Photoelectric laser sensors

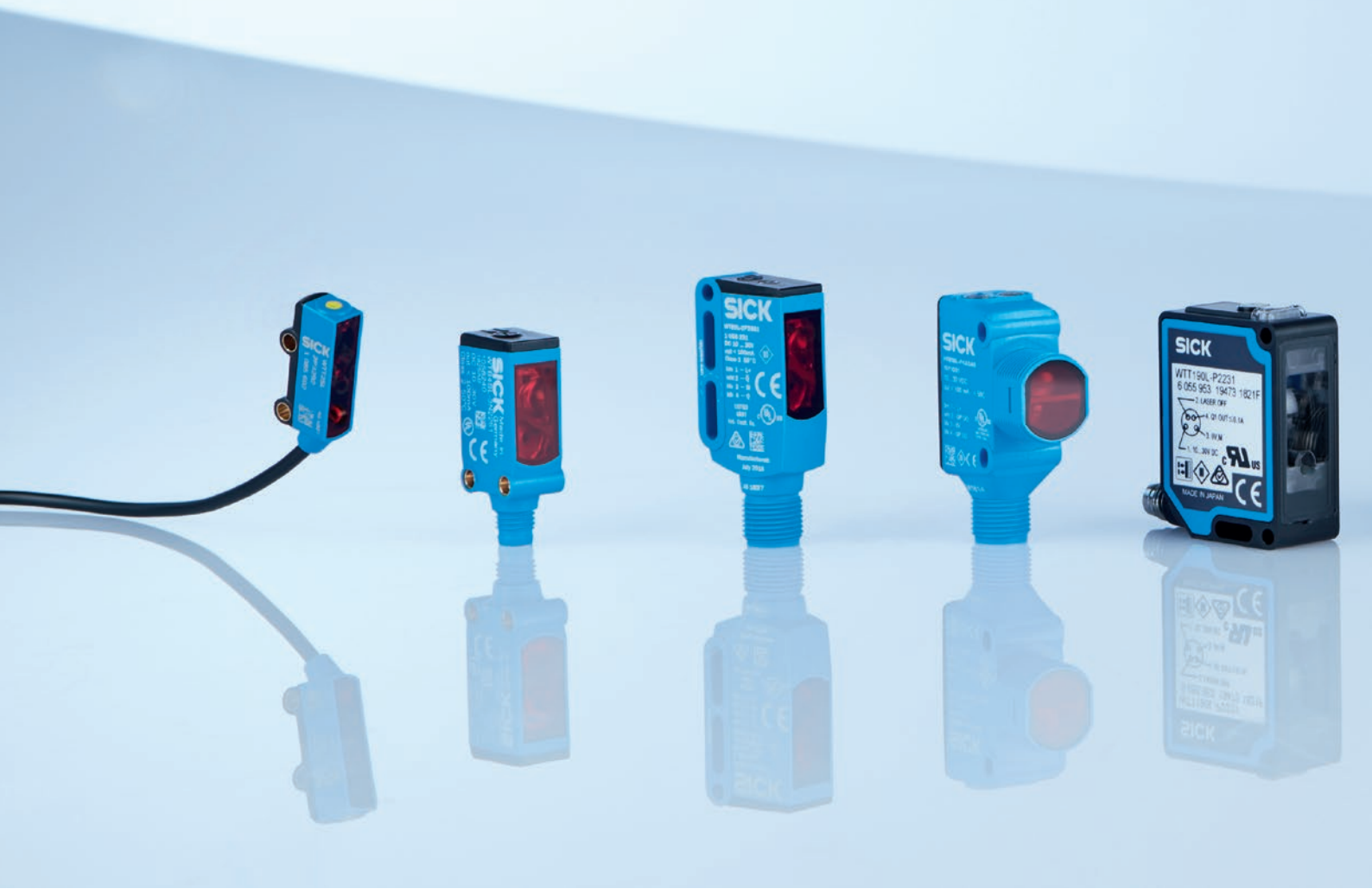
OVERVIEW OF THE PRODUCTS

SICK
Sensor Intelligence.

LASER EXPERTISE FROM SICK

Laser technology based sensors are the number one choice when it comes to detecting tiny objects, especially under challenging environmental conditions. The laser sensors from SICK provide the optimal solution even with metallic reflections, in tight spaces, under the influence of ambient light from modern energy-saving lamps, or when detecting through small drilled holes.

The extremely small light spots provide the ideal starting point for precise object and feature detection in automation. They make the sensors ideal for precise position, presence, overhang and height checks even under challenging installation and light conditions. The concentrated light spot allows very accurate switching, thus providing the basis not only for optimum product quality but also for reduced machine downtimes as fewer switching errors arise.



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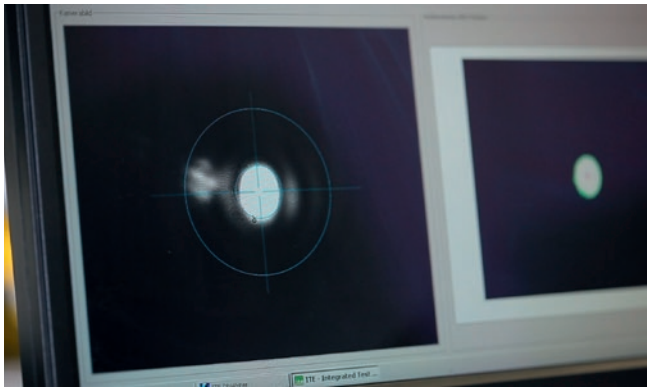
The laser technology based product families from SICK are perfect for the packaging industry, the automotive and parts supply industry, the electronics industry, and the solar industry. But that's not all: laser sensors also deliver optimum results in machine tool building, in the food and beverage industry, and the pharmaceutical industry. Their applications include, for example, examining grippers in the automotive industry, inspecting dies in machine tool construction, or detecting wafer edges.

YOUR ADVANTAGES AT A GLANCE

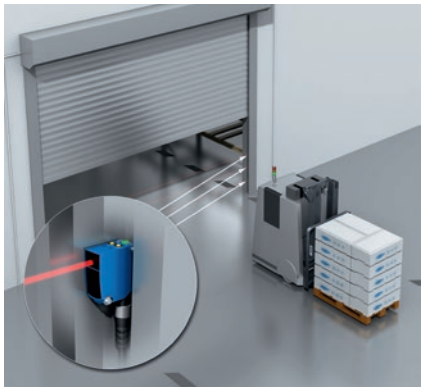
- Maximum precision thanks to concentrated light spot
- High-performance solutions for specialized applications involving long sensing ranges
- Fast commissioning through simple alignment
- Eye safe thanks to laser class 1 and 2

DIVERSE LASER EXPERTISE FROM A SINGLE SOURCE



Maximum precision

Our laser sensors perform their detection task with maximum precision – even with ultrasmall objects and object characteristics. The secret of this performance is the optimum adjustment: Every sensor is precisely pre-adjusted in production. We automatically focus and align the light beam to keep the variations between the individual sensors as small as possible. The advantage: Replacing a sensor in your system is simple and requires minimal installation effort. This makes it effortless to use the appropriate device for each application.



Very long sensing ranges

To ensure the highest possible energy density, the light emitted by the laser diodes is concentrated. This enables very long sensing ranges to be achieved, even for miniature sensors.

Fast commissioning

The high quality of the components selected for our laser sensors guarantees their high performance. Thanks to the uniform wavelength and parallel beam path of the laser diodes, the light beam is sharply concentrated and exhibits a high intensity and energy density. Laser sensors with red light therefore possess a sharply delimited, clearly visible light spot. This enables them to be easily aligned with objects or reflectors, thereby saving valuable time during commissioning.

Laser photoelectric retro-reflective sensors

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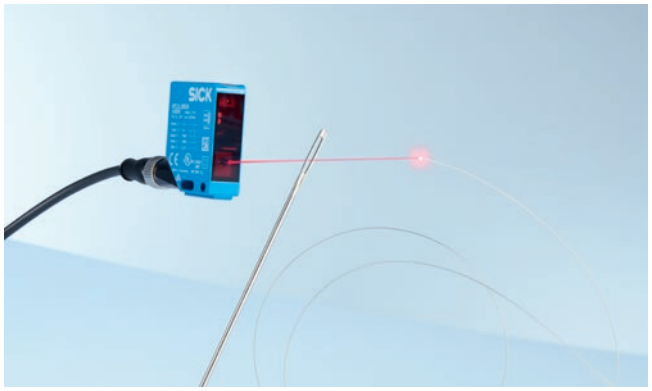
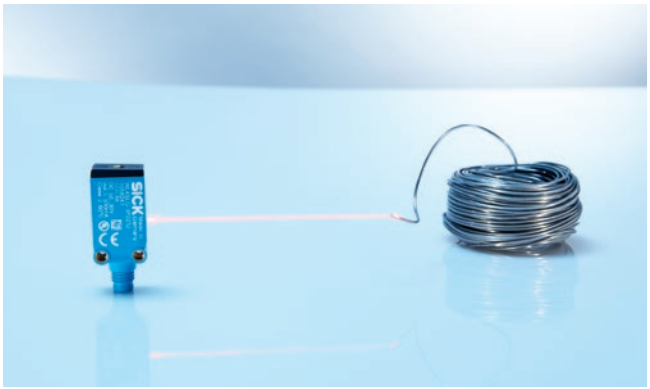


Detection through extremely small openings

The beam characteristics of the laser diode, and the special lenses that further concentrate the emitted light ensure sharply delimited laser spots. The laser sensors can therefore also safely and reliably detect objects through extremely small openings, and deliver stable switching signals even under adverse application and installation conditions.



Detection of extremely small objects

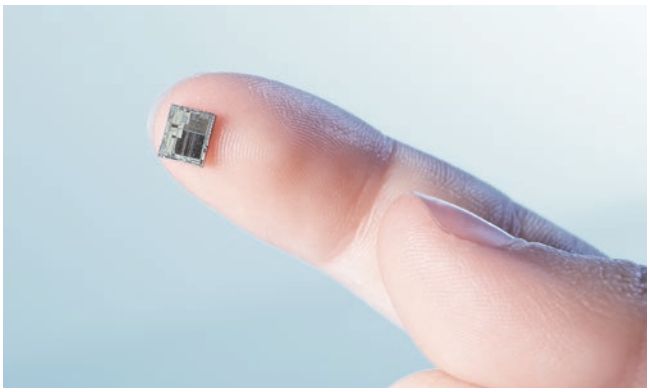
The consistent focusing of the laser spots enables extremely small objects or position differences to be reliably detected – even at long sensing ranges.

Extremely stringent requirements throughout the entire development and production process

The housings, which are made from durable metals or the glass fiber reinforced plastic VISTAL®, ensure a high level of mechanical ruggedness. We regularly put our materials to the test in special shock, leak and chemical tests.

When developing new laser sensors, we focus particularly on optical design. This, together with SIRIC®, an ASIC technology specially developed by SICK, makes our solutions optically rugged and insensitive to ambient light, background reflections, and other types of interference.

SICK sensors are also tested with regard to their electromagnetic properties and compatibility in in-house test laboratories.



LASER CLASSES

DIN EN/IEC60825-1:2014

Industrial laser equipment are classified into laser classes to make it immediately clear whether they pose a potential hazard, and any necessary protective measures the user must take. They are classified according to the risk of injury to the skin and eyes. To make it as easy as possible for our customers to use our laser sensors and to avoid the need for protective measures, all of our photoelectric laser sensors are rated as class 1 or 2 lasers.

Laser class	Hazard potential
1	**The accessible laser radiation is harmless under reasonably foreseeable conditions.**
1M	The accessible laser radiation is harmless to the eye as long as the beam cross section is not reduced by optical instruments such as magnifying glasses.
2	**The laser radiation lies in the visible spectral range (400 nm to 700 nm). It is harmless to the eye for short periods of exposure (up to 0.25 s).**

Protective measures required:

2M	The laser radiation lies in the visible spectral range (400 nm to 700 nm). It is harmless to the eye for short periods of exposure (up to 0.25 s) as long as the beam cross section is not reduced by optical instruments such as magnifying glasses.
3R	The accessible laser radiation is potentially dangerous to the eyes.
3B	The accessible laser radiation is dangerous to the eyes and potentially also to the skin. Diffusely scattered radiation is generally safe.
4	The accessible laser radiation is very dangerous to the eyes and dangerous to the skin. Even diffusely scattered radiation can be dangerous. The laser radiation can cause fire or explosion hazards.

SMART SENSOR

Our Smart Sensors provide a future-proof means of making your automation network more efficient. Our laser portfolio also includes smart sensors.

SMART SENSORS

Enhanced Sensing
Top sensor performance for a stable process

Efficient Communication
Flexibility and transparency at the lowest field level

& Enhanced Sensing and Efficient Communication characterize every Smart Sensor.

Diagnostics
Highest availability levels thanks to predictive maintenance

Smart Tasks
From raw signals to customized information

+ Several Smart Sensors are also equipped with Diagnostics and/or Smart Task functions. For more details see pages 14/15.

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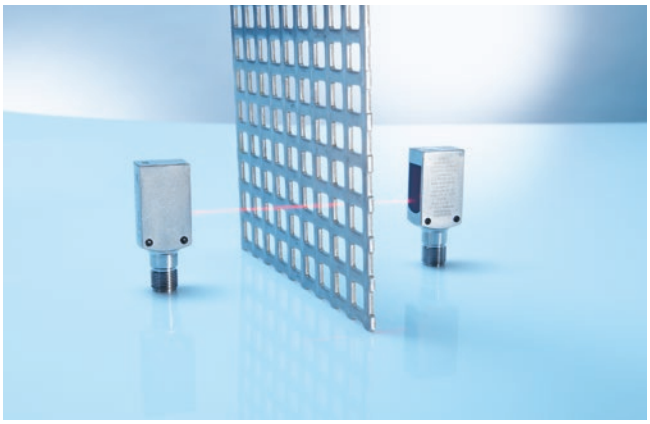
A SUITABLE SPECIALIST FOR EVERY APPLICATION

Depending on the actual conditions of the application, there can be very specific requirements on the sensor technology. The selection of a suitable detection principle and sensor type is therefore always linked to the particular application. The following applies when doing so: the more precise the requirements, the more cost effective the corresponding solution in operation.

Laser photoelectric retro-reflective sensors

Laser photoelectric retro-reflective sensors require a special fine triple reflector to ensure a stable detection result.

- Reliable view through openings in patterned parts
- Easy alignment to reflectors thanks to the well visible laser spot – even at very long sensing ranges

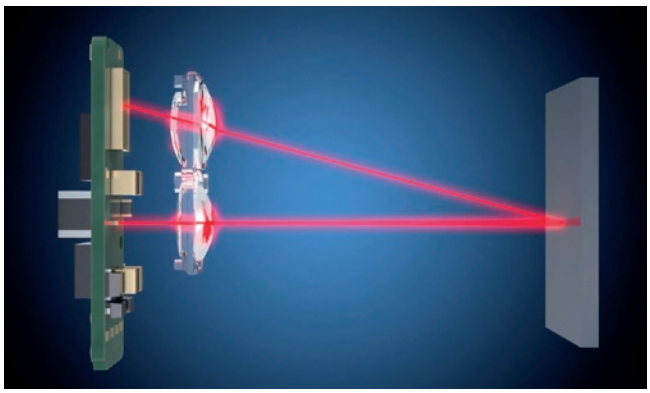


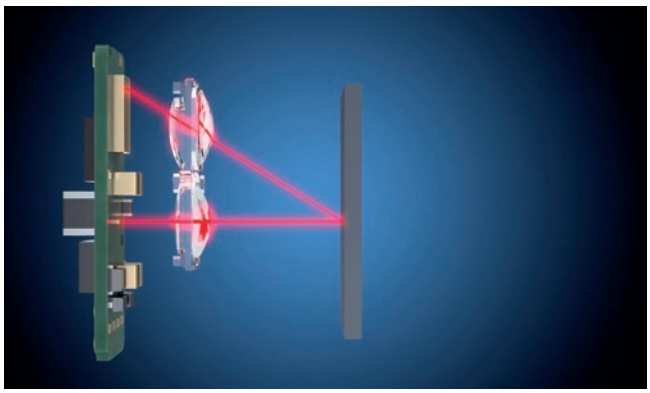
Laser through-beam photoelectric sensors

When the light beam is interrupted by an object passing into it, the sensor switches. Since the beam is continuous, precise alignment of the sender with the receiver is essential to the detection result.

- Very long sensing ranges up to 80 m
- Maximum switching precision over the entire sensing range as objects enter the light beam
- The high operating reserve guarantees a stable process even in harsh ambient conditions such as dust and fog

LASER PHOTOELECTRIC PROXIMITY SENSORS – BACKGROUND SUPPRESSION VERSUS TIME-OF-FLIGHT





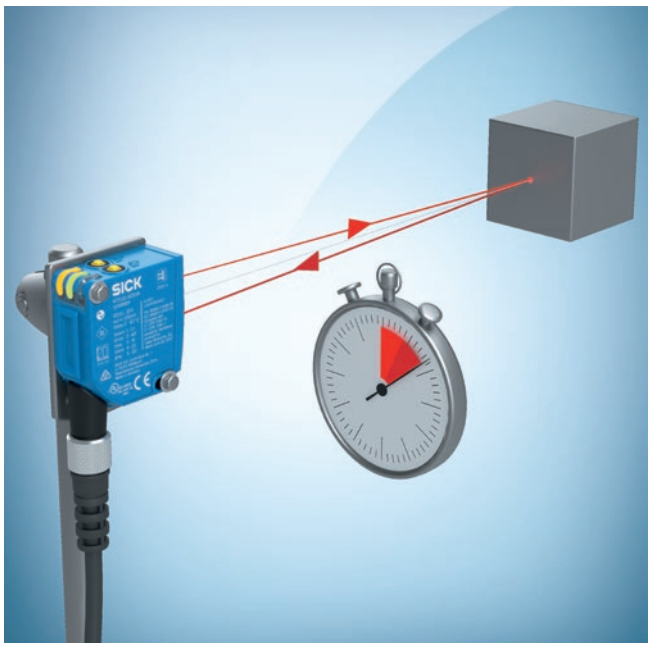
The background suppression feature is based on a distance measurement that involves the calculation of an angle, which is referred to technically as triangulation.

The sensor projects a light spot onto the object to be detected. The light reflected from the object hits the receiver array at an angle that depends on the distance. The distance of the object is determined based on the position of the light spot on the receiver element.

- Maximum precision when detecting objects against close backgrounds
- Thanks to minimal blind areas, even very close objects can be reliably detected

The time-of-flight principle determines the distance between the sensor and the object by measuring the time from when a laser pulse is emitted until its reflection arrives back at the receiver element of the sensor.

- Consistently precise measurement data even at very long sensing ranges – virtually independent of the object color
- Reliable object detection even at large detection angles
- Increased resistance to ambient light and background reflections
- Continuously available distance signals via IO-Link or analog output



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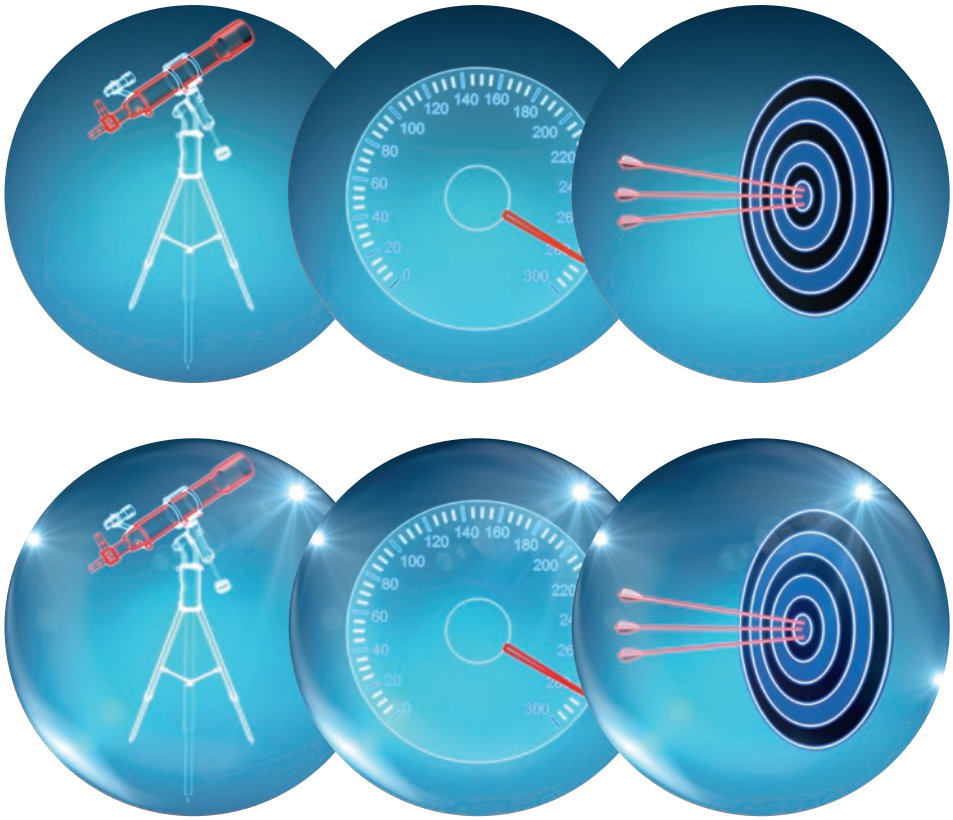
THE RIGHT SELECTION FOR THE BEST RESULTS

The standard variants of our time-of-flight sensors are suitable for a wide variety of applications and are ideal for detecting objects at a large distance. The color and material of the objects to be detected is almost irrelevant. The standard variants deliver outstanding results for light, dark or matt surfaces and, which is their particular feature, even at extreme angles and for shiny or jet-black objects.

- Long sensing ranges
- Reliable detection at extreme angles and even with shiny objects



- The high measurement accuracy even for very shiny objects guarantees precise process control
- Reliable switching – even with steam or fog present – ensures stable machine processes

The Shiny variants of the PowerProx product family from SICK have been specially developed for detecting shiny and highly reflective objects at a 90° detection angle. These surfaces reflect an especially high proportion of the light directly back to the receiver element of the sensor, which can lead to measuring inaccuracies. The Shiny variants are equipped with a special filter technology that enables them to determine the distance of highly reflective objects very precisely and reliably.

PHOTOELECTRIC PROXIMITY SENSOR

Product family		Dimensions (W x H x D)	Detection principle		Housing material				Laser class		Photoelectric proximity sensor	
			Background suppression	Energetic	Stainless steel	Metal	Plastic	VISTAL®	1	2	Max. sensing range [1] [2]	
Cuboid proximity sensors												
	G6L	12 mm x 31.5 mm x 21 mm	■	■			■		■		white 10 mm ... 450 mm black 10 mm ... 180 mm	
	W8L	11 mm x 31 mm x 20 mm	■				■		■		white 30 mm ... 300 mm black 40 mm ... 180 mm	
	W100L	11 mm x 31 mm x 20 mm		■			■		■		white 5 mm ... 450 mm black 5 mm ... 400 mm	
	W4SL-3	12.2 mm x 41.8 mm x 17.3 mm	■				■		■		white 25 mm ... 300 mm black 25 mm ... 170 mm	
	W4SL-3V	15.3 mm x 55.4 mm x 22.2 mm	■		■				■		white 25 mm ... 300 mm black 25 mm ... 170 mm	
	W4SL-3H	15.3 mm x 63.2 mm x 22.2 mm	■		■				■		white 25 mm ... 300 mm black 25 mm ... 170 mm	
	W9L-3	12.2 mm x 52.5 mm x 23.6 mm	■					■	■		white 25 mm ... 300 mm black 25 mm ... 170 mm	
								■		■	white 25 mm ... 400 mm black 25 mm ... 230 mm	
	W12-2 laser	15 mm x 49 mm x 41.5 mm	■			■				■	white 20 mm ... 50 mm black 20 mm ... 50 mm	
						■			■	■	white 30 mm ... 200 mm black 30 mm ... 170 mm	
Cylindrical proximity sensors												
	V18L Axial	80.1 mm M18 x 1	■			■			■		white 40 mm ... 120 mm black 40 mm ... 80 mm	
	V18L Radial	89.6 mm M18 x 1	■			■			■		white 40 mm ... 120 mm black 40 mm ... 60 mm	
Hybrid proximity sensors												
	H18L	16.2 mm x 48.5 mm x 31.8 mm M18 x 1	■					■	■		white 30 mm ... 300 mm black 30 mm ... 250 mm	

[1] Object with 90% remission (based on standard white, DIN 5033).
[2] Object with 6% remission (based on standard black, DIN 5033).

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	Light spot size and shape [3]	Minimum distance between object and background [4] [5]	Smallest object to be detected [6]	Response time/ switching frequency	Smart Sensor
	● Ø 4.5 mm at 400 mm	2.5 mm at 50 mm 20 mm at 150 mm	typically 0.4 mm	≤ 0.625 ms 1,000 Hz	
	● Ø 1.5 mm at 300 mm	3 mm at 50 mm 9 mm at 150 mm	typically 0.2 mm	≤ 0.25 ms 2,000 Hz	
	● Ø 1.5 mm at 300 mm	–	typically 0.2 mm	≤ 0.25 ms 2,000 Hz	
	● Ø 1 mm at 150 mm	2 mm at 50 mm 19 mm at 150 mm	typically 0.2 mm	≤ 0.5 ms 1,000 Hz	
	● Ø 1 mm at 150 mm	2 mm at 50 mm 19 mm at 150 mm	typically 0.2 mm	≤ 0.5 ms 1,000 Hz	
	● Ø 1 mm at 150 mm	2 mm at 50 mm 19 mm at 150 mm	typically 0.2 mm	≤ 0.5 ms 1,000 Hz	
	● Ø 0.8 mm at 300 mm	2 mm at 50 mm 19 mm at 150 mm	typically 0.2 mm	≤ 0.5 ms 1,000 Hz	
	● Ø 0.8 mm at 400 mm	0.5 mm at 50 mm 13.5 mm at 150 mm	typically 0.2 mm	≤ 1 ms 500 Hz	
	● Ø 0.1 mm at 45 mm	1 mm at 50 mm	typically 0.2 mm	≤ 0.2 ms 2,500 Hz	
	● Ø 0.1 mm at 45 mm (focus 45 mm) ● Ø 0.2 mm at 100 mm (focus 80/100 mm)	0.75 mm at 50 mm 5 mm at 150 mm	typically 0.2 mm	≤ 0.2 ms 2,500 Hz	
	● Ø 1 mm at 100 mm	2 mm at 50 mm 5 mm at 100 mm	typically 0.2 mm	≤ 0.5 ms 1,500 Hz	
	● Ø 1 mm at 100 mm	2 mm at 50 mm 5 mm at 80 mm	typically 0.2 mm	≤ 0.5 ms 1,500 Hz	
	● Ø 3 mm x 1.2 mm at 150 mm	1 mm at 50 mm 10.5 mm at 150 mm	typically 0.2 mm	≤ 0.5 ms 1,000 Hz	

[3] Value at the focus position of the light spot.
[4] See page 16 for more detailed values.
[5] Black object (6%) in front of white background (90%).
[6] Value at the focus position of the light spot, white object (90%), no background.

RETRO-REFLECTIVE/THROUGH-BEAM PHOTOELECTRIC SENSORS

Product family		Dimensions (W x H x D)	Housing material				Laser class		Photoelectric retro-reflective sensors	
			Stainless steel	Metal	Plastic	VISTAL®	1	2	Max. sensing range	Light spot size and shape [2]
Cuboid photoelectric sensors										
	G6L	12 mm x 31.5 mm x 21 mm			■		■		0.08 m ... 12 m	● Ø 28 mm at 5 m
	W100L	11 mm x 31 mm x 20 mm			■		■		0.08 m ... 12 m	● Ø 7 mm at 6 m
	W4SL-3	12.2 mm x 41.8 mm x 17.3 mm			■		■		0 m ... 12 m	● Ø 1 mm at 0.6 m
	W4SLG-3				■		■		0 m ... 3.5 m	● Ø 1 mm at 0.6 m
									0 m ... 4.5 m [1]	● Ø 1 mm at 0.5 m
	W4SL-3V	15.3 mm x 55.4 mm x 22.2 mm	■				■			
	W4SLG-3V		■				■		0 m ... 3.5 m [1]	● Ø 0.4 mm at 0.06 m
									0 m ... 4.5 m [1]	● Ø 1 mm at 0.5 m
	W4SL-3H	15.3 mm x 63.2 mm x 22.2 mm	■				■			
	W4SLG-3H		■				■		0 m ... 3.5 m / 4.5 m	● Ø 0.4 mm at 0.06 m
									0 m ... 4.5 m [1]	● Ø 1 mm at 0.5 m
	W9L-3	12.2 mm x 52.5 mm x 23.6 mm				■	■		0 m ... 12 m	● Ø 1 mm at 0.6 m
	W9LG-3						■		0 m ... 3.5 m / 4.5 m	● Ø 0.04 mm at 0.06 m
									0 m ... 4.5 m [1]	● Ø 1 mm at 0.5 m
	W12-2 laser	15 mm x 49 mm x 41.5 mm		■				■	0 m ... 15 m	● Ø 0.8 mm at 300 mm
				■			■	■	0 m ... 18 m	
Cylindrical photoelectric sensors										
	V18L Axial	80.1 mm M18 x 1		■			■	■	0.1 m ... 35 m	● Ø 8 mm at 15 m
	V18L Radial	89.6 mm M18 x 1		■			■	■	0.1 m ... 35 m	● Ø 8 mm at 15 m
Hybrid photoelectric sensors										
	H18L	16.2 mm x 48.5 mm x 31.8 mm | M18 x1				■	■	■	0.1 m ... 12 m	● Ø 2 mm at 2 m

[1] Type-dependent.
[2] All values at the respective focus position of the light spot.

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				Through-beam photoelectric sensors			
	Response time switching frequency	Auto-collimation	Dual lens	Max. sensing range	Light spot size and shape	Response time switching frequency	Smart Sensor
	≤ 0.625 ms 1,000 Hz		■	0 m ... 40 m	● Ø 90 mm at 30 m	≤ 0.625 ms 1,000 Hz	
	≤ 0.25 ms 2,000 Hz		■	0 m ... 35 m	● Ø 30 mm at 30 m	≤ 0.25 ms 2,000 Hz	
	≤ 0.5 ms 1,000 Hz	■		0 m ... 60 m	● Ø 160 mm x 100 mm at 30 m	≤ 0.5 ms 1,000 Hz	
		■					
				0 m ... 60 m	● Ø 160 mm x 100 mm at 30 m	≤ 0.5 ms 1,000 Hz	
	≤ 0.5 ms 1,000 Hz	■					
				0 m ... 60 m	● Ø 160 mm x 100 mm at 30 m	≤ 0.5 ms 1,000 Hz	
	≤ 0.5 ms 1,000 Hz	■					
	≤ 0.5 ms 1,000 Hz	■		0 m ... 60 m	● Ø 160 mm x 100 mm at 30 m	≤ 0.5 ms 1,000 Hz	
		■					
	≤ 0.5/0.2 ms 1,500/2,500 Hz	■		0 m ... 10 m	● Ø 1 mm at 1 m	≤ 0.2 ms 2,500 Hz	
		■		0 m ... 80 m	● Ø 150 mm at 60 m	≤ 0.5/0.25 ms 1,000/2,000 Hz	
	≤ 0.625 ms 800 Hz		■	0 m ... 60 m	● Ø 35 mm at 30 m	≤ 0.5 ms 1,000 Hz	
	≤ 0.625 ms 800 Hz		■	0 m ... 60 m	● Ø 35 mm at 30 m	≤ 0.5 ms 1,000 Hz	
	≤ 0.5 ms 1,000 Hz		■	0 m ... 60 m	● 25 mm x 13 mm at 30 m	≤ 0.5 ms 1,000 Hz	

TIME-OF-FLIGHT SENSORS

Product family		Dimensions (W x H x D)	Housing material				Laser class		Type of light		Photoelectric proximity sensor	
			Stainless steel	Metal	Plastic	VISTAL®	1	2	Visible red light	Infrared light	Max. sensing range	
Time-of-flight sensors												
	WTT2SL	7.7 mm x 27.5 mm x 13.5 mm			■		■			■	white 50 mm ... 800 mm black 50 mm ... 800 mm	
	WTT4SL Speed	12.2 mm x 41.8 mm x 17.3 mm			■		■		■		white 50 mm ... 1,000 mm black 50 mm ... 1,000 mm	
	WTT4SL Distance				■		■		■		white 50 mm ... 1,300 mm black 50 mm ... 1,300 mm	
	WTT190L	17.4 mm x 45.6 mm x 34.7 mm			■		■		■		white 200 mm ... 3,000 mm black 200 mm ... 3,000 mm	
	WTT12L Precision	20 mm x 49.6 mm x 44.2 mm				■	■		■	■	white 50 mm ... 1,800 mm black 100 mm ... 1,800 mm	
	WTT12L Speed					■	■		■	■	white 50 mm ... 2,500 mm black 100 mm ... 2,500 mm	
	WTT12L Distance					■	■		■	■	white 50 mm ... 3,800 mm black 100 mm ... 3,800 mm	
	WTT12L Precision Shiny	20 mm x 49.6 mm x 44.2 mm				■	■		■		white 50 mm ... 1,400 mm black 100 mm ... 1,400 mm	
	WTT12L Speed Shiny					■	■		■		white 50 mm ... 1,600 mm black 100 mm ... 1,600 mm	
	WTT12L Distance Shiny					■	■		■		white 50 mm ... 1,800 mm black 100 mm ... 1,800 mm	
	WTT280L	23.5 mm x 76 mm x 55.8 mm			■		■		■		white 200 mm ... 4,000 mm black 200 mm ... 3,000 mm	

[1] At half of max. sensing range.
[2] Value at 1 m, white object (90%), no background.
[3] White object (90%) in front of white background (90%).
[4] Depends on the average setting.
[5] Corresponds to 1σ.
[6] ±- 30 mm at 0.2 m .... 2 m
±- 50 mm at 2 m ... 3 m

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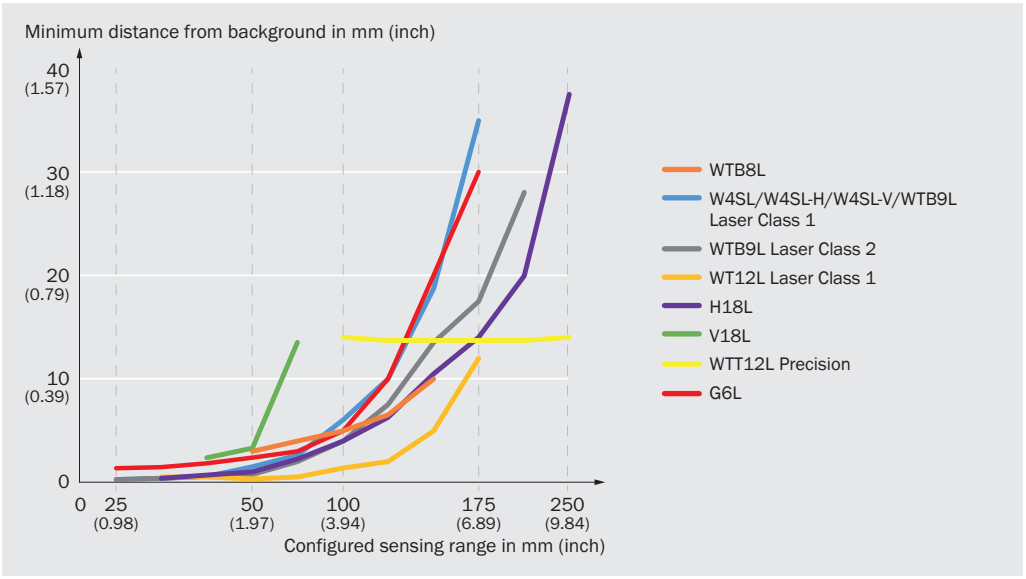
	Light spot size and shape [1]	Smallest object to be detected [2]	Minimum distance between object and background [3]	Distance value resolution Distance value repeatability Distance value accuracy	Response time / switching frequency	Smart Sensors
	 Ø 11 mm at 400 mm	typically 0.2 mm	85 mm at 50 mm 125 mm at 800 mm	1 mm 2 ... 5 mm [5] ± 20 mm	95 ms 5 Hz	
	 Ø 4 mm at 1,000 mm	typically 0.2 mm	60 mm at 250 mm 75 mm at 900 mm	1 mm 7,5 ... 13 mm –10 ... +80 mm	1,000 Hz	
	 Ø 4 mm at 1,000 mm	typically 0.2 mm	50 mm at 250 mm 70 mm at 1000 mm	1 mm 4,5 ... 11 mm –10 ... +80 mm	100 Hz	
	 Ø 4 mm at 1,500 mm	typically 0.2 mm	60 mm at 200 mm [4] 160 mm at 3,000 mm	2 mm 5 ... 80 mm [5] ± 30 mm [6]	0.6 ms .. 51.4 ms [8] 10 ... 833 Hz [8]	
	 8 x 6 mm at 900 mm	typically 0.2 mm	13 mm at 100 mm 14 mm at 1,800 mm	1 mm 0.9 ... 1.3 mm [5] ± 15 mm	16.7 ms 30 Hz	
	 9 x 7 mm at 1,250 mm	typically 0.2 mm	21 mm at 100 mm 36 mm at 2,500 mm	1 mm 2.3 ... 6.1 mm [5] ± 15 mm	0.5 ms 1,000 Hz	
	 12 x 9 mm at 1,900 mm	typically 0.2 mm	15 mm at 100 mm 24 mm at 3,800 mm	1 mm 1.1 ... 3 mm [5] ± 15 mm	5 ms 100 Hz	
	 8 x 6 mm at 700 mm	typically 0.2 mm	17 mm at 100 mm 17 mm at 1,400 mm	1 mm 1.1 ... 1.5 mm ± 20 mm [7]	16.7 ms 30 Hz	
	 8 x 6 mm at 800 mm	typically 0.2 mm	36 mm at 100 mm 42 mm at 1,600 mm	1 mm 2.7 ... 8.0 mm ± 20 mm [7]	0.5 ms 1,000 Hz	
	 8 x 6 mm at 900 mm	typically 0.2 mm	20 mm at 100 mm 22 mm at 1,800 mm	1 mm 1.2 ... 3 mm ± 20 mm [7]	5 ms 100 Hz	
	 Ø 12 mm at 3 m	typically 0.2 mm	47 mm at 200 mm 75 mm at 3,000 mm		0.5 ms 1,000 Hz	

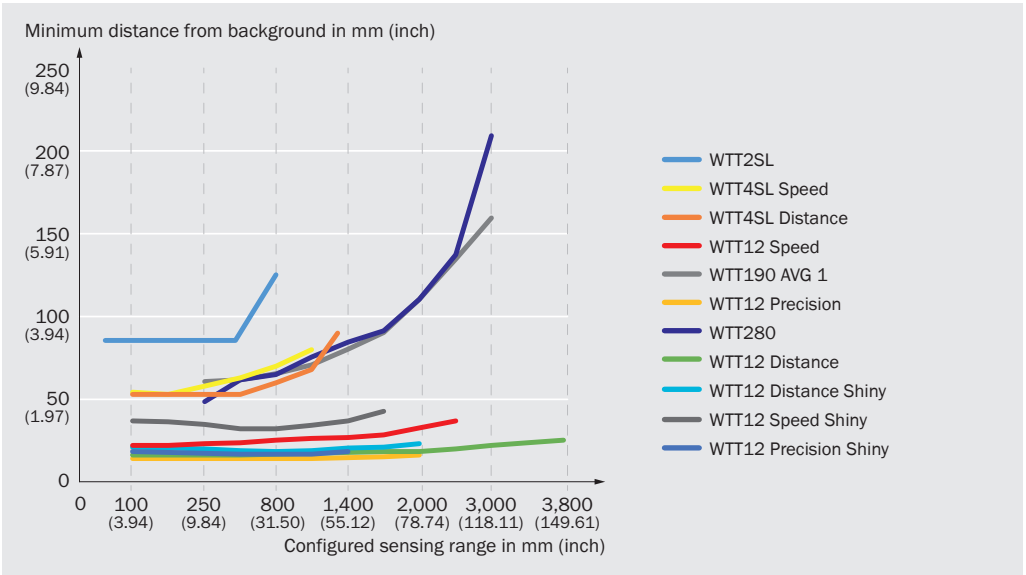
[7] ± 20 mm at 50 mm ... 1,000 mm
± 15 mm at 1,000 mm ... 1,400 mm
[8] Type-dependent/selectable via menu.

BACKGROUND SUPPRESSION – COMPARISON



Laser photoelectric proximity sensors

Minimum distance in mm between the configured sensing range and background [1)]

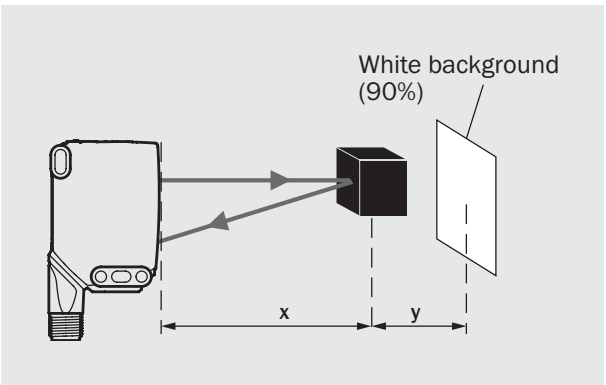


Time-of-flight photoelectric proximity sensors

Minimum distance in mm between the configured sensing range and background [1)]

Example

WTT2SL: At a sensing range of 50 mm to 500 mm, the distance between a black object and a white background must be at least 85 mm to enable the background to be reliably suppressed.



[1)] Black object (6% remission) in front of white background (90% remission)

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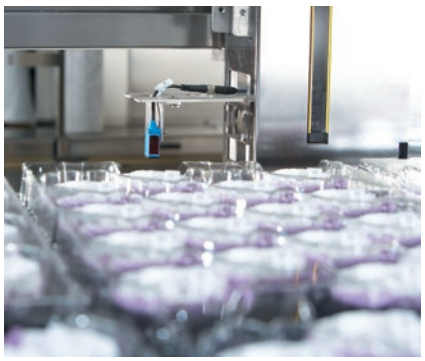
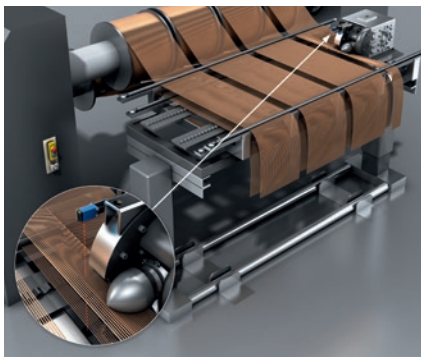
FOR APPLICATIONS THAT REQUIRE MAXIMUM PRECISION



PROTRUSION MONITORING

After the goods have been placed on the tray, the WL4SL-3 photoelectric retro-reflective sensor checks whether any objects are protruding and could thereby cause a collision. The well visible and highly precise laser spot can detect even the smallest protruding part.

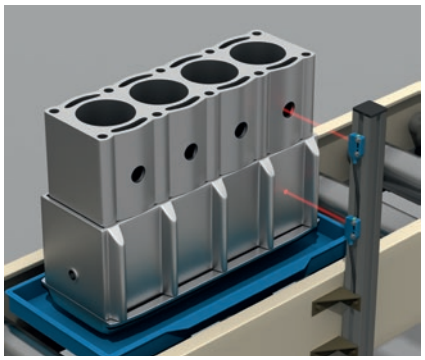
➜ www.sick.com/W4SL-3



DETECTION OF VERY FINE YARNS IN WARP KNOTTING MACHINES

To reduce the downtime of weaving machines, it is necessary to tie the ends of yarns together. Warp knotting machines process a variety of yarn types – from coarse to very fine. Two WTB4SL-3 photoelectric proximity sensors detect even the finest yarns and thereby ensure problem-free tying of the yarn ends.

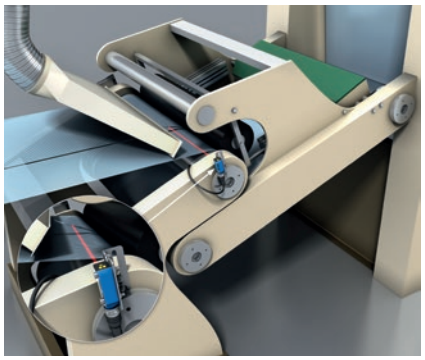
➜ www.sick.com/W4SL-3



OPTICAL INLINE QUALITY CONTROL

Comprehensive quality control also includes checking the machining of the engine block. Thanks the precise light spot of the W9L-3 photoelectric proximity sensor, even the smallest holes and machining defects on the engine block can be reliably detected.

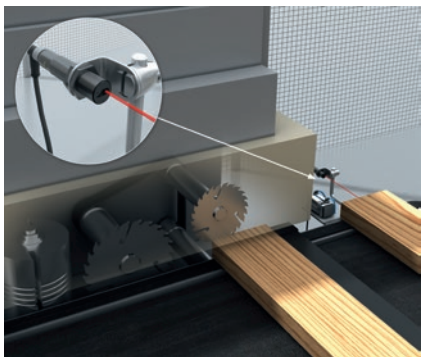
➜ www.sick.com/W9L-3



FIBER BREAK MONITORING

During the production of fine plastic fibers, the highly precise W9LG-3 small photoelectric sensor detects breaks in the fiber directly downstream of the fiber cutting equipment. This minimizes the amount of scrap in the production process.

➜ www.sick.com/W9LG-3



FAST BOARD DETECTION FOR WOOD ALIGNMENT

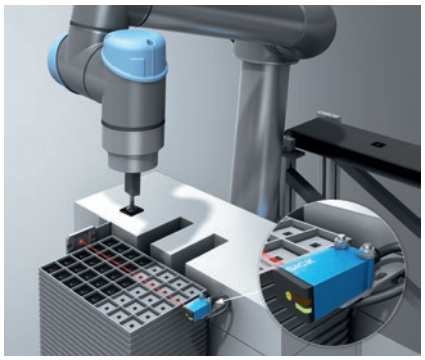
Thanks to a switching frequency of 1.5 kHz, the V18 laser photoelectric retro-reflective sensor with a rugged metallic housing reliably detects passing wooden blocks – even at very high speeds. A pneumatic cylinder aligns the wooden blocks based on the captured data, thereby ensuring they are correctly oriented and processed in the sanding machine.

→ www.sick.com/V18L

OPTICAL INLINE QUALITY CONTROL

The precise laser spot of the H18L photoelectric hybrid sensor is positioned to shine directly above the cartons and checks whether the cartons are closed. The sensor reliably detects even the smallest deviations from the desired state.

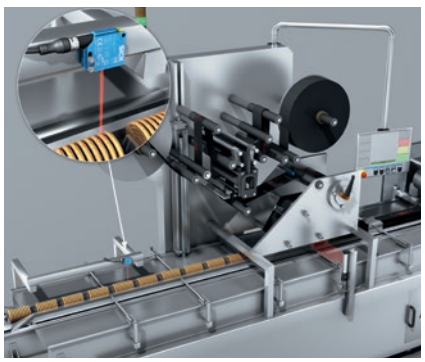
→ www.sick.com/suresense



POSITIONING OF TRAYS ON UNLOADERS/ UPLOADERS

To enable the robot to accurately perform its gripping operations and avoid collisions, the trays are positioned highly precisely on the unloader/uploader with the help of a W4SL-3 photoelectric retro-reflective sensor.

→ www.sick.com/W4SL-3



DETECTION OF BISCUITS IN TRAYS

The W12L-2 photoelectric proximity sensor checks that there are a predefined number of biscuits in a tray so they can be packaged in the next production step. Thanks to the precise light spot and high switching frequency, it can reliably detect narrow gaps even at high processing speeds.

→ www.sick.com/W12L-2

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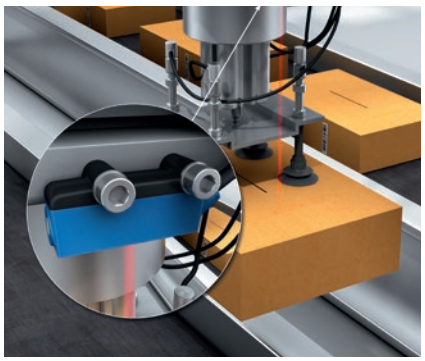
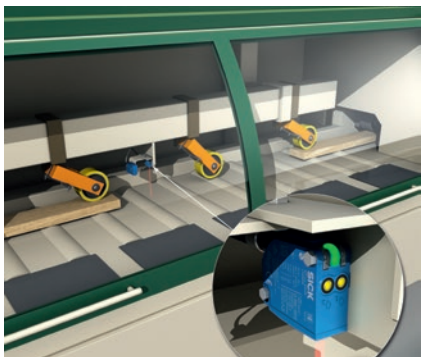
FOR APPLICATIONS THAT REQUIRE PRECISION AT LONG SENSING RANGES



MONITORING OF A WORKPIECE HOLDER DURING TRANSPORT

The PowerProx Mini MultiTask photoelectric sensor monitors the workpiece holder of a robot during transport. Thanks to the compact housing and a sensing range of up to 800 mm, the sensor can be mounted in a space saving manner above the tool flange. Advantage: The sensor does not need to be replaced when changing the gripper.

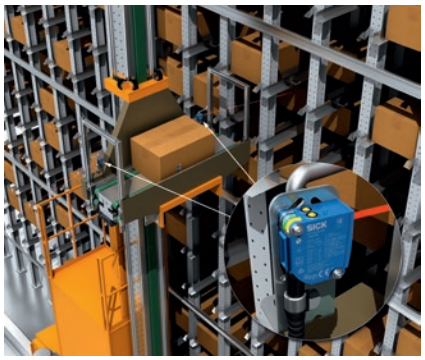
➜ www.sick.com/PowerProx



RAPID COUNTING AND PRECISE EDGE DETECTION

The PowerProx Speed is the right choice when it comes to processes such as precise edge detection in the timber industry: The short response times, high switching frequency, and high-precision laser beam enable, for example, the edges of wooden boards to be clearly detected.

➜ www.sick.com/PowerProx



EMPTY BAY DETECTION

Thanks to the extended sensing range of up to 3.8 m, two separate, adjustable switching points, and an analog output, the PowerProx Distance is the ideal solution for detecting occupied bays and clearances, for palletization, and for collision protection.

➜ www.sick.com/PowerProx

LOADING AND UNLOADING OF PRINTED CIRCUIT BOARDS

The G6L miniature photoelectric sensor detects the presence of printed circuit boards in a magazine buffer. Thus, the photoelectric sensor supports the loading and unloading process of the printed circuit boards by a robot. The very small light spot of the laser photoelectric sensor enables precise detection of even the thinnest circuit boards.

➜ www.sick.com/G6L

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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 9,700 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our 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.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our 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 us a reliable supplier and development partner.

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For us, that is "Sensor Intelligence."

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