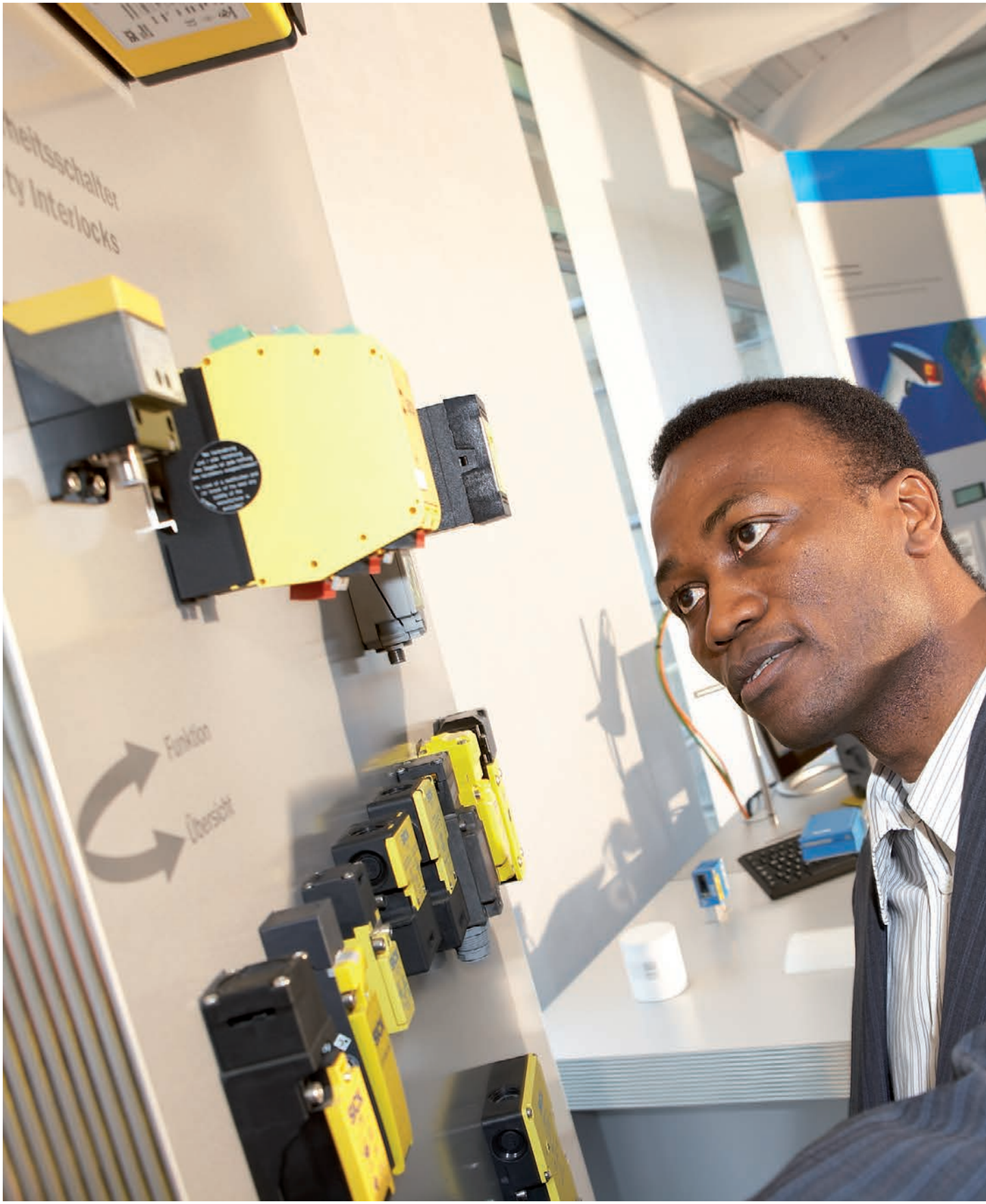
PRODUCTS & APPLICATIONS

Safety Switches

Three product groups for reliable
and intelligent safety solutions

SICK
Sensor Intelligence.



8014702/2012-06-28
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Industrial safety systems from SICK

SICK creates sensor solutions for industrial automation – from development to services – based on experience and customer requirements.

This philosophy is reflected in the term “safetyPLUS®” in the Industrial Safety Systems sector.

- SICK is dedicated to seamlessly integrating solutions in safety and system environments
- Application-oriented functions and trendsetting products increase system efficiency
- Incorporating the current international standards supports global business
- Services range from implementing your vision to regular maintenance
- Tools for safety engineering
- A full range of services to support the safety function on your machines and systems

For comprehensive information, see www.sick-safetyplus.com

Sensors	Logic	Actuators
Opto-electronic protective devices	**sens:Control – safe control solutions**	**Drives Contactors Valves**
Safety switches		
Safexpert® safety software		
SICK LifeTime Services		

safetyPLUS® by SICK for an unbroken safety chain

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Safety switches

Safety light curtains,
photoelectric safety switches

Safety laser scanners

sens:Control –
safe control solutions

Safety switches from SICK – versatile solutions for every requirement

Safety switches from SICK combine compact design with prevention against tampering and quick installation. Whether monitoring mobile protective devices, safe position monitoring or safety commands – SICK's diverse portfolio is the ideal, cost-effective solution for any application.

The advantages of safety switches from SICK at a glance:

- Flexibility through customized versions
- Easy commissioning and quick device replacement
- High machine uptime due to low wear and low-maintenance configuration
- Improved prevention against tampering
- Combine several switches in order to completely secure a machine or system

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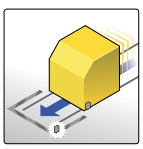
Safety switches from SICK are used for the following safety-related tasks:

Locking of movable guards

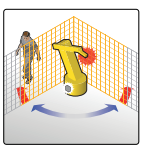
Locking without guard lock

Locking with guard lock

Safe position monitoring



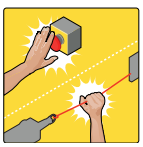
Monitoring of machine stops



Monitoring of machine stop positions

Safety commands

Manual approval for safe maintenance and setup mode



Emergency stop, emergency shutdown

Safety switches from SICK – versatile. Cost-effective. Durable.

The right safety switch for every application – safety switches portfolio from SICK

Various technologies and housing designs provide a multitude of cost-effective options for your safety applications. Increased industrial toughness, quick diagnostics and communication with safe control solutions from SICK indicate effective solutions for all performance levels.

Main features at a glance

	
	Electro-mechanical safety switches
Safety tasks	
Actuation	• Switch cams/hinge • Separate actuator
Electrical contacts	• Floating contacts (5 V ... 230 V)
Diagnostics	• Signaling contacts • Optional LED status display
Performance level	• With a safety switch up to PL c • With two safety switches up to PL e
Product group overview	➜ Page 30

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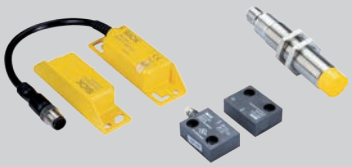
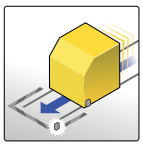
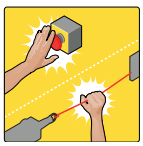


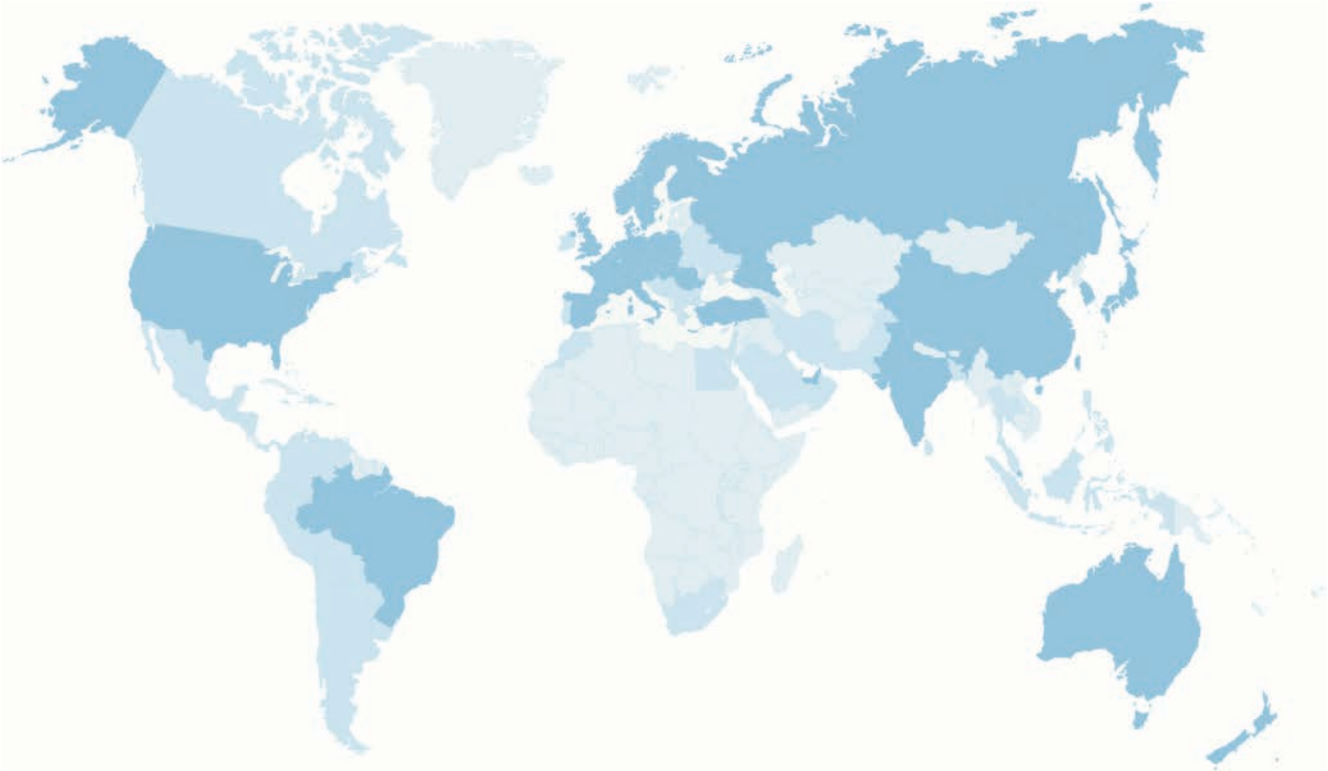
Non-contact

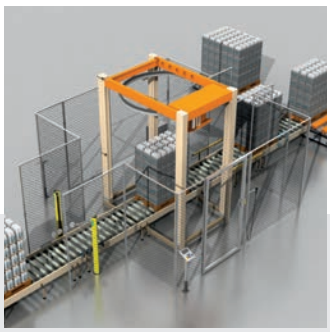
Safety command

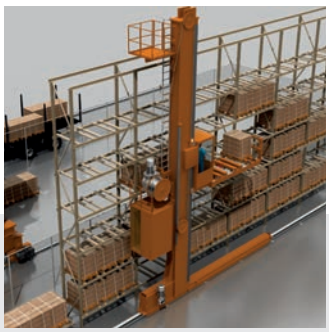
Non-contact safety switches	Safety command devices
  	 
• Metal (eteel) • Magnet/transponder	• Manual
• Reed contacts • Semiconductor outputs	• Floating contacts (5 V ... 230 V)
• Optional signaling contacts • LED status display	• Signaling contacts • Optional lighting
• With a safety switch up to PL c	• With a safety switch up to PL c
➜ Page 38	➜ Page 48

Safety switches from SICK – in your industry worldwide

Thousands of installations and applications 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.

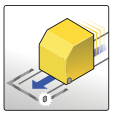






Solving applications worldwide

Safety in your industry – typical applications

1   

Access protection
for a stretch wrapper
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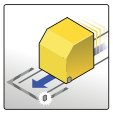
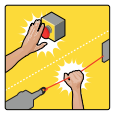
2   

Hazardous point protection
on an injection molding machine
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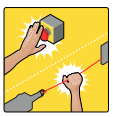
3  

Emergency stop
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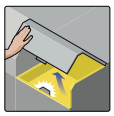
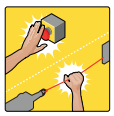
4   

Monitoring flaps
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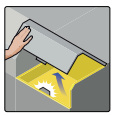
5 

Door monitoring
on a blister packaging machine
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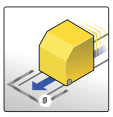
6  

Safe position monitoring
on a storage and retrieval system
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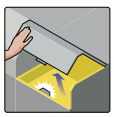
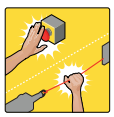
7   

Door monitoring for a bag forming, filling and sealing packaging machine
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4
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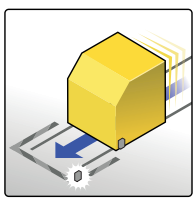
Access protection for a stretch wrapper

Electro-mechanical

Non-contact

Safety command



A stretch wrapper quickly wraps products or cases on a pallet. The machine's high wrapping speeds can create hazards for employees. Fences can prevent access to the hazardous area. For maintenance and setup, users need to ensure that employees can only access the machine via a safety door or other area or perimeter guarding method. The safety door is locked by an interlock in automatic operation. The safe position of the wrapper is monitored. The safety door can be opened in maintenance and setup mode and the wrapper can be manually restarted.

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Access monitoring with guard lock

- Slim design for simple and immediate installation on the safety door frame
- Radial actuator for rotatable door
- High locking forces for large, stable access door
- Separate contacts detect door and locking status
- Depending on the risk assessment: up to PL e through the use of two safety switches

⊕ Easy to assemble with dual status monitoring

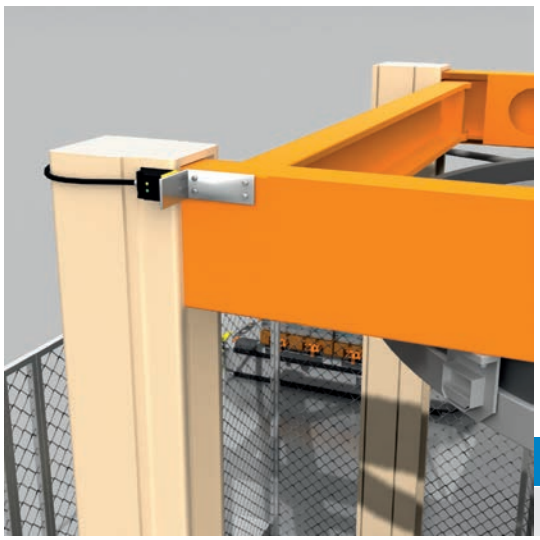
Recommended product	
i10 Lock	➜ Page 36

Manual restart if needed

- Use approval switch in setup mode in the event of simultaneously inactive safety door switch
- Three-level design of the approval switch enables on/off and emergency stop function
- Operator safety in the hazardous area when machine is running at reduced speed mode

⊕ Process-optimized and safe start up of critical machine movements

Recommended product	
E100	➜ Page 51



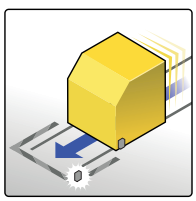
Safe inductive position monitoring

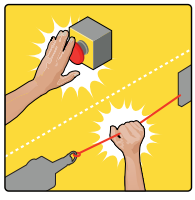
- Quick adjustment and low wear due to non-contact design
- Simple connection to a safe control solution
- LED status display for immediate diagnostics

⊕ Double the reliability – for position and durability

Recommended product	
IN4000 Standard	➜ Page 41

Hazardous point protection on an injection molding machine





Electro-mechanical

Non-contact

Safety command

Interference with an injection molding machine must be prevented during the production process. The injection unit is secured by a sliding door in order to protect personnel from bruises and burns. Routine maintenance to exchange materials and for cleaning must remain possible. The safety door is locked by a guard lock during the injection molding process. The position of the door in its locked position is also monitored by a position switch in order to ensure the necessary safety level. A machine stop can generally be triggered by an emergency stop in the event of a hazardous situation.

Please note: Deviating safety concepts may be required for specific PL c standards.

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Guard lock for personnel and process protection

- Rigid actuator for straight-line movement of the sliding door
- Optional plug connector for quick device exchange or flexible cable entry
- Separate door and guard lock monitoring enables the targeted shutdown of part of a process

⊕ Two safe monitoring levels and additional diagnostics in a guard lock

Recommended product	
i10 Lock	➜ Page 36

Additional position monitoring for increased safety

- Position switch with turning lever for quick movement
- Dual door monitoring through the combination of safety guard lock and position switch
- The position switch provides tamper protection for a safety guard lock

⊕ Diverse and redundant door monitoring for applications up to performance level PL e

Recommended product	
i10R	➜ Page 33
i110R	➜ Page 33

Straight to the point emergency stop

- Safe emergency stop function
- Panel mount version for integration into the machine's control panel
- Increased safety by self-monitoring contacts between buttons and switching elements

⊕ Functional design for higher throughput

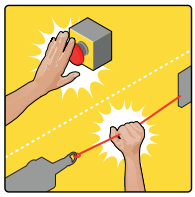
Recommended product	
ES21	➜ Page 50

Emergency stop on a conveyor system

Electro-mechanical

Non-contact

Safety command



Conveyor sections bridge paths between individual machining stations. Hoods are used to secure these machining stations. However, it is difficult to secure the conveyor sections by fences or other safety facilities. Controlled interference must be possible along the entire section. Rope pulls can be used to secure individual conveyor sections. This ensures that a safe emergency stop is possible at any time and at any position along the conveyor section. Safety switches with separate actuators are used to monitor the status of the hoods.

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Cyclical actuation with safety switches compactly monitored with separate actuators

- Versatile with three cable entry glands
- Easily close the hood with flexible actuators and conical insertion guides
- Highly resistent to shock and vibration, ensuring machine reliability
- Depending on the risk assessment: up to PL e through the use of two safety switches

⊕ High reliability due to a high level of flexibility and stability

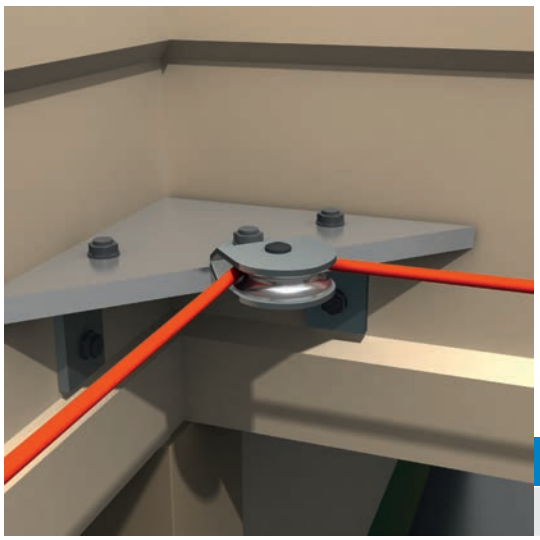
Recommended product	
i16S	➜ Page 32

Emergency stop via rope pulls for large conveyor areas

- Rugged due to metal housing
- Diagnostics using additional contacts
- Rope break detection feature
- Actuation is possible at any point along the rope

⊕ Emergency stop along the entire length of transport belts and feed systems, up to PL e

Recommended product	
i110RP (up to 30 m)	➜ Page 51
i150RP (up to 75 m)	➜ Page 52



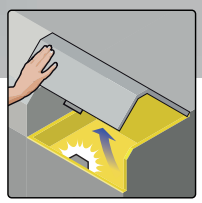
Accessories for a safe emergency stop

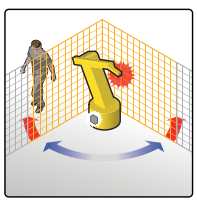
- Tear-proof rope
- Rugged eye bolts for optimal rope guidance
- Optimal adaptation to the conveyor section by deflection rollers
- Easily adjust the rope's tension with the tensioning set feature

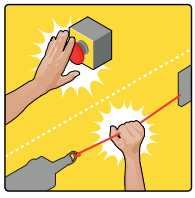
⊕ Optimal rope guidance without obstacles

Recommended product	
Accessories i150RP	➜ Page 52

Monitoring flaps on a production line







Electro-mechanical

Non-contact

Safety command

Production lines enable the manufacture of solar cells in connected machining centers. These lines are secured by door flaps for direct access and quick troubleshooting during the production process. Upstream, turntables enable the transport of cells from and to individual machining centers from various directions. The safe position of the turntable after swiveling 90° can be monitored using inductive switches. The flaps are protected by a safety switch with a separate actuator. A machine stop can generally be triggered by an emergency stop device in the event of a hazardous situation.

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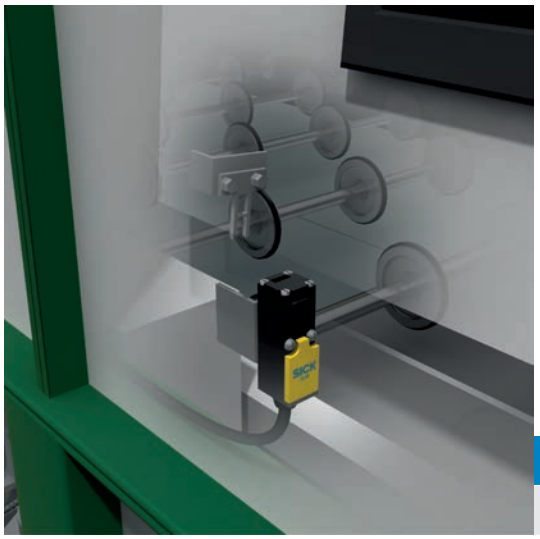


Door flap monitoring using a compact safety switch with separate actuator

- Compact plastic housing for confined conditions
- Diagnostics available using additional signaling contacts
- Vibration resistant with corresponding locking force

⊕ Function-optimized up to PL c for high system throughput

Recommended product

i12S ➜ Page 34

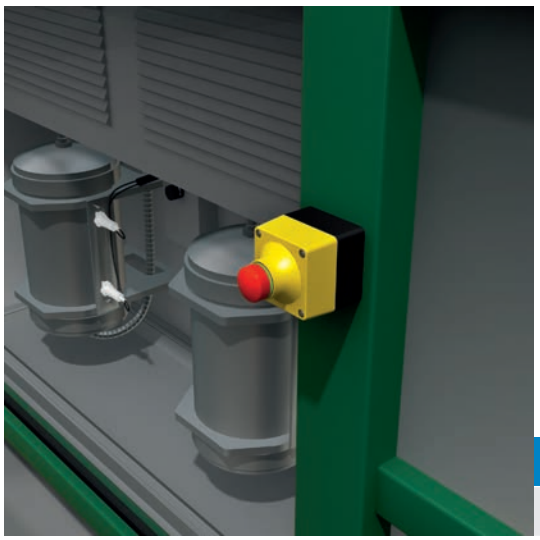
Position monitoring for rotary movements by inductive safety switches

- Space-saving mounting due to compact housing
- Quick electrical and mechanical installation
- Non-contact operating design for increased durability

⊕ Safe, low-wear and efficient up to PL d for seamless production

Recommended product

IN3000 Direct ➜ Page 44



Emergency stop for defined machine stop

- Central emergency stop for general machine stop
- Status display by colored markings
- Anti-lock button

⊕ Diversity and safety for your machine design up to PL e

Recommended product

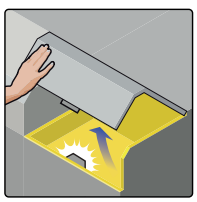
ES21 ➜ Page 50

Door monitoring
on a blister packaging machine

Electro-mechanical

Non-contact

Safety command



For blister packaging machines, various process steps take place in a sequence. The machines have numerous doors to ensure universal, free access in the event of a fault or for refilling material. All doors are monitored by transponder safety switches. These ensure that the machine cannot be started if the doors are open.

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Intelligent door monitoring using transponder safety switches

- Low-wear solution
- Simple and direct connection to the safe control solution
- Improved prevention against tampering with coded actuators
- LED warning message for readjustment
- Resistant to vibrations due to long sensing range

⊕ High system availability due to coordinated solution up to PL e

Recommended product	
TR4 Direct	➜ Page 46

Series connection of sensors

- Quick connection of the sensors by T-distributor
- Return line saving due to end plug
- Simple fault detection using LED display on the safety switch
- Reduced wiring costs and safety capable inputs on the control

⊕ Up to PL e for cost-optimized commissioning and quick troubleshooting

Recommended product	
Accessories TR4 Direct	➜ Page 46

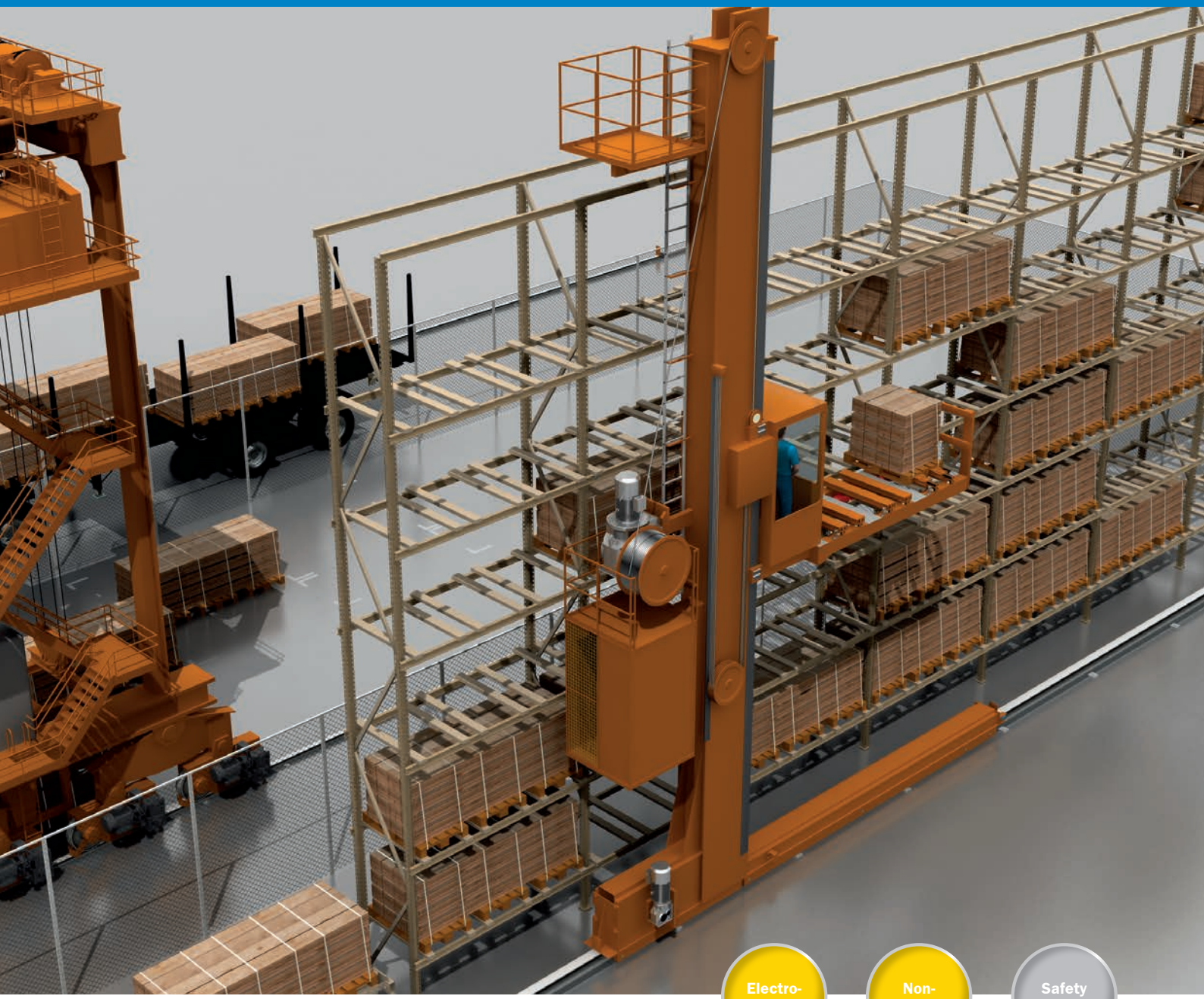
Simple individual wiring for the control

- Easy installation and quick device replacement due to M12 plug connector
- Additional diagnostics output per safety switch
- Clear fault detection at a glance

⊕ Central diagnosis over the control

Recommended product	
Accessories TR4 Direct	➜ Page 46

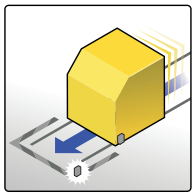
Safe position monitoring on a storage and retrieval system



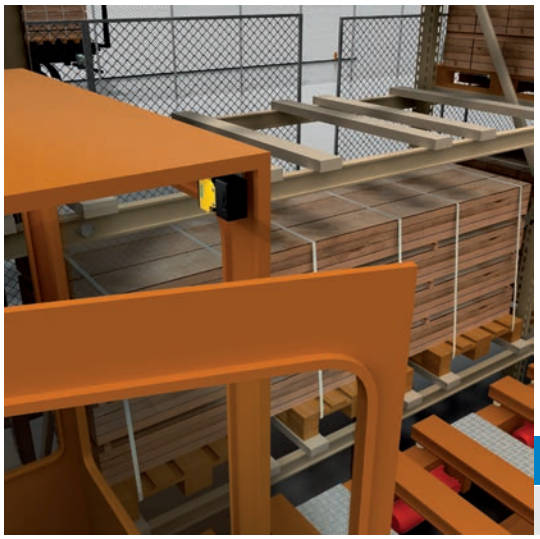
Electro-mechanical

Non-contact

Safety command



Storage and retrieval systems are installed in high-bay warehouses for moving goods in and out of storage. The position of the pallet handler must be detected in order to avoid a collision with the system. The final position of the operating system as well as the machine operator's cabin door must be safely monitored. A safety switch with separate actuator allows for the storage and retrieval system to only operate when the cabin door is closed. The safe final position of the pallet handler when moving pallets in and out of storage is monitored using inductive sensors. Position switches monitor the safe final position of the storage and retrieval system on the guide rail and safely shut it down.



Safe monitoring of cabin doors with safety switches with separate actuators

- Three cable entry points for optimal installation
- Safety through dual-channel connection to the safe control solution
- Highly reliable even when exposed to shock and vibration
- Depending on the risk assessment: up to PL e through the use of two safety switches

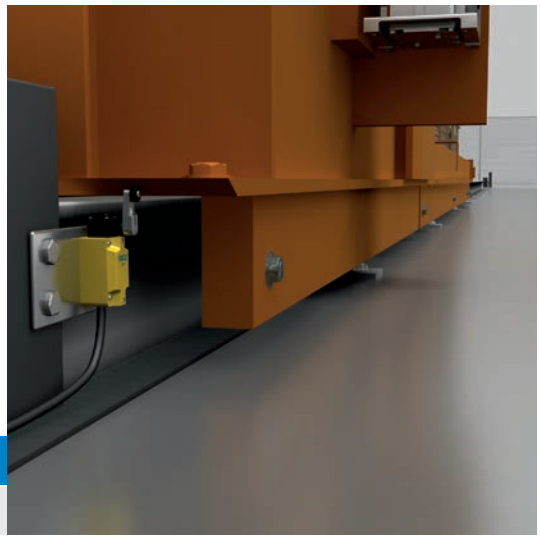
⊕ Start up only when door is locked

Recommended product	
i16S	➜ Page 32

Safe final position for process protection with position switch

- Tough metal housing
- Four contacts for dual-channel safety with additional diagnostics
- Metal turning lever also operates reliably at high speeds

⊕ Reliable shutoff in the event of a fault up to PL c



Recommended product	
i110R	➜ Page 33

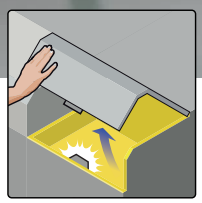
Final position detection for collision protection with inductive safety switch

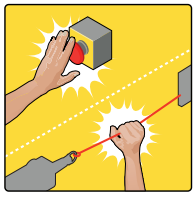
- Compact housing
- High level of safety up to performance level PL e
- Easy adjustment through LED status display and quick device replacement due to M12 plug connector
- Low-wear due to inductive operating design

⊕ High durability despite frequent activation

Recommended product	
IN3000 Direct	➜ Page 44
IN4000 Standard	➜ Page 41

Door monitoring for a bag forming, filling and sealing packaging machine





Electro-mechanical

Non-contact

Safety command

Food and beverages are merged in pick-and-place applications. The finished products are sealed in packaging film by the bag forming, filling and sealing machine. The doors must be locked until the sealing process has been completed. Pick-and-place machines have high hygienic requirements that must be complied with and the doors must be able to be opened at any time. Both of these pick-and-place requirements are fulfilled using magnetic safety switches. Locking the doors during the sealing process is monitored by safety guard locks.

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Safety door monitoring by non-contact safety switches

- Magnetic safety switches with response range of up to 9 mm
- LED status display immediately on the protective device
- Especially suited for sliding and turning doors, given the large door offset tolerances

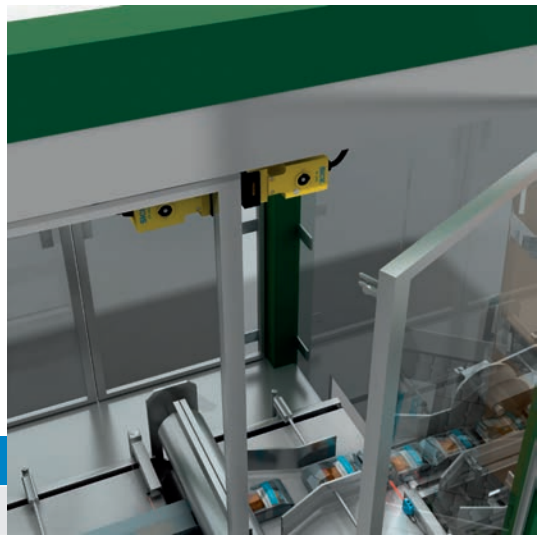
⊕ Simple and flexible installation for machines up to PL e

Recommended product	
RE13	➜ Page 42
RE27	➜ Page 40

Process protection with safety guard lock

- Plastic housing with 1200 N locking force
- Additional diagnostics contact
- Visualization of the guard lock using LED display
- Depending on the risk assessment: up to PL e through the use of two safety switches

⊕ Optimal solution up to PL c for long overtravel movements



Recommended product	
i14 Lock	➜ Page 33

Emergency stop at ideal positions

- Safe emergency stop function
- Various forced opening/closing combinations
- Surface mount version for direct mounting on the machine

⊕ Complete device for machines up to PL e for quick mounting

Recommended product	
ES21	➜ Page 50

“Sensor Intelligence” is a promise

At SICK, sensor solutions are developed for industrial automation with commitment and experience. From development to product support, every employee is completely committed to ensuring that sensors and application solutions from SICK optimally fulfill their versatile functions.

Optimal personnel and process protection

SICK offers a variety of different safety switches for securing your machine or system.

- Non-contact safety switches, e.g., transponder safety switches, are ideal in the event of imprecise guidance of the safety door or high requirements for prevention against tampering
- Safety guard locks are ideal for the safe locking of machines and for personnel and process protection
- Enabling switches are typically used for personnel protection in the maintenance and setup mode

➜ The matching solution for all your applications

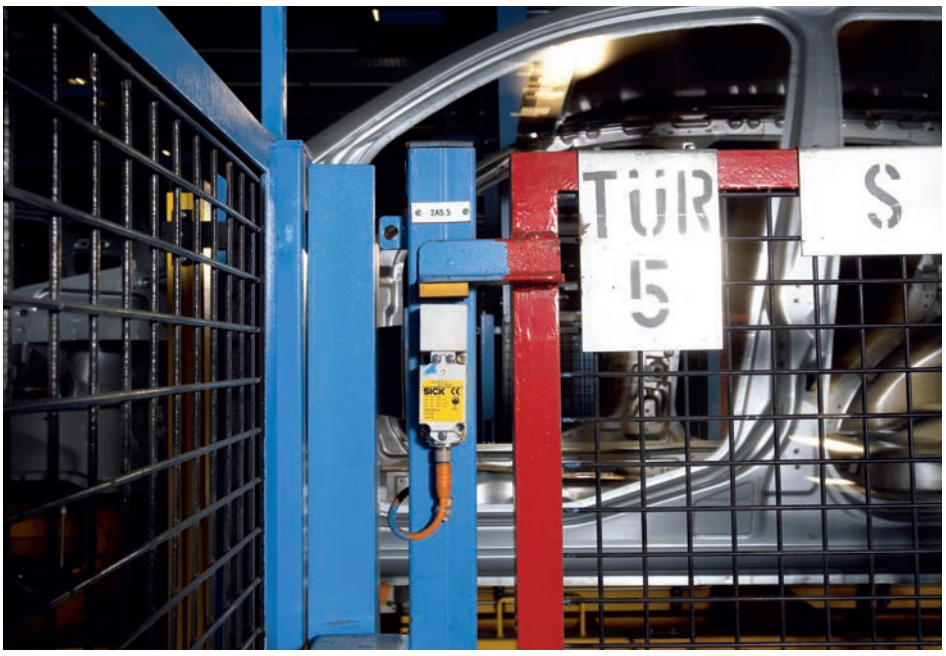
High machine throughput

SICK ensures the quality of its products in order to provide you the highest possible quality solution.

- SICK performs intensive tests and verifications for all products
- Effective product surveillance over the entire product life-cycle
- Short delivery times in the event of replacement

➜ Less machine downtime

SICK’s safety switches are used in thousands of applications to ensure the safety of your employees and colleagues



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Why choose safety switches from SICK?

Conforms with standards and directives

Play it safe and save effort and expense with the stress-free implementation of the machine directives and the new safety standards (SIL and PL).

- SICK products constantly meet the current international safety standards and directives
- We support the application of the new European standard EN ISO 13849-1 and the determination of the performance level (PL) with our libraries for the IFA (formerly BGIA) SISTEMA-Tool

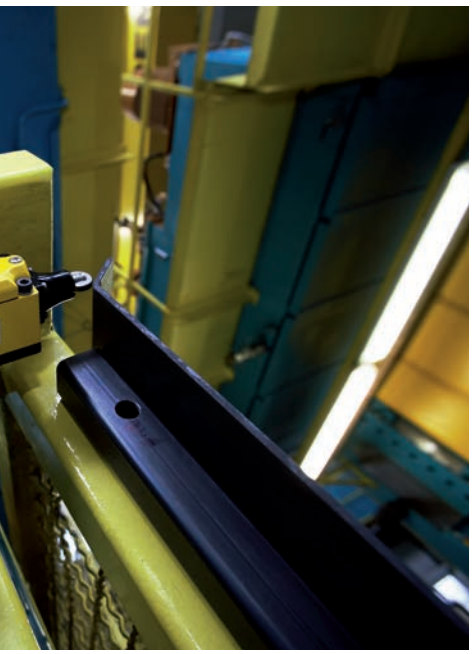
➜ Compliant with safety standards for the optimal safety of your machine or system

Complete solutions from a single source

SICK provides comprehensive safety expertise support, not just with successful products, but also with international service.

- Coordinated combinations of SICK safety switches, opto-electronic protective devices and safe control solutions
- Updated guides such as the “Safe Machine Guidelines” brochure, seminars and Safexpert® safety software

➜ Your fast track to a CE-compliant machine



Safety switches from SICK for established and intelligent safety solutions

Safety switches are used in many safety applications. The most frequent application areas are protecting movable guards, the position determination of dangerous movements and the safe stop function with safety command devices. Depending on the application, there are different forms of safety switches and the portfolio of SICK safety switches is split into three groups:

electro-mechanical safety switches, non-contact safety switches and safety command devices. This means the appropriate solution is available for all common requirements. In conjunction with sens:Control – safe control solutions, SICK offers ideal complete solutions from a single source, which are optimally suited to one another.

Safety switches from SICK in the overview

Electro-mechanical safety switches

Electro-mechanical safety switches economically and reliably monitor movable guards. SICK's portfolio of electro-mechanical safety switches contains four product groups: safety position switches, safety hinge switches, safety switches with separate actuator and safety locking devices. This enables users to choose the appropriate solution for a variety of different applications. When combined with sens:Control – safe control solutions, SICK offers complete solutions from a single source.

➜ More from page 30

Non-contact safety switches

Non-contact safety switches are ideal in applications where precise guidance of guards is difficult. Due to their design, they are extremely long-lasting devices that require minimal maintenance. In addition, they are resistant to shock and vibrations and offer a high level of prevention against tampering. Our range of non-contact safety switches includes magnetic, transponder and inductive safety switches. Rectangular and cylindrical types are available for each sensor principle.

➜ More from page 38

Safety command devices

Safety command devices from SICK ensure that dangerous movements are reliably stopped or critical machine functions are reliably initiated. SICK's portfolio of safety command devices includes three major product groups: emergency stop pushbuttons, rope pull switches and enabling switches. The wide product range enables users to choose different functions and performance based on their application needs.

➜ More from page 48


SICK
i 10 Lock
SICK
i 17 S
SICK
i110R
SICK
i10 H



Product family description

Safety switches with separate actuator

Safety switches with a separate actuator are made up of two parts: a safety switch that is mounted on the fixed part and an actuator that is mounted on the mobile part of the guard. When the guard is closed, the actuator is moved into the safety switch. This achieves the safe status and the safety-relevant contacts are closed. These devices are ideal for protecting sliding and rotating doors, as well as removable protective covers. SICK offers variants with different shapes and functions – from compact to standard – for corresponding applications.

At a glance

- Plastic and metal housings
- Rigid or mobile actuators
- Available with M20 x 1.5 cable entry gland or M12 plug connector (depending on variant)
- IP 67 enclosure rating
- Slow-action switching elements with up to four contacts

Safety locking devices

Safety locking devices are used for keeping guards safely locked until a hazardous area can be entered. They are intended for applications in which there is an immediate danger to people when delayed stopping or an uncontrolled process interruption has the potential to cause injury or death. There are two restraint types, including spring force locking and magnetic force locking. With spring force locking, the guard is held closed by spring force. In magnetic force locking, the guard is held closed by activation of the magnetic coil.

At a glance

- Plastic and metal housings
- Variants with metal actuator head
- Rigid or mobile actuators
- Locked by spring force and magnetic force
- Lock and door monitoring
- Variants with LED locking indicator
- Available with M20 x 1.5 cable entry gland or M12 plug connector (depending on variant)

Safety position switches

Safety position switches are used for reliably identifying dangerous movements, even at high speeds. These switches use an actuator that is in a positive connection with the safety switch. There are two different actuators: the roller plunger for determining exact positions and the turning lever for identifying rapid movements. The safety position switch is actuated directly by the protective device.

At a glance

- Plastic and metal housings
- Roller plunger and turning lever
- IP 66 enclosure rating
- 1 M20 x 1.5 cable entry gland
- Slow-action or snap-action switching element with up to four contacts

Product family overview

	 i12S (6025059)	 i16S (6025063)	 i110S (6025074)	
General information	**Safe and economical door monitoring with retaining force**			
Housing material	Glass-fiber reinforced thermoplastic	Glass-fiber reinforced polybutylene terephthalate (PBT)	Die-cast zinc	
Enclosure rating	IP 67	IP 67	IP 67	
Ambient operating temperature from ... to	–20 °C ... +80 °C	–20 °C ... +80 °C	–20 °C ... +80 °C	
Technical specifications				
Safety related parameters				
B_{10d} parameter	2 x 10^6 switching cycles, with small load	2 x 10^6 switching cycles, with small load	2 x 10^6 switching cycles, with small load	
Mechanical life	1 x 10^6 switching cycles	1 x 10^6 switching cycles	1 x 10^6 switching cycles	
Actuation frequency	≤ 7.200 /h	≤ 7.200 /h	≤ 7.200 /h	
Approach speed	≤ 10 m/min	≤ 10 m/min	≤ 10 m/min	
Actuation torque	–	–	–	
Retaining force	15 N	30 N	12 N	
Locking force	–	–	–	
Electrical details				
Switching principle	Slow action switching element	Slow action switching element	Slow action switching element	
Number of positive action N/C / N/O door monitoring contacts	2/1	2/0	2/2	
Number of positive action N/C / N/O solenoid monitoring contacts	–	–	–	
Usage category in compliance with IEC/EN 60947-5-1	AC-15/DC-13	AC-15/DC-13	AC-15/DC-13	
Rated operating current (voltage)	3 A (240 V AC), 3 A (24 V DC)	3 A (240 V AC), 3 A (24 V DC)	3 A (240 V AC), 3 A (24 V DC)	
Rated insulation voltage Ui	240 V	240 V	240 V	
Switching voltage	≥ 5 V DC	≥ 5 V DC	≥ 5 V DC	
Switching current	≥ 5 mA	≥ 5 mA	≥ 5 mA	
Solenoid operating voltage	–	–	–	
Power consumption	–	–	–	
Short-circuit protection	3 A gG	3 A gG	3 A gG	
Connection				
Connection type	Cable gland	Cable gland	Cable gland	
Number of cable glands x size of the screwed joint	1 x M16	3 x M20	1 x M20	
Cross section of electrical conductors	≤ 1,5 mm²	≤ 1,5 mm²	≤ 1,5 mm²	
Detailed information	➜ Page 34	www.mysick.com/en/i16S	www.mysick.com/en/i110S	

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	i10 Lock (6022585)	**i14 Lock (6025060)**	**i10R (6025085)**	**i110R (6025108)**
	Safe and economical door monitoring with high locking force		**Safe and established position monitoring**	
	Glass-fiber reinforced thermoplastic	Glass-fiber reinforced thermoplastic	Glass-fiber reinforced thermoplastic	Die-cast zinc
	IP 67	IP 65	IP 66	IP 66
	–20 °C ... +55 °C	–20 °C ... +60 °C	–25 °C ... +80 °C	–25 °C ... +80 °C
	3×10^6 switching cycles, with small load 1×10^6 switching cycles	2×10^6 switching cycles, with small load 1×10^6 switching cycles	2×10^6 switching cycles, with small load 10×10^6 switching cycles	2×10^6 switching cycles, with small load 10×10^6 switching cycles
	≤ 7.000 /h	≤ 3.600 /h	≤ 6.000 /h	≤ 6.000 /h
	≤ 20 m/min	≤ 10 m/min	0,1 m/min ... 15 m/min	0,1 m/min ... 15 m/min
	–	–	≥ 0.14 Nm	≥ 0.34 Nm
	–	–	–	–
	≤ 1.300 N	≤ 1.200 N	–	–
	Slow action switching element	Slow action switching element	Slow action switching element	Slow action switching element
	–	–	2/1	2/2
	2/1	2/1	–	–
	AC-15/DC-13	AC-15/DC-13	AC-15/DC-13	AC-15/DC-13
	4 A (230 V AC), 4 A (24 V DC)	3 A (240 V AC), 2 A (24 V DC)	3 A (240 V AC), 3 A (24 V DC)	3 A (240 V AC), 3 A (24 V DC)
	250 V	250 V	250 V	250 V
	≥ 12 V DC	≥ 5 V DC	≥ 5 V DC	≥ 5 V DC
	≥ 1 mA	≥ 5 mA	≥ 5 mA	≥ 5 mA
	24 V (20,4 V ... 26,4 V) DC	24 V (20,4 V ... 26,4 V) DC	–	–
	≤ 8 W	≤ 7 W	–	–
	4 A gG	3 A gG	F15	F15
	Cable gland	Cable gland	Cable gland	Cable gland
	3 x M20	1 x M20	1 x M20	1 x M20
	0,34 mm^2 ... 1,5 mm^2	≤ 1,5 mm^2	≤ 2,5 mm^2	≤ 2,5 mm^2
	➜ Page 36	www.mysick.com/en/i14_Lock	www.mysick.com/en/i10R	www.mysick.com/en/i110R

Further information

www.mysick.com/en/i12S

At a glance

- Narrow plastic housing
- Rigid or mobile actuators
- 1 M16 x 1.5 cable entry gland
- Slow-action switching elements with up to three contacts
- IP 67 enclosure rating

Your benefits

- Cost-effective solution for all standard safety applications
- Small design simplifies installation and makes it easy to mount directly on the guard door frame
- High reliability and safety due to the cone shaped metal alignment aid

Ordering information

Number of positive action N/C contacts	Number of N/O contacts	Type	Part no.
1	1	i12-SA113	6025057
2	0	i12-SA203	6025100
	1	i12-SB213	6025059

Actuators

Figure	Design	Actuation option	Min. door radius	Type	Part no.
	Straight	Rubber-mounted	150 mm	iE12-S1	5311131
	Angled	Rigid	150 mm	iE12-A1	5311132
	Radial	Semiflexible	60 mm	iE12-F1	5308842

Required accessories

Cable gland

Figure	Type	Part no.
	Cable gland M16	5309163

Enhanced system solutions see page 54

Further information

www.mysick.com/en/i10_Lock

At a glance

- Narrow plastic housing
- Rigid or mobile actuators
- 3 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

Ordering information

- **Locking type:** electrical

Solenoid monitoring contacts		Door monitoring		Connection type	Type	Part no.
Number of positive action N/C	Number of N/O	Number of positive action N/C	Number of N/C			
2	1	0	1	Cable entry	i10-E0233 Lock	6022585
	0	2	0	Cable entry	i10-E0453 Lock	6020598
				Connector	i10-E0454 Lock	6045056

- **Locking type:** mechanical

Solenoid monitoring contacts		Door monitoring		Connection type	Type	Part no.
Number of positive action N/C	Number of N/O	Number of positive action N/C	Number of N/C			
2	1	0	1	Cable entry	i10-M0233 Lock	6022580
	0	2	0	Cable entry	i10-M0453 Lock	6029934
				Connector	i10-M0454 Lock	6045055

Actuators

Figure	Design	Actuation option	Method of actuation	Door radius	Type	Part no.
	Straight	Rubber-mounted	–	≥ 1.000 mm	iE10-S2	5306530
	Angled	Rigid	With overtravel	≥ 1.000 mm	iE10-A4	5308497
	Radial	Semiflexible	Door hinged at top/bottom	≥ 90 mm	iE10-R1	5306528
			Door hinged on left/right	≥100 mm	iE10-R2	5306529

Required accessories

Cable gland

Figure	Type	Part no.
	Cable gland M20	5309164

Enhanced system solutions see page 54


SICK
RE27-DACL
6039760
24V AC/DC Class2
D-79183 WALDKIRCH

Product family description

Magnetic safety switches

Magnetic safety switches are equipped with complementary-switching or equivalent-switching contacts that use coded magnetic actuators. Magnetic safety switches can be used in areas where a high level of contamination occurs. The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards. Their operating principle enables greater tolerances, making them ideal for applications where precise guidance of guards is difficult.

At a glance

- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- Response range of up to 9 mm
- Available with following contact options: complementary with an NO/NC contact or equivalent with two or three N/O contacts
- Direct connection to safe control solution possible
- Sensors with plug connector or connected cable

Transponder safety switches

Transponder safety switches are used in applications where a high level of prevention against tampering is essential. The safety switch determines which actuator code to use and will not engage unless the proper actuator code is read. The safety switches have a wide response range, which is highly beneficial for mounting and considerably reduces machine downtime. Some safety switches are extremely small and have a central evaluation unit in the control cabinet, while others have an integrated evaluation unit with an LED status indicator. Various versions, including multicode and unicode variants, enable connectivity of up to 30 safety switches.

At a glance

- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- LED status indicator
- Response range of up to 25 mm
- Multicoded and unique coded sensors
- Safe series connection of sensors possible (depending on the variant)
- Variants with ATEX approval for use in Ex zone 2

Inductive safety switches

Inductive safety switches are used for determining position and work on a non-contact basis. They detect approaching objects without a separate actuator. Their wide response range makes them simple to mount and adjust.

At a glance

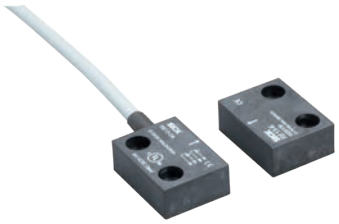
- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- LED status indicator
- Direct connection to safe control solution possible
- Response range of up to 15 mm
- Sensors with plug connector
- High enclosure rating of IP 67 or IP 69K

Product family overview

	 RE13 (6036769)	 RE27 (6034343)	
General information	Simple and established non-contact door monitoring		
Housing material	Glass-fiber reinforced PPS	Glass-fiber reinforced PPS	
Housing diameter	–	–	
Enclosure rating	IP 67	IP 67	
Ambient operating temperature from ... to	–20 °C ... +60 °C	–20 °C ... +60 °C	
Technical specifications			
Safety related parameters			
Safety integrity level	–	–	
Category	Up to category 4 (EN ISO 13849) [1]	Up to category 4 (EN ISO 13849) [1]	
Performance level	Up to PL e (EN ISO 13849) [1]	Up to PL e (EN ISO 13849) [1]	
B_{10d} parameter	2 x 10^7 switching cycles, with small load	2 x 10^7 switching cycles, with small load	
PFHd (mean probability of a dangerous failure per hour)	–	–	
TM (Mission Time)	–	–	
Safe switch on distance S_{ao}	7 mm	9 mm	
Safe switch off distance S_{ar}	20 mm	20 mm	
Electrical details			
Type of output	Reed contacts	Reed contacts	
Number of N/O contacts/ N/C contacts	2/0	3/0	
Number of outputs	–	–	
Supply voltage	–	–	
Switching voltage	≤ 24 V DC	≤ 24 V DC	
Switching current	≤ 100 mA	≤ 100 mA	
Status display	–	✔	
Connection			
Connection type	M8 plug connector, 4 pins	Cable	
Cable length	–	5 m (PVC)	
Detailed information	➜ Page 42	www.mysick.com/en/RE27	

[1] In combination with suitable safety device.
[2] Values apply for steel (FE360).
[3] Dependent on material. The indicated values refer to steel ST37.

	 **IN3000 Direct (6034582)**	 **IN4000 Standard (6027391)**	 **TR4 Direct (6044638)**
	Safe, non-contact position monitoring		Non-contact safety switches with high level of prevention against tampering
	White bronze coated brass (housing), PBT (cover)	PBT/V4A	Valox® DR48
	M12	M18	–
	IP 65, IP 67	IP 69K	IP 69K
	–25 °C ... +70 °C	–25 °C ... +70 °C	–10 °C ... +55 °C
	SIL2 (IEC 61508), SILCL2 (EN 62061) Category 3 (EN ISO 13849) [1] PL d (EN ISO 13849) [1] – 1,0 x 10^{-7} (EN ISO 13849) 10 years (EN ISO 13849), at –25 °C ... +70 °C and 5 % ... 95 % relative air humidity 20 years (EN ISO 13849), at +10 °C ... +40 °C and 5 % ... 70 % relative air humidity	SIL3 (IEC 61508) Category 4 (EN ISO 13849) [1] PL e (EN ISO 13849) [1] – 1,33 x 10^{-9} (EN ISO 13849) 10 years (EN ISO 13849)	SIL3 (IEC 61508) Category 4 (EN ISO 13849) [1] PL e (EN ISO 13849) [1] – 1,119 x 10^{-9} (EN ISO 13849) 20 years (EN ISO 13849)
	0,5 mm ... 4 mm [2]	3 mm ... 6 mm [3]	15 mm
	6 mm [2]	15 mm [3]	35 mm
	Semiconductor	Semiconductor, pulsed	Semiconductor (OSSD)
	–	–	–
	2	1	2
	24 V DC (19,2 V DC ... 28,8 V DC)	24 V DC (19,2 V DC ... 30 V DC)	24 V DC (20,4 V DC ... 26,4 V DC)
	–	–	–
	–	–	–
	✔	✔	✔
	M12 plug connector, 4 pins	M12 plug connector, 4 pins	M12 plug connector, 8 pins
	–	–	≤ 200 m
	➜ Page 44	www.mysick.com/en/IN4000_Standard	➜ Page 46



Further information

www.mysick.com/en/RE13_RE23

At a glance

- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- Response range up to 7 mm for small design and up to 9 mm for standard design
- 2 N/O contacts
- Direct connection to safe control solution possible
- 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
- High level of machine availability due to high tolerances for door misalignment
- Direct connection to the safe control solution eliminates any additional wiring and reduces installation time
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- 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)

Ordering information

System part	Connection type	Cable length	Safe switch on distance S_{ao}	Type	Part no.
Sensor and actuators	Cable	3 m	7 mm	RE13-DA03	6034333
	M8 plug connector, 4-pin	–	7 mm	RE13-DAC	6036769
			9 mm	RE23-DAC	6036927

Required accessories

Connectors

Figure	Size of the cable gland	Direction of cable outlet	Cable length	Type	Part no.
	M8, 4-pin	Straight	2 m	DOL-0804-G02M	6009870
			5 m	DOL-0804-G05M	6009872
			10 m	DOL-0804-G10M	6010754
		Angled	2 m	DOL-0804-W02M	6009871
			5 m	DOL-0804-W05M	6009873
			10 m	DOL-0804-W10M	6010755

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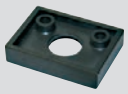
Mounting systems

Figure	Description	Packing unit	Type	Part no.
	Spacer	10	RE10-SD	5322315
	Spacer	10	RE20-SD	5320067

Enhanced system solutions see page 54

At a glance

- Direct connection to safe control solution possible
- Response range of up to 15 mm
- LED status indicator
- Sensors with plug connector
- Up to performance level PL d (EN ISO 13849), SILCL2 (EN 62061), SIL2 (IEC 61508)

Your benefits

- Cost-effective solution for applications up to PL d / SILCL2
- Space-saving mounting due to compact housing design
- 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
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards

Further information

www.mysick.com/en/IN3000_Direct

Ordering information

System part	Housing diameter	Installation type	Type	Part no.
Sensors	M30	Non-flush	IN30-E0208K	6044655
	M18	Non-flush	IN30-E0305K	6034576
		Flush	IN30-E0306K	6034581
	M12	Non-flush	IN30-E0407K	6034582

Required accessories

Connectors

Figure	Size of the screwed joint	Direction of cable outlet	Cable length	Type	Part no.
	M12, 4-pin	Straight	5 m	DOL-1204-G05M	6009866
			10 m	DOL-1204-G10M	6010543
			15 m	DOL-1204-G15M	6010753

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Mounting systems

Figure	Description	Type	Part no.
	Mounting bracket, M12 thread	BEF-WN-M12	5308447
	Mounting bracket, M18 thread	BEF-WN-M18	5308446
	Mounting bracket, M30 thread	BEF-WN-M30	5308445
	Clamping block for round sensors M12, without fixed stop	BEF-KH-M12	2051479
	Clamping block for round sensors M18, without fixed stop	BEF-KH-M18	2051481

Enhanced system solutions see page 54

Further information

www.mysick.com/en/TR4_Direct

At a glance

- Multicoded and unique coded sensors
- Response range of up to 25 mm
- Safe series connection of up to 30 sensors possible
- Two OSSD safety outputs for direct connection to a single safety controller
- LED status indicator
- Up to performance level PL e (EN ISO 13849)
- Sensors with plug connector

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 saves costs
- Long service life due to durable and low-maintenance design
- Fast diagnostics via LED status indicator
- 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

Ordering information

- **Design:** cylindrical
- **System part:** sensor & actuator

Housing diameter (sensor/actuator)	Safe switch on distance S_{ao}	Safe switch off distance S_{ar}	Coding	Connection type	Cable length	Model name	Part no.
M18 / M18	15 mm	25 mm	Multicoded	Cable with plug, M12, 8-pin	0.2 m	TR4-SAM01C	6034588
				Cable	3 m	TR4-SAM03P	6034586
			Unique coded	Cable with plug, M12, 8-pin	0.2 m	TR4-SAU01C	6022319
				Cable	3 m	TR4-SAU03P	6022317
M18 / M30	25 mm	35 mm	Multicoded	Cable with plug, M12, 8-pin	0.2 m	TR4-SBM01C	6035190
				Cable	3 m	TR4-SBM03P	6025090
			Unique coded	Cable with plug, M12, 8-pin	0.2 m	TR4-SBU01C	6044628
				Cable	3 m	TR4-SBU03P	6044626

- **Design:** rectangular
- **System part:** sensor & actuator
- **Dimensions:** 25 mm x 88 mm x 20 mm
- **safe switch on distance Sao:** 15 mm
- **safe switch off distance Sar:** 35 mm

Boundary area indication	Magnetic retaining force	Coding	Connection type	Cable length	Model name	Part no.
–	–	Multicoded	Cable with plug, M12, 8-pin	0.2 m	TR4-SDM01C	6044638
			Cable	3 m	TR4-SDM03P	6044636
		Unique coded	Cable with plug, M12, 8-pin	0.2 m	TR4-SDU01C	6044641
			Cable	3 m	TR4-SDU03P	6044639
✔	✔	Multicoded	Cable with plug, M12, 8-pin	0.2 m	TR4-SFM01C	6044650
			Cable	3 m	TR4-SFM03P	6044648
		Unique coded	Cable with plug, M12, 8-pin	0.2 m	TR4-SFU01C	6044653
			Cable	3 m	TR4-SFU03P	6044651

Required accessories

Plug connectors and cables

Figure	Size of the cable gland	Direction of cable outlet	Cable material	Cable length	Model name	Part no.
	M12, 8-pin	Straight	PVC	5 m	DOL-1208-G05MA	6020993
				10 m	DOL-1208-G10MA	6022152
				15 m	DOL-1208-G15MA	6022153
				30 m	DOL-1208-G30MA	6022242

Adapters/distributors

Description	Model name	Part no.
T-junction for serial connection of TR4 Direct	TR4-AK004C	5325889
End plug for serial connection in combination with TR4-AK004C T-junction	TR4-AL002C	5325890

Mounting systems

Figure	Description	Model name	Part no.
	Mounting bracket, M18 thread	BEF-WN-M18	5308446
	Clamping block for round sensors M18, without fixed stop	BEF-KH-M18	2051481

Enhanced system solutions see page 54


SICK



Product family description

Emergency stop pushbuttons

Emergency stop pushbuttons are essential in automated machines and plants. They make it possible for someone to stop a machine or a system immediately in case of an emergency. Depending on the variant, the emergency stop pushbuttons are either integrated into a machine control panel, or mounted with their housings directly on the machines.

At a glance

- Either as surface-mounted version with housing or as built-in version (Ø 22 mm)
- Built-in version 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

Rope pull switches

Rope pull switches ensure that dangerous movements are reliably stopped over long distances. The rope is connected to the rope pull switch for optimum safeguarding of hazardous points that are not protected by safety covers, e.g., conveyors. In the working position, the rope is under tension and the safety-relevant contacts – the positive opening normally closed contacts – are closed. The contacts are opened by a pull on the rope or if the rope breaks, the emergency stop function is triggered. Actuation is possible at any point along the rope.

At a glance

- Rope lengths up to 75 m, with rope break and rope pull function
- Metal housing with integrated rotary unlocking lever or emergency stop pushbutton and fault display
- 1 or 3 M20 x 1.5 cable entry glands
- Slow-action switching elements with four contacts
- Complies to the standards EN 13850 and EN 60947-5-5

Enabling switches

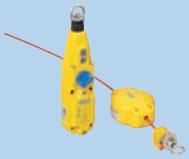
Enabling switches ensure that even critical machine functions are performed safely. They are used when work has to be performed in the hazardous area in “setup” operating mode. All enabling switches are configured as 3-stage switches, i.e., movements can only be activated in the middle position because this is the only position in which all contacts are closed.

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 EN 60947-5-8

Product family overview

	 ES21 (6036148)	 ES21 (6036492)	
General information	Quick, reliable emergency stop safety protection		
Design	Surface mount version	Panel mount version	
Cord length	–	–	
Housing material	Plastic	Plastic	
Enclosure rating	IP 65	IP 65	
Ambient operating temperature from ... to	–25 °C ... +60 °C	–30 °C ... +70 °C	
Technical specifications			
Safety related parameters			
B_{10d} parameter **Electrical life (depending on the load)**	2,5 x 10^5 switching cycles 1 x 10^6 switching cycles	2,5 x 10^5 switching cycles 1 x 10^6 switching cycles	
Actuation force (deflection)	–	–	
Electrical details			
Switching principle	Slow action switching element	Slow action switching element	
Number of positive action N/C contacts / N/O contacts	2/1	2/1	
Usage category in compliance with IEC/EN 60947-5-1	AC-15/DC-13	AC-15/DC-13	
Rated operating current (voltage)	3 A (250 V AC), 2 A (24 V DC)	3 A (250 V AC), 2 A (24 V DC)	
Rated insulation voltage Ui	600 V	600 V	
Switching voltage	≥ 5 V DC	≥ 5 V DC	
Switching current	≥ 1 mA	≥ 1 mA	
Short-circuit protection	–	–	
Connection			
Connection type	Cable gland	–	
Cable length	–	–	
Number of cable glands x size of the screwed joint	2 x M20	–	
Cross section of electrical conductors	≤ 2,5 mm^2	≤ 2,5 mm^2	
Detailed information	www.mysick.com/en/ES21	www.mysick.com/en/ES21	

	 i110RP (6025077)	 i150RP (6024883)	 E100 (6022879)
	Safety protection over long distances		Safety protection during setup or maintenance
	–	–	With plus/minus buttons
	≤ 30 m	≤ 75 m	–
	Metal	Metal	Plastic
	IP 66	IP 65	IP 65
	–25 °C ... +80 °C	–25 °C ... +80 °C	–5 °C ... +50 °C
	2 x 10^6 switching cycles, with small load 1 x 10^6 switching cycles	2 x 10^6 switching cycles, with small load 1 x 10^6 switching cycles	1 x 10^5 switching cycles, with small load 1 x 10^5 switching cycles
	≤ 125 N (300 mm)	≤ 125 N (300 mm)	–
	Slow action switching element	Slow action switching element	Slow action switching element
	2/2	2/2	2/2
	AC-15/DC-13	AC-15/DC-13	DC-13
	3 A (240 V AC), 2 A (24 V DC)	3 A (240 V AC), 3 A (24 V DC)	2 A (24 V DC)
	250 V	250 V	32 V
	≥ 5 V DC	≥ 5 V DC	≥ 12 V DC
	≥ 5 mA (5 V DC)	≥ 5 mA (5 V DC)	≥ 1 mA (24 V DC)
	T6	T6	2 A gG / 0,1 A gG
	Cable gland	Cable gland	Cable
	–	–	5 m
	1 x M20	3 x M20	–
	≤ 1,5 mm^2	≤ 1,5 mm^2	≤ 0,5 mm^2
	www.mysick.com/en/i110RP	➜ Page 52	www.mysick.com/en/E100

Further information

www.mysick.com/en/i150RP

At a glance

- Rope lengths up to 75 m, with rope break and rope pull function
- Metal housing with integrated emergency stop pushbutton and fault display
- Rotary unlocking lever
- 3 M20 x 1.5 cable entry glands
- Slow action switching elements with four contacts

Your benefits

- The emergency stop function can be triggered at any point along the rope
- The long rope length reduces the number of rope pull switches, which saves costs
- Simple adjustment of the rope tension
- Rugged metal housing offers a high level of protection for the rope pull switch
- Integrated emergency stop pushbutton allows users to trigger the emergency stop function at the end of the rope
- User-friendly systems available with many rope lengths
- Additional contacts provide quick and easy diagnostics
- Flexible connectivity due to three cable entry glands

Ordering information

Number of positive action N/C contacts	Number of N/O contacts	Type	Part no.
2	2	i150-RP223	6024884
3	1	i150-RP313	6024883

Required accessories

Rope accessory

Figure	Accessory type	Item supplied	Cord length	Type	Part no.
	Rope accessory set	2 rope grippers, 1 tensioner, 3 eye bolts, 5 m rope, 1 allan key	5 m	iE110-P05	5311136
		2 rope grippers, 1 tensioner, 14 eye bolts, 30 m rope, 1 allan key	30 m	iE110-P30	5311139
		2 rope grippers, 1 tensioner, 32 eye bolts, 75 m rope, 1 allan key	75 m	iE110-P75	5320017
	Spring	–	–	iE110-PTS	5311290

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Figure	Accessory type	Item supplied	Cord length	Type	Part no.
	Tensioner set	1 tensioner, 2 rope grippers, 1 allan key	–	iE110-PTR	5309034
	Eye bolt	–	–	iE110-PEB	5309035
	Rope	–	30 m	iE110-PL30	5310813
	Rope	–	100 m	iE110-PL100	5310814

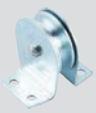
Cable gland

Figure	Type	Part no.
	Cable gland M20	5309164

Indicator light

Figure	Description	Type	Part no.
	Lamp set/indicator light	iE110-PIS1	5325871

Pulley

Figure	Description	Type	Part no.
	Internal pulley	iE110-PCPI	5325887
	External pulley	iE110-PCPO	5325888

Enhanced system solutions see page 54

Enhanced system solutions

Figure	Description	Technical details	Type	Part no.
	Safety relay UE43-2MF – the perfect monitoring of safety switches and emergency stop pushbuttons	With removable terminals, 2 safety outputs, 1 application diagnostic output	UE43-2MF3D2	6024894
	Safety relay UE48-2OS – the generalist with diagnostics	With removable terminals, 2 safety outputs, 1 application diagnostic output	UE48-2OS3D2	6024916
	Safety controller Flexi Soft – with software (Flexi Soft Designer) configurable safety controller	Flexi Soft CPU0 main unit, without EFI connections, two-level spring terminals	FX3-CPU000000	1043783
		Flexi Soft CPU1 main unit, 2 EFI connections, two-level spring terminals	FX3-CPU130002	1043784
		Flexi Soft XTIO extension unit, 8 inputs/4 outputs, two-level spring terminals	FX3-XTIO84002	1044125
		Flexi Soft XTDI input expansion unit, 8 inputs, two-level spring terminals	FX3-XTDI80002	1044124
		Flexi Soft system plug	FX3-MPL000001	1043700

Figure	Description	Technical details	Type	Part no.
	Safety controller Flexi Soft – with software (Flexi Soft Designer) configurable safety controller	Flexi Classic main unit	UE410-MU3T5	6026136
		Flexi Classic in-/output expansion unit	UE410-XU3T5	6032470
		Flexi Classic input expansion unit	UE410-8DI3	6026139

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Safety solutions from SICK allow you to create efficiency today and in the future

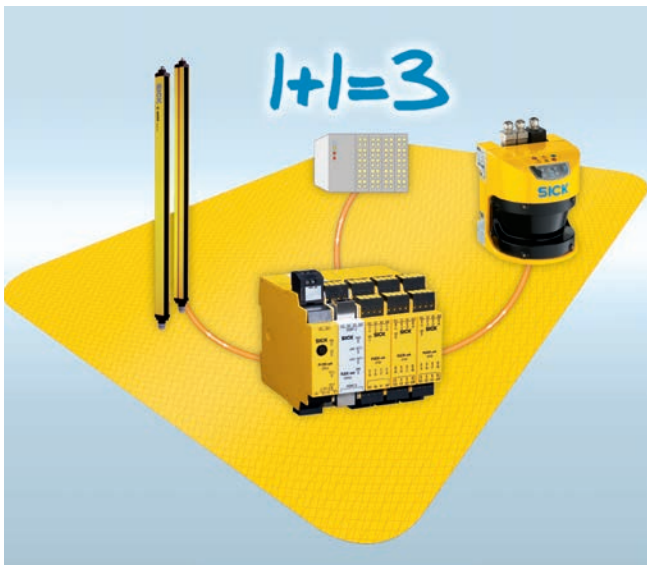
Customer-oriented – efficient – innovative

Safety devices should not prevent increases in the productivity of your machines and systems. This is why SICK surveys customers before making new product developments.

In addition to the technological developments, SICK adapts the customer's requirements and needs. This has led to trendsetting products like safety laser scanners, miniTwin safety light curtains and the Flexi Soft modular safety controller.

Expertise and experience in machine safety: Information on system integration, standards and laws, and FAQs can be found at www.sick-safetyplus.com

Intelligent networking allows you to cover all safety functions with just a few SICK devices.



Space-saving – rapid – transparent

Simple system integration plays a key role in the commissioning and ongoing operation of your machines. With the SICK-created interface EFI, our products permit rapid communication for automatic operation and convenient configuration and diagnostic functions for setup and maintenance work. Higher speed of safe communication also means decreasing the minimum distances and thus saving expensive machine space.

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Integrated, intelligent functions and coordinated interfaces make additional hardware unnecessary, reducing the number of devices and wires required for your machines.

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Complete safety solution from SICK: foil wrapping machine with automatic material transport

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To ensure that you always receive expert support, SICK has established an international training program for its machine safety specialists.

Benefit from our expertise.

“Guidelines for Safe Machienery” brochure

The “Guidelines for Safe Machinery – Six steps to a safe machine” combines our many years of practical experience into a comprehensive brochure. We designed it to help you keep your machines safe.

It contains structured information on:

- Legal requirements for machines
- Safety-relevant directives, regulations and standards
- Selection and application of safety devices
- Examples of how to protect machines and persons against accidents
- Examples of the application of the new standards EN ISO 13849-1 and EN 62061 to determine the PL or SIL

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“Guidelines for Safe Machinery – Six steps to a safe machine” is available for download at **www.mysick.com** in the SICK Literature Finder (publication type brochure) or for order as a printed brochure from your SICK representative.

Item numbers of the European editions:
8008007 German, 8007988 English
Item number of the North American edition:
7028282 English

“Industrial Safety Systems” product catalog

The catalog contains information about our safety products, including accessories and services with order numbers.

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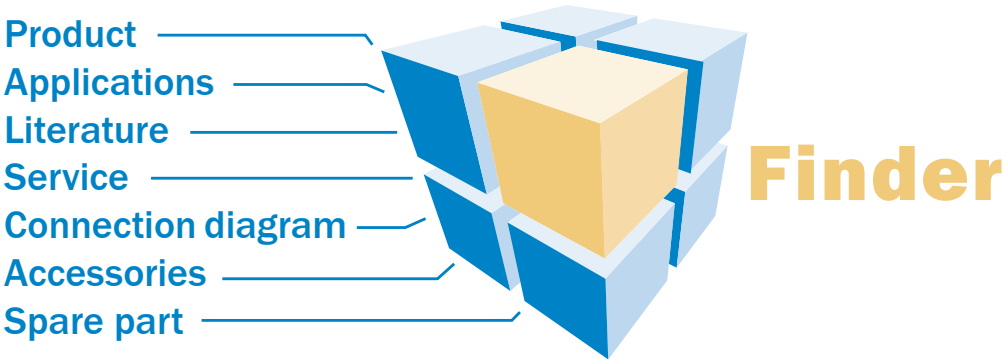

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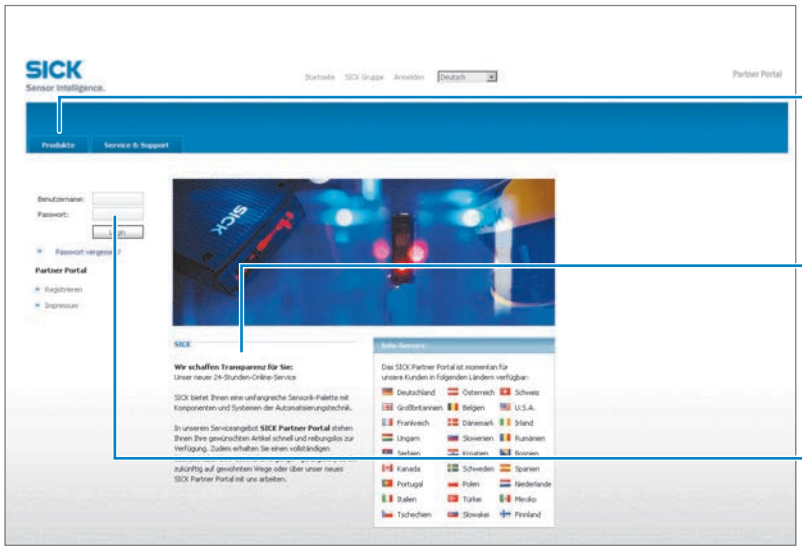

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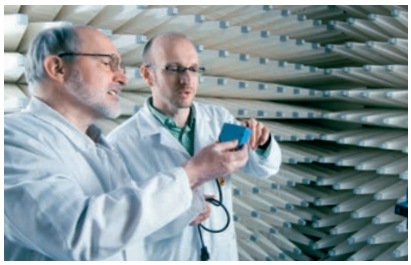
SICK at a glance



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With a staff of more than 5,000 and over 50 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.

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