



Efficient Solutions for the Machine Tool Industry

Achieving more with intelligent sensors

SICK
Sensor Intelligence.





Efficient Solutions for the Machine Tool Industry

Challenges in the Machine Tool Industry

Sensor Solutions to improve production efficiency	4
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Applications in focus

① Forming machine tools	7
② Cutting machine tools	35

Products

Product overview	46
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Special Pages

Competence for Machine Safety	112
Safety control solutions	114
Safety control solutions for Machines	116
Safety control solutions for Flexible Manufacturing Cells	118
Safety control solutions for Motion Control	120
Industrial Instrumentation	122
Encoders and Motor Feedback Systems	124
Smart Sensor Solutions	126

General information

Company	128
Industries	130
SICK LifeTime Services	132
Versatile product range for industrial automation	134
Industrial communication and unit integration	138
Services – www.mysick.com	139

Sensor Solutions to improve production efficiency

SICK has been shaping the machine tools industry for decades with its innovative and intelligent sensor solutions. Whether in individual machines or automated production cells, SICK's "Sensor Intelligence." helps make machines and systems safer, faster, and more flexible for a wide range of production requirements.

Simply achieve complete machine safety using safety sensors and safety controllers that operate in accordance with applicable standards. Selecting the optimal sensors enables you to intelligently automate production processes involving a wide range of application requirements. In addition monitoring production quality is integrated into process. This is where SICK uses its comprehensive industry and sensor expertise to create superior solutions.



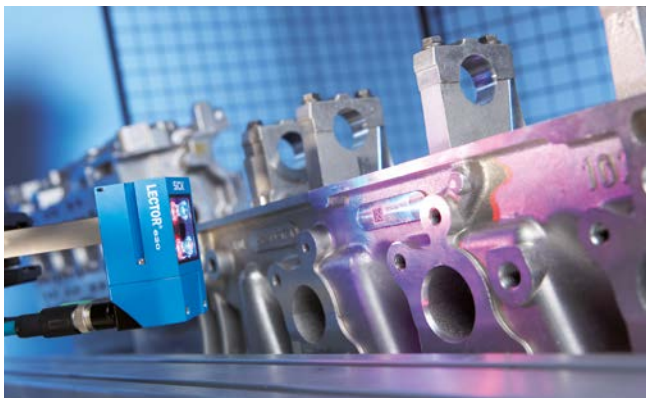
Safety

The interaction between man and machine and the harsh ambient conditions that can sometimes be present pose particular challenges with respect to safety technology in the machine tools industry. With this in mind, SICK offers an exceptionally broad portfolio of safety solutions, all of which are characterized by how well they can be integrated in your control system. This is also accompanied by a comprehensive service package that includes consultation, commissioning, training, and education.



Quality control

SICK offers reliable solutions for all quality control applications: Photoelectric proximity sensors to check that materials are present in the production process, distance sensors for precise measurement of workpieces, vision sensors to monitor production features, and 3D vision systems for high-end testing. These solutions ensure that the high quality that is demanded in each application is achieved.



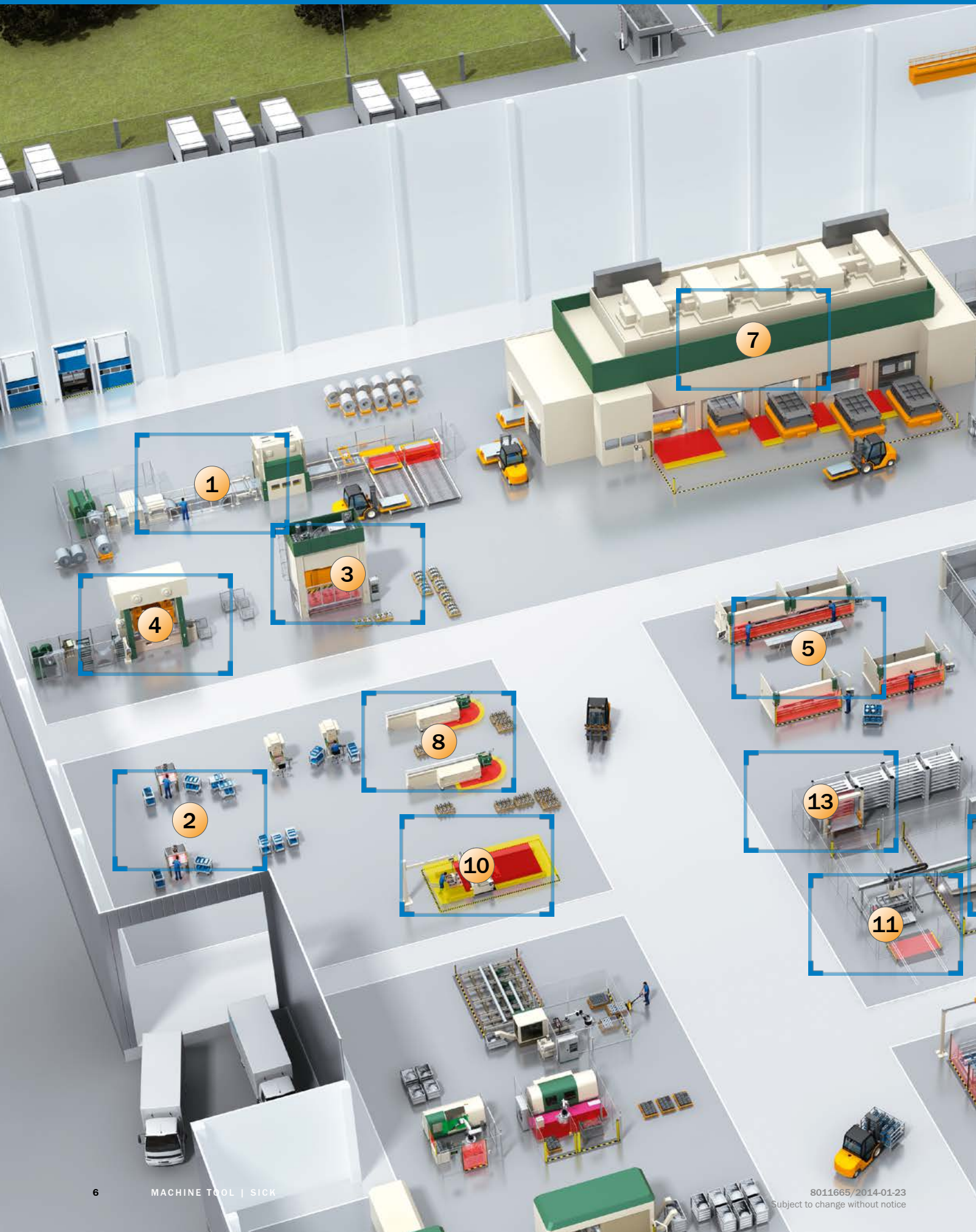
Track-and-trace

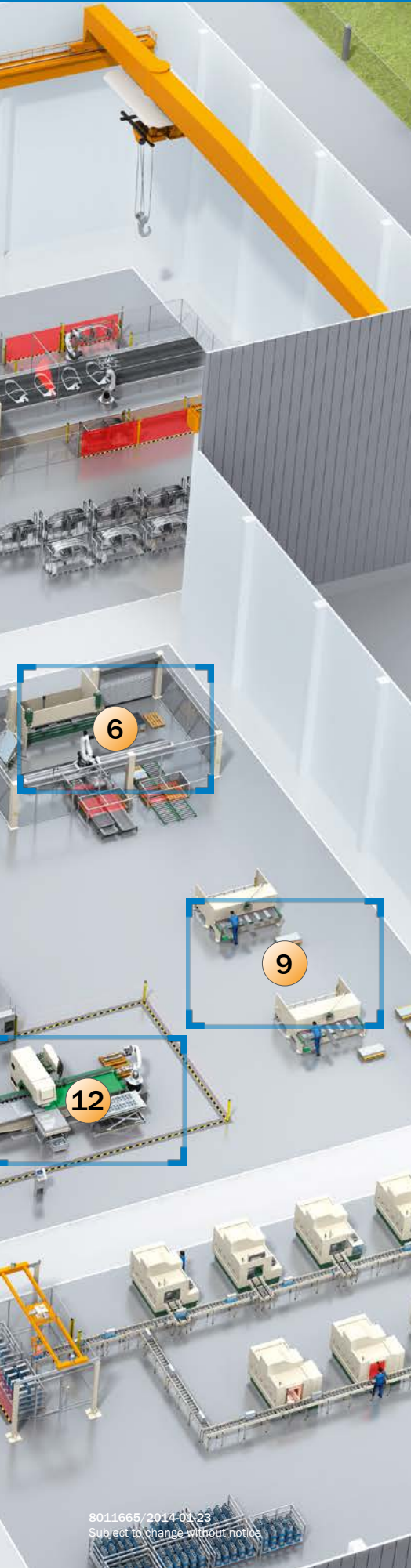
For automated production processes, workpiece-specific production data is supplied using coded information on a document. This information can then be scanned to enable the corresponding machine programs to be converted automatically. It must be possible for suppliers (e.g., in the automotive industry) to uniquely trace the components they have manufactured. SICK provides practical solutions for these requirements, including stationary code reading systems, mobile bar code scanners, and RFID solutions.



Flexible automation

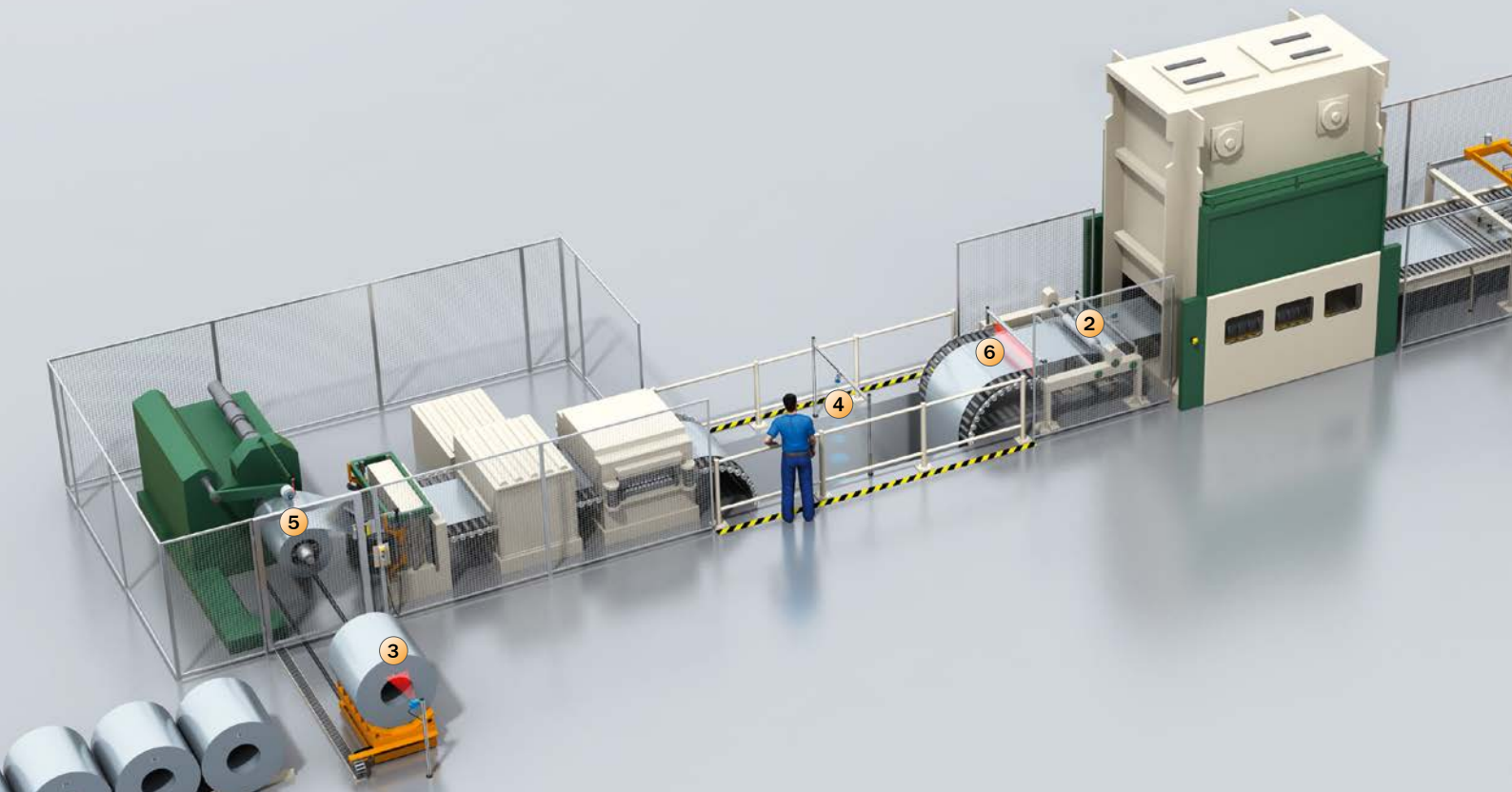
The trend for small lot sizes and the fulfillment of individual customer requirements demand the need for enhanced flexibility and also efficient production. A multitude of sensors and solutions from SICK, comprising a range of designs, functions, and modes of operation, play a decisive role in meeting this requirement.





Forming machine tools

Focus 1	8
① Blanking line	
Focus 2	10
② Small presses	
Focus 3	12
③ Mechanical and Hydraulic press	
Focus 4	14
④ Automated presses	
Focus 5	16
⑤ Press brakes and Tandem press brakes	
Focus 6	18
⑥ Automated bending cell	
Focus 7	20
⑦ Press line	
Focus 8	22
⑧ Tube bending machine	
Focus 9	24
⑨ Guillotine machine	
Focus 10	26
⑩ CNC Plasma cutting machine	
Focus 11	28
⑪ Laser cutting and turret punching system: Parts feeding system	
Focus 12	30
⑫ Laser cutting and turret punching machine	
Focus 13	32
⑬ Laser cutting and turret punching system: Automated sheet storage system	



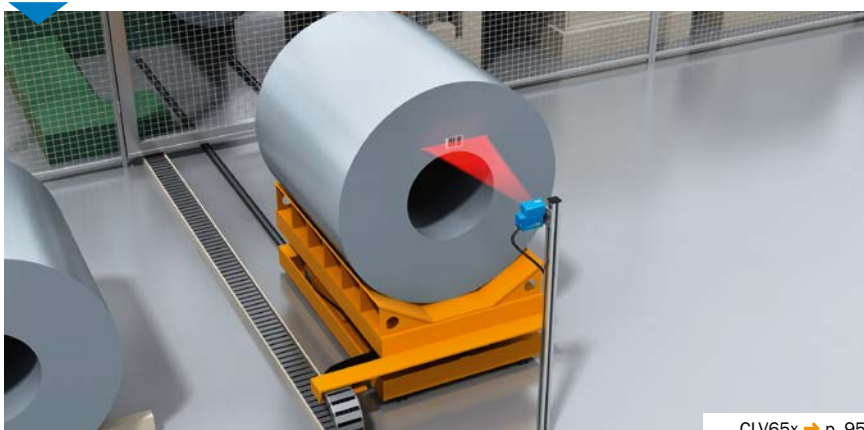
③ Identifying the sheet metal coil

Over the entire manufacturing process, it must be possible to trace the production material to uniquely identify each coil. Important information such as: type of material, sheet thickness, roll width, and additional parameters and properties are contained in the bar codes.

The CLV650 bar code scanner with oscillating mirror is versatile due to its long reading distance and the availability of versions with auto focus or dynamic focus.

④ Loop control

The loop control system enables the separation processes, such as unwinding and cutting of the sheet. The sag of the sheet roll is determined continuously by the UM30 non-contact ultrasonic sensor or the DT35 non-contact laser distance sensor. These values are used to control the retraction speed of the sheet.



CLV65x → p. 95



UM30-2 → p. 104
Dx35 → p. 101



1 Vertical access protection

Sheet panels that have undergone final cutting are stacked on pallets and discharged via the roller conveyor. Both access points are protected against unauthorized access by an S3000 Advanced safety laser scanner, which is mounted vertically and provides the “simultaneous protective field monitoring” function.



S3000 Advanced → p. 72

2 Tracking the sheet roll

The WTB27 optical proximity sensor monitors the presence of the sheet roll at various points throughout the industrial manufacturing process. It is immune to ambient light and optical reflections. The continuous flow of material while the plate shears are operating is monitored reliably.



WTB27 → p. 54

5 Sheet coil uncoiling

To ensure a constant feed of material, the uncoiling speed of the sheet coil must be regulated. The DT50 distance sensor measures the radius of the sheet coil continuously over the entire unwinding process.

The DFS60 incremental encoder uses a friction roller to measure the retraction speed of the sheet. The measured values from both sensors are used to control the retraction speed and initiate automatic coil change.



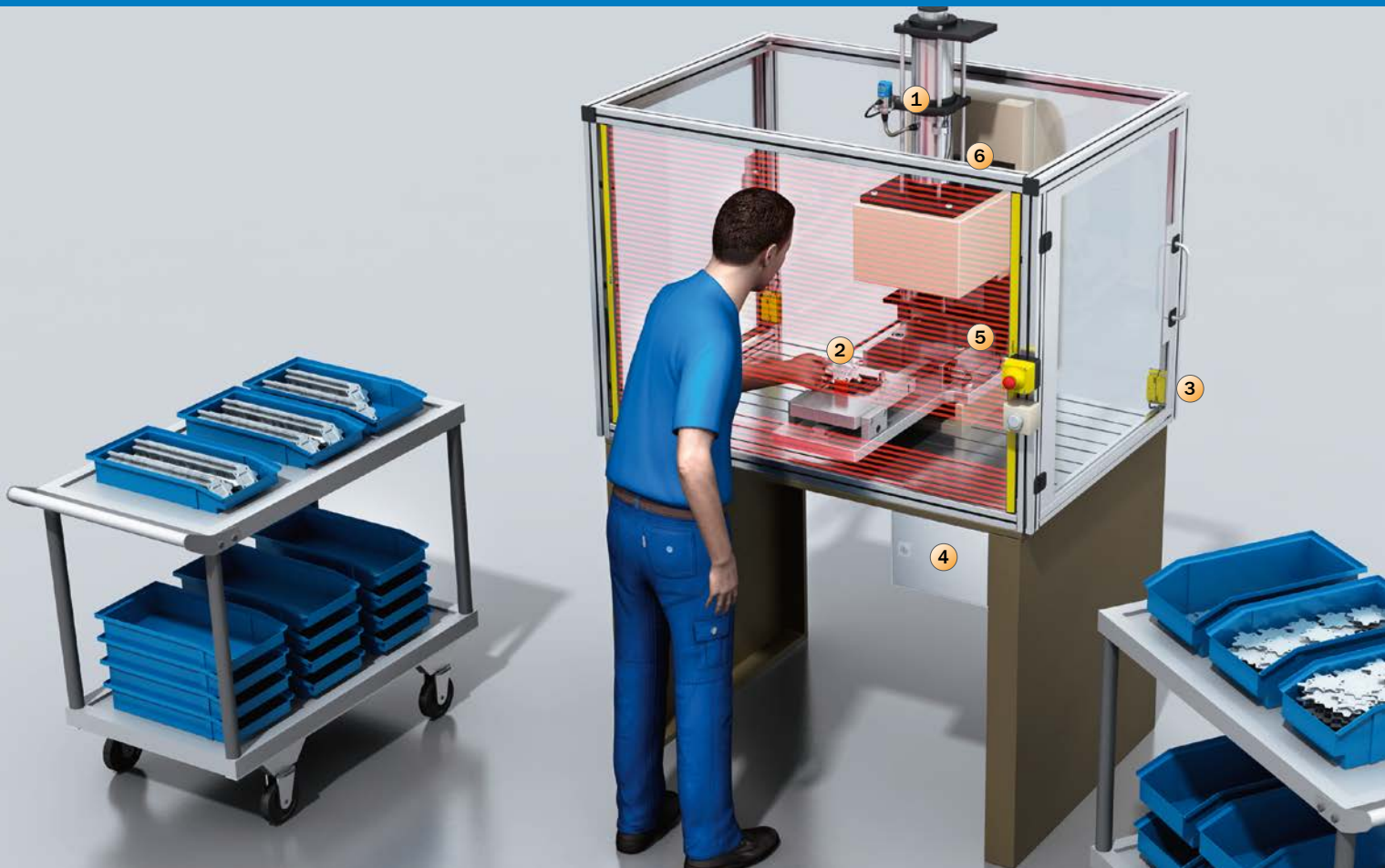
Dx50 → p. 102
DFS60 → p. 92

6 Weld detection and measurement of the sheet removal speed

The MLG automation light grid detects a hole less than 15 mm that marks the weld of the coil. The DFS60 incremental encoder determines the speed of the sheet. The information from both sensors signals the position of the weld and helps control the downstream system/plate shears.



MLG → p. 65
DFS60 → p. 92



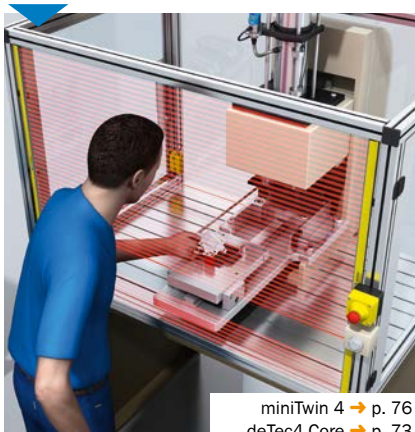
② Hazardous point protection at small presses

The miniTwin safety light curtain safeguards access to the small press. The miniTwin has a small size, flexible mounting concept, and no blind zones, enabling easy integration. Used in conjunction with a safety relay or the Flexi Soft safety controller, required safety functions of the machine can be easily configured and other safe sensors, such as the ES21 emergency stop pushbutton, can be integrated. The offline simulation in the Flexi Soft Designer enables

the control sequence to be tested and optimized even prior to implementation. Documentation intended to support the project can be generated as a PDF in multiple languages (e.g., English, German, Mandarin).

③ Monitoring of the service doors on the side

The side doors on the small press are monitored using RE2 non-contact magnetic safety switches. Thanks to its sensing range, the RE2 compensates for position tolerances and the door offset, thus increasing the machine's throughput.



miniTwin 4 → p. 76
deTec4 Core → p. 73



ES21 → p. 85
Flexi Soft → p. 88

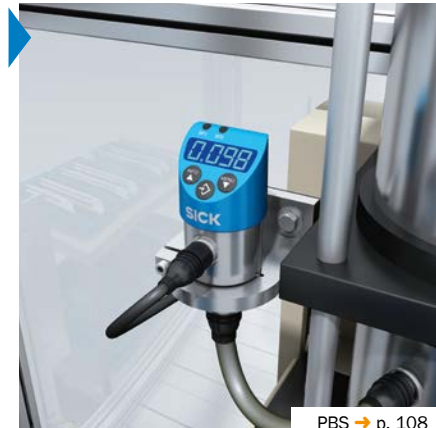


RE2 → p. 83



1 Monitoring of the press force

On pneumatic or hydraulic presses, the press force is determined using a pressure sensor on the cylinder. The PBS pressure switch monitors the value using freely adjustable switching thresholds and ensures the quality of the workpieces in the pressing procedure.



PBS → p. 108

4 Complete machine control with Flexi Soft

The compact Flexi Soft modular safety controller allows comprehensive safety functions to be implemented. "Non-safe" signals can also be evaluated via standard I/O modules. On electrically driven presses, the Drive Monitor FX3-MOC extends the safety concept with the addition of safe drive monitoring.



Flexi Soft → p. 88

5 Monitoring of the clamping cylinders

The MZ2Q magnetic cylinder sensor detects the position of the clamping cylinders. Thanks to two switching points, the rear or front final position can be established with just one cylinder sensor. The monitoring function can thus be implemented even on the smallest clamping cylinders in confined spaces.



MZ2Q-T → p. 63

6 Monitoring of cylinder final position and press travel

Two MZT8 magnetic cylinder sensors monitor the final positions of the press cylinder. Alternatively, the MPA analog positioning sensor and the PBS pressure switch enable the press force and path to be monitored easily and precisely up to a length of 1,007 mm.



PBS → p. 108
MZT8 → p. 63
MPA → p. 62



3 Press stroke height adjustment

Once the tools have been replaced, the press stroke must be adapted using a primarily mechanical adjustment mechanism. The procedure for adjusting the height of the press stroke can be done automatically with the help of an electric drive and the AFS60 absolute encoder, which determines the precise measurement of the revolution at the gear.

4 Measuring the press stroke with an absolute encoder

An AFS60 absolute encoder is mounted to the eccentric shaft on mechanical presses for the purpose of determining the position of the press stroke. It reliably supplies signals for establishing the top dead center (TDC) and bottom dead center (BDC).

5 Hazardous point protection on a press

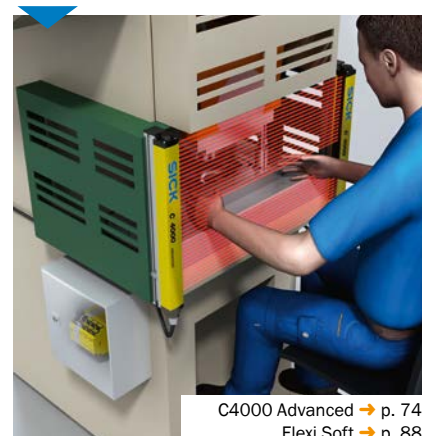
A C4000 Advanced safety light curtain provides hazardous point protection. The PSDI mode (presence sensing device initiations) function controls the press cycle via the light curtain in single or double break mode, which makes the process more efficient. The operating modes are implemented using the compact Flexi Soft safety controller.



AFS/AFM60 SSI → p. 90



AFS/AFM60 SSI → p. 90



C4000 Advanced → p. 74
Flexi Soft → p. 88



6 Measuring the press stroke with a wire draw encoder

To determine the position of the press stroke, a BKS wire draw encoder is used. It reliably supplies signals for establishing the top dead center (TDC) and bottom dead center (BDC).



Compact → p. 94

1 Measuring pressure, level, and temperature in hydraulic systems

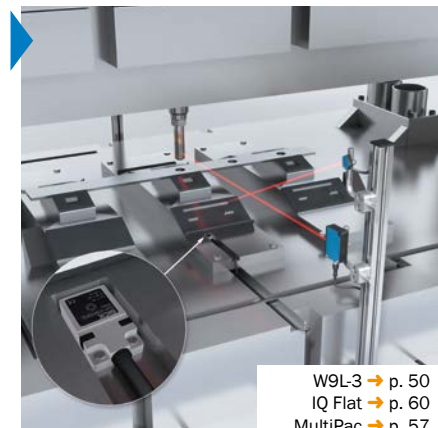
The LFP Cubic level sensor monitors the oil level in the tank within the hydraulic system of the press. The PBS digital pressure switch or a PBT analog pressure transmitter measures the system and forming pressure to ensure the best possible component quality. The TBS temperature switch measures the oil temperature to prevent overheating.



LFP Cubic → p. 106
PBS → p. 108
TBS → p. 111

2 Tool monitoring (in-die sensing)

The IQ Flat inductive proximity sensor, which is integrated into the press, detects whether the metal workpiece is correctly positioned. The W9L-3 Laser small photoelectric sensor – mounted outside of the tool – detects precise workpiece features. A W27 MultiPac photoelectric sensor enables punching tool breakages to be monitored even when dealing with reflective surfaces.

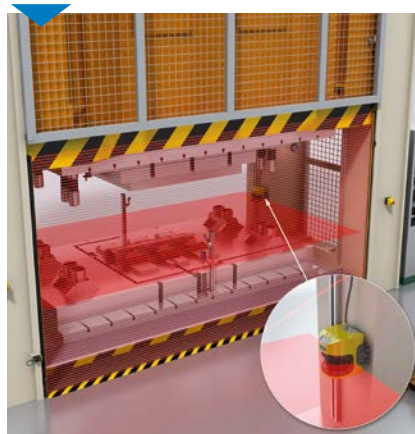


W9L-3 → p. 50
IQ Flat → p. 60
MultiPac → p. 57

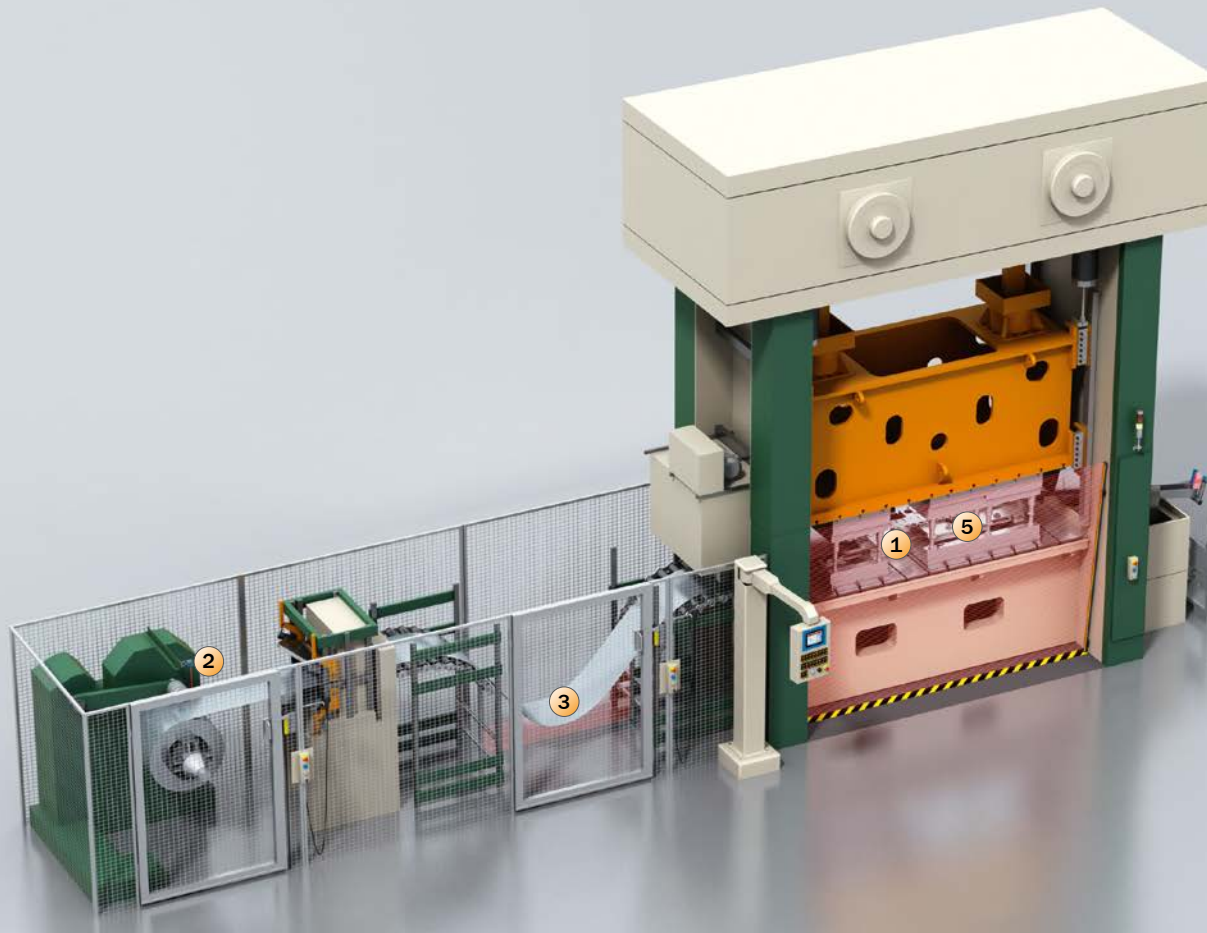
7 Hazardous point protection

The C4000 or deTec4 Core safety light curtain provides hazardous point protection on both sides of the press. The interior of the press is monitored using a secondary protective measure, such as the S3000 safety laser scanner. It prevents the press from starting as long as there is a person inside the press. Once the press has started, the laser scanner is muted when the press is performing its downstroke.

The IN4000 inductive safety switch monitors whether the protective doors are closed. The non-contact switch compensates for any vibrations and shifts. The alternative solution TR4 Direct transponder safety switch offers additional benefit against manipulation. All safety sensors are connected by using the compact Flexi Soft safety controller.



C4000 Standard → p. 73
IN4000 Standard → p. 85
S3000 Standard → p. 71
Flexi Soft → p. 88



2 Metal sheet uncoiling

To ensure a constant feed of material, the uncoiling speed of the sheet coil must be regulated. The DT35 distance sensor continuously measures the radius of the sheet coil throughout the entire unwinding process. The DFS60 incremental encoder uses a friction roller to measure the retraction speed of the sheet.

3 Loop control

The loop control system enables the separation processes, such as unwinding and cutting of the sheet. The sag of the sheet roll is continuously determined by the MLG non-contact automation light grid or the DT35 non-contact laser distance sensor. These values are used to control the retraction speed of the sheet.

4 Ejection control, monitoring and counter function

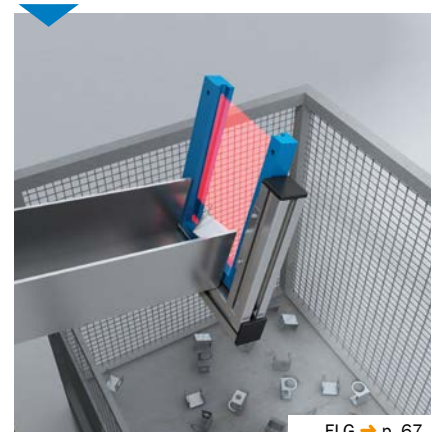
Once produced, workpieces are transported out of a punch press via a chute. At the end of the chute, the FLG automation light grid (open-side version) detects the workpieces that have fallen through the opening in the light grid. Any material backlog in the tool or faults in the process are identified early. The digital signal can be evaluated by the controller to count the manufactured parts.



DFS60 → p. 92
Dx35 → p. 101



MLG → p. 65
Dx35 → p. 101



FLG → p. 67

1 Hazardous point protection

The C4000 safety light curtain (host/guest) provides hazardous point protection on both sides of the press.



Another smart solution involves just one deTec4 Core safety light curtain that is mounted at an angle. No blind zones and a 14 mm resolution ensure safe detection right down to the ground. Both safety sensors are connected using the compact Flexi Soft safety controller.

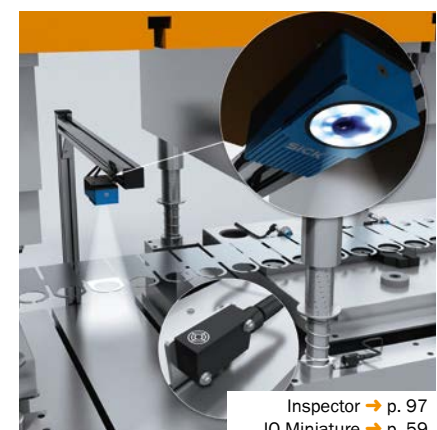


C4000 Standard → p. 73
deTec4 Core → p. 73
Flexi Soft → p. 88

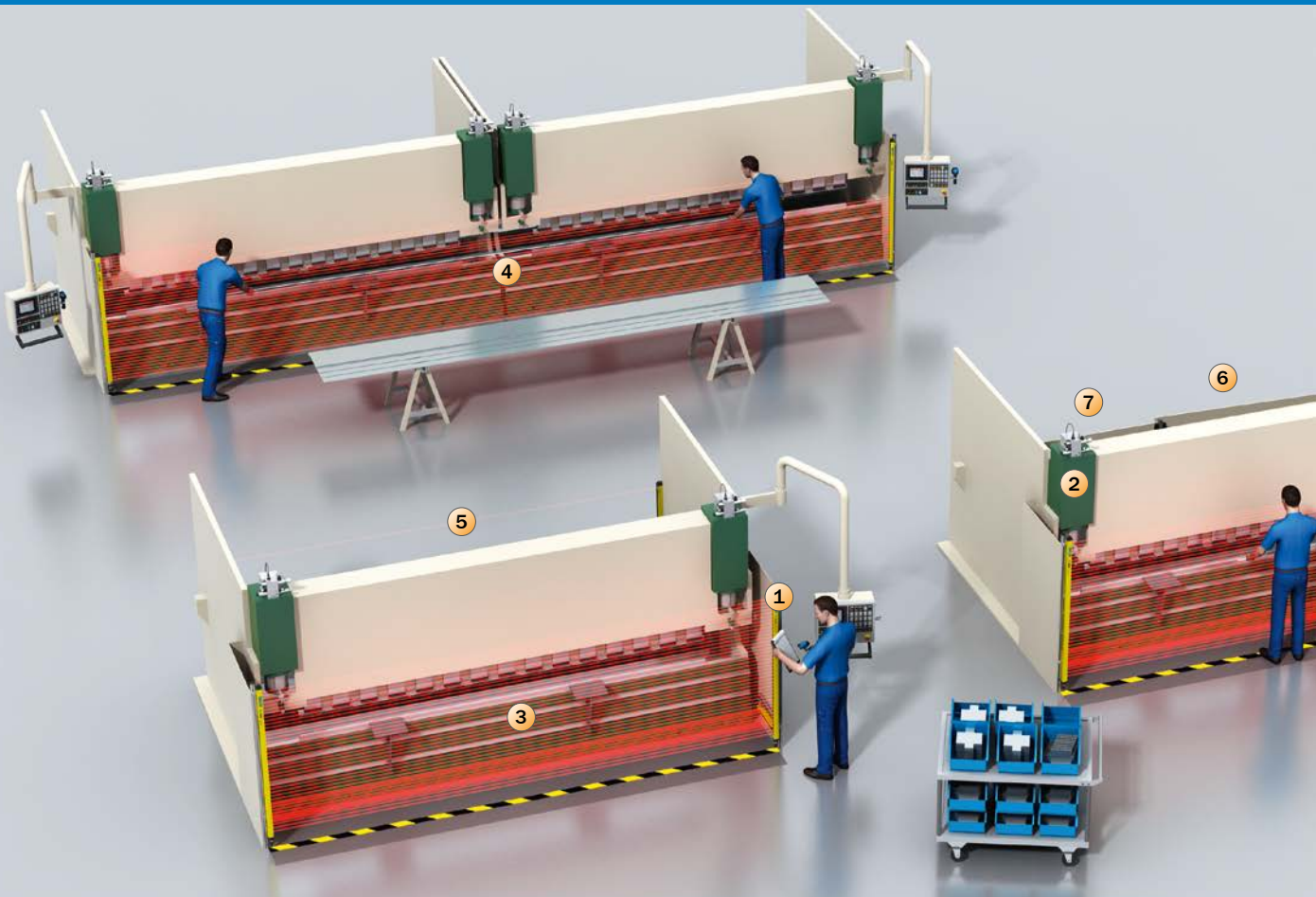
5 Tool monitoring (in-die sensing)

For the purpose of positioning the workpieces precisely and controlling the process, the IM18, IM08, and IQ05 inductive sensors use three different housing styles (flat, round or rectangular) to detect features such as edge position and punched holes at several points.

The IQ10 inductive proximity sensor detects the limit stop on the guide punch to verify that the tool has closed correctly. The Inspector vision sensor continuously checks the punched contours during the process. Irregularities during the punching process are identified early, which minimizes consequential damage to the tool and rejected material.



Inspector → p. 97
IQ Miniature → p. 59



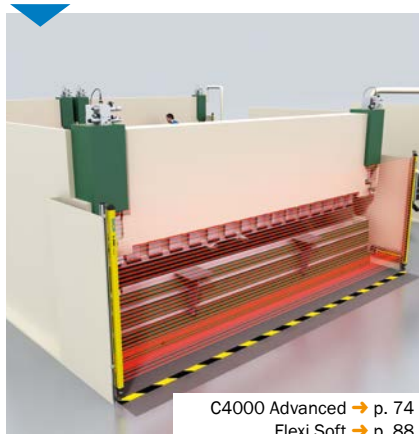
③ Hazardous point protection on a press brake

The hazardous point on a hydraulic press brake is protected by two C4000 safety light curtains (host/guest) in conjunction with the compact Flexi Soft safety controller. All control signals, such as top dead center (TDC), bottom dead center (BDC), plus stoptime measurement and blanking for the sheet, are evaluated using the Flexi Soft.

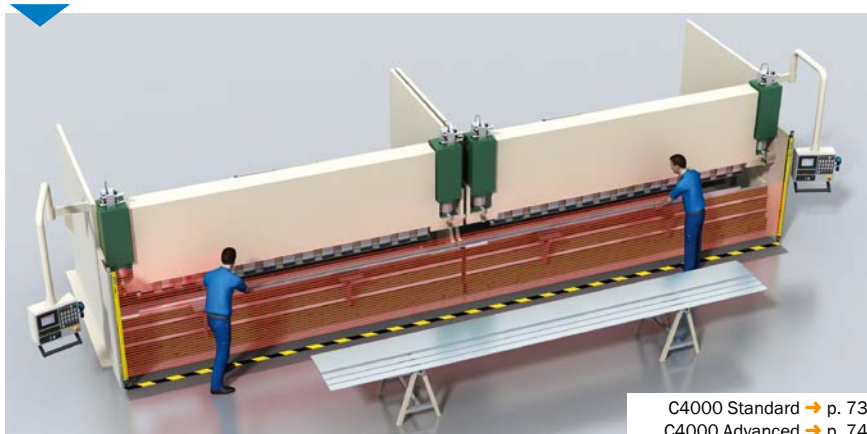
④ Hazardous point protection on tandem presses

Two press brakes are used in parallel when bending very long workpieces. Since the area to be monitored is very wide, it can only be protected with optical safety devices with long sensing ranges, such as the C4000 safety light curtain.

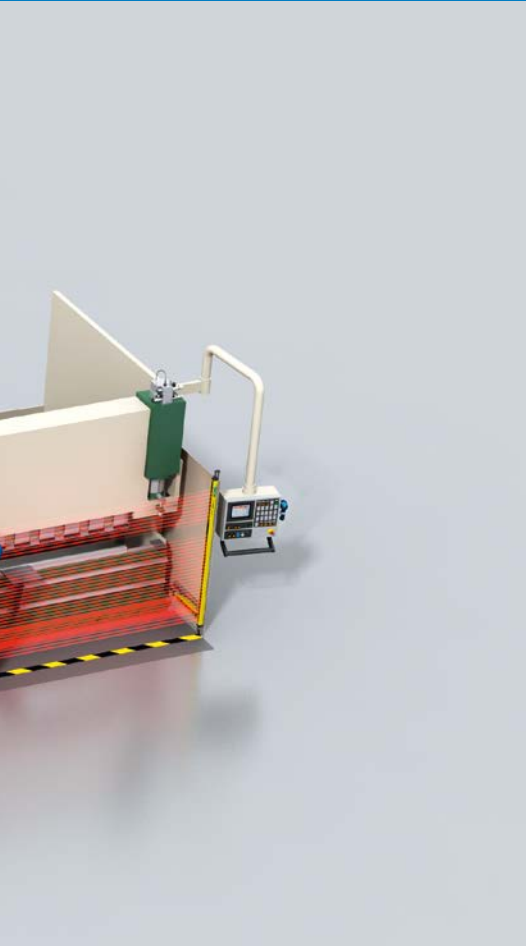
A light curtain attached horizontally at the bottom provides safe presence detection.



C4000 Advanced → p. 74
Flexi Soft → p. 88



C4000 Standard → p. 73
C4000 Advanced → p. 74



5 Access protection with multiple light beam safety device

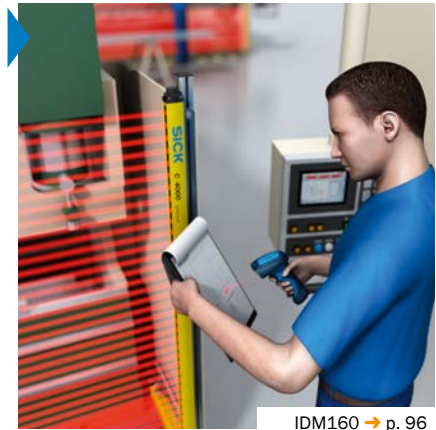
Access protection at the rear of the press brake is implemented using the M2000 A/P multiple light beam safety device. If the light beam is interrupted, it will stop the machine's dangerous movement.



M2000 Standard A/P → p. 80

1 Mobile identification of production data

The rugged IDM160 hand-held scanner is used to read a bar code from an order sheet; this bar code contains all the information required to configure the system for a particular series part. The data is wirelessly transferred to the ST 2070 base station. A majority of the system conversion is completed automatically. The operator receives all the information required for the production series on the display.



IDM160 → p. 96

2 Pressure measurement in the hydraulic cylinder

The PBT pressure transmitter continuously measures the oil pressure in both cylinders of the upper tool during the bending process. The analog signal is evaluated in the machine controller, which ensures that the correct bending force is used for the workpiece and the cylinders are synchronized.



PBT → p. 109

6 Access protection with door and safety locking device

Rugged i10 safety locks ensure that when the door is open the machine stops and won't start again until all process restart steps are completed. Only then can the door be opened; the machine is still prevented from starting. The door must be closed for the system to restart.



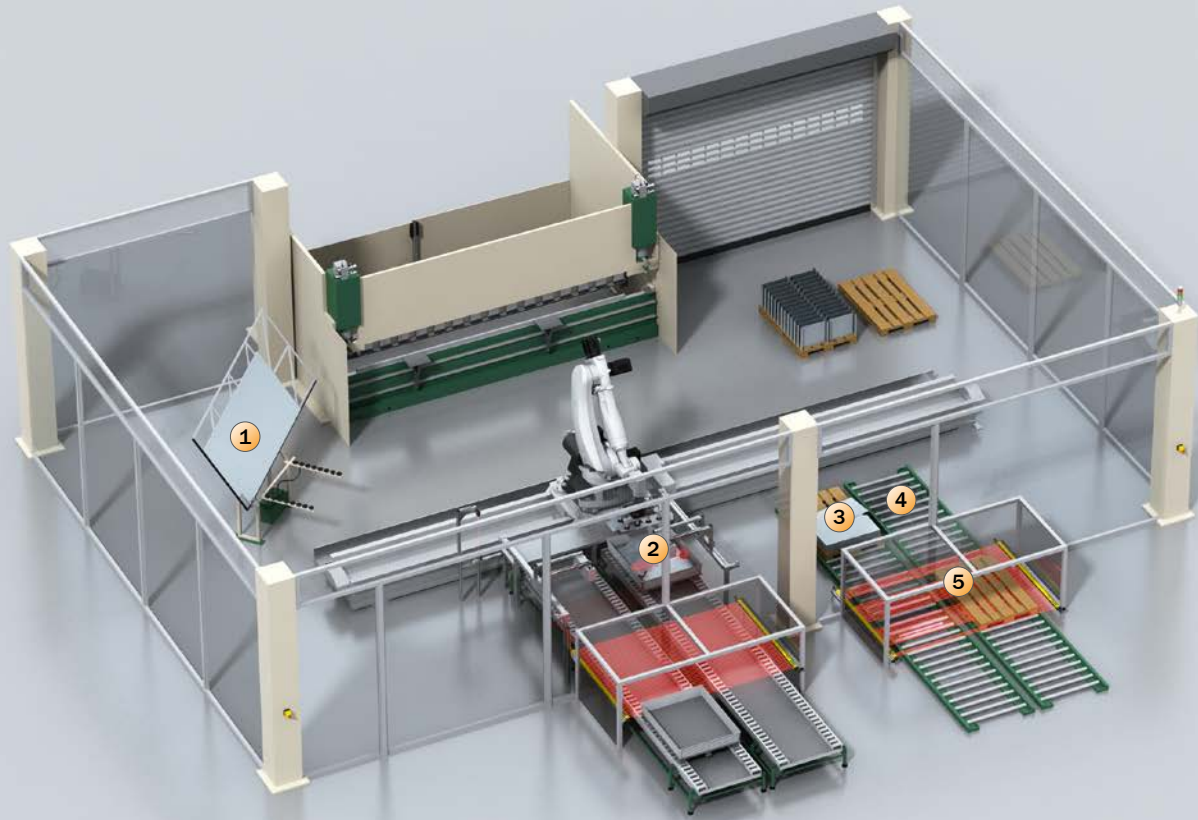
i10 Lock → p. 81

7 Measuring pressure, level, and temperature in the machine hydraulics

The PBS pressure switch measures the system pressure of the hydraulic pump and compares the actual value with the set value. The LFP Cubic determines the level of hydraulic oil in the unit and prevents the pump from being damaged due to a low oil level. The TBT temperature sensor checks the oil temperature to prevent overheating.



LFP Cubic → p. 106
PBS → p. 108
TBT → p. 110



3 Automated parts removal from pallets

Sheet metal parts are stacked on pallets in accordance with the production order and removed by a robot with a vacuum gripper. The PI50 vision sensor detects the position and alignment of the sheet metal parts and sends the position data to the robot.

4 Non-contact double sheet monitoring

Two OD displacement sensors determine the thickness of the sheet with an accuracy of $\pm 10 \mu\text{m}$. This solution reliably detects double sheets and sheet thickness. The non-contact measurement method improves the cycle time and, consequently, the efficiency of the machine. An evaluation unit calculates the measuring signals and transfers the results to the control.



Inspector → p. 97



OD Precision → p. 101

1 Tactile double sheet monitoring

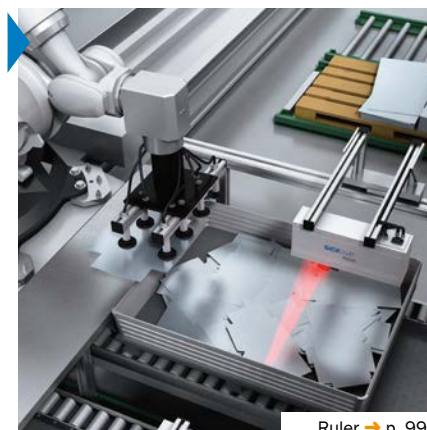
A system consisting of an MPS analog positioning sensor mounted to a pneumatic cylinder determines the thickness of the sheet. This solution reliably detects double sheets and sheet thickness. This tactile measurement procedure offers a cost-effective and material-independent solution.



MPS → p. 62

2 Automated parts removal (bin-picking)

Sheet parts of different shapes and sizes are fed into the bending machine by a robot. The Ruler high-end 3D camera performs a high-precision scan to provide accurate position data for determining the topmost sheet part and its position in the tote. The labor-intensive process of presorting the parts is no longer required.

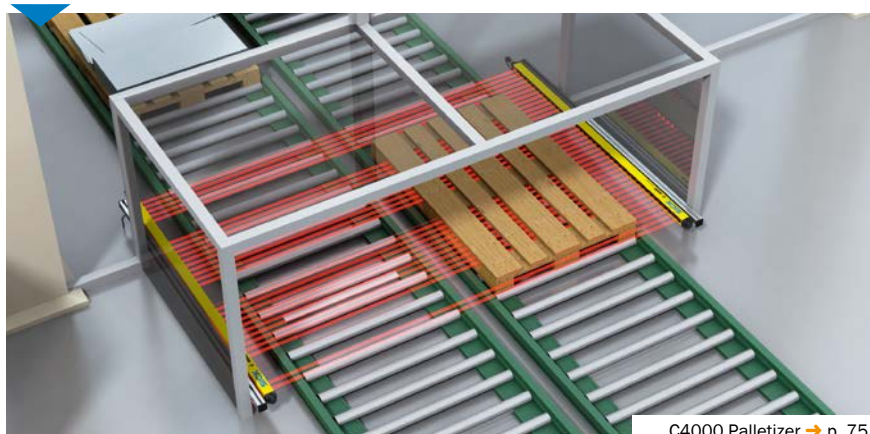


Ruler → p. 99

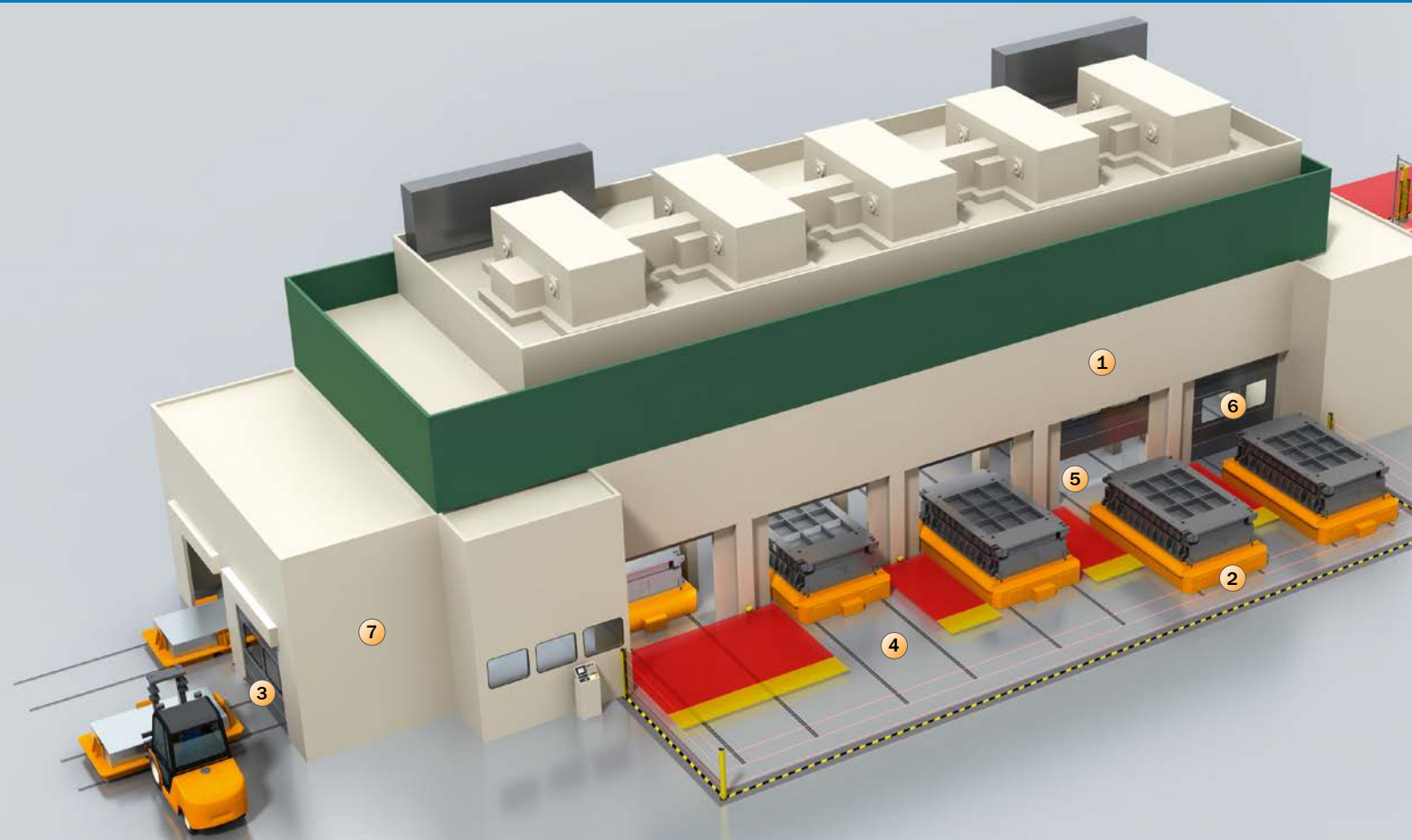
5 Access protection with differentiation between people and material

The C4000 Palletizer or C4000 Fusion safety light curtain can be used to teach a variety of pallet contours. This enables material on pallets to be moved into the area at any time. However, if a worker enters the safety zone, production is stopped due to the different contour pattern that is detected.

Additional muting sensors are not required. Tunnels are only necessary if the safety distance to the hazardous point (e.g., robot removal) is insufficient.



C4000 Palletizer → p. 75



3 Positioning the transfer carriage for sheet metal feeding

A transfer carriage brings the sheets to the pickup point. The DL100 Hi distance sensor handles the highly precise, highly dynamic positioning process. This ensures smooth deceleration and acceleration and prevents the sheets from slipping.

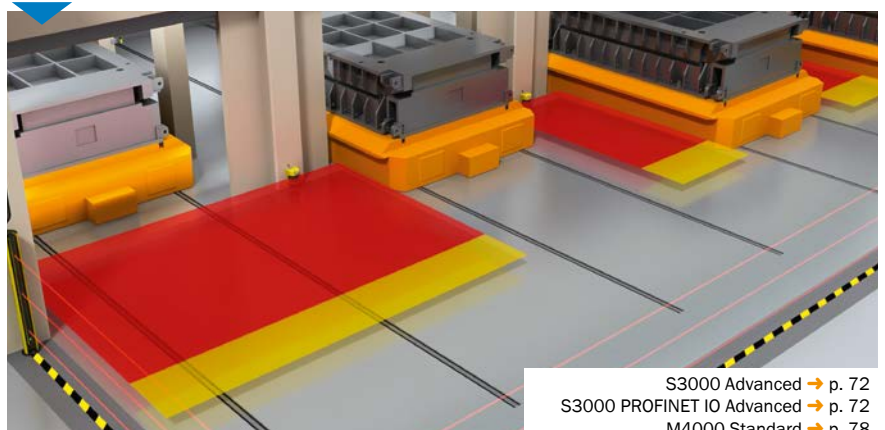
4 Access protection on a press line

The M4000 multiple light beam safety device uses a deflector mirror to protect three sides of the change area for press tools. The interruption of one or more beams stops a dangerous movement, such as that of a press table. The S3000 safety laser scanner protects the area in front of the press between two tool gates.

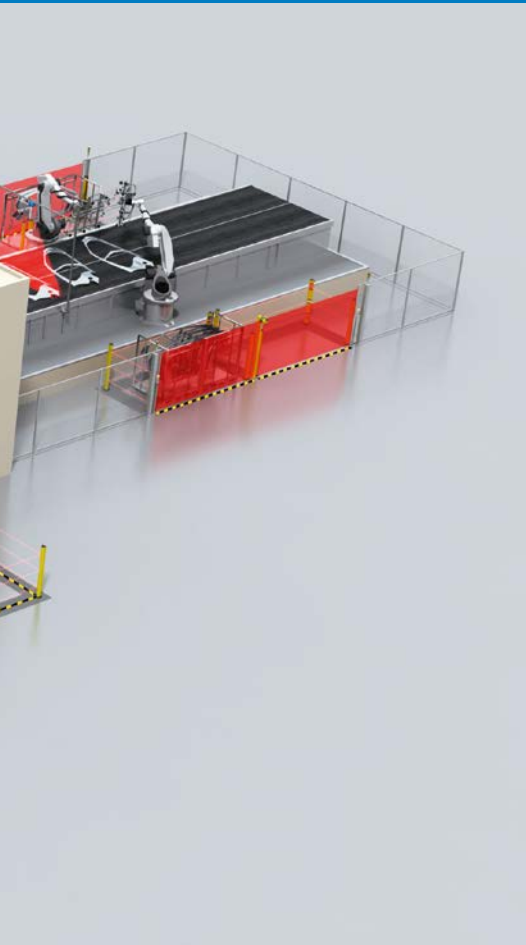
If a person or an object is present in this area, it is prohibited to withdraw or extend the press tools.



Dx100 → p. 102



S3000 Advanced → p. 72
S3000 PROFINET IO Advanced → p. 72
M4000 Standard → p. 78



1 Component detection in a crossbar robot

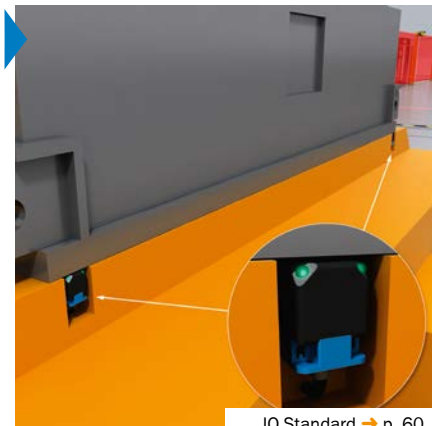
The WT12L-2 small photoelectric sensor checks whether the component is located in the gripper of the robot and whether the component has therefore been removed from the press tool. This prevents mechanical damage to the press.



WT12-2 Laser → p. 52

2 Presence detection of the press tool

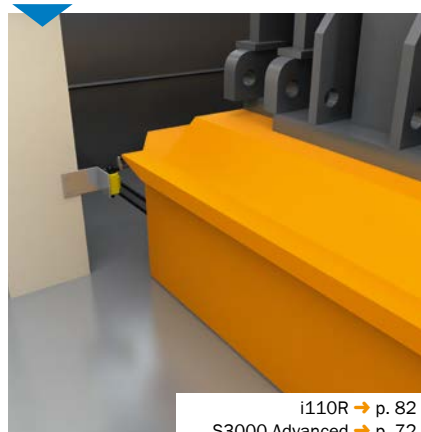
IQ40 inductive proximity sensors signal the correct position of the tool on the press table so that automatic locking can be performed.



IQ Standard → p. 60

5 Safe position monitoring of the tool changer

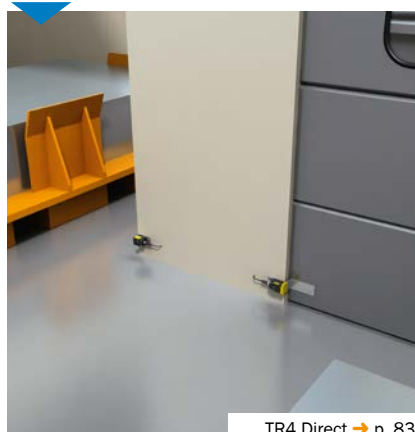
The i110R safety position switch monitors the movement of the press table in the gate area. Pressing the switch activates the protective fields of the S3000 safety laser scanner at the gates.



i110R → p. 82
S3000 Advanced → p. 72

6 Lifting gate monitoring with non-contact safety switch

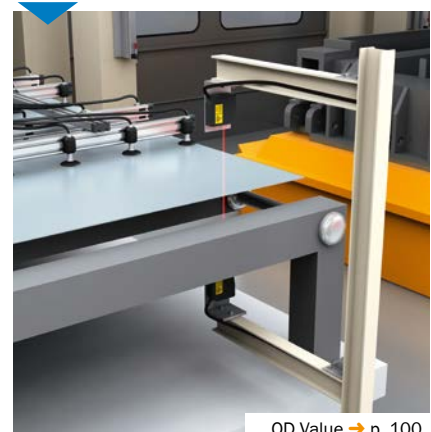
The lifting gate of the press is monitored using the TR4 Direct non-contact transponder safety switch. There is no wear, and safe transponder technology handles the detection process. As soon as the gate is closed, the automatic press process can start.



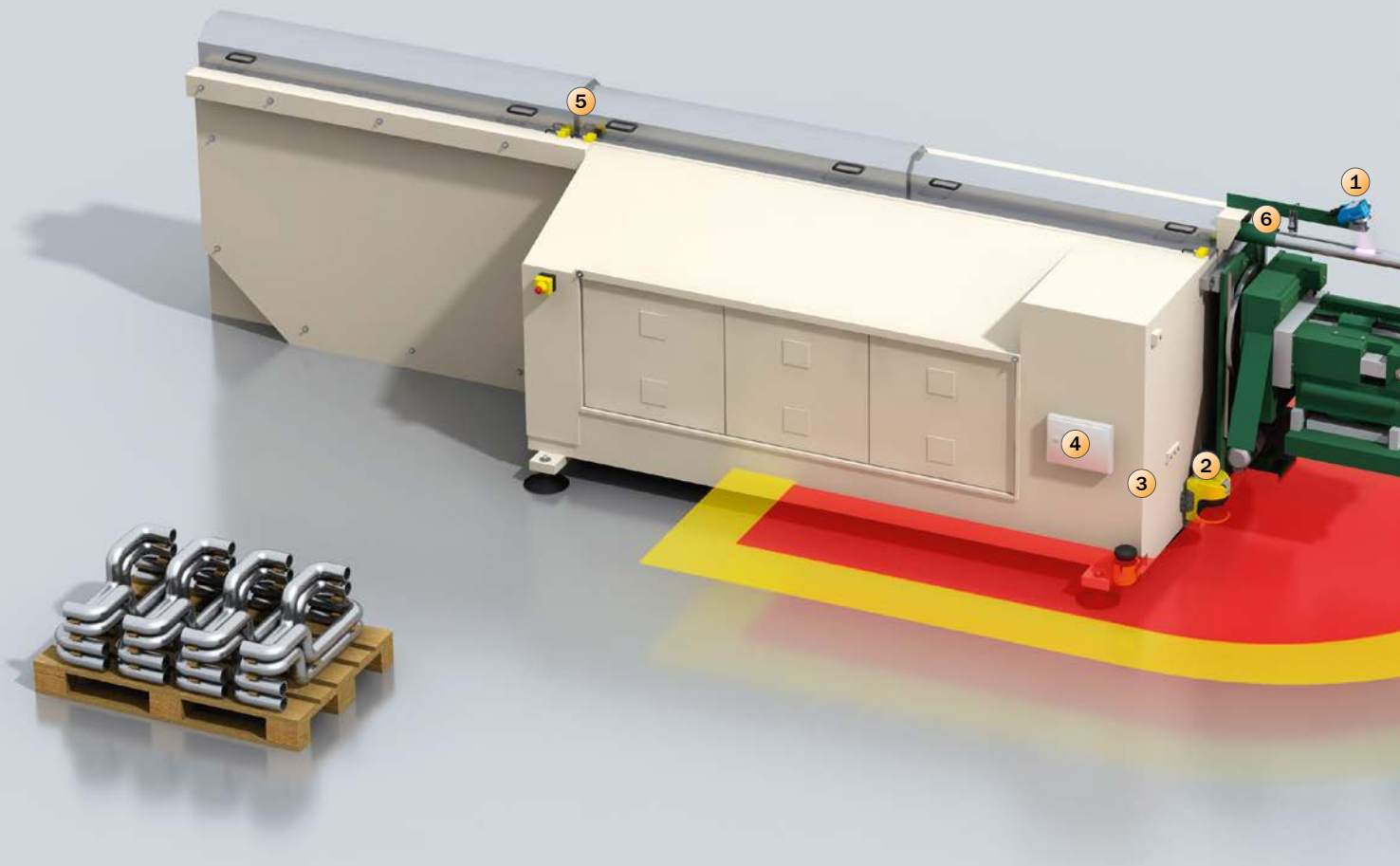
TR4 Direct → p. 83

7 Double sheet monitoring during sheet feeding

Two OD displacement sensors determine the thickness of the sheet with an accuracy of $\pm 10 \mu\text{m}$ as well as signal deviations in thickness and double sheets. The measured values of the sensors are evaluated by averaging the difference and thus allow customer-specific calculation of the data.



OD Value → p. 100



2 Dynamic hazardous area protection

The movement of the bending head and the free pipe end present a hazard for the operator of a pipe bending machine. These zones are protected by S3000 safety laser scanners. Protective and warning fields are configured on the S3000, according to the dangerous movement and activated via the machine controller.

S300 safety laser scanners protect the machine area from the side, so the bent part does not put people at risk during the swivel process.

3 Networked safety laser scanners

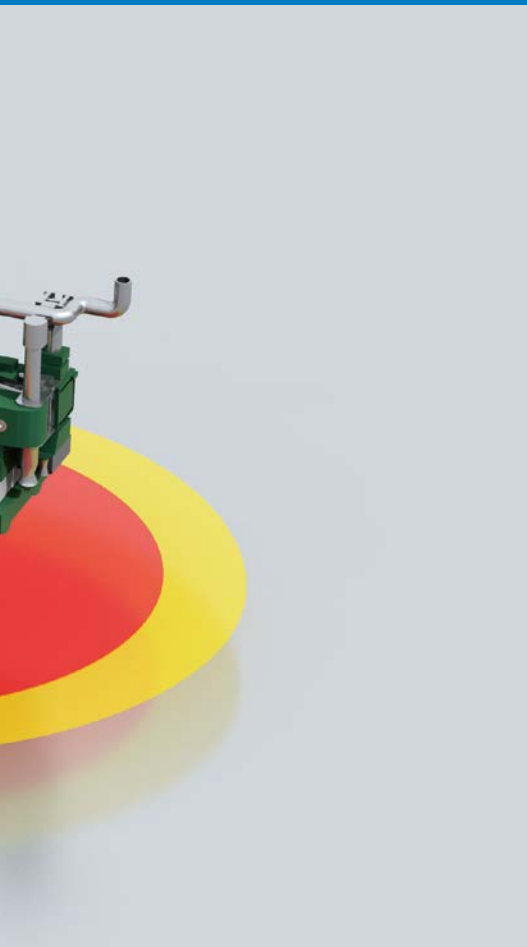
The signals from the laser scanner can either be directly forwarded to the Flexi Soft safety controller or, if there are two devices, via a host/guest connection. All scanners can be directly connected to the CPU and protective fields can be activated immediately via the EFI interface (enhanced function interface).



S300 Mini Remote → p. 69
S3000 Advanced → p. 72



Flexi Soft → p. 88



1 Reliable component detection for direct part marking

Pipes have a 2D code for identification and traceability purposes. This code is dot-peened onto the surface, which prevents it from becoming damaged and illegible in later work steps. The LECTOR®620 image-based code reader with diffuse lighting reliably reads the code even on curved and reflective surfaces.



LECTOR62x → p. 95

4 Safe drive monitoring

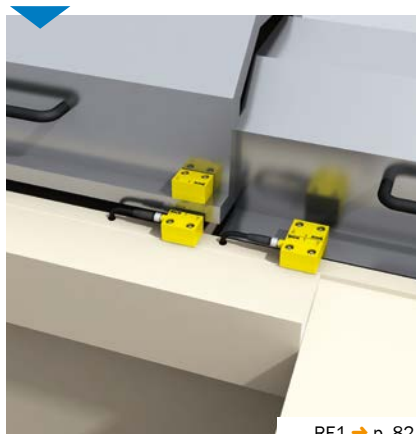
The swivel motion of the bending head and the material feed of the profile are hazardous points during the bending process. On electrically driven tube bending machines, the Drive Monitor FX3-MOC detects when the dangerous movement (e.g., swivel motion of the bending head) has come to a stop and, in conjunction with the Flexi Soft safety controller, monitors the electric drive system.



Flexi Soft → p. 88

5 Monitoring the protective hood

The protective hood above the pipe feeder on the bending machine is monitored using the RE1 non-contact magnetic safety switch. Thanks to its wide sensing range, the RE1 compensates for position tolerances and the door offset.



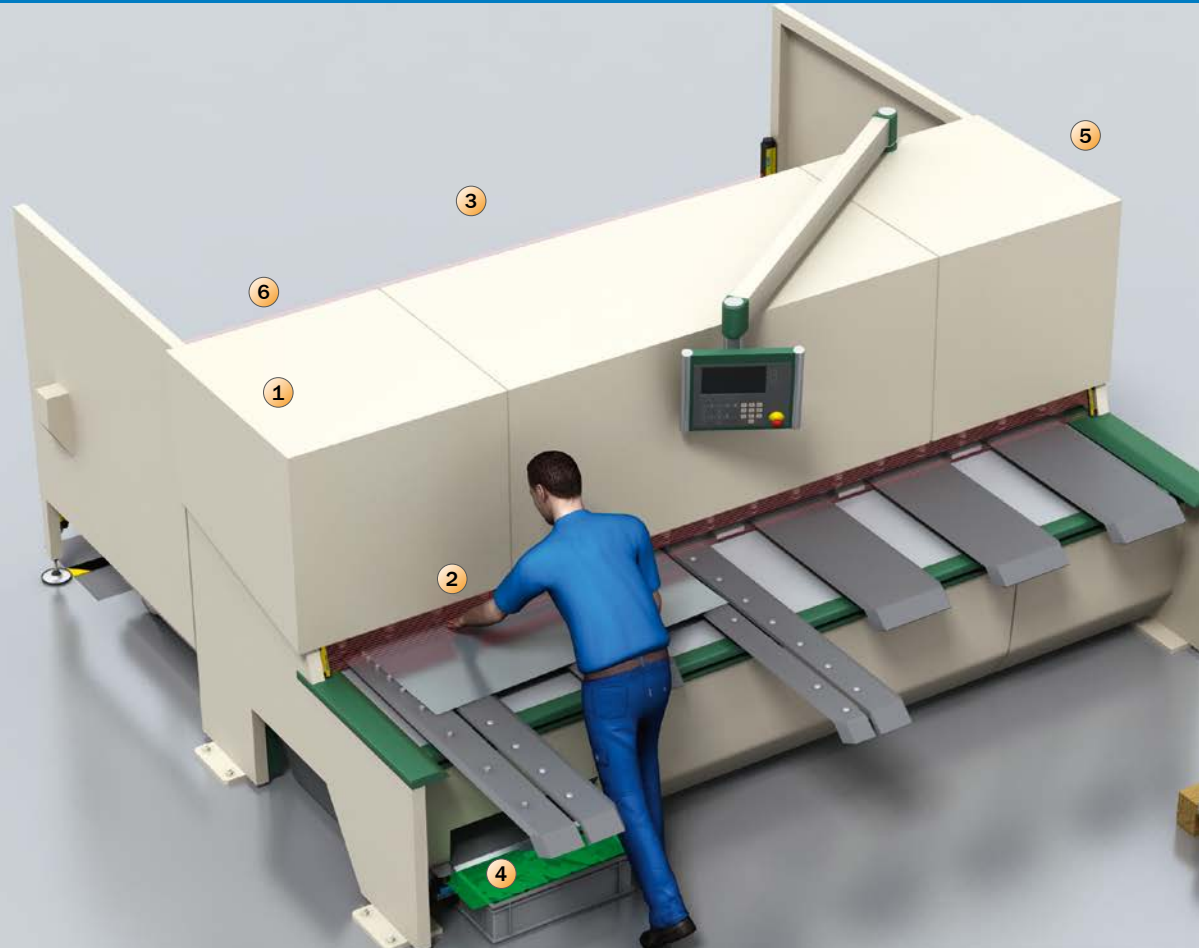
RE1 → p. 82

6 Non-contact detection with inductive proximity sensor

The IME12 inductive proximity sensor signals when the pipe is at the correct position to start the processing sequence. The sensor is non-contact and therefore free from wear.



IM Standard → p. 58



3 Access protection for the rear area

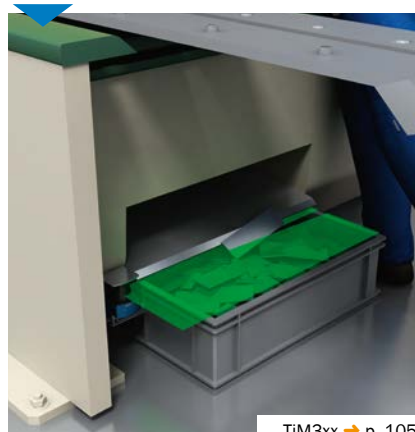
The rear area of the plate shears can be safely monitored with an M2000 A/P or M4000 A/P multiple light beam safety device, and the area can be quickly accessed when parts must be removed. The integrated alignment aids on the M4000 ensure easy commissioning.

4 Level monitoring in the material box and ejection control monitoring

If the stack reaches the fill level and interrupts the sensor field, the TiM3xx 2D laser scanner signals that the maximum level has been reached via a digital switching signal. The material box must then be replaced. Separated sheet parts slide out of the machine and are detected by the configurable sensor field.

5 Measuring pressure, level, and temperature in the machine hydraulics

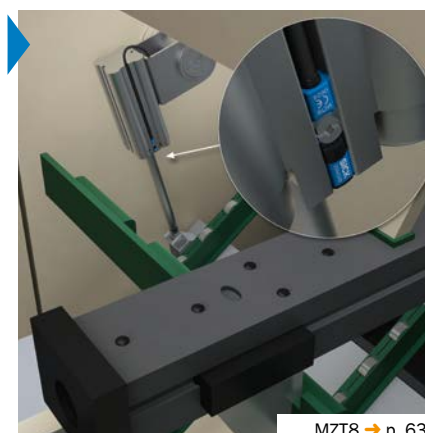
The PBS pressure switch measures the system pressure of the hydraulic pump and compares the actual value with the set value. The LFP Cubic monitors the level of hydraulic oil in the unit within the four programmable switching thresholds and prevents the pump from being damaged due to a low oil level. The TBT temperature sensor checks the oil temperature to prevent overheating.





1 Monitoring the cylinder final positions

An MZT8 magnetic cylinder sensor reliably detects the final position of the pneumatic cylinder on the part removal device.



MZT8 → p. 63

2 Hazardous point protection on Guillotine shears

The miniTwin safety light curtain protects access to the plate shears. The miniTwin has a small size, a flexible mounting design, and no blind zones, enabling easy integration near the hazardous point. Used in conjunction with a safety relay or the Flexi Soft safety controller, it enables safety functions to be implemented conveniently across the entire machine.



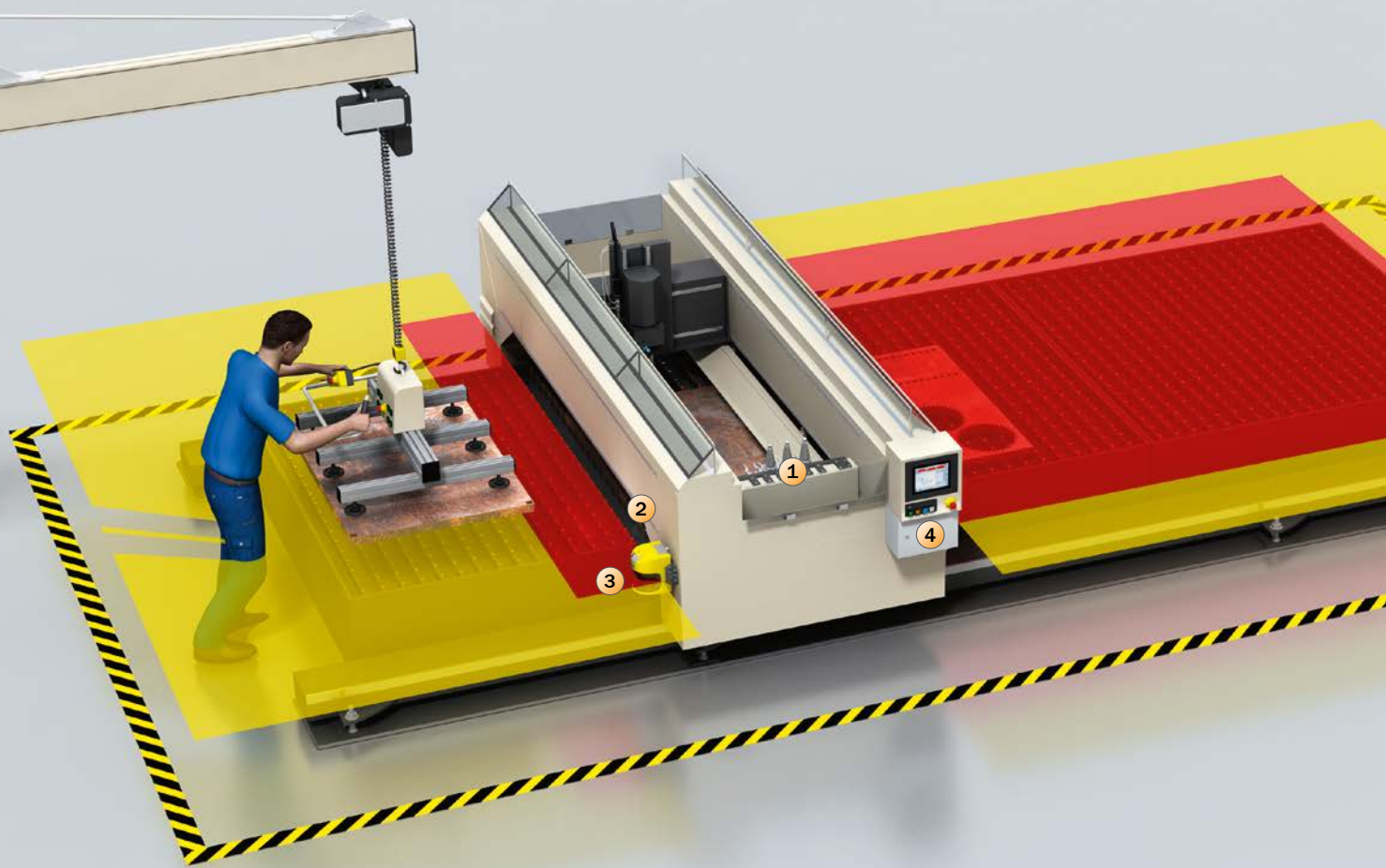
miniTwin4 → p. 76

6 Monitoring of sheet ejection

A GR18S or W15 photoelectric sensor reliably detects the part removal of cut sheets on the material carriage.



W15 → p. 55
GR18S → p. 56



② Determination of the alignment of metal plates

The worker places the metal plates on the machining table. If these are not accurately aligned in the machining direction, this will lead to incorrect cutting and increased costs. The compact PI50 Inspector vision sensor detects the angular variation by means of the punched holes or a metal edge.

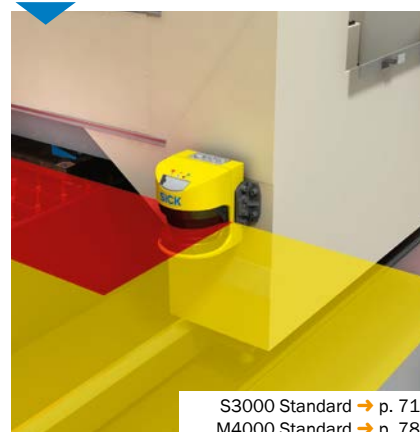
The signal is used to compensate for the cutting movement in the machine controller.

③ Hazardous area protection at the machining table

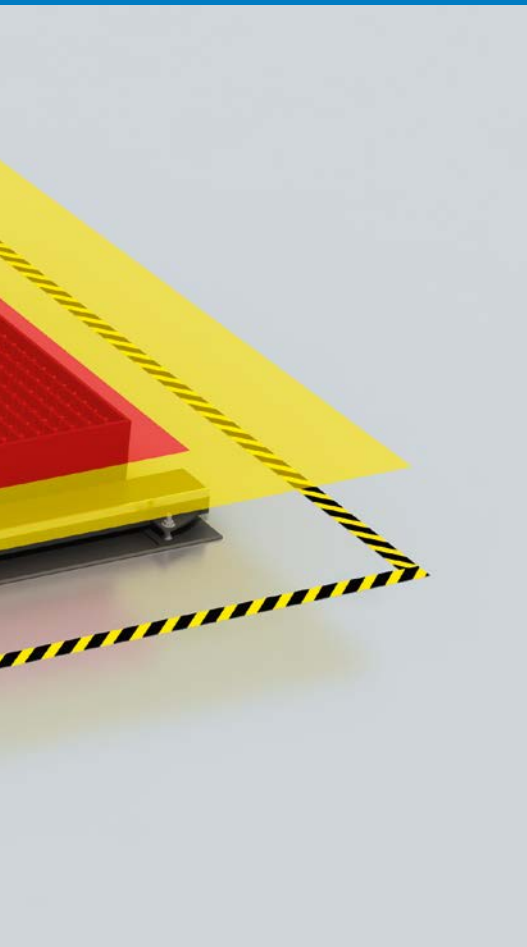
S3000 safety laser scanners with simultaneous protective fields can be used on both sides of the CNC portal to protect the machine; they can be used as an alternative to M4000 multiple light beam systems or fences. This increases the machine's productivity and simplifies loading and unloading.



Inspector → p. 97

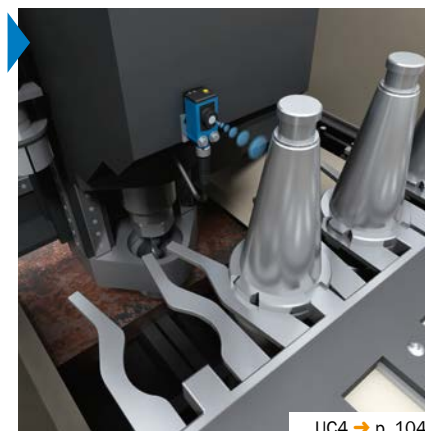


S3000 Standard → p. 71
M4000 Standard → p. 78



1 Tool detection

Further machining steps, such as the drilling of holes, are performed on the plasma arc cutting line. The tools are placed in a tool magazine and detected by a UC4 ultrasonic sensor. The sensor is very small and can be integrated in areas where space is limited; the detection principle is not sensitive to reflective surfaces.

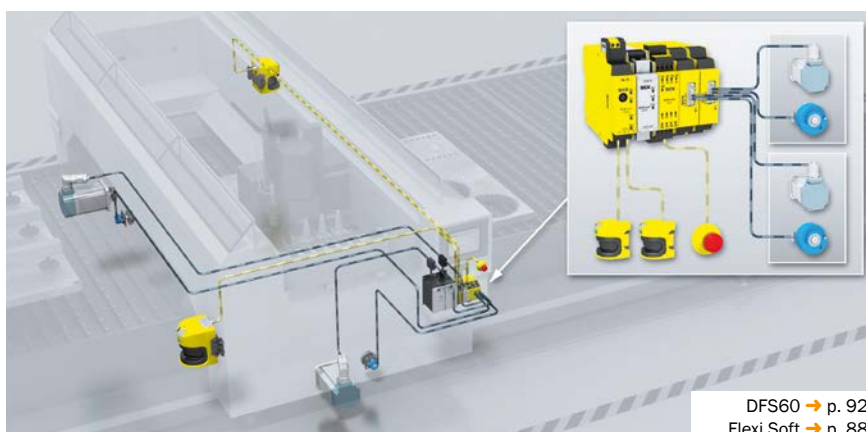


UC4 → p. 104

4 Safe drive monitoring

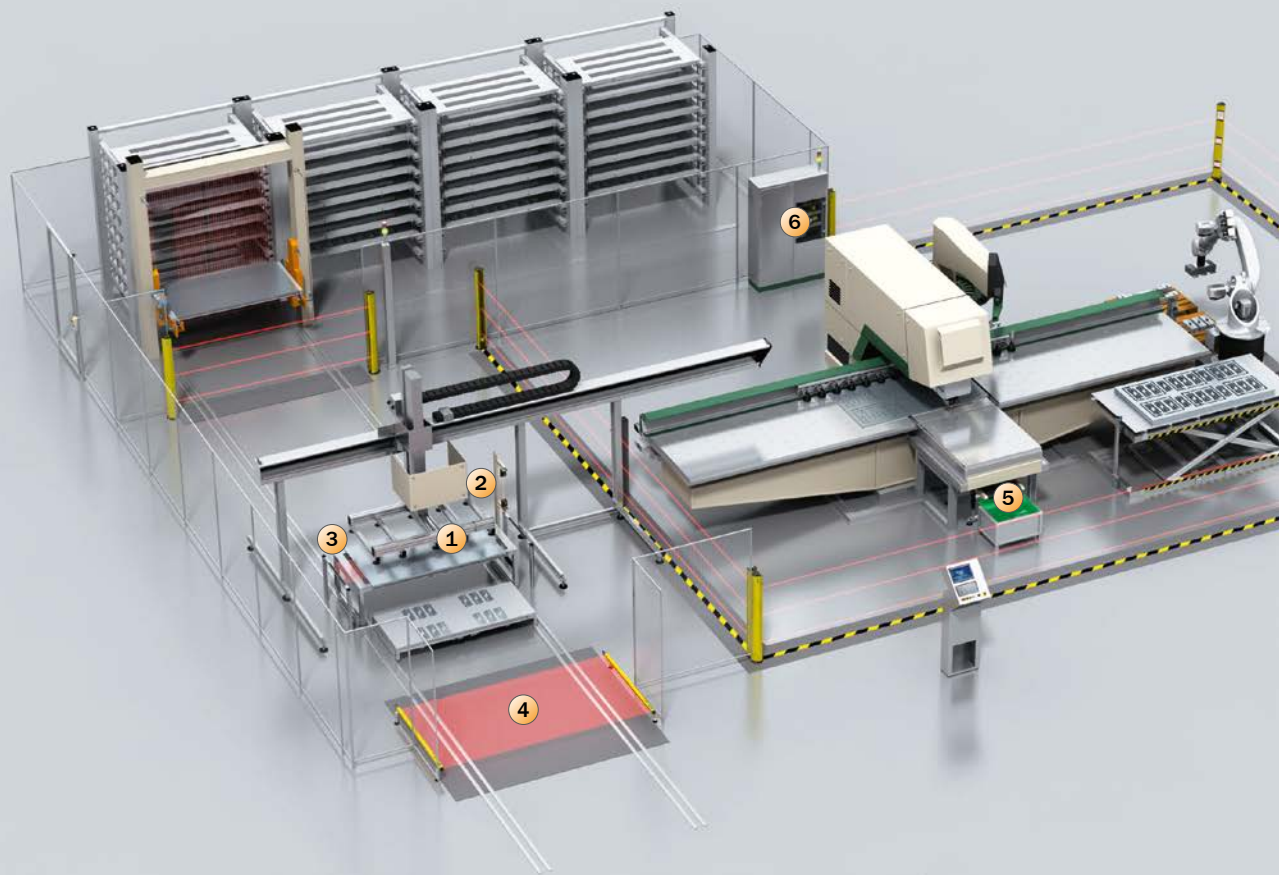
The movements of the CNC portal, which the worker cannot predict and which can be very rapid, represent hazardous points during the machining process. The modules of the Drive Monitor FX3-MOC safely monitor the electric drive system of the CNC plasma arc cutting line in conjunction with the signals of the Flexi Soft safety controller.

Depending on the performance level required or the drive used on the machine, it may be necessary to attach an additional incremental encoder (e.g., DFS60) and forward its signal to the safe control separately for evaluation purposes.



DFS60 → p. 92
Flexi Soft → p. 88

Laser cutting and turret punching system: Parts feeding system



3 Top end position at the scissor lift table

The scissor lift table raises the stack of sheets for removal of single sheets. The SAS smart light grid enables precise detection of the top edge irrespective of the size of the sheet. This allows the handling device to be positioned for faster removal.

4 Access protection with differentiation between people and material

The C4000 Palletizer or C4000 Fusion safety light curtain can be used to teach a variety of pallet contours. This enables material on pallets to be moved into the area at any time. However, if a worker enters the safety zone, production is stopped due to the different contour pattern that is detected.

5 Level monitoring in the material box

The TiM3xx 2D laser scanner is used for level monitoring. The TiM3xx signals that the maximum level has been reached via a digital switching signal. The material box must then be replaced. Freely configurable sensor fields facilitate installation on the machine and fast, cost-effective adaptation to different tote sizes.



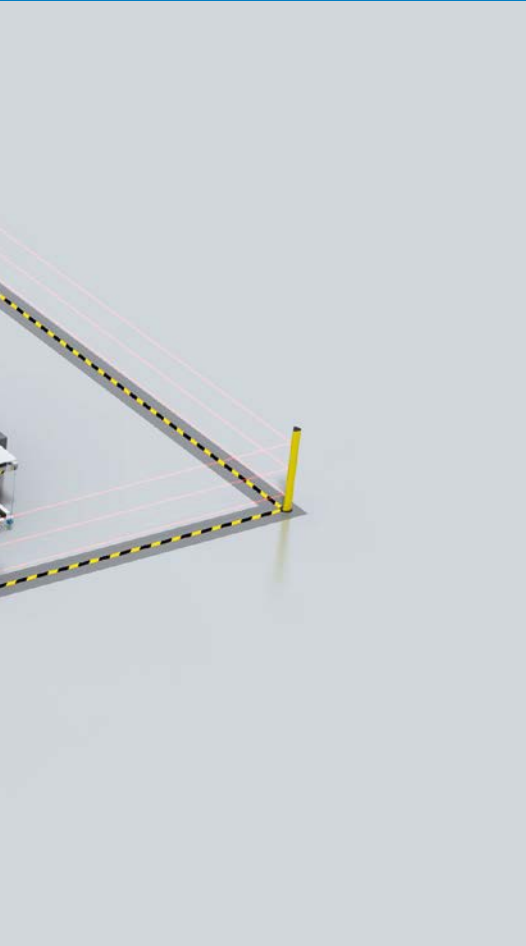
SAS → p. 68



C4000 Standard → p. 73



TiM3xx → p. 105



1 Parts detection in the robot gripper

A GR18S cylindrical photoelectric sensor reliably monitors pickup of the sheet parts by the gripper. Interruptions in the process are reliably detected and throughput is improved.



GR18S → p. 56

2 Non-contact double sheet monitoring

Two OD displacement sensors determine the thickness of the sheet with an accuracy of $\pm 10 \mu\text{m}$. This solution reliably detects double sheets and sheet thickness. The non-contact measurement method improves the cycle time and, consequently, the efficiency of the machine. An evaluation unit calculates the measuring signals and transfers the results to the control.



OD Value → p. 100

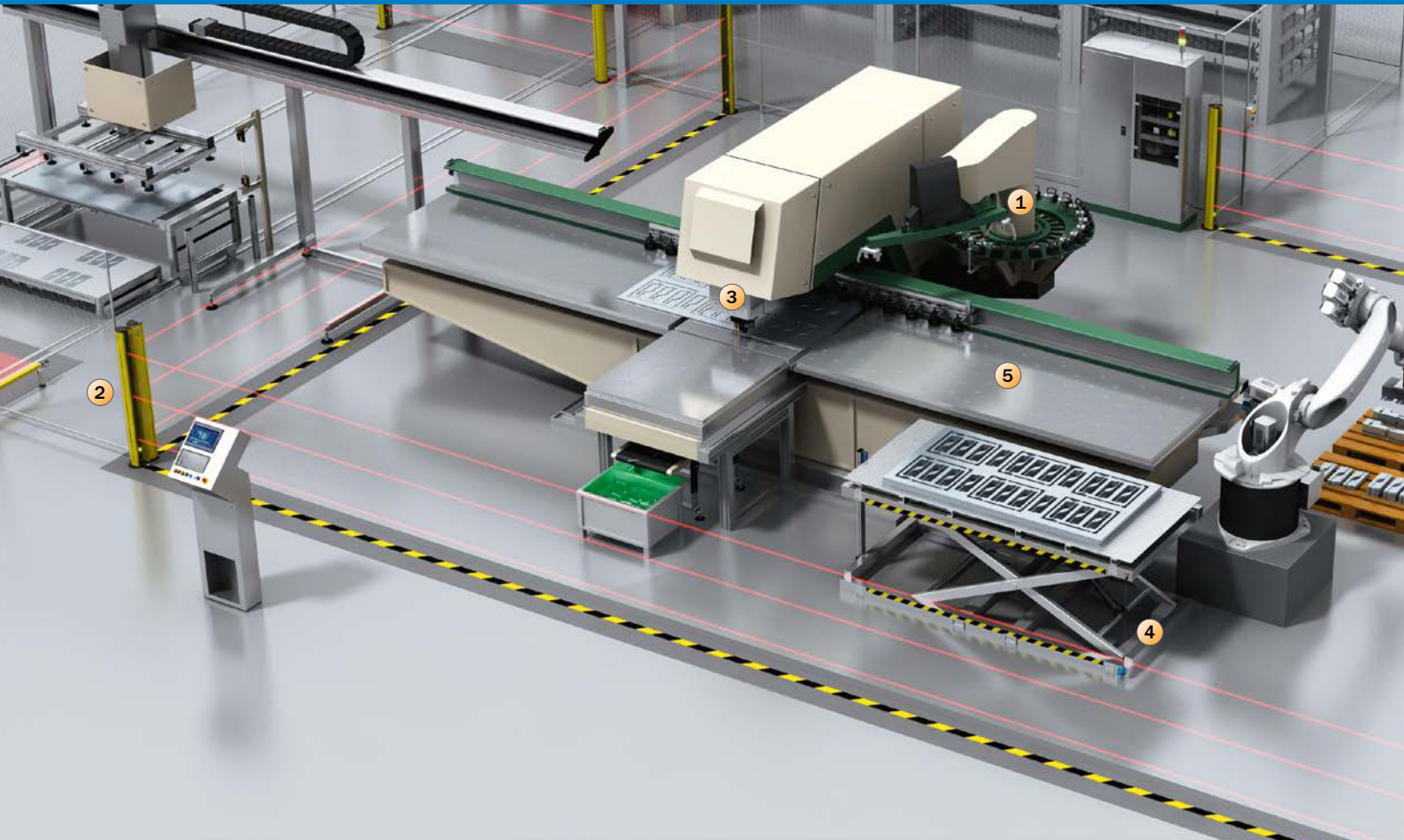
6 Safe networked control solution

The Flexi Soft modular safety controller is responsible for complete monitoring of all safety functions of the punching or laser cutting line. All safety signals for the door switch, the emergency stop pushbutton, and the opto-electronic safety devices, can be connected and logically combined. The advanced functionality of the Flexi Line enables individual machine modules of a system to be added or removed subsequently without any programming work.

In addition, the Flexi Loop allows for simple integration and the unambiguous diagnosis of up to 32 stations via a cost-effective 5-pin M12 standard cable. Gateways for all common fieldbus systems are available for connecting to an HMI or a network.



Flexi Soft → p. 88



3 Height positioning and collision protection at the cutting head

During machining, heat and tension can lead to uneven sheets. An OD Max optical displacement sensor continuously checks the distance between the cutting head and the sheet panels on the machining table. The position relative to the sheet panel is monitored and collisions are avoided.



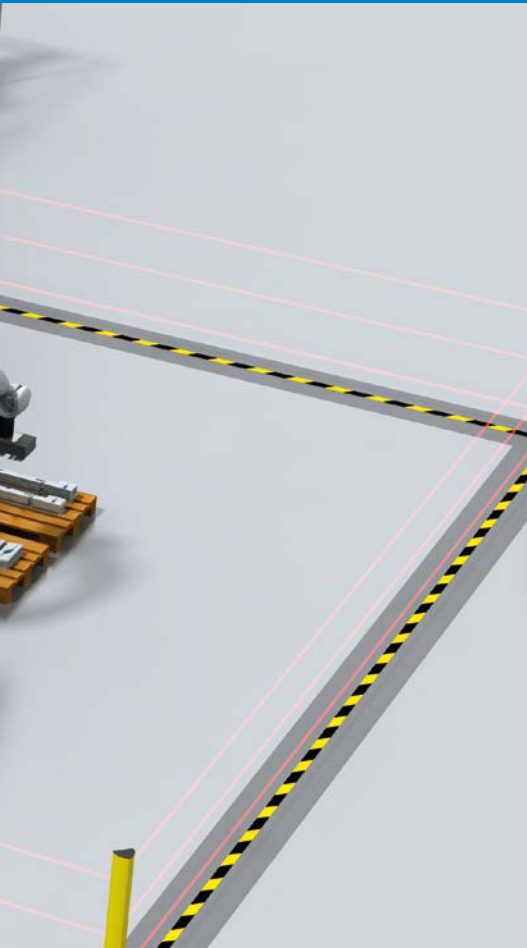
OD Max → p. 100

4 Height monitoring at the scissor lift table

Following machining, residual grids are placed on a scissor lift table. To ensure a smooth transfer, the height of the stack must be aligned with that of the machining table. The analog signal values of the EcoLine wire draw encoder are used to determine the lifting height. When the maximum load has been reached, the worker removes the stack of residual grids.



EcoLine → p. 93



1 Detection of assigned tool locations

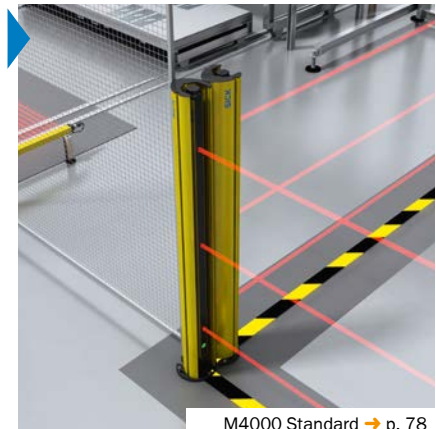
The machining process on a punching machine requires different tools, which are provided by a tool magazine. The assignment of the tool magazine location and the correct positioning of a tool holder are reliably detected using the W27-3 compact photoelectric sensor.



W27-3 → p. 54

2 Access protection with separation of work areas

Several M4000 multiple light beam safety devices fitted in a column and mirror columns for deflecting the light beam are used to define separate safety zones. The loading area can be used and monitored independently of the work area. The integrated alignment aids ensure easy commissioning.



M4000 Standard → p. 78

5 Collision protection at the machining table

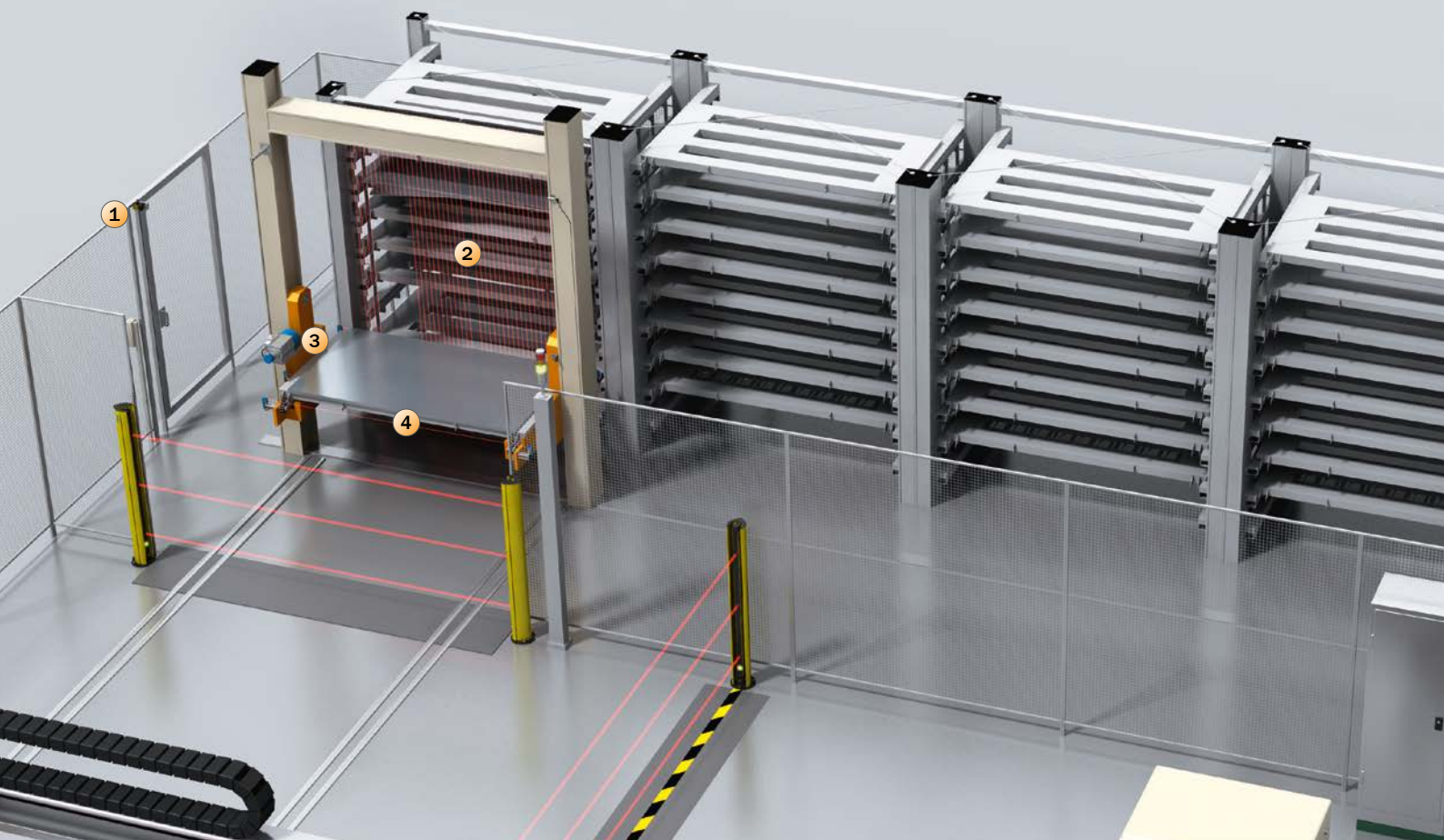
The TiM3xx 2D laser scanner is used to detect curved sheets or tilted parts. The TiM3xx signals the detected objects by means of a digital switching signal and thus avoids collisions with the tool. Freely configurable sensor fields facilitate installation and integration into the machine.

Miniature photoelectric sensors such as the W4S-3 with PinPoint technology are an alternative solution for detecting bulges. The W4S-3 is fitted at several points and the light beam aligned precisely parallel to the sheet. This monitors the evenness of the sheet.



W4-3 → p. 48
TiM3xx → p. 105

Laser cutting and turret punching system: Automated sheet storage system



③ Height positioning in metal sheet storage

The material lift is used to move stacks of sheets from a transfer carriage or residual sheets from a vacuum nozzle to an interim shelf for storage. The BTF13 wire draw encoder signals the absolute height position of the material lift to the control. The bottom and top final positions of the material lift are monitored by inductive proximity sensors.

④ Positioning of the sheet pallet

Two WS/WE12-2 small photoelectric sensors or one WT12-3 photoelectric proximity sensor precisely detects the presence of the sheet pallet or the position of the pallet edge thanks to a fast switching frequency.

They ensure that the vacuum nozzle or the transfer carriage of the material infeed can place the sheets correctly and that there is always a gap between the material lift and the interim shelf. This eliminates collisions and reduces downtime.



IM Standard → p. 58
HighLine → p. 94

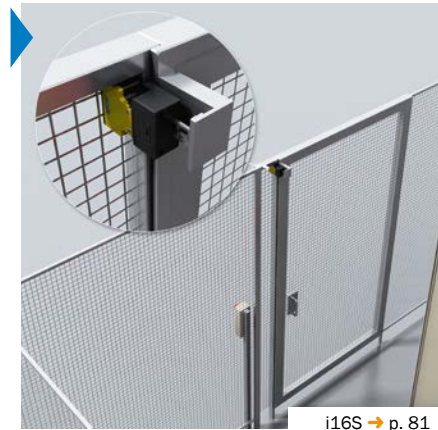


W12-3 → p. 51
W12-2 Laser → p. 52



1 Access protection with electro-mechanical safety switch

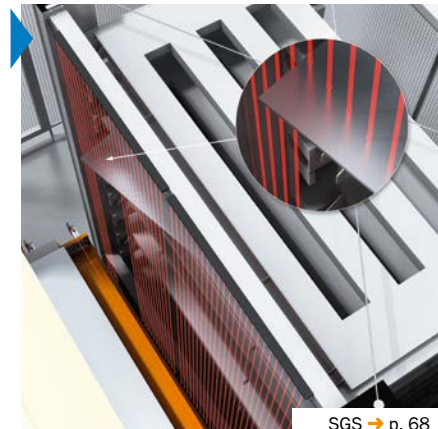
The i16S electro-mechanical safety switch uses the locking device to lock the machine door and ensures that all process steps are completed before the door can be opened. Once the door has been opened, the machine cannot be started. The door must be closed for the system to restart.



i16S → p. 81

2 Protrusion monitoring in the sheet buffer store

Metal frames with sheet parts or sheet panels are placed on the interim shelf. The SGS smart light grid provides early detection of objects that have slipped or are protruding and thus eliminates collisions and subsequent damage.



SGS → p. 68

5 Safe networked control solution

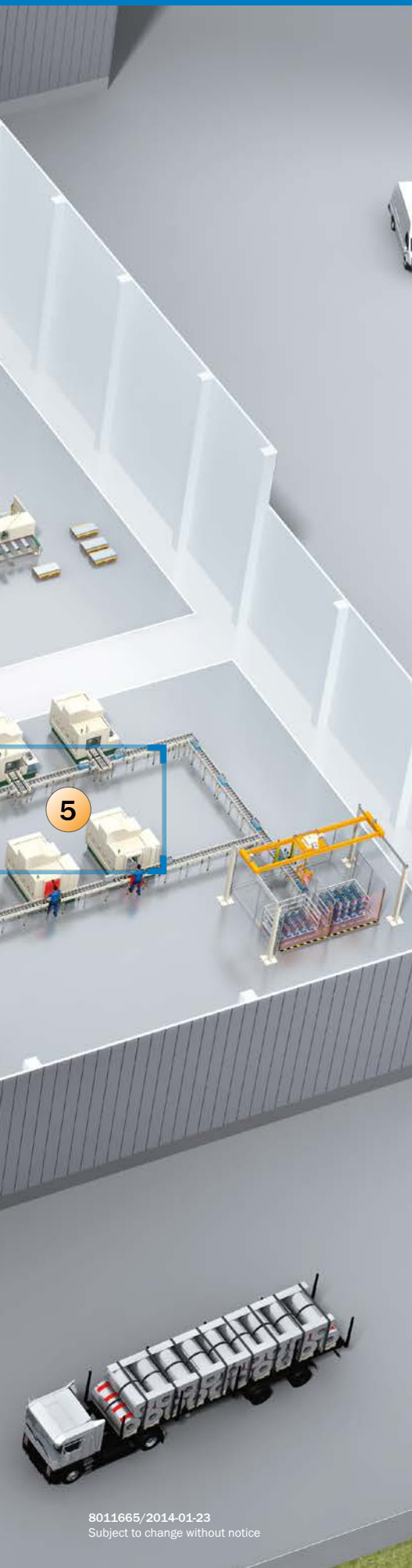
The Flexi Soft modular safety controller is responsible for complete monitoring of all safety functions of the punching or laser cutting line. All safety device signals for the door switch, the emergency stop pushbutton, and the opto-electronic safety devices, can be connected and logically combined.

The advanced functionality of the Flexi Line enables individual machine modules of a system to be added or removed subsequently without any programming work. In addition, the Flexi Loop allows for simple integration and the unambiguous diagnosis of up to 32 stations via a cost-effective 5-pin M12 standard cable. Gateways for all common fieldbus systems are available for connecting to an HMI or a network.



Flexi Soft → p. 88





Cutting machine tools

Focus 1 36

- ① Metal saw machines

Focus 2 38

- ② Automated CNC milling and turning machines

Focus 3 40

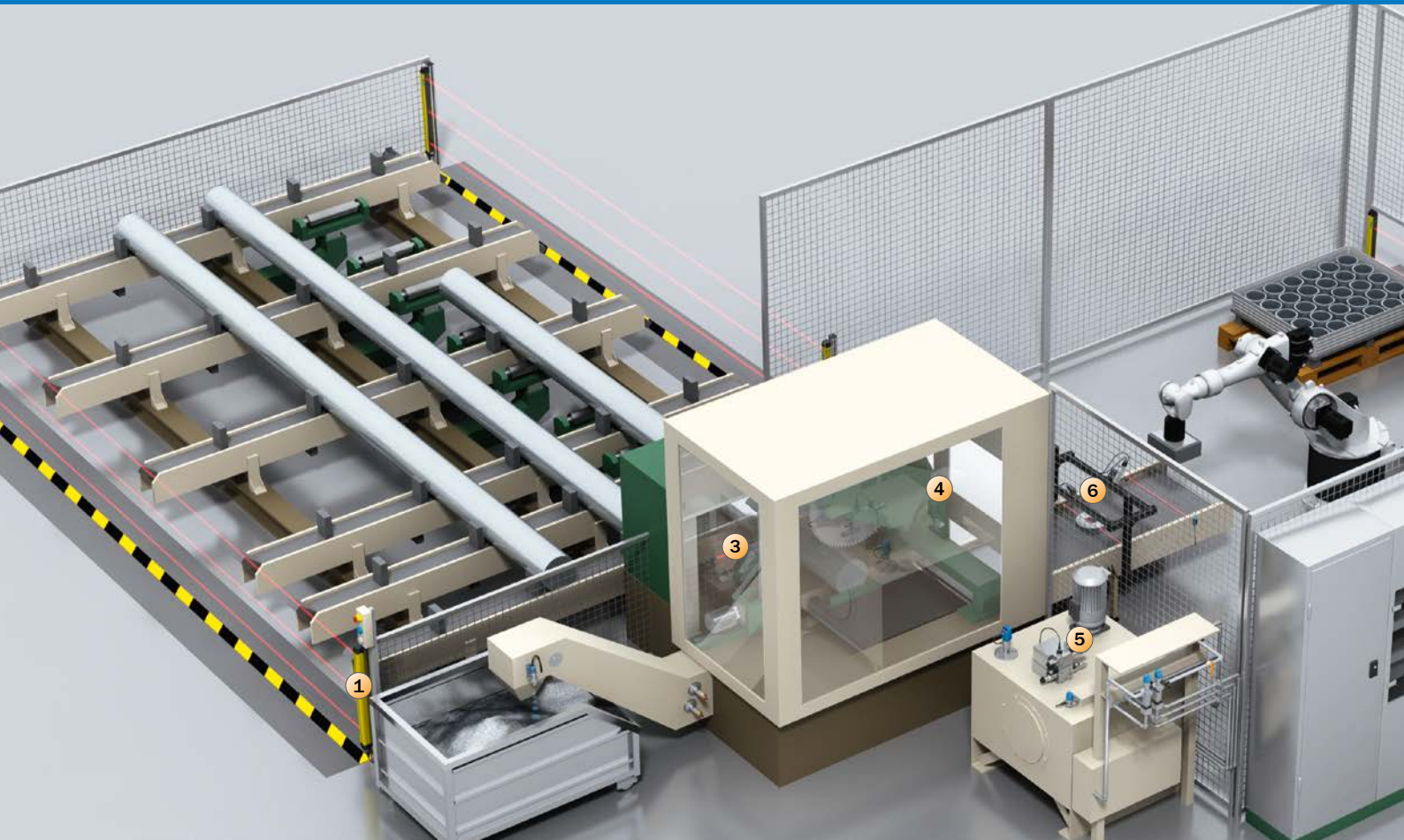
- ③ Automated production cell

Focus 4 42

- ④ Automated machine centers (Powertrain): Palletizing station

Focus 5 44

- ⑤ Automated machine centers (Powertrain): Engine part production



③ Detection of end of material

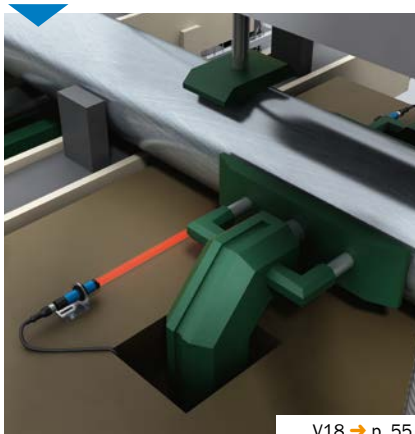
A VS/VE18 cylindrical photoelectric sensor detects the presence of the raw material in the saw. Its digital signal is used to control the machine in harsh environments.

④ Positioning the saw blade

The height of the saw blade is automatically positioned for optimum control of the sawing process. The DBS36 incremental encoder supplies precise measurement values for this purpose. It can be easily and directly mounted using the supported flange joint or the hollow shaft and its universal cable outlet. Its compact size saves space.

⑤ Pressure, level, and temperature measurement

The PBS pressure switch measures the system pressure of the hydraulic pump and compares the actual value with the set value. The LFP Cubic monitors the level of hydraulic oil in the unit within the four programmable switching thresholds and prevents the pump from being damaged due to a low oil level. The TBT temperature sensor checks the oil temperature to prevent overheating.



V18 → p. 55



DBS36 → p. 91

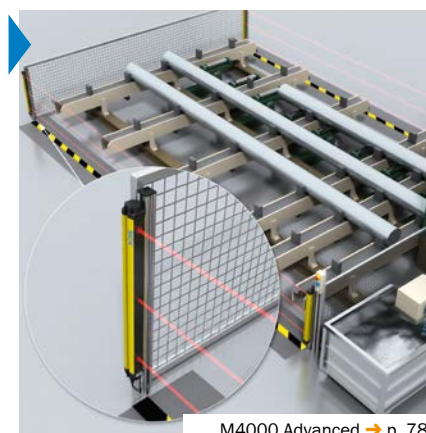


LFP Cubic → p. 106
PBS → p. 108
TBT → p. 110



1 Access protection for material infeed

Both sides of the material infeed on an automated sawing line can be monitored with an M4000 A/P multiple light beam safety device, and can be quickly accessed. The integrated alignment aids on the M4000 ensure easy commissioning.



M4000 Advanced → p. 78

2 Access protection for material outfeed

The worker pulls full pallets through an opening in and out of the robot production cell. Since the area left open for this purpose is below the protective fence, it can be protected against people crawling beneath it by using an M4000 A/P multiple light beam safety device.



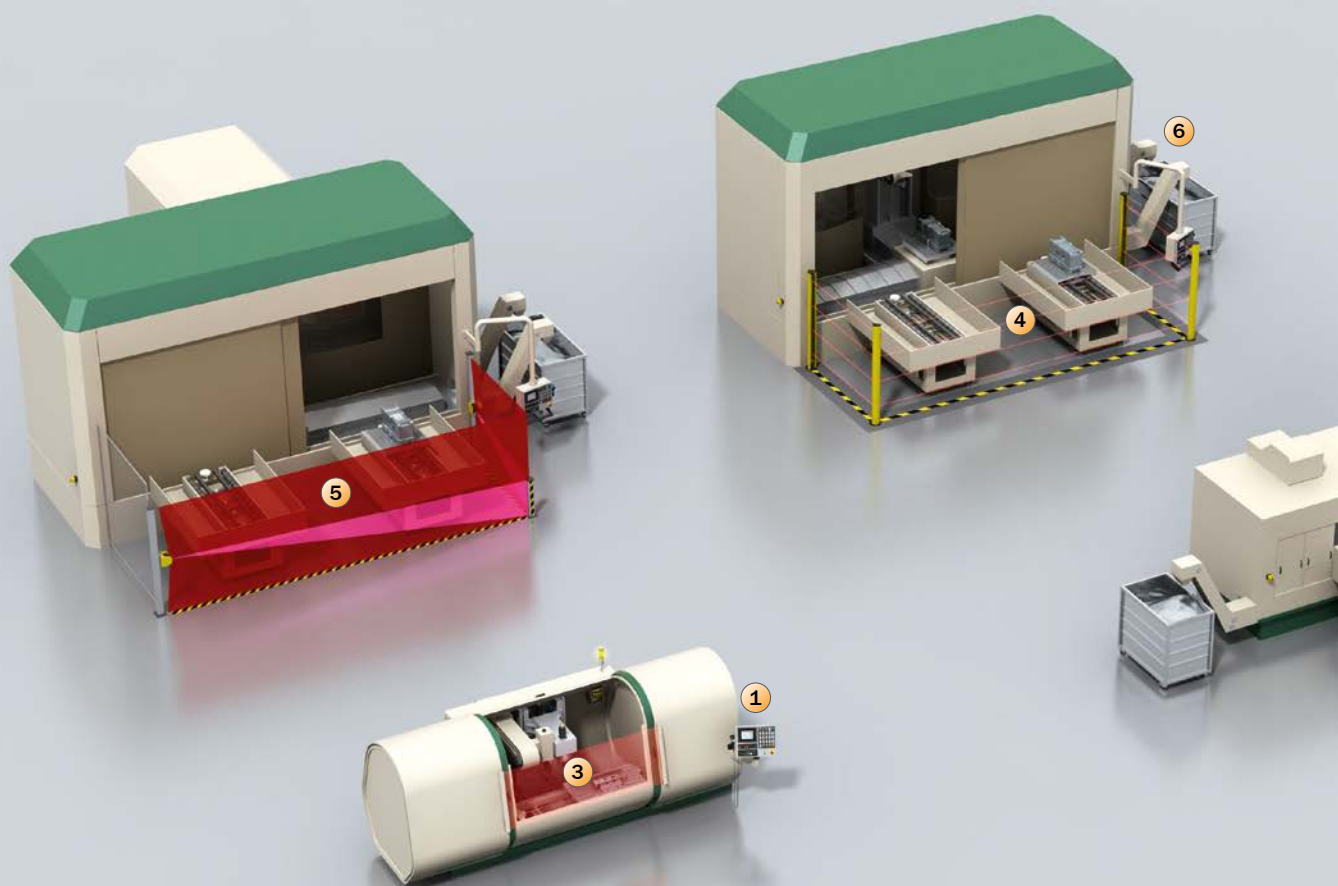
M4000 Standard → p. 78

6 Automated robot unloading

A saw blade continuously separates workpieces of different shapes and lengths from bar profiles. The belt transports parts to the depalletizing robot. The Ranger high-end 3D camera precisely detects the different shapes and their positions even at a high rate of throughput. This enables the parts to be placed on the correct pallets in a targeted manner.

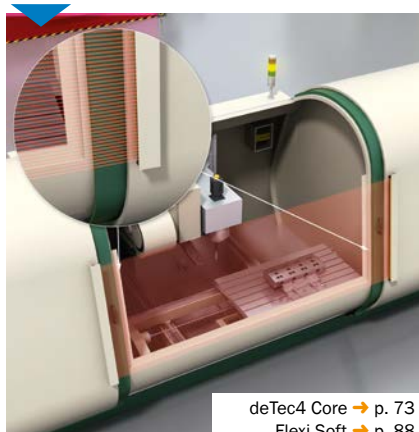


Ranger → p. 98



3 Hazardous point protection at machine doors that close automatically

The deTec4 Core safety light curtain is installed upstream of the machine door, which closes automatically. The miniTwin has a small size, a flexible mounting design, and no blind zones, enabling easy integration. Used in conjunction with a safety relay or the Flexi Soft safety controller, it enables safety functions to be configured easily.



deTec4 Core → p. 73
Flexi Soft → p. 88

4 Access protection with multiple light beam safety device

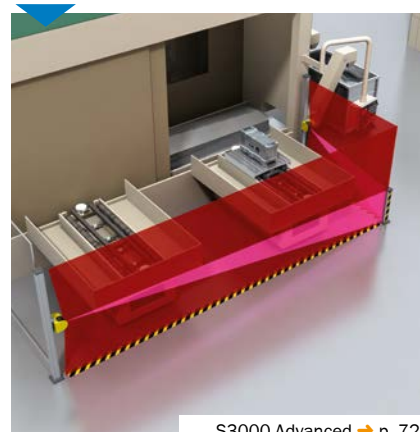
Automatic pallet changing systems, which are loaded and unloaded by workers, are attached to CNC machining centers. When pallets are being changed in the machine, no worker may be in the hazardous area. Access to this area is protected by an M4000 multiple light beam safety device in a device column with deflector mirrors. If a worker leaves the area, the safety signal must be activated.



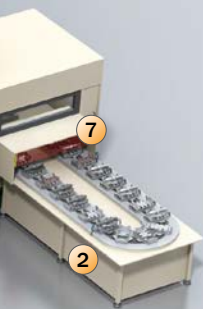
M4000 Standard → p. 78

5 Access protection with safety laser scanner

Vertical access can also be safeguarded using S3000 safety laser scanners, which can be used as an alternative to multiple light beam safety devices. Entering the area interrupts the beams, which activates the safety function. If a worker leaves the area, the safety signal must be activated.

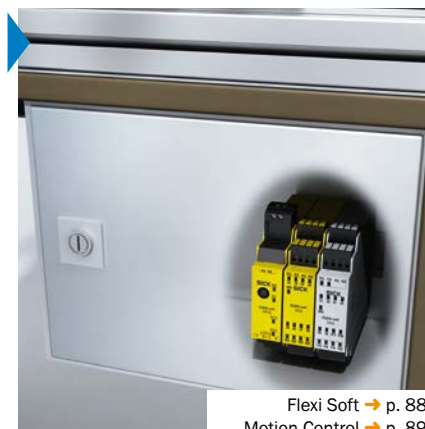


S3000 Advanced → p. 72



1 Safe drive monitoring

The different axis movements of lathes and milling machines are hazardous points during the setup or machining process. One Drive Monitor FX3-MOC per drive monitors the electric drive system of the machines, thus enabling safety functions such as “Safe stop” and “Safe operating stop,” for example, or reliable speed monitoring of the tool axes to be implemented.



Flexi Soft → p. 88
Motion Control → p. 89

2 Automated parts infeed and outfeed

The conveyor feeds in new workpieces and discharges machined ones simultaneously. The individual workpieces and empty workpiece carriers are made available. The IME inductive proximity sensor detects the position of the workpiece carrier. The WL12 small photoelectric sensor monitors whether a workpiece is placed on the carrier. Both signals are used to control the process.

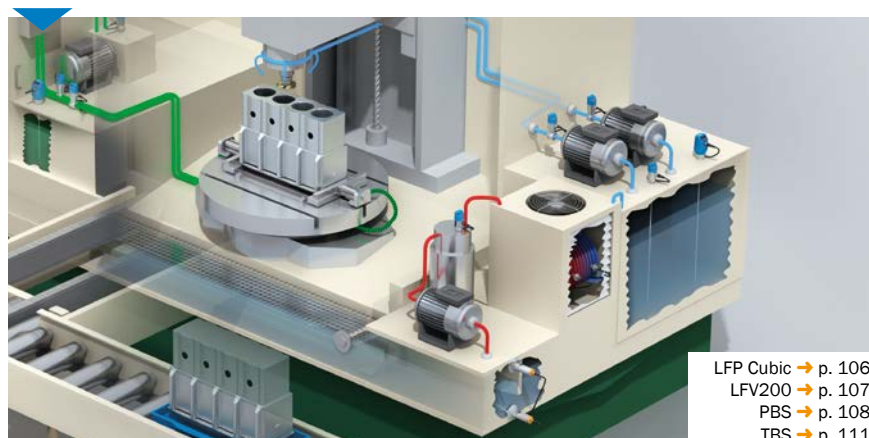


IM Standard → p. 58
W12-2 Laser → p. 52

6 Measuring pressure, level, and temperature for hydraulic and cooling lubricant systems

Several parameters must be monitored on CNC machines: the oil and cooling lubricant levels, the locking positions or forces of the workpiece clamps, and the permissible operating temperatures of the oils or cutting fluids. The PBS pressure switch supplies digital and/or analog signals to the controller for monitoring pressure. Thanks to the IO-Link interface sensors that are difficult to access can be configured easily via

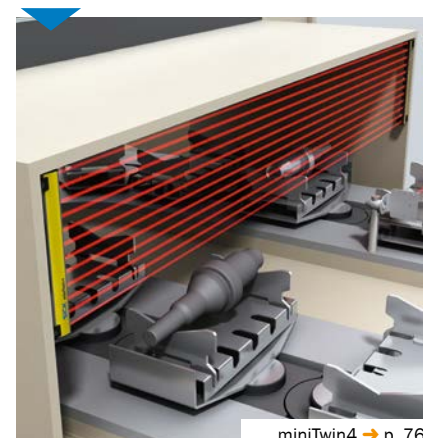
remote access and the pressure values displayed on the machine's HMI. Limit values in the chip conveyor are safely detected using an LFP200 vibrating level switch. The LFP Cubic offers four switching points in one sensor, thus reducing mechanical complexity and the costs of the individual sensors that would otherwise be required. The TBS temperature sensor reliably monitors operating temperatures.



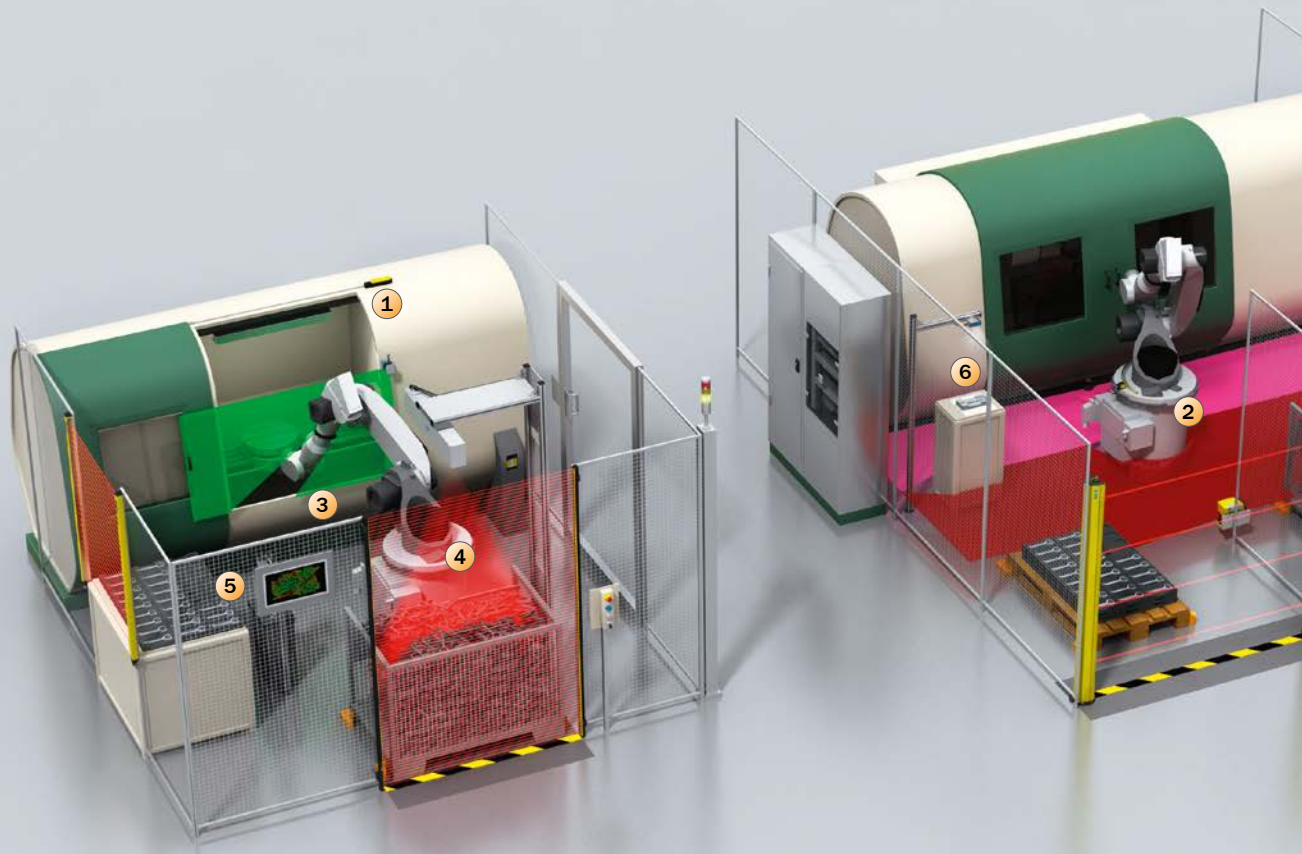
LFP Cubic → p. 106
LFP200 → p. 107
PBS → p. 108
TBS → p. 111

7 Access protection at parts infeed and outfeed

On interlinked or automated machines, the workpieces are fed in via a conveyor. The miniTwin safety light curtain is also mounted on a tunnel to provide additional protection against interruptions at the hazardous point. The miniTwin has a small size, a flexible mounting design, and no blind zones, enabling easy integration.



miniTwin4 → p. 76

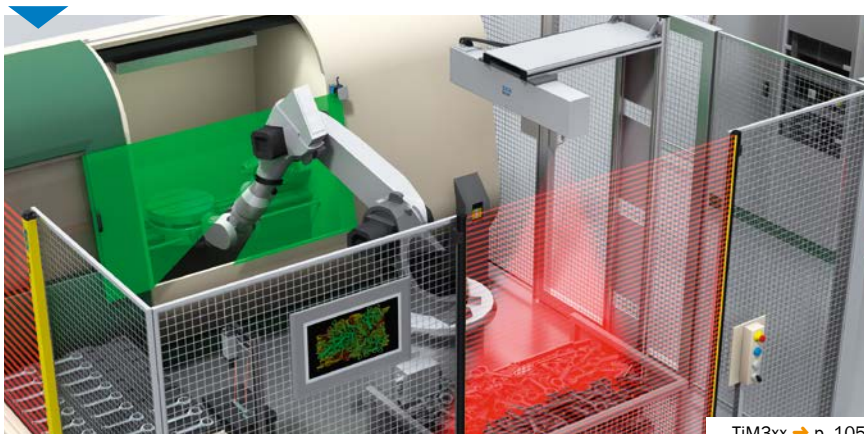


③ Collision protection for automated loading and unloading

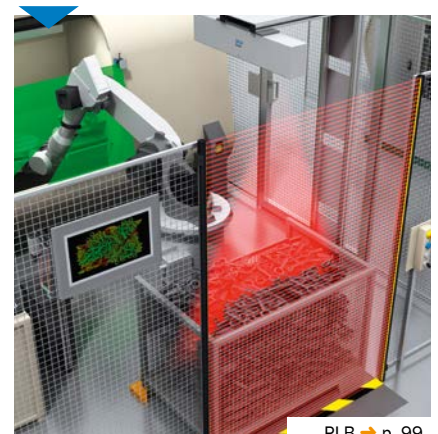
The TiM3xx 2D laser scanner monitors whether the door area is free. The door of the machine tool, which closes automatically, is reliably prevented from colliding with the robot arm, thus minimizing downtime and costs.

④ Part location in boxes

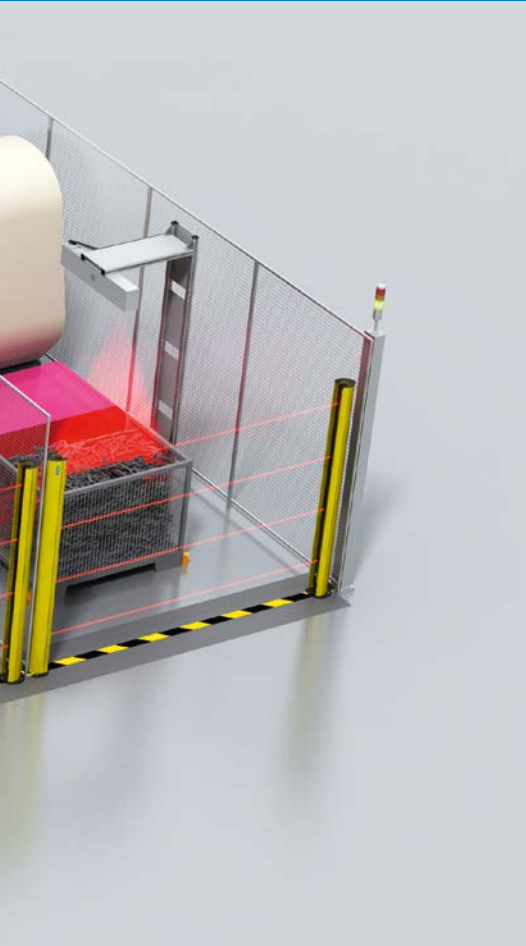
Piston rods are delivered in boxes as bulk materials. The rods must be separated from the boxes for further processing. The PLB system solution supplies the robot with the necessary information to take the parts out of the box individually. The connecting rods are then placed into the machine at the specified position and aligned accordingly.



TiM3xx → p. 105

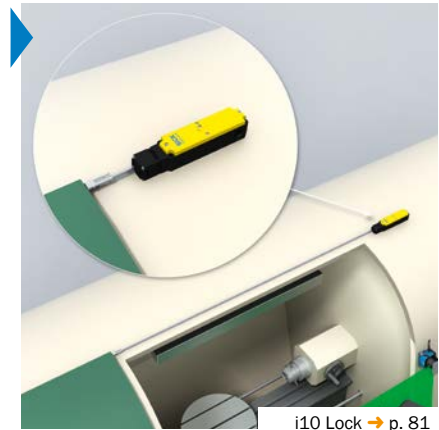


PLB → p. 99



1 Hazardous point protection at the machine tool

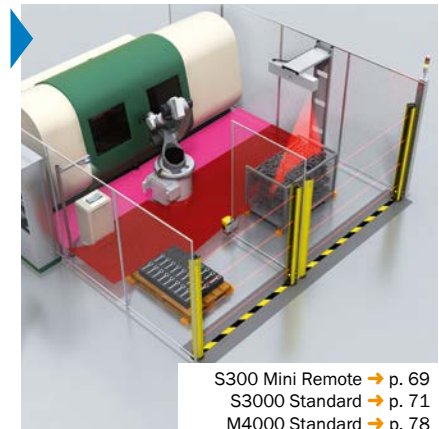
A check must be performed at the machine tool to confirm that the sliding door of the machine housing is closed. The i10 Lock safety locking device performs this task reliably.



i10 Lock → p. 81

2 Hazardous point protection at the robot cell

In automated machining cells, raw part totes or trays containing the finished workpieces are added or removed. The cell is protected at two access points with M4000 multiple light beam safety devices to avoid downtime. S300 Mini and S3000 safety laser scanners are used to monitor access in the robot area. The robot can continue with its defined work steps.



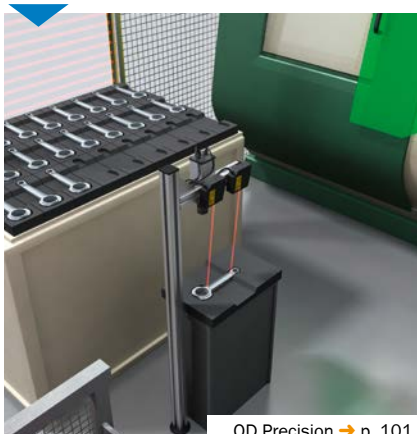
S300 Mini Remote → p. 69
S3000 Standard → p. 71
M4000 Standard → p. 78

5 Precise component measurement

Quality control of the piston rod is carried out directly at the placement area. Two OD short range distance sensors (displacement) determine the difference between set and actual values of the connecting rod and signal deviations in height. The OD has an integrated evaluation unit. Digital signals handle system integration.

6 Quality control in connecting rod production

Depending on the required resolution and the inspection characteristics, quality control is performed using the Inspector vision sensor or the IVC-2D smart camera. The shape of the current connecting rod is compared to the data-set taught for an ideal connecting rod.

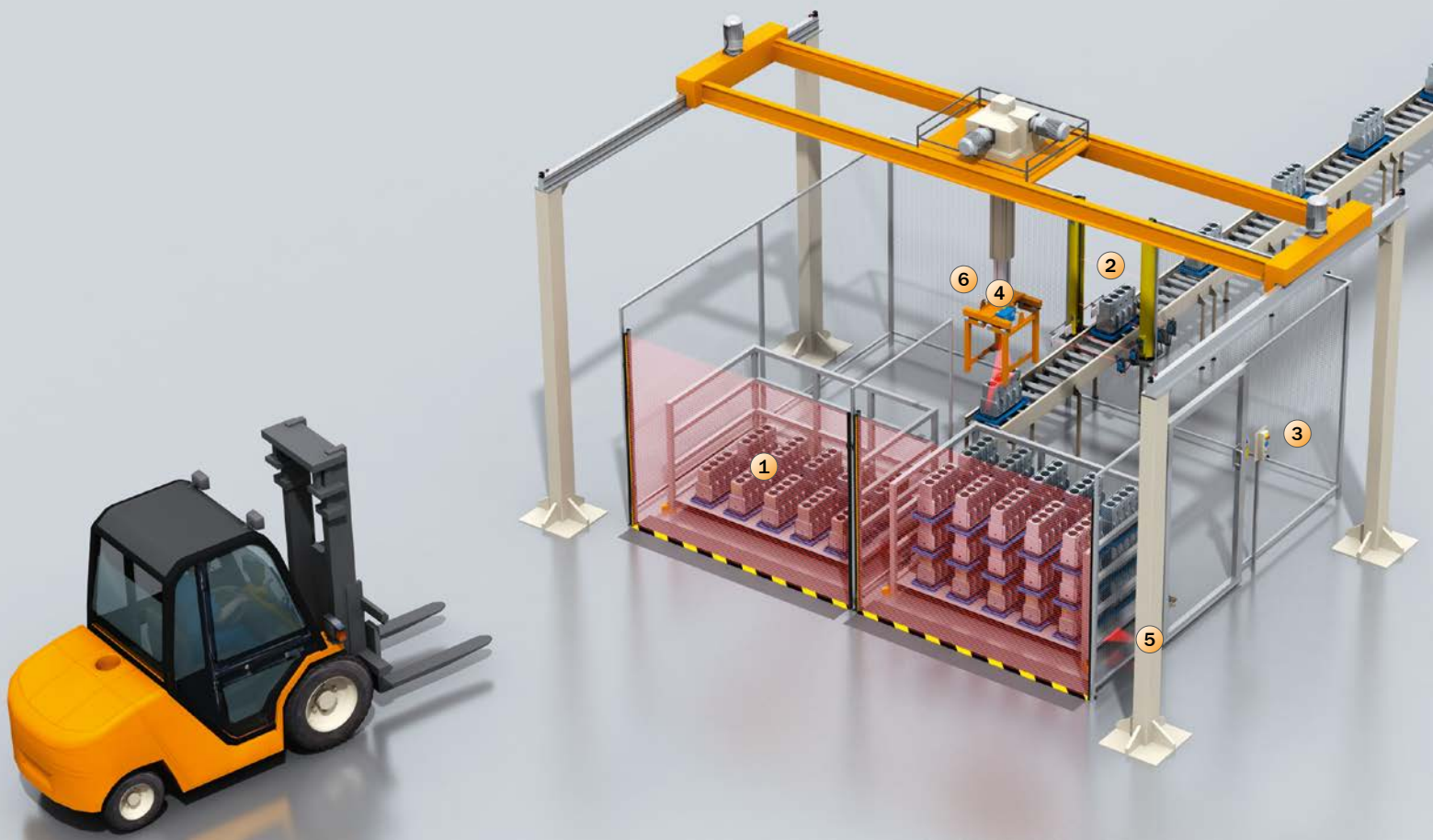


OD Precision → p. 101



Inspector → p. 97

Automated machine centers (Powertrain): Palletizing station

**3 Access protection at a robot cell**

Prior to accessing the robot cell, a stop request must be issued. Current processes are completed. The door is then unlocked and access is permitted. When the door is open, the i10 Lock safety locking device prevents startup of the system.

The Flexi Soft modular safety controller is responsible for all the cell's safety functions. Corresponding software modules can be used to configure access protection for muting functions.

4 Robot guidance using laser measurement sensor

The gantry robot grips the motor blocks that arrive on the roller conveyor and places them onto the rack. The LMS400 2D laser scanner measures the bright, partially sharp-edged surfaces of the motor blocks. The robot controller uses this data to calculate the gripping position on the motor block.



i10 Lock → p. 81
Flexi Soft → p. 88

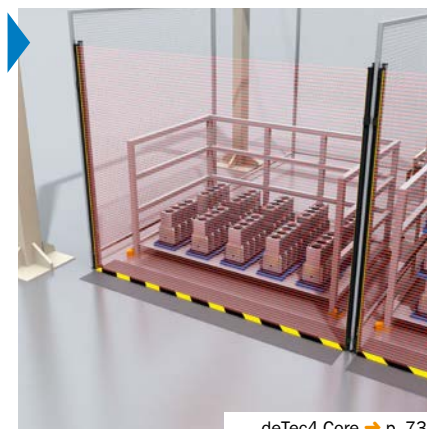


LMS4xx → p. 106



1 Hazardous area protection at the rack station

A forklift truck replaces full racks with empty ones. Only when the fork lift truck exits the hazardous area do the deTec4 Core safety light curtains release the work area for automatic palletizing.



deTec4 Core → p. 73

2 Access protection at roller conveyors

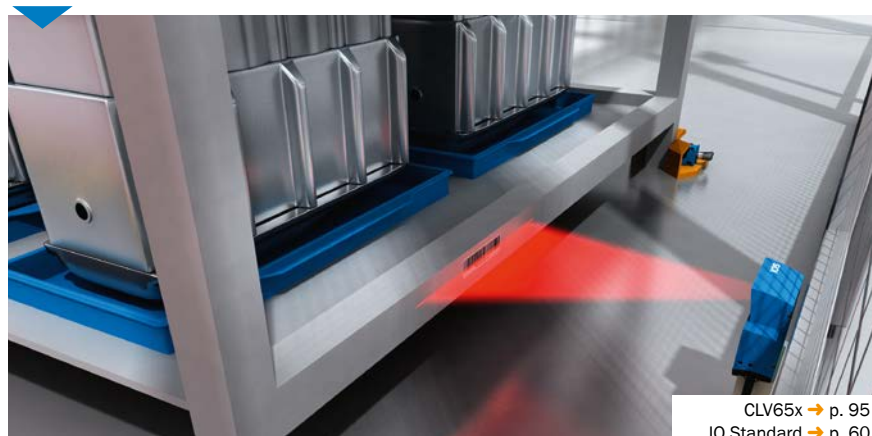
The motor blocks are transported to the automatic palletizer via roller conveyors. The M4000 multiple light beam safety device with muting function to differentiate between people and machine reliably safeguards access to the conveyor system.



M4000 Advanced → p. 78

5 Rack identification

The CLV6xx bar code scanner reads the identification number of the rack that contains the motor block pallets. This ensures traceability of the various batches. The CLV6xx receives the start signal for rack identification from the IQ40 inductive proximity sensor.



CLV65x → p. 95
IQ Standard → p. 60

6 Detection of gripper state

Workpieces are picked up automatically by handling devices. A pneumatic cylinder opens and closes the gripper. The MZT8 magnetic cylinder sensor detects the final position of the pneumatic cylinder to identify that the workpiece has been picked up correctly. The signal is evaluated in the machine control.



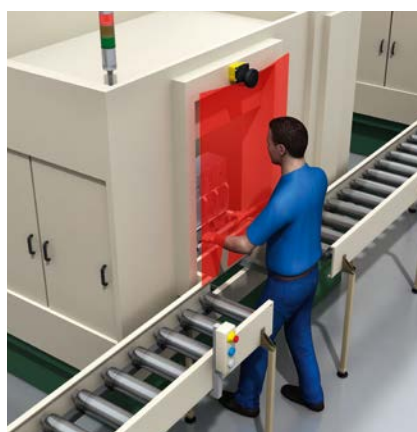
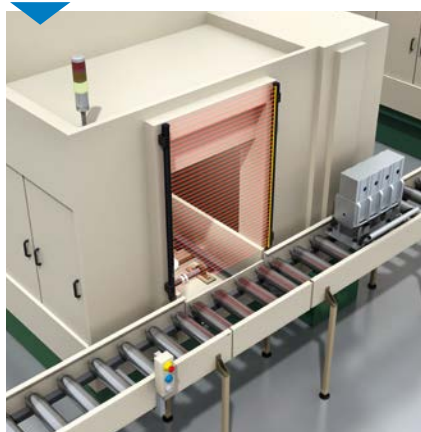
MZT8 → p. 63



③ Hazardous point protection at loading doors

To reduce automation complexity, workers can load interlinked CNC machine tools manually. To do this, they feed the workpieces into the machining area using a sliding table. A deTec4 Core safety light curtain safeguards against intrusions. An S300 Mini safety laser scanner can be used as an alternative, which simplifies installation and commissioning.

Thanks to warning and protective fields, the safety device can be flexibly configured to the opening in question. The S300 Mini safety laser scanner can also be attached underneath the roller conveyor to protect the hazardous area from below.

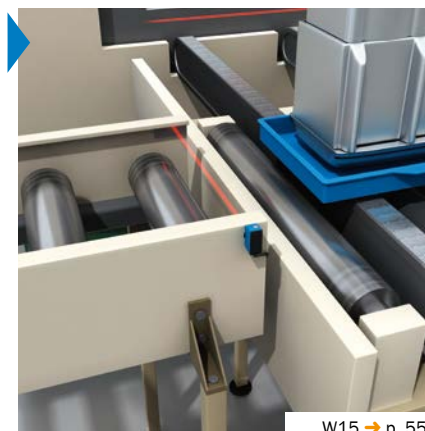


S300 Mini Standard → p. 69
deTec4 Core → p. 73



1 Transport control on the conveying line

The presence of material carriers in the segments of the conveyor system must be reliably detected for transport control. This is done using the WL15 small photoelectric sensor. It is designed for flexible mounting, either on the front using plastic nuts and a snap ring or on the side.



WL15 → p. 55

2 Optical inline quality control

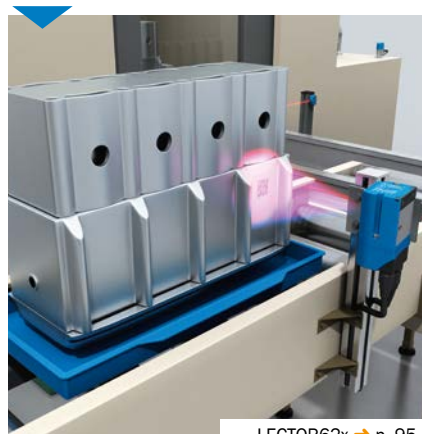
To achieve full quality control, it must be verified that the motor block has been machined correctly. The Inspector vision sensor checks that the holes and cutouts are present and correct. The precise light spot of the WT12L-2 Laser photoelectric proximity sensor detects even the smallest holes on the motor block.



Inspector → p. 97
WT12-2 Laser → p. 52

4 Identification of the motor block

The required information for product tracing is contained in dot-peened 2D codes on the cylinder heads. The codes are located on the bright polished surface and must be clearly identified. The LECTOR®620 image-based code reader performs this task reliably.

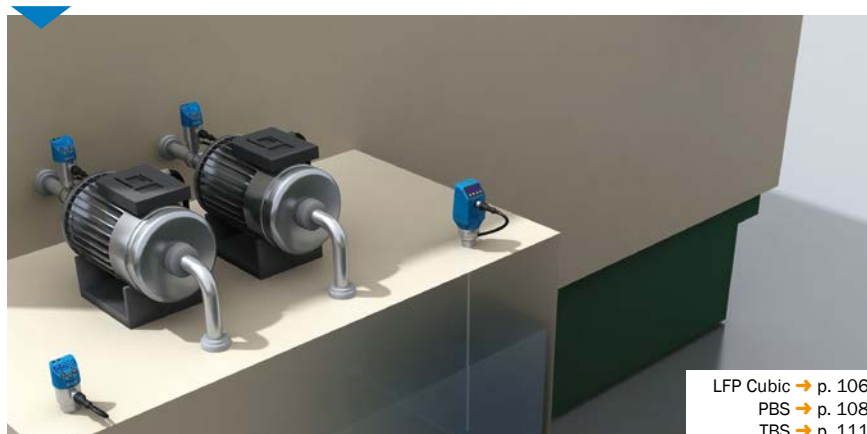


LECTOR620 → p. 95

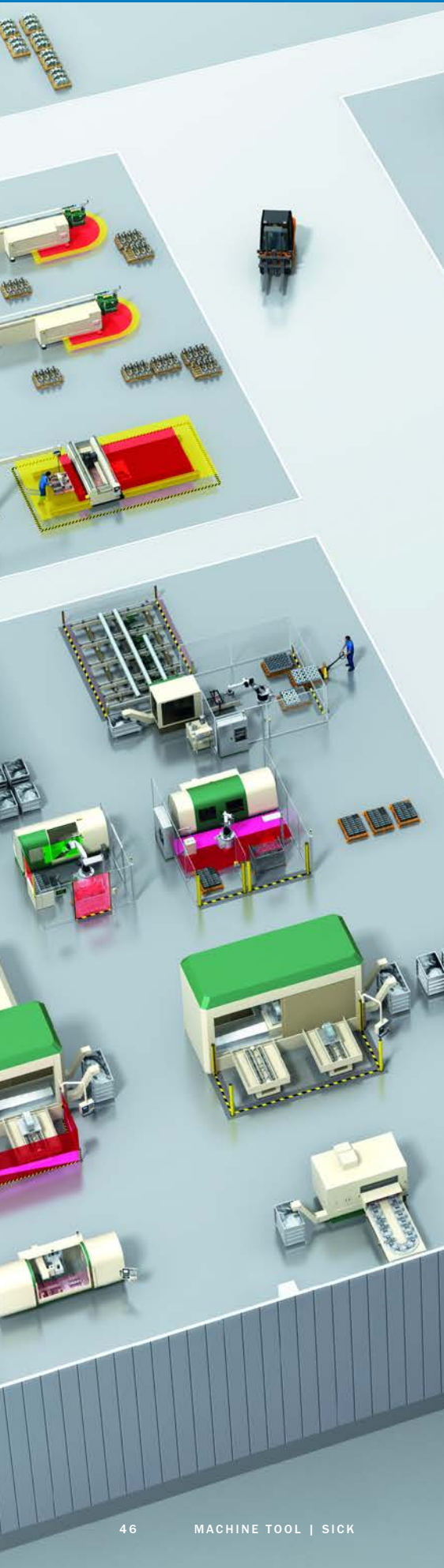
5 Monitoring the cooling lubricant

For complete process control, the level, pressure, and temperature of the cooling lubricant must be monitored. The LFP Cubic level sensor is used to measure the fill level. TDR technology enables the LFP to sense the fill level independent of the medium, installation conditions, and tank material. Limit and continuous level applications can be monitored with just one device.

The PBS pressure switch is responsible for monitoring the pressure in the machine's cooling lubricant circuit. The TBS temperature sensor is used to monitor the optimum temperature of the cooling lubricant. Any overheating is reliably detected.



LFP Cubic → p. 106
PBS → p. 108
TBS → p. 111



Product overview

Miniature photoelectric sensors

W2S-2	48
W4-3	48
W4S-3 Inox	49
W8 Laser.	49
G6	50

Small photoelectric sensors

W9L-3	50
W9-3	51
W12-3	51
W12-2 Laser.	52
W18-3	52
W14-2	53

Compact photoelectric sensors

W280L-2 Long Range	53
W27-3	54

Cylindrical photoelectric sensors

V12-2	54
V180-2.	55
W15	55
GR18S	56

Fiber-optic sensors and fibers

WLL180T	56
LL3	57

MultiTask photoelectric sensors

MultiPac	57
--------------------	----

Inductive proximity sensors

IM Miniature	58
IM Standard	58
IM Inox	59
IQ Miniature	59
IQ Standard	60
IQ Flat	60

Capacitive proximity sensors

CM	61
CQ	61

Analog positioning sensors

MPS	62
MPA	62

Sensors for T-slot cylinders

MZ2Q-T.	63
MZT8.	63

Sensors for C-slot cylinders

MZC1.	64
---------------	----

Fork sensors

WFL	64
---------------	----

Array sensors

Ax20	65
----------------	----

Advanced automation light grids

MLG	65
---------------	----

Standard automation light grids

ELG.	66
PLG.	66
FLG.	67
VLC100	67

Smart light grids

SAS.	68
SGS	68

Safety laser scanners

S300 Mini Standard	69
S300 Mini Remote	69
S300 Standard	70
S300 Advanced	70
S300 Professional.	71
S3000 Standard	71
S3000 Advanced	72
S3000 PROFINET IO Advanced.	72

Safety light curtains

deTec4 Core	73
C4000 Standard	73
C4000 Advanced	74
C4000 Entry/Exit	74
C4000 Palletizer	75
C4000 Select	75
miniTwin4	76
miniTwin2	76
C2000 Standard	77

Safety camera systems

V300 Work Station Extended	77
--------------------------------------	----

Multiple light beam safety devices

M4000 Standard	78
M4000 Advanced	78
M4000 Area	79
M2000 Standard	79
M2000 Standard A/P	80

Single-beam photoelectric safety switch

L4000 Systems	80
-------------------------	----

Electro-mechanical safety switches

i16S	81
i10 Lock	81
i110R	82

Non-contact safety switches

RE1.	82
RE2.	83
TR4 Direct	83
T4000 Standard.	84
IN4000 Direct	84
IN4000 Standard	85

Safety command devices

ES21.	85
E100.	86

Safety relays

UE10-30S	86
UE45-3S1	87
UE48-20S	87

Safety controllers

Flexi Classic	88
Flexi Soft.	88
Motion Control.	89

Motor feedback systems rotary HIPERFACE®

SFS/SFM60	89
---------------------	----

Absolute encoders

AFS/AFM60 SSI	90
AFS/AFM60 EtherCAT.	90
A3M60 PROFIBUS.	91

Incremental encoders

DBS36	91
DFS60	92
DFV60 measuring wheel encoder	92

Linear encoders

TTK70	93
-----------------	----

Wire draw encoders

EcoLine	93
Compact	94
HighLine	94

Bar code scanners

CLV65x.	95
-----------------	----

Image-based code readers

LECTOR®62x.	95
---------------------	----

Hand-held scanners

IDM140	96
IDM160	96

RFID

RFH6xx.	97
-----------------	----

Vision sensors

Inspector.	97
--------------------	----

Smart cameras

IVC-3D	98
------------------	----

High-end cameras

Ranger	98
Ruler	99

Flexible automation systems

PLB.	99
--------------	----

Short range distance sensors (displacement)

OD Value.	100
OD Max	100
OD Precision.	101

Mid range distance sensors

Dx35	101
Dx50	102

Long range distance sensors

Dx100	102
DME5000	103

Linear measurement sensors

OLM100	103
------------------	-----

Ultrasonic sensors

UM30	104
UC4	104

2D laser scanners

TiM3xx	105
LMS1xx	105
LMS4xx	106

Level sensors

LFP Cubic	106
LFV200	107
UP56.	107
MHF15.	108

Pressure sensors

PBS.	108
PBT.	109
PFT.	109

Flow sensors

FFU.	110
--------------	-----

Temperature sensors

TBT.	110
TCT.	111
TBS.	111



W2S-2 – At a glance

- Complete product family of photoelectric sensors in a tried-and-tested sensor design
- Adjustable BGS photoelectric proximity sensor with an sensing range up to 120 mm
- Optical performance data that exceeds market standards for sensing range and housing design
- Reliable detection of jet-black, poorly reflective and highly reflective objects
- PinPoint LED ensures high sensing ranges and reliable object detection

Your benefits

- Reliable object detection in confined environments helps cut costs and save space
- Sub-miniature housing enables seamless integration and creates opportunities for new machine designs
- Tried-and-tested, rugged housing design can be easily integrated into compact machines and systems
- Complete, ultra-small product family with operating functions for every application
- The 45-degree tilted cable entry offers maximum installation flexibility with additional soft rubber bearings to absorb vibrations and tensile loads

→ www.mysick.com/en/W2S-2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



W4-3 – At a glance

- Best-in-class background suppression, reliable detection of critical objects and a high immunity to ambient light
- Quick and easy setup using a precise 5-turn potentiometer, control wire or teach function
- Best background suppression in its class
- PinPoint LED for brightest light spot in its class
- 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.mysick.com/en/W4-3

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





W4S-3 Inox – At a glance

- WashDown rated for fluid tightness (IP 66, IP 67, IP 68 and IP 69K) and Ecolab certified
- Tough stainless steel housing (316L/1.4404)
- Resistant to a variety of common cleaning and disinfection agents
- Highly visible laser-like light spot due to PinPoint LED
- Teach-in via stainless steel pushbutton with a metal membrane
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Long service life in harsh conditions ensures less downtime and fewer replacement costs
- Quick and easy alignment due to highly visible PinPoint emitter LED
- Easy adjustment via a stainless steel metal membrane teach-in pushbutton
- 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_Inox

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



W8 Laser – At a glance

- Laser class 1
- Background suppression
- Standard miniature housing with M3 threaded mounting holes
- Switching frequency up to 2 kHz
- Light/dark switching via rotary switch
- Mounting bracket BEF-W100-A is included with delivery

Your benefits

- Highly flexible design and operational capabilities due to precise background suppression
- Reliable detection of small objects, regardless of color or surface qualities
- Rapid switching frequency reliably detects objects travelling at high speeds which allows to optimize the production processes
- Highly visible laser light spot simplifies alignment
- All necessary accessories are included with delivery, reducing installation and procurement costs

→ www.mysick.com/en/W8_Laser

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



W9L-3 – At a glance

- Tough VISTAL™ housing
- Precise laser light spot
- Photoelectric proximity sensor in laser classes 1 and 2
- Photoelectric retro-reflective sensor with autocollimation optics and polarizing filter; models available for clear material detection
- Through-beam photoelectric sensors with sensing ranges of up to 60 m
- SIRIC technology
- Connections: M8 and M12 plugs, cable as well as cable with plug
- M3 and M4 hole pattern

Your benefits

- Precise detection of small objects and object features
- Detection of objects even through small openings
- Less machine downtime due to stable VISTAL™ housing as well as the suppression of optical interference
- The longest detection and sensing ranges in its class
- Best-in-class background suppression for photoelectric proximity sensors
- No blind spots, detection of shiny objects using photoelectric retro-reflective sensors
- A wide variety of connection and mounting options
- Highly visible light spot simplifies alignment

→ www.mysick.com/en/W9L-3

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, routing and optic

→ www.mysick.com/en/W9-3

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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

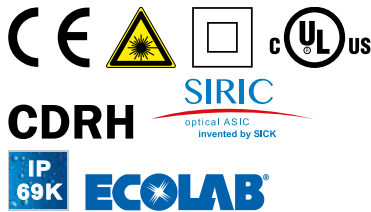
Your benefits

- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





W12-2 Laser – At a glance

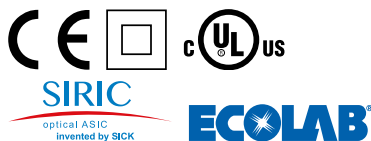
- Best-in-class retro-reflective laser performance in a metal housing
- Teflon® coating available
- Precise autocollimation optics
- Adjustable focus on retro-reflective sensors
- High switching frequency of 2.5 kHz
- Connection via cable or rotatable connector
- Mounting options with through holes, blind holes, oblong holes and dovetail
- Laser protection class 1 or 2

Your benefits

- Reliable object detection of small objects due to superior ASIC (application-specific integrated circuit) technology combined with innovative laser technology
- Red light laser technology provides quick and easy alignment of sensor
- Rugged metal housing (available with Teflon® coating) withstands harsh environments
- Laser protection class 1 or 2 for eye safety
- Resistance to optical interference reduces false readings and downtime
- Rotatable connector provides easy installation

→ www.mysick.com/en/W12-2_Laser

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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 thanks to IO-Link

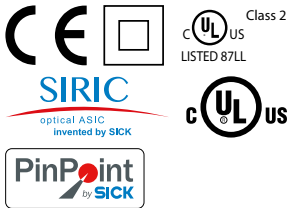
Your benefits

- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





W14-2 – At a glance

- Outstanding background suppression with OES3 technology
- Highly visible and precise light spot due to PinPoint LED in selected products
- Slim, durable plastic housing
- Complete sensor family with proximity, retro-reflective and through-beam variants

Your benefits

- Reliable object detection at a cost-effective price
- PinPoint LED technology provides a highly visible red light that enables quick and easy setup
- Broad product range gives users a variety of choices to fit their application
- Rugged plastic housing in a slim design simplifies installation
- Quick and easy installation using SICK accessories saves time

→ www.mysick.com/en/W14-2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



W280L-2 Long Range – At a glance

- WTT280L-2: sensing distance up to 4 m
- WLT280L-2: sensing distance up to 18 m
- Complete background suppression: very small black/white shift, insensitive against reflections from the background (e.g. shiny metal, window, safety vest)
- Visible red class 1 laser light
- Version 1: with 1 x switching output and light/dark switch, version 2: with 2 x switching outputs and light/dark switch
- Disable laser by wire
- Reliable detection also in very fast production processes thanks to the switching frequency of 1000 Hz

Your benefits

- Reliable target detection with difficult target colors, angles and color transitions (black/white shift)
- One sensor with two outputs and two status LEDs improves application flexibility and reduces the number of sensors needed
- Quick and easy commissioning with sensing distance adjustment potentiometers and status LED – one for each output
- Quick and easy alignment with a red class 1 laser light
- Rotatable connector and light/dark switch for mounting and installation flexibility

→ www.mysick.com/en/W280L-2_Long_Range

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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 – $+60^{\circ}\text{C}$
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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

- Low-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing maintenance time and costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs

→ www.mysick.com/en/V180-2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



W15 – At a glance

- M18 front mount using plastic nut or snap ring, side assembly with 24.1 mm through holes
- Flush mounting possible using the snap ring
- Transparent back cover
- Best-in-class background suppression and red PinPoint LED
- High immunity to ambient light
- Highly visible LED indicators

Your benefits

- Completely compatible with many competitor models, making it easy install and commission
- Flush mounting reduces setup time and prevents obstructions to material flow on conveyor systems
- Clearly visible LED indicators reduce setup time and simplify troubleshooting
- Reliable detection due to best-in-class background suppression that ignores stray background reflections, detects multi-colored/shiny objects and provides high immunity to ambient light
- Customer-specific options reduce material and labor costs

→ www.mysick.com/en/W15

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



WLL180T – At a glance

- Selectable response time up to 16 μ s
- Sensing range up to 20 m (Through-beam system); up to 1400 mm (proximity system)
- Bus-compatible with anti-interference
- 2 x 4-digit 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



MultiPac – At a glance

- Two redundant receiver arrays from SICK
- The newest SICK chip technology
- Intense, visible red HighPower LED
- Sensing distance up to 500 mm
- Fast and precise commissioning thanks to the highly visible light spot

Your benefits

- Redundant receiver arrays provide reliable detection of shiny, gloss, dark, or irregular shaped objects without signal interruptions
- Products can be detected using a higher angle of incidence. This removes the typical mounting restrictions associated with detecting these products.
- In applications involving plastic wrapped bottles, the MultiPac replaces current solutions which require expensive mechanical height adjustment
- Allows overhead detection of product that is transported on a single conveyor belt but separated into multiple lanes

→ www.mysick.com/en/MultiPac

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





IM Miniature – At a glance

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

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



IM Standard – At a glance

- Precise operating distances due to ASIC technology
- Extra tough thanks to high fastener torque and hot melt adhesive filling
- M8 to M30 sizes available
- Operating distance from 1.5 mm to 20 mm
- IP 67 enclosure rating
- Operating temperature from -25°C to $+70^{\circ}\text{C}$
- DC, AC and AC/DC versions available
- Customer-specific models available

Your benefits

- Reduced machine downtime
- Reduced mechanical damage
- Fewer maintenance costs due to longer service life
- High resistance to shock and vibrations

→ www.mysick.com/en/IM_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





IM Inox – At a glance

- Stainless steel housing (316L/1.4404)
- Extremely watertight (IP 68/IP 69K)
- Triple sensing distance
- High resistance to mechanical stress
- Watertight housing suitable for use in hygienic and wash down areas
- Resistant to aggressive cleaning agents
- Visual adjustment indicator via output LED

Your benefits

- Less machine downtime due to rugged sensor design
- Cost reduction due to long service life even under the most extreme ambient conditions
- Quick and easy installation due to adjustment indicator via LEDs
- Large operating reserve due to triple operating distance
- High resistance to shock and impact due to stainless steel sensing face
- No restrictions on cleaning agents or processes, ensuring reliable operation

→ www.mysick.com/en/IM_Inox

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



IQ Miniature – At a glance

- Long sensing distance
- 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 distance 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





IQ Standard – At a glance

- Long sensing distance 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



IQ Flat – At a glance

- Flat, compact design
- Long sensing distance 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





CM – At a glance

- Cylindrical housing
- Detects powders, granulates, liquids and solids.
- Best-in-class electromagnetic compatibility
- 4-wire DC (CM18 and CM30) and 2-wire AC versions (CM30)
- Supply voltage: 10 ... 40 VDC (CM18 and CM30), 20 V... 250 VAC (CM30)
- Short-circuit reverse polarity and power-up pulse suppression protection
- LED status indicator
- IP 67 enclosure rating

Your benefits

- Durable housing withstands harsh industrial applications, reducing maintenance costs and downtime
- Quick and easy adjustment of the switching point saves installation and setup time
- Application flexibility
- Solves applications where other sensing technologies cannot provide a solution
- High shock and vibration resistance increases sensor life and reduces maintenance costs
- Non-contact level measurement, even through container or tank walls, reduces installation and setup time

→ www.mysick.com/en/CM

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



CQ – At a glance

- Rectangular housing
- Detects powders, granulates, liquids and solids.
- Best-in-class high electromagnetic compatibility
- Electrical design: DC 4-wire
- Supply voltage: CQ35 10 ... 40 VDC and CQ28 10...30 VDC
- Short-circuit, reverse polarity and power-up pulse suppression protection

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





MPS – At a glance

- Magnetic position sensor for pneumatic and hydraulic cylinders with T-slot
- Output signal: analog, 4 – 20 mA current and 0 – 10 V (in one sensor)
- Superior precision: 0.05 mm resolution, 0.1 mm repeatability, 0.3 mm linearity, 1 ms measurement rate
- Electric setting of zero point and end point via teach-in button (optional)
- Various lengths available from 32 – 256 mm
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Maximum flexibility with several different measuring ranges from 32 to 256 mm
- Easy analog output setup: adjustable zero and end point can be taught via single button
- Drop-in T-slot mounting from above makes assembly easy
- Selectable installation direction to optimize cabling
- Efficient measurement of stroke due to minimal blind zones, increasing machine throughput
- Simple commissioning due to „in-range“ indicator
- IO-Link provides easy data access from the PLC
- Quick and easy configuration

→ www.mysick.com/en/MPS

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



MPA – At a glance

- Measured lengths from 107 to 1007 mm in 36 mm steps
- Output signals 4 to 20 mA as well as 0 to 10 V in a single sensor
- Can be mounted on various cylinders thanks to its universal housing with adapters, e.g., cylinders with T-slot, round and tie rod cylinders
- Linearity of 0.5 mm at a sample rate of 1.15 ms
- Accuracy of 0.03 % as well as reproducibility of 0.06 %
- IP 67 enclosure rating
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- High flexibility through measuring ranges from 107 to 1007 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Saves time due to configurable start and end points via intelligent Teach Pad
- A rugged aluminum housing, the capacitive Teach Pad and the anti-kink cable guarantees a long operational lifetime of the sensor and reduces maintenance costs
- Time savings through simple commissioning and diagnostics thanks to a 4-color LED display
- Analog power, voltage signal and IO-Link in a single sensor reduces the range of variants and thereby lowers warehousing costs
- IO-Link provides easy data access from the PLC
- Quick and easy configuration

→ www.mysick.com/en/MPA

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





MZ2Q-T – At a glance

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

Your benefits

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

→ www.mysick.com/en/MZ2Q-T

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



MZT8 – At a glance

- Magnetic piston detection for all conventional pneumatic cylinders with T-slots
- Short sensor housing length – only 24 mm
- Sensor element at the tip of the housing
- Proprietary GMR-ASIC technology ensures precise switching and low hysteresis
- Enclosure rating: IP 68 / IP 69K (PUR) respectively IP 67 / IP 69K (PVC)
- Captive screw
- 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

- Shortest sensor on the market, making it ideal for short stroke cylinders
- Sensor element at the tip of the sensor – piston detection possible without stroke loss
- Captive installation screw enables reliable and optimized installation
- Time saving „single-handed mounting“ with 1/4 turn
- Flexible installation via Allen wrench or flathead screwdriver
- Extremely rugged housing - rated for IP67 respectively IP 68 and IP 69K, enlarging sensor life time

→ www.mysick.com/en/MZT8

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





MZC1 – At a glance

- Fits into all commonly used cylinders, linear slides and grippers with C-slots, such as, Festo or SMC
- Complete range with PNP/ NPN, PUR and PVC cable, M8 and M12 connector
- Combined Allen and flathead installation screw
- Very short sensor housing, making it easier to install on short stroke cylinders
- Operating display LED
- IP 67 / IP 68 / IP 69K enclosure rating (depending on type)

Your benefits

- Reduced maintenance cost as the sensor keeps its position under shock and vibration and does not move out
- Increased machine throughput via SICK's proprietary GMR (giant magneto resistive) and ASIC (application specific integrated circuit) technology that ensures precise one-time switching while eliminating false signals
- Flexible installation via Allen wrench or flathead screwdriver
- Time saving single-hand mounting with ¼-turn installation.
- Convenient installation and sensor replacement due to drop-in installation – installer does not need to disassemble the cylinder from the machine for sensor replacement.

→ www.mysick.com/en/MZC1

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



WFL – At a glance

- Very precise laser beam (Class 1 laser)
- Simple and accurate adjustment via teach-in
- Fast response time (max. 100 µs)
- Minimum detectable object size of 0.05 mm
- 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

- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





Ax20 – At a glance

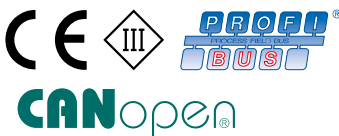
- Proximity contrast line sensor in a compact housing
- Application-specific sensor functions
- Detect position of edge of material
- Diameter, width and gap detection of different objects
- Very high reproducibility of 0.03 mm
- Large measurement range: 30 mm
- Visible white LED light spot to enable 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



MLG – At a glance

- User-programmable and factory-pre-set versions available
- Sensing range up to 8.5 m
- Monitoring heights of over 3 m and up to 240 beams possible
- Resolutions of 10 / 20 / 30 / 50 mm and customer-specific resolutions possible
- External teach-in for optimal sensitivity settings
- Short response time < 3 ms
- Up to 6 PNP or NPN switching outputs and two switching inputs
- PROFIBUS, CANopen, analog outputs, RS-485

Your benefits

- MLG light grids are robust, resistant, and powerful
- Light grid status information to avoid interrupting operation
- Customer-oriented solution based on modular beam separations improves operational safety
- Integrated PROFIBUS, CANopen bus systems, analog outputs, and RS-485 interfaces reduce cabling time and costs
- A fully modular system guarantees the optimum solution for the customer
- With the MLG, the system integrator can offer a solution with the end customer in mind
- Robust metal housing can cope with harsh environments and reduces downtime
- Integrated software program minimizes mounting work, since no additional connection box is required

→ www.mysick.com/en/MLG

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



PLG – At a glance

- 360° visible job LED
- Range up to 2 m
- Flexible monitoring 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
- Bus connection possible

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/PLG

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



VLC100 – At a glance

- Sensing range up to 2.8 m
- Resolution 6 mm up to 18 mm
- One device only: integrated sender and receiver
- Intuitive one-button operation
- Automatic alignment
- Synchronization of 2 systems
- Easy teach-in function

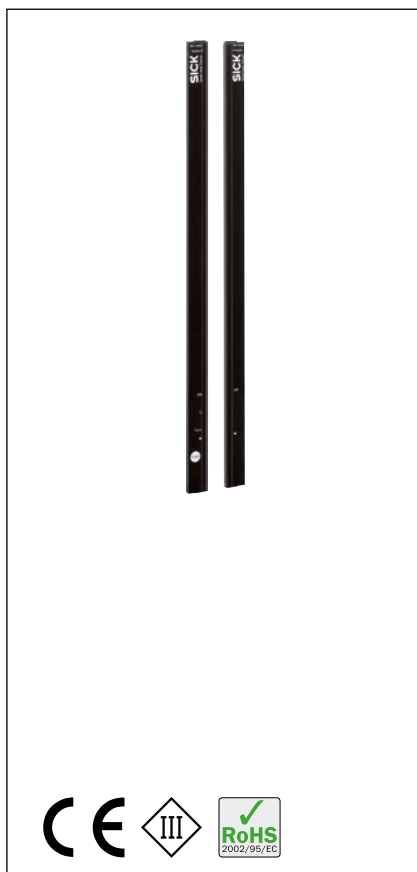
Your benefits

- Flexible and individual design of detection area
- Quick commissioning without additional software
- Intuitive, time-saving operation
- No variants: one device concept for all detection areas
- Reduced storage, shipping and commissioning costs
- No expert knowledge required
- High reliability and simple maintenance

→ www.mysick.com/en/VLC100

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





SAS – At a glance

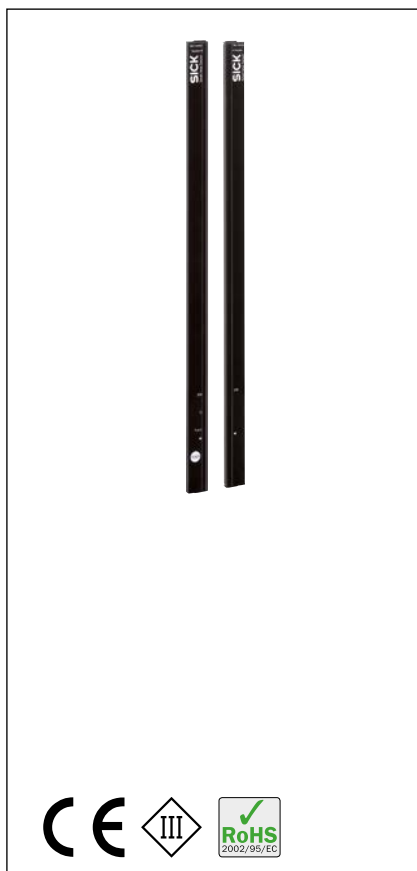
- Variable detection lengths from 120 mm up to 600 mm (in 160 mm increments)
- Set parameters via teach-in with no PC
- Simple teach-in setup
- Maximum range 4 m
- Response time 18 ms
- 25 mm resolution with 40 mm beam separation possible
- Highly immune to sunlight up to 150,000 lx
- Small blind zone < 11 mm

Your benefits

- Small, slim and sleek design enables easy integration into applications
- Capacitive teach-in button and LEDs make commissioning easier for complex solutions
- Slim and flat models offer flexible mounting options and optimize 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
- Auto-teach and auto-muting enable Plug & Play. And, an alignment aid and “Click & Go” provide faster installation.

→ www.mysick.com/en/SAS

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





S300 Mini Standard – At a glance

- Very compact design
- 2 m or 3 m protective field range
- 270° scan angle
- One field set (one protective field, two warning fields)
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



S300 Mini Remote – At a glance

- Can only be used in EFI system network with a Flexi Soft safety controller or another safety laser scanner
- Very compact design
- 2 m or 3 m protective field range
- 270° scan angle
- Up to 16 switchable field sets (16 protective fields, 32 warning fields)
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





S300 Standard – At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scan angle
- One field set (one protective field, two warning fields)
- 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_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



S300 Advanced – At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scan angle
- Four switchable field sets (four protective fields, eight warning fields)
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





S300 Professional – At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scan angle
- Eight switchable field sets (eight protective fields, 16 warning fields)
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Measured data output via RS-422

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 guarantees 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_Professional

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



S3000 Standard – At a glance

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

Your benefits

- Largest protective field range in the market increases the variety of application possibilities
- Safety engineering – with no loss of productivity.
- Quick recommissioning via configuration memory
- Expandable modular system, simple cabling and additional functions such as the simultaneous monitoring of up to four protective fields using SICK safety controllers with EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and productivity – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.mysick.com/en/S3000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





S3000 Advanced – At a glance

- 4 m, 5.5 m or 7 m protective field range
- Four switchable field sets (four protective fields, eight warning fields)
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Selectable resolution for hand, leg or body detection
- Simultaneous monitoring of up to four protective fields
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)

Your benefits

- Largest protective field range in the market increases the variety of application possibilities
- Safety engineering – with no loss of productivity
- Quick recommissioning via configuration memory
- Expandable modular system, simple cabling and additional functions such as the simultaneous monitoring of up to four protective fields using SICK safety controllers with EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and productivity – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.mysick.com/en/S3000_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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
- Four switchable field sets (four protective fields, four warning fields)
- 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 two protective fields

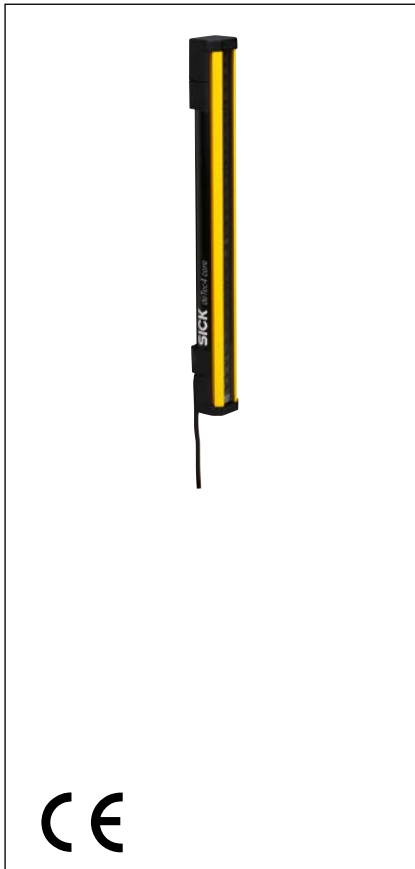
Your benefits

- Reliable, fault-tolerant communication with PLC controller using state-of-the-art fiber-optic technology.
- Efficient, cost-effective protection – networked through direct connection to PROFINET IO networks
- Rapid diagnosis by means of remote access prevents downtimes
- Standardized integration in PLC controllers, thanks to GSDML generic station description
- Largest protective field range in the market increases the variety of application possibilities
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





deTec4 Core – At a glance

- Type 4 (IEC 61496), PL e (EN ISO 13849)
- Protective operation
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2,100 mm
- Automatic range measurement of up to 10 m
- Ambient operating temperature of -30 °C to +55 °C
- Enclosure rating IP 65 / IP 67

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic range measurement of up to 10 m
- Simply safe: rugged and reliable thanks to enclosure rating IP 67 and an ambient operating temperature down to -30 °C, enabling use in harsh ambient conditions
- Intelligently standardized: M12, 5-pin provide cost reductions
- Basic function without configuration effort enables quick replacement when servicing is required

→ www.mysick.com/en/deTec4_Core

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



C4000 Standard – At a glance

- Type 4 (IEC 61496), 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

- 7-segment display saves time during alignment and diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Ability to cascade up to three systems optimizes the safety application and reduces wiring costs
- Preconfigured light curtains and the clone plug enables easy and rapid commissioning
- Precise, convenient configuration and diagnostics reduces downtime

→ www.mysick.com/en/C4000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





C4000 Advanced – At a glance

- Type 4 (IEC 61496), 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 increase the productivity in the process
- 7-segment display saves time during alignment and diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Clone plug enables easy and rapid commissioning, saving time and costs
- Ability to cascade up to three systems optimizes the safety application and reduces wiring costs
- Precise, convenient configuration and diagnostics reduce downtime

→ www.mysick.com/en/C4000_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



C4000 Entry/Exit – At a glance

- Type 4 (IEC 61496), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking
- 7-segment display
- Multiscan function increases availability
- External device monitoring (EDM), restart interlock (RES)
- Beam coding
- Configuration and diagnostics via PC

Your benefits

- Cost-effective: No additional muting sensors or protective measures are required.
- A compact sensor pair reduces the mounting requirements considerably – additional muting sensors are not required
- With the dynamic and self-teaching blanking function, the system can reliably differentiate between people and material – this provides maximum safety
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Time saving alignment and diagnostics by means of the 7-segment display

→ www.mysick.com/en/C4000_Entry_Exit

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





C4000 Palletizer – At a glance

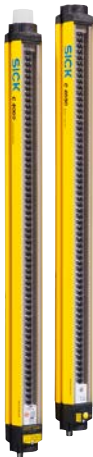
- Type 4 (IEC 61496), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking detects goods and pallets
- Direction recognition
- Multiple sampling
- Reduced resolution
- Muting alternative
- Beam coding
- Object gap suppression

Your benefits

- Cost-effective: No additional muting sensors or protective measures are required.
- A compact sensor pair reduces the mounting requirements considerably – additional muting sensors are not required
- With the dynamic and self-teaching blanking function, the system can reliably differentiate between people and material – this provides maximum safety
- The assorted feasibility of pallets allows the passage of mesh boxes, Euro pallets and half pallets, increasing plant availability
- Saves storage space: pallets can be parked permanently in the protective field
- One system monitors several conveyor belts, reducing sensor costs
- Quick commissioning: Euro pallets, mesh boxes etc. are detected without any programming

→ www.mysick.com/en/C4000_Palletizer

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



C4000 Select – At a glance

- Type 4 (IEC 61496), PL e (EN ISO 13849)
- Configuration via DIP switch, without PC
- Long scanning range up to 19 m
- Integrated laser alignment aid and alignment display
- Robust housing with three mounting grooves for maximum mounting flexibility
- Single beam / double beam blanking
- Diagnostics via 7-segment display – error codes directly on the device
- Beam coding for correct system allocation
- Cascadable up to three systems or with one safety laser scanner

Your benefits

- The blanking functions for reliable and safe object detection increase the productivity
- Time saving alignment and diagnostics by means of the 7-segment display
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Clone plug enables easy and rapid commissioning, saving time and costs
- Increased flexibility and reduced wiring costs by cascading up to three systems or one system together with a safety laser scanner
- Precise and convenient configuration and diagnostics possible via DIP switch
- The integrated laser alignment aid in combination with the alignment display enables time saving alignment of the sender and receiver

→ www.mysick.com/en/C4000_Select

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





miniTwin4 – At a glance

- Type 4 (IEC 61496), 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 1200 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: its small design, cascable features and incremental protective field heights enable a flexible adjustment to the machine design
- Standardization saves time and resources because of more straightforward logistics, order entry and service
- Simplified handling and setup: Software-free, almost fully automatic commissioning and intuitive operation with sustainable optics
- Bright LED display provides fast alignment, easy start up and clear protective field visualization ensure quick diagnostics
- End-to-end coverage in cascable applications eliminates dead zones and shortens the safety distance, increasing productivity
- Application-specific brackets provide increased flexibility and reduce installation time

→ www.mysick.com/en/miniTwin4

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



miniTwin2 – At a glance

- Type 2 (IEC 61496), PL d (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 1200 mm
- Typical scanning ranges 0 m ... 8 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: its small design, cascable features and incremental protective field heights enable a flexible adjustment to the machine design
- Standardization saves time and resources because of more straightforward logistics, order entry and service
- Simplified handling and setup: Software-free, almost fully automatic commissioning and intuitive operation with sustainable optics
- Bright LED display provides fast alignment, easy start up and clear protective field visualization ensure quick diagnostics
- End-to-end coverage in cascable applications eliminates dead zones and shortens the safety distance, increasing productivity
- Application-specific brackets provide increased flexibility and reduce installation time

→ www.mysick.com/en/miniTwin2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





C2000 Standard – At a glance

- Type 2 (IEC 61496), PL d (EN ISO 13849)
- Robust, industrial housing
- 7-segment display
- Impact and scratch-resistant front screen
- External device monitoring (EDM)
- Beam coding for correct system allocation
- A wide range of standardized connection and mounting accessories
- Internal self-testing function, configurable without PC

Your benefits

- Customer-friendly interfaces and status display simplify commissioning and maintenance
- High-quality industrial design provides reliable and durable continuous operation
- 7-segment display saves time during alignment and diagnostics
- Rugged design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- A multitude of intelligent mounting adapters enables flexible, time-saving installation
- Ability to integrate SICK safe control solutions provides additional application flexibility and customization, including restart interlock and EDM functions
- Special variants for wash down environments

→ www.mysick.com/en/C2000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



V300 Work Station Extended – At a glance

- SIL2 (IEC 61508, EN 62061) and 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

- Flexible and individual definition of protective fields
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





M4000 Standard – At a glance

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

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



M4000 Advanced – At a glance

- Type 4 (IEC 61496), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- 7-segment display
- Wide scanning range, up to 70 m
- External device monitoring (EDM), restart interlock (RES), application diagnostic output (ADO), SDL interface
- Muting in combination with the UE403 switching amplifier
- Laser alignment aid and LED optional integrated
- Configuration and diagnostics via PC

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 switching amplifier

→ www.mysick.com/en/M4000_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





M4000 Area – At a glance

- Type 4 (IEC 61496), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- 7-segment display
- Resolution 60/80 mm, wide scanning range up to 70 m
- External device monitoring (EDM), restart interlock (RES), application diagnostic output (ADO), SDL interface
- Beam coding for correct system alignment
- Configuration and diagnostics via PC

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
- Long scanning ranges provide and high resolutions ensure reliable area protection

→ www.mysick.com/en/M4000_Area

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



M2000 Standard – At a glance

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

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





M2000 Standard A/P – At a glance

- Type 2 (IEC 61496), PL d (EN ISO 13849)
- Robust, industrial housing
- 7-segment display
- Scanning range up to 6 m
- External device monitoring (EDM) and internal self-testing configurable without PC
- Economical active/passive variants minimize the wiring costs
- Standardized M12 connectivity is available

Your benefits

- Economical active/passive variants minimize the wiring costs and installation time
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- 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_A_P

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



L4000 Systems – At a glance

- Type 4 (IEC 61496), PL e (EN ISO 13849), only in conjunction with UE401
- 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 –20 °C ... +55 °C
- Narrow evaluation device (22.5 mm) with external device monitoring and restart interlock (EDM/RES)
- Fast response time of max. 30 ms
- Up to 8 sensors can be cascaded

Your benefits

- Easy integration due to small, compact versions with maximum range
- Flexible device integration makes it possible to set up individual protective fields
- Fast response times reduces safety distance and saves production area
- Extremely well suited for extreme ambient conditions such as heat, cold or moisture
- Straightforward configuration without a computer, only with the help of jumpers

→ www.mysick.com/en/L4000_Systems

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





i16S – At a glance

- Compact plastic housing
- Rigid and mobile actuators
- Available with M20 X 1.5 cable entry glands
- Slow-action switching elements with two contacts
- High retaining force
- IP 67 enclosure rating

Your benefits

- High availability and safety due to the cone shaped alignment aid
- High locking force offers machine reliability, even when exposed to shock and vibration
- Flexible electrical connectivity due to three cable entry glands

→ www.mysick.com/en/i16S

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



i10 Lock – At a glance

- Narrow plastic housing
- Rigid or mobile actuators
- Available with M20 X 1.5 cable entry glands
- 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

→ www.mysick.com/en/i10_Lock

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





i110R – At a glance

- Standardized metal housing
- Metal turning lever with plastic roller
- 1 M20 x 1.5 cable entry gland
- Slow-action or snap-action switching element with up to four contacts

Your benefits

- Standard device design provides quick and easy mounting
- High availability due to rugged metal housing
- Different switching elements offer the appropriate solution for electrical installation
- Improved diagnostics due to additional signaling contacts

→ www.mysick.com/en/i110R

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



RE1 – At a glance

- Response range of up to 7 mm
- 1 NO/1 NC or 2 NO contacts
- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- Sensors with plug connector or connected cable

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

→ www.mysick.com/en/RE1

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



RE2 – At a glance

- Response range of up to 9 mm
- 1 NO/1 NC, 2 NO contacts or 3 NO contacts
- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- Sensors with plug connector or connected cable
- LED status indicator (RE27)

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)

→ www.mysick.com/en/RE2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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 for direct connection of sensors to a single safety controller
- Safe series connection of up to 30 sensors possible
- LED status indicator
- Boundary area indication and magnetic retaining force (both optional)

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

→ www.mysick.com/en/TR4_Direct

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





T4000 Standard – At a glance

- Small sensors with external evaluation unit
- Response range of up to 10 mm
- Sensors with plug connector or connected cable
- Up to performance level PL e / Cat. 4 (EN ISO 13849)

Your benefits

- High level of prevention against tampering due to individually coded actuator
- High level of machine availability due to high tolerances for door misalignment
- High level of machine reliability due to resistance to shocks and vibrations
- 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)
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- Long service life due to durable and low-maintenance design

→ www.mysick.com/en/T4000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



IN4000 Direct – At a glance

- Two OSSD safety outputs for direct connection of sensors to a single safety controller
- Response range of up to 20 mm
- LED status indicator
- Up to performance level PL e / Cat. 4 (EN ISO 13849)

Your benefits

- Direct connection to the safe control solution eliminates any additional wiring and reduces installation time
- Fast diagnostics via LED status indicator
- 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_Direct

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





IN4000 Standard – At a glance

- One pulsed output for direct connection of sensors to a single safety controller
- IP 67 or IP 69K enclosure rating
- Response range of up to 15 mm
- LED status indicator
- Up to performance level PL e / Cat. 4 (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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



ES21 – At a glance

- Either as surface-mounted version with housing or as built-in version (Ø 22 mm)
- Built-in version for machine control panels with self-monitoring contacts between the pushbutton and switching element
- Surface-mounted version for direct mounting on different machines and systems
- Rotational or key unlocking
- Variants with LED ring lighting
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



UE10-30S – At a glance

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Output expansion for a safe processing of OSSD output signals
- 3 safety outputs, 1 application diagnostic output
- Feedback path for external device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- 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/UE10-30S

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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 networks (PROFIBUS-DP, DeviceNet, CANopen, Modbus TCP, Ethernet (TCP/IP), EtherNet/IP and PROFINET IO)

Your benefits

- Optimal scalability prevents extra inputs and outputs, reducing unnecessary hardware
- Configuration via rotary DIP switch reduces wiring and 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

→ www.mysick.com/en/Flexi_Classic

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Flexi Soft – At a glance

- Modularly expandable (12 ... 144 inputs/outputs)
- Intuitive configuration software: easy operation, simulation mode, wiring diagrams, freely downloadable
- Safely link up to four Flexi Soft safety controllers via EFI
- Integration into all common fieldbus systems
- Enhanced sensor functionalities via EFI interface
- 48 TÜV certified function blocks

Your benefits

- Prevention of redundant inputs and outputs saves money
- Less downtimes due to gateways, e.g., PROFINET IO, PROFIBUS-DP, EtherCAT, CANopen, Modbus TCP, Ethernet (TCP/IP), DeviceNet
- Standard RS-232 diagnosis via the main module enables real-time diagnostics for quick commissioning, faster troubleshooting and reduced downtime
- Fast electronic installation via complete wiring diagram
- Simulation mode allows a user to verify the safety functions before installation
- Via Automatic Configuration Recovery (ACR) easy change of EFI sensors without the help of any tools

→ www.mysick.com/en/Flexi_Soft

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





Motion Control – At a glance

- Standstill, speed and direction monitoring as well as safe stop functions
- PL e (EN ISO 13849), SIL3 (IEC 61508), SILCL 3 (EN 62061)
- Variants with interfaces for all current encoder and motor feedback systems
- Can be integrated into the modular design of the Flexi Soft safety controller
- Variants with standstill monitoring by means of residual voltage measurement

Your benefits

- High machine availability
- New concepts resulting from safe interaction between man and machine
- Reliable protection against dangerous machine movements
- Increased efficiency and productivity
- Strict separation between automation technology and safety applications provides protection from manipulation

→ www.mysick.com/en/Flexi_Soft_Drive_Monitor

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



SFS/SFM60 – At a glance

- HIPERFACE® motor feedback system in singleturn and multiturn design, compatible with the world's leading drive systems
- 1,024 sine/ cosine periods per revolution
- Absolute position with a resolution of 32,768 increments per revolution and 4,096 revolutions with the multiturn system
- HIPERFACE® interface: Programming of the position value and electronic type label
- Mechanical flexibility through different blind hollow shaft and through hollow shaft diameters (8 to 15 mm diameter), available with various torque supports
- Unique ball bearing design, allowing for a ball bearing distance of 30 mm.
- Universal cable outlet and common connector versions
- Protection class IP 65

Your benefits

- Convenient traceability and simple maintenance thanks to storage of motor-specific data in the electronic type label
- Platform for the future, since all electrical interfaces (TTL/HTL, 1Vpp, SSI, PROFIBUS, HIPERFACE DSL®) are or will be available in this mechanical component.
- Large ball bearing distances reduce uneven wear and minimize vibration on the encoder housing, which increases the encoder's service life
- The nickel code disk offers a high degree of vibration resistance and an extended temperature range
- Shorter development times through standardized mechanical interface

→ www.mysick.com/en/SFS_SFM60

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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

- Programmability of the encoders means less storage, greater machine availability and easy installation
- Precise positioning due to high resolutions
- Large selection of mechanical interfaces and electrical contacting possibilities: Suitable for all applications
- Suitable for applications with limited space requirements (extremely short installation depth of 30 mm)
- Very good rotation accuracy due to increased bearing distance
- One programming tool and software with automatic encoder detection for AFS60/AFM60/DFS60

→ www.mysick.com/en/AFS_AFM60_SSI

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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
- Up to 125 µs on-the-fly data transfer speed
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





A3M60 PROFIBUS – At a glance

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

Your benefits

- High level of system reliability even in extreme environmental conditions
- Lower maintenance costs due to non-contact single and multiturn magnetic scanning
- Space-saving, cost-efficient design ensures easy integration into applications with limited space
- High level of productivity due to quick communication and position calculation
- Immune to contamination and condensation, making it ideal for harsh environmental conditions
- Very good price-performance ratio

→ www.mysick.com/en/A3M60_PROFIBUS

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



DBS36 – At a glance

- Connection with universal cable outlet
- Versions with blind hollow shaft or face mount flange with solid shaft
- Face mount flange with 3 mounting hole patterns and servo groove
- Hollow shaft with universal stator coupling
- Compact diameter of 37 mm
- Electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Available PPR: 100 to 2,500
- Temperature range: -20 °C ... +85 °C
- Enclosure rating: IP 65

Your benefits

- The universal cable outlet allows use in tight spaces and makes flexible cable routing possible
- Face mount flange with various mounting hole patterns provides flexibility when mounting in new or existing applications
- Face mount flange with servo groove makes mounting with servo clamps possible
- The DBS36E's universal stator coupling ensures easy device replacement without changing the application
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- Compatibility with the DDS36E series makes it easy to replace this series in existing applications

→ www.mysick.com/en/DBS36

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





UL certification not valid for all types.

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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 ($\pm 10 \mu\text{m}$)
- High resolution ($1 \mu\text{m}$)
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



EcoLine – At a glance

- Measuring lengths: 1.25 m ... 10 m
- Modular measurement system with a wide range of interfaces / measuring lengths
- Analog interface with push-button teach
- Very small housing (55 ... 190 mm)
- Slim housing with spring integrated in the measuring drum
- Light yet shock-proof and temperature-resistant plastic housing

Your benefits

- Space- and cost-saving design thanks to slim mechanics
- The absolute analog output allows for the use of a cost-effective interface card
- Easy to install
- Numerous combinations of interfaces and measuring lengths
- Advanced programming options lead to a reduction in the amount of variants, save costs, and reduce storage

→ www.mysick.com/en/EcoLine

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





Compact – At a glance

- Compact housing (90 x 90 x 90 mm)
- Incremental and absolute versions
- Integrated measuring systems
- Measuring lengths from 2 m ... 5 m
- High resolution

Your benefits

- Industrial designed encoder integrated in an aluminum housing makes it less susceptible to external damage, saving time and reducing maintenance costs
- Extremely precise measurements by eliminating the coupling between the encoder and the mechanism
- Space-saving installation, since the encoder is directly integrated into the wire draw mechanics.
- Very precise measurements thanks to its high resolution

→ www.mysick.com/en/Compact

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



HighLine – At a glance

- Modular measuring system with a wide selection of interfaces/measuring lengths
- Measuring lengths: 2 m ... 50 m
- Very rugged system (dirt scraper, integrated brushes)
- High-quality winding mechanism and wire input
- Interfaces: - TTL/HTL - ANALOG, SSI, PROFIBUS, CANopen, DeviceNet, HIPERFACE®, EtherNET/IP, EtherCAT, PROFINET
- High enclosure rating
- Highly resistant to shock and vibrations
- High resolution possible

Your benefits

- Reliable solution in harsh environments
- Long service life due to rugged industrial housing
- Quick and easy installation without the need for precise linear guidance
- Low integration and maintenance costs
- Customization option reduces storage costs
- Teach-in function enables fast installation

→ www.mysick.com/en/HighLine

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





CLV65x – At a glance

- Huge depth of field due to auto focus
- Integrated pushbuttons for auto setup and reading diagnostics
- CAN, Ethernet TCP/IP, PROFINET, and EtherNet/IP available on board, no additional gateway needed (depending on variant)
- Enhanced SMART code reconstruction technology
- Flexible sorting, filtering, and logical functions
- Integrated web server provides remote diagnostics and monitoring
- Advanced, easy-to-use SOPAS configuration software
- Integrated LED bar graph

Your benefits

- Economical, as auto focus means no versions 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 SD 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 required

→ www.mysick.com/en/CLV65x

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



LECTOR® 62x – At a glance

- Decoding of most popular code types: 1D, 2D, direct part marking
- Easy integration with industrial networks: serial, USB, several fieldbus technologies
- Auto setup with function buttons, aiming laser, focus adjustment and green feedback LED – for quick setup without PC
- Compact design and industrial housing
- Analysis tools include live image capturing, code verification and read rate view

Your benefits

- Intelligent decoding algorithms provide reliable reading performance for improved read rates and throughput
- IDpro facilitates integration with most popular industrial networks
- Intuitive setup with function buttons, auto setup, aiming laser, focus adjustment and green feedback LED reduces training and installation time and costs
- Compact design and flexible interface connections make it easy to install in reduced spaces
- Quick analysis of read rate performance and code quality allows for efficient control
- Cloning back-up systems ensure low machine downtime in the event of unexpected incidents
- SICK LifeTime Services give you peace of mind

→ www.mysick.com/en/LECTOR62x

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





IDM140 – At a glance

- Reading distance up to 320 mm
- Identifies all popular linear bar codes
- Scan rate up to 500 scans/second
- Withstands 25 drops from 1.6 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 highly visible scan line for correct aiming

→ www.mysick.com/en/IDM140

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



IDM160 – At a glance

- Identification of all popular 1D codes, with PDF version also stacked codes
- Compact housing with up to IP 65 withstanding 50 drops from 2 m on concrete
- Good read feedback via LED, beeper and vibrator
- Supports all popular corded and cordless interfaces as well as industrial fieldbuses via SICK connectivity
- Tool-free exchange of cable and battery
- Corded and cordless versions available

Your benefits

- Increased productivity and throughput thanks to fast and reliable identification
- Reduced costs thanks to 2-in-1 scan engine: covering standard and high-density codes with a single device
- High reliability thanks to industrial grade and rugged housing
- Intuitive good read feedback for noisy industrial environment via vibration, beeper and LED
- Higher user comfort through ergonomic housing design, well balanced and light weight
- High flexibility and operator mobility with corded and cordless versions
- Quick integration in most corded and cordless PC or industrial networks

→ www.mysick.com/en/IDM160

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





RFH6xx – At a glance

- 13.56 MHz RFID interrogator 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 IDpro platform

→ www.mysick.com/en/RFH6xx

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





IVC-3D – At a glance

- Easy 3D measurement – provides information about object height, shape and volume
- Independent of contrast and color
- Easy-to-use graphical user interface for fast application development
- Simple connection of PLCs, robots, and other control systems, e.g., via EtherNet/IP or OPC
- Scans up to 5,000 profiles per second
- Industrial, robust 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Ranger – At a glance

- High speed 3D at unmatched speed and quality
- MultiScan technology to measure 3D, contrast, color and scatter at the same time
- Sensor resolutions of up to 1,536 pixels in 3D and 3,072 pixels in gray-scale and color
- Full flexibility in configuration, working distance, and field of view
- In-machine 3D calibration tool
- 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
- Fully 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





Ruler – At a glance

- Factory calibrated 3D in millimeters at full production speed
- High accuracy 3D for measurement widths from 100 mm up to 1.5 m
- Capture 3D, grayscale, and scatter at the same time
- Easy to integrate without need for external lights
- Rugged housing for tough environments and operation down to -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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



PLB – At a glance

- 3D flexible automation system for robotic part handling
- Localization of randomly oriented parts in bins and boxes
- 3D camera with superior image quality
- High immunity to ambient light conditions
- CAD-based 3D shape matching
- Combination of pre-set software and hardware
- Integrated tools for calibration and robot communication
- Verifies free gripping position based on end-effector model

Your benefits

- PLB facilitates cost-effective design of robotic part handling systems
- Field-proven tools make it easier for robot integrators to develop the complete application
- The combination of precise 3D shape matching and short measurement times supports relevant production rates
- Advanced SICK 3D camera technology ensures reliable results even under varying site conditions
- Flexible part localization makes it possible handling parts with a variety of shapes and sizes at various positions within the bin
- CAD-based shape matching makes it easy to introduce new parts in existing work cells

→ www.mysick.com/en/PLB

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CE III CDRH
RS-422

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 cost-effective
- 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



CE III RS-232

OD Max – At a glance

- Several measurement ranges from 24 ... 26 mm up to 250 mm ... 450 mm
- CMOS receiving element for measurement independent of surface
- High measurement frequency and high linearity
- Variety of selectable integrated calculations based on values from two sensors
- Laser technology for precise measurement or detection of very small objects
- Several output options

Your benefits

- Minimum machine downtime due to its reliability on any surface, regardless of brightness or color
- Highly accurate measurement, even during the production process, ensures high product quality
- High measuring frequency of 10 kHz increases processing speeds and reduces cycle times
- Reduce the cost to change your process by making a reference measurement using two sensors
- Comparatively low investment costs for challenging measuring tasks
- An easy-to-read LC display and simple push-button keypad programming ensures simple setup and servicing
- Reduced material costs, when using the distance sensors to control cost-relevant production processes

→ www.mysick.com/en/OD_Max

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





CE III C **UL** US
RS-422 USB
RS-232

OD Precision – At a glance

- Many measurement ranges from 24 mm ... 26 mm up to 300 mm ... 700 mm
- CMOS receiving element for measurement independent of surface
- High measuring accuracy and frequency
- Glass thickness measurement with just one sensor head
- Different light spot sizes
- Integrated calculations for up to three sensors
- Stand alone use via RS-422

Your benefits

- Non-contact measurement improves quality inspection during production
- Surface-independent measurement algorithms ensure minimum machine downtime, regardless of surface gloss or color
- Reduced processing times as a result of the high measuring frequency of up to 10 kHz
- Simple, cost-effective solution for challenging measuring tasks due to a variety of sensor models
- Optional stand-alone operation via RS-422 means the OD Precision offers maximum performance at lower investment costs
- High visibility LC display enables simple, cost-effective setup
- Many interfaces for simple integration into an existing production environment

→ www.mysick.com/en/OD_Precision

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



CE III C **UL** LISTED
CDRH
IO-Link

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





Dx50 – At a glance

- HDDM™ technology offers best reliability, immunity to ambient light and price/performance ratio
- Measurement ranges of 10 or 20 m directly onto the object or even 50 m on reflector
- Different performance levels depending on product and laser class chosen
- Different interfaces: switching, analog or serial interface
- Display with intuitive and consistent operating concept
- Robust die-cast zinc metal housing
- Operating temperature from –30 °C to +65 °C

Your benefits

- Wide measurement ranges up to 10, 20 or 50 m in combination with different interfaces allow an easy and fast integration in any production environment
- Highly reliable and precise measurement helps to increase process quality and stability
- High measurement or switching frequencies enable a fast material flow
- Dx50 product family is based on a common platform, offering multiple performance levels, making it easy to accommodate future changes
- Intuitive setup via display or remote teach reduces installation time and costs
- Temperature range from –30 °C to +65 °C allows for outdoor use without additional cooling or heating
- Up to 40 klx ambient light immunity – allows for use in optically challenging environments

→ www.mysick.com/en/Dx50

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Dx100 – At a glance

- 3-axis alignment bracket with quick lock system
- SpeedCon™ and standard M12 electrical connections
- Small and rugged metal housing
- Display with intuitive menu and easy-to-see status LEDs
- Pre-failure and diagnostic data available
- Numerous fieldbus and Ethernet interfaces
- Elongated holes for precise adjustment of sensor offset (or “home position”)
- Versatile accessories

Your benefits

- 3-axis alignment bracket ensures fast alignment and easy exchange, reducing maintenance and setup costs
- Enhanced closed-loop behavior offers highest performance and productivity
- Fast setup with an intuitive and easy-to-use display guarantees the perfect sensor settings
- Pre-failure and extensive diagnostic data allow for preventive maintenance, ensuring the highest machine uptime
- Numerous fieldbus and Ethernet-based interfaces offer the highest flexibility and fast communication for maximum efficiency
- Small, rugged metal housing and SpeedCon™ compatible connectors ensure hassle-free installation – even in confined spaces
- Numerous accessories allow flexible use and guarantee high operation functionality

→ www.mysick.com/en/Dx100

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





DME5000 – At a glance

- Measurement range from 0.15 m to 300 m
- Very fast measurement cycles
- Highest accuracy, repeatability and system availability
- Illuminated LC display with diagnostic information
- Visible red light and bracket with springs for alignment
- Variety of interfaces: SSI, RS-422, PROFIBUS, HIPERFACE, DeviceNet

Your benefits

- Fastest measurement rate offers optimized integration into control loops for increased productivity
- Red laser light as well as adjustable mounting brackets (optional accessory) enable fast and easy alignment, ensuring on-time and cost-effective installation
- Multi-point self checks provide maintenance and replacement warnings increasing overall machine availability
- A tough, metal housing as well as heating and cooling accessories ensure reliability in rough ambient conditions
- User-friendly display with easy-to-use menu along with external PC/PLC programming offers fast and cost-efficient setup
- Multiple serial interfaces provide high-speed position output to the controller and high flexibility in application integration
- Integrated speed monitoring offers additional information for increased process reliability
- Highest degree of accuracy and repeatability ensures high machine availability

→ www.mysick.com/en/DME5000

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



OLM100 – At a glance

- Control marks for special functions and sensor configuration
- Measurement range up to 10 km
- High repeatability of 1 mm
- Adjustable resolution as low as 0.1 mm
- Multiple interfaces: SSI, RS-422, RS-485 and CANopen
- Self-adjusting quadruple redundant red LED lighting
- Integrated skew and bank angle for fast parallel mounting, therefore alignment only in one axis is necessary
- Large temperature range from -30 °C to +60 °C

Your benefits

- Precise positioning with speeds of up to 4 m/s significantly increases throughput
- Camera-based system with no moving parts in combination with tough metal housing ensure increased lifetime, thus reducing replacement costs
- High ambient light safety due to self-adjusting LED illumination ensures reliable operation, thus increasing machine availability
- Large temperature range from -30 °C to +60 °C offers flexible and reliable use in many applications
- Various interfaces (RS-422, RS-485, SSI and CANopen) offer highest flexibility and easiest system integration, hence saving costs for interface converters and protocol adaption
- Smallest available housing for common industrial serial interfaces offers easy integration in confined spaces, therefore allowing the customer to save room on his machine design

→ www.mysick.com/en/OLM100

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



UC4 – At a glance

- Integrated time-of-flight technology detects objects such as glass, liquids and transparent foils, independent of color
- Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)
- Immunity to dirt, dust and fog
- One PNP/NPN switching output
- Excellent background suppression

Your benefits

- Mini housing allows for quick and easy integration, even in the most confined spaces
- Immunity to dirt and dust ensures reliable object detection, even in challenging environmental conditions
- Integrated temperature compensation ensures high measurement accuracy
- Various switching outputs provide application flexibility, which increases reliability and productivity
- Full mechanical compatibility to photoelectric sensors increase application flexibility without machine modification
- Economical version available for simple, cost-sensitive applications
- Fast machine setup due to easy-to-use teach-in button

→ www.mysick.com/en/UC4

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





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 one sensor can be used for large anti-collision fields
- No wiring necessary between sender and receiver

→ www.mysick.com/en/TiM3xx

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



LMS1xx – At a glance

- Economical measurement sensor
- Real-time output of measurement data via Ethernet interface
- Field evaluation using intelligent algorithms and programmable applications
- Number of switching outputs can be expanded via external CAN modules
- Parameter setting interface is accessible from the front while the device is mounted
- Rugged housing

Your benefits

- Lightweight housing makes it easy to mount
- No wiring between sender and receiver
- Advanced filtering technology rigorously reduces false trips caused by outdoor environmental factors like fog, rain and snow
- Optional external CAN I/O module increases number of switching outputs for greater application flexibility
- Fast, easy commissioning due to SOPAS software

→ www.mysick.com/en/LMS1xx

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





LMS4xx – At a glance

- The Level Control feature, which is integrated into the sensor, features a gap-free scanning surface that can detect objects in containers, without any impairment from a shadow. Smaller objects, regardless of color, are detected at any place in the container.
- Large dynamic measurement range of 0.7 m to 3 m
- High ambient light immunity
- Rugged design
- High angular resolution
- Ideal for vision applications on pallets

Your benefits

- The integrated Level Control feature replaces a number of sensors and drastically reduces the effort required for wiring and programming
- Reliable detection at high conveyor speeds
- Neither shading nor artificial lighting is necessary
- Simple, flexible installation at positions beyond the robot collision area
- High accuracy detection and positioning measurements in real-time provide rapid data capture

→ www.mysick.com/en/LMS4xx

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



LFP Cubic – At a glance

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

Your benefits

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

→ www.mysick.com/en/LFP_Cubic

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





LFB200 – At a glance

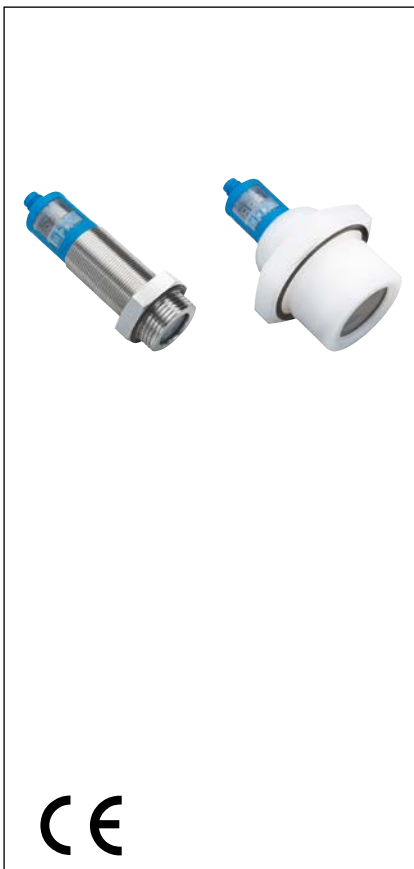
- Housing made of 316L stainless steel
- Two electrical output versions available
- Commissioning without filling
- Process temperature up to 150 °C
- Immune to deposit formation
- Very high repeatability
- Aseptic versions with polished surface, CIP and SIP resistant
- Tube extension up to 6 m

Your benefits

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

→ www.mysick.com/en/LFB200

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



UP56 – At a glance

- Non-contact level measurement up to 3.4 m operating distance / 8.0 m limit scanning distance
- Pressure resistant up to 6 bar (87 psi)
- Transducer protected by PVDF cover for increased resistance
- 3 in 1: continuous level measurement, level switch and display
- Analog output switchable between 4 mA ... 20 mA and 0 V ... 10 V
- Process connector thread G 1 and G 2
- IP 67 enclosure rating
- Easy to set parameters, 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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





MHF15 – At a glance

- Robust level monitoring in liquid without additional requirements
- Small, compact design; no medium calibration required
- Process temperature up to 55 °C, process pressure up to 16 bar
- IP 67 and IP 69K enclosure rating
- Process connection G ½
- Highly medium resistant due to stainless steel housing 1.4404, polysulfone apex
- Output available as PNP or NPN transistor
- FDA-compliant, UL

Your benefits

- Small, compact sensor ideal for difficult installation conditions with limited space
- Quick commissioning without medium calibration saves time and money
- No moving mechanical parts reduce maintenance and eliminate the need to recalibrate – even after long periods of use.

→ www.mysick.com/en/MHF15

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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

→ www.mysick.com/en/PBS

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





PBT – At a glance

- Pressure measurement ranges from 0 bar ... 1 bar up to 0 bar ... 600 bar
- Gauge, absolute, and compound measurement ranges
- A large variety of available process connections
- No moving parts: No mechanical wear, fatigue-proof, maintenance-free
- Circularly welded, hermetically sealed stainless steel membrane
- Output signal 4 mA ... 20 mA, 0 V ... 5 V or 0 V ... 10 V
- Electrical connection M12 x 1, L-connector acc. to DIN 175301-803 A or flying leads

Your benefits

- Compact size takes up less space
- Simple and cost-saving installation
- Available in a wide selection of configurations, enabling a perfect match to individual customer requirements
- Robust design enables higher reliability
- Excellent price/performance ratio

→ www.mysick.com/en/PBT

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



PFT – At a glance

- Measurement ranges from 0 mbar ... 100 mbar up to 0 bar ... 600 bar
- Gauge, absolute, and compound measurement ranges
- Variant with flush-mounted membrane available
- Process temperature up to 150 °C (optional)
- Large variety 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
- Electrical connection M12 x 1, L-connector according to DIN 175301-803 A or flying leads

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, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





FFU – At a glance

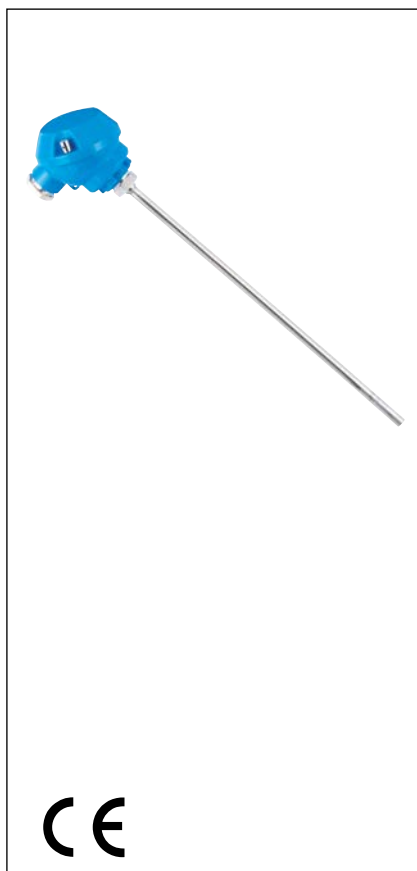
- Flow sensor for conductive and non-conductive liquids
- Compact design with no moving parts
- Process temperature up to 80 °C, process pressure up to 16 bar
- High chemical resistance due to seal-free sensor design
- Large display with membrane keyboard
- Integrated teaching tube detection

Your benefits

- Reduced maintenance costs
- Adjustable measuring ranges reduces the number of variants
- Ability to be used with conductive and non-conductive liquids reduces variants and lowers storage costs
- Straight measuring tube reduces pressure loss, thus reducing energy costs
- Sensor without seals increases process reliability and availability
- Flexible measurement system for all industries

→ www.mysick.com/en/FFU

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



TBT – At a glance

- Pt100 element, accuracy class A according to IEC 60751
- Measuring ranges -50 °C ... +150 °C and -50 °C ... +250 °C
- Wetted parts made from corrosion resistant stainless steel 1.4571
- Various mechanical adaptations and insertion lengths
- Pt100 (4-wire) or 4 mA ... 20 mA (2-wire)
- Cable gland M16 x 1.5

Your benefits

- Reliable operation through rugged design and high-quality materials
- Good long-term stability, accuracy and linearity
- Quick and safe installation
- Convenient system integration even in narrow installation spaces
- Optimal solutions for individual requirements

→ www.mysick.com/en/TBT

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.





TCT – At a glance

- Pt100 element, accuracy class A according to IEC 60751
- Measuring ranges $-50\text{ °C} \dots +150\text{ °C}$ and $-50\text{ °C} \dots +250\text{ °C}$
- Wetted parts made from corrosion resistant stainless steel 1.4571
- Various mechanical adaptations and insertion lengths, also available with thermowell
- Pt100 (4-wire) or 4 mA ... 20 mA (2-wire)
- Circular connector M12 x 1 (IP 67) or L-connector according to DIN EN 175301-803 A (IP 65)

Your benefits

- Reliable operation through rugged design and high-quality materials
- Good long-term stability, accuracy and linearity
- Quick and safe installation
- Convenient system integration through compact dimensions and industry-standard output signals
- Optimal solutions for individual requirements

→ www.mysick.com/en/TCT

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



TBS – At a glance

- Large display
- Individually programmable transistor outputs PNP or NPN, optional analog output 4 mA ... 20 mA or 0 V ... 10 V
- Round connector M12 x 1
- Measuring ranges $-20\text{ °C} \dots +80\text{ °C}$
- Pt1000 element, accuracy class A (IEC 60751)
- Various insertion lengths and connection threads
- Wetted parts made from corrosion-resistant stainless steel 1.4571
- Enclosure rating IP 65 and IP 67

Your benefits

- Quick and safe set-up through superior ease of use
- Compact dimensions and rotatable housing facilitate integration
- Very reliable: splash-proof housing, high-grade materials, rugged design, and field-proven technology
- Very good long-term stability, accuracy and linearity
- Quick response time
- Versatile configuration allows for optimal solutions for specific requirements

→ www.mysick.com/en/TBS

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



From your safety application to a complete solution

Our range of safety components and services provides the optimal safety solution for a wide range of your machine or system requirements. Control and monitor your processes in a flexible manner: The interaction between man and machine during commissioning, operation, or servicing means that fast diagnosis is consistently supported throughout our control and sensor solutions. Increase both safety and productivity at the same time.



Opto-electronic protective devices

- Safety laser scanners
- Safety camera systems
- Safety light curtains
- Multiple light beam safety devices with mirror columns and device columns
- Single-beam photoelectric safety switches



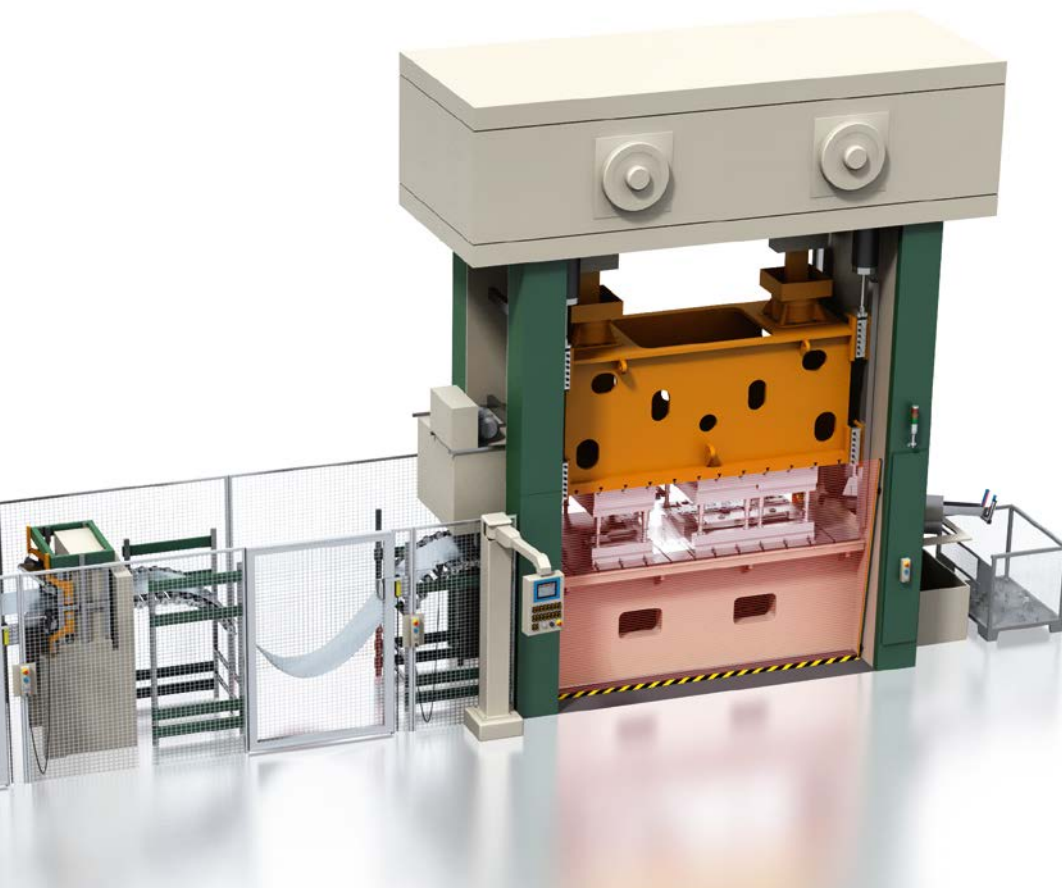
Safety switches

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



sens:Control – safe control solutions

- Safety relays
- Safety controllers
- Advanced Flexi Soft functions with Flexi Line safe networking and Flexi Loop safe sensor cascade
- Safe Drive Monitor drive monitoring



SICK – Your partner for machine safety

When it comes to international business, safety officers and decision makers are faced with a complex network of laws, regulations, labeling measures, and guidelines. SICK can help deal with this challenge. We have experience with the details and know exactly how to fulfill the numerous requirements. Both in terms of current machinery and in planning and purchasing new systems.



Consulting & Design

- Risk assessment
- Safety concept
- Hardware- and software design
- Installation and commissioning
- Functional safety assessment
- CE-conformance check
- CE certification
- Plant walk-through

Training & Education

- User training
- Seminars
- WebTraining

Verification & Optimization

- Inspection
- Machine safety inspection
- Electrical equipment check
- Accident investigation
- Stoptime measurement

More information → www.senscontrol.com

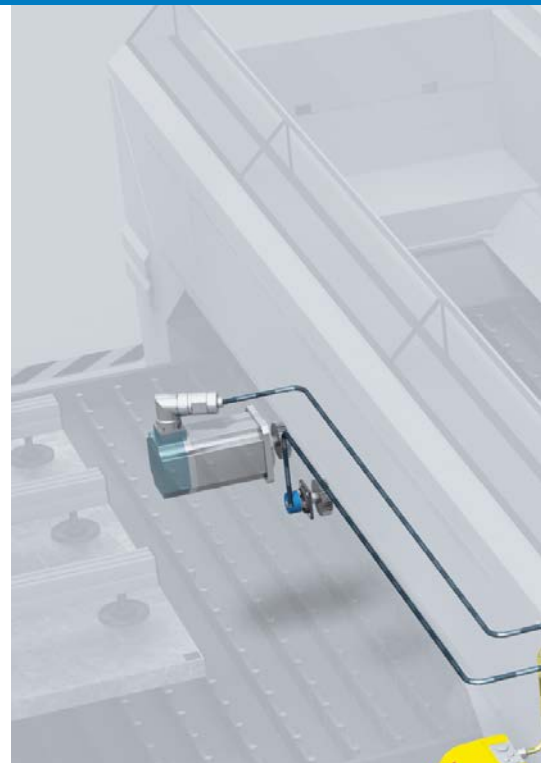
sens:Control from SICK: Safety with flexible expansion options

Safety solutions for today's machines and systems have to do more than "just" protect against accidents – we are increasingly seeing the need to offer added value with respect to automation.

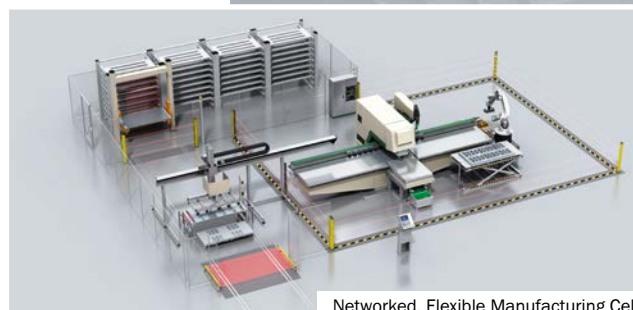
The sens:Control portfolio with its safety relays and control and network solutions turns these demands into reality. Thanks to modular design and intuitive software, optimal safety solutions are being developed that fulfill the increasing requirements placed on today's machines and systems.

For each individual application, safety solutions must be engineered and configured in a simple manner that allows them to be migrated so that basic functions can be set up, tested, integrated in the automation process, and put into operation in the shortest possible time.

Choose the control solution you require for your application:



Individual machine



Networked, Flexible Manufacturing Cell



Safety relays

- Reliable and rugged
- Minimum amount of wiring
- Rapid device replacement using plug-gable terminals
- Compact, space-saving design
- Application-oriented variants available



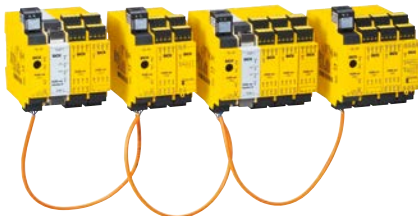
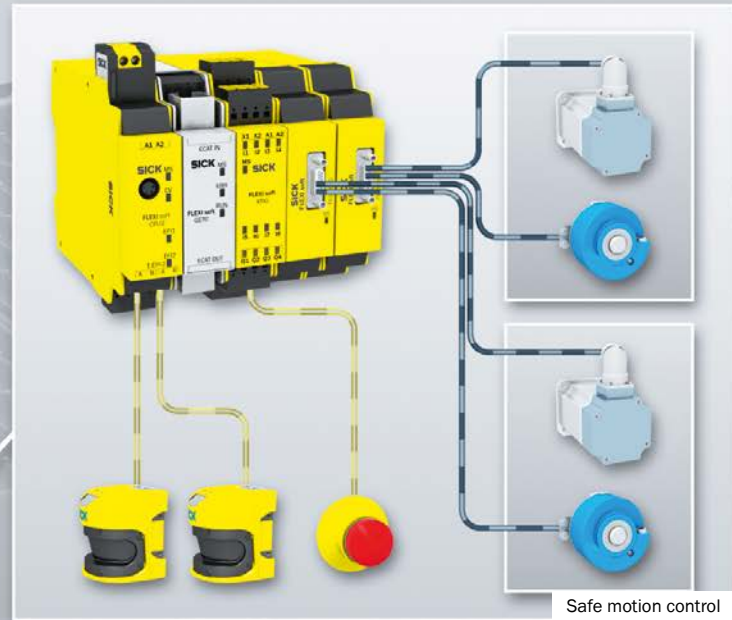
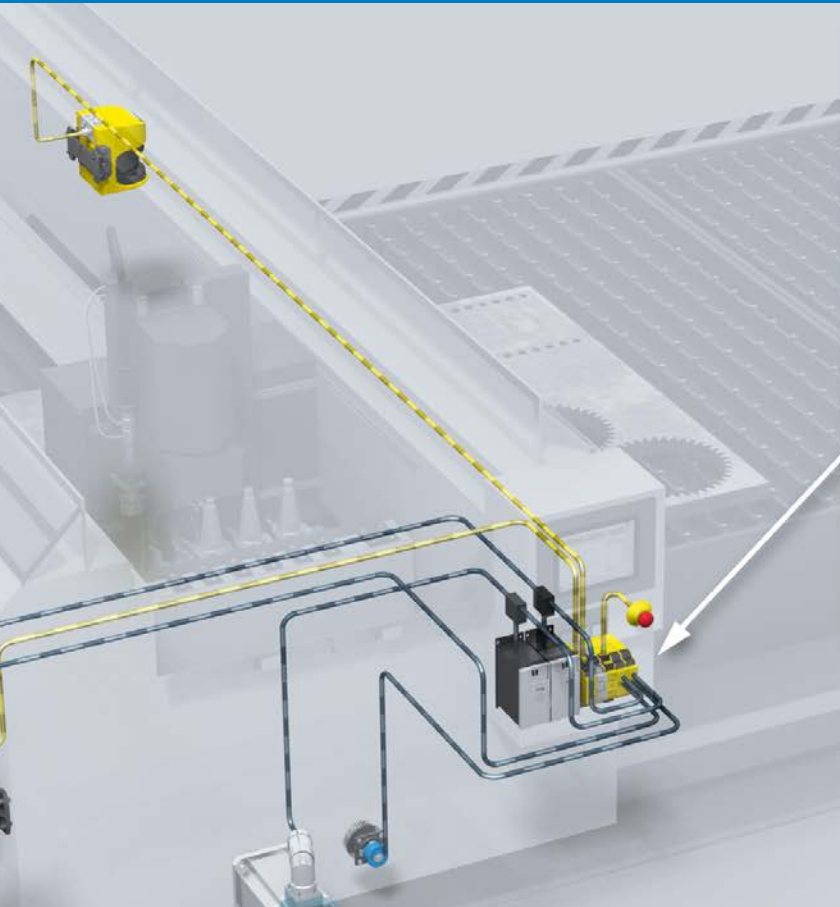
Safety controller: Flexi Classic

- Simple configuration via screwdriver
- Logical connection and optimal compatibility with all sensors
- Modular construction: The controller grows with the application (8 ... 104 E/As)
- Simple realization from the planning up to the
- wiring with the Flexi Classic configurator



Safety controller: Flexi Soft

- Fast cut-off path at a constant 8 ms
- Modular construction: The controller grows with the application
- Configuration of the function logic blocks using the intuitive Flexi Soft Designer configuration tool
- Rapid communication between the safety components via the SICK EFI interface reduces safety distances and the amount of wiring, and enables convenient configuration and diagnostics



Advanced Flexi Soft functions

- Safe networking of 32 machine modules via the Flexi Line function
- Simple integration of safety solutions in higher-level networks via gateways in all current fieldbus systems
- Consistent programming, configuration, and diagnostics across the network
- Flexi Loop safe sensor cascade with 32 stations on one safety path incl. simple diagnostics



Motion Control

Safe drive monitoring: Drive Monitor

- Functions in accordance with IEC 61800-5-2: (Adjustable speed electrical power drive systems – Part 5-2: Safety requirements)
- Seamless integration in the Flexi Soft safe controller

Complete solution: Example of safe press control

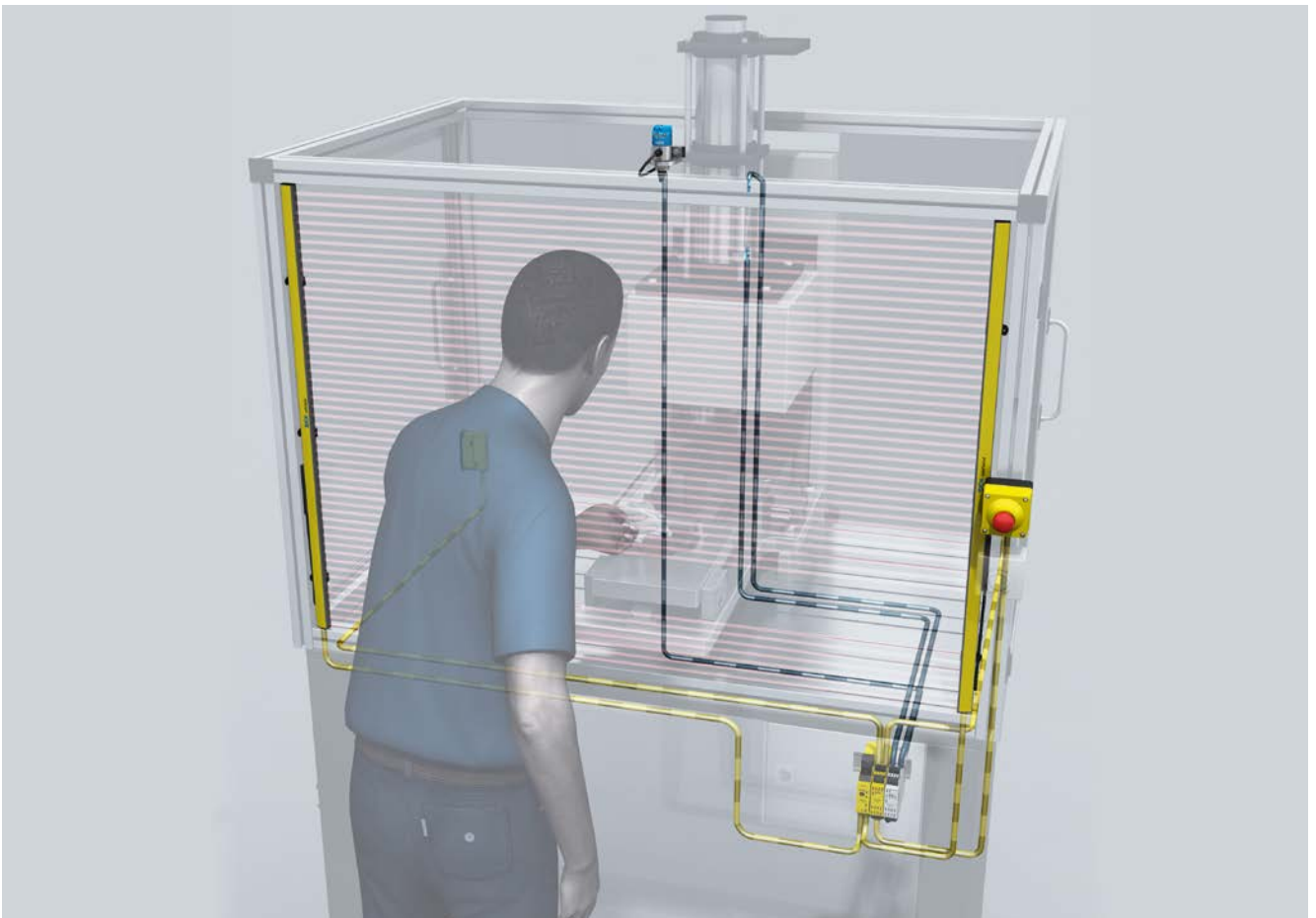
Simple and smart: Flexi Soft safety controller

Flexi Soft safely controls and monitors mechanical or hydraulic presses and realizes typical functions, including:

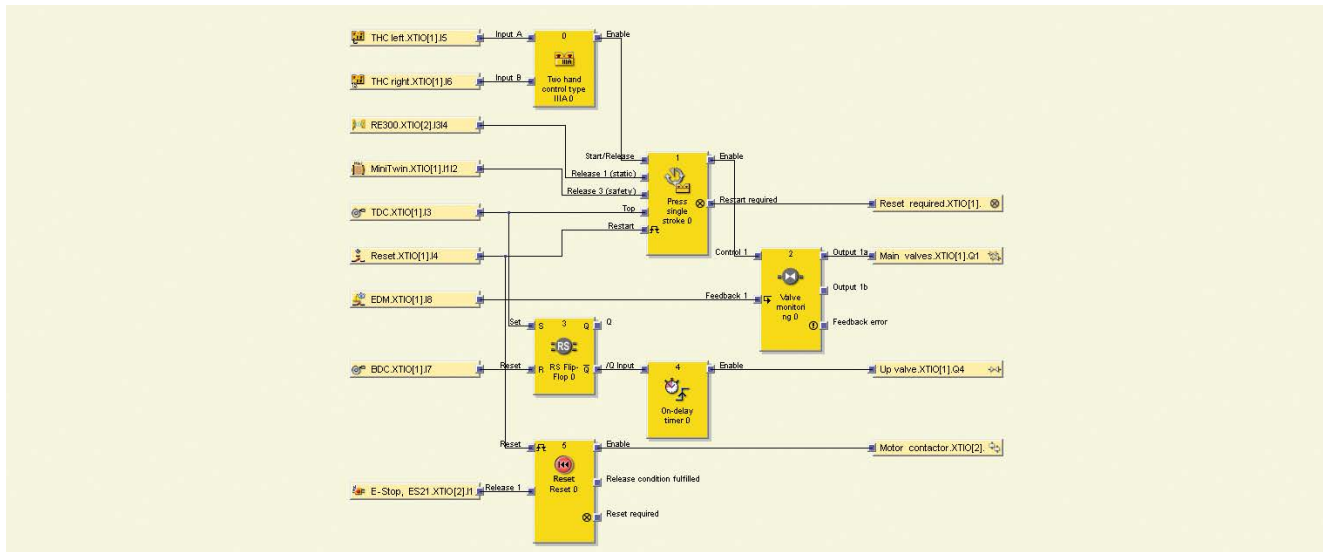
- Monitoring switching signals, e.g., two-hand operation, emergency stop, foot switch, safety light curtain, safety switch, to fulfill safety functions
- Use of safe output signals for controlling valves or the hydraulic pump
- Control of operating modes, such as setup mode, single or double break PSDI (Presence sensing device initiation) mode, automatic mode
- EDM (External device monitoring)
- Position monitoring for TDC (Top Dead Center) and BDC (Bottom dead center) and overrun monitoring (SCC = Stop control contact)
- Reset and restart interlock
- Muting of the light curtain during non-hazardous upward movement
- Integration of non-safe signals such as pressure switch, magnetic cylinder sensor

Benefits of Flexi Soft:

- Fast shut-off in just 8 ms! – Reduces the mounting distance for safety light curtains, increasing productivity
- Processing of safe and non-safe machine signals
- Realization of applications with servo drives with a safe Drive Monitor module, e.g., for servo presses, CNC portals
- Modular expansion of the Flexi modules, including networking of several CPUs from other machine modules.
- Gateways in all current automation networks

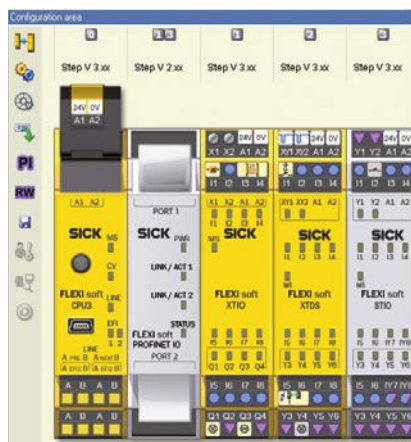


Safety solutions made easy: Flexi Designer software



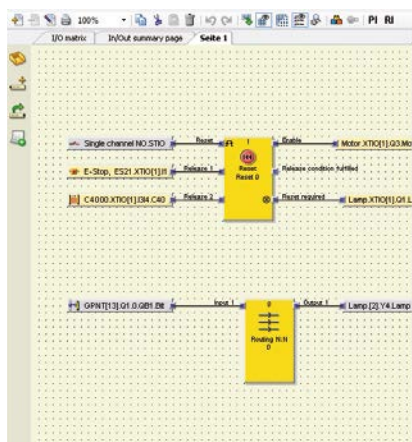
Benefits of Flexi Designer:

- Quick implementation of safety concepts thanks to intuitive interface and powerful, comprehensive logic editor
- Simple configuration of pre-configured function blocks
- Project documentation in various languages (Chinese, Czech, English, French, German, Japanese, Spanish, Turkish)
- No license fee, simply download and use straight away



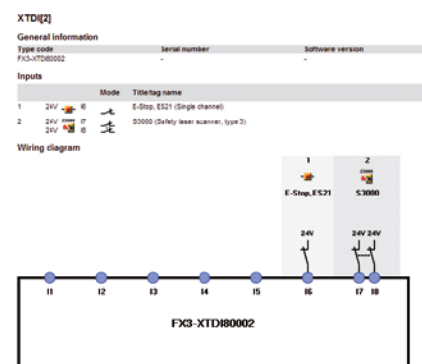
Hardware configuration

- Simple hardware configuration using drag and drop
- Broad range of input and output elements with easy to understand icons
- Clear diagnostics through online monitor; all statuses at a glance
- Customized modification of elements which can be saved in a special library



Logic creation

- Extensive library of certified function blocks
- Large number of logic blocks available for each project
- Application-specific blocks for presses, muting, and ramp down detection
- Verification of the created project via offline simulation
- Online forcing of inputs
- Definition of individual logic function blocks



Documentation

- Detailed wiring diagram for fast commissioning, in the event of faults, and servicing support
- Extensive multi-lingual documentation in just one single file
- Detailed illustration of the logic
- Supports the machine documentation

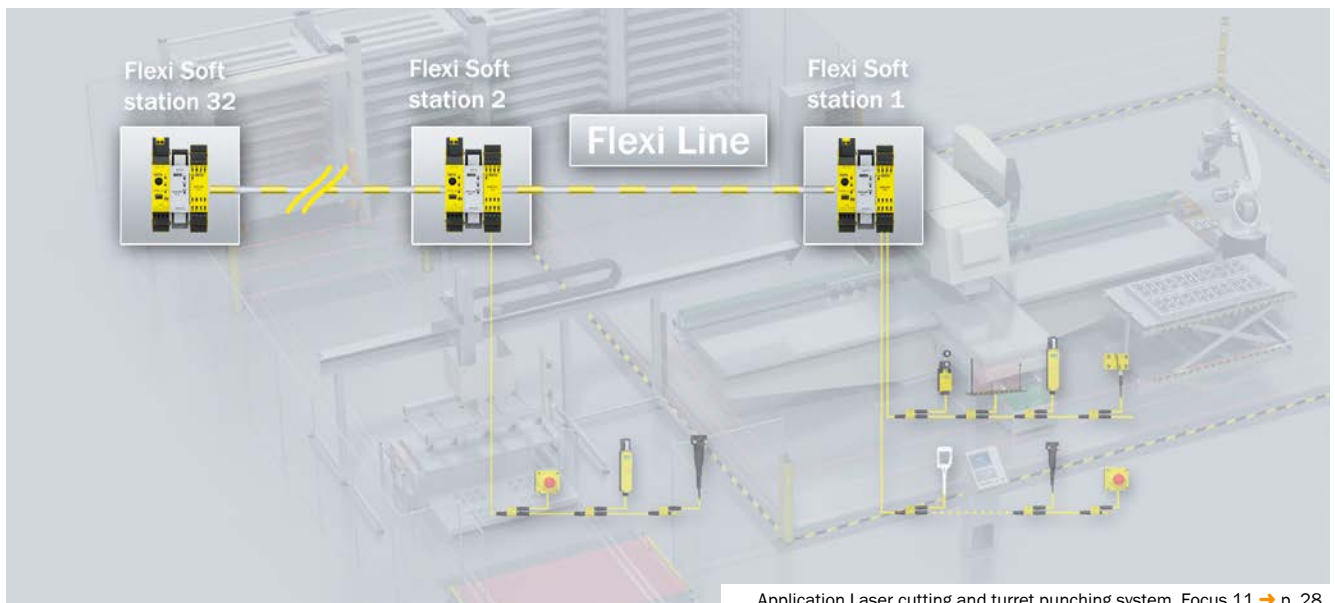
Flexible and modular machine concepts implemented simply and safely

State-of-the-art machines and systems are increasingly designed based on the requirements of flexible production: Extensions or modifications using machine modules must be simple and be able to be integrated at a later date.

The amount of time and effort required for planning, commissioning, and servicing needs to be minimized and simplified. With this in mind, the comprehensive safe controller has a modular and clear design, the electrical and mechanical installation process for the components is extremely simple, and cabling is reduced. 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 machine line and designed to support the processes. Performance level e (PL e) should also be achieved when sensors are cascaded.

Intelligent diagnostics should support qualified personnel and operators with respect to sensor troubleshooting.

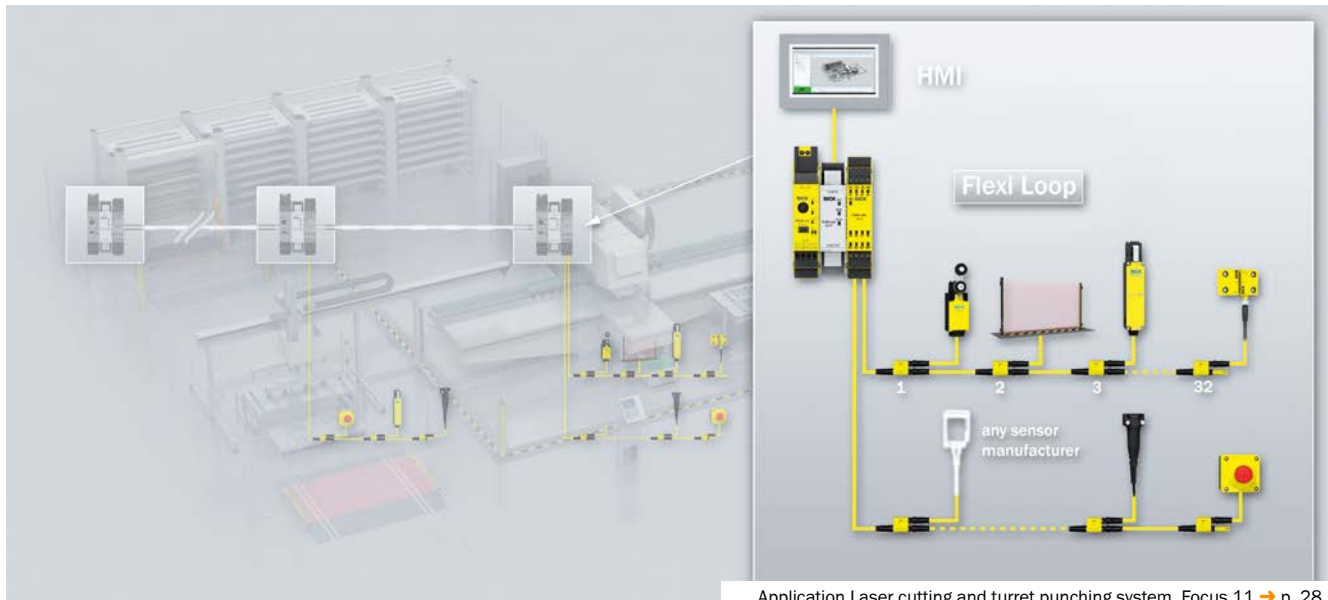
Flexi Soft and the functions of Flexi Line safe networking and the Flexi Loop safe sensor cascade allow these requirements to be implemented.



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 flexibility allows modular machine structures to be mapped in a consistent way. And the possibilities for machine concepts are endless.

- Machine modules can be modified at will in terms of how many are installed and their sequence in the process. 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: No additional hardware and quick realization and commissioning
- 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 via a two-wire standard cable between the CPUs
- Combination with the Flexi Loop safe sensor cascade



Application Laser cutting and turret punching system, Focus 11 → p. 28

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 within a Flexi Soft control solution 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 (also REED sensors).

- Compatible with sensors from other manufacturers
- Transmission of detailed diagnostic information and visible 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
- Loop extension by means of additional voltage supply

Complete solution for a servo press

There is a clear trend for the use of electric drive in machine tools. Processes can be controlled more accurately, allowing product quality to be increased. Energy is supplied to the process in a more targeted manner, saving costs. Productivity is increased thanks to the faster traversing movements of the axes. With the Drive Monitor, Flexi Soft also offers the possibility to benefit from these advantages in terms of safety.

Safe drive monitoring with the Drive Monitor

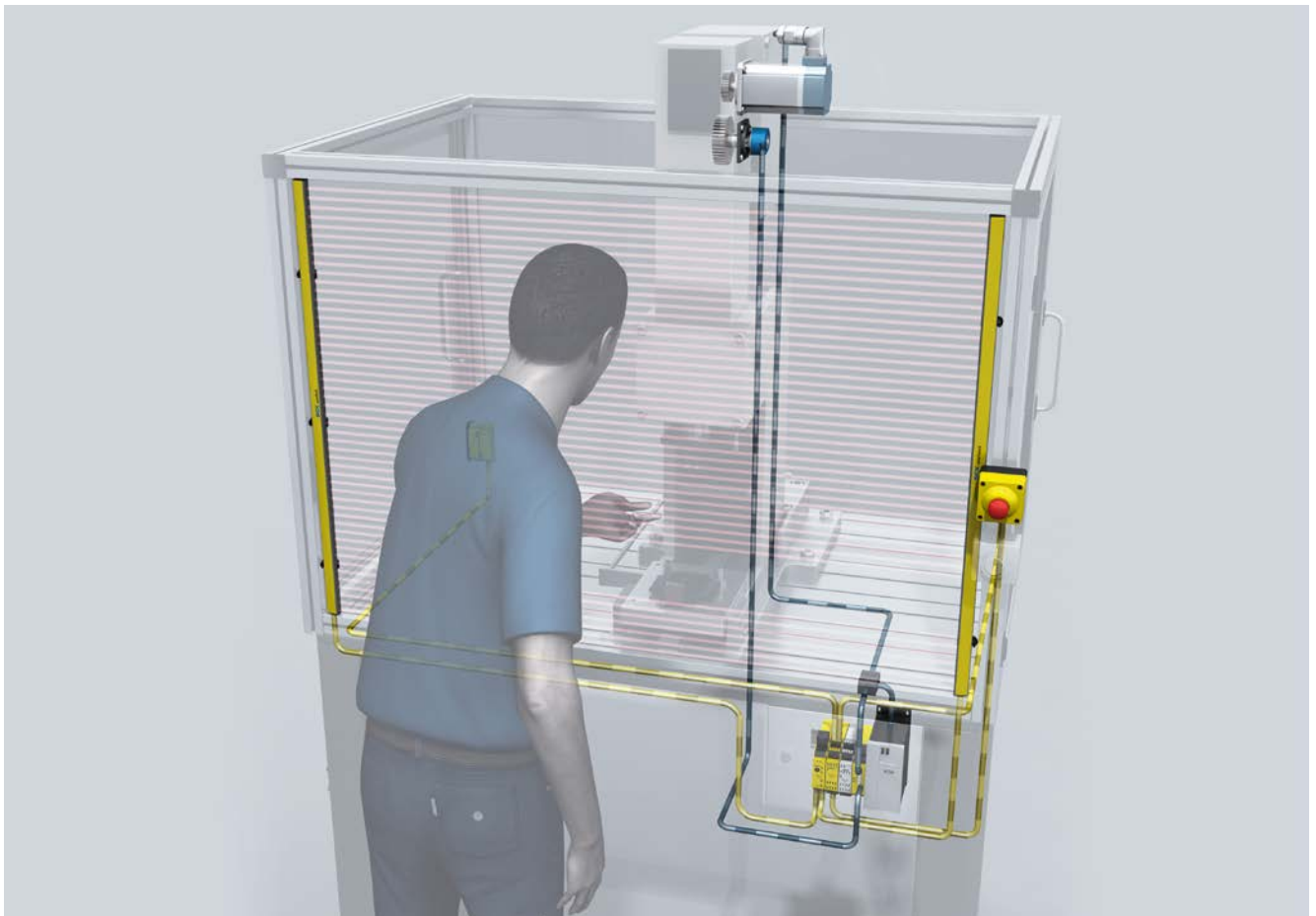
On mechanically and hydraulically operated machines, the entire drive control system is “safely” disconnected from the energy supply when the safety light curtain is interrupted or the service doors are opened.

In comparison, the FX3-MOC Drive Monitor uses the signal of electrically operated axis to achieve the desired safety functions and the required Performance Levels (PL). If necessary, a second independent signal is also used.

The following functions in accordance with IEC 61800-5-2 are available:

(Safety requirements for adjustable speed electrical power drive systems)

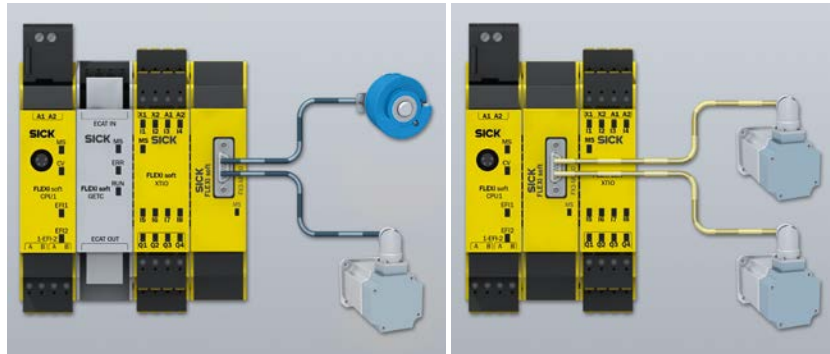
- Safe brake control (SBC)
- Safe stop 1 (SS1)
- Safe stop 2 (SS2)
- Safe operating stop (SOS)
- Safe direction (SDI)
- Safely limited speed (SLS)
- Safe speed monitor (SSM) Safely limited position (SLP) (step 2)



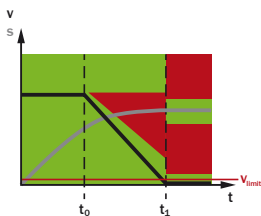
Safe and simple fulfillment of the required Performance Level (PL)!

For each Drive Monitor module, two encoders can be used and the following PL can be achieved:

- For one axis with non-safe motor feedback (MFB) and an additional external encoder, up to PL e can be achieved.
- For two axes, up to PL d can be achieved without an additional external encoder depending on the motor feedback (safe or non-safe MFB) being used.
- A combination with a safe encoder is possible.



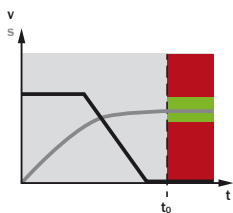
Functions used and benefits when implemented in a servo press



Safe stop 2 (SS2)

The SS2 function is activated by its safe signal when the safety light curtain is interrupted. The process of braking the press movement to a safe stop is initiated and monitored by the Drive Monitor.

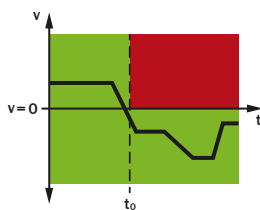
The benefit: There is no need to activate the mechanical brake and the drive does not have to be disconnected from the energy supply. Re-referencing is also not required; downtimes are minimized.



Safe operating stop (SOS)

The position of the press in the top dead center must be reliably monitored in the press cycle. This means that the drive's energy supply is maintained by the SOS safe drive function and the drive works against external forces and torques in order to hold its position. The operator can replace a workpiece safely.

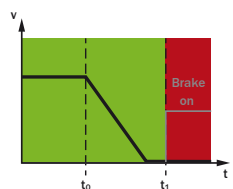
The benefit: Fewer brake tests need to be carried out by the safe controller. Production is increased.



Safe direction of motion (SDI)

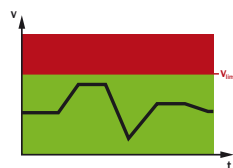
The SDI safe drive function monitors whether the drive is only able to move in a defined direction. The application makes sure that the press movement is in the upstroke phase (upstroke muting).

The benefit: The operator can start to replace the workpiece in perfect safety. This saves time and increases productivity.



Safe brake control (SBC)

If implemented safety functions do not take effect due to defective equipment, for example, the additional SBC safe drive function makes sure that a safety signal that controls suitable safe mechanical safety brakes is generated and monitored.



Safely limited speed (SLS)


SLS reliably monitors the speed of the drive when the press is set up. If a preconfigured speed limit is exceeded, the drive is switched off by the Drive Monitor, e.g., via SS2.

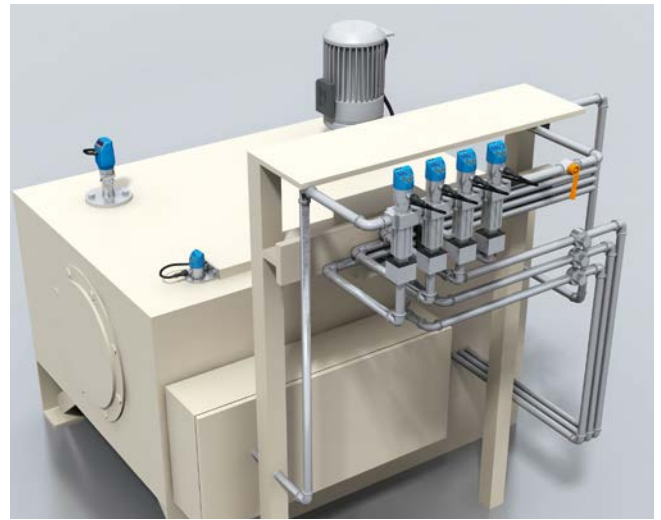
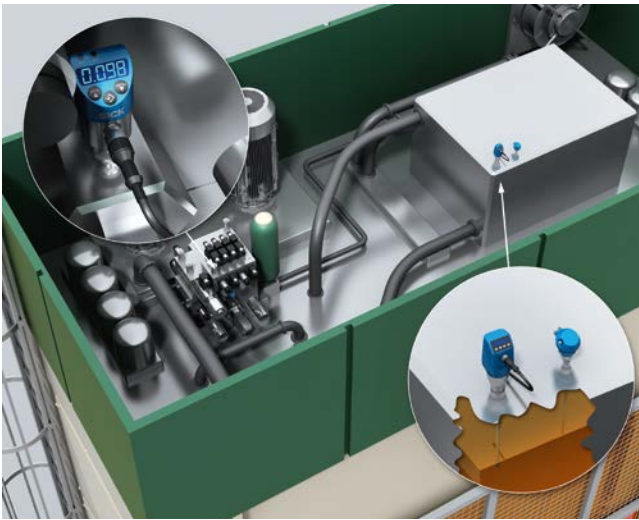
The benefit: Optimization of setup times

Pressure – level – flow – temperature, measuring the typical process variables in machines precisely and efficiently

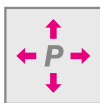
Ensuring complete process control and increased machine availability requires the level, pressure, temperature, and flow of liquids or bulk materials to be monitored.

Always the right solution for your requirements with SICK Sensor Intelligence.

- Flexible installation options, for example by means of rotatable displays, the possibility to install the system close to the tank wall, or a wide range of process connections
- High measurement accuracy and robustness thanks to high-quality materials and proven measurement principles
- Efficient monitoring thanks to digital and analog output signals in one device
- Reduction of mechanical and electrical complexity of the application thanks to state-of-the-art sensor solutions
- Smart Sensor Solution: Simple configuration, diagnostics, device replacement, and advanced sensor functionality powered by  **IO-Link**



Precise pressure measurement

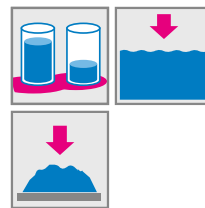


PBS pressure switch or PFT pressure transmitter for monitoring system or operating pressures up to 600 bar.

→ Compact – flexible – simple



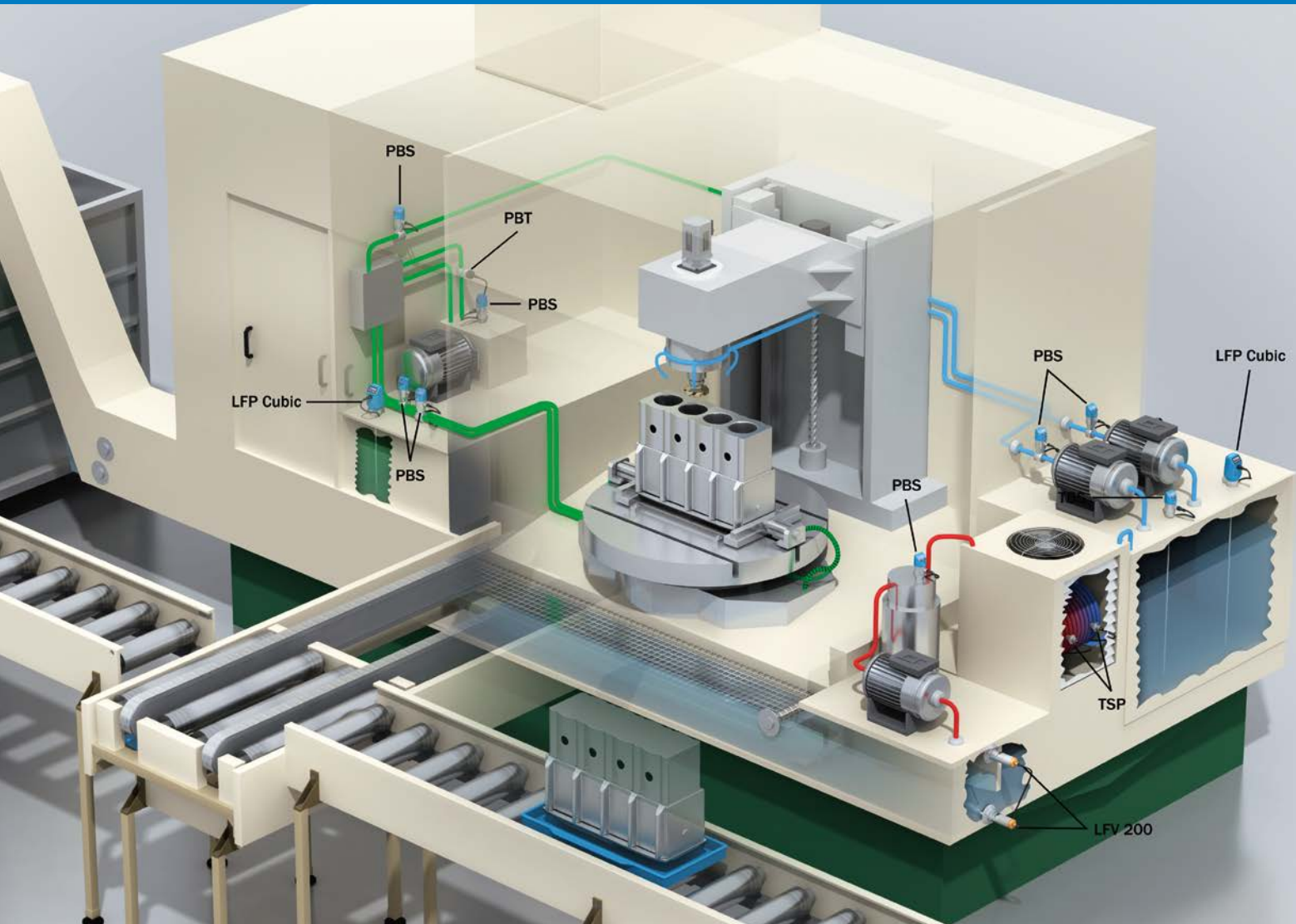
Efficient level measurement



Detect limit values with the LFV tuning fork or up to four limit values at the same time with an LFP Cubic level sensor. Measure bulk materials in containers without touching them with the UP56 ultrasonic sensor..

→ Innovative – flexible – reliable





Precise flow measurement

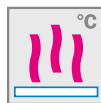


Monitoring the flow rate of cooling water or cooling lubricant precisely and maintenance-free without moving parts with the FFU flow sensor.

→ Maintenance-free – precise – compact



Universal temperature measurement



Monitoring of operating states in coolant processing circuits with a TSP temperature sensor, monitoring the temperature of hydraulic oil with the TBT temperature sensor or the TBS temperature switch.

→ Simple – precise – universal



Your partner for precise sensor technology

High-resolution optical and very robust magnetic systems complement one another perfectly and permit exact position detection in all kinds of applications.

The encoders and motor feedback systems from SICK are ideally suited to the requirements of the machine building industry.



Absolute encoders

- Absolute encoders generate information about position, angle, and revolution counts in type-specific angle increments. For this, a unique code pattern is assigned to each angle increment. The number of code patterns available per revolution determines the resolution.
- 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.
- 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 revolution counts. The number of graduations per revolution determines the number of impulses that the encoder transmits to the control unit for each revolution.
- The current position can be determined by the control unit by counting these impulses from a reference point.
- When the machine is switched on, a reference run to the reference point is required to determine the position of the encoder.

Encoder



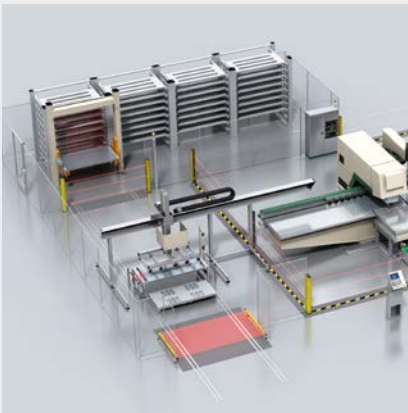
Motor feedback systems





Linear encoders

- High-resolution position measurement systems for linear applications: Non-contact, absolute length measurement systems for measured lengths up to 1,700 m (subject to the model) and wire draw encoders for measured lengths up to 50 m provide reliable position data even in the harshest ambient conditions.
- With wire draw encoders, the product portfolio ranges from incremental systems, and analog and absolute distance measurement to all current fieldbus variants.



Motor feedback systems

- Motor feedback systems with the HIPERFACE® interface and, since 2011, also with the HIPERFACE DSL® (digital servo link) interface are used by renowned engine manufacturers around the world.
- Motor feedback systems from SICK fulfill important requirements such as temperature resistance, high resolution, electronic type labeling, multiturn designs with mechanical gear mechanisms, high stability, and last but not least, small dimensions enabling short motor lengths.

In addition to its own industry standards SSI, HIPERFACE® and HIPERFACE DSL®, SICK also supports standardized Ethernet and fieldbus systems.

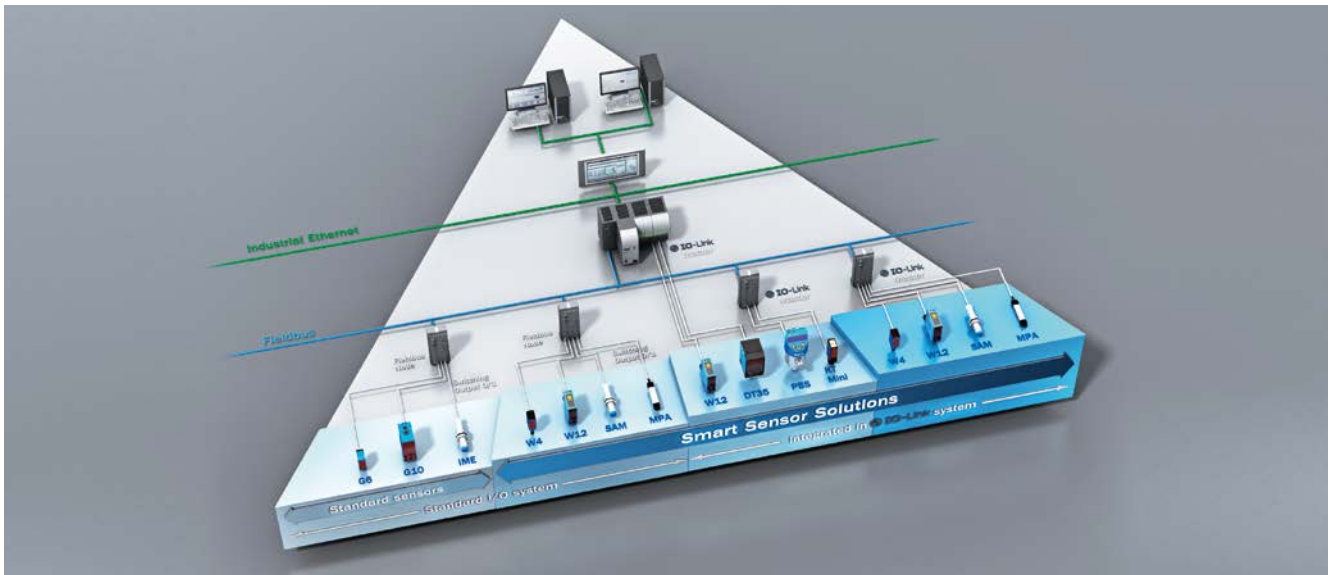


More information about HIPERFACE DSL → www.sick.com/hiperfacedsl

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

For years, end customers have been demanding more and more from machine manufacturers. Machines for flexible batch production and machine settings that can be made by operators are highly sought-after. Having sensors that are as simple to integrate as possible and diagnostic options for determining process data or reducing downtimes represent further key concerns for machine builders. A consistent communication concept right down to the lowest field level is key to using the features and technologies of state-of-the-art sensors and actuators, and making machines and systems more productive as a result. Through IO-Link, leading automation manufacturers have managed to establish a standard that solves the problem of clearing those final tricky hurdles in the communication chain.

With Smart Sensor Solutions, intelligent sensors in the field level are already showing that automation functions can be solved easily right at the heart of the problem.



Standard functions



Easy device replacement

The sensor is identified and the application-specific parameters are written to the sensor reliably and quickly by the control system.



E-parts list/E-inventory

The sensor-specific device ID is identified via IO-Link. Electronic documentation for all sensors in the as-delivered state of the machine/system can be created quickly and automatically.



Flexible sensor adjustment

Depending on the production process, the sensor receives the application-specific, optimum parameters, such as the sensing range or threshold, from the automation system.



Sensor visualization

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



Condition monitoring/diagnostics

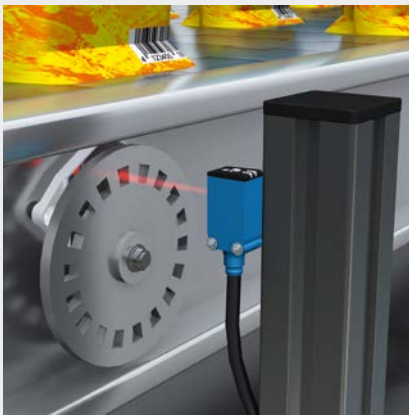
Implemented diagnostic and self-test options (e.g., contamination, signal strength) enable operators to look ahead and prevent downtimes or allow them to plan for them.

**Example 1:****Remote pressure measurement and process-dependent settings**

- The PBS pressure switch is installed on the press hydraulic system in the press head and monitors system and operating pressure.
- The measured value and the set limit values are transmitted to the HMI for the press via IO-Link.
- Any parameter modifications that become necessary can be made remotely.

Benefits:

- + Minimized effort and time saved during commissioning and servicing as there is no need to reach the installation site of the sensor.
- + Convenient, menu-guided modifications via HMI.
- + Operator identifies faults more quickly thanks to clear messages.

**Example 2:****Speed measuring on a belt or drive shaft**

- The WL4SC optical sensor detects and counts the holes of a perforated disk directly in the sensor. Parameters specified by the control system are used to convert the counter value into a speed.
- The calculated speed per minute is transferred from the sensor to the control system cyclically.

Benefits:

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

Advanced functions**High-speed counters**

The "Count" function in a sensor's micro-controller can be used to realize the detection process with maximum clock frequency. An alternative solution for high-speed counting to the central counter module in the control system.

**Profile recognition/verification**

Smart sensors measure the actual profile directly and with high precision, and evaluate the result internally with a desired profile. The control system simply receives a binary signal in order to process this information further.

**Timers**

Innovative sensors measure the time window between two detections directly and with high precision, and make the measurement result available for further processing (e.g., distance monitoring, length or speed measuring).

**Product track and trace using time stamps**

Linking the fast and precise process of product detection that a sensor carries out during production with a time value produces a highly accurate method of specifying a position based on time stamping.

**Debouncing**

This sensor function allows disturbance variables in the signal curve to be suppressed, preventing erroneous shutdowns. The sensor debounces what it really "sees".

We deliver "Sensor Intelligence."

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

A company with a culture of success

Over 6,000 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 40 subsidiaries and representations worldwide. Our exemplary corporate culture fosters an optimum

work-life balance, thus attracting the best employees from all over the world. SICK is one of the best employers – we have been among the winners of the prestigious German "Great Place to Work" award for many years in succession.



Innovation for the leading edge

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



A corporate culture for sustainable excellence

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



"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.



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



For safety and productivity: SICK LifeTime Services

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



The benefit of SICK services

Each of our products and solutions is accompanied by a comprehensive range of services tuned precisely to the requirements of the product or solution – along its entire life cycle. Backed by extensive industry expertise and more than 60 years

of experience, LifeTime Services stand for maximum availability and an exceptional service life of our products and solutions.





Consulting & Design

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



Verification & Optimization

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



Training & Education

- User training
- Seminars
- WebTraining



Product & System Support

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



Upgrade & Retrofits

- Machine conversion
- Sensor upgrades
- Retrofitting of technology

www.sick.com/services



Versatile product range for industrial automation

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

www.sick.com/products

Photoelectric sensors



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

Proximity sensors



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

Magnetic cylinder sensors



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

Identification solutions



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

Detection and ranging solutions



- Laser measurement technology

System solutions



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

Fluid sensors



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

Registration sensors



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

Distance sensors



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

Automation light grids



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

Vision



- Vision sensors
- Smart cameras
- 3D cameras

Opto-electronic protective devices



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

Safety switches



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

sens:Control – safe control solutions



- Safety relays
- Safety controllers
- Network solutions

Motor feedback systems



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

Encoders



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

Analyzers and systems



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

Gas flow measuring devices



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

Software



- Safexpert® safety software

Simple integration into your automation world

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

Industrial communication



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



PLC and engineering tool integration



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

HMI integration



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

Software and tools

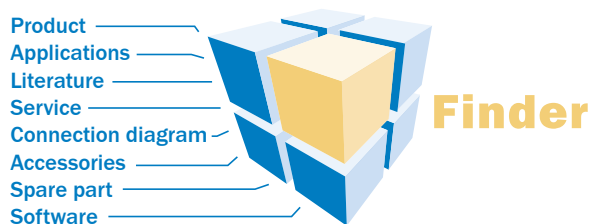


Our software tools support you in establishing connections, parameterizing and diagnosing sensors and safety controllers from SICK. The intuitive user interface permits simple and fast designing and realization of the application required.

www.sick.com/industrial-communication

www.mysick.com – search online and order

Search online quickly and safely – with the SICK “Finders”

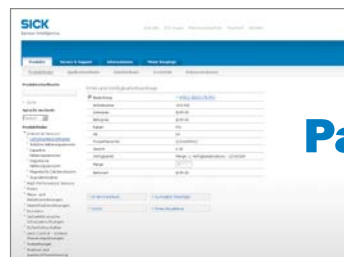


Product Finder: We can help you to quickly target the product that best matches your application.

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

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

Efficiency – with the e-commerce tools from SICK



Partner Portal
www.mysick.com

Find out prices and availability: Determine the price and possible delivery date of your desired product simply and quickly at any time.

Request or view a quote: You can have a quote generated online here. Every quote is confirmed to you via e-mail.

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

For safety and productivity: SICK LifeTime Services

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



Consulting & Design

Globally available experts for cost-effective solutions



Product & System Support

Fast and reliable, by telephone or on location



Verification & Optimization

Checks and recommendations for increased availability



Upgrade & Retrofits

Uncovers new potential for machines and systems



Training & Education

Employee qualification for increased competitiveness

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for factory, logistics, and process automation. With more than 6,000 employees and over 40 subsidiaries worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

Worldwide presence:

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

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