SAFETY SWITCHES

OVERVIEW OF THE PRODUCTS

Non-contact safety switches, safety locking devices,
electro-mechanical safety switches, safety command devices,
mechanical bolts for safety switches

SICK
Sensor Intelligence.

WIDEST PORTFOLIO FOR VERSATILE TASKS

Safety switches are indispensable in any application where safety is required for people and machinery. They are used for protecting movable physical guards, determining the position of dangerous movements, and the safe stop function. SICK offers not only traditional electro-mechanical safety switches and safety command devices but also a large selection of safety locking devices and non-contact safety switches.

CHALLENGES CALL FOR SOLUTIONS

Reliably monitor hazardous access points like doors or flaps

The manipulation of safety switches on physical guards such as doors or flaps is a problem in many companies. A high level of protection against manipulation is therefore often necessary to avoid accidents. SICK offers suitable solutions for this: from the tried-and-proven RE1 and RE2 magnetic safety switches through to the flexible STR1 transponder safety switches with a high, variant-dependent coding level and performance level e.

Keep doors or flaps closed to prevent manipulation – to protect people and processes

Is manipulation proofing of the protective devices on your machines or equipment an important issue for you? Then we recommend the RFID-monitored flexLock safety locking device.
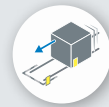The MLP1 magnetic safety locking device with a high offset tolerance is the ideal solution for protecting processes from unnecessary interruptions.

Reliably monitor the position or presence of machine parts

Sensors used for position monitoring in dynamic processes are subjected to high levels of mechanical stress as a result of frequent actuation. The IME2S and IQB2S inductive safety switches from SICK operate in a non-contact manner and are therefore especially low-wear and low-maintenance. They also have a very precise switching point.

Reliably stopping machines in case of emergency or manually resetting protective devices

The ability to immediately stop a machine in absolute emergencies is essential. The easy-to-install ES11 emergency stop pushbutton offers the ideal solution for this. Why? Because it already comes with an integrated pushbutton for manually resetting protective devices. An LED also makes it easier for the machine operator to see the operating status.

ACCESS AND POSITION: NON-CONTACT SAFETY

Machines and production lines have doors and flaps that need to be secured. Highly manipulation proof magnetic safety switches and transponder safety switches are optimally suited for this application.
Inductive safety switches detect a defined position and register it reliably.
Magnetic, inductive and RFID safety switches belong to the class of non-contact safety switches and operate in a particularly low-wear manner.

Rugged functionality for a longer product life cycle

The RE1 and RE2 magnetic safety switches and the STR1 RFID safety switch guarantee optimal monitoring of doors and flaps. They offer a high tolerance to door offset.
The RE1 and RE2 are not only reliable but also low mainte-nance and, when combined with a suitable safety module in the controller, deliver performance level e protection.
The STR1 also offers a very intuitive diagnostic function. It provides flexible mounting options and maximum protection against manipulation.

Discover the STR1 ➜ www.sick.com/STR1
Check out the reliable RE1 and RE2 ➜ www.sick.com/RE1 & www.sick.com/RE2

Quick installation for maximum machine availability

Inductive safety switches guarantee simple and reli-able position and area monitoring up to performance level d. Because they are activated by metal, the safety switches do not require a separate actuator to perform this task. This makes them especially low wear in operation. They are simple and flexible to mount and, thanks to the wide range of products available, can be used for numerous safety tasks.

Find out more about the cubic IQB2S
➜ www.sick.com/IQB2S
Discover the possibilities of the cylindrical IME2S
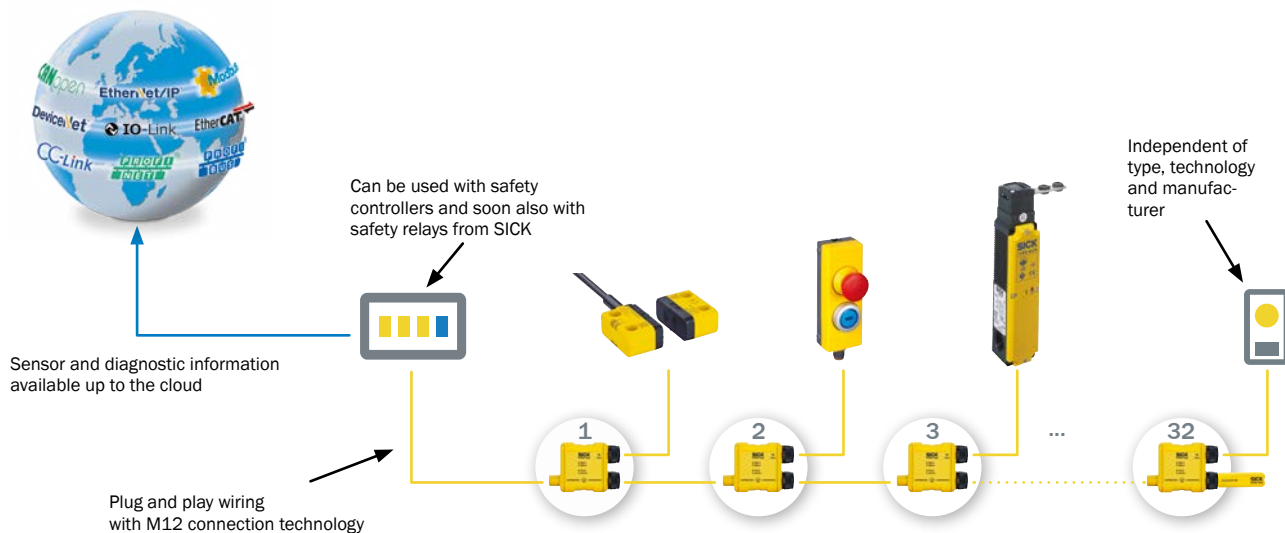➜ www.sick.com/IME2S

VERSATILE AND ABLE TO BE INTEGRATED INTO ANY EQUIPMENT

Different sectors, different tasks, different requirements – there are many ways of integrating sensors. Whether it be wiring sensors individually, connecting simple sensors in series, or cascading different protective devices. SICK is a reliable partner in this field and can offer a suitable solution for integrating your sensors.

Cuts costs, supports diagnostics, reliable

Flexi Loop provides a flexible solution for series connection of safety switches and other safety sensors in series within a machine. Thanks to the ability to individually monitor each sensor, this series connection allows safety levels up to performance level e with no compromise in safety. The safety level required for your equipment depends on the risk assessment. We would happy to assist you with this.

Can be used with safety controllers and soon also with safety relays from SICK

Independent of type, technology and manufacturer

Sensor and diagnostic information available up to the cloud

Plug and play wiring with M12 connection technology

For background information and further integration options, see:

➜ **"Safe series connection" special information brochure**
➜ **Explanatory video on fault masking**

PROTECTION FOR PEOPLE AND PROCESSES: MANIPULATION-PROOF

Safety locking devices prevent access to hazardous areas. They can be relied upon to prevent people from opening protective devices until machine processes or dangerous states such as machine overrun movements have passed.

Electro-mechanical safety locking devices feature high locking force and reliability. RFID-monitored safety locking devices also offer a high level of protection against manipulation and performance level e.

Personal protection for access protection

To protect people from dangerous machine movements, protective devices must lock securely. Safety locking devices allow access to the hazardous area only after the machine has come to a complete standstill.

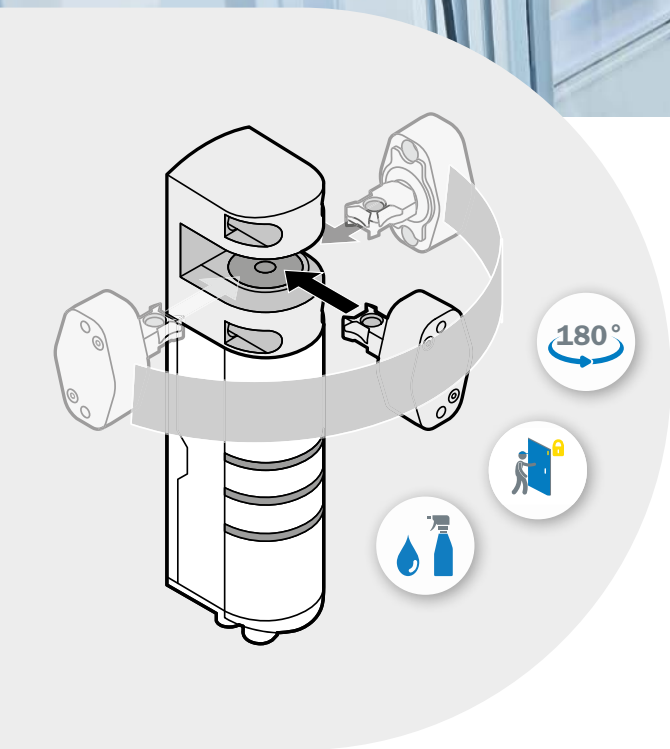Find out more about the safety locking devices from SICK:

➜ www.sick.com/i110Lock
➜ www.sick.com/TR110Lock
➜ www.sick.com/flexLock

Process protection with RFID safety locking devices

RFID-monitored safety locking devices prevent unintentional opening of protective doors when processes are running. In this way, you avoid scrap and damage to the machine and create a continuous production flow.

More on the tried-and-proven MLP1 ➜ www.sick.com/MLP1
More on the innovative flexLock ➜ www.sick.com/flexLock

A FLEXIBLE SOLUTION FOR GUARD LOCKING

The RFID-monitored flexLock safety locking device with its open locking head offers an actuation radius of 180°. It is easy to mount and quick to clean due to the rounded housing. It also features PL e for door and locking device monitoring as well as a high level of protection against manipulation with a high coding level of the actuator.

Even with small closing radii, flexLock is suitable for a wide variety of machines with movable physical guards.

➔ Find out everything about the flexLock

YOUR PARTNER FOR SAFETY

SICK has a comprehensive portfolio of sensors, controllers and services and can also assist you on-site with a world-wide network of functional safety experts.

CREATING
SAFE
PRODUCTIVITY

AN OVERVIEW OF THE MOST IMPORTANT FEATURES OF THE SAFETY SWITCHES

	Safety application	Key selection criteria		Manipulation protection due to coding level of the actuator (EN ISO 14119)	Product group	Products	from page	
Interlocking movable physical guards								
	Door locking	Protection of people [1]	Power to release	Low coding level	Electro-mechanical safety locking devices	i14 Lock, i10 Lock, i110 Lock, i200 Lock	12	→
				Low/high coding level	RFID safety locking devices	flexLock, TR110 Lock	12	
			Power to lock [2]	Low coding level	Electro-mechanical safety locking devices	i10 Lock, i110 Lock, i200 Lock	13	
				Low/high coding level	RFID safety locking devices	flexLock, TR110 Lock	12	
		Process protection				flexLock, MLP1	12	
	Door monitoring	No tolerance to door offset	Retaining force required, electro-mechanical volt-free contact	Low amount of coding	Electro-mechanical safety switch	i12S, i16S, i17S, i110S	14	
		Tolerance to door offset	No retaining force required, volt-free reed contacts (low-wear)	Low coding level	Magnetic safety switches	RE1, RE2	10	
			No retaining force required, OSSDs (low-wear)	Low/high coding level	RFID safety switch	STR1	10	
Safe position monitoring								
	Monitoring of machine stop positions	Switch off when activated	Mechanical activation	No coding	Safety position switches	i10P, i10R, i110P, i110R	13	→
		Switch on when activated	Non-contact activation by metal without additional actuator		Inductive safety switches	IME2S, IQB2S	11	
						IN4000 Direct	11	
			Non-contact activation by coded actuator	Low/high coding level	RFID safety switch	STR1	10	
Safety commands								
	Emergency stop	–	Triggering of emergency stop at defined positions	–	Emergency stop pushbutton	ES11, ES21	16	→
			Triggering emergency stop throughout the entire distance	–	Rope pull switch	110RP, 150RP	17	
	Resetting of the protective device	–	–	–	Pushbutton for machine commands	ER12	16	→
	Manual approval for maintenance and setup mode	–	–	–	Enabling switch	E100	17	

[1] All locks for protecting people can also be used for process protection.

[2] In the event of a voltage drop, the safety locking device unlocks regardless of whether the dangerous state of the machine has ended. Use for protecting people requires correct project planning.

ACHIEVABLE PERFORMANCE LEVEL COMBINED WITH SAFETY RELAY OR SAFETY CONTROLLERS

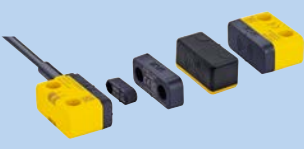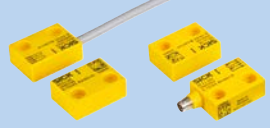|	ReLy RLY3-EMSSx For safety sensors with volt-free contacts	ReLy RLY3-OSSDx For safety sensors with OSSDs	Flexi Classic For volt-free contacts and OSSDs	Flexi Soft For volt-free contacts and OSSDs	Flexi Compact For volt-free contacts and OSSDs
→	PL c / (PL d) [3]	–	PL c / (PL d) [3]	PL c / (PL d) [3]	PL c / (PL d) [3]
	–	PL e [4]	–	PL e [4]	PL e [4]
	PL c / (PL d) [3]	–	PL c / (PL d) [3]	PL c / (PL d) [3]	PL c / (PL d) [3]
	–	PL e [4]	PL e [4]	PL e [4]	PL e [4]
	–	PL e [5]	PL e [5]	PL e [5]	PL e [5]
	PL c / (PL d) [3]	–	PL c / (PL d) [3]	PL c / (PL d) [3]	PL c / (PL d) [3]
	PL e [6,7]	–	PL e [6,7]	PL e [6,7]	PL e [6,7]
	–	PL e	PL e	PL e	PL e
→	PL c	–	PL c	PL c	PL c
	–	PL d	PL d	PL d	PL d
	–	PL e	PL e	PL e	PL e
	–	PL e	PL e	PL e	PL e
→	PL e [9]	–	PL e [9]	PL e [9]	PL e [9]
	PL e [6]	–	PL e [6]	PL e [6]	PL e [6]
	–	–	compatible	compatible	compatible
	compatible [10]	compatible [10]	compatible [10]	compatible	compatible
	→ www.sick.com/ReLy		→ www.sick.com/Flexi_Classic	→ www.sick.com/Flexi_Soft	→ www.sick.com/Flexi_Compact

[3] PL d with fault exclusion (e.g., when using the MB1 in conjunction with electro-mechanical safety locking devices or safety switches with a separate actuator).

[4] PL e for door and locking device monitoring. | [5] PL e for door monitoring. | [6] PL e when using PSDI inputs. | [7] PL e when actuated at least once a month.

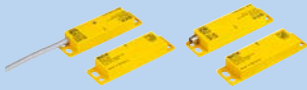[8] Can only be combined with magnetic safety switches with equivalent contacts (RE13, RE23, RE27).

[9] PL e when using PSDI inputs and integrated dropout protection contact (additional contact which monitors the correct position of the contact block in the built-in version of the emergency stop pushbutton).

[10] Only with series connection of one normally closed and one normally open contact.

	STR1	TR4 Direct	RE1
	Small RFID safety switch for door monitoring with manipulation protection	RFID safety switch for door monitoring with manipulation protection	Small magnetic safety switch for non-contact door monitoring

Technical data overview

	STR1	TR4 Direct	RE1
Sensor principle	RFID	RFID	Magnetic
Safety integrity level	SIL3 (IEC 61508)	SIL3 (IEC 61508)	–
Category	Category 4 (EN ISO 13849)	Category 4 (EN ISO 13849)	–
Performance level	PL e (EN ISO 13849)	PL e (EN ISO 13849)	–
Number of safe outputs	2	2	–
Number of N/C contacts	–	–	1 / 0
Number of N/O contacts	–	–	1 / 2
Connection type	Cable with plug M12, 5-pin Cable with plug M12, 8-pin Cable, 5-wire Cable, 7-wire Cable with plug M8, 8-pin	Cable with plug M12, 8-pin / cable with plug M12, 5-pin / cable	Plug connector, M8, 4-pin Cable Cable with M12 male connector, 4-pin Cable with M8 male connector, 4-pin
Actuator coding level	Low coding level (EN ISO 14119) High coding level (EN ISO 14119)	Low coding level (EN ISO 14119) High coding level (EN ISO 14119)	Low coding level (EN ISO 14119)
Type of output	Self-monitoring semiconductor outputs (OSSDs)	Self-monitoring semiconductor outputs (OSSDs)	Reed contacts

At a glance

	STR1	TR4 Direct	RE1
	• Response range of up to 14 mm • Small housing with flexible mounting options • Sensor activation possible from three sides • Four different actuators available • Universally coded, uniquely coded, and permanently coded sensors • PL e (EN ISO 13849), SIL3 (IEC 61508) • Safe series connection of up to 30 sensors possible	• Response range of up to 25 mm • Unique and universally-coded sensors up to enclosure rating IP 69K • Up to performance level PL e (EN ISO 13849) • Two OSSD safety outputs • Reliable series connection of up to 30 sensors possible (depending on the variant) • LED status indicator • Periphery indicator and magnetic holding force (optional) • Flexi-Loop-compatible M12 plug connector (depending on the variant)	• Response range up to 7 mm • 2 or 3 contacts • Up to performance level PL e (EN ISO 13849) • Sensors with plug connector or connected cable • Flexi Loop-compatible M12 plug connector (depending on variant)

Detailed information	➜ www.sick.com/STR1	➜ www.sick.com/TR4_Direct	➜ www.sick.com/RE1

RE2	IME2S	IQB2S	IN4000 Direct
Compact magnetic safety switch for non-contact door monitoring	Cylindrical inductive safety switch for position monitoring	Small, cuboid inductive safety switch for position monitoring	Cuboid inductive safety switch for position monitoring

	RE2	IME2S	IQB2S	IN4000 Direct
	Magnetic	Inductive	Inductive	Inductive
	–	SIL2 (IEC 61508)	SIL2 (IEC 61508)	SIL3 (IEC 61508)
	–	Category 2 (ISO 13849-1)	Category 2 (ISO 13849-1)	Category 3 (EN ISO 13849)
	–	PL d (ISO 13849-1)	PL d (ISO 13849-1)	PL e (EN ISO 13849)
	–	2	2	2
	1 / 0	–	–	–
	1 / 2	–	–	–
	Plug connector, M8, 4-pin Cable Cable with M8 male connector, 4-pin Cable with M12 male connector, 4-pin Cable with plug M12, 8-pin	Male connector M12, 4-pin / Cable with M12 male connector, 4-pin / Cable, 4-wire	Cable with M12 male connector, 4-pin / male connector M8, 4-pin / Cable, 4-wire	Plug connector, M12, 4-pin
	Low coding level (EN ISO 14119)	Uncoded (EN ISO 14119)	Uncoded (EN ISO 14119)	Uncoded (EN ISO 14119)
	Reed contacts	Self-monitoring semiconductor outputs (OSSDs)	Self-monitoring semiconductor outputs (OSSDs)	Self-monitoring semiconductor outputs (OSSDs)

RE2	IME2S	IQB2S	IN4000 Direct
• Response range of up to 9 mm • 2 or 3 contacts • Up to performance level PL e / Cat. 4 (EN ISO 13849) • Sensors with plug connector or connected cable • LED status indicator (RE27) • Flexi Loop-compatible M12 plug connector (depending on variant)	• Types: M12 to M30 • Increased response ranges: 4 mm to 15 mm • Two OSSD safety outputs • Enclosure rating: IP67 • Temperature range: –25 °C to +70 °C • Nickel-plated brass housing, plastic sensing face • Up to performance level PL d (EN ISO 13849) • Connection variants: M12 male connector, cable or cable with M12 male connector	• Rectangular type: 12 mm x 26 mm x 40 mm • Response range: 4 mm • Two OSSD safety outputs • Enclosure rating: IP67 • Temperature range: –25 °C bis +70 °C • Rugged VISTAL® housing • Up to performance level PL d (EN ISO 13849) • Connection variants: M8 male connector, cable or cable with M12 male connector	• 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 (EN ISO 13849) • Flexi Loop-compatible M12 plug connector

| → www.sick.com/RE2 | → www.sick.com/IME2S | → www.sick.com/IQB2S | → www.sick.com/IN4000_Direct |

	flexLock	TR110 Lock	MLP1
	RFID-monitored safety locking device with 180° actuation radius	RFID-monitored safety locking device with high manipulation protection	RFID safety switch with magnetic locking for process protection

Technical data overview

	flexLock	TR110 Lock	MLP1
Type	Type 4 (EN ISO 14119)	Type 4, RFID (EN ISO 14119)	Type 4, RFID (EN ISO 14119)
Actuator coding level	Low coding level (EN ISO 14119) High coding level (EN ISO 14119)	High coding level (EN ISO 14119)	Low coding level (EN ISO 14119) High coding level (EN ISO 14119)
Type of output	Self-monitoring semiconductor outputs (OSSDs)	Self-monitoring semiconductor outputs (OSSDs)	Self-monitoring semiconductor outputs (OSSDs)
Locking principle	Power to release / power to lock	Power to lock / power to release	Power to lock
Locking monitoring	–	✔	–
Door monitoring	–	✔	✔
Locking force F_{Zh}			500 N (GS-ET-19)
Flexible actuator	3,150 N (EN ISO 14119)	–	–
Rigid actuator (frontal)	2,790 N (EN ISO 14119)	–	–
Rigid actuator (lateral)	2,700 N (EN ISO 14119)	–	–
With straight actuator	–	3,000 N (EN ISO 14119)	–
With angled actuator	–	1,100 N (EN ISO 14119)	–
With hinged actuator	–	2,000 N (EN ISO 14119)	–
Escape release	✔	✔	–
Connection type	Plug connector, M12, 8-pin	Plug connector, M12, 8-pin Plug connector, M12, 5-pin	Cable with plug M12, 5-pin Cable with female connector, M12, 5-pin Cable with plug M12, 8-pin
LED	✔	✔	✔

At a glance

flexLock	TR110 Lock	MLP1
• Innovative design: Open locking head with 180° actuation radius, rounded housing, bright LEDs (visible from three sides) • PL e for door and locking monitoring with low or high coding • IP67 and IP69K enclosure rating • High locking force: Up to 3150 N • Flexible actuator for high offset tolerance	• PL e for door and locking monitoring (EN ISO 13849) • Locking force: up to 3,900 N • Actuator with high coding level (EN ISO 14119) • Enclosure rating: IP67, IP69K • Power to lock or power to release variants • Three actuation directions • Optional emergency release • Variants with two illuminable pushbuttons	• Actuator with low or high coding level • Magnetic locking force: 500 N, retaining force: 25 N • PL e, category 4 (EN ISO 13849), SIL 3 (EN 61508) for door monitoring • Offset tolerance: ± 5 mm • Enclosure rating: IP67 • Standardized or integrated mounting • Variants with two M12 plug connectors for simple cascading

Detailed information	➜ www.sick.com/flexLock	➜ www.sick.com/TR110_Lock	➜ www.sick.com/MLP1

i14 Lock	i10 Lock	i200 Lock
Small electro-mechanical safety locking device with status LED	Tried-and-proven electro-mechanical safety locking device with door monitoring	Electro-mechanical safety locking device with door monitoring and status LED

Type 2, electro-mechanical (EN ISO 14119)	Type 2, electro-mechanical (EN ISO 14119)	Type 2, electro-mechanical (EN ISO 14119)
Low coding level (EN ISO 14119)	Low coding level (EN ISO 14119)	Low coding level (EN ISO 14119)
Electro-mechanical contacts	Electro-mechanical contacts	Electro-mechanical contacts
Power to release	Power to lock / power to release	Power to lock / power to release
✔	✔	✔
–	✔	✔
770 N (EN ISO 14119)	1,000 N (EN ISO 14119)	2,000 N (EN ISO 14119)
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
Cable gland, 1 x M20	Cable gland, 3 x M20 Plug connector, M12, 8-pin	Cable gland, 3 x M20
✔	–	✔

• Compact plastic housing • M20 x 1.5 cable entry gland • Power to release • Lock monitoring • LED locking indicator • Mechanical unlocking mechanism on three sides	• Narrow plastic housing • Rigid or mobile actuators • Available with M20 X 1.5 cable entry glands or Flexi Loop-compatible M12 plug connector (depending on variant) • Power to lock or power to release variants • Lock and door monitoring • IP 67 enclosure rating	• Compact plastic housing • Stainless steel entry for actuator • Either rigid, mobile or bolt actuators available • 3 M20 x 1.5 cable entry glands • Power to lock or power to release variants • Lock and door monitoring • LED locking indicator

➜ www.sick.com/i14_Lock	➜ www.sick.com/i10_Lock	➜ www.sick.com/i200_Lock

	i12S	i16S	i17S
	Small electro-mechanical safety switch with retaining force for doors	Compact electro-mechanical safety switch with retaining force for doors	Compact electro-mechanical safety switch with retaining force for doors

Technical data overview

Switch type	Safety switches with separate actuator	Safety switches with separate actuator	Safety switches with separate actuator
Number of positive action N/C contacts	1 / 2	1 / 2	2
Number of N/O contacts	1 / 0	1 / 0	1
Housing material	Plastic	Plastic	Plastic
Enclosure rating	IP67 (IEC 60529)	IP67 (IEC 60529)	IP67 (IEC 60529)
Switching principle	Slow action switching element	Slow action switching element	Slow action switching element
Connection type	Cable gland, 1 x M16 / plug connector, M12, 4-pin	Cable gland, 3 x M20 / plug connector, M12, 4-pin	Cable gland, 3 x M20

At a glance

• Narrow plastic housing • Rigid and mobile actuators • Available with M16 X 1.5 cable entry gland or Flexi Loop-compatible M12 plug connector (depending on variant) • Slow-action switching element with up to three contacts • IP 67 enclosure rating	• Compact plastic housing • Rigid and mobile actuators • Available with M20 X 1.5 cable entry glands or Flexi Loop-compatible M12 plug connector (depending on variant) • Slow-action switching elements with two contacts • High retaining force • IP 67 enclosure rating	• Compact plastic housing • Rigid or mobile actuators • 3 M20 x 1.5 cable entry glands • Slow-action switching elements with three contacts • IP 67 enclosure rating

Detailed information	➔ www.sick.com/i12S	➔ www.sick.com/i16S	➔ www.sick.com/i17S

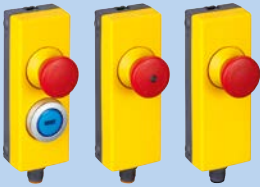| i110S	i10H	i10P, i10R	i110P, i110R
Rugged electro-mechanical safety switch with retaining force for doors	Electro-mechanical safety switch for door monitoring on the hinge	Compact electro-mechanical safety position switch with roller plunger or turning lever	Rugged electro-mechanical safety position switch with roller plunger or turning lever
Safety switches with separate actuator	Safety hinge switches	Safety position switches	Safety position switches
2 / 3	1 / 2	2	1 / 2 / 3
2 / 0 / 1	1	1	1 / 2
Metal	Plastic	Plastic	Metal
IP67 (IEC 60529)	IP67 (IEC 60529)	IP66 (IEC 60529)	IP66 (IEC 60529)
Slow action switching element	Slow action switching element	Slow action switching element	Snap action switching element / slow action switching element
Cable gland, 1 x M20 / plug connector, M12, 4-pin	Cable gland, 1 x M16	Cable gland, 1 x M20	Cable gland, 1 x M20

• Standardized metal housing • Rigid or mobile actuators • Available with M20 X 1.5 cable entry gland or Flexi Loop-compatible M12 plug connector (depending on variant) • Slow-action switching elements with four contacts • IP 67 enclosure rating	• Standardized plastic housing • Stainless steel solid shaft with Ø 10 mm • 1 cable entry M16 x 1.5 • Slow action switching element with up to 3 contacts • Adjustable switching point • IP67 enclosure rating	• Standardized plastic housing • Roller plunger with plastic roller / turning lever with plastic roller • 1 M20 x 1.5 cable entry gland • Slow-action switching elements with three contacts	• Standardized metal housing • Roller plunger with stainless steel roller / 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

| ➜ www.sick.com/i110S | ➜ www.sick.com/i10H | ➜ www.sick.com/i10P
➜ www.sick.com/i10R | ➜ www.sick.com/i110P
➜ www.sick.com/i110R |

	ES11	ES21	ER12
	Reliable emergency stop pushbutton with optional reset pushbutton	Emergency stop pushbutton for fast and reliable stopping of the machine	Reliable button for machine commands

Technical data overview

	ES11	ES21	ER12
Switch type	Emergency stop pushbutton	Emergency stop pushbutton	Reset pushbutton / dual push-button
Number of positive action N/C contacts	2	1 / 2 / 3	–
Number of N/O contacts	0 / 1	0 / 1	1 / 2
Housing material	Plastic	Plastic	Plastic
Enclosure rating	IP65 (EN 60529)	IP65 (IEC 60529) IP54 (IEC 60529)	IP65 (EN 60529)
Emergency stop pushbutton (illuminable)	✔	✔	–
Pushbuttons (illuminable)	✔	–	✔
Connection type	Plug connector, M12, 4-pin / plug connector, M12, 8-pin	Cable gland, 2 x M20	Plug connector, M12, 4-pin / plug connector, M12, 5-pin / plug connector, M12, 8-pin
Suitable for muting applications (with UE403)	–	–	✔
Suitable for reset/override applications (with deTec4)	–	–	✔

At a glance

	ES11	ES21	ER12
	• Slim plastic housing with quick disconnect mounting clip • Available as an emergency stop pushbutton or as a combined emergency stop/reset unit • Emergency stop pushbutton with optional LED illumination • Illuminated reset pushbutton • Flexi Loop-compatible M12 plug connector	• Available either as a surface-mounted version with housing or as a built-in version (Ø 22 mm) • Built-in version for machine control panels with self-monitoring contacts between pushbutton and switching element • Surface-mounted version for direct mounting on different machines and systems • Variants with LED ring lighting • Optionally available with protective collar to prevent inadvertent actuation	• Thin housing with snap-lock connection • Illuminable pushbuttons • Lock function • M12 plug connector

| Detailed information | ➜ www.sick.com/ES11 | ➜ www.sick.com/ES21 | ➜ www.sick.com/ER12 |

	i110RP	i150RP	E100
	Safe rope pull switch over large distances for stopping a machine	Safe rope pull switch over extra large distances for stopping a machine	Enabling switch for safety during setup or maintenance operation
	Rope pull switch	Rope pull switch	Enabling switch
	2 / 3	2 / 3	2
	2 / 0 / 1	2 / 0 / 1	2
	Metal	Metal	Plastic
	IP66 (IEC 60529)	IP65 (IEC 60529)	IP67 (EN 60529) IP65 (EN 60529)
	–	–	–
	–	–	–
	Cable gland, 1 x M20 / plug connector, M12, 4-pin	Cable gland, 3 x M20 / plug connector, M12, 4-pin	Cable open end
	–	–	–
	–	–	–

i110RP	i150RP	E100
• Rope lengths up to 30 m, with rope break and rope pull function • Metal housing with integrated rotary unlocking lever and tension display • Available with M20 X 1.5 cable entry gland or Flexi Loop-compatible M12 plug connector (depending on variant) • Slow-action switching elements with four contacts • Complies to the standards EN ISO 13850 and IEC/EN 60947-5-5	• Rope lengths up to 75 m, with rope break and rope pull function • Metal housing with integrated emergency stop push button and tension display • Rotary unlocking lever • Available with M20 X 1.5 cable entry gland or Flexi Loop compatible M12 plug connector (depending on variant) • Slow-action switching elements with four contacts	• 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

→ www.sick.com/i110RP   → www.sick.com/i150RP   → www.sick.com/E100

	MB1
	Rugged mechanical bolt for safety switches

Technical data overview	
Installation tolerance (horizontal)	3 mm ... 30 mm
Model	
Catch release button/ANSI-compliant locking mechanism	✔
Escape release	✔
Frame plate with latching function	✔
Suitable for	i10 Lock safety locking device i110 Lock safety locking device TR110 Lock safety locking device RE1 non-contact safety switch STR1 non-contact safety switch TR10 Lock safety locking device

At a glance	
	• Rugged design • Variants with ANSI-compliant locking mechanism • Standardized frame plates suitable for many safety switches from SICK • Horizontal installation tolerance of 27 mm • Compensation of vertical door offset up to ± 7 mm • Variants with catch release button and emergency release

Detailed information	➔ www.sick.com/MB1

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SICK AT A GLANCE

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Detailed addresses and further locations ➜ **www.sick.com**

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