

Safety

Switches, proximity sensors, locking devices and command devices

Safety at Leuze



Safety starts with the switch

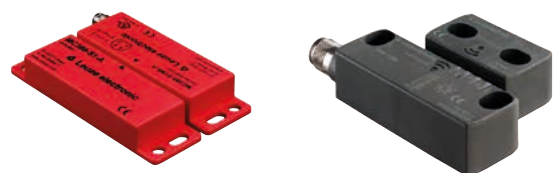
Our safety switches and safety locking devices offer solutions for all applications where doors, flaps and covers are monitored. They ensure the safety of persons and make sure that processes run smoothly.

Safety switches

Safety switches monitor the closing state of doors, flaps and covers. The devices of the S20 and S200 series with their robust housings and wide range of installation options can be used universally. The S300 position switches monitor the reaching of final positions. Variants with plunger and various actuators enable optimum adaptation to the installation situation. And the S400 hinge switches unite the safety switch and door hinge functions in one component.

Safety proximity sensors

With their encapsulated and contactless design, safety proximity sensors are insensitive to contamination and humidity. They operate free from wear and also have a long life expectancy, even with frequent operating cycles. They are also used wherever it is difficult to precisely guide the moveable protective device. All devices feature a high-strength plastic housing. Furthermore, the RD800 series with RFID transponder provides maximum protection against tampering.



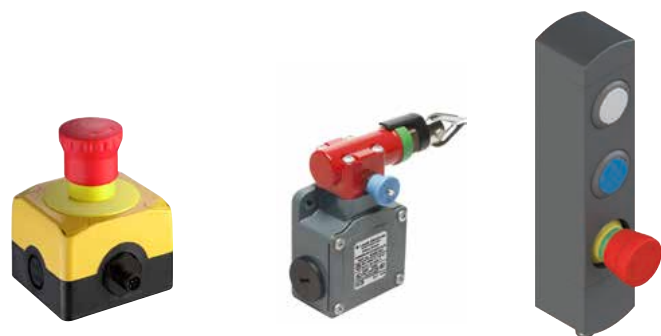
Safety locking devices

Safety switches with locking device keep doors locked and thus prevent unauthorized entry or access, thereby protecting persons and processes. The L series features a wide range of variants for different application cases, from devices with mechanical actuators to devices with an RFID-coded actuator for maximum manipulation protection as well as integrated command buttons. All devices are characterized by their robust design for harsh industrial applications.



Safety command devices

For stopping in emergencies, EN ISO 12100-1 stipulates protective devices and supplementary protective measures such as E-Stop buttons or emergency E-Stop rope switches. The E-Stop buttons are used wherever it makes sense to be able to enter a stop command at a specific location. E-Stop rope switches are used for larger danger zones.



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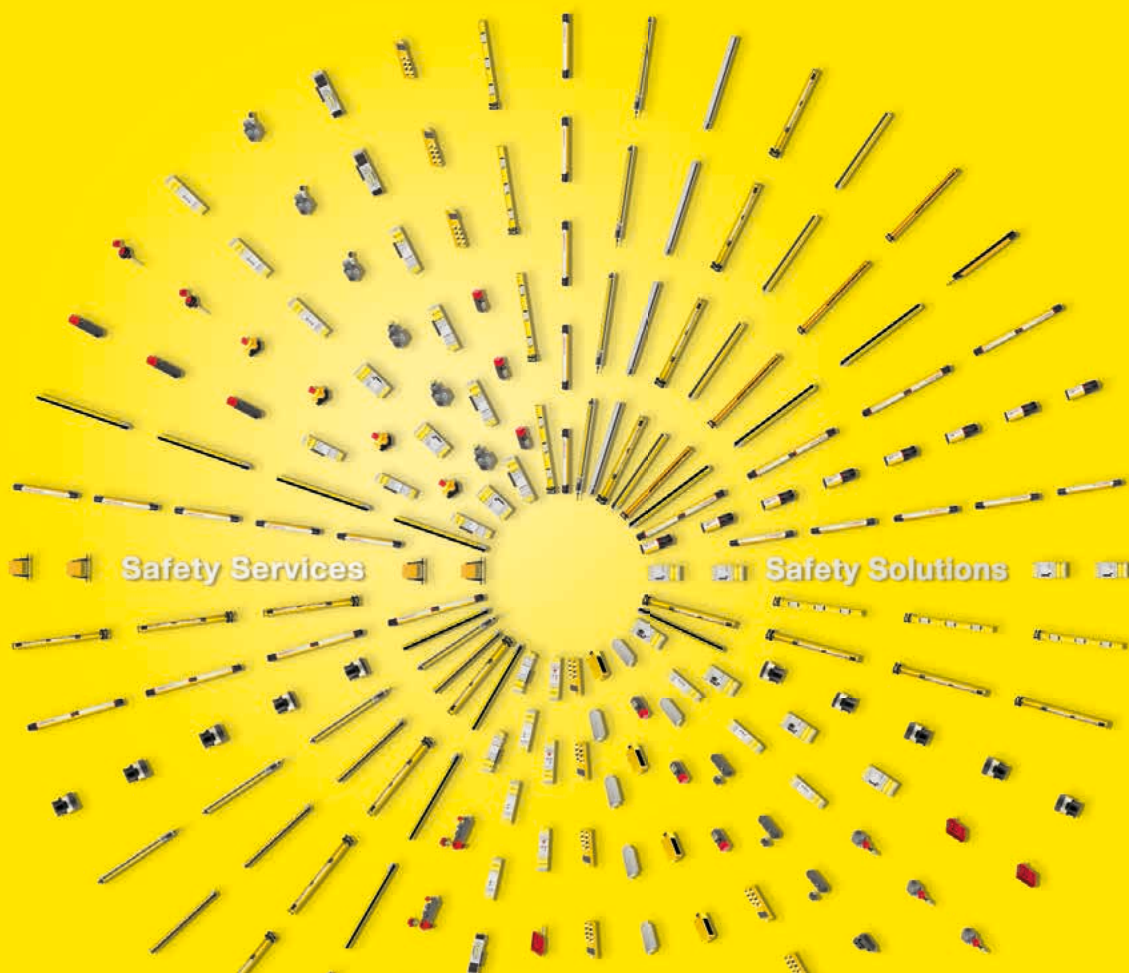
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Safety at Leuze

Safety Thought Further.
For all your safety applications worldwide.

Global industry is in a constant state of change. And with it, the complex requirements for safety concepts to protect people and systems. At the same time, the importance of smooth process is growing constantly as a result of automation and networking.

Our driving force is the desire to guarantee you gapless safety, efficient material flow and maximum availability at all times. This is why we have bundled our expertise in machine safety into one portfolio: Safety at Leuze.





Experts for your application

Effective solutions begin with a comprehensive understanding of the relevant requirements. Our specialized application know-how and many years of experience in our core industries mean that we can offer a unique insight into safety-related applications. Coupled with extensive knowledge of norms and standards, we provide you with targeted answers that are able to solve even complex challenges effectively and efficiently.



Everything from a single source

Individual requirements need flexible solutions. Our high-quality products and intelligent systems as well as competent technical advice and support form the basis of our safety portfolio. Benefit from our extensive range of products. The diversity of our portfolio means that we are able to provide you with all components, from sensor to control, from a single source – all with maximum user-friendliness and all optimally matched to each other.



Experienced safety specialists

Sustainable machine safety begins with professional planning of the safety systems. It spans the entire lifecycle of a machine. Let our experienced and certified safety experts support you with competent advice. Take advantage of over 30 years of experience in machine safety and the passionate commitment of the Sensor People.



Innovative safety

New challenges call for innovative approaches. We are constantly developing new products and system solutions in order to meet existing requirements even better and to meet new challenges effectively. Particularly in the area of optical sensors, new technological concepts mean that we are able to set milestones again and again. From the very first photoelectric safety sensor to concepts such as Smart Process Gating – we actively shape the advances made in industry.

Applications

Safe monitoring of guards

Monitoring of doors and flaps

Requirement: Moving protective devices such as doors and flaps protect the operator from hazards. The closed state of the protective devices must be monitored.



Solution: The safety switches of the S20/200 series with their robust housings and wide range of installation options can be used universally. The contactless, magnetically coded switches of the MC series are ideal for use in harsh, dirty or damp environments.

Monitoring of doors and flaps, with high protection against manipulation

Requirement: The closed state of safety guards such as doors or flaps must be monitored. EN ISO 14119 stipulates that measures to protect against manipulation must also be provided. If this is not possible through constructive measures, the sensor must have a high level of protection against manipulation.



Solution: The RD 800 contactless safety transponders with RFID coding offer maximum protection against manipulation. With their OSSD outputs, they are also easy to integrate in the safety circuit.

Monitoring of doors and flaps, with guard locking for long stopping times

Requirement: Areas with hazardous movements can be entered via safety doors to allow maintenance. If the movement does not stop immediately after the door is opened, the door is to be guarded by a safety switch with locking device.



Solution: The robust L series safety switches with guard locking keep safety doors securely locked until access is released by an electric signal. The series includes standard designs, devices with integrated operational controls as well as devices with RFID-coded actuators.

Monitoring of doors and flaps, with guard locking device for process protection

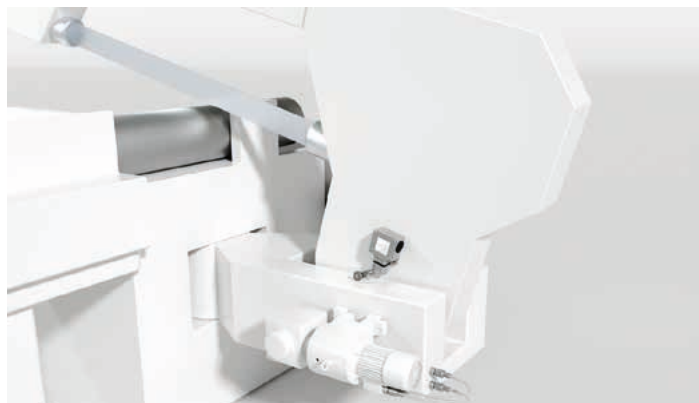
Requirement: When doors or flaps are opened, the process is allowed to stop only at defined positions in order to avoid scrap or maintenance work when the process starts up again. The doors or flaps are to be released only when these positions are reached.



Solution: The L series safety switches with guard locking keep safety doors locked until the process control sends an electric release signal.

Safe monitoring of final positions

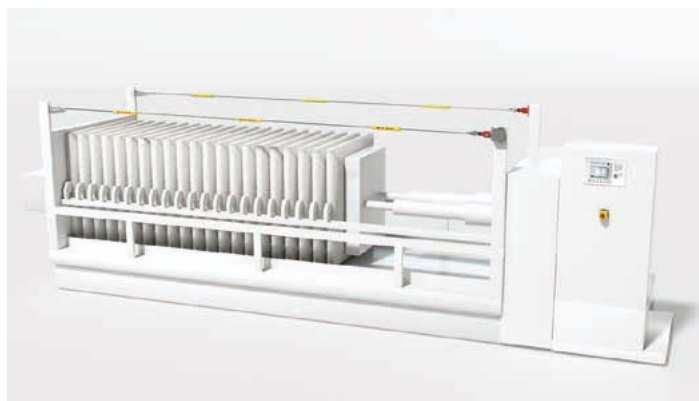
Requirement: To trigger shutdown at the end of the cutting process or for service work, it is necessary to monitor when the saw blade reaches the final position.



Solution: The S300 position switch monitors when the final position is reached. Variants with plunger and various actuators make the device suitable for universal use. With its forced normally closed contacts, the S300 can also be directly integrated into the safety circuit.

Triggering of an emergency stop

Requirement: Machines and systems with dangerous movements must be equipped with an E-Stop device. This device can be actuated manually in the event of danger.



Solution: The ESB 200 E-Stop button is used wherever it makes sense to be able to enter a stop command at a specific location. The ERS 200 E-Stop rope switch is used for larger danger zones.

S20 / S200

Safety switches with separate actuator

Owing to their robust housings and wide variety of installation options, the S20 and S200 series safety switches with separate actuator can be used universally. They have five different approach directions for the actuator. Thanks to the funnel-shaped insertion opening, the actuator is centered and the reliability in operation increased. Different contact configurations, connection via cable or connector and a broad range of actuators offer the right solution for your application.



Advantages for you

- Low-cost solutions for monitoring doors and flaps
- Thanks to their positive opening contacts, all devices can be easily integrated into a safety circuit
- 5 actuator approach directions enable simple adaptation to different installation situations
- Avoidance of unwanted machine downtimes through generously dimensioned actuator play in the actuator head

Areas of application

- Monitoring of doors and flaps

S20 / S200

Properties

Type 2 interlock device without guard interlocking in acc. with EN ISO 14119

S20: technopolymer housing / S200: metal housing, both with degree of protection IP 67

Actuator with mechanical tongue and low coding level in acc. with EN ISO 14119

Positive-opening contacts for integration in a safety circuit

Easy mounting with standard construction

The head can be adjusted in 90° increments. In combination with entry from above, 5 approach directions are available for the actuators.

Up to 8 different actuators

High-quality silver contacts for long life expectancy

Wide range of actuators – Reliable operation



A wide range of actuators ensures that the appropriate installation option is always available for your machine or system. For all actuators, the switches have generously dimensioned play of up to 4.5 mm in the actuator head. As a result, slight movements of the protective device do not lead to unwanted machine downtimes.

S300

Safety position switches

The S300 safety position switches monitor the reaching of final positions. They are used for position monitoring on machines or as an alternative to hinge switches. The position switches have a metal housing, degree of protection IP 67 and are available with various contact sets. Variants with plunger and various actuators enable optimum adaptation to the installation situation.



Advantages for you

- With up to 4 actuator approach directions and 3 cable entries, the devices can be easily mounted in a wide variety of installation situations
- Thanks to their positive opening contacts, all devices can be easily integrated into a safety circuit
- Optimum adaptation through adjustable actuator angle in 10° grid
- Easy adjustment of the switching point using a standard screwdriver

Areas of application

- Monitoring of doors and flaps
- Safe monitoring of final positions

Always the right solution



S300

Properties

Type 1 interlock device without guard interlocking in acc. with EN ISO 14119
Technopolymer and metal housing, degree of protection IP 67
Actuation by unencoded cam in acc. with EN ISO 14119
Positive-opening contacts for integration in a safety circuit
Universal use thanks to individually set actuator approach directions and actuator angles in 10° grid
Switching direction selectable
Variants with plunger actuator and various roll actuators
Extremely durable and robust

Different actuators allow easy adaptation to the respective installation situation. Furthermore, the approach direction and angle of the actuator can be adjusted at the switch.

S400

Safety hinge switches

The S400 safety hinge switches monitor the closing state of guards that can rotate, such as protection hoods or flaps. They unite the safety switch and door hinge functions in a single component with appealing design. As a result, they are recognizable as safety devices to specialist technicians only. Available as a second fastening element are passive hinges in the same design. The S410 variants with wide mounting fork are specially suitable for use on delicate glass or plastic components.



Advantages for you

- High protection against manipulation through switching function being encapsulated in the device
- Switching point easily adjustable using a screwdriver
- Repeatable setting (switching angle alignment) with skewed or misaligned doors
- Thanks to their positive opening contacts, all devices can be easily integrated into a safety circuit
- Flexible connection via cable or M12 connector
- The hidden screws on the rear side and the rear-side connection for concealed cable routing provide the possibility of creating machines and systems with attractive design

Areas of application

- Monitoring of doors and flaps
- Manipulation protection integrated in the sensor is necessary

S400

Properties	Type 1 interlock device without guard interlocking in acc. with EN ISO 14119
	Metal housing, degrees of protection IP 67 / IP 69K
	Actuation by encapsulated position switch inside hinge, high level of protection against manipulation
	Positive-opening contacts for integration in a safety circuit
	Concealed cable routing thanks to connection on rear side
	180° maximum opening angle of the protective device
	Adjustable switching point
	Model S410 with wide fork dimension for special materials, e.g. glass
	Optional additional hinges (without contacts, mechanical function only)



MC 300

Safety proximity sensors

Magnetically coded

Owing to their enclosed design and contact-free operating principle, the MC 300 magnetically coded proximity sensors are ideal for use in harsh, dirty and damp environments. The cubic and cylindrical designs enable use in many different applications.



Advantages for you

- Wear-free operation and long life expectancy, even with frequent operating cycles
- For use in dusty, dirty and damp environments
- Flexible use thanks to different designs, contact configurations and connections

Areas of application

- Monitoring of doors and flaps

MC300

Properties	Type 4 interlock device / contactless actuation, in acc. with EN ISO 14119
	High-strength plastic housing, degree of protection IP 67
	Actuator with low coding level in acc. with EN ISO 14119
	Models with additional signal contact and status LED
	Connection via cable or M8 / M12 connector
	Wide temperature range from –20 ... 70°C

RD 800

Safety proximity sensors

RFID-coded



The RD 800 safety transponders with RFID-coded actuator offer optimum tampering protection. Extra installation measures to protect against tampering are therefore no longer necessary. Even with just one device, the RD 800 achieve performance level PL e in accordance with EN ISO 13849-1. The OSSD outputs make it easy to integrate the devices in the safety circuit.

Advantages for you

- Wear-free operation and long life expectancy, even with frequent operating cycles
- The RFID-coded actuators offer optimum protection against manipulation. Extra installation measures are therefore no longer necessary.
- Performance level e in accordance with EN ISO 13849-1 is already achieved with just one device
- Wide operating area from various directions:
 - for maximum flexibility when installing
 - supports applications with large tolerances
 - ensures reliable operation, even if mechanical properties change over time

Areas of application

- Monitoring of doors and flaps
- Manipulation protection integrated in the sensor is necessary

LEDs for fast status information and diagnosis



RD 800	
Properties	Type 4 interlock device / contactless actuation, in acc. with EN ISO 14119
	High-strength plastic housing, degrees of protection IP 67 / IP 69K
	Actuator with low or high coding level in acc. with EN ISO 14119
	Performance level PL e, category 4 in acc. with EN ISO 13849-1 with a single device
	OSSD safety outputs, series connection possible
	Laser inscription, permanently legible even under harsh conditions
	LEDs for status display on sensor and signaling output
	Models with programming input for teaching-in actuators
	Connection via cable or M12 connector

The integrated LEDs allow easy reading of the sensor status. It can thus be quickly recognized whether the device is active or the door is open, and at which point the safety chain has been interrupted. Internal device information is also clearly visible.

L100

Safety locking devices

The versatile L100 safety locking device is used both for personnel safety as well as for machine protection. Six different heavy-duty actuators support use in various mounting conditions. The devices are available as variants with electromagnetic and spring-force-actuated locking type.



Advantages for you

- Low-cost solution for monitoring and guard locking of doors and flaps
- Easy adaptation to different installation situations thanks to the standard construction, 6 different heavy-duty actuators and cable entry in 3 directions
- Avoidance of unwanted machine downtimes through generously dimensioned actuator play in the actuator head
- Thanks to their positive opening contacts, all devices can be easily integrated into a safety circuit

Areas of application

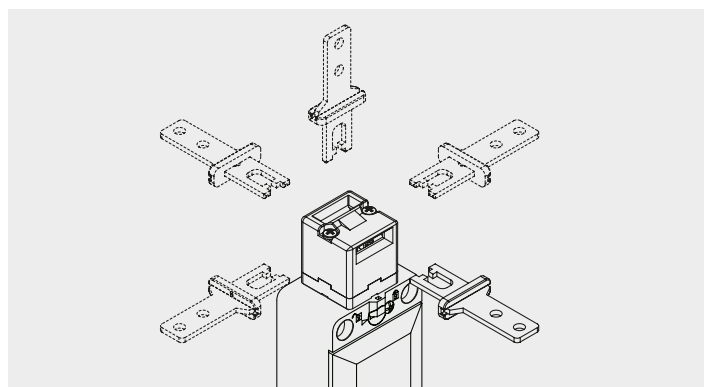
- Monitoring of doors and flaps with locking device, for long stopping times

L100

Properties

Type 2 interlock device with guard interlocking in acc. with EN ISO 14119
Mechanical tongue with low coding, 6 different actuators
Positive-opening contacts for integration in the safety circuit
Models with electromagnetic or spring-force-actuated locking type
For safety applications up to performance level PL e / SIL 3
Locking force 1,100 N
Technopolymer housing with degree of protection IP 67
In the unlocked state, the low locking force of 30 N holds the protective device in position so that it does not open by itself
Cable entries in 3 directions for maximum flexibility, e.g. in constrained spaces and with series connection

Five approach directions for flexible use



Owing to the adjustable alignment of the head in 90° increments and the additional entry from above, the device can be used with five different approach directions for the actuator. This means that just one item is required for different installation situations. For all actuator models, the devices have generously dimensioned play of up to 4.5 mm in the actuator head. As a result, slight movements of the protective device do not lead to unwanted machine downtimes.

L200

Safety locking devices

The L200 safety locking device is designed for high mechanical stress in harsh environments. It is used for heavy-duty applications on large machines and systems as well as at large protective doors and sliding gates. The optional emergency unlock function (panic button) allows the protective device to be opened manually in an emergency.



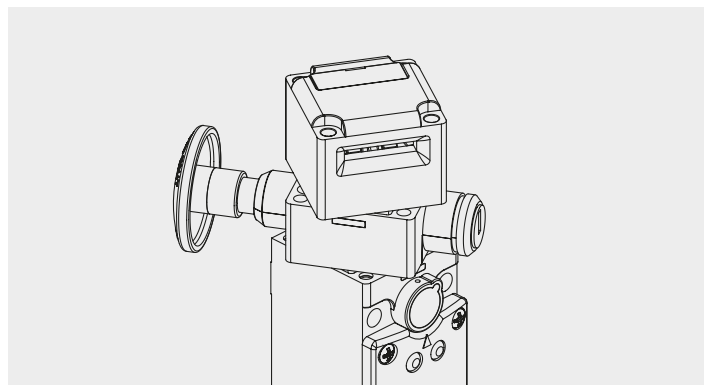
Advantages for you

- Heavy-duty access guarding for use on large machines and systems in harsh ambient conditions
- Easy adaptation to different installation situations thanks to the standard construction, 6 different actuators and cable entry in 3 directions
- Optional escape unlocking function (ergonomically optimized panic button) for manually opening the protective devices in the event of an emergency
- Avoidance of unwanted machine downtimes through generously dimensioned actuator play in the actuator head
- Thanks to their positive opening contacts, all devices can be easily integrated into a safety circuit

Areas of application

- Monitoring of doors and flaps with locking device, for long stopping times

Always flexible – also with escape unlocking



L200	
Properties	Type 2 interlock device with guard interlocking in acc. with EN ISO 14119
	Mechanical tongue with low coding, 6 different actuators
	Positive-opening contacts for integration in the safety circuit
	Models with electromagnetic or spring-force-actuated locking type
	For safety applications with performance level up to PL e/SIL 3
	Locking force 2,800 N
	Metal housing with degree of protection IP 67
	In the unlocked state, the low locking force of 30 N holds the protective device in position so that it does not open by itself
	Cable entries in 3 directions for maximum flexibility, e.g. in constrained spaces and with series connection
	Escape unlocking function through ergonomically optimized panic button
	LED display unit for on-site diagnosis

The escape release button allows the operator to leave the danger zone at all times, e.g. even in the event of a power outage. For maximum flexibility when installing the devices, the button like the head can be rotated in four directions.

L250

Safety locking devices with RFID coding

The robust L250 safety locking devices for safety applications up to PL e / SIL 3 are used for safeguarding safety doors on machines and systems. Using modern RFID technology, these devices offer maximum tamper protection (type 4 according to EN ISO 14119) and are easy to integrate. With a locking force of up to 2,100 N and a compact, easy-to-clean technopolymer housing, the devices of the L250 series can be used universally and provide an economical solution for personal and process protection.



Advantages for you

- The RFID-coded actuators offer optimum protection against manipulation. Extra installation measures are therefore no longer necessary.
- Thanks to their OSSD safety outputs, all devices can be easily integrated into a safety circuit
- Simple mounting and modern design:
Matching door handle and lockout-tagout functionality as well as matching command device with E-Stop button enable easy mounting of complete safety functions at safety doors in a modern design

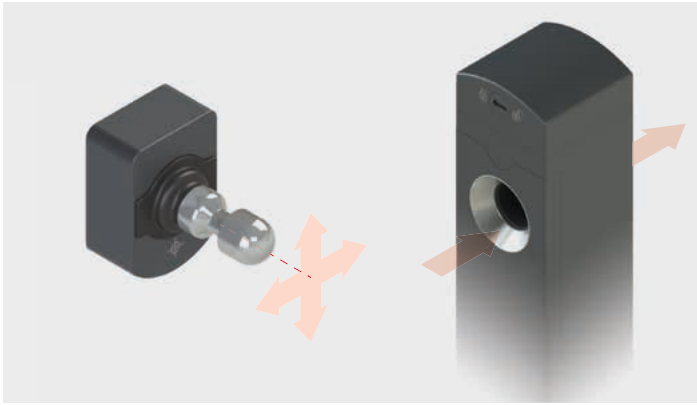
Areas of application

- Monitoring of doors and flaps, with locking device for long stopping times (personnel protection)
- Monitoring of doors and flaps, with locking device for process protection

L250

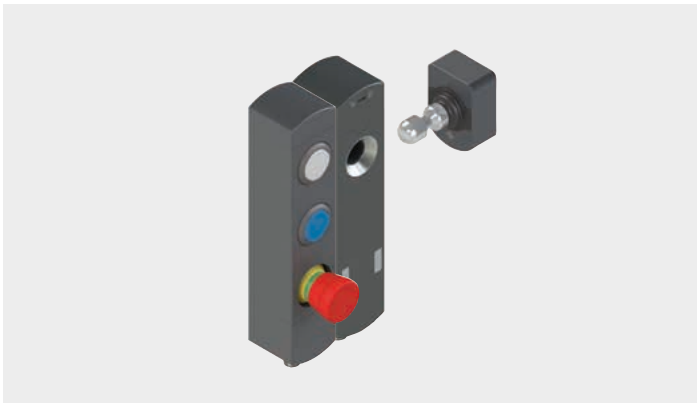
Properties	Type 4 interlock device with guard interlocking in acc. with EN ISO 141199
	RFID-coded actuator for maximum protection against manipulation
	OSSD safety-related switching outputs
	Performance level PL e/SIL 3 with one device
	Locking force 2,100 N for universal use on small to medium-sized safety doors
	Compact and easy-to-clean technopolymer housing with degree of protection IP 67 / IP 69K
	Escape unlocking function through integrated panic button, ergonomically optimized
	In the unlocked state, the low locking force of 20 N holds the protective device in position so that it does not open by itself
	6 LEDs for fast diagnosis at the device
	3 activation modes
	Variable installation through 3-sided attachment as well as flexible alignment of connection cable, auxiliary release and panic button in 90-degree increments
	Accessories: Lockout-tagout device, remote escape unlocking button with 5 m cable, door handle, command devices (matched in design and function)

Designed for reliable operation



The joint at the actuator and the large, chamfered opening on the device minimize the risk of collision between the sensor and actuator and prevents damage even with imprecisely closing doors. The unobstructed opening allows accumulated dirt to be simply pushed out on the rear side. The special design thus guarantees maximum reliability and availability.

Fully safeguarded



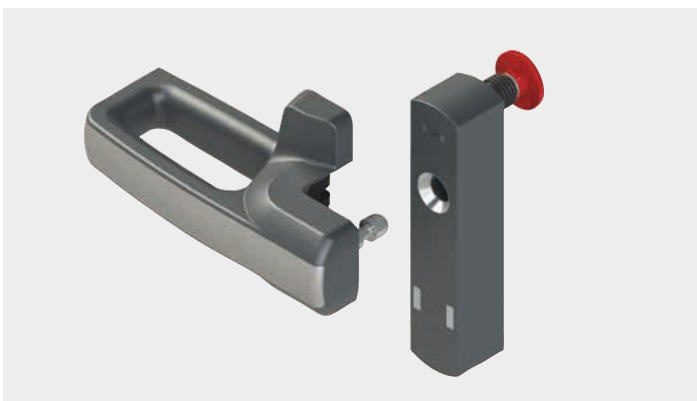
The optional CD-B command devices simplify the setup of safety functions at safety doors. The command device and locking device have the same design with identical dimensions. This results in modules that are optimally matched both in terms of appearance and function. With the integrated buttons for request, reset and emergency stop the modules offer complete solutions for a safety installation at access doors.

Lockout-tagout



The full-metal lockout-tagout device prevents operating personnel from being locked inside the danger zone by using individual padlocks. For this purpose, the red slider is pushed upward and the lock inserted. This mechanically locks the opening and additionally shields RFID detection of the actuator. Up to 5 padlocks with 3.5 mm shackle can be inserted into the elongated eyelet.

Robust door handle in attractive design

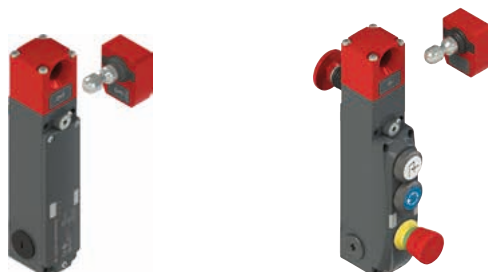


The AC-L250-SH2 door handle impresses with its robust, modern and ergonomic design. The fastening screws are concealed by snap-in protection caps. This prevents the accumulation of dirt and simplifies cleaning. Furthermore, the protection against manipulation means that standard screws can be used – special safety screws are not necessary. The handle is suitable both for use on swing doors (hinges on right or left) and for use on sliding gates (opening to left or right).

L300

Safety locking devices with RFID coding

The robust L300 safety locking devices for safety applications up to PL e/SIL 3 are used for safeguarding safety doors on machines and systems. Complete safety functions are easy to implement with the integrated command and emergency stop buttons. Using modern RFID technology, the L300 series offers maximum protection against manipulation (type 4 according to EN ISO 14119) and is easy to integrate. With a locking force of up to 9750 N and the robust metal housing, the devices are particularly suitable for use on heavy doors and in tough environments.



Advantages for you

- The RFID-coded actuators offer optimum protection against manipulation. Extra installation measures are therefore no longer necessary.
- With a locking force of up to 9,750 N, doors remain securely locked even under extreme loads
- Thanks to their OSSD safety outputs, all devices can be easily integrated into a safety circuit
- Integrated command and E-Stop buttons, matching door handles and the lockout-tagout functionality enable complete safety functions to be easily installed at safety doors

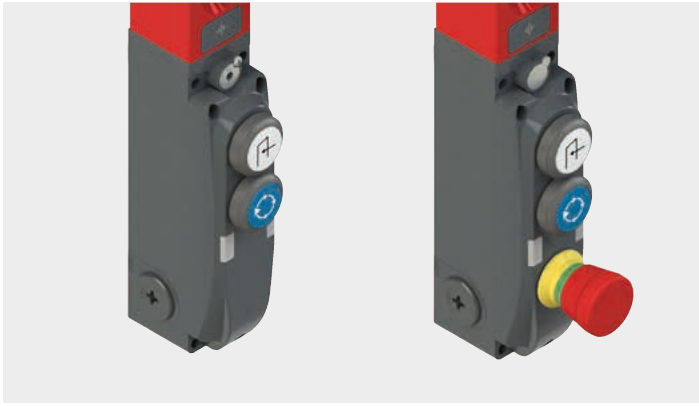
Areas of application

- Monitoring of doors and flaps, with locking device for long stopping times (personnel protection)
- Monitoring of doors and flaps, with locking device for process protection

L300

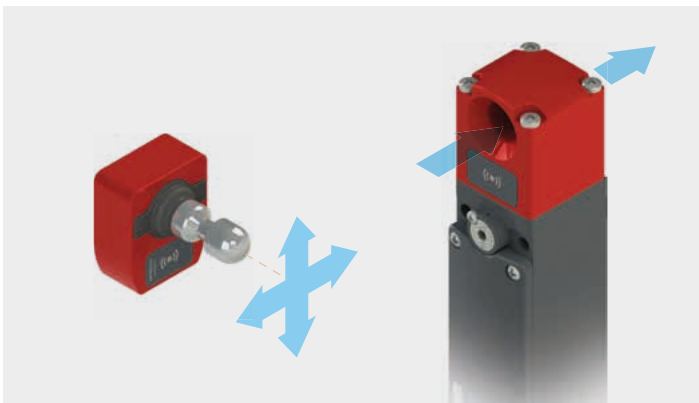
Properties	Type 4 interlock device with guard interlocking in acc. with EN ISO 14119
	RFID-coded actuator for maximum protection against manipulation
	OSSD safety-related switching outputs
	Performance level PL e/SIL 3 with one device
	Locking force 9,750 N for use even under extreme loads
	Robust metal housing with degree of protection IP 67 / IP 69K for use in harsh environments
	Escape unlocking function through integrated panic button, ergonomically optimized
	In the unlocked state, the low locking force of 30 N holds the protective device in position so that it does not open by itself
	6 LEDs for fast diagnosis at the device
	Variable installation thanks to flexible alignment of device head and escape release button in 90° increments
	Integrated command and E-Stop buttons for easy implementation of complete safety functions at safety doors
	Accessories: Lockout-tagout device, door handle

Complete guarding with just one device



The optional command buttons of the L300 safety locking device simplify the setup of safety functions at safety doors. With the integrated buttons for request, reset and emergency stop, the compact device provides a complete solution for the safety system installation at an access door. This simplifies wiring and saves space.

Designed for reliable operation



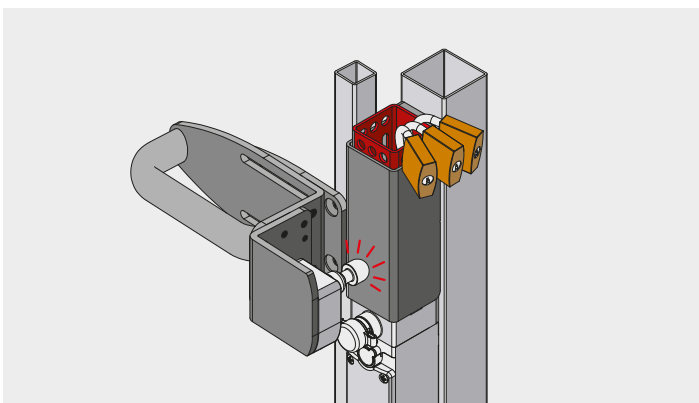
The joint at the actuator and the large, chamfered opening on the device minimize the risk of collision between the sensor and actuator and prevents damage even with imprecisely closing doors. The unobstructed opening allows accumulated dirt to be simply pushed out on the rear side. The special design thus guarantees maximum reliability and availability.

Escape unlocking with panic button



The optional escape release button (panic button) enables the actuator to be unlocked immediately and the door to be opened from inside the danger zone. The ergonomically optimized button allows the operator to then leave the danger zone if he is inadvertently locked inside. The device also functions if the power supply fails.

Door handle and lockout-tagout



The AC-L300-SH adjustable door handle, which can be mounted on the right or left, ensures quick and easy installation of the L300 safety locking device on swing doors and sliding gates. The extremely robust metal construction supports the benefits of door centering by means of the joint on the actuator. The AC-L300-SH2 door handle offers a design-optimized alternative (see the illustration at the bottom of page 17). The optional lockout-tagout device prevents operating personnel from being locked inside the danger zone by using individual padlocks. For this purpose, the safety mechanism is pushed downward and the lock inserted. This mechanically locks the opening and additionally shields RFID detection of the actuator.

ESB 200 E-Stop button

ERS 200 E-Stop rope switch

For stopping in emergencies, EN ISO 12100-1 stipulates protective devices and supplementary measures such as E-Stop buttons or emergency rope switches. The ESB 200 E-Stop button is used wherever it makes sense to be able to enter a stop command at a specific location. The ERS 200 E-Stop rope switch is used for larger danger zones.



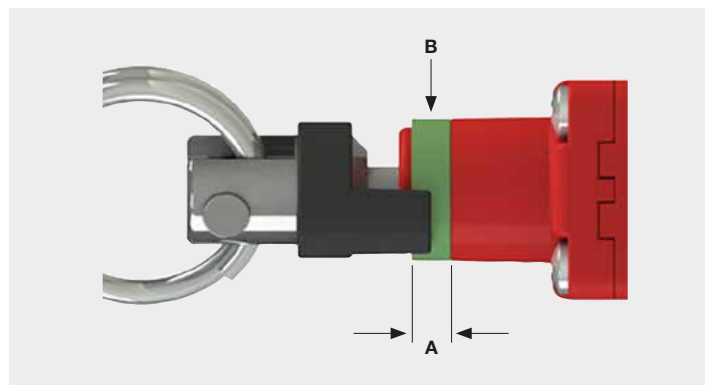
Advantages for you

- The ESB 200 E-Stop button in the surface-mounted version with screw terminals or M12 connection can be used universally and is easy to install
- The ERS 200 E-Stop rope switches are available with left-pull actuation, right-pull actuation and actuation along the longitudinal axis and thus can always be integrated at the optimum position in the machine

Areas of application

- Triggering of an emergency stop

Simple mounting and matching accessories



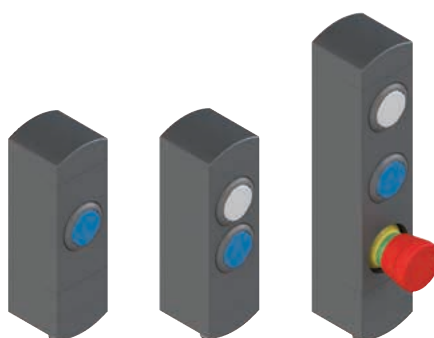
	ESB 200 E-Stop button	ERS 200 E-Stop rope switch
Properties	Surface-mounted variant for universal use	Clicks in on both sides with positive-opening contacts
	2 safety circuits, 1 signal circuit	Easy alignment with switching point indicator
	Optionally with key release	Easy integration thanks to cable entries on 3 sides
	Connection with screw terminals and M12 connector	Compact metal housing, degree of protection IP 67
	Ergonomically optimized	Reset button with status display
	Degree of protection IP 67 and IP 69K	Temperature compensation for longer rope lengths
		Accessories: Steel rope, clamping bolts, rope end piece, deflection rollers, rope labeling 'STOP'

The rope switches have a green ring (A), which indicates the correct rope tensioning range. The rope only needs to be tensioned until the black tension indicator reaches the middle of the ring (B). If the indicator leaves the green area as a result of tension or loosening, the safety contacts are opened. Matching accessories such as steel rope, clamping bolts, deflection rollers and the attachable rope labeling with 'STOP' print make installation of the E-Stop devices easy.

CD-B

Command devices

The CD-B modular command devices can be used both standalone and in combination with safety sensors, e.g. for inputting a reset request or triggering an emergency stop. Combination with L250 series locking devices in particular provides perfectly matched modules, both in terms of appearance and function: both devices have the same design and identical dimensions.



Advantages for you

- Compact devices with small dimensions for easy and flexible integration in machinery and systems
- The flush-fitted command buttons prevent inadvertent triggering and impress with their attractive design

Areas of application

- Inputting of commands, e.g. request for a reset or for opening a door with locking device
- Triggering of an emergency stop
- Combined with L250 locking devices: perfectly matched modules in terms of function and appearance

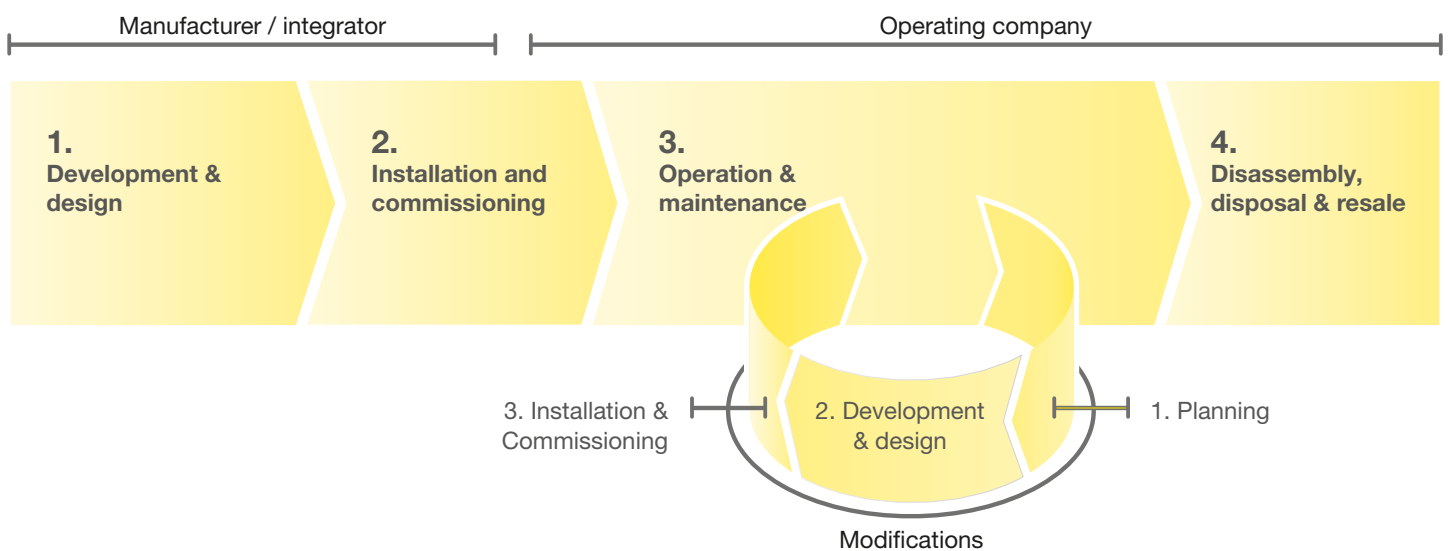
CD-B

Properties	Shock-resistant technopolymer housing, glass fiber reinforced and self-extinguishing
	Compact dimensions with minimal housing width (40 mm)
	Models with 1 or 2 command buttons and with E-Stop button
	Dimensions and design identical to L250 series locking devices

Machine Safety Services

Sustainable machine safety begins with professional planning of the safety systems and spans the entire lifecycle of a machine. Our teams of experienced and certified experts offer the appropriate support here.

Stages of a machine life cycle



When designing and constructing machines, we create the safety-related concept together with you and support you in its realization. During operation, we regularly perform tests to ensure the permanent function of the safety systems. If changes are made to existing machines, we provide you with support on everything from the safety-related planning to renewed commissioning.

Through our services, you benefit from our many years of experience in the area of machine safety and our extensive industry and application knowledge. Efficient safety-related solutions for every phase of a machine's life cycle are thereby created together.

Our service offerings



Status check "safety technology on machines and systems"

- Our experts analyze the safety-related condition of your machinery and check whether the current safety-related requirements are satisfied in accordance with the current state of the art.
- In the event of deviations, we provide recommendations on what corrections can be performed so as to comply with legal requirements.



Risk assessment and hazard assessment

In accordance with applicable directives, the manufacturer of a machine is required to perform a risk assessment. This also applies in the case of significant modifications or extensions of machines.

The national regulations for the operation of machines require employers to conduct a hazard assessment before using work equipment and to update this assessment at regular intervals according to the current state of the art.

- Our experts support you in identifying the dangers, in assessing and evaluating the risks as well as in defining the risk-reducing measures.



Inspection of protective devices

- Within the scope of the initial or regular inspection, we check the condition, mounting and correct function of the protective device as well as the correct integration in the safe part of the machine control
- We summarize the results of the tests in a detailed report. If necessary, this includes practically oriented suggestions on how deviations can be corrected.



Stopping time measurement

For the correct placement of the protective device, the required minimum distance between protective device and dangerous movements is to be calculated. To do this, the stopping time of the machine must be known. With the stopping time measurement, we determine this value reliably.

- By measuring the stopping time within the scope of regular inspections, any wear, such in brake components, can be detected in good time.



Status check "CE marking of machines"

During the development of machines, the specifications from the machinery directive must be adhered to and documented by the manufacturer. This is confirmed with the Declaration of Conformity and the CE marking.

- We check the documentation for completeness and give recommendations of how any deviations can be corrected.



Conformity assessment in accordance with the European machinery directive

The machinery directive defines the procedure for the design and construction of machines for satisfying the applicable safety and health protection requirements. This is a prerequisite for the Declaration of Conformity and the CE marking.

- We help you comply with and implement the legal requirements of the machinery directive.



Safety concept and safety design

The measures necessary for risk minimization are known from the risk analysis.

The safety concept and the safety functions are developed on the basis of these requirements.

- With our extensive industry knowledge and our many years of safety-related experience, we create practically oriented concept proposals for you and support you during their implementation.



Verification and validation

To avoid errors during the implementation of safety functions, both the hardware as well as the software must be checked to determine whether the requirements of the functional specification were met completely and correctly. The function test of all safety functions is to be performed according to the validation plan.

- We support you during the planning, development and execution of the function tests as well as with the creation of the required documentation.

Technical data

Safety switches



S20, S200

Safety position switches












S300

Safety hinge switches



S400, S410

General	Type in accordance with EN ISO 14119	Type 2 interlock device without guard interlocking	Type 1 interlock device without guard interlocking	Type 1 interlock device without guard interlocking
	Safety	For safety applications up to performance level PL e / SIL 3	For safety applications up to performance level PL e / SIL 3	For safety applications up to performance level PL e / SIL 3
	Housing	Technopolymer (S20) or metal (S200)	Technopolymer or metal	Metal
	Degree of protection	IP 67	IP 67	IP 67 / IP 69K
	Actuators	Mechanical tongue, with low coding level in accordance with EN ISO 14119	Actuated by unencoded cam in accordance with EN ISO 14119	Encapsulated position switch inside hinge
	Dimensions (W × H × D)	S20: 30.8 mm × 93 mm × 30.8 mm, 52.2 mm × 90.5 mm × 31.6 mm S200: 40 mm × 109.5 mm × 38 mm	56 mm × 88 mm × 33 mm	S400: 49 mm × 100.6 mm × 22.5 mm S410: 79 mm × 100.6 mm × 22.5 mm
	Contacts	1 NC + 1 NO 2 NC 2 NC + 1 NO 3 NC	1 NC + 1 NO 2 NC + 1 NO	2 NC + 1 NO
	Connection type	Cable entry M20 × 1.5 (S20: optional 3-way) M12 connector	Cable entry M20 × 1.5 (1- or 3-way) M12 connector	M12 Cable Cable with M12 Orientation: top, bottom or wall-side
	Certifications	CE  c  US UK 	CE  c  US UK 	CE  c  US UK 
Functions	Function	Safety switches with separate actuator	Safety switches with plunger and roll actuator	Safety switches and door hinge in one component
	Integration in safety circuit	Positive-opening contacts for integration in a safety circuit	Positive-opening contacts for integration in a safety circuit	Positive-opening contacts for integration in a safety circuit
	Actuators	Up to 8 different actuators	6 different plunger and roll actuators	
	Special functions		Switching direction selectable	Additional hinge (without contacts)
Features		Universal use with 5 actuator approach directions	Universal use thanks to individually set actuator approach directions and actuator angles in 10° grid	High protection against tampering through encapsulated position switch
		Easy mounting with standard construction	Extremely durable / robust	Elegant design for discreet and effective integration in the system
		High-quality silver contacts for long life expectancy		Hidden cable routing thanks to connection on rear side
				180° maximum opening angle of the protective device, adjustable switching point
				Model S410 with wide fork dimension for attachment to special materials, e.g. glass

**Safety proximity sensors,
magnetically coded**

**Safety proximity sensors,
RFID-coded**

MC 300
RD 800

General	Type in accordance with EN ISO 14119	Type 4 interlock device without guard interlocking	Type 4 interlock device without guard interlocking
	Category in accordance with EN ISO 13849-1	Up to 4 (depending on the number of sensors)	4
	Performance level (PL) in accordance with EN ISO 13849-1	Up to PL e (depending on the number of sensors)	PL e with a single device
	Housing	High-strength plastic housing	High-strength plastic housing
	Degree of protection	IP 67	IP 67 / IP 69K
	Code type	Actuator with low coding level in accordance with EN ISO 14119	Actuator with low and high coding level in accordance with EN ISO 14119
	Dimensions (housing)	M30 × 36 mm (MC 330) 36 × 26 × 13 mm (MC 336) 88 × 25 × 13 mm (MC 388)	87.5 × 25 × 18 mm (sensor) 45 × 25 × 18 mm (actuator)
	Assured operating distances (Seo, Sar)	< 6 mm, > 14 mm (MC 330) < 3 mm, > 11 mm (MC 336) < 6 mm, > 30 mm (MC 388)	12 mm, 10 mm
	Switching tolerance	± 1 mm	
	Contacts / safety output	2 NC 1 NC + 1 NO	OSSD safety outputs
	Min. approach speed of actuator towards sensor	50 mm/s	
	Response time	3 ms	7 ms (typical), 12 ms (max.)
	Connection type	M8 Cable Cable with M12	M12 Cable
	Certifications	CE cULUS TÜV UKCA	CE cULUS TÜV UKCA
Functions	Encoding	Magnetically coded	RFID coded, for maximum protection against manipulation
	Status indicator	LED	4 LEDs
	Signaling contact	X	X
	Programming input		For teaching-in actuators
Features		Contactless actuation without mechanical contacts	Contactless actuation without mechanical contacts
		Long life expectancy	Long life expectancy
		Not sensitive to soiling	Not sensitive to soiling
			Series connection possible

Safety locking devices



L100



L200



L250



L300

General		L100	L200	L250	L300
	Type in accordance with EN ISO 14119	Type 2 interlock device with guard interlocking	Type 2 interlock device with guard interlocking	Type 4 interlock device with guard interlocking	Type 4 interlock device with guard interlocking
	Safety	For safety applications up to performance level PL e / SIL 3	For safety applications up to performance level PL e / SIL 3	Performance level PL e / SIL 3 with one device	Performance level PL e / SIL 3 with one device
	Housing, degree of protection	Technopolymer, IP 67	Metal, IP 67	Technopolymer, IP 67 / IP 69K	Metal, IP 67 / IP 69K, IP 65 for integrated operational controls
	Actuators	Mechanical tongue, with low coding level in accordance with EN ISO 14119	Mechanical tongue, with low coding level in accordance with EN ISO 14119	Mechanical tongue with RFID-encoded actuator in accordance with EN ISO 14119. Coding: AC-L250-SCA: low AC-L250-UCA: high	Mechanical tongue with RFID-encoded actuator in accordance with EN ISO 14119. Coding: AC-L300-SCA: low AC-L300-UCA: high
	Locking type, locking force acc. to ISO 14119	With either quiescent current principle or open circuit current principle, F_{1max} 1,100 N	With either quiescent current principle or open circuit current principle, F_{1max} 2,800 N	With either quiescent current principle or open circuit current principle, F_{1max} 2,100 N	With either quiescent current principle or open circuit current principle, F_{1max} 9,750 N
	Connection type	Cable entry M20 × 1.5 (3-way)	Cable entry M20 × 1.5 (3-way)	M12 connector Cable with M12 connector	Cable entry M20 × 1.5 (3-way) M12 (8- or 12-pin) M23 (19-pin)
Functions	Certifications	CE cUL US UK CA	CE cUL US UK CA	CE cUL US ECOLAB UK CA	CE cUL US ECOLAB UK CA
	Function	Safety switches with locking device	Safety switches with locking device	Safety switches with locking device	Safety switches with locking device
	Integration in safety circuit	Positive-opening contacts for integration in the safety circuit	Positive-opening contacts for integration in the safety circuit	OSSD safety-related switching outputs	OSSD safety-related switching outputs
	Actuators	Multiple heavy-duty actuators	Multiple heavy-duty actuators	Contactless actuation through RFID technology	Contactless actuation through RFID technology
	Status indicator		LED status display	LED status display	LED status display
	Escape release		Models with integrated escape release button	Models with integrated escape release button	Models with integrated escape release button
	Special functions			Accessory: remote escape unlocking button with 5 m cable	Models with integrated command and E-Stop buttons
Features		Universal use with 5 actuator approach directions	Universal use with 5 actuator approach directions	Large center opening for actuator shaft	Large center opening for actuator shaft
			Robust design for big machinery and systems in harsh ambient conditions	Flexibly mounted actuator enables secure closing even with warped doors	Flexibly mounted actuator enables secure closing even with warped doors
			Variable installation options: Front and side mounting with just 2 screws	Variable installation options: Front and side mounting with just 2 screws	Variable installation options: Flexible and independent alignment of device head and escape release
			Flexible and independent alignment of connection unit and escape release	Door handle for simple mounting of switches and actuators (optional)	Door handle for simple mounting of switches and actuators (optional)
				Lockout-tagout (optional)	Lockout-tagout (optional)

Safety command devices

**ERS 200**

E-Stop rope switch

ESB 200

E-Stop button

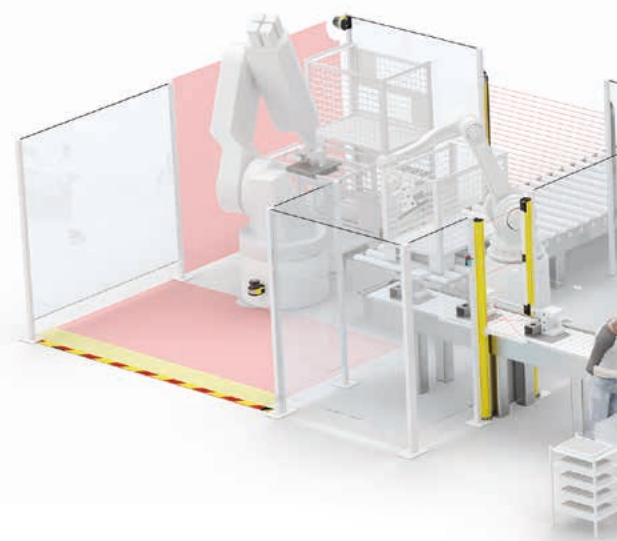
CD-B

Command device | with E-Stop button

General	Type	E-Stop command device in accordance with EN ISO 13850, EN 60947-5-5	E-Stop command device in accordance with EN ISO 13850, EN 60947-5-5	Display/command device (not safe), E-Stop command device in accordance with EN ISO 13850, EN 60947-5-5
	Integration in control circuits	Up to category 4 in accordance with EN ISO 13849-1	Up to category 4 in accordance with EN ISO 13849-1	E-Stop button: Up to category 4 in accordance with EN ISO 13849-1
	Housing, degree of protection	Metal, IP 67	Glass fiber reinforced plastic, self-extinguishing, IP 67 / IP 69K	Glass fiber reinforced plastic, self-extinguishing, IP 65
	Actuators	Stainless steel bolt, red, steel rope with sheathing	Button, 40 mm diameter, red, self-locking	Button, blue Button, white / button, blue Button, white / button, blue / E-Stop button, self-locking
	Actuation	By rope, pull: 83 N 235 N, slacken: 63 N 147 N	By button	By button
	Contact allocation	1 NC + 1 NO 2 NC 2 NC + 1 NO	2 NC 2 NC + 1 NO	2 NC (for E-Stop)
	Mounting	Straight, angular	Top-mounted	Side-mounted, can be rotated in 90° increments
	Connection type	Cable entry M20 × 1.5 (1- or 3-way) M12 connector	Cable entry M20 × 1.5 or M16 × 1.5 M12 connector	M12 connector, 5-pin 8-pin 12-pin
Features	Certifications	CE c US UK CA	CE UK CA	CE c US UK CA
		Position-independent E-Stop command input	Position-dependent E-Stop command input	Position-dependent E-Stop command input, illuminated buttons for request and reset
		Reset function (reset button with indicator)	Reset function (via rotary knob or key)	Reset function (via rotary knob, for E-Stop button)
		Simple rope adjustment by means of switching point indicator	Protected screw fitting	Protected screw fitting
		Clicks in on both sides with friction-locking contacts		Dimensions and design identical to L250 series locking devices

Safety from a single source

Individual requirements need flexible solutions. Our high-quality products, intelligent systems and solutions as well as competent technical and consulting services form the basis of our safety portfolio. Benefit from our extensive range of products. The diversity of our portfolio means that we are able to provide you with all components, from sensor to control, from a single source – all with maximum user-friendliness and all optimally matched to each other.



Products



Safety laser scanners



Safety light curtains / with Smart Process Gating



Multiple light beam safety devices / with muting



Single light beam safety devices



Safety radar sensors



Safety switches and safety proximity sensors



Safe bar code positioning system



Safety locking devices



Safety relays and controls



Safety command devices

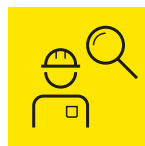
Solutions



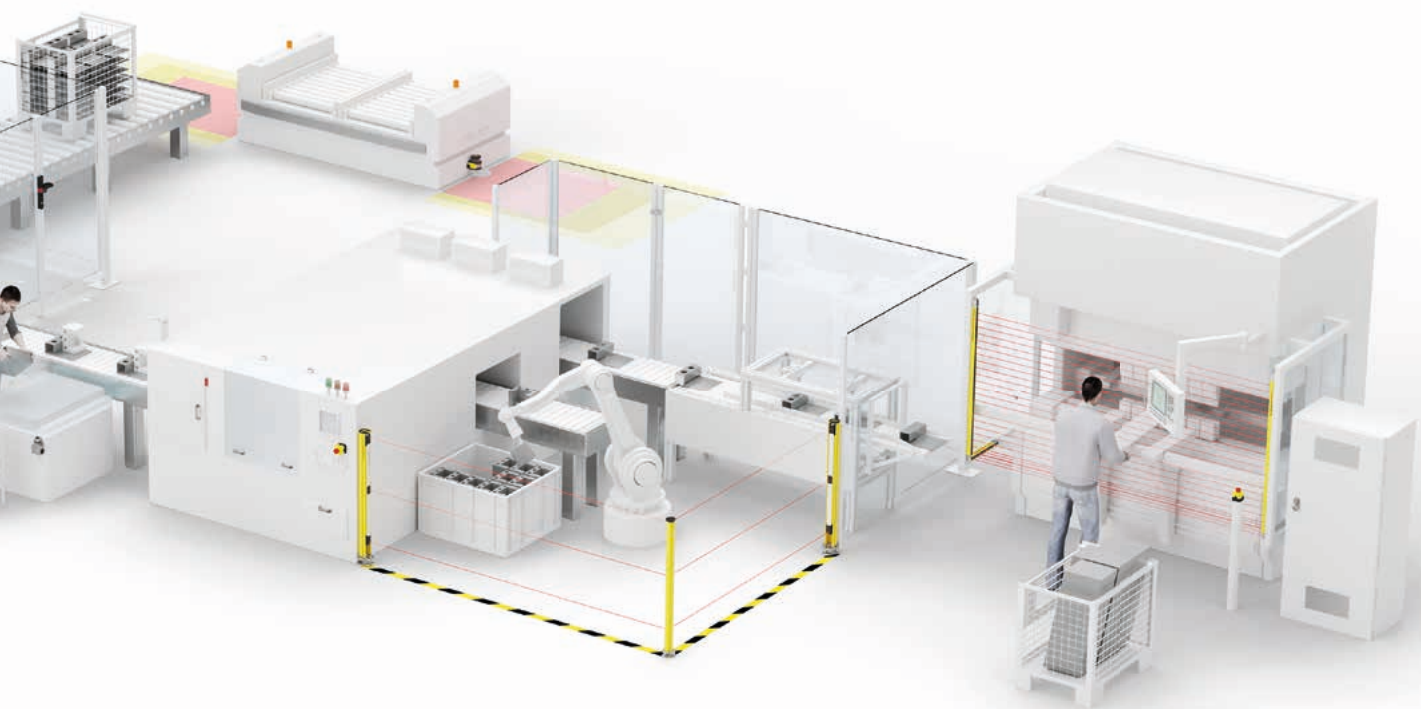
Safety solutions, e.g. for safeguarding transfer stations and access points to transport systems



Services



Safety services, e.g. inspections, risk assessment and validation



Accessories and suitable products



Connection boxes

For simple connection of muting sensors



Alignment aids

For simple alignment over large distances



Programmable safety control

MSI 400 basic and extension modules with up to 168 I/Os and gateway functions for integrating safety sensors into the machine circuit



Safety relays

MSI evaluation units, evaluation units with time delay and contact extensions for integrating safety sensors into the machine circuit



Cables

To facilitate the integration of our sensors, we offer a large variety of connection and interconnection cables with M8, M12, and M23 connectors – straight or angled, and with or without LED.



Signaling devices

For visual and acoustic status visualization, pre-mounted or modular

Our company

Everything at a glance

In a constantly changing industrial world, we work together with our customers to find the best solution for their sensor applications: innovatively, precisely and efficiently.

Key figures

Foundation	1963
Company structure	GmbH + Co. KG, wholly family-owned
Executive management	Salvatore Buccheri, Dr. Henning Grönzin, Helge Held
Headquarters	Owen, Germany
Subsidiaries	22
Production locations	5
Technological competence centers	3
Distributors	40
Employees	1,500

Product range

- Switching sensors
- Measuring sensors
- Safety
- Identification
- Data transmission
- Network and connection technology
- Industrial image processing
- Accessories and supplementary products

Focus industries

- Intralogistics
- Packaging industry
- Machine tools
- Automotive industry
- Laboratory automation



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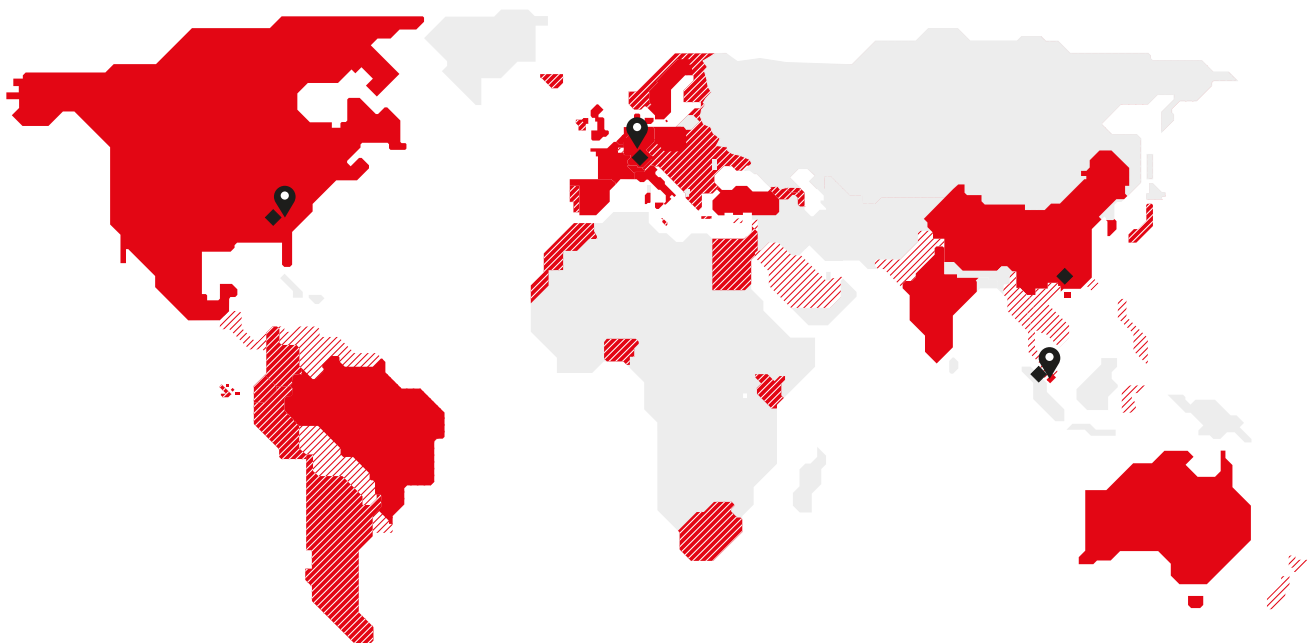




Our Locations

At work for you around the world

Your success is our motivation. We therefore place great value on always being personally, quickly, and easily accessible to you. We produce on four continents, allowing us to offer you reliable product availability.



- 📍 Technological competence centers
- ◆ Production locations
- Subsidiaries
- ▨ Distributor
- ▨ Distribution through neighboring country

Technological competence centers

Owen, Germany
Duluth/Georgia, USA
Singapore

Production locations

Owen, Germany
Unterstadion, Germany
Duluth/Georgia, USA
Shenzhen, China
São Paulo, Brazil
Malacca, Malaysia

Subsidiaries

Australia/New Zealand	Italy
Belgium	Mexico
Brazil	Singapore
China	Poland
Denmark/Sweden	South Korea
France	Spain
Germany – headquarters	Switzerland
Germany – distribution company	The Netherlands
Great Britain	Turkey
Hong Kong	USA/Canada
India	

Our product range at a glance

Switching Sensors

- Optical Sensors
- Inductive Switches
- Capacitive Sensors
- Ultrasonic Sensors
- Fiber Optic Sensors
- Fork Sensors
- Light Curtains
- Special Sensors

Measuring Sensors

- Distance Sensors
- Sensors for Positioning
- 3D Sensors
- Light Curtains
- Bar Code Positioning Systems
- Fork Sensors

Safety

- Safety Solutions
- Safety Laser Scanners
- Safety Light Curtains
- Single and Multiple Light Beam Safety Devices
- Safety Radar Systems
- Safe Locking Devices, Switches and Proximity Sensors
- Safety PLCs and Relays
- Machine Safety Services

Identification

- Bar Code Identification
- 2D-Code Identification
- RF Identification

Data Transmission

- Optical Data Transmission Systems

Network and Connection Technology

- Connection Technology
- Modular Connection Units

Industrial Image Processing

- Light Section Sensors
- Industrial IP Cameras
- Vision Sensors

Accessories and Supplementary Products

- Signaling Devices
- Mounting Systems
- Reflectors

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