



## Safety Switches

The complete programme



# SICK



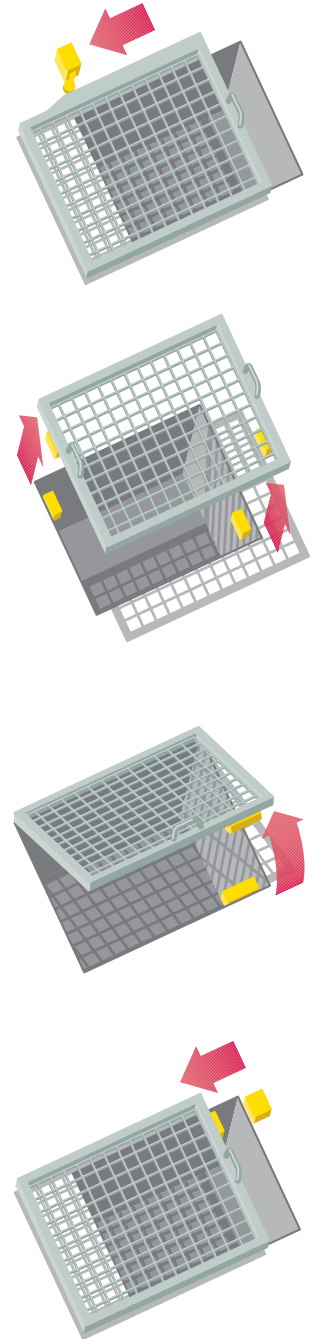
## State-of-the-art technology for flexible applications

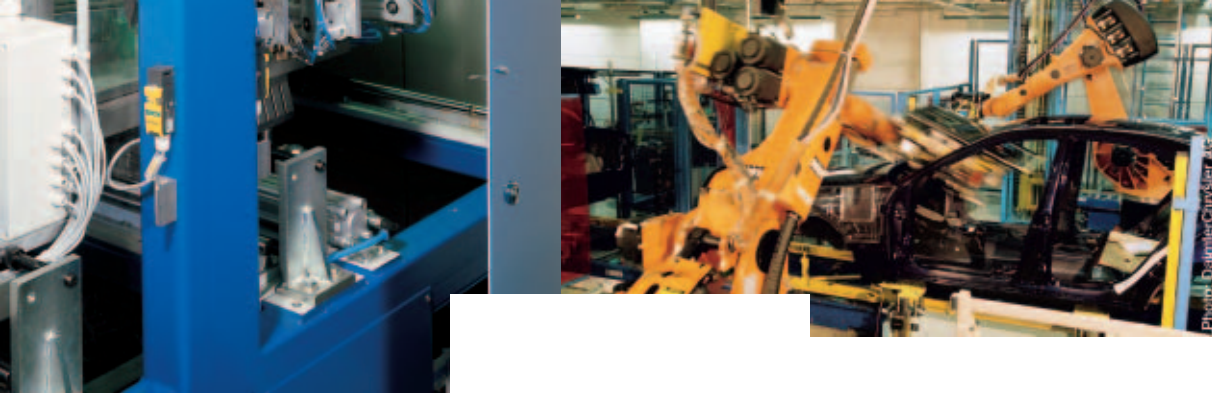
### Switching to safety and quality

Today, the demand for tamper-proof safety systems and more stringent safety regulations make modern safety interlocks indispensable. SICK expertise in interlock technology opens up countless new application possibilities. Thanks to improved equipment, robust and compact housings, as well as modern interlock technology, SICK offers effective solutions to many application conditions.

### Safely equipped in all situations

In accordance with EN 292-2 (safety of machinery) safety devices, which function and operate independently, must be equipped with their own safety switches. Upon opening the safety door the output contacts of the safety switches are opened by the actuator and any hazardous motions of the machinery brought to rest.





## Developed for rugged everyday industrial use

SICK products are designed to cope with arduous conditions, such as being subjected to knocks and vibration. Opening, closing and interlocking operations are assured over a long period of constant use. SICK safety switches are available in plastic and metal versions.

## Quick and reliable connection with the UE 10 'intelliface' series

SICK safety switches or opto-electronic safety components can easily and safely be connected to 'intelliface' evaluation units of the UE 10 Series.



**intelliface**  
 the intelligent interface

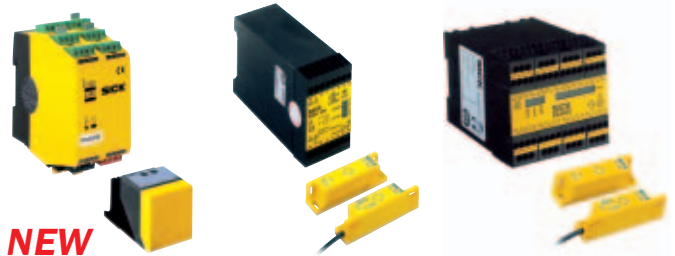
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# Safety sensors

As well as conventional safety sensors utilising transponder and reed switch technology a unique safety interface is also now available from SICK.











**NEW**

Sensor & Actuator	IN 4000	RE 300	RE 4000
Safety category to EN 954-1	4		
<b>Contacts</b>			
Positively driven NC contact NO contact		1NC/1NO 	1NC/1NO 
Design	Cubical	Cubical	Cubical
Mode of operation	Inductive	Reed	Reed
Operating voltage [V]	24		
<b>Environment</b>			
Ambient temperature [°C]	-25 to +70	-10 to +55	-10 to +55
Housing material	Plastic	Plastic	Plastic
Enclosure rating	IP 67	IP 67	IP 67
Actuating directions			
<b>Connection</b>			
Connector	M12		
Cable connected		✓	✓
<b>Evaluation unit</b>			
Safety category to EN 954-1	4	3	4
<b>Contacts</b>			
Number of sensors, max.	10	1	6
Semiconductor outputs			
Relay outputs (+ signal outputs)	3 NO/2 NC 	2 NO/1 NC 	3 NO/1 NC 
Supply voltage [V]	24	24/110/230	24/110/230
Current, max. [A]	6	4	4
<b>Environment</b>			
Ambient temperature [°C]	0 to +70	-10 to +55	-10 to +55
Housing material	Plastic	Plastic	Plastic
Enclosure rating	IP 20	IP 20	IP 20
<b>Approvals</b>			





T4000	T4000 multi	T4000 C
Cubical	Cubical	Cubical
Transponder	Transponder	Transponder
-25 to +70	-25 to +70	0 to +55
Glass-reinforced thermoplastic	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic
IP 67	IP 67	IP 67
		
M8	M8	M12
✓	✓	
3	4	3
1	2/4	1
		2 NPN
2 NO/(+NPN)	2 NO/(+3/5 NPN)	
		
24	24	24
4	4	0.4
0 to +55	0 to +55	0 to +55
Glass-reinforced thermoplastic	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic
IP 20	IP 20	IP 67
		



## Safety Know-how for your benefit

Safety technology from SICK – is represented by a broad spectrum of products, in which more than 50 years of know-how exists, derived from the fields of mechanical, optical and electronic engineering. Experience acquired over many years form the basis of being able to offer the best possible solution for resolving individual projects and applications, irrespective whether it involves sensors or mechanical systems for safety use.

# Safety switches with separate actuators

SICK safety switches are actuated using a special multi-coded actuator, which prevents them from being overridden. Various housing designs enable installation to be accomplished to suit any given application.



	i10	i11mini	i12 S	i16 S
<b>Switching element</b>				
Positively driven NC contact NO contact	1NC/1NO 	1NC 	2NC 1NC/1NO 	1NC/1NO 
2NC		2NC/1NO 	2NC/1NO 	2NC 
Switching principle	Slow-action switch	Slow-action switch	Slow-action switch	Slow-action switch
Current, max. [A] at 230 VAC	4	6	3	2
Contact material	Silver alloy	Silver alloy, gold-plated	Silver alloy	Silver alloy
<b>Environment</b>				
Mechanical lifecycles, min.	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
Ambient temperature [ °C ]	-20 to +80	-20 to +80	-20 to +80	-20 to +80
Housing material	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic
Enclosure rating	IP 67	IP 67	IP 67	IP 67
LED display				
Actuating directions				
<b>Connection</b>				
Cable entry	1 x M20	3 x M16	1 x M16	3 x M20
<b>Actuator</b>				
Straight	✓	✓	✓	✓
Straight, rubber-mounted	✓	✓		
Angled	✓	✓	✓	
Angled, rubber-mounted		✓		
Radius actuator	✓		✓	✓
Flexible				✓
Door radius, min.	90 mm	150 mm	60 mm	60 mm
<b>Approvals</b>				



i17 S	i100 S	i110 S	i1001	i1002
2NC/1NO 	3NC/1NO 	3NC/1NO  2NC/2NO 	2NC/1NO 	2NC/1NO 
Slow-action switch	Slow-action switch	Slow-action switch	Slow-action switch	Slow-action switch
2	6	2	10	10
Silver alloy	Silver alloy, gold-plated	Silver alloy	Silver alloy	Silver alloy
10 <sup>6</sup>	2 x 10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
-20 to +80	-25 to +80	-20 to +80	-5 to +40	-5 to +40
Glass-reinforced thermoplastic	Die-cast light alloy, anodised	Die-cast zinc	Powder-coated die-cast zinc, stainless steel	Powder-coated die-cast zinc, stainless steel
IP 67	IP 67	IP 67	IP 67	IP 67
3 x M20	1 x M20	1 x M20	1 x PG 13,5	1 x PG 13,5
✓	✓	✓	With wing lever	✓
✓				✓
✓	✓	✓		
60 mm	165 mm	60 mm		

# Safety locking devices

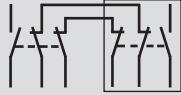
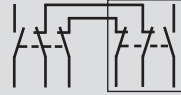






Safety locking devices prevent movable safety devices, in conjunction with the control system, from being moved until the hazardous conditions no longer exists. Depending on the product range, mechanical or electrical interlocks are available.

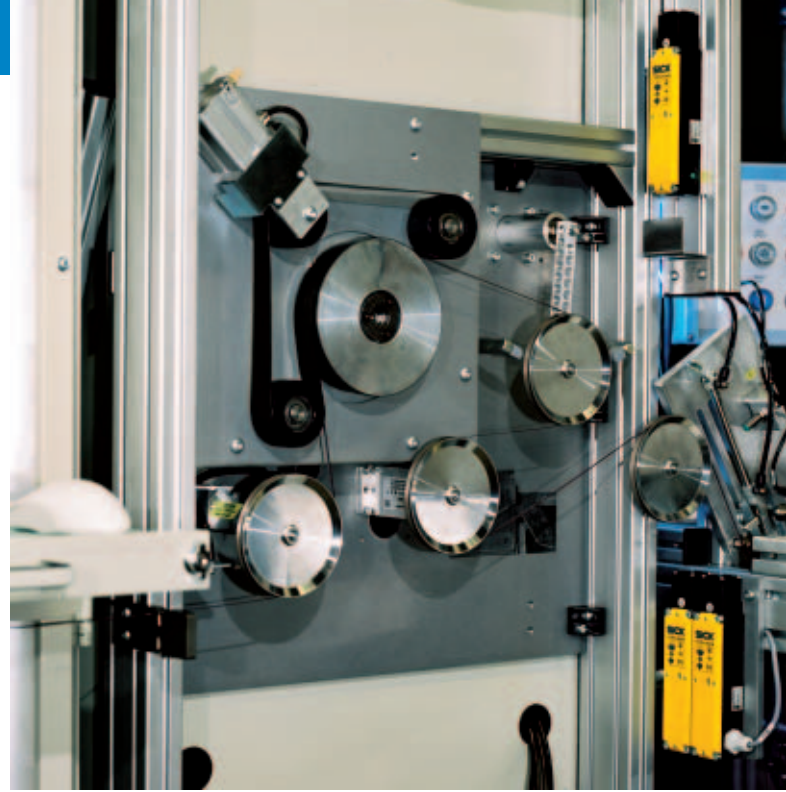


	i 10 Lock	i 14 Lock	i200 Lock
<b>Switching element</b>			
Positively driven NC contact NO contact (+ door contact)	2NC/1NO(+1NC)  2NC + (1NC/1NO) 	2NC/1NO  3NC 	4NC/1NO  3NC/2NO 
Switching principle	Slow-action switch	Slow-action switch	Slow-action switch
Current, max. [A] at 230 VAC	6	2	2
Contact material	Silver alloy, gold-plated	Silver alloy	Silver alloy
<b>Environment</b>			
Mechanical lifecycles, min.	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
Ambient temperature [°C]	-20 to +55	-10 to +60	-20 to +60
Housing material	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic
Enclosure rating	IP 67	IP 65	IP 65
LED display		✓	✓
Actuating directions			
<b>Locking</b>			
Locking methods	Mechanical /electrical	Mechanical	Mechanical/electrical
Supply voltage [V]	24/110/230	24/110/230	24/110/230
Power consumption [W]	8	7	7
On time [%]	100	100	100
Retaining force in locked condition [N]	1200	1200	2000
<b>Connection</b>			
Cable entry	3x M20	1x M20	3x M20
<b>Actuator</b>			
Straight	✓	✓	✓
Straight, rubber-mounted	✓		
Angled	✓		
Angled, rubber-mounted			
Radius	✓		
Flexible			✓
Door radius, min.	90 mm	160 mm	80 mm
<b>Approvals</b>			





i 1001 Lock	i 1002 Lock
4NC/2NO 	4NC/2NO 
Slow-action switch	Slow-action switch
10	10
Silver alloy	Silver alloy
10 <sup>6</sup>	10 <sup>6</sup>
-5 to +40	-5 to +40
Powder-coated die-cast zinc, stainless steel	Powder-coated die-cast zinc, stainless steel
IP 67	IP 67
✓	✓
	
Mechanical	Mechanical
24/110	24/110
100	100
1x PG13,5	1x PG13,5
With wing lever	✓
 	 



## Quality without compromise

Our quality management system extends from the development stage right through the design stage to the individual production sectors, from material management via stock control through to despatch and from marketing to customer support. As a consequence, each and every employee is responsible for achieving the highest result possible in executing his work and strives to make even further ongoing improvements. From this, product solutions are generated that meet the precise expectations of the customer and the most demanding requirements imposed on the industry.

# Safety position switches

When determining positive, safe positioning, SICK offers safety switches in various options. Depending upon the application and environmental conditions, selection can be made from an array of operating principles and housing design.



	i 10 R	i 10 P	i 100 R
<b>Switching element</b>			
Positively driven NC contact NO contact	2NC/1NO 	2NC/1NO 	3NC/1NO 
Switching principle	Slow-action switch	Slow-action switch	Slow-action switch
Current, max. [A] at 230 VAC	3	3	6
Contact material	Silver alloy	Silver alloy	Silver alloy, gold-plated
<b>Environment</b>			
Mechanical lifecycles, min.	10 x 10 <sup>6</sup>	10 x 10 <sup>6</sup>	30 x 10 <sup>6</sup>
Ambient temperature [°C]	-25 to +80	-25 to +80	-25 to +80
Housing material	Glass-reinforced thermoplastic	Glass-reinforced thermoplastic	Die-cast light alloy, anodised
Enclosure rating	IP 66	IP 66	IP 67
Actuating directions			
<b>Connection</b>			
Cable entry	1 x M20	1 x M20	1 x M20
<b>Actuator</b>			
Design	Roller lever	Roller plunger	Roller lever
<b>Approvals</b>			









i100 P	i110 R	i110 P
3NC/1NO 	1NC/1NO 2NC/2NO  3NC/1NO 	1NC/1NO 2NC/2NO  3NC/1NO 
Slow-action switch	Snap-action switch Slow-action switch	Snap-action switch Slow-action switch
6	3	3
Silver alloy, gold-plated	Silver alloy	Silver alloy
30 x 10 <sup>6</sup>	10 x 10 <sup>6</sup>	10 x 10 <sup>6</sup>
-25 to +80	-25 to +80	-25 to +80
Die-cast light alloy, anodised	Die-cast zinc	Die-cast zinc
IP 67	IP 66	IP 66
1 x M20	1 x M20	1 x M20
Roller plunger	Roller lever	Roller plunger



# Safety hinge switches

Safety hinge switches in metal or plastic design are constructed for direct installation onto pivoting safety devices. The desired switch point can be easily adjusted.

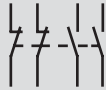
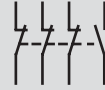
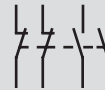





	i10 H	i110 H
<b>Switching element</b>		
Positively driven NC contact NO contact	1NC/1NO 	2NC/1NO 
Switching system	Slow-action switch	Slow-action switch
Current, max. [A] at 230 VAC	3	2
Contact material	Silver alloy	Silver alloy
<b>Environment</b>		
Mechanical lifecycles, min.	10 <sup>6</sup>	10 <sup>6</sup>
Ambient temperature [ °C ]	-20 to +80	-25 to +80
Housing material	Glass-reinforced thermoplastic	Die-cast zinc
Enclosure rating	IP 67	IP 66
Direction of approach		
<b>Connection</b>		
Cable entry	1 x M 16	1 x M 20
Cable connected		
<b>Actuating element</b>		
Design	Hinge	Hinge
<b>Approvals</b>		

# Safety operating devices

The enabling switch, designed for use in hazardous zones, is characterised by its lightweight construction and its exceptional ergonomic features. The rope switch fulfils the requirements in emergency stop devices set out in EN 418. Separate rope sets enable rapid and simple installation.



	E 100	i 110 RP
<b>Switching element</b>		
Positively driven NC contact NO contact	2NC/2NO 	3NC/1NO   2NC/2NO 
Switching principle	Slow-action switch	Slow-action switch
Current, max. [A] at 230 VAC	2	2
Contact material		Silver alloy
<b>Environment</b>		
Mechanical lifecycles, min.		10 <sup>6</sup>
Ambient temperature [ °C ]	-5 to +50	-25 to +80
Housing material	Plastic	Die-cast light alloy
Enclosure rating	IP 67	IP 66
Direction of approach	↓	↔
<b>Connection</b>		
Cable entry		1x M20
Connector		
Cable connected	5 m, 10 m	
Length of cable, max.		30 m
<b>Accessories, separate</b>		
Rope set		5 m, 10 m, 20 m, 30 m
Rope grippers		✓
Eye nuts		✓
Tensioner		✓
Length of rope		30 m, 100 m
<b>Approvals</b>		 





Our complete range of sensors provides answers to suit any application in the field of automation. Even under rugged ambient conditions objects are reliably detected, counted and positioned in respect of their form, location and surface finish, as well as their distances established with pin-point accuracy.



Comprehensive safeguarding of both personnel and machinery! As specialists in Sensor Technology, SICK develops and manufactures pioneering products for providing protection in hazardous zones, dangerous locations and for safeguarding access points. By providing services, which encompass all aspects of machine safety and security, SICK is setting new standards in Safety Technology.



System control, maintaining setpoints, optimising process control and monitoring the flow of materials – the instruments and services for Analysis and Process Measurement, supplied by SICK-MAIHAK, are setting the standards for these applications in terms of Technology and Quality.



Whether the tasks involve identification, handling, classification or volume measurement, innovative Auto Ident systems and laser measuring systems function extremely reliably, even under rapid cycle times. They conform to the latest Standards and can be simply and speedily integrated in all industrial environments and external applications.

## SICK Sensor Intelligence.

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