ReLy

THE SAFETY RELAY FOR HIGH EASE OF USE

Safety relays

SICK
Sensor Intelligence.

ReLy PAYS OFF FOR YOU IN MANY WAYS

Rely on safety relays from SICK and benefit from a user-friendly housing and state-of-the-art technologies during commissioning, operation and maintenance processes.

INCREASE PRODUCTIVITY

### Fast response times for efficient operation

Reduce safety distances thanks to fast response times. Cycle times become shorter, machines more compact.

Simple commissioning for a quick start of production

With only one wiring diagram per module, you will immediately find the right terminal. The wiring is easily accessible on the front face of the module.

Fast troubleshooting for reduced downtime

Diagnostic LEDs enable fast trouble-shooting. Thanks to the user-friendly housing, modules can be exchanged in seconds.
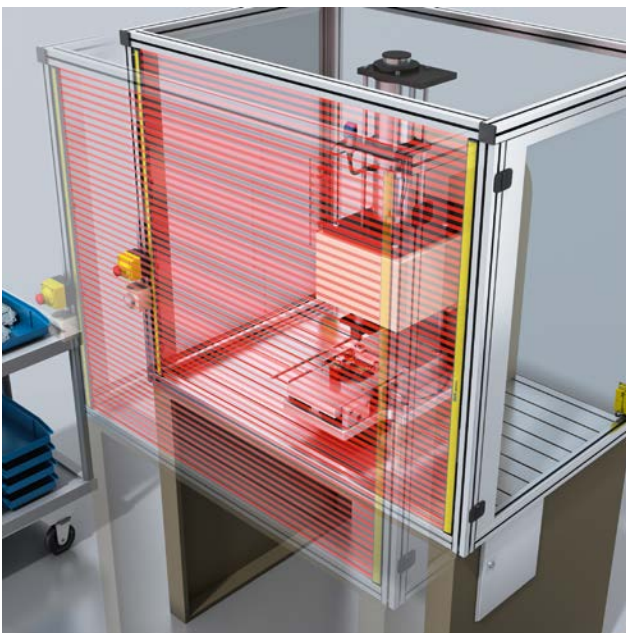
More compact machine designs and faster processes as a result of shorter response times.

The front connector ensures simple wiring without the need for tools, and can be inserted with a click.

SAVE TIME AND COSTS

SAFEGUARDING MACHINES

Reduced commissioning and maintenance work

ReLy features a user-friendly housing. Expensive commissioning and maintenance work is drastically reduced.

Narrow modules for space saving in the control cabinet

With a module width of 18 mm, you save 20 % of the space required in the control cabinet. Costs are reduced and handling is made easier.

Very high safety with performance level e

All ReLy modules can be used in applications requiring safety up to performance level e (SIL3).

The one-click mounting rail release guarantees a quick module exchange.

Enormous space saving (20 % compared to UExx) in the control cabinet due to a housing width of only 18 mm.

VERSATILE APPLICATION – SIMPLE SELECTION

With a clear range of variants, the Rely can cover virtually every application. Use this selection guide to quickly and easily find a suitable variant.

Safetey relay (part number)	Monitored sensor types						Features					
	Sensors with OSSD outputs as well as integrated reset and EDM function	Sensors with OSSD outputs, without integrated reset and EDM function	Electro-mechanical safety switches (equivalent)	Electro-mechanical safety switches (complementary)	Two-hand controls	Flexi Loop safe series connection	Enabling current path (thereof with time delay switching)	External device monitoring (EDM)	Path for external device monitoring (EDM)	Reset input (automatic/manual)	Diagnostic output/ *diagnostic path	Parameterizable via DIP switches
RLY3-OSSD1 (1085343)	■						2		■			
RLY3-OSSD4 (1099971)	■						4		■		■ *	
RLY3-OSSD2 (1085344)		■					2	■		■	■	
RLY3-OSSD3 (1099969)		■					3	■		■	■	
RLY3-EMSS1 (1085345)			■				2	■		■	■	
RLY3-EMSS3 (1099973)			■				3	■		■	■	
RLY3-HAND1 (1085346)					■		2	■		■	■	
RLY3-TIME1 (1100688)		■	■				3 (1)	■		■	■	■
RLY3-MULT1 (1100692)		■	■	■			3	■		■	■	■
RLY3-LOOP1 (1100696)						■	3	■		■	■	■

Are you looking for a safe and intelligent complete solution for your safety application? SICK is happy to assist you with this. For more information and contact details, visit:

➜ www.sick.com/safe-productivity

THE RIGHT CHOICE EVEN FOR SPECIAL REQUIREMENTS


RLY3-TIME1 – safe stop with time-delayed switching

RLY3-TIME1 has two safety contacts that ensure an actuator is switched off immediately. A third safety contact switches off after a time delay, if required, for example to maintain the power supply to support braking, or to only allow access to a machine once it has come to a full standstill.

➕ **Protect stop category 1 applications easily and cost-effectively.**

RLY3-MULT1 – equipped for all cases

RLY3-MULT1 is the multifunctional relay in the family. It monitors a wide variety of sensor types, e.g. opto-electronic protective devices, equivalent and complementary safety switches as well as safety mats. It can be conveniently parameterized via DIP switches.

➕ **Just one module for all your applications. This reduces complexity and storage costs.**
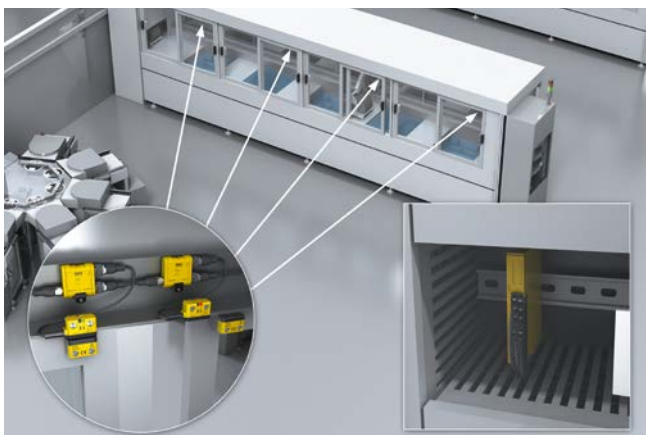
RLY3-LOOP1 – need a safe series connection?

RLY3-LOOP1 in combination with Flexi Loop is an economical and software-free solution for safe series connection of up to 32 sensors. Thanks to individual monitoring, this is achieved with no loss in safety level up to performance level e (SIL3). Compared to individual wiring, a safe series connection via Flexi Loop drastically reduces the installation costs.

➕ **The diagnostics node helps you troubleshoot problems quickly.**

➜ **www.sick.com/Flexi_Loop**

CREATING
SAFE
PRODUCTIVITY

THE SAFETY RELAY FOR HIGH EASE OF USE
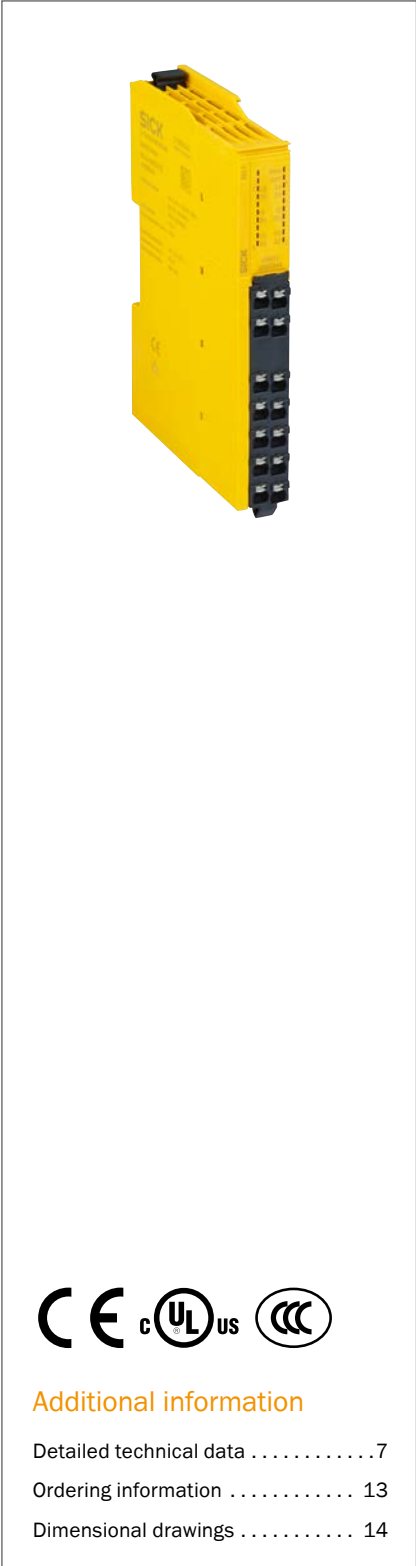
Product description

High ease of use, more space in the control cabinet, quicker production starts, more compact machines with shorter safety distances and reduced downtime: With the clever ReLy safety relay, you get even more out of your application, and that with high safety at performance level e. So don't rely on just any safety relay – use the ReLy from SICK. Thanks to clearly defined areas of application, selecting the right variant is simple as can be.

At a glance

- Clever, user-friendly housing functions
- Thin design with construction widths from 18 mm
- Fast response times of under 10 ms (depending on the type)
- Status LEDs and diagnostic interfaces
- Variants for universal application and for safe series connection with Flexi Loop available

Your benefits

- Reduce commissioning work thanks to quick installation and wiring with a single front connector
- Quick module exchange thanks to the simple one-click mounting rail release
- Significant space savings in the control cabinet with a 20% thinner housing compared to the predecessor version
- Design machines more compactly and benefit from faster processes thanks to short response times and reduced safety distances
- Increase machine availability with comprehensive diagnostic options
- Long service life even in highly dynamic processes with many switching cycles

Additional information

➜ **www.sick.com/ReLy**

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

Detailed technical data

Features

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Applications										
Output expansion module for OSSDs	✔		–							
Evaluation unit	–		✔							
Evaluation unit for stop category 1 applications	–				✔	–				
Compatible sensor types										
Safety sensors with OSSDs	✔					–				✔
Safety sensors with potential-free outputs	–				✔			–		✔
Safety sensors with test input	–									✔
Safety pressure mats	–									✔
Two-hand controls Type III C, in accordance with EN 574	–							✔	–	
Flexi Loop safe series connection	–								✔	–

Safety-related parameters

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)									
Category	Category 4 (ISO 13849-1)									
Performance level	PL e (ISO 13849-1)									
PFH$_D$ (mean probability of a dangerous failure per hour)	1.0×10^{-9}									1.5×10^{-9}
T$_M$ (mission time)	20 years (ISO 13849-1)									
Stop category in accordance with IEC 60204-1	0				0 [1] 1 [2]	0				

[1] For enabling current paths (13, 14, 23, 24).

[2] For release-delayed enabling current path (37, 38).

Functions

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Sensor monitoring										
Discrepancy monitoring	–				✔			–		✔
Sequence monitoring	–		✔			–				✔
Cross-circuit detection	–				✔			–		✔
Flexi Loop monitoring	–								✔	–
Restart interlock	–		✔					–	✔	
Reset	–		Automatic Manual					–	Automatic Manual	
External device monitoring (EDM)	–		✔							
Path for external device monitoring (EDM)	✔		–							

Interfaces

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Connection type	Front connector with spring terminals									
Inputs										
Safety inputs	2							4 [1]	2	
Inputs for external device monitoring (EDM)	–							1	–	
Inputs for reset pushbutton or external device monitoring (EDM)	–		1					–	1	
Outputs										
Freigabestrompfade (sicher) Enabling current paths (safe)	2	4	2	3	2		3	2	3	
Release-delayed enabling current paths, for stop category 1 applications (safe)	–				1	–				
Feedback current paths (for use as external device monitoring, not safe)	1		–							
Signaling current paths (not safe)	–	1	–							
Application diagnostic outputs (not safe)	–		2	–					1	2
Test pulse outputs (not safe)	–		1	3				–	1	2
Display elements	LEDs									
Configuration method										
Hard wired	–		✔							
DIP switches	–				✔	–				✔

[1] For connecting 2 control devices (both with normally closed and normally open)

Electrical data

Operating data

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Voltage supply	Passive (no active voltage supply)		PELV or SELV							
Supply voltage V_s	–		24 V DC (16.8 V … 30 V)							
Residual ripple	–		≤ 2.4 V							
Power consumption	–		≤ 2.5 W (DC)							
Power consumption (input circuits)	≤ 1.5 W (DC)	≤ 2.5 W (DC)	–							

Safety inputs

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number	2							4	2	
Input voltage										
HIGH	24 V DC (15 V … 30 V)		24 V DC (11 V … 30 V)							
LOW	0 V DC (–3 V … 5 V)									
Input current	≤ 50 mA	≤ 60 mA	4 mA … 6 mA							
Test pulse width	≤ 1 ms					–				≤ 1 ms
Test pulse rate	≤ 10 Hz					–				≤ 10 Hz
Activation time tolerance between the two start buttons	–				≤ 3 s			–	≤ 3 s	
Synchronization time (between the actuators)	–							≤ 500 ms	–	

Reset pushbutton or external device monitoring (EDM) input

		OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number		–		1					–	1	
Input voltage											
	HIGH	–		24 V DC (11 V … 30 V)					–	24 V DC (11 V … 30 V)	
	LOW	–		0 V DC (–3 V … 5 V)					–	0 V DC (–3 V … 5 V)	
Input current		–		4 mA … 6 mA					–	4 mA … 6 mA	

External device monitoring input (EDM)

		OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number		–							1	–	
Input voltage											
	HIGH	–							24 V DC (11 V … 30 V)	–	
	LOW	–							0 V DC (–3 V … 5 V)	–	
Input current		–							4 mA … 6 mA	–	

Enabling current paths

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Response time	12 ms		10 ms	12 ms		10 ms	12 ms	10 ms	79 ms	[1]
Number	2	4	2	3	2		3	2	3	
Type of output	N/O contacts, positively guided									
Contact material	Silver alloy, gold flashed									
Switching voltage	10 V AC … 230 V AC 10 V DC … 230 V DC									
Switching current	10 mA … 6 A									
Total current	12 A				12 A [2]		12 A			
Mechanical life (switching cycles)	10^7									
Overvoltage category	III (EN 60664-1)									
Rated impulse withstand voltage U_{imp}	6 kV (EN 60664-1)									

[1] Depends on the configured sensor type, for details see operating instructions
[2] Maximum total current for all 3 enabling current paths.

Enabling current paths, release-delayed

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Response time	–				12 ms	–				
Number	–				1	–				
Type of output	–				N/O contacts, positively guided	–				
Contact material	–				Silver alloy, gold flashed	–				
Switching voltage	–				10 V DC … 30 V DC	–				
Switching current	–				2 mA … 2 A	–				
Total current	–				12 A [1]	–				
Mechanical life (switching cycles)	–				10^7	–				

[1] Maximum total current for all 3 enabling current paths.

Check-back current paths

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number	1		–							
Type of output	N/C contact, positively guided		–							
Contact material	Silver alloy, gold flashed		–							
Switching voltage	15 V AC … 30 V AC 15 V DC … 30 V DC	10 V AC … 30 V AC 10 V DC … 30 V DC	–							
Switching current	3 mA … 100 mA		–							
Mechanical life (switching cycles)	10^7		–							

Signaling current paths

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number	–	1	–							
Type of output	–	N/C contact, positively guided	–							
Contact material	–	Silver alloy, gold flashed	–							
Switching voltage	–	10 V AC ... 30 V AC 10 V DC ... 30 V DC	–							
Switching current	–	10 mA ... 100 mA	–							
Mechanical life (switching cycles)	–	10^7	–							

Application diagnostic outputs

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number	–		2					1	2	
Type of output	–		Push-pull semiconductor output, short-circuit protected							
Output voltage										
HIGH	–		≥ V_s – 3 V							
LOW	–		≤ 3 V							
Input current (NPN)	–		≤ 15 mA							
Output current (PNP)	–		≤ 120 mA							

Test pulse outputs

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Number	–		1		3			–	1	2
Type of output	–		PNP semiconductors, short-circuit protected					–	PNP semiconductors, short-circuit protected	
Output voltage	–		≥ V_s – 3 V					–	≥ V_s – 3 V	
Test pulse width	–		2 ms					–	2 ms	[1]
Test pulse interval	–		40 ms					–	40 ms	[1]

[1] Depends on the configured sensor type, for details see operating instructions.

Mechanical data

	OSSD1	OSSD4	OSSD2	OSSD3	TIME1	EMSS1	EMSS3	HAND1	LOOP1	MULT1
Dimensions (W x H x D)	See dimensional drawings									
Housing width	18 mm	28 mm	18 mm							
Weight	130 g	180 g	130 g	150 g	160 g	130 g	150 g	130 g	160 g	

Ambient data

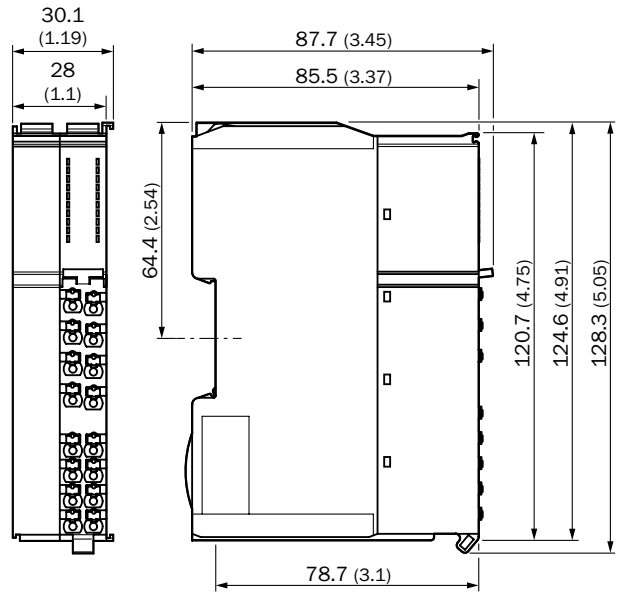|	
Enclosure rating	IP20 (IEC 60529)
Ambient operating temperature	–25 °C ... +55 °C
Storage temperature	–25 °C ... +70 °C
Air humidity	10 % ... 95 %, Non-condensing
Interference emission	According to IEC 61000-6-4
Interference resistance	According to IEC 61326-3-1 According to IEC 61000-6-2 According to IEC 60947-5-1

Ordering information

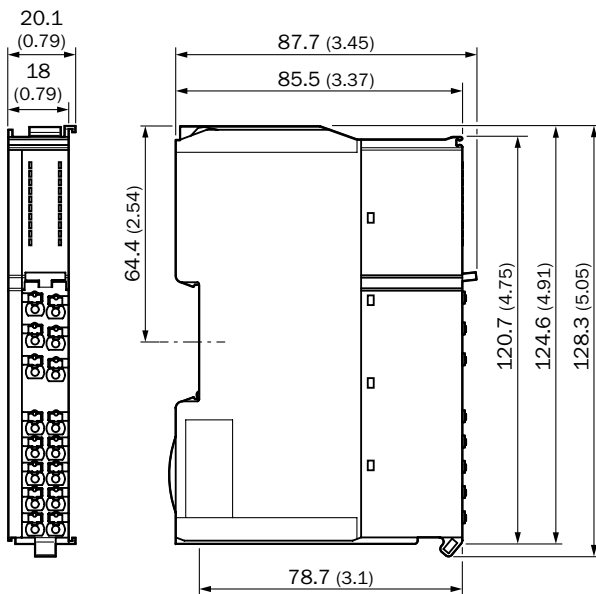| Applications	Compatible sensor types	Enabling current paths	Housing width	Type	Part no.
Output expansion module for OSSDs	Safety sensors with OSSDs	2	18 mm	RLY3-OSSD100	1085343
		4	28 mm	RLY3-OSSD400	1099971
Evaluation unit	Safety sensors with OSSDs	2	18 mm	RLY3-OSSD200	1085344
		3	18 mm	RLY3-OSSD300	1099969
Evaluation unit for stop category 1 applications	Safety sensors with OSSDs, safety sensors with potential-free outputs	2+1	18 mm	RLY3-TIME100	1100688
Evaluation unit	Safety sensors with potential-free outputs	2	18 mm	RLY3-EMSS100	1085345
		3	18 mm	RLY3-EMSS300	1099973
	Two-hand controls Type III C, in accordance with EN 574	2	18 mm	RLY3-HAND100	1085346
	Flexi Loop safe series connection	3	18 mm	RLY3-LOOP100	1100696
	Safety sensors with OSSDs, safety sensors with potential-free outputs, safety sensors with test input, safety pressure mats	3	18 mm	RLY3-MULT100	1100692

Dimensional drawings (Dimensions in mm (inch))

EMSS1, HAND1, OSSD1, OSSD2, TIME1

20.1 (0.79)
18 (0.79)

87.7 (3.45)
85.5 (3.37)
64.4 (2.54)
120.7 (4.75)
124.6 (4.91)
128.3 (5.05)
78.7 (3.1)

OSSD4

30.1 (1.19)
28 (1.1)

87.7 (3.45)
85.5 (3.37)
64.4 (2.54)
120.7 (4.75)
124.6 (4.91)
128.3 (5.05)
78.7 (3.1)

EMSS3, LOOP1, MULT1, OSSD3

20.1 (0.79)
18 (0.79)

87.7 (3.45)
85.5 (3.37)
64.4 (2.54)
120.7 (4.75)
124.6 (4.91)
128.3 (5.05)
78.7 (3.1)
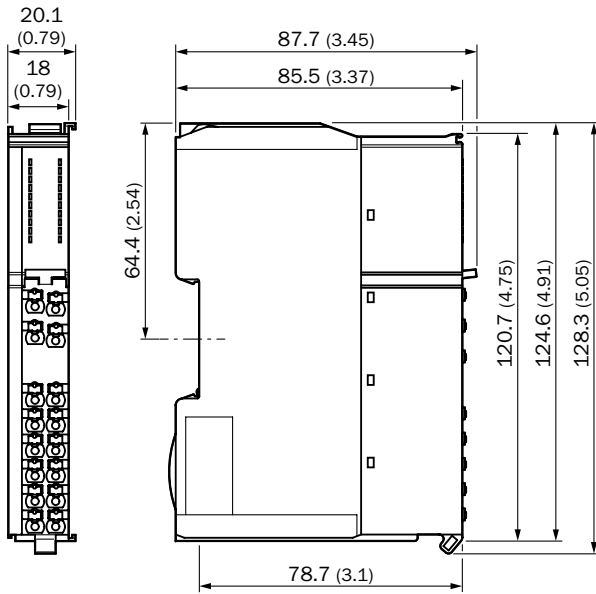
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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 10,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

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

That is "Sensor Intelligence."

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

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