
- Flexi Loop-compatible M12 plug connector (depending on variant)

Your benefits

- Long service life due to durable and low-maintenance design
- Just one safety switch in conjunction with a suitable safety module makes it possible to solve applications up to PL e and Cat. 4 (EN ISO 13849)
- High level of machine availability due to high tolerances for door misalignment
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- Fast diagnostics via LED status indicator (RE27)
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.mysick.com/en/RE2

For more information, simply 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.

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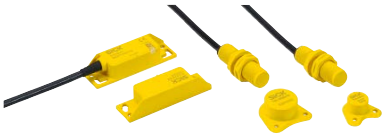

TR4 Direct – At a glance

- Response range of up to 25 mm
- Multicoded and unique coded sensors up to enclosure rating IP 69K
- Up to performance level PL e (EN ISO 13849)
- Two OSSD safety outputs
- Safe series connection of up to 30 sensors possible (depending on variant)
- LED status indicator
- Boundary area indication and magnetic retaining force (optional)
- Flexi Loop-compatible M12 plug connector (depending on variant)

Your benefits

- High level of prevention against tampering due to individually coded actuator (depending on type)
- High level of machine availability due to high tolerances for door misalignment and boundary area indication
- High level of machine reliability due to resistance to shocks and vibrations
- Cascadability of up to 30 sensors saves costs
- Long service life due to durable and low-maintenance design
- Fast diagnostics via LED status indicator
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.mysick.com/en/TR4_Direct

For more information, simply 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.

IN4000 Standard – At a glance

- One clocked safety output for direct connection of sensors to a safety controller
- IP67 or IP69K enclosure rating
- Response range up to 15 mm
- LED status indicator
- Up to performance level PL e (EN ISO 13849)
- Safe series connection of sensors possible

Your benefits

- Fast diagnostics via LED status indicator
- Cascadability of up to 9 sensors saves costs
- Long service life due to durable and low-maintenance design
- Just one safety switch in conjunction with a suitable safety module makes it possible to solve applications up to PL e and Cat. 4 (EN ISO 13849)
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards

→ www.mysick.com/en/IN4000_Standard

For more information, simply 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.

i10 Lock – At a glance

- Narrow plastic housing
- Rigid or mobile actuators
- Available with M20 X 1.5 cable entry glands or Flexi Loop-compatible M12 plug connector (depending on variant)
- Locked by spring force and magnetic force
- Lock and door monitoring
- IP 67 enclosure rating

Your benefits

- Small design simplifies installation and makes it easy to mount directly on the guard door frame
- Flexible electrical connectivity due to three cable entry glands
- Improved diagnostics due to additional signaling contacts
- Practical, simple adjustment due to various actuators that are suitable for any door
- Different switching elements offer the appropriate solution for electrical installation
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

➜ **www.mysick.com/en/i10_Lock**

For more information, simply 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.

i200 Lock – At a glance

- Compact plastic housing
- Stainless steel entry for actuator
- Either rigid, mobile or bolt actuators available
- 3 M20 x 1.5 cable entry glands
- Locked by spring force and magnetic force
- Lock and door monitoring
- LED locking indicator

Your benefits

- High reliability due to rugged metal actuator head, even when the guard has a mechanical offset
- Flexible electrical connectivity due to three cable entry glands
- Improved diagnostics due to additional contacts for door monitoring and LED lock monitoring
- Different switching elements offer the appropriate solution for electrical installation
- Bolt actuator offers personal protection in the hazardous area and prevents an undesirable restart of the machine

➜ **www.mysick.com/en/i200_Lock**

For more information, simply 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.

ES11 – At a glance

- Slim plastic housing with quick disconnect mounting clip
- Available as an emergency stop pushbutton or as a combined emergency stop/reset unit
- Emergency stop pushbutton with optional LED illumination
- Illuminated reset pushbutton
- Flexi Loop-compatible M12 plug connector

Your benefits

- Easy mounting with snap-in connection
- Quick commissioning and rapid replacement thanks to M12 plug connector
- User-friendly status display
- With Flexi Loop: safe series connection including diagnostics with easier wiring

→ www.mysick.com/en/ES11

For more information, simply 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.

ES21 – At a glance

- Available either as a surface-mounted version with housing or as a built-in version (Ø 22 mm)
- Built-in version for machine control panels with self-monitoring contacts between pushbutton and switching element
- Surface-mounted version for direct mounting on different machines and systems
- Rotational or key release
- Variants with LED ring lighting
- Optionally available with protective collar to prevent inadvertent actuation

Your benefits

- Increased safety due to self-monitoring contacts
- Reduction in accidental faults due to variants with a protective collar
- User-friendly status indicator identified by a colored mark or LED ring around the pushbutton simplifies diagnostics
- Successful down to the last detail: award-winning and appealing design

→ www.mysick.com/en/ES21

For more information, simply 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.

i110RP – At a glance

- Rope lengths up to 30 m, with rope break and rope pull function
- Metal housing with integrated rotary unlocking lever and tension display
- Available with M20 X 1.5 cable entry gland or Flexi Loop-compatible M12 plug connector (depending on variant)
- Slow-action switching elements with four contacts
- Complies to the standards EN ISO 13850 and IEC/EN 60947-5-5

Your benefits

- The emergency stop function can be triggered at any point along the rope
- Simple adjustment of the rope tension
- Rugged metal housing offers a high level of protection for the rope pull switch
- User-friendly systems available with many rope lengths
- Additional contacts provide quick and easy diagnostics
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.mysick.com/en/i110RP

For more information, simply 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.

E100 – At a glance

- Plastic housing with connected cable
- 3-stage functional structure (off-on-off)
- Slow-action switching elements with four contacts
- Variant with additional plus/minus buttons
- Complies to the standard IEC/EN 60947-5-8

Your benefits

- Personal protection with enabling switches: increased safety in setup mode when protective devices are deactivated
- Plus/minus buttons for additional control of direction of movement
- Different cable lengths available to meet customer application requirements

→ www.mysick.com/en/E100

For more information, simply 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.

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Flexi Loop – At a glance

- Ability to cascade 32 sensors with up to 30 m per segment in compliance with performance level e
- Compatible with sensors from all manufacturers
- Detailed diagnostic information
- Integrated standard inputs and outputs
- Power supply for sensors is included
- Unscreened standard cable with M12 connectivity
- IP 65 and IP 67 enclosure rating
- Intelligent accessories for field diagnostics and commissioning

Your benefits

- Cascading of safety switches and safety sensors with OSSD outputs minimizes the wiring effort and the number of inputs of the safety controller, which saves costs
- Easy retrofitting of existing machines
- Simple calculation of the performance level saves time since the Flexi Loop node monitors each sensor individually
- User-friendly due to quick and easy configuration
- Ability to be used over long distances increases application flexibility
- Detailed diagnostic information minimizes system downtime
- Seamless system integration and communication with other SICK safety controllers
- Detailed status information on Flexi Loop components, diagnostics accessories, and safety controller enable quick and easy field diagnostics

→ **www.mysick.com/en/Flexi_Loop**

For more information, simply 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.

Flexi Classic – At a glance

- Rotary DIP switch for easy adjustment
- Modularly expandable
- Direct wiring for all types of sensors
- Logic functions: AND, OR, Muting, Bypass, Reset, EDM
- Integration into all common fieldbuses
- Integration of the safe sensor cascade Flexi Loop
- Special muting modules are able to meet all the requirements of a demanding muting application

Your benefits

- Optimal scalability prevents extra inputs and outputs, reducing hardware
- Configuration via rotary DIP switch simplifies logic configuration
- The Flexi Classic Configurator tool offers easy logic configuration and wiring help
- Complete diagnostics of the system reduces downtime
- Its compact design makes it possible to save space in the control cabinet
- Significantly reduced wiring compared with conventional safety solutions. Wiring with Flexi Loop is even easier.

→ **www.mysick.com/en/Flexi_Classic**

For more information, simply 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.

Flexi Soft – At a glance

- Expansion modules, Motion Control modules, and gateways for all common fieldbuses
- Configuration data stored in the system plug
- Safe networking of up to 32 Flexi Soft stations
- Integration of sensor cascade
- Multi-language, license-free configuration software: exceptionally simple operation, plausibility check, simulation mode, wiring diagram, parts list, documentation, and data recorder

Your benefits

- Scalable for an efficient and cost-optimized safety application solution
- Cost savings: Flexi Soft offers a modular structure that is in line with your requirements, and thus offers an ideal level of granularity
- Intuitive configuration software featuring comprehensive functions enables continuous monitoring of the configuration
- Rapid verification of the safety application: The configuration software provides documentation and a wiring diagram
- Safety logic is easy to create thanks to ready-made, TÜV-certified function blocks
- The main module's diagnostics interfaces and the configuration storage facility in the system plug enable rapid commissioning, component replacement, and troubleshooting, resulting in minimum downtimes

→ www.mysick.com/en/Flexi_Soft

For more information, simply 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.

Flexi Soft Drive Monitor – At a glance

- 7 drive safety functions: SS1, SS2, SOS, SSM, SLS, SDI and SBC
- For all common encoder interfaces
- Programmable logic
- Monitoring of up to 10 speed levels and 4 brake ramps
- Possible to monitor multiple axes

Your benefits

- Integration into a Flexi Soft system with a software tool and a project file allows quick project planning and commissioning.
- Easy logic development using predefined, modifiable, freely configurable applications
- Maximum level of integration into higher-level controllers via all common fieldbus systems using gateways
- Documentation of the entire safety application simplifies machine acceptance and validation
- Monitoring movements instead of shutting down increases machine productivity
- Flexibility due to a wide range of drive safety functions

→ www.mysick.com/en/Flexi_Soft_Drive_Monitor

For more information, simply 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.

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Speed Monitor – At a glance

- Zero-speed and drive monitoring
- 4 safe semiconductor outputs
- PL e (EN ISO 13849), SIL3 (IEC 61508), SILCL3 (EN 62061)
- Maximum input frequency of 2 kHz
- Adjustable monitoring limit/monitoring frequency from 0.1 to 9.9 Hz or 0.5 to 99 Hz
- 2 application diagnostic outputs for failure and status display
- Diagnostic LEDs

Your benefits

- Easy commissioning – using only a screwdriver – reduces installation time
- Tool backup using the Flexi Soft Designer and the Flexi Classic Configurator
- Additional HTL encoder evaluation
- Cascading of units is possible

→ **www.mysick.com/en/Speed_Monitor**

For more information, simply 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.

Standstill Monitor – At a glance

- Standstill monitoring by means of residual voltage measurement
- 3 normally open and 1 normally closed positively guided safety contacts
- 2 application diagnostic outputs for semiconductors
- 1 application diagnostic output normally open
- PL e (EN ISO 13849), SIL3 (IEC 61508), SILCL 3 (EN 62061)
- Maximum motor supply voltage 690 V
- Adjustable voltage threshold and standstill period

Your benefits

- Quick mounting and installation thanks to the lack of additional wiring requirements
- Simple commissioning with a screwdriver
- Easy to retrofit as the subsequent mounting of sensors is not necessary

→ **www.mysick.com/en/Standstill_Monitor**

For more information, simply 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.

UE10-2FG – At a glance

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Fast response time of 10 ms
- Compact design
- 2 contact outputs
- Feedback path for external device monitoring (EDM)
- Screw-type terminals or plug-in screw-type terminals
- Coded plugs for all slots

Your benefits

- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Reduced wiring effort for fast and easy system commissioning

→ www.mysick.com/en/UE10-2FG

For more information, simply 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.

UE43-3MF – At a glance

- Evaluation unit for emergency stop pushbuttons and safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- Supports discrepancy monitoring
- 3 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)

Your benefits

- Complete monitoring and evaluation of sensors
- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ www.mysick.com/en/UE43-3MF

For more information, simply 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.

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UE45-3S1 – At a glance

- Ideal for the evaluation of emergency stop pushbuttons and safety switches
- Cross circuit detection and sequence monitoring for dual-channel actuation
- 2 N/O contacts for a direct integration into a machine environment
- 1 N/O contact for stop category 1 applications, time delayed up to 30 s
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Complete monitoring and evaluation of sensors
- Time delay provides optimal protection of brake applications
- Adjustable time delay at the front of the device (up to 30 s) makes it easy for the user to change settings
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ **www.mysick.com/en/UE45-3S1**

For more information, simply 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.

UE48-20S – At a glance

- Ideal for the evaluation of emergency stop pushbuttons, safety switches, safety light curtains, safety laser scanners and safety pressure sensitive mats
- Cross circuit detection and sequence monitoring for dual-channel actuation
- 2 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- One module for all common applications simplifies machine integration
- Complete monitoring and evaluation of sensors
- The sequence monitoring takes over the evaluation of non-contact safety switches
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ **www.mysick.com/en/UE48-20S**

For more information, simply 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.

SKS/SKM36 – At a glance

- Motor feedback systems for the standard performance range
- 128 sine/cosine periods per revolution
- Absolute position with a resolution of 4,096 increments per revolution and 4,096 revolutions with the multiturn system
- Programming of the position value and electronic type label
- HIPERFACE® interface
- Integrated version and stand-alone design
- Certified according to SIL2/PL d (only valid for SKS36S/SKM36S-H...)
- Conforms to RoHs

Your benefits

- The small dimension allows manufacturers of low-power and minimal-power motors to considerably reduce the size of their motors
- The stand-alone version is ideally suited as a master and path encoders
- The SKS/SKM36 motor feedback systems have strongly penetrated the drive technology market
- The consistent mechanical components in SEK/SEL37 allow for a high degree of flexibility with various encoder systems

➜ **www.mysick.com/en/SKS_SKM36**

For more information, simply 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.

SEK160 – At a glance

- HIPERFACE® motor feedback systems for large hollow shaft and torque motors
- 128 sine/cosine periods per revolution
- Absolute position with a resolution of 4,096 increments per revolution
- Programming of the position value and electronic type label
- HIPERFACE® interface
- Turn & play – for simple assembly without tools
- High resistance to shock and vibration due to holistic scanning
- Bearingless motor feedback system

Your benefits

- Direct seat on the drive shaft renders transmission elements such as toothed belt or coupling superfluous
- The simplified, compact design is wear-free, thus helping to reduce maintenance costs
- Measuring accuracy is no longer affected by magnetic fields thanks to the capacitive measuring principle
- Time-saving mounting, since no mounting tools are required: simply fit it on, turn it and start
- The minimal dimensions enable you to save space and weight, allowing for a more efficient use of space.

➜ **www.mysick.com/en/SEK160**

For more information, simply 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.

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EKS/EKM36 – At a glance

- Motor feedback system with HIPERFACE DSL® interface
- Compact, robust design with 36 mm diameter
- Up to 20 bit resolution per revolution and 4,096 revolutions measurable with the multiturn system
- Facility for connecting an external temperature sensor
- E²Prom with 8 kbyte of free memory space
- SIL2-certified (only valid for EKS/EKM36-2...)
- Service life histogram

Your benefits

- Saving all analog components on the controller part through exclusively digital data transmission
- Enormous cost saving thanks to the separate encoder cable no longer being necessary, data transmitted synchronously to the controller cycle
- Minimal cabling thanks to integration of the encoder communication into the motor cable
- Optimization of the controller circuit via automatic synchronization with the controller cycle

→ www.mysick.com/en/EKS_EKM36

For more information, simply 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.

AHS/AHM36 SSI – At a glance

- Compact 36 mm absolute encoder with max. 26 bits (singleturn: 14 bits, multiturn: 12 bits)
- Face mount flange, servo flange, blind hollow shaft
- Rotatable M12 connector or rotatable cable outlet
- SSI interface
- Programmable SSI version: Resolution, preset value, etc. can be programmed (depending on the type)
- Protection class up to IP 67 (depending on the type)
- Operating temperature: –40 °C to +100 °C (depending on the type)

Your benefits

- Simple, time-saving mechanical installation due to a rotatable connector or rotatable cable outlet, various mounting hole patterns, and many different shafts
- Simple and flexible electrical installation with various configuration options and adjustable SSI protocol structure (programmable SSI version)
- Easy setup for various applications allowing binary, non-binary, and non-integer resolutions with the round axis functionality (programmable SSI version)
- Reliable operation in harsh environments thanks to the rugged, reliable, fully magnetic sensor system
- Space-efficient and cost-effective design that is suitable for applications where space is tight
- High performance at a cost-efficient price

→ www.mysick.com/en/AHS_AHM36_SSI

For more information, simply 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.

AFS/AFM60 SSI – At a glance

- High-resolution absolute encoders with up to 30 bits (AFM60) or up to 18 bits (AFS60)
- Face mount flange, servo flange, blind or through hollow shaft
- SSI, SSI + Incremental or SSI + Sin/Cos interface
- Programmable resolution and offset (dependent on type)
- Connection system: M12, M23 connector or cable outlet
- Enclosure rating: IP 67 (housing), IP 65 (shaft)
- Operating temperature: –30 °C to +100 °C (depends on type)

Your benefits

- The programmability of the encoder results in reduced storage, high machine availability, and easy installation
- Precise positioning thanks to high resolutions
- Large selection of mechanical interfaces and electrical contacting options: suitable for all applications
- Suitable for applications with limited space (extremely short installation depth of 30 mm)
- Excellent concentricity properties due to long bearing distance
- One programming tool and software with automatic detection of the encoder for AFS60/AFM60/DFS60

→ www.mysick.com/en/AFS_AFM60_SSI

For more information, simply 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.

AFS/AFM60 EtherNet/IP – At a glance

- High-resolution, 30-bit absolute encoder (18 bit singleturn and 12 bit multiturn)
- Device Level Ring (DLR functionality)
- Extensive diagnostics: Min/max values for temperature, position, speed. Operating hours counter, display of flags, alarms and warnings using e.g. a fault header (32 bit)
- Status display via 5 duo LEDs
- Rotary axis function
- IP address via DHCP / DEC switches
- Ethernet/IP interface (extended profile 0x22)
- Function block

Your benefits

- DLR functionality for reliability with simple maintenance and a simple adaptation to existing network topologies
- Lower installation costs due to fewer external switches
- High level of productivity thanks to superior diagnostics with 32-bit fault header, fast communication and high level of redundancy
- Optimal machine availability thanks to early warning and fault detection system
- Simple setting for various applications thanks to rotary axis function
- Simple installation due to user-friendly on-board configuration assembly
- Industrial-application design for use in particularly cramped space conditions

→ www.mysick.com/en/AFS_AFM60_EtherNet_IP

For more information, simply 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.

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AFS/AFM60 PROFINET – At a glance

- High-resolution 30-bit absolute encoder (18-bit singleturn and 12-bit multiturn)
- Face mount flange, servo flange and blind hollow shaft
- Connection type: 3 x M12 axial plug
- PROFINET-IO-RT interface
- Less than 5 ms data update time
- Round axis functionality
- Alarms, warnings and diagnostics functions for speed, position, temperature, operating time, etc.
- Status display via 5 LEDs

Your benefits

- Increased productivity as a result of intelligent diagnostics functions and rapid data transfer
- Increase in network reliability due to early error detection
- Simple installation with various configuration options
- Flexible, easy setup and high resolutions for various applications with binary, integer and “decimal point” values based on round axis functionality
- Maximum system availability through embedded switch technology
- Compact and cost-efficient design

→ www.mysick.com/en/AFS_AFM60_PROFINET

For more information, simply 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.

AFS/AFM60 EtherCAT® – At a glance

- High-resolution 30-bit absolute encoder (18-bit singleturn and 12-bit multiturn)
- Face mount flange, servo flange and blind hollow shaft
- Connection type: 3 x M12 axial connector
- Data tranfer speed “ on the fly” in the range of µs
- EtherCAT® interface CoE (CiA DS-301) Device profile (CiA DS-406)
- Round axis functionality
- Alarms, warnings and diagnostics functions for speed, position, temperature, operating time, etc.
- Status display via 5 LEDs
- Up to 16 adjustable electronic cam switches

Your benefits

- Increased productivity as a result of intelligent diagnostics functions and rapid data transfer
- Increase in network reliability due to early error detection
- Simple installation with various configuration options
- Flexible, easy setup and high resolutions for various applications with binary, integer and “decimal point” values based on round axis functionality
- Maximum system availability through embedded switch technology
- Compact and cost-efficient design

→ www.mysick.com/en/AFS_AFM60_EtherCAT

For more information, simply 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.

A3M60 PROFIBUS – At a glance

- Robust absolute multiturn encoder with up to 31 bits (14-bit singleturn and 17-bit multiturn)
- Face mount flange, servo flange or blind hollow shaft
- Compact design (<70 mm)
- Integrated PROFIBUS interface with DP V0, V1, and V2 functionality (depending on type)
- Connectivity: 3 x M12 plug
- Protection class up to IP67
- Operating temperature: –30 to +80°C (depending on type)

Your benefits

- Maximum system availability, even under extreme ambient conditions
- Reduced maintenance costs due to wear-free magnetic singleturn and multiturn scanning
- Space-saving and cost-efficient design - the best solution, particularly when installation space is limited
- High productivity thanks to fast communication and position calculation
- Immune to contamination and condensation - ideal for tough ambient conditions
- High performance at a cost-efficient price

➜ **www.mysick.com/en/A3M60_PROFIBUS**

For more information, simply 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.

DBS36 Core – At a glance

- Connection with universal cable outlet
- Designs with blind hollow shaft or face mount flange with solid shaft
- Face mount flange with 6 mounting hole patterns and servo groove
- Hollow shaft with universal stator coupling
- Compact housing diameter of 37 mm with compact construction depth,
- Electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Number of lines: 10 to 2,500
- Temperature range: –20 °C ... +85 °C
- Enclosure rating: IP 65

Your benefits

- The universal cable outlet allows for use in tight spaces and for flexible cabling
- Face mount flange with various mounting hole patterns provides high flexibility when mounting in existing and new applications
- Face mount flange with servo groove makes mounting with servo clamps possible
- The universal stator coupling of the DBS36 Core allows for easy device replacement without adapting the application
- Shafts in metric and US design enable worldwide use
- The high flexibility of the mechanical interface of the encoder and the available accessories allow for the use of a single design in many applications
- Long-term and reliable operation thanks to a high enclosure rating, temperature resistance and bearing lifetime

➜ **www.mysick.com/en/DBS36_Core**

For more information, simply 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.

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DBS60 Core – At a glance

- Face mount flange, servo flange, blind and through hollow shaft
- Housing unit: Ø58 mm; compact mounting depth, large bearing distance
- Flange and stator couplings enable diverse mounting options
- Resolution: up to 5,000 pulses
- Cable outlet, radial M23 or M12 connector
- TTL/RS-422 and HTL/push-pull, universal TTL/HTL interface with 4.5 V DC to 30 V DC
- Hollow shafts: metal up to Ø5/8", insulated up to Ø15 mm; front and rear clamping

Your benefits

- Diverse installation options due to different flange and shaft versions
- Universal cable outlet and radial connector allow use in tight spaces and make flexible cable routing possible
- Compact housing dimensions save valuable space Optional hollow shaft clamp on the back facilitates mounting
- Protects the encoder against high shaft temperatures and currents through optional isolated shafts
- Flanges and stator couplings with different mounting holes allow diverse mounting options with one encoder version
- Rugged design with large bearing distance allows high shaft loads and a longer service life
- The TTL/HTL combination interface enables less product variety and reduces storage costs

→ www.mysick.com/en/DBS60_Core

For more information, simply 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.

DFS60 – At a glance

- Compact installation depth
- High resolution up to 16 bits
- Optionally programmable: Output voltage, zero pulse position, zero pulse width and number of pulses
- Connection: Radial or axial cable outlet, M23 or M12 connector, axial or radial
- Electrical interfaces: 5V & 24V TTL/RS-422, 24 V HTL/push pull
- Mechanical interfaces: face mount or servo flange, blind or through hollow shaft
- Remote zero set possible

Your benefits

- Reduced storage costs and downtime due to customer-specific programming
- Variety of different mechanical and electrical interfaces enable the encoder to be optimally adjusted to fit the installation situation
- Excellent concentricity even at high speeds
- High resolution of up to 16 bits ensures precise measurements
- Permanent and safe operation due to a high enclosure rating, temperature resistance and a long bearing lifetime
- Programmability via the PGT-08 programming software and the PGT-10-S display programming tool allow the encoder to be adapted flexibly and quickly according to customer needs
- Programmable zero pulse position simplifies installation

→ www.mysick.com/en/DFS60

For more information, simply 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.

DFV60 measuring wheel encoder – At a glance

- Rotatable spring arm for universal use
- 300 mm wheel circumference with o-ring made from NBR70
- Mounting arm and measurement wheels made from aluminum
- Programmable output voltage, zero pulse position, zero pulse width and number of pulses
- Connection: radial M12 connector outlet or radial/axial cable outlet
- Electrical interfaces: 5V & 24V TTL/ RS-422, 24 V HTL/push pull
- Remote zero setting possible

Your benefits

- Universal-use spring arm ensures fast and simple mounting
- The high level of spring tension enables use in harsh environmental conditions
- Reduced storage costs and downtime due to programmability
- Connector-in cable outlet in radial or axial direction enables customer-specific cable solutions
- Excellent concentricity even at high speeds
- Permanent and safe operation due to a high enclosure rating, temperature resistance and a long bearing lifetime
- Programmability via the PGT-08 programming software and the PGT-10-S display programming tool allow the encoder to be adapted flexibly and quickly according to customer needs
- Programmable zero pulse position simplifies installation

→ www.mysick.com/en/DFV60_measuring_wheel_encoder

For more information, simply 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.

TTK70 – At a glance

- Non-contact determination of absolute position
- Small, compact read head
- Standard SSI interface, combined with SinCos output
- Measuring lengths of up to 4 m
- High level of accuracy (± 10 µm)
- High resolution (1 µm)
- High travel speed of up to 10 m/s

Your benefits

- Easy to integrate into existing systems
- Small size, light weight and high measurement speed make it ideal for a variety of applications
- After installation, the system is immediately available and completely maintenance-free, which leads to time and cost savings
- Immune to environmental factors like contamination and condensation, ensuring increased reliability
- Real-time speed determination plus absolute positioning due to SinCos and SSI output

→ www.mysick.com/en/TTK70

For more information, simply 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.

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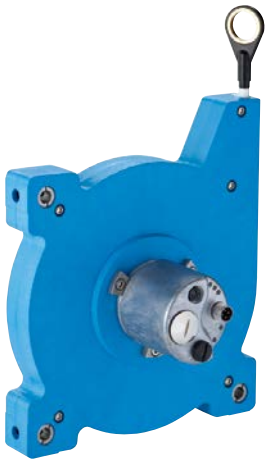

EcoLine – At a glance

- Measured lengths: 1.25 m ... 10 m
- Modular measuring system with a wide selection of interfaces/measuring lengths
- Very small, slim housing (55 mm ... 190 mm) with spring integrated in the measurement drum
- Light yet shock-proof and temperature-resistant plastic housing
- Analog interface with teach-in function at the encoder

Your benefits

- Space- and cost-saving design thanks to slimline mechanics
- Numerous possible combinations of interfaces and measuring lengths
- Advanced programming options lead to a reduction in the amount of variants, save costs, and reduce storage
- Analog interface speeds up commissioning and cost-effective interface card can be used

→ www.mysick.com/en/EcoLine

For more information, simply 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.

Lector62x – At a glance

- Decoding of all common 1D, 2D, and stacked codes, as well as optical character recognition (depending on type)
- Flexible interfaces: serial interface, USB, and Ethernet
- Function buttons, aiming laser, focus adjustment, auto-setup, and green feedback LED
- Industrial, compact housing with swivel connector
- MicroSD memory card for storing images and backup copies of parameters

Your benefits

- Intelligent decoding algorithms ensure optimal reading performance, good read rates, and high throughput
- 4D*pro* facilitates quick and easy integration into many industrial networks
- Intuitive setup with aiming laser, focus adjustment, and auto-setup reduces training and installation time and costs
- Simple mounting thanks to a compact housing and swivel connector, even when space is limited
- Quick and efficient analysis of reading performance and code quality
- Cloning systems create backup copies of parameters, ensuring short machine downtimes in the event of malfunctions
- Proven SICK LifeTime Services

→ www.mysick.com/en/Lector62x

For more information, simply 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.

CLV61x Dual Port – At a glance

- Straightforward PROFINET IO connection
- Minimal cabling complexity thanks to line and ring topologies
- PROFINET IO with integrated switch (Dual Port)
- Optimal reading field for intralogistics applications
- USB interface
- Adjustable scanning frequency of up to 1,000 scans per second
- Small, compact design

Your benefits

- The switch installed within the housing makes it easy to install and implement line and ring topologies
- The cable integrated within the scanner has a 4-pin M12 male connector and provides a single power supply via a flat ribbon cable
- The compact housing with swivel connector makes it easier to mount the sensor – even where space is tight
- Simple configuration process via additional USB interfaces
- The configuration process can either take place directly in the control environment or via the SOPAS ET user interface for rapid integration into your conveyor system

→ www.mysick.com/en/CLV61x_Dual_Port

For more information, simply 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.

CLV62x – At a glance

- CAN, Ethernet TCP/IP, PROFINET, and EtherNet/IP available on board, no additional gateway needed (depending on variant)
- SMART620 code reconstruction technology
- Flexible sorting, filtering, and logical functions
- Advanced, easy-to-use SOPAS configuration software
- High scanning frequency of up to 1,200 Hz
- Small housing
- Advanced remote diagnostics and network monitoring capabilities available over Ethernet
- IP 65 or IP 69K rated (depending on type)

Your benefits

- High read rate of damaged, dirty, and partially covered bar codes due to enhanced SMART620 code reconstruction
- Increased scanner intelligence enables sophisticated configuration of logical operations, reducing the control system programming effort. Data is then delivered in the desired format
- No supplementary Ethernet gateway required with Ethernet models – lowers costs
- The CLV62x scanner can be used as a multiplexer in any CAN scanner network from SICK – no supplementary multiplexer necessary
- Real-time code identification even at very high conveyor speeds
- Compact design and easy operation enable installation in situations with limited space

→ www.mysick.com/en/CLV62x

For more information, simply 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.

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CLV63x – At a glance

- Integrated function buttons, e. g., for starting auto setup or reading quality evaluation
- Integrated LED bar graph
- CAN, Ethernet TCP/IP, PROFINET, and EtherNet/IP on board. No additional Ethernet gateway required (for “Ethernet” connection type)
- Enhanced SMART code reconstruction technology
- Flexible sorting, filtering, and logical functions
- Advanced, easy-to-use SOPAS configuration software
- High scanning frequency of up to 1,200 Hz
- Advanced remote diagnostics and network monitoring capabilities available over Ethernet

Your benefits

- Intelligent auto setup and multi-function pushbuttons save time during commissioning
- Easily execute firmware updates using the microSD memory card: no need for a PC
- Enhanced SMART technology reads damaged and partially obscured codes, increasing read rates
- Increased scanner intelligence enables sophisticated configuration of logical operations, reducing the control system programming effort. Data is then delivered in the desired format
- Real-time code identification even at very high conveyor speeds
- Increased scanning reliability due to high-performance computing power and high scanning frequency

→ www.mysick.com/en/CLV63x

For more information, simply 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.

CLV65x – At a glance

- Huge depth of field due to auto focus
- Integrated function buttons, e. g., for starting auto setup or reading quality evaluation
- CAN, Ethernet TCP/IP, PROFINET, and EtherNet/IP on board. No additional Ethernet gateway required (for “Ethernet” connection type)
- Enhanced SMART code reconstruction technology
- Flexible sorting, filtering, and logical functions
- Integrated web server for diagnostic data and network monitoring
- Advanced, easy-to-use SOPAS configuration software
- Integrated LED bar graph

Your benefits

- Cost-effective, as auto focus means no variants or additional light barriers are required for focus adjustment
- Intelligent auto setup and multi-function pushbuttons save time during commissioning
- Easily execute firmware updates using the microSD memory card: no need for a PC
- Enhanced SMART technology reads damaged and partially obscured codes, increasing read rates
- Increased scanner intelligence enables sophisticated configuration of logical operations, reducing the control system programming effort. Data is then delivered in the desired format
- Integrated web server provides remote diagnostics and monitoring; no additional software is required

→ www.mysick.com/en/CLV65x

For more information, simply 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.

RFH6xx – At a glance

- 13.56 MHz RFID write/read device for ranges up to 240 mm
- Transponder communication according to ISO/IEC 15693 standard
- Compact, industrial design with integrated antenna
- Embedded protocols allow interfacing with standard industrial fieldbus technologies
- Powerful micro-processor executes internally configurable logic
- Flexible trigger control
- Supports parameter cloning via microSD memory card
- Built-in diagnostics

Your benefits

- Reliable identification ensures maximum throughput
- Adapts to changing needs, ensures investment over the long term
- Simple integration saves installation time
- A wide range of functionality ensures flexible solutions
- Maintenance-free
- Uses same connectivity and configuration software as SICK's bar code scanners and image-based code readers – compatible through standardized 4D*pro* platform

→ www.mysick.com/en/RFH6xx

For more information, simply 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.

RFU62x – At a glance

- Compact UHF RFID read/write device with integrated antenna for sensing ranges of up to 1 m
- Standard-compatible transponder interface (ISO/IEC 18000-6C / EPC C1G2)
- Supports industry-standard data interfaces and fieldbuses, as well as PoE
- MicroSD memory card for parameter cloning
- Extensive diagnostic and service functions

Your benefits

- Correct assignment and no overshoot thanks to the well-defined read/write range and intelligent filter functions
- Integrated process logic for remote solutions saves additional control and programming effort
- Can be easily integrated into industrial networks thanks to 4Dpro compatibility
- Firmware upgrades and industry-standard compliance ensure long-term reliability
- Minimum changeover times in case of failure thanks to cloning
- RFU62x can be mounted to metal directly – no loss of range
- Easy operation and installation with SOPAS ET user interface

→ www.mysick.com/en/RFU62x

For more information, simply 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.

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IDM14x – At a glance

- Reading distance up to 850 mm
- Identifies all popular linear bar codes
- Scan rate up to 500 scans/second
- Withstands 24 drops from 1.8 m height
- Highly visible scan line
- IP 41 enclosure rating

Your benefits

- Increased productivity thanks to high scan rate
- Reliable identification reduces the need to manually input data
- Lightweight, ergonomic design ensures user comfort
- Highly dependable thanks to rugged housing and non-moving parts
- Easy targeting with higly visible scan line for correct aiming

→ www.mysick.com/en/IDM14x

For more information, simply 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.

IDM26x – At a glance

- Identification of all current 1D, stacked, and 2D codes
- Reliable, secure, and fast code reading
- Rugged, stable housing with IP 65 enclosure rating
- Supports all common corded and cordless interfaces as well as industrial fieldbuses via SICK connectivity
- Good read feedback via LED, beeper, and vibration
- Decoding algorithms ideal for direct part marked codes (depending on type)

Your benefits

- Only one device for a wide range of different code types
- Fast and accurate identification without manual data entry
- Highly reliable thanks to industrial enclosure rating and rugged housing
- Simple and flexible integration in industrial fieldbus networks using SICK connectors
- Simple, intuitive operation thanks to multiple read confirmation
- Direct expert advice all over the world from the SICK sales and service network
- Low contrast or highly reflective DPM codes are identified reliably

→ www.mysick.com/en/IDM26x

For more information, simply 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.

CDF600 – At a glance

- Simple mounting saves time on installation, commissioning, and provides flexibility for different application environments
- All electrical connections are pluggable
- Integrated parameter storage
- 6 LEDs for status and error display
- Integrated CAN interface

Your benefits

- A two-screw system makes mounting quick and easy
- Electrical installation is quick since all connections are established with plugs
- Auto detect: Sensor and CDF600 detect each other automatically
- Quick sensor exchange due to integrated parameter memory
- Compact design and easy operation enable installation in situations with limited space
- Easy diagnosis via 6 LEDs

→ www.mysick.com/en/CDF600

For more information, simply 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.

CDF600-2 – At a glance

- Flexible mounting on all standard profiles
- Flexible fieldbus connection for PROFIBUS DP and PROFINET (depending on type)
- Code switch for setting node address and operating mode (depending on type)
- LEDs for status and diagnostics
- Plug-in electrical connections
- Integrated configuration memory for connected sensors
- Compact and flexible

Your benefits

- Sophisticated two-screw system for fast, flexible mounting on all standard profiles
- Choice of different versions for connecting to industrial field buses
- Code switch that is mounted so it is protected against accidental adjustment and is easily accessible from the outside for easy setup of bus address and operating mode without complex software
- Clear status LEDs that are identifiable on two sides from any viewing direction for simple and effective diagnosis (depending on type)
- Fast installation and easy replacement in the system thanks to plug-in connections
- Integrated cloning module for all configurations of the connected sensor enables very fast replacement time in case of faults
- Compact and rugged design with choice of horizontal or vertical cable direction

→ www.mysick.com/en/CDF600-2

For more information, simply 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.

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Inspector – At a glance

- High-speed positioning, inspection and measurement
- Powerful “object locator” tool, independent of position, rotation and scale
- Unique, interchangeable housing design supporting dome and various optical accessories
- Simple step-by-step configuration in PC including emulator
- Easy-to-use operator interfaces
- Flexible machine and HMI design interfaces

Your benefits

- The multi-functional vision toolbox offers smart camera-level performance but with sensor ease-of-use
- Unique, interchangeable housing design provides the easiest way to improve image quality
- The simple configuration in SOPAS, including emulator for offline configuration and testing, will reduce downtimes in production to a minimum
- The easy-to-use operator interfaces are optimized to make it easier for the operator to oversee daily work more efficiently
- Ethernet communication and web API gives excellent connectivity and freedom to customize user’s HMI

→ www.mysick.com/en/Inspector

For more information, simply 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.

CVS – At a glance

- Color control and sorting over large areas and long scanning distances
- Inspecting one color, minimum and maximum fill
- Two-color matching
- Sorting of up to 15 colors
- Reference capacity of 15 color configurations
- Parameter up- and download to PC
- Compact IP-67 rated housing with integrated display for configuration and monitoring
- Different variants for different fields of view and sensing distances

Your benefits

- The support for large fields of view ensures reliable color sorting even if the part varies in position
- The minimum and maximum fill tolerance guarantees that there is always the correct color fill on your part before it leaves your line
- Two-color matching delivers reliable results for multi- colored objects
- Sorting of up to 15 color configurations gives you the most economic solution for batch production
- You can store and restore the configuration using your PC, saving you time with each machine installation

→ www.mysick.com/en/CVS

For more information, simply 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.

IVC-2D – At a glance

- Suitable for advanced inspections and measurements
- Flexible working distance and field of view
- Stand-alone operation, no PC needed
- IP 65 rating
- Easy-to-use interface with more than 110 software tools
- Simple interfacing with PLCs, robots and control systems that support EtherNet/IP or OPC
- Available in three different resolutions from fast VGA (0.3 MP) to high-resolution UXGA (1.9 MP)

Your benefits

- The IVC-2D's flexibility ensures optimal setup for individual application needs
- The 1.9 MP resolution enables inspection of fine details with high repeatability
- IP 65 rating makes the system suitable for industrial environments
- Easy-to-use interface ensures fast application development, saving time and reducing costs
- The camera's OPC server and EtherNet/IP interface enable easy integration with PLCs, robots and control systems
- Stand-alone operation reduces installation complexity compared to PC-based vision
- A wide range of camera-controlled lighting makes it easy to create a complete solution

→ www.mysick.com/en/IVC-2D

For more information, simply 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.

IVC-3D – At a glance

- Advanced 3D image processing made easy
- Independent of object contrast and color
- Easy-to-use graphical user interface for fast application development
- Simple connection of PLCs, robots, and other control systems, e.g., those using Ethernet/IP or OPC
- Scans up to 5,000 profiles per second
- Industrial, rugged metal housing

Your benefits

- The IVC-3D makes advanced 3D shape inspections easy, enabling cost-efficient solutions
- Contrast-independent measurement provides greater reliability even at varying object color and when the object color is the same as the background
- Factory calibrated – instantly providing true metric dimensions at production speed
- The camera's OPC server and EtherNet/IP interface enables simple communication with PLCs, robots and control systems, making integration easy
- Stand-alone operation – no PC is needed after configuration

→ www.mysick.com/en/IVC-3D

For more information, simply 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.

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TriSpector1000 – At a glance

- 3D inspection of moving parts
- Intuitive user interface
- Embedded image analysis
- Easy replacement concept
- High resolution 3D image with intensity overlay
- Factory calibrated 3D data, true mm values in all dimensions
- Rugged IP67 metal housing with plastic windows

Your benefits

- Reliable 3D inspection even when part color, position and height varies
- Easy commissioning and operation thanks to an intuitive user interface
- Embedded image analysis for fast configuration
- Quick device replacement due to guaranteed field of view and re-use of saved settings
- Intensity data enhances 3D navigation, allows checking presence of label, printed pattern or object rotation.
- Factory calibrated data simplifies setup and reduces time and effort
- Withstands harsh or food processing environments

→ **www.mysick.com/en/TriSpector1000**

For more information, simply 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.

Ranger – At a glance

- Fast 3D measurement with high speed and quality
- MultiScan function for simultaneously measuring the 3D shape, contrast, color and scatter
- Sensor resolutions of up to 1,536 pixels in 3D and 3,072 pixels in gray-scale and color
- High flexibility in configuration, operating distance, and field of view
- In-machine 3D calibration
- Gigabit Ethernet and CameraLink interfaces

Your benefits

- High-speed and high-resolution measurement allow you to increase production throughput and still ensure product quality
- Get accurate size and position measurements in 3D regardless of an object's height or color, ensuring reliable solutions
- Highly flexible field of view in combination with in-machine 3D calibration, provides dimensions in millimeters
- Unique MultiScan technology lets one camera do the job of many, reducing costs for integration, maintenance, and accessories, creating cost-efficient solutions
- The high level of flexibility and versatility of Ranger makes it an ideal choice for the most challenging tasks

→ **www.mysick.com/en/Ranger**

For more information, simply 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.

Ruler – At a glance

- Factory-calibrated 3D measurements in millimeters at full production speed
- High-accuracy 3D for measurement for widths from 100 mm up to 1.5 m
- Capture 3D, grayscale, and scatter simultaneously
- Easy to integrate without the need for external lights
- Rugged housing for harsh environments which temperatures as low as –30 °C
- Remote operation over long cable distances with Gigabit Ethernet

Your benefits

- High-speed measurement allows you to increase production throughput and still ensure product quality
- Accurate size and position measurement in 3D, regardless of an object's height or color, creating reliable solutions
- Simultaneously capturing 3D, scatter, and grayscale, allows for more reliable quality control and inspection
- Factory calibrated 3D with built-in lighting instantly provides results in millimeters, which makes integration easy
- Designed for tough industrial environments to ensure a long and problem-free life time

→ www.mysick.com/en/Ruler

For more information, simply 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.

OD Mini – At a glance

- Compact, robust housing
- Integrated amplifier unit, no additional unit necessary
- Display and LEDs on device for visualization of current status
- Wide range of interfaces available
- Simple teach-in using display or external teaching input
- CMOS receiver unit for precise, fast measurement in the µm range
- Different measuring ranges enabling measurement from 10 mm up to 250 mm

Your benefits

- Cost-saving commissioning through simple operating concept and display
- Small installation size and low weight also allow use in highly dynamic applications
- Reduction in cabling, as no additional amplifier unit is necessary
- High machine throughput thanks to reliable measurement, regardless of brightness and color of surface
- The wide range of available interfaces enables simple integration into industrial networks
- Optimum performance even at high production speeds

→ www.mysick.com/en/OD_Mini

For more information, simply 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.

8019952/2016-05-13

OD Value – At a glance

- Several measurement ranges from 26 mm ... 34 mm to 100 mm ... 500 mm
- CMOS receiving element for measurement independent of surface
- Easy, LED-based user and teach-in concept
- Wide range of models and a wide range of standard interfaces
- Laser technology for precise measurement of very small objects
- Compact stand-alone device
- Excellent price-performance ratio

Your benefits

- Reliable measurement independent of surface, minimizes machine downtime
- Extremely simple sensor teach-in makes setup faster and more costeffective
- Minimal space requirements and less wiring due to its compact, standalone design
- Many measurement ranges and output interfaces make it ideal for cost-effective integration into any production environment
- Low investment costs make consistent, regular quality inspection possible
- Non-contact measurement technology from a safe distance allows the inspection to be carried out directly during the production process
- Wear and damage-free inspection, due to non-contact measurement

→ www.mysick.com/en/OD_Value

For more information, simply 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.

DT20 Hi – At a glance

- Four measuring ranges from 50 mm up to 1,000 mm
- Very high linearity of up to ± 0.5 mm
- CMOS receiving element enables accurate distance measurement independent of color or shininess
- Red laser
- Scaleable analog and switching output
- Display with easy to use setup menu
- Advanced settings (e.g., averaging function, external laser-off, etc.)

Your benefits

- Reliable, precise measurement, independent of surface, increases production quality
- Reliable and consistent measurements, regardless of color, reduce changeover time
- Advanced settings provide increased application flexibility to easily solve customer-specific applications
- Fast commissioning via button, remote or numerical teach
- Easy, precise alignment and verification based on red laser light and LC display, decreasing commissioning time
- Tough metal housing permits operation in harsh environments

→ www.mysick.com/en/DT20_Hi

For more information, simply 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.

Profiler™ – At a glance

- Measure complex profiles with just one laser line
- Analyze up to four areas at the same time
- More than 10 integrated measurement functions, e.g., height, width, and inclination
- Sensor head and evaluation unit in one device
- Commissioning via software or integrated display with operating elements
- High-quality CMOS receiver unit

Your benefits

- Measuring a 2D profile with just one sensor saves on hardware and installation costs
- Cost-effective solution for 2D profile measurement
- Real-time visualization of the measurement results via the integrated LC display
- Intuitive and quick commissioning via the software or display reduces installation time
- Thanks to the stand-alone concept of the Profiler™ 2, there is no need for cabling or to mount an additional evaluation unit
- Reliable measuring regardless of color, material, or shape
- More than 10 integrated measurement functions allow profiles to be measured and analyzed quickly

→ www.mysick.com/en/Profiler

For more information, simply 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.

Dx35 – 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

→ www.mysick.com/en/Dx35

For more information, simply 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.

Dx50-2 – At a glance

- Measuring range up to 10 m on black targets and up to 30 m on white targets within a compact housing
- Output rate up to 3,000/s
- Repeatability: 0.5 mm to 5 mm
- Reliable, patented HDDM™ time-of-flight technology
- Withstands extreme temperatures from –40 °C to +65 °C thanks to rugged metal housing
- Shape comparison integrated in sensor
- IO-Link, analog and switching output
- Display with intuitive menu structure and easy teach option or WiFi for configuration with the SOPASair app
- Enclosure rating IP 65 and IP 67

Your benefits

- A wide measuring range and a compact housing increase the number of application possibilities
- Very high throughput thanks to a high measuring frequency
- Precise and reliable measurement regardless of object color improves uptime and process quality
- Withstands harsh ambient conditions thanks to ruggedness, a wide temperature range, and ambient light immunity
- Integrated shape comparison for straightforward checking and sorting of objects
- Fast and easy commissioning via intuitive display menu structure, easy-teach option, WiFi, multifunctional input, or IO-Link saves time
- Full process control with IO-Link from commissioning to maintenance
- Three switching modes provide a simple solution for demanding applications

→ www.mysick.com/en/Dx50-2

For more information, simply 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.

OLM100 – At a glance

- Highly accurate non-contact bar code positioning system
- Movement speed of up to 4 m/s can be achieved
- Wear and maintenance-free thanks to camera technology
- Adjustable resolution as low as 0.1 mm
- Precise positioning up to 10,000 m
- Compact, extremely rugged magnesium housing
- Wide range of interfaces: SSI, RS-422, RS-485, and CANopen
- Large temperature range from –30°C to +60°C

Your benefits

- High travel speed linked to precise positioning increases system efficiency and improves throughput
- Camera-based system with no moving parts increases the sensor's service life, thus reducing lifecycle costs considerably
- Minimal housing dimensions combined with the latest industrial interfaces ensure integration into almost any system design, even where space is limited
- Serial interfaces (RS-422, RS-485, SSI, and CANopen) offer highest flexibility and easiest system integration, hence saving costs for interface converters and protocol adaption
- The large temperature range from –30°C to +60°C offers reliable use in many applications

→ www.mysick.com/en/OLM100

For more information, simply 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.

UC4 – At a glance

- Reliable measurement, regardless of material color, transparency, gloss, and ambient light
- Ultrasonic technology in a miniature housing
- Detection, measurement, and positioning with ultrasonic technology
- Immune to dirt, dust, humidity, and fog
- Variants with PNP/NPN switching output or analog output
- Precise background suppression
- Teach-in button

Your benefits

- Mini housing allows for quick and easy integration, even in the most confined spaces
- The sensor's immunity to optically difficult environment enables it to take accurate measurements even in dirty, dusty, humid, and foggy conditions
- Integrated temperature compensation ensures high measurement accuracy at all times for optimum process quality
- Various operating modes provide optimal application flexibility and solutions, which increase reliability and productivity
- Full mechanical compatibility to photoelectric sensors allows for the use of the suitable technology for every application without machine modification
- Teach-in button for fast and easy commissioning

→ www.mysick.com/en/UC4

For more information, simply 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.

UM18 – At a glance

- Reliable measurement independent of material color, transparency, gloss and ambient light
- Four ranges up to 1,300 mm
- Short metal or plastic M18 housing with a length of 41 mm
- Straight or right-angle version
- High immunity to dirt, dust, humidity and fog
- PNP/NPN switching output, analog output or push-pull switching output with IO-Link
- Synchronization and multiplex modes are available

Your benefits

- Four sensing ranges up to 1,300 mm provide a range of flexible mounting options
- Easy machine integration due to short M18 housing available in straight or right-angle versions
- Intelligent measurement filters and versions with temperature compensation guarantee reliable measurement results for maximum process reliability
- Solid, one-piece housing secures highest machine availability
- Synchronization or multiplex mode enables simultaneous operation of up to 10 sensors, improving application flexibility and process reliability
- Easy system integration due to a wide range of available output signals
- Unintentional adjustments to sensor settings are eliminated since teach-in process is done with an external wire
- Variety of application solutions due to insensitivity and reliability of ultrasound technology

→ www.mysick.com/en/UM18

For more information, simply 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.

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UM30 – At a glance

- Integrated time-of-flight technology detects objects such as glass, liquids and transparent foils, independent of color
- Range up to 8,000 mm
- Display enables fast and flexible sensor adjustment
- Immune to dust, dirt and fog
- Available with combined analog and digital outputs
- Synchronization and multiplexing
- Adjustable sensitivity
- Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)

Your benefits

- Easy machine integration due to compact size
- Various setup options ensure flexible adaptation to applications
- Multiplex mode eliminates cross-talk interference for consistent and reliable detection and high measurement reliability
- Synchronization mode allows multiple sensors to work as one large sensor, providing a low-cost solution for area detection
- Display enables setup prior to installation, reducing on-site installation time
- Integrated temperature compensation and time-of-flight technology ensure high measurement accuracy
- ObSB-mode enables detection of any object between the sensor and a taught background

→ www.mysick.com/en/UM30

For more information, simply 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.

TiM3xx – At a glance

- Configure without a PC using “touch and teach”
- Small, lightweight and economical measurement sensor
- Field evaluation using intelligent algorithms
- Set parameter interface is accessible while device is mounted
- One of the smallest laser scanners on the market
- Proven industrial design
- Low power consumption (typ. 3 W)

Your benefits

- Low cost of ownership
- Easily hidden from view due to small dimensions
- Low installation costs and exchange time due to M12 x 12 or D-Sub connector
- Long operation for battery-driven vehicles
- Preconfigured fields ensure short installation time
- Reduced hardware costs since only one sensor can be used for large anti-collision fields (up to 235 qm)
- No wiring necessary between sender and receiver

→ www.mysick.com/en/TiM3xx

For more information, simply 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.

TiM5xx – At a glance

- Monitoring area of up to 235 m² with just one sensor
- High ambient light tolerance due to HDDM technology
- Rugged housing with up to an IP 67 enclosure rating
- Low power consumption of just 3 W
- Compact design with a housing height of just 86 mm maximum
- Integrated Ethernet interface
- Long sensing range of up to max. 10 m
- Industry-standard design and M12 male connector

Your benefits

- Reliable object detection independent of the surface and ambient light
- Rugged IP 67 housing withstands both indoor and outdoor conditions
- Easy integration into compact automated guided vehicles (AGV) due to small size
- Ethernet interface enables straightforward implementation and remote maintenance
- Can determine additional information such as object size, shape, etc. due to measured data output
- Low implementation costs due to scalability: Sensor telegram is identical to sensor telegrams for laser scanners in the SICK portfolio

→ www.mysick.com/en/TiM5xx

For more information, simply 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.

LMS1xx – At a glance

- Efficient and cost-effective 2D laser scanner for measuring ranges of up to 50 m
- Outstanding performance whatever the weather, thanks to multi-echo technology and intelligent algorithms
- Rugged, compact housing with enclosure rating up to IP 67, integrated heating and a temperature range from –40°C and +60°C
- Variants for security applications with relay outputs and VdS certification available
- Measurement data output via Ethernet interface in real time
- Number of switching outputs can be expanded via external CAN modules

Your benefits

- Straightforward integration and mounting due to compact design
- Low purchase and operating costs: One device can monitor areas of over 5,500 m² in size
- Product family with many variants, which also provide solutions for demanding and specialized applications
- Extended filter options significantly reduce measurement errors caused by conditions such as fog, rain or snow
- Optional CAN I/O module increases number of switching outputs for greater application flexibility
- Ethernet interface enables straightforward implementation and remote maintenance

→ www.mysick.com/en/LMS1xx

For more information, simply 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.

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LFP Cubic – At a glance

- Level sensor for liquids
- No mechanical moving parts
- Interchangeable and retractable probe from 200 mm to 2,000 mm and cable probe up to 4,000 mm
- Resistant to deposit formation
- Process temperature up to 100 °C; process pressure up to 10 bar
- 3-in-1: combined display, analog output (according to NAMUR NE 43), and binary output
- High enclosure rating of IP67, rotatable housing and remote amplifier

Your benefits

- Rugged design increases service life
- High flexibility due to cutable and exchangable monoprobe or rope probe
- 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 without calibration
- Titanium process connection brings high chemical resistance
- Compact and rotatable housing or remote amplifier ensures flexible installation
- No crosstalk when several sensors are mounted next to each other
- Advanced technology enables adjustment-free measurement

→ www.mysick.com/en/LFP_Cubic

For more information, simply 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.

UP56 – At a glance

- Non-contact level measurement up to 3.4 m operating distance / 8.0 m scanning distance limit
- Pressure resistant up to 6 bar
- Converter protected by PVDF cover for increased resistance
- 3-in-1: Continuous measurement, switching signal, and display
- Analog output can be switched 4 mA ... 20 mA and 0 V ... 10 V
- Process connector thread G 1 and G 2
- IP67 enclosure rating
- Simple operation, also via Connect+

Your benefits

- Non-contact measurement in pressurized containers – no wear over time
- Easy to set parameters, saving time
- Flexible measurement system for different container sizes – standardization and stock reduction
- One product for point level and continuous applications, reduces the number of sensors required

→ www.mysick.com/en/UP56

For more information, simply 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.

PBS – 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

IO-Link

→ www.mysick.com/en/PBS

For more information, simply 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.

PAC50 – At a glance

- Electronic pressure switch for pneumatic applications
- Large display shows system pressure, output states and set switching points
- Three large function keys and intuitive menu navigation
- Measuring range for gauge pressure (vacuum and overpressure)
- Individually programmable switching outputs and optional analog output
- Installation on a mounting rail, wall or in a control panel

Your benefits

- Bi-color display (green/red) clearly shows the output state to recognize whether the pressure is within the target range
- Quick overview of important system parameters due to advanced display functions
- Intuitive operation allows simple and quick commissioning
- Pressure connections on the back and bottom, various mounting options and configurable output signals provide installation flexibility
- High reliability due to the rugged design (IP 65/IP 67 enclosure rating) and proven technology
- Low storage costs since a few product variants are able to meet a broad range of application requirements
- Reduced downtime when changing the format or replacing the sensor thanks to IO-Link

IO-Link

→ www.mysick.com/en/PAC50

For more information, simply 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.

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PFT – At a glance

- Measuring ranges from 0 mbar ... 100 mbar up to 0 bar ... 600 bar
- Relative, absolute, and ± measuring ranges
- Also available with flush-mounted membrane
- Process temperature up to 150 °C (optional)
- Large number of commonly used process connections
- High shock and vibration resistance
- Accuracy 0.5% or 0.25%
- Output signal 4 mA ... 20 mA, 0 V ... 5 V or 0 V ... 10 V
- Zero and span adjustable
- Round connector M12 x 1, angled plug (DIN 175301-803 A) or cable connection

Your benefits

- Reliable and highly accurate measurement technology
- Wide application range
- No mechanical wear, fatigue-proof, maintenance-free as no moving parts
- Simple and cost-saving installation
- Optimal solution for individual requirements due to very versatile configurability

→ **www.mysick.com/en/PFT**

For more information, simply 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.

PLB – At a glance

- Localization of parts in bins and boxes independent of part orientation
- 3D camera with superior image quality
- Reliable part localization, even under varying ambient conditions
- Part localization based on matching between CAD model of part and 3D image
- Verification that free space is available for the gripper in reported pick positions
- Complete solution comprising hardware and software preconfigured and tailored for the precise localization of parts in bins
- Integrated tools for coordinate alignment and communication with the robot

Your benefits

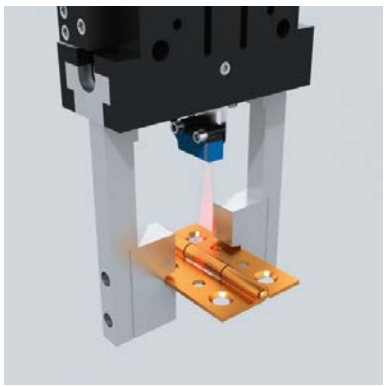
- The comprehensive, easy-to-use solution makes it possible to configure new applications quickly and efficiently
- PLB noticeably reduces the effort of analyzing and designing solutions for new applications
- PLB enables reliable robot-automated part-picking without the need for precise part placement in the bin or on the pallet, thereby maximizing part handling uptime
- Features tailored for the target applications ensure high part localization accuracy and short part picking cycle time
- With PLB, no machine vision expertise is needed in order to use and maintain the system
- CAD-based localization makes it easy to introduce new parts in production

→ **www.mysick.com/en/PLB**

For more information, simply 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.

WE SIMPLY DETECT ANY OBJECT

Whether they're dealing with transparent, black, small, uneven, shiny, or flat objects, SICK sensors can detect anything – making them an indispensable tool for ensuring smooth material flows in assembly systems. Photoelectric proximity sensors and photoelectric sensors use various transmission sources to optimize optical performance and ensure universal object detection. The line-shaped light spot of a sensor detects irregularly shaped and perforated objects in exactly the same way as shiny and uneven surfaces. Sensors with a precise laser light point enable maximum-accuracy switching for small objects, while those featuring a light band support the detection of all objects whose position or height varies, regardless of their location.

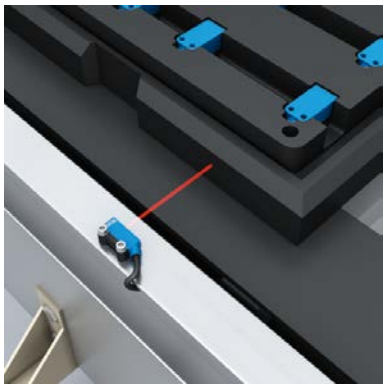


Detecting shiny objects

For sensors, detecting shiny, uneven, and – in some cases – oil-coated surfaces presents a particular challenge in handling and assembly applications. In the same way as cases where small objects are being detected, a precise light spot is required to achieve reliable detection results. Photoelectric sensors with a line-shaped light spot are particularly well suited to detecting objects of this kind.

Detecting perforated objects

The properties of the optical design for the photoelectric proximity sensor is critical for reliably detecting perforated objects such as mesh boxes or electrical sheets. A line-shaped light spot suppresses gaps in the object being detected to prevent multiple switching of the photoelectric proximity sensor. In conventional photoelectric proximity sensors, the light spots are often too small. In many cases they are unable to fully cover the gaps in the perforated objects, meaning that the photoelectric proximity sensor detects the same object several times.



Detecting black objects

To detect the deepest of blacks, the primary requirement is a significant amount of light. With its latest generation of PinPoint LEDs, SICK is solving this problem. Even light emissions of less than one percent are reliably detected. As a result, this equipment's capabilities go beyond detecting ultra-black objects. PinPoint LEDs guarantee reliable detection of any kind of object, and provide immeasurable value in practice.

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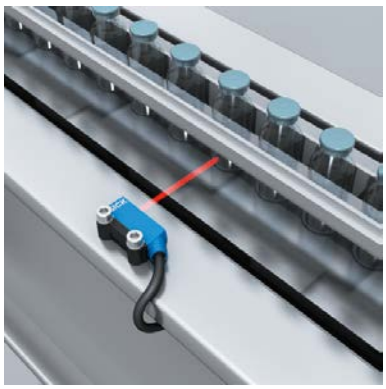


Detecting transparent objects

Transparent objects are found in a whole host of manufacturing and assembly processes, in objects such as films, ampules, pipettes, flat glass, and hollow glass. With the aid of sophisticated SICK technologies such as AutoAdapt (continuous threshold adaptation) or the autocollimation principle, highly transparent objects can be reliably detected even if they have a very low signal attenuation in the light path.

Detecting small objects

The reliable detection of small objects represents a major challenge in handling and assembly applications – but laser photoelectric sensors, fiber-optic sensors, and photoelectric sensors with focused optics are proven to be up to the task. The extremely small light spot of these sensors provides the ideal starting point for precise object and feature detection in automation. This makes the sensors ideal for pinpoint-accurate position, presence, overhang, and height checks involving the smallest objects, even under critical lighting conditions.

Detecting high-speed objects

Extremely fast-paced manufacturing processes require specially adapted sensor solutions. Photoelectric sensors detect and count the holes in a perforated disc on conveying equipment. Very high switching frequencies of up to 2.5 kHz enable SICK sensors to react with lightning-fast speed and excellent positioning accuracy – especially when it matters most. The result is straightforward, precise speed measurement, directly in the sensor.

Detecting objects with position tolerances

In many cases, solutions are used for the detection of misshapen objects or objects of varying height. This often leads to high costs, especially as a result of complex and expensive installation. Previously, reliably detecting the leading edge in objects of varying height generally required the installation of two photoelectric sensors – one on top of the other. SICK provides a solution in the form of sensors with a light band. These enable all objects from a certain minimum size to be detected irrespective of their position.

IO-LINK TECHNOLOGY

A consistent communication concept right down to the lowest field level is key to boosting the performance of state-of-the-art sensors and actuators, and making machines and plants 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 tricky hurdles in the communication chain.

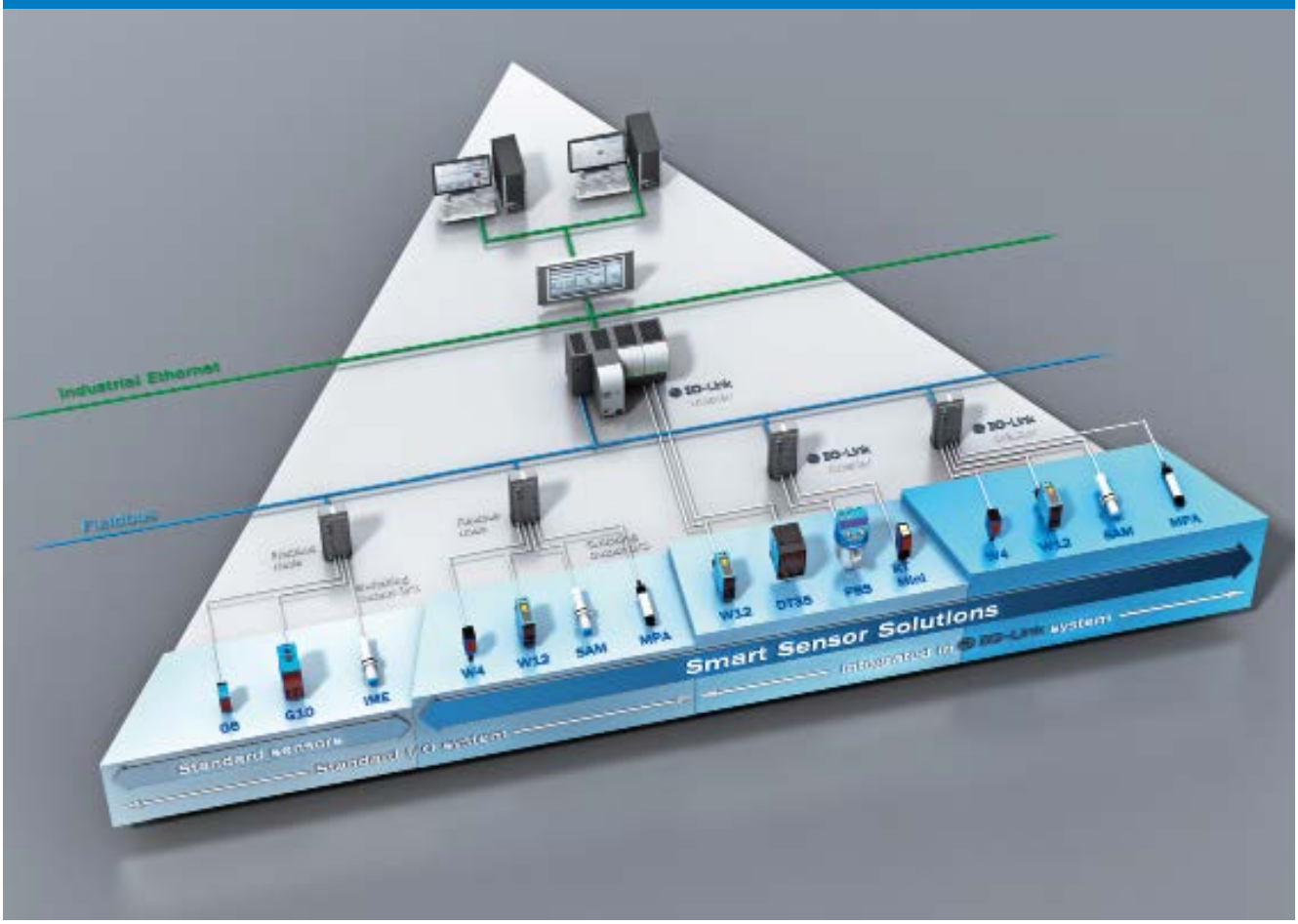
What is IO-Link?

IO-Link is the world's first standardized technology (IEC 61131-9) for communicating with sensors and actuators. Its powerful point-to-point communication is based on the familiar three-wire sensor and an actuator connection, and does not require any additional cable materials. IO-Link is not a fieldbus; it is the logical next step in tried-and-tested connectivity for sensors and actuators.

An IO-Link system consists of the following components:

- IO-Link master
- IO-Link devices such as sensors, RFID readers, valves, and I/O modules
- Unshielded three or four-wire standard cables
- Configuration tool (such as SOPAS Engineering Tool) for configuring IO-Link and setting sensor parameters

IO-Link is the "USB interface" at sensor/actuator level



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Integration into automation concepts

With an IO-Link master, an IO Device Description, and function blocks, it is very easy to integrate an IO-Link sensor into the overall automation system.

Hardware: IO-Link master

The device is activated using an IO-Link master

The IO-Link master may be a fieldbus node itself, or part of a modular I/O-Link system that is connected to the fieldbus.

The fieldbus nodes are integrated using a device description (GSD, GSDML, EDS, etc.).

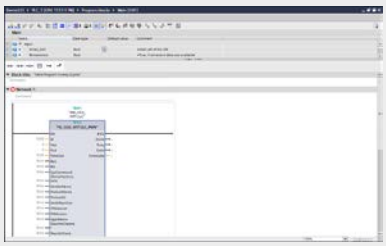
Configuration

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.

The IODD (IO Device Description) is used for specific configuration of IO-Link devices. It contains information on identification, parameters, process and diagnostics data, and communication properties of the devices.

Programming



Using an IO-Link device-specific function block

The device-specific function blocks simplify service data-based configuration between the PLC and the IO-Link devices (acyclic communication).

They provide the device parameters and correct data types, and translate the parameters into indexes and subindexes.

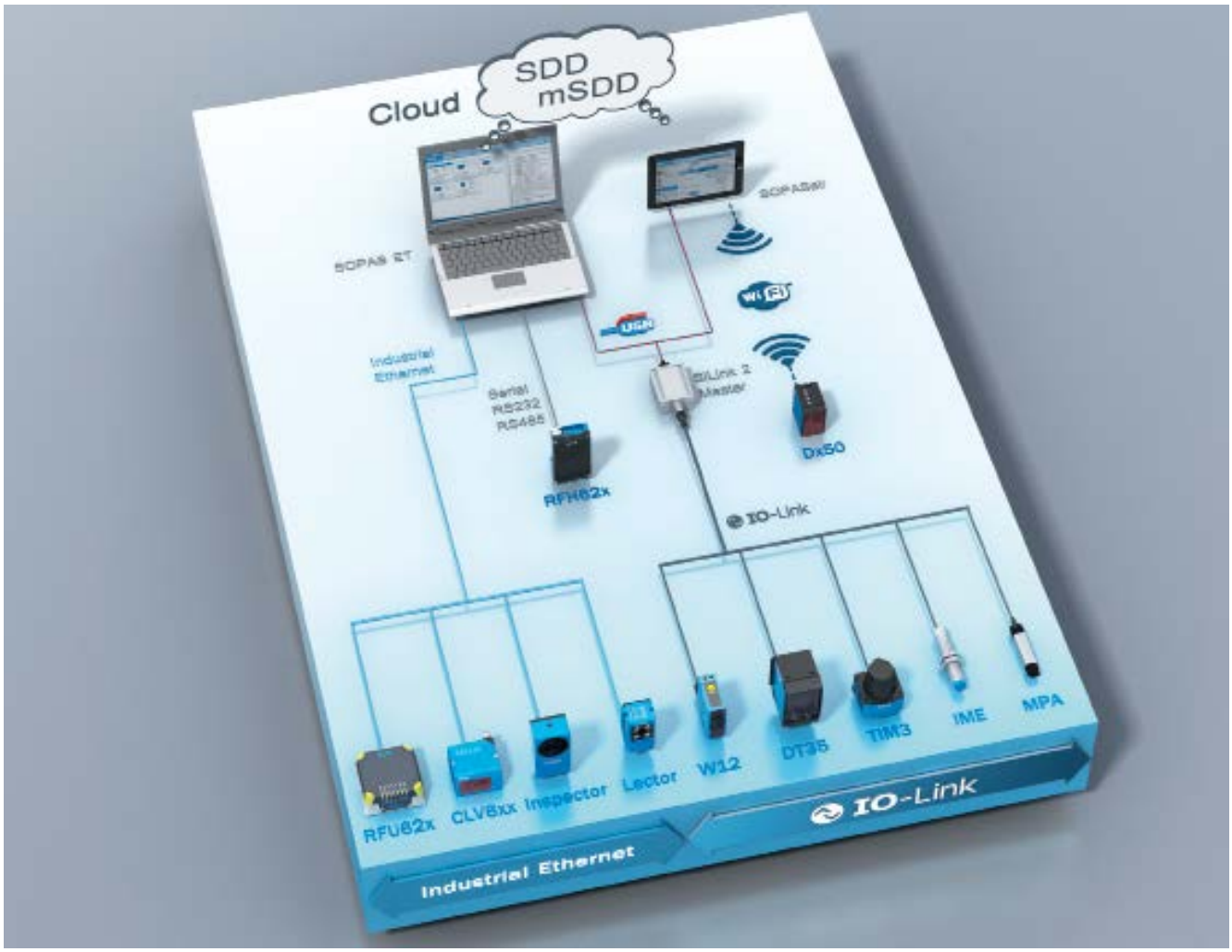
- Maximum machine availability thanks to quick and error-free interchangeability and commissioning of sensors
- Rapid device replacement thanks to automated configuration of IO-Link devices via the control system
- Easy sensor installation thanks to straightforward mounting and industry-standard three-wire cable

SOPAS SOFTWARE TOOL

SOPAS is an intuitive software tool for configuring, monitoring, and performing diagnostics on SICK sensors. The user interface features excellent usability and enables fast and simple design and implementation of the required application.

The tool offers general functions such as:

- Online and offline configuration
- Visualization of status and process data
- Parameter storage
- Simulation mode
- Device drivers that can be loaded directly from the device and/or the cloud



Two different software tools are available for PC-based and mobile devices:

- SOPAS ET (SOPAS Engineering Tool)
- SOPASair

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SOPAS ET

SOPAS ET (SOPAS Engineering Tool) is an intuitive software tool for PC-based devices.

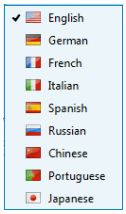
As well as general functions such as status and process data visualization, online and offline configuration, and parameter set storage, it offers options including:

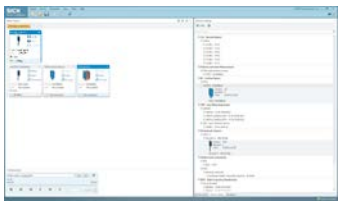
- Project management, device catalog, parameter import/export, device and parameter set comparison, data recorder

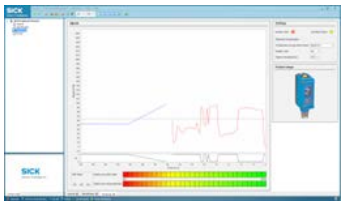
For each physical device, SOPAS ET requires a device description file known as the SDD (SOPAS Device Description). This represents the device in question and shows its device-specific parameters. SDDs can be downloaded directly from the device and/or from the cloud once SOPAS ET has been started up for the first time.

Your benefits:

- One software tool for all devices
- Easy to use: straightforward operation and configuration
- Automatic device identification: no interface knowledge required
- Freely configurable data recorder enables recording, reproduction, and exporting of parameter values
- Available in nine languages







SOPASair

SOPASair is an intuitive app for mobile terminal devices.

For each physical device, the SOPASair app requires a device description file or mSDD (mobile SOPAS Device Description), which it uses for device visualization. mSDDs can be downloaded directly from the device and/or from the cloud once SOPASair has been started up for the first time.

Your benefits:

- One app for all devices
- Easy to use: straightforward operation and configuration
- Fast device replacement thanks to import of stored parameter settings
- Simulation-based configuration without the device

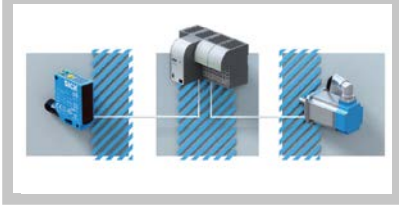
Smart Sensor Solutions powered by IO-Link

Integrating the lowest field level into communication within a machine makes it possible to achieve a consistent flow of information throughout the automation pyramid, right down to 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.

Centralized approach

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

Remote approach



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 open up new possibilities for enhancing productivity.

8019952/2016-05-13

Speed measuring

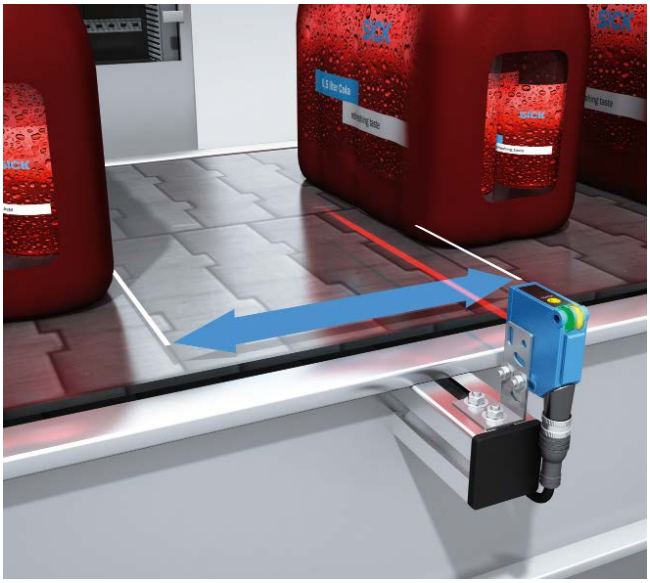
- The optical sensor detects and counts the holes of a perforated disk
- Parameters specified by the control system are used to convert the counter value into a speed
- The speed per minute is transferred to the control system cyclically

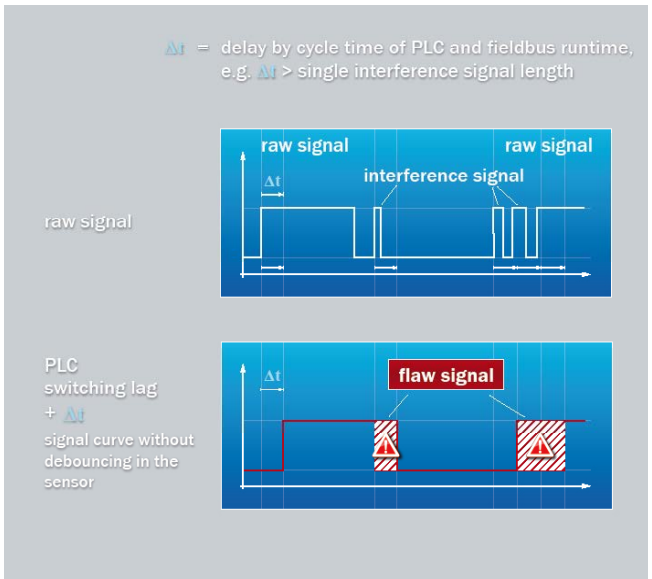
⊕ Easy and precise speed measuring
⊕ Option of linking a sensor to an additional sensor in order to determine the direction of rotation. The sensor sends information on the direction of rotation and speed cyclically to the PLC

Distance measurement between two products

- Using a high-precision method, the sensor detects the gap between two products on a conveyor belt
- 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, there is the option of calculating the distance in the sensor. The sensor receives the parameters for this purpose from the PLC

⊕ Simple and extremely precise time measurement provides the basis for calculating distance





Debouncing in the sensor instead of the PLC

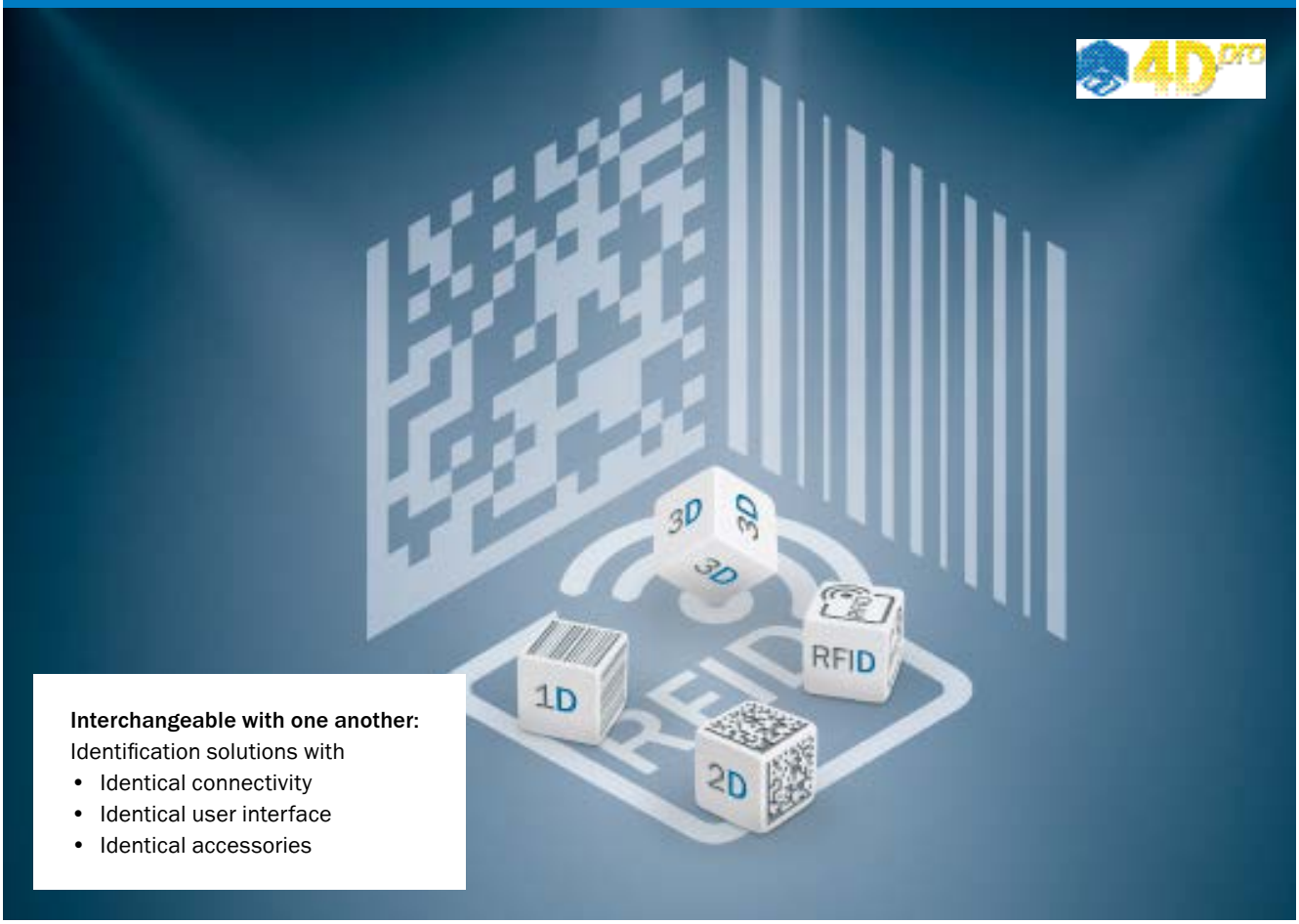
- Debounce times can be implemented independently of cycle times, bus runtimes, and input delays
- Debouncing uses the speed of the sensor controller (e.g., 5 kHz)
- Precise leading edge and/or trailing edge detection for objects, as disturbance variables bouncing off an object are detected over even the smallest of distances 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 false detections, and sends an interference-free signal back to the PLC

⊕ Increased machine speed
⊕ Precise detection

4DPRO – THE FLEXIBILITY YOU NEED

The sensor manufacturer SICK offers a broad portfolio of identification and vision solutions which are developed and produced in-house. Whichever solution you choose today, you can be sure of a flexible future with the 4Dpro concept. All 4Dpro sensors are compatible and interchangeable with one another. Standardized connectivity, a standardized user interface, and a standardized accessory concept – we call this unique combination 4Dpro.

4Dpro – At a glance



Interchangeable with one another:
Identification solutions with
- Identical connectivity
- Identical user interface
- Identical accessories

How you benefit from using 4Dpro sensors

- Security of investment thanks to the option of switching between technologies
- Simple commissioning, even with cross-technology applications
- Fast and flexible exchange thanks to standardized connectivity and cloning function
- Quick and easy integration into programmable logic controllers (PLCs) as SICK provides the function blocks free of charge
- Little time or money spent on storage thanks to reduced component variety and accessory parts

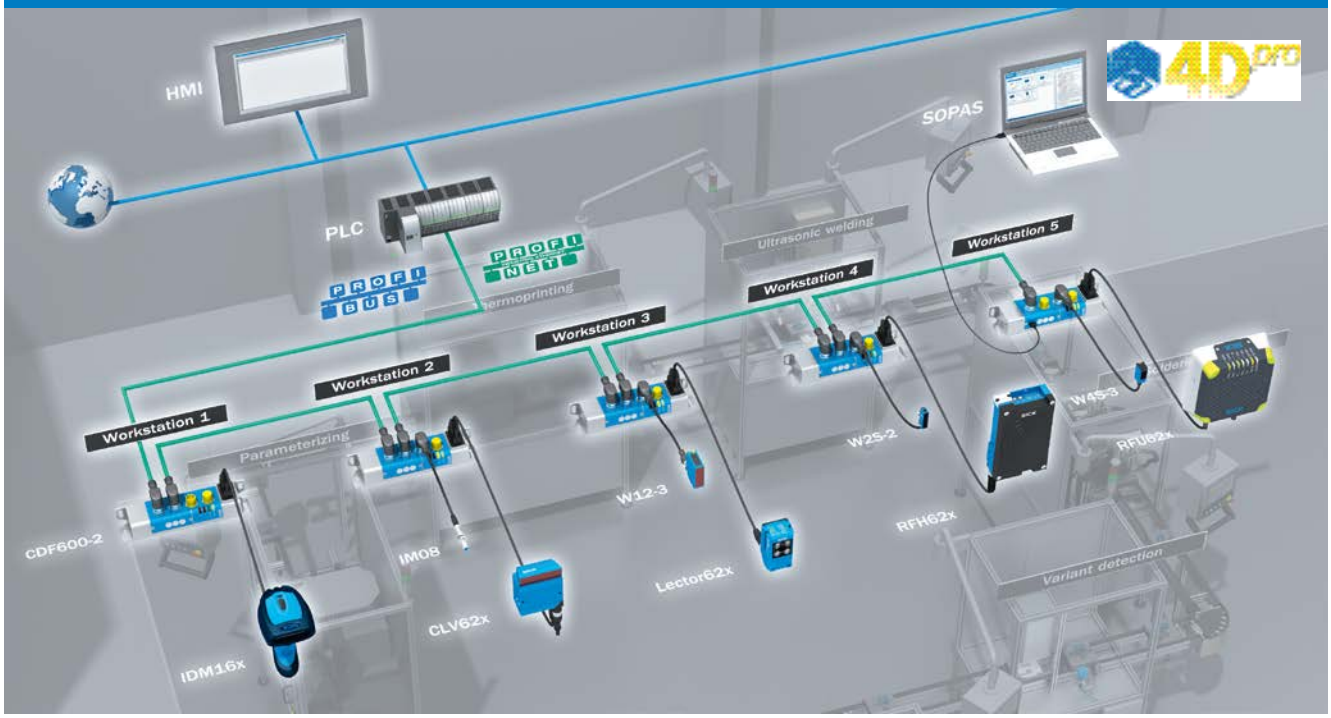
8019952/2016-05-13

FROM PRE-ASSEMBLY TO FINAL ASSEMBLY

Clear-cut, reliable identification of objects throughout the entire production process

Seamless traceability of products, devices, and batches is becoming an increasingly important element of performing quality control and boosting productivity. Efficient methods of detecting production data offer a significant competitive advantage, which is why so many of today's machine manufacturers are looking for solutions that offer them. When it comes to creating complex assemblies, RFID solutions from SICK open up new potential for controlling complicated processes and tracing the assembly procedure with precision.

Topology of a semi-automatic assembly line networked with 4Dpro sensors



The CDF600 fieldbus module enables the networking of 4Dpro devices, such as bar code scanners, RFID systems, and hand-held scanners, in PROFIBUS, PROFINET-IO, or EtherCAT® networks. This ensures continuous communication by the individual devices with the higher-level control system of the assembly line.

All 4Dpro devices are compatible and interchangeable through the standardized 4Dpro platform. As a result of the proxy operating mode integrated into the fieldbus module, only the 4Dpro device is visible to the control system, not the fieldbus module. This means that direct access by the control system to a bar code scanner, hand-held scanner, or RFID device is possible.

Standardized connectivity

All 4Dpro sensors feature the same modular connectivity. This provides the basis for a flexible fieldbus link combined with high process reliability.

What's more, you benefit twice over: the purchase order process is less complicated and integration is quicker and easier

Standardized user interface

All 4Dpro sensors use SICK's universal device configuration software. This means that you can quickly familiarize yourself with all technologies.

Data is sent to the control in the required format and the inputs and outputs of the 4Dpro sensors can be analyzed quickly by an event monitor.

Standardized accessory concept

All 4Dpro sensors are supported by the same accessory pool. This reduces both component variety and the amount of effort put into storage, smoothing the way for low storage costs.

FROM YOUR SAFETY APPLICATION TO A COMPLETE SOLUTION

safetyPLUS® – SAFE MACHINERY AND MORE.

safetyPLUS® is the range of machine safety products and services provided by SICK for protecting people and investments. The PLUS means comprehensive, individual support for our customers regarding the functional safety of their machines and plants. Comprehensive means the best possible support from development of the machine through commissioning and use to retrofitting and modernizing – all over the world.

Customer requirements for legal compliance and reliable production are met through:

- Safety products and systems, services, training, and tools
- Expert knowledge passed on through consultancy and online ser
- Safety tools for a simplified engineering process
- Functionality to support production efficiency

WE PROTECT PEOPLE.

Advantages for your design engineering and productivity – our pioneering safety products prove these day in and day out. And they have been doing so for more than half a century.

Products that are more than the sum of their parts equal **added efficiency** for your application. With clever product combinations or turnkey systems.

Do you export or utilize machinery worldwide? Then we have the expertise to ensure your compliance with **legal requirements** all over the world.

Services and training courses in 80 countries – functional safety knowledge **at your location**.

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SICK – Your partner for machine safety

When it comes to international business, employees responsible for safety and decision-makers are faced with a complex fabric of laws, regulations, labeling measures, and guidelines – it is not easy to retain an overview. We have experience with the details and know exactly how to fulfill the numerous requirements. Our services are accredited, and this independent confirmation of our expertise proves that we perform the specified activities with the utmost reliability, at the required standards of quality. And that guarantees objective results, which are also internationally recognized. You can trust in our decades of experience as a market leader in the area of industrial safety – when it comes to both current machinery as well as planning and purchasing new plants.

DAkkS
Deutsche
Akkreditierungsstelle
D-IS-12060-01-01

Consulting and design

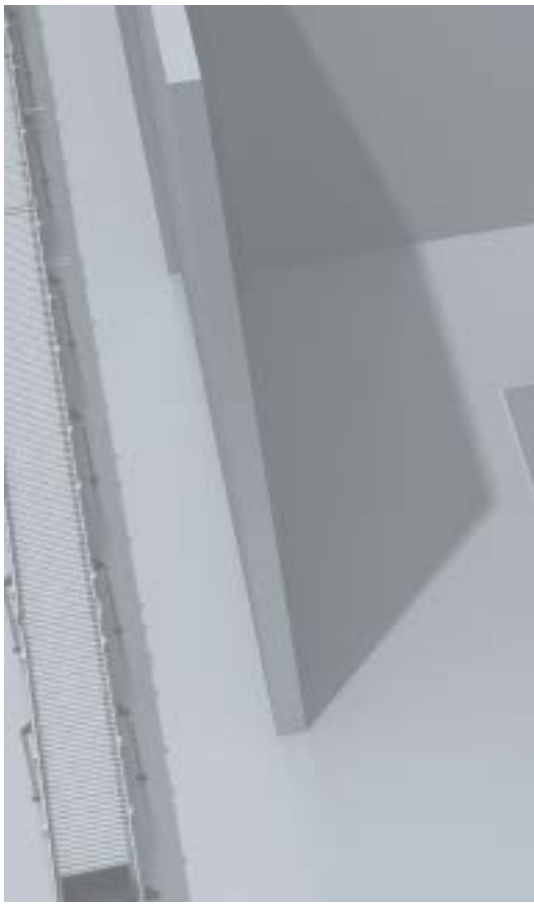
- Risk assessment
- Safety concept
- Safety hardware and software design
- Installation and commissioning
- Validation of functional safety
- CE-conformance check
- Plant walk-through

Training and education

- User training
- Seminars
- Web training

Verification and optimization

- Inspection
- Machine safety inspection
- Electrical equipment check
- Accident investigation
- Stop time measurement



sens:CONTROL – SAFE CONTROL SOLUTIONS

Intelligent machine design focuses, on the one hand, on increasing productivity, but also provides the highest level of quality and safety. sens:Control – safe control solutions by SICK embody this principle. The product portfolio includes safe sensor cascades, safety controllers, motion control safety controllers, and safety relays. It features easy commissioning, modularity, and optimum integration into automation processes. The goal of sens:Control is to optimize interaction between man and machine.

Select the control solution you require for your application:

Safety relay

For flexible, cost-effective machine integration

- Anything from a single-channel emergency stop pushbutton up to a safety laser scanner with PNP outputs can be connected
- Minimum amount of wiring
- Rapid device replacement using removable terminals
- Coded version for all slots
- Application-oriented variants available

Flexi Classic

Efficient and easy-to-use safety controller

- Configuration via rotary switch simplifies logic configuration
- Flexi Classic Configurator tool offers easy logic configuration and wiring help
- Logic functions: AND, OR, muting, bypass, reset, EDM
- Integration into all common fieldbuses
- Integration of the Flexi Loop safe sensor cascade
- Complete diagnostics for the system, preventing unplanned downtime

Flexi Soft

The software-programmable safety controller

- Scalable for an efficient and cost-optimized safety application solution
- Expansion modules, Motion Control modules, and gateways for all standard fieldbuses
- The main module's diagnostics interfaces and the configuration storage facility in the system plug enable rapid commissioning, component replacement, and troubleshooting, resulting in minimum downtimes
- Cost savings: Flexi Soft can have a modular structure that is in line with your requirements, and thus offers an ideal level of granularity
- Integration of the Flexi Loop safe sensor cascade

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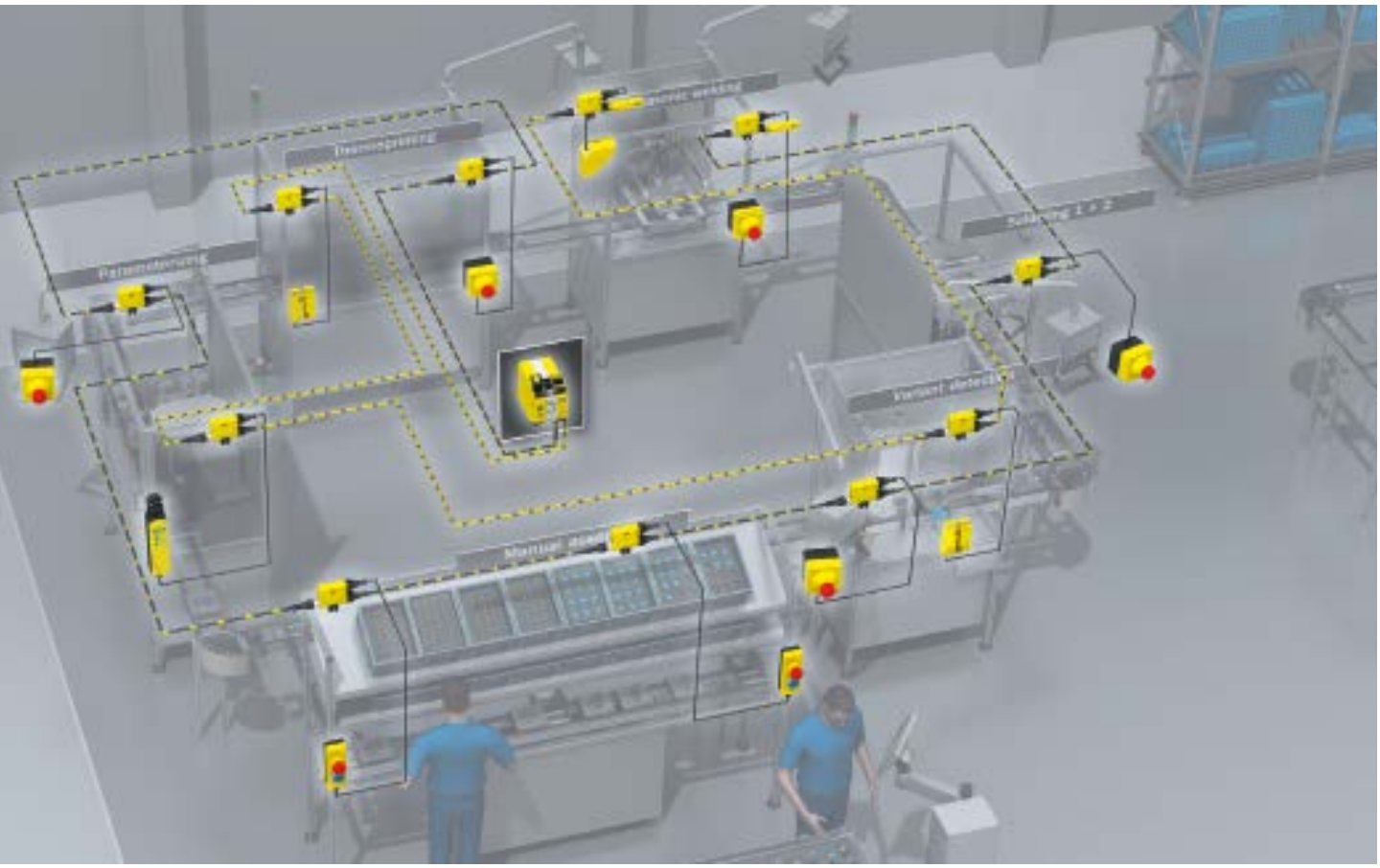


Flexi Line

Safe networking of controllers without addressing

- Flexible solution that allows any kind of modular machine concept to be used
- Safe, addressing-free networking of safety controllers
- Cost-effective integration: no additional hardware; quick configuration and commissioning
- Efficient communication and short response times thanks to optimized exchange of information
- Up to 32 safety controllers can be networked

Flexi Loop

Safe sensor cascade with convenient diagnostics options

- Cost-saving, safe sensor cascade with diagnostics function
- Ability to cascade 32 sensors with up to 30 m per segment in compliance with performance level e
- Compatible with sensors from all manufacturers
- Detailed diagnostics information
- Power supply for sensors is included
- Enclosure rating IP 65 and IP 67
- Intelligent accessories for field diagnostics and commissioning

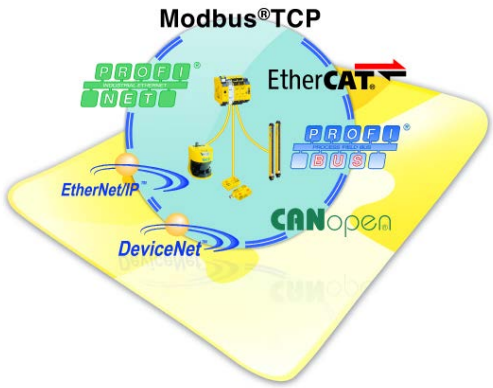
Flexi Soft Drive Monitor

Safe drive monitoring

- Ideal integration of safety applications with drives
- Increased flexibility thanks to independent drive system
- Open to all standard motor feedback systems and encoders
- Minimized switch-off and changeover times thanks to numerous drive safety functions
- Detection of machine downtime, enabling rapid intervention in the machine and workpiece replacement

THE SOFTWARE-PROGRAMMABLE SAFETY CONTROLLER

Flexi Soft is a powerful, modular, easy-to-commission safety controller whose scalability and user-friendly software allow it to be efficiently adapted to meet the requirements of a range of safety applications. Its modular hardware platform allows the controller to grow module by module with the task at hand – up to the highest level of safety. Thanks to the Flexi Soft Designer configuration tool, creating safety concepts with simulation mode and the complete wiring diagram has never been easier. Integration into all common fieldbus environments and the safe networking of individual Flexi Soft stations with one another are additional advantages of this safety controller.



Flexi Soft advantages

- Modularly expandable inputs and outputs
- Configuration memory in the system plug
- RS-232 and USB interface for configuration and real-time diagnostics
- Short switch-off time of just 8 ms
- Intuitive configuration tool: easy operation (drag and drop), simulation mode, wiring diagram, and multilingual documentation available to download free of charge
- 48 TÜV-certified function blocks
- Reliable networking of up to 32 Flexi Soft stations without addressing or additional hardware
- Cascading of up to 32 sensors including full diagnostic capabilities
- Drive Monitor for safe switch-off, speed, and direction monitoring as well as safe stop functions
- Standard inputs and outputs, e.g., for activating a lock or a signal lamp, or for processing the signals of other automation sensors

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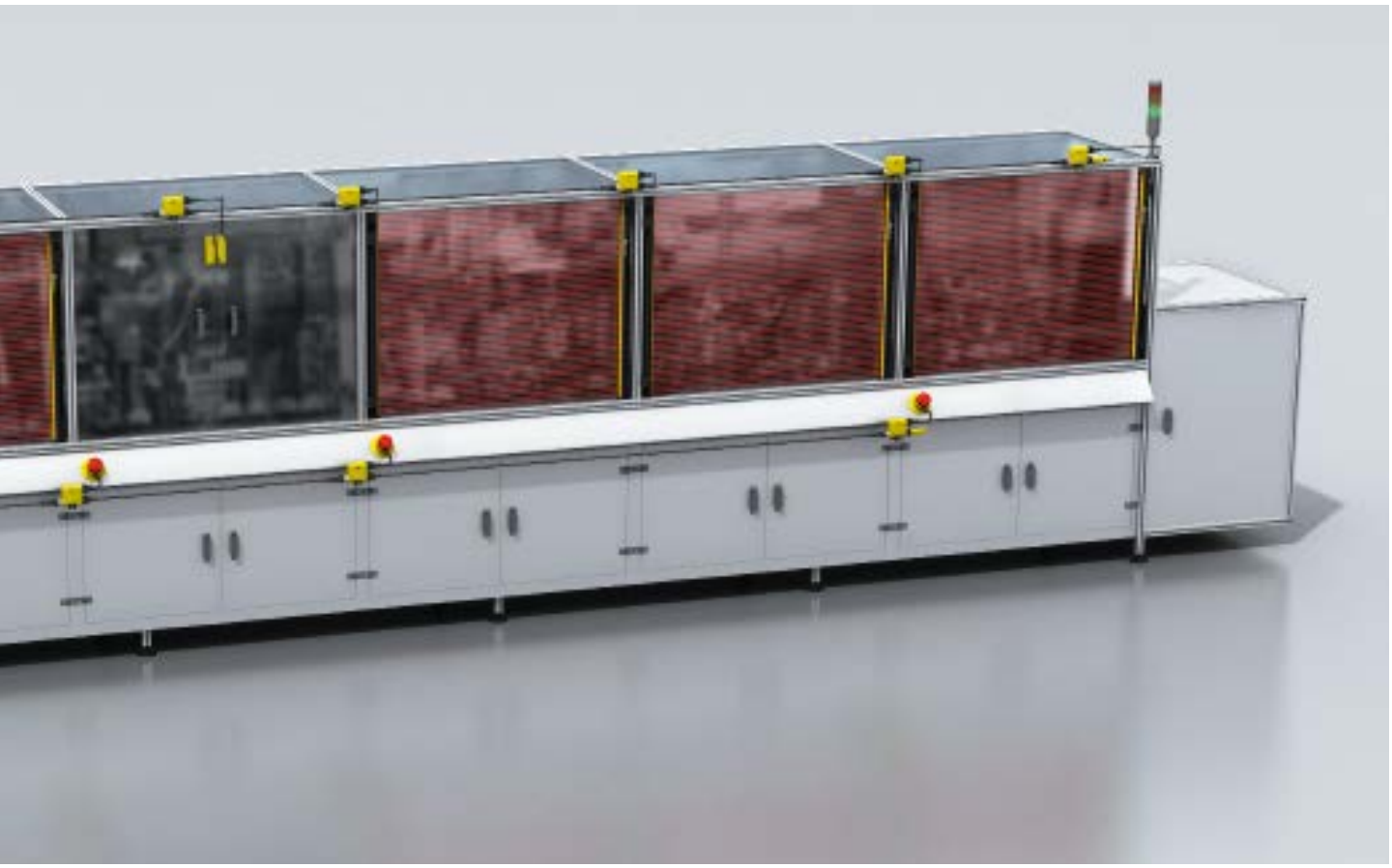
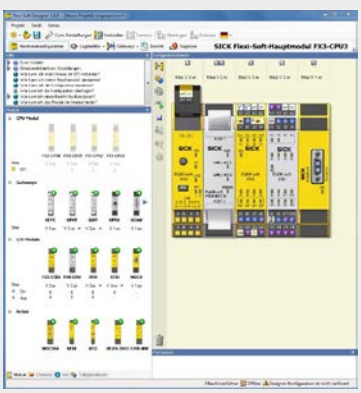


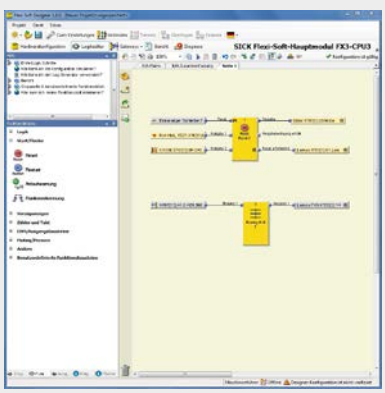
Benefits of Flexi Soft Designer

- 10 minutes to green with Flexi Soft Designer
- Exceptionally easy software-based configuration in just three steps: hardware configuration, logic generation, plus transfer and verification
- Intuitive user interface, straightforward logic generation via drag and drop, and integrated simulation mode
- Large number of standard logic blocks for each Flexi Soft station and other application-specific function blocks, such as emergency stop, two-hand operation, muting, pressing, ramp down detection, operating mode selector switch, reset, restart
- The easy-to-follow user guide in the configuration tool provides information on the modules and elements, as well as a graphical wiring diagram for quick commissioning, plus full documentation

Hardware configuration



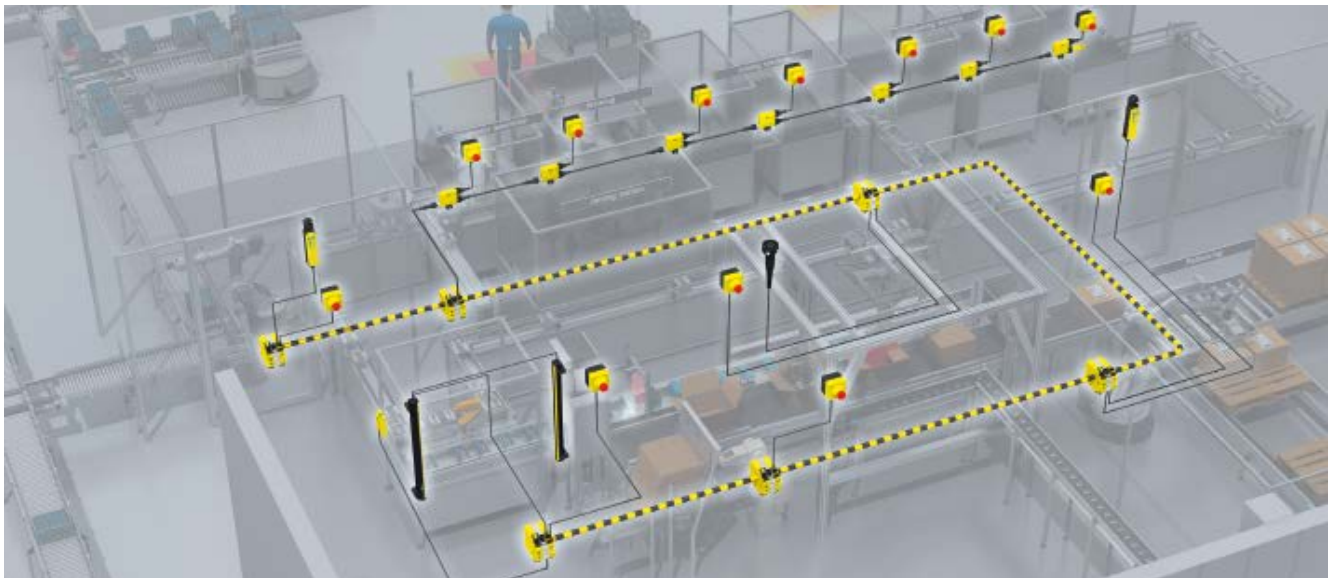
Logic creation



Documentation

FLEXIBLE AND MODULAR MACHINE CONCEPTS IMPLEMENTED SIMPLY AND SAFELY

State-of-the-art machines and plants increasingly need to accommodate the requirements of flexible production and must be designed accordingly. This means that it must be possible to extend and adjust machine modules quickly at any time, so that the work involved in planning, commissioning, and servicing can be kept to a minimum. The answer is a modular safe controller with a clear-cut design, straightforward electrical and mechanical component installation, and reduced cabling. Depending on the scope of the product, the system response time must be quick and be able to be calculated. Safety functions should be able to be networked across the entire assembly line and designed to support the processes. Performance level PL e should also be achieved when sensors are cascaded. Intelligent diagnostics functions should support operators during troubleshooting. Flexi Soft and the functions of Flexi Line safe networking and the Flexi Loop safe sensor cascade allow these requirements to be implemented.



Safe networking: Flexi Line

The Flexi Line additional function enables up to 32 Flexi Soft stations to be networked with one another up to a distance of 1,000 m. This allows modular machine structures to be mapped in a consistent way. And the possibilities for machine concepts are endless.

- The number and sequence of machine modules can be changed in any way. The safe networking of the various Flexi Soft safe controllers takes place without fixed addressing.
- Once the entire process image has been configured, modifications to the machine setup can be made easily using teach-in. This allows individual modules to be tested separately and brought together at the installation site later on.
- Cost-effective integration via the safe CPU: fast configuration and commissioning as no additional hardware is required
- Efficient communication and reduced response times thanks to the optimized sharing of information with neighboring stations or realization of emergency stop paths (global and local process image)
- Networking of the CPUs in question via a two-wire standard cable
- Combination with the Flexi Loop safe sensor cascade

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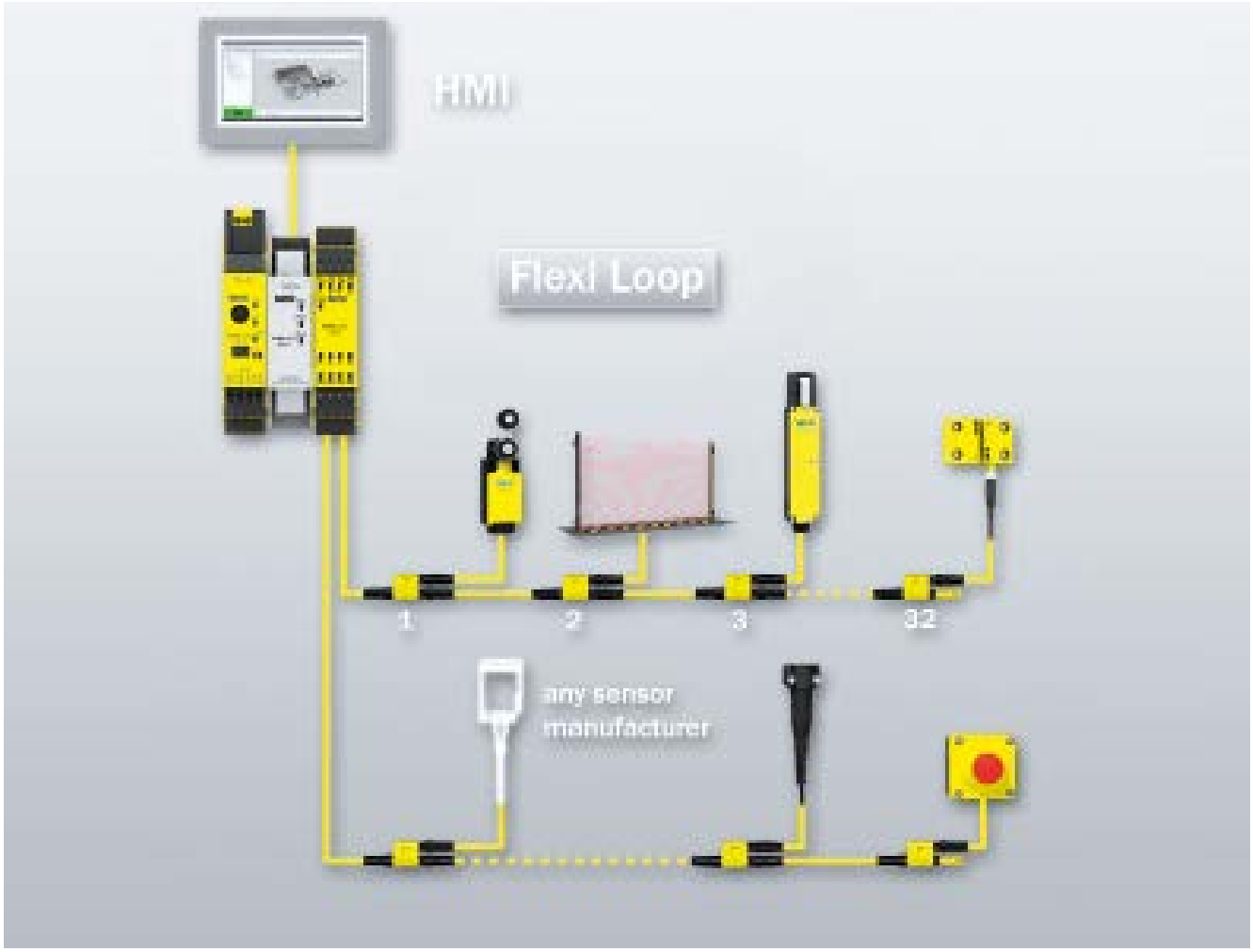


Safe sensor cascade: Flexi Loop

Thanks to the Flexi Loop remote integration concept, up to eight sensor cascades – each with up to 32 dual-channel safety switches and safety sensors – can be connected up to a length of 960 m in a cost-effective way. It is possible to cascade safety switches and sensors in compliance with performance level PL e, even in the case of reed sensors.

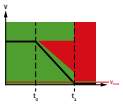
- Compatible with sensors from other manufacturers
- Transmission of detailed diagnostic information and the applicable status via LED displays directly on the node
- System modifications can be made at any time by adding or removing nodes
- Integrated standard inputs (e.g., for status displays, integration of reset or start buttons) and standard outputs as well as sensor voltage supply included
- Flexi Loop extension by means of additional voltage supply

SAFE MOTION CONTROL – THE RIGHT SAFETY CONCEPT FOR ANY APPLICATION

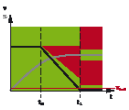
As machines are developed to offer better and better performance, so too is more attention paid to protecting people, machines, and plants. Innovative machines and safety concepts mean that the availability and efficiency of machines can be increased while still offering entirely unencumbered safety. This is where Safe Motion Control comes to the fore. Safe Motion Control describes drive safety monitoring using products from the Motion Control and Motion Control Sensors divisions.

Thanks to the safe monitoring of the machine operator, as well as the machine parameters (speed, path, and acceleration), it is possible to differentiate precisely between hazardous and safe machine movements. In the case of safe machine movements, the operator can reach into the machine even while the process is running. This reduces downtimes in the machine or plant, making your processes more efficient. With Safe Motion Control from SICK, you can play it safe.

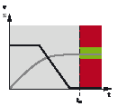
DRIVE SAFETY FUNCTIONS ACCORDING TO IEC 61800-5-2



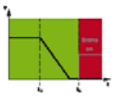
Safe stop 1 (SS1)
- Corresponds to stop category 1 as per EN 60204-1
- Controlled shutdown maintaining the power supply to the drive elements
- The ramp is monitored
- After shutting down or below a speed limit: activation of the safe torque off (STO) function



Safe stop 2 (SS2)
- Corresponds to stop category 2 as per EN 60204-1
- Controlled shutdown maintaining the power supply to the drive elements
- The ramp is monitored
- After shutting down: safe monitoring of the drive shaft position in a defined range

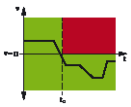


Safe operating stop (SOS)
- After shutting down: safe monitoring of the drive shaft position in a defined range

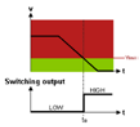


Safe brake control (SBC)
- Safe output signal for switching off the power supply of an external brake

Safely limited speed (SLS)
- When permission has been given, a safe, reduced speed is monitored in the special mode
- If the speed is exceeded, one of the safe stop functions is triggered



Safe direction (SDI)
- In addition to safe movement, there is also monitoring of safe direction of rotation (right/left)
- In the event of movement in an unapproved direction of rotation, a safe stop function is triggered



Safe speed monitor (SSM)
- Safe output signal when the speed goes above or falls below a certain limit

Safe motion monitoring can be implemented in a variety of ways depending on the safety concept or the control concept. In principle, there is a differentiation between integrated and external safety concepts.

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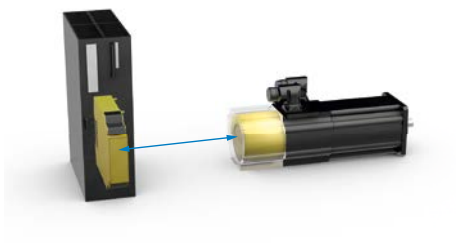
INTEGRATED SAFETY CONCEPT

COMPONENTS OF THE DRIVE SYSTEM

- Digital servo drive with integrated safety function
- Servomotor with safe motor feedback system



Advantages of the integrated safety concept:

- Only a few male connectors and cables are required
- Fewer components
- Complete drive system from one manufacturer
- Quick certification
- Short response time for errors
- Easy availability of the control parameters

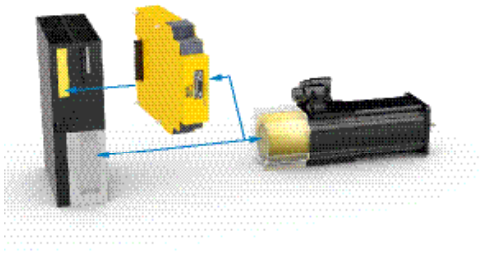
The SICK solution

Safe motor feedback system with HIPERFACE® or HIPERFACE DSL® such as SRM50S or EKM36-2

EXTERNAL SAFETY CONCEPT

COMPONENTS OF THE DRIVE SYSTEM

- Digital servo drive without safety function
- Motor feedback system or encoder, available as a variant for standard applications or safety applications
- External safety monitor: Servomotor with safe motor feedback system

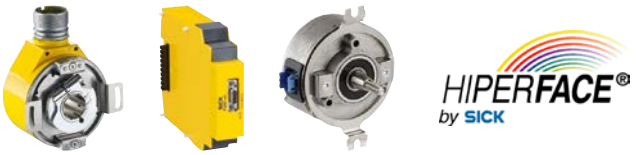


Advantages of the external safety concept:

- Excellent protection against manipulation thanks to separation of safety and automation tools
- External safety concept is independent of the drive system
  - High flexibility in the drive selection
  - Easy retrofitting of existing machines
  - Scalable safety and machine concept
- Entire safety solution in one piece of software, saving time and money
- Monitoring of multiple drives in a single system
  - Dependencies between the movements of individual drives can be taken into account
- Our verified and industry-specific application packages relieve you of engineering work

The SICK solution

- Motor feedback system with HIPERFACE® or encoder such as SRM50S or DFS60S Pro
- Drive Monitor FX3-MOC0



SICK: YOUR PARTNER FOR HIGH-PRECISION SENSORS

High-resolution optical systems and very robust magnetic systems complement one another perfectly and permit exact position detection in all kinds of applications. Encoders and motor feedback systems from SICK are ideally suited to the requirements of machinery and plant engineering.

Motor feedback systems

- Renowned motor manufacturers all over the world use motor feedback systems with HIPERFACE® or HIPERFACE-DSL® interfaces
- Motor feedback systems from SICK feature temperature resistance, high resolution, electronic type labeling, multiturn designs with mechanical gear mechanisms, high stability, as well as small dimensions that enable short motor lengths

Benefits of HIPERFACE DSL®

- Single-cable technology – 50% less cabling required, an extremely useful feature for moving axes in particular
- Easy installation and commissioning, as only one cable is required for each axis
- Low risk of errors, as only a few male contacts are used
- Short drag chains
- Condition monitoring by means of service life histogram in motor feedback system and evaluation of external sensors

Available interfaces for encoders and motor feedback systems

SICK standards

SSI, HIPERFACE® by SICK, HIPERFACE® DSL

SICK fieldbus systems

DeviceNet™, PROFIBUS® PROCESS FIELD BUS, CANopen®

SICK Ethernet systems

EtherNet/IP™, PROFINET® INDUSTRIAL ETHERNET, EtherCAT®

SICK incremental systems

HTL, TTL, Open Collector, Sin/Cos

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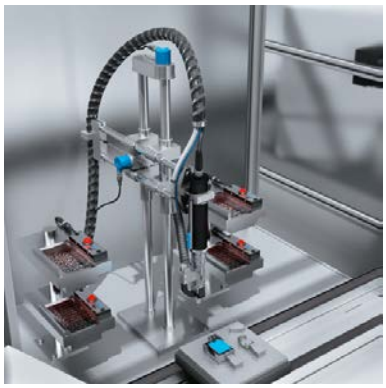

Absolute encoders

- Absolute encoders generate information about position, angle, and rotation counts in type-specific angle steps. For this, a unique code pattern is assigned to each angle increment. The number of code patterns available per revolution determines the resolution of the encoder
- Each code pattern forms a unique reference, and is therefore an absolute position. There is therefore no need for a reference run after switching on the machine
- A singleturn encoder measures the absolute position within a revolution. A multiturn encoder not only provides the position within a revolution but also the number of revolutions
- All current electric interfaces are available: SSI, PROFIBUS, CANopen, DeviceNet™, EtherNet/IP™, EtherCAT®, and PROFINET

Incremental encoders

- Incremental encoders generate information about position, angle, and rotation counts. The number of graduations per revolution determines the number of pulses that the encoder transmits to the control unit for each revolution
- The current position can be determined by the control unit by counting these pulses from a certain reference point
- When the machine is switched on, a reference run to the reference point is required to determine the position of the encoder
- Available interfaces: TTL (RS-422), HTL (push-pull), Sin/Cos (1Vss), Open Collector

Linear encoders

- High-resolution position measurement systems for linear applications: non-contact, absolute length measurement systems for exceptional repeating accuracy of less than 5 µm, high traversing speeds of up to 10 m/s, and measured lengths of up to 1,700 m (depending on model)
- Wire-draw encoders for measured lengths up to 50 m. The product portfolio ranges from incremental systems to absolute distance measurement with all current fieldbus and Ethernet systems

Encoder

Motor-Feedback Systems

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

More than 7,400 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 more than 50 subsidiaries and representations worldwide. The people work with pleasure at SICK.

This is demonstrated by the accolades that the company is regularly awarded in the “Great Place to Work” competition. This lively corporate culture holds strong appeal for qualified and skilled persons. In SICK, they are part of a company that ensures an excellent balance between career progression and quality of life.

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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.

“SENSOR INTELLIGENCE.” FOR ALL REQUIREMENTS

SICK is a renowned expert in many industries, and is entirely familiar with the critical challenges they face. While speed, accuracy and availability take center stage in all industries, technical implementations vary greatly. SICK puts its vast experience to use to provide with precisely the solution you need.

For applications worldwide

Hundreds of thousands of installations and applications go to prove that SICK knows the different industries and their processes inside out. This tradition of uncompromising expertise is ongoing: As we move into the future, we will continue to design, implement and optimize customized solutions in our application centers in Europe, Asia and North America. You can count on SICK as a reliable supplier and development partner.

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Subject to change without notice

For your specific industry

With a track record of proven expertise in a great variety of industries, SICK has taken quality and productivity to new heights. The automotive, pharmaceutical, electronics and solar industries are just a few examples of sectors that benefit from our know-how. In addition to increasing speed and improving traceability in warehouses and distribution centers, SICK solutions provide accident protection for automated guided vehicles. SICK system solutions for analysis and flow measurement of gases and liquids enable environmental protection and sustainability in, for example, energy production, cement production or waste incineration plants.

For performance across the board

SICK provides the right technology to respond to the tasks involved in industrial automation: measuring, detecting, monitoring and controlling, protecting, networking and integrating, identifying, positioning. Our development and industry experts continually create groundbreaking innovations to solve these tasks.

➜ www.sick.com/industries

SERVICES FOR MACHINES AND SYSTEMS: 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 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. LifeTime Services range from product-independent consulting to traditional product services and are characterized by extensive industry expertise and 70 years of experience.

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➜ www.sick.com/service

Consulting and design

- Plant walk-through
- Risk assessment
- Safety concept
- Safety software and hardware design
- Validation of functional safety
- CE-conformance check

Product and system support

- Installation
- Commissioning
- Start-up support
- Calibrations
- Telephone support
- 24-hour helpline
- SICK Remote Service
- Troubleshooting on site
- Repairs
- Exchange units
- Extended warranty

Verification and optimization

- Inspection
- Stop time measurement
- Machine safety inspection
- Electrical equipment check
- Accident investigation
- Initial verification
- Performance check
- Maintenance

Upgrade and retrofits

- Upgrade services

Training and education

- Training
- Seminars
- Web training

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
- Cylindrical photoelectric sensors
- Fiber-optic sensors and fibers
- MultiTask photoelectric sensors

Proximity sensors

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

Magnetic cylinder sensors

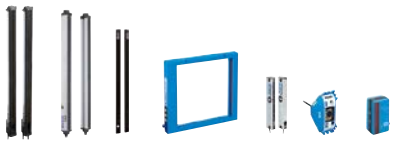
- Analog positioning sensors
- Sensors for T-slot cylinders
- Sensors for C-slot cylinders
- Sensor adapters for other cylinder types

Registration sensors

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

Automation light grids

- Measuring automation light grids
- Switching automation light grids



8019952/2016-05-13

Opto-electronic protective devices

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

Safety switches

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

sens:Control – safe control solutions

- Safe sensor cascade
- Safety controllers
- Motion Control safety controllers
- Safety relays

Gas analyzers

- Gas transmitters
- In-situ gas analyzers
- Extractive gas analyzers

Dust measuring devices

- Scattered light dust measuring devices
- Transmittance dust measuring devices
- Gravimetric dust measuring devices

Analyzer solutions

- CEMS solutions
- Process solutions

Traffic sensors

- Tunnel sensors
- Overheight detectors
- Visual range measuring devices

Ultrasonic gas flow measuring devices

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

Identification solutions

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

Vision

- 2D vision
- 3D vision
- Sensor integration machine

Distance sensors

- Displacement measurement sensors
- Mid range distance sensors
- Long range distance sensors
- Linear measurement sensors
- Ultrasonic sensors
- Optical data transmission
- Position finders

Detection and ranging solutions

- 2D laser scanners
- 3D laser scanners
- Radar sensors

8019952/2016-05-13

Motor feedback systems

- Motor feedback system rotary HIPERFACE®
- Motor feedback system rotary HIPERFACE DSL®
- Motor feedback system rotary incremental
- Motor feedback system rotativ incremental with commutation
- Motor feedback system linear HIPERFACE®

Encoders and inclination sensors

- Absolute encoders
- Incremental encoders
- Linear encoders
- Wire draw encoders
- Safety encoders
- Inclination sensors
- Measuring wheel encoders

Fluid sensors

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

System solutions

- Customized analyzer systems
- Driver assistance systems
- Robot guidance systems
- Object detection systems
- Profiling systems
- Quality control systems
- Security systems
- Track and trace systems
- Functional safety systems

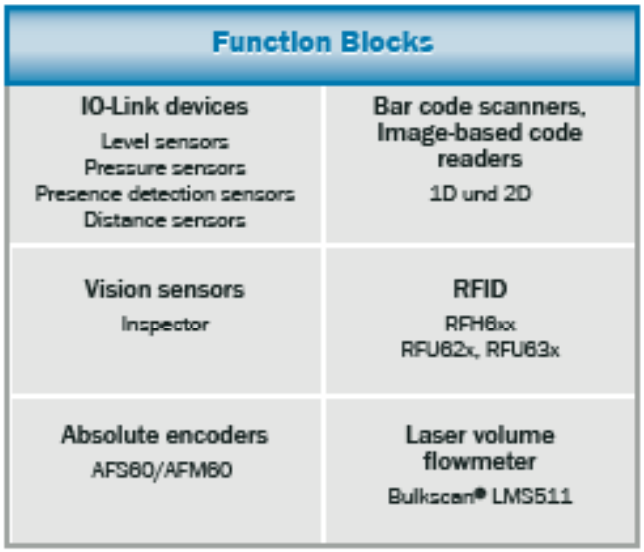
Softwareprodukte

- SICK AppSpace
- Analytics Solutions
- Integrated Managing Solutions

EASY INTEGRATION INTO YOUR AUTOMATION WORLD

Sensor integration with SICK is easy and fast for you: Our intelligent sensor solutions and safety controllers provide different integration technologies which 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 reliability with a continuous diagnostic concept.

PLC and engineering tool integration



Function blocks

The SICK function blocks quickly allow you to establish acyclic communication to our sensors within your PLC program. Additionally, complex and variable process data can be parsed into their individual information contents without programmer effort.

DTM (Device Type Manager)

FDT/DTM is a cross-manufacturer concept, with which configuration and diagnosis of devices from different manufacturers can be done with just one engineering tool.

TCI (Tool Calling Interface)

The Tool Calling Interface (TCI) makes it possible to call up a tool used to carry out parameterization and diagnosis of a field device via the existing communication infrastructure.

HMI integration

OPC server

OPC technology is used to exchange data between field devices and Windows-based applications. The SOPAS OPC server from SICK follows the OPC DA specification and thus can be used on Windows operating systems.

Web server

The SOPAS web server from SICK can be used everywhere, where a web browser is available. The web server is distinguished by its ability to both carry out pure data exchange and also to provide visualizations for the devices, which is a big advantage, particularly for vision sensors.

Fieldbus Communication Interface

Our fieldbus and network solutions allow SICK sensors and safety controllers to be connected to all conventional automation systems. This guarantees an easy and fast access to the available data.

→ www.sick.com/industrial-communication

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- Easily repeat previous orders.
- Conveniently export quotations and orders to work with your systems.

SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.

Consulting and design
Safe and professional

Product and system support
Reliable, fast and on-site

Verification and optimization
Safe and regularly inspected

Upgrade and retrofits
Easy, safe and economical

Training and education
Practical, focused and professional

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous representative offices 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, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and additional representatives → www.sick.com

SICK
Sensor Intelligence.