PRODUCT CATALOG 2011/2012

Top Products
Industrial Sensors

Inductive proximity sensors, capacitive proximity sensors,
magnetic proximity sensors, magnetic cylinder sensors,
photoelectric sensors

SICK
Sensor Intelligence.

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With our “Top products” publication, we present a compact selection of our products for you to choose from.

Compare products and choose the right ones for your application. For much more information, including dimensional and CAD drawings, charts, applications and a complete online data sheet to download, go to the Product Finder at www.mysick.com/products and enter the part number which you’ll find on the product page in the “Technical details and ordering information” table.

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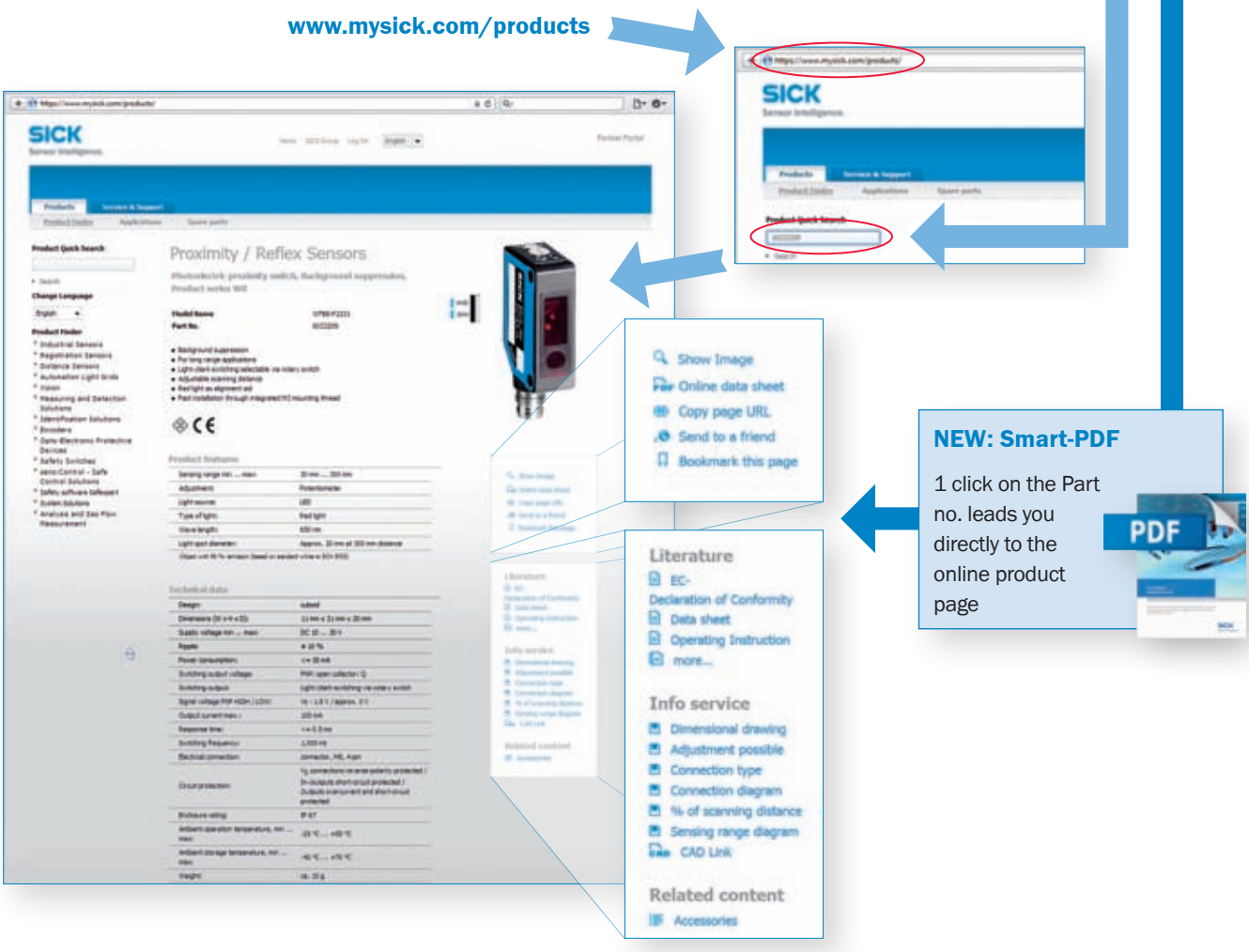
Search Part no. in search field

Technical details and ordering information

- Adjustment: potentiometer
- Operating mode: light/dark with rotary switch
- Enclosure rating: IP 67
- Switching frequency: Up to 2 kHz

W8

Sensor type	Sensing technology	Output type	Sensing range	Connection	Model name	Part no.
Proximity	BGS	PNP	5...100 mm [1]	Connector M8, 3-pol	WTB8-P2111	6033213
			30...300 mm [1]	Connector M8, 4-pin	WTB8-P2231	6033209
				Cable 2m, PVC	WTB8-N1131	6033[illegible]



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Sensor Intelligence is our promise

SICK sensor solutions for industrial automation are the result of exceptional dedication and experience. From development all the way to service: The people at SICK are committed to investing all their expertise in providing with the very best sensors and system solutions possible.

A company with a culture of success

Approximately 5,000 people are on staff, with products and services available to help SICK sensor technology users increase their productivity and reduce their costs. Founded in 1946 and headquartered in Waldkirch, Germany, SICK is a global sensor specialist with more than 50 subsidiaries and representations worldwide. Our exemplary corporate culture fosters an optimum work-life balance, thus attracting the best employees from all over the world. SICK is one of the best employers – we have been among the winners of the prestigious German “Great Place to Work” award for many years in succession.

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Innovation for the leading edge

SICK sensor systems simplify and optimize processes and allow for sustainable production. SICK operates thirteen research and development centers all over the world. Co-designed with customers and universities, our innovative sensor products and solutions are made to give a decisive edge. With an impressive track record of innovation, we take the key parameters of modern production to new levels: reliable process control, safety of people and environmental protection.

A corporate culture for sustainable excellence

SICK is backed by a holistic, homogeneous corporate culture. We are an independent company. And our sensor technology is open to all system environments. The power of innovation has made SICK one of the technology and market leader – sensor technology that is successful in the long term.

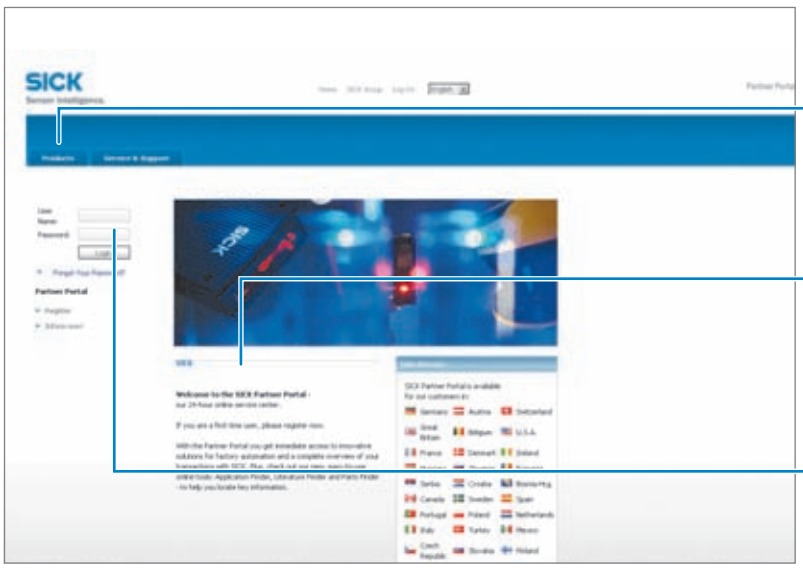
A

www.mysick.com –
Your sensor e-business Partner Portal.

An online portal is essential when efficient and fast processing of every detail is required!

You will find comprehensive e-commerce tools and information for your sensor planning at www.mysick.com: complete order administration – from a product availability check, through offers and order conditions, to order placement and status. The SICK Partner Portal supports your workflow with the individual provision of user rights. Moreover, simple online access to application examples and technical data, drawings and graphics will effectively accelerate your product selection.

Plan your product solution online – at SICK's Partner Portal.



User-friendly: you will find everything you need for solution planning under the menu items Products, Information and My Processes.

24-hour availability: regardless of where you are in the world or when you want to know something, everything is available within a click at www.mysick.com.

Secure: your data is password-protected and only visible to you. With individual user administration you define who may access what data and carry out which actions!

Product Finder

www.mysick.com/Products
The Product Finder lets you search for the suitable device for your application using your specification – from a large number of products in all areas of factory and logistics automation.

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You can access all publications in the Literature Finder, e.g. operating instructions, technical information, customer magazines and other literature about SICK products.

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The advantages of using SICK's Partner Portal

- Work more efficiently online
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  For example, price inquiries, quotes, orders
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- Products and additional information are linked, ensuring comprehensive search results
- All processes available at a glance: product searches, quotes, order status, etc.
- Exclusive downloadable content: technical data, drawings, graphics, etc.

Order online now!

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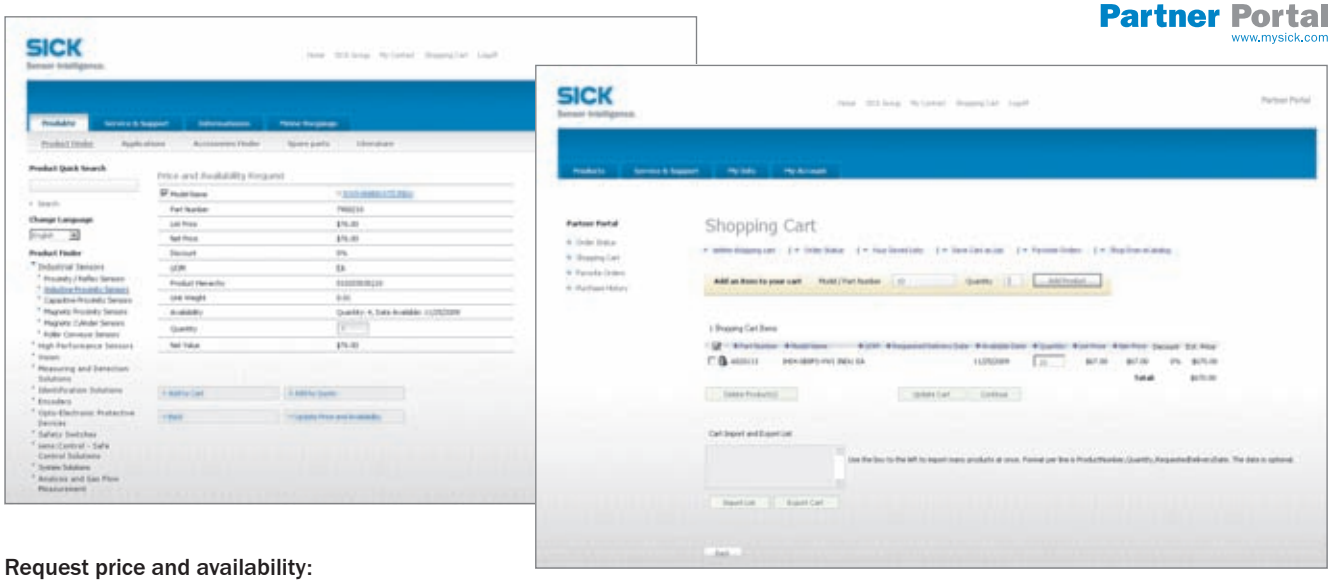
www.mysick.com



Request price and availability:
Find the price and delivery date of the desired products easily and quickly.

Request for a quote:
You can enter a reference number for a quote. The quote is available online. Each quote is confirmed via e-mail.

Online orders:
You can carry out the order process in just a few steps.

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Despite the extensive range of sensor products that SICK offers, the requirements and application conditions of the automation industry are so varied that adapted, customer-specific solutions are required; products specially tailored to your needs and wishes – customized products.

The industrial sensors approach for realizing customized solutions is divided into six phases. During each phase of the project, you can rely on our support – anywhere in the world:

APPLICATION EXPERTISE | ENGINEERING EXPERTISE | PRODUCTION EXPERTISE

1. Application analysis

SICK provides you with onsite assistance in the analysis of your application requirements and the resulting requirements for a customized sensor.

2. Assessment of requirements

All requirements are assessed and prioritized to produce a clear picture of which product adjustments are necessary.

3. Drawing up a specification

We work with you to draw up the specifications for your customized solution.

4. Prototyping

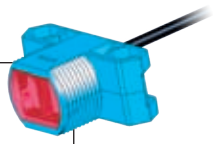
SICK can use the specifications to produce a fully functional prototype product.

5. Test installation

Test installations can be carried out with the support of the SICK service team to ensure successful integration of the product.

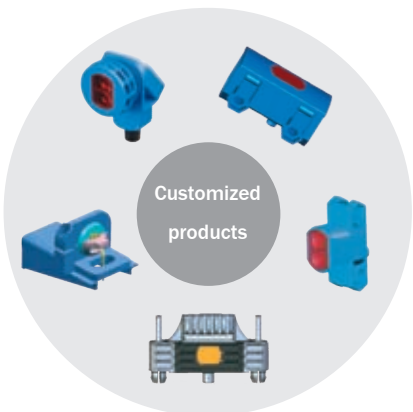
6. Production and supply

Upon approval by you, SICK will supply the product with all SICK quality standards relating to final production and product quality.



POTENTIAL FOR PRODUCT CUSTOMIZATION

- Functional principle
- Housing adjustments
- Connections and types of cable
- Mounting options



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Consulting & Design
For the fusion of product, application and industry expertise to create the perfect solution.

Product & System Support
For a rapid response and reliable assistance on any questions relating to the integration and functioning of SICK systems and sensors. Experienced specialists take professional action to supply practical solutions.

Verification & Optimization
For the best possible utilization and trouble-free operation of the SICK systems and sensors. Use SICK's experience for maximum system efficiency.

Upgrade & Retrofits
For the subsequent integration of more powerful and innovative SICK systems and sensors to maintain or enhance economic efficiency.

Training & Education
For trained personnel for the best possible utilization of the SICK systems and sensors. SICK seminars and user training courses improve the ability of design engineers, managers, and supervisors to confidently make the right decisions.

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The demands placed on systems and their components by the food and beverage industry are especially extreme, especially in terms of wash down conditions and harsh chemicals. With IP 69K, Johnson Diversey and ECOLAB certifications, SICK sensors are ideal for precisely this area.

RELIABLE FUNCTIONING – UNAFFECTED BY STEAM CLEANERS

High pressure cleaners – with hot steam or cold water jets – are standard in industries where clean surfaces are crucial. SICK sensors remain functionally reliable, even in exposed areas. They stay sealed – temperature fluctuations and high steam temperatures have no effect on their functioning.

RESISTANT – UNAFFECTED BY CLEANING AND DISINFECTANT AGENTS

Aggressive cleaning and disinfectant agents which work very effectively – such as alkaline products or products containing chlorine – are particularly demanding on sensors. Resistant materials are an essential minimum requirement for SICK sensors, which are developed and manufactured to exceptionally high quality standards. Aggressive cleaning and disinfectant agents do not affect their functioning, even in the long term.

ECOLAB

Test of material's resistance to aggressive cleaning and disinfectant agents:

- 28 days' exposure time
- 20 °C temperature
- No swelling
- No brittleness

JOHNSON DIVERSEY

Test of material's resistance to aggressive cleaning and disinfectant agents:

- 7 cleaning agents
- 25 days' exposure time
- Various temperatures
- No swelling
- No brittleness

IP 69K TO DIN 400 50

Resistance of the sensors and accessories during cleaning processes:

- 100 bar high-pressure jet cleaning
- 16 liters per minute
- 80 °C water temperature
- 100 mm distance to unit under test
- Test with spray angle of 0°, 30°, 60°, 90° with the unit under test rotating (5 rpm)

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HACCP “Hazard Analysis and Critical Control Points”

HACCP is a preventive approach to identifying hazards in the manufacturing, processing, and sale of food and beverages. With the HACCP approach, procedures are to be established for detecting, documenting, eliminating, and following up health hazards.

Every machine builder or manufacturer must create their own HACCP system. Many industry-specific recommendations and proven procedures have been emerging over the past few years.

The authorities or customers will establish their own hygiene standards, as the circumstances dictate. With some of these standards, compliance is not mandatory.

Some specialized standards, such as the recommendations for hygienic equipment design set out by the EHEDG (European Hygiene Equipment Design Group), are very useful. The aim of the organizations formulating such standards is to achieve better safety, cleaning, and maintenance of the equipment. These standards are used as the basis for producing equipment for high levels of hygiene, and manufacturers complying with these standards are contributing to preventing problems in the future.

SICK has made it an objective to fulfill these requirements. The guidelines are adhered to wherever possible.

THE SEVEN STEPS OF HACCP	**SICK helps you meet your requirements**
1. Conduct a hazard analysis 2. Identify critical control points 3. Establish critical limits 4. Introduce monitoring procedures 5. Establish corrective actions 6. Establish validation procedures 7. Document the procedures	**The reduction of the hazards in step 1 reduces the costs for preventive measures in steps 2 to 7**
1. CONDUCT A HAZARD ANALYSIS	**The GMP and EHEDG recommendations ensure that the correct materials are used: e.g. smooth surfaces so that dirt cannot collect. SICK assists you in keeping your costs and work time to a minimum in steps 2 to 7.**
Identify the food safety hazards and establish preventive measures that you can apply in your plant to contain these hazards. Possible hazards in the context of food and beverages could be biological (such as microorganisms), chemical, or physical.	
Work out a strategy for steps 2 to 7 as a response to the identified hazards.	

Easy to select:
Selection guide for food & beverage sensors

A

Product family	Dimensions (W x H x D) [mm]	Sensing technology	Sensing range	Enclosure rating & certification					
				IP 67	IP 68	IP 69K	Johnson Diversey	ECOLAB	HACCP
 W4S-3 Inox	15.3 x 44.7 x 22.3	Photoelectric proximity	3 ... 500 mm	■	–	■	–	■	■
		Photoelectric retro-reflective	0 ... 5 m						
		Through-beam photoelectric	0 ... 5 m						
 W8 Inox	11 x 33.3 x 21	Photoelectric proximity	0 ... 950 mm	■	■	■	–	–	–
		Photoelectric retro-reflective	0 ... 6,5 m						
		Through-beam photoelectric	0 ... 45 m						
 MH15V	M18 x 1	Photoelectric proximity	3 ... 350 mm	■	–	■	–	■	■
		Photoelectric retro-reflective	0.04 ... 3.5 m						
		Through-beam photoelectric	0 ... 5 m						
 V18V	M18 x 1	Photoelectric proximity	0 ... 800 mm	■	■	■	■	■	■
		Photoelectric retro-reflective	0.04 ... 4.5 m						
		Through-beam photoelectric	0 ... 18 m						
 IM Inox	M12 x 1	Inductive proximity	6 ... 10 mm	–	■	■	■	■	■
	M18 x 1	Inductive proximity	10 ... 20 mm						
	M30 x 1	Inductive proximity	20 ... 40 mm						
 IMF	M12 x 1	Inductive proximity	2 ... 8 mm	–	■	■	■	■	■
	M18 x 1	Inductive proximity	5 ... 12 mm						
 MZT8	5 x 5.5 x 24	Magnetic cylinder	–	■	■	■	–	–	–

Environmental zones:

Aggressive Zone

AGGRESSIVE ZONE

Food and beverage zone. Constant contact with food or beverage.

CLEANING. RISKS PER HACCP

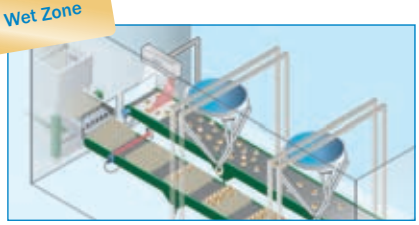
Aggressive high-pressure cleaning with water and chemicals, and hot cleaning. There is a high bacterial risk in this zone.

HOW SICK CAN ASSIST YOU.

Our specially constructed s in stainless steel and food-quality plastics can help to reduce these risks.

The sturdy housing ensures that our devices are waterproof and highly resistant. **IP 69K**

Wet Zone



WET ZONE

Food and beverage zone. Constant contact with food or beverage.

CLEANING. RISKS PER HACCP

Low-pressure cleaning with water and chemicals, and hot cleaning. There is a high bacterial risk in this zone.

HOW SICK CAN ASSIST YOU.

Our specially constructed s in stainless steel and food-quality plastics can help to reduce these risks.

The sturdy housing ensures that our devices are waterproof and highly resistant. **IP 69K**

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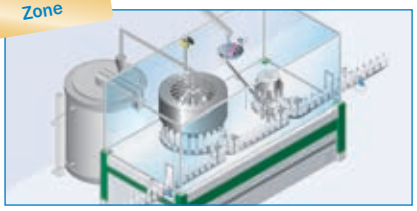
Light source		Housing material		Operating temperature	Environmental zones				Page
Red PinPoint	Red	Stainless steel	Plastic		Aggres-sive	Wet	Splash	Dry	
■	■	■	–	–30 °C ... +70 °C	■	■	■	■	74
–	■	■	–	–30 °C ... +60 °C	■	■	■	■	78
■	■	■	–	–25 °C ... +55 °C	■	■	■	■	124
–	■	■	–	–25 °C ... +80 °C (short term: 100 °C)	■	■	■	■	128
–	–	■	–	–25 °C ... +85 °C	■	■	■	■	22
–	–	■	–	–40 °C ... +80 °C (short term: 100 °C)	■	■	■	■	24
–	–	–	■	–30 °C ... +80 °C	–	■	■	■	46

Other devices and configurations on request or at www.sick.com

Splash Zone



SPLASH ZONE

Splash zone. The personnel touch the surfaces of the equipment and then the food or beverage. The food or beverage could splash in this zone.

CLEANING. RISKS PER HACCP

No aggressive cleaning. The risks in this zone are bacteria and cross-contamination.

HOW SICK CAN ASSIST YOU.

Our housing for wet zones, specially designed to GMP requirements, helps to minimize risks. Special non-poisonous plastics and splash-protected housing.
IP 67->IP 69K

Dry Zone

DRY ZONE

Non-contact zone. Underside of machine.

CLEANING. RISKS PER HACCP

No aggressive cleaning. Risks include the danger of glass entering the food or beverage.

HOW SICK CAN ASSIST YOU.

A special front cover made from plastic prevents any glass from entering the product.

B

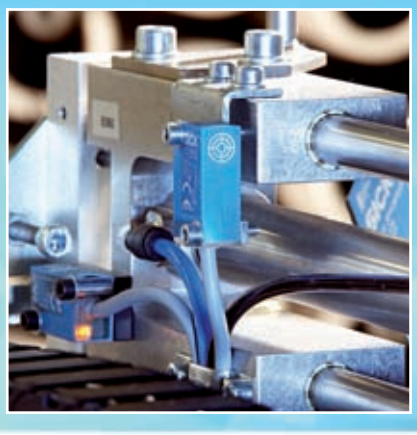
Reliable, powerful, rugged.
Inductive sensors from SICK.

IME

Position determination in a packaging plant

IMF

Use in the food and beverage industry



IQ10

Object detection in the machine construction industry

Equipped for all automation requirements

Inductive sensors are used in virtually all industries. They detect metal objects without contact, and feature long service life and extreme ruggedness.

With the latest ASIC technology, SICK's sensors offer the ultimate in precision and reliability.

SICK can always provide the right solution to meet your requirements – from cylindrical or rectangular standard sensors with single, double, or triple sensing range, to special sensors for explosive zones and harsh environments.

It is the intelligent, reliable route to implementing industry-specific and customized solutions to any task involving automation.

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Inductive proximity sensors

Easy to select:
Selection guide for inductive sensors

B

Design	Dimensions	Max. nominal sensing range [mm]			Housing material
		Flush	Quasi-flush	Non-flush	
Threaded barrel	M4	0.6	–	–	Stainless steel, plastic
	M5	0.8	–	–	Stainless steel, plastic
	M8	1.5 / 2	–	2.5 / 4	Nickel-plated brass, plastic
		–	3	6	Nickel-plated brass, plastic
	M12	2 / 4	–	4 / 8	Nickel-plated brass, plastic
		–	6	10	Nickel-plated brass, plastic
		2 / 4	–	4 / 8	Stainless steel (V4A)
		6	–	10	Stainless steel (V4A)
	M18	5 / 8	–	8 / 12	Nickel-plated brass, plastic
		–	12	20	Nickel-plated brass, plastic
		5 / 8	–	8 / 12	Stainless steel (V4A)
		10	–	20	Stainless steel (V4A)
	M30	10 / 15	–	15 / 20	Nickel-plated brass, plastic
		–	22	40	Nickel-plated brass, plastic
		20	–	40	Stainless steel (V4A)
Smooth barrel	Ø 3 mm	0.6	–	–	Stainless steel, plastic
	Ø 4 mm	0.8	–	–	Stainless steel, plastic
	Ø 6.5 mm	2	–	4	Stainless steel, plastic
Rectangular	8 x 16 x 4 mm	1,5	–	–	Plastic
	10 x 30 x 6 mm	3	–	–	Plastic
	10 x 16 x 37 mm	3	–	6	Plastic
	20 x 32 x 8 mm	7	–	–	Metal (GD Zn), plastic
	25 x 50 x 10 mm	5	–	–	Metal (Gd Al Si 12), plastic
	40 x 40 x 66 mm	20	–	40	Plastic
	40 x 40 x 118 mm	15	–	20	Plastic

Rugged and durable

High quality manufacturing and tough metal or plastic housings ensure long service life and high accuracy. Inductive sensors are highly reliable even under harsh operating conditions, such as when subjected to vibration and impact, cooling lubricant, high temperature fluctuations, humidity, or electromagnetic interference.

Versatile and easy to install

The SICK range offers you a wide variety of sensors for different installation situations: choose from normally open or normally closed functionality, with NPN or PNP switching output, cable or connector sensor connection, standard or short-body housings, plus multiple and flexible mounting options. In other words: inductive sensors from SICK make using and connecting sensors particularly easy and efficient.

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Connection				Special features				Product family	Page
Connector	Cable	Terminals	Pigtail	All-metal	IP 67	IP 68	IP 69K		
–	PUR, 2 m	–	–	–	■	–	–	IM Miniature	16
M8, 3-pin	PVC, 2 m	–	–	–	■	–	–	IM Miniature	16
M8, 3-pin	–	–	–	–	■	–	–	IM Standard	18
M8, 3-pin	–	–	–	–	■	–	–	Triple Sensing Range	20
M12, 4-pin	–	–	–	–	■	–	–	IM Standard	18
M12, 4-pin	–	–	–	–	■	–	–	Triple Sensing Range	20
M12, 4-pin	–	–	–	■	–	■	■	IMF	24
M12, 4-pin	–	–	–	■	–	■	■	Inox	22
M12, 4-pin	–	–	–	–	■	–	–	IM Standard	18
M12, 4-pin	–	–	–	–	■	–	–	Triple Sensing Range	20
M12, 4-pin	–	–	–	■	–	■	■	IMF	24
M12, 4-pin	–	–	–	■	–	■	■	Inox	22
M12, 4-pin	–	–	–	–	■	–	–	IM Standard	18
M12, 4-pin	–	–	–	–	■	–	–	Triple Sensing Range	20
M12, 4-pin	–	–	–	■	–	■	■	Inox	22
–	PUR, 2 m	–	–	–	■	–	–	IH Miniature	16
M8, 3-pin	PVC, 2 m	–	–	–	■	–	–	IH Miniature	16
M8, 3-pin	PVC, 2 m	–	–	–	■	–	–	IH Miniature	16
–	PVC, 2m	–	–	–	■	–	–	IQ Flat	26
–	PUR, 2m	–	–	–	■	–	–	IQ Flat	26
M8, 3-pin	PVC, 2 m	–	–	–	■	–	–	IQ 10	28
–	–	–	M8, 3-pin / M12, 4-pin	–	■	–	–	IQ Flat	26
–	PUR, 2m	–	–	–	■	–	–	IQ Flat	26
M12, 4-pin	–	–	–	–	■	–	–	IQ 40	30
–	–	M20 x 1.5	–	–	–	■	–	IQ 40	30

IM Standard

The classic series. Cylindrical inductive sensors for industrial use:

- Sizes M8 to M30
- Sensing range from 1.5 mm to 20 mm
- DC, AC, and AC/DC versions available
- Customer-specific customizations possible
- Variable connection with cable or connector

IMF

IMF inductive sensors for the food and beverage industry:

- Stainless steel housing (316L/1.4404)
- Extremely watertight (IP 68/IP 69K)
- Extended temperature range from –40 to +80 °C (short term: +100 °C)
- Resistant to all common cleaning agents, ECOLAB and JohnsonDiversey certified

IQ Standard

Rectangular inductive sensors from SICK:

- Sensing range up to 60 mm
- DC, AC, and AC/DC versions available
- Customer-specific versions possible
- Connection by cable, connector, or junction box

B

Product description

Cylindrical, miniature inductive sensors for maximum performance when space restrictions are greatest. The tough and reliable IH and IM Miniature sensor families require a minimum of space. They are ideal for highly dynamic applications in robotics, handling, and assembly. Miniaturization without compromises – without jeopardizing performance, with sensing ranges up to 4 mm, and built-in electronics.

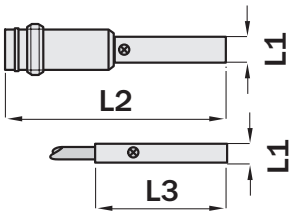
At a glance

- Small housing sizes and light weight
- Integrated LED indicator
- Sensing ranges up to 4 mm

Your benefits

- Trouble-free placement in space-critical applications; high degree of design flexibility
- Reliable detection of rapid handling and assembly processes
- Simple monitoring of operational state with high visibility
- High positioning accuracy

Dimensions



	Thread type / Ø L1	Connector type L2 [mm]	Cable type L3 [mm]
IM04	M4	-	22
IM05	M5	38	25
IH03	Ø 3 mm	-	22
IH04	Ø 4 mm	38	25
IH06	[1] Ø 6,5 mm	-	35,5
	Ø 6,5 mm	50	45

[1] Short-body housing

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

- www.mysick.com/en/IH_Miniature
- www.mysick.com/en/IM_Miniature

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Technical details and ordering information

- Electrical wiring: DC 3-wire
- Supply voltage: 10 ... 30 V DC
- Output function: normally open
- Output type: PNP
- Operating temperature: –25 °C ... +70 °C
- Enclosure rating: IP 67
- Other models available on request or at www.sick.com

B

IH Miniature

Housing Ø [mm]	Installation type	Nominal sensing distance [mm]	Connection	Model name	Part no.
3	Flush	0.6	Cable, PUR, 2 m	IH03-0B6PS-VU1	6020141
4	Flush	0.8	M8, 3-pin	IH04-0B8PS-VT1	6020114
			Cable, PVC, 2 m	IH04-0B8PS-VW1	6020113
6.5	Flush	2	Cable, PVC, 2 m	IH06-02BPS-VWK [1]	6025874
			M8, 3-pin	IH06-02BPS-VT1	7900179
			Cable, PVC, 2 m	IH06-02BPS-VW1	7900177
	Non-flush	4	M8, 3-pin	IH06-04NPS-VT1	7900183

[1] Short-body housing

IM Miniature

Housing	Installation type	Nominal sensing distance [mm]	Connection	Model name	Part no.
M4	Flush	0.6	Cable, PUR, 2 m	IM04-0B6PS-ZU1	6020145
M5	Flush	0.8	M8, 3-pin	IM05-0B8PS-ZT1	6020110
			Cable, PVC, 2 m	IM05-0B8PS-ZW1	6011591

Recommended accessories

Name	Design	Model name	Part no.
Mounting clamp	Plastic	BEF-S-H06	7901771

Cables and connectors → p. 142
Additional mounting brackets → p. 146

B

Product description

The most important requirements for inductive sensors are precision, highest possible availability, and long service life. The IME inductive sensors pack high technology into the smallest of spaces. The integrated ASIC chip enables digital adjustment after the end of the manufacturing process. The saving of values in the ASIC ensures highly precise switching points and very high repeatability of values – for any number of production runs. The use of hot melt adhesive inside the housing makes for very high resistance to shock and vibration. For the user, that means high positioning accuracy in the machine and reliable sensor operation.

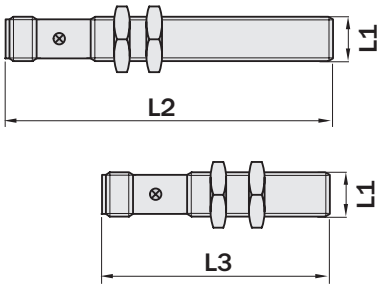
At a glance

- Precise sensing ranges through ASIC technology
- Very tough thanks to high fastener torque and hot melt adhesive
- Enclosure rating IP 67
- Operating temperature from –25 ... +75 °C

Your benefits

- Less machine downtime
- Reduction in mechanical damage
- Cost reductions due to longer service life
- High resistance to shock and vibration

Dimensions



	Thread type L1	Standard L2 [mm]	Short L3 [mm]
IME08	M8	50	41
IME12	M12	65	46
IME18	M18	69	50
IME30	M30	71	52

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/IM_Standard

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B

Technical details and ordering information

- Electrical wiring: DC 3-wire
- Supply voltage: 10 ... 30 V DC
- Output function: normally open
- Output type: PNP
- Housing material: nickel-plated brass, plastic (PA6)
- Operating temperature: –25 °C ... +75 °C
- Enclosure rating: IP 67
- Other models available on request or at www.sick.com

Housing	Installation type	Nominal sensing range [mm]	Connection	Model name	Part no.
M8	Flush	1.5	M8, 3-pin	IME08-1B5PSZT0S	1040838
				IME08-1B5PSZT0K [1]	1040837
		2	M8, 3-pin	IME08-02BPSZT0S	1040870
				IME08-02BPSZT0K [1]	1040869
	Non-flush	2.5	M8, 3-pin	IME08-2N5PSZT0S	1040854
				IME08-2N5PSZT0K [1]	1040853
		4	M8, 3-pin	IME08-04NPSZT0S	1040886
				IME08-04NPSZT0K [1]	1040885
M12	Flush	2	M12, 4-pin	IME12-02BPSZC0S	1040732
				IME12-02BPSZC0K [1]	1040731
		4	M12, 4-pin	IME12-04BPSZC0S	1040764
				IME12-04BPSZC0K [1]	1040763
	Non-flush	4	M12, 4-pin	IME12-04NPSZC0S	1040748
				IME12-04NPSZC0K [1]	1040747
		8	M12, 4-pin	IME12-08NPSZC0S	1040780
				IME12-08NPSZC0K [1]	1040779
M18	Flush	5	M12, 4-pin	IME18-05BPSZC0S	1040934
				IME18-05BPSZC0K [1]	1040933
		8	M12, 4-pin	IME18-08BPSZC0S	1040966
				IME18-08BPSZC0K [1]	1040965
	Non-flush	8	M12, 4-pin	IME18-08NPSZC0S	1040950
				IME18-08NPSZC0K [1]	1040949
		12	M12, 4-pin	IME18-12NPSZC0S	1040982
				IME18-12NPSZC0K [1]	1040981
M30	Flush	10	M12, 4-pin	IME30-10BPSZC0S	1040998
				IME30-10BPSZC0K [1]	1040997
		15	M12, 4-pin	IME30-15BPSZC0S	1041030
				IME30-15BPSZC0K [1]	1041029
	Non-flush	15	M12, 4-pin	IME30-15NPSZC0S	1041014
				IME30-15NPSZC0K [1]	1041013
		20	M12, 4-pin	IME30-20NPSZC0S	1041046
				IME30-20NPSZC0K [1]	1041045

[1] Short-body housing

Recommended accessories

Name	Design	Size	Model name	Part no.
Mounting bracket	90° bracket, zinc plated steel	M12	BEF-WN-M12	5308447
		M18	BEF-WN-M18	5308446
Mounting plate	Zinc plated steel	M12	BEF-WG-M12	5321869
		M18	BEF-WG-M18	5321870

Cables and connectors → p. 142
Additional mounting brackets → p. 146

B

Product description

For that little bit extra, the Triple Sensing Range sensors are ideal. Thanks to innovative ASIC technology, they offer greatly extended sensing ranges up to 40 mm, providing even more capacity in reserve. They can be used like conventional proximity sensors over a operating temperature of –25 °C ... +70 °C, for performance without restrictions.

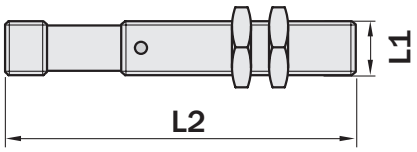
At a glance

- Triple sensing range up to 40 mm
- Operating temperature from –25 °C ... +70 °C

Your benefits

- Less machine downtime
- Large operating reserve due to triple sensing range
- Less space required for the same sensing range when compared with standard sensors
- Lower risk of mechanical damage due to greater distance away from moving parts
- High detection sensitivity, therefore very suitable for detecting difficult parts such as wires, thin sheets, small screws

Dimensions



Thread type L1	Housing length L2 [mm]
M8	60
M12	60
M18	63,5
M30	73,5

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/IM_Triplex

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B

Technical details and ordering information

- Electrical wiring: DC 3-wire
- Supply voltage: 10 ... 30 V DC
- Output function: normally open
- Output type: PNP
- Operating temperature: –25 °C ... +70 °C
- Enclosure rating: IP 67
- Other models available on request or at www.sick.com

Housing	Installation type	Nominal sensing range [mm]	Connection	Model name	Part no.
M8	Quasi-flush	3	M8, 3-pin	IM08-03BPS-ZT1	6025574
	Non-flush	6	M8, 3-pin	IM08-06NPS-ZT1	6027508
M12	Quasi-flush	6	M12, 4-pin	IM12-06BPS-ZC1	6027511
	Non-flush	10	M12, 4-pin	IM12-10NPS-ZC1	6027514
M18	Quasi-flush	12	M12, 4-pin	IM18-12BPS-ZC1	6027517
	Non-flush	20	M12, 4-pin	IM18-20NPS-ZC1	6027519
M30	Quasi-flush	22	M12, 4-pin	IM30-22BPS-ZC1	6027521
	Non-flush	40	M12, 4-pin	IM30-40NPS-ZC1	6027522

Recommended accessories

Name	Material	Size	Model name	Part no.
Mounting bracket	Zinc plated steel	M8	BEF-WN-M08	5321721
		M12	BEF-WN-M12	5308447
		M18	BEF-WN-M18	5308446
		M30	BEF-WN-M30	5308445
Mounting plate, large	Zinc plated steel	M8	BEF-WG-M08	5321722
		M12	BEF-WG-M12	5321869
		M18	BEF-WG-M18	5321870
		M30	BEF-WG-M30	5321871
Clamping block	PA12, glass fiber reinforced	M8	BEF-KHF-M08	2051478
		M12	BEF-KHF-M12	2051479
		M18	BEF-KHF-M18	2051481

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

B

Product description

High pressure cleaners with aggressive cleaning agents, acids, and alkalis are a challenge for sensor systems. The solution: Inox inductive sensors in fully encapsulated sensor housings made from stainless steel (316L/1.4404). They can withstand extreme stresses, offer a triple sensing range, and have a very high reduction factor.

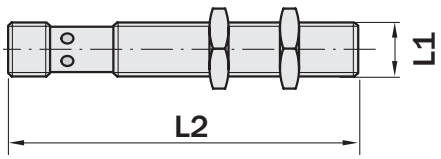
At a glance

- One piece stainless steel housing (316L/1.4404)
- Extremely watertight (IP 68/IP 69K)
- Triple sensing range up to 40 mm
- High resistance to mechanical stress
- Especially suitable for use in hygienic and wet zones
- Not affected by aggressive cleaning agents
- Visible signal strength indicator

Your benefits

- Less machine downtime due to tough, sturdy sensors
- Long service life even under the most extreme ambient conditions
- Quick and easy installation thanks to adjustment indicator
- Large operating reserve due to triple sensing range
- High resistance to shock and impacts due to all-metal sensing face
- No restrictions on cleaning agents or processes

Dimensions



Thread type L1	Housing length L2 [mm]
M12	60
M18	63,5
M30	63,5

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/IM_Inox

8013958/2011-08-29
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Technical details and ordering information

- Electrical wiring: DC 3-wire
- Supply voltage: 10 ... 30 V DC
- Output type: PNP
- Operating temperature: –25 °C ... +85 °C
- Enclosure rating: IP 68 / IP 69K
- Other models available on request or at www.sick.com

Housing	Installation type	Output function	Nominal sensing range [mm]	Connection	Model name	Part no.
M12	Flush	Normally closed	6	M12, 4-pin	IM12-06BPO-NC1	6027574
		Normally open	6	M12, 4-pin	IM12-06BPS-NC1	6027572
	Non-flush	Normally open	10	M12, 4-pin	IM12-10NPS-NC1	6027575
M18	Flush	Normally closed	10	M12, 4-pin	IM18-10BPO-NC1	6027579
		Normally open	10	M12, 4-pin	IM18-10BPS-NC1	6027577
	Non-flush	Normally open	20	M12, 4-pin	IM18-20NPS-NC1	6027580
M30	Flush	Normally open	20	M12, 4-pin	IM30-20BPS-NC1	6027582
	Non-flush	Normally open	40	M12, 4-pin	IM30-40NPS-NC1	6027584

Recommended accessories

Name	Design	Size	Model name	Part no.
Mounting bracket	90° bracket, stainless steel	M12	BEF-WN-M12N	5320949
		M18	BEF-WN-M18N	5320947
Mounting plate	Stainless steel	M12	BEF-WG-M12N	5320950
		M18	BEF-WG-M18N	5320948

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

B

Product description

IMF inductive sensors perform tasks reliably and precisely in all branches of food and beverage production, whether breweries, dairies, or producers of frozen foods. Their housings are made from an extremely tough mix of stainless steel and FDA-certified plastic, which defies even the harshest stresses of everyday operation.

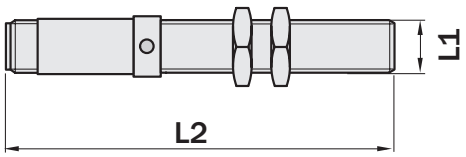
At a glance

- Extremely watertight (IP 68/IP 69K)
- Stainless steel housing (316L/1.4404)
- Extended operating temperature (–40 ...+80 °C)
- Tolerates short-term spikes up to 100 °C
- Resistant to industrial cleaning agents, ECOLAB and JohnsonDiversey certified

Your benefits

- Less machine downtime due to reliable sensors
- Hygienic processes due to suitable sensor housing material and design
- No sensor failure from aggressive cleaning cycles
- No restrictions on cleaning agents or processes

Dimensions



	Thread type L1	Housing length L2 [mm]
IMF12	M12	65
IMF18	M18	63

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/IMF

Technical details and ordering information

- Electrical wiring: DC 3/4-wire
- Supply voltage: 10 ... 30 V DC
- Output type: PNP
- Operating temperature: –40 °C ... +80 °C
- Enclosure rating: IP 68 / IP 69K
- Connection: connector M12, 4-pin with gold-plated contacts
- Other models available on request or at www.sick.com

B

Housing	Installation type	Output function	Nominal sensing range [mm]	Model name	Part no.
M12	Flush	Normally closed	2	IMF12-02BPOVC0S	6035454
			4	IMF12-04BPOVC0S	6035462
		Normally open	2	IMF12-02BPSVC0S	6035452
			4	IMF12-04BPSVC0S	6035460
		Complementary	2	IMF12-02BPPVC0S	6035215
			4	IMF12-04BPPVC0S	6035219
	Non-flush	Normally closed	4	IMF12-04NPOVC0S	6035458
			8	IMF12-08NPOVC0S	6035466
		Normally open	4	IMF12-04NPSVC0S	6035456
			8	IMF12-08NPSVC0S	6035464
		Complementary	4	IMF12-04NPPVC0S	6035217
			8	IMF12-08NPPVC0S	6035221
M18	Flush	Normally closed	5	IMF18-05BPOVC0S	6035470
			8	IMF18-08BPOVC0S	6035478
		Normally open	5	IMF18-05BPSVC0S	6035468
			8	IMF18-08BPSVC0S	6035476
		Complementary	5	IMF18-05BPPVC0S	6035223
			8	IMF18-08BPPVC0S	6035227
	Non-flush	Normally closed	8	IMF18-08NPOVC0S	6035474
			12	IMF18-12NPOVC0S	6035482
		Normally open	8	IMF18-08NPSVC0S	6035472
			12	IMF18-12NPSVC0S	6035480
		Complementary	8	IMF18-08NPPVC0S	6035225
			12	IMF18-12NPPVC0S	6035229

Recommended accessories

Name	Design	Size	Model name	Part no.
Mounting bracket	90° bracket, stainless steel	M12	BEF-WN-M12N	5320949
		M18	BEF-WN-M18N	5320947
Mounting plate	Stainless steel	M12	BEF-WG-M12N	5320950
		M18	BEF-WG-M18N	5320948

Cables and connectors ➔ p. 142 Additional mounting brackets ➔ p. 146

B

Product description

Solve applications where space is at a premium with IQ Flat rectangular inductive sensors. Thanks to their low profile, only 4.7 mm, this family of inductive sensors is designed to fit into tight spaces. IQ Flat sensors are easily installed using one or two screws, depending on the model, which saves installation time and costs. Greater operating distances of up to 7 mm simplify even the trickiest of detection tasks. Versions are available with a metal housing, which reduces maintenance costs. These inductive sensors are space- and cost-saving solutions for universal applications.

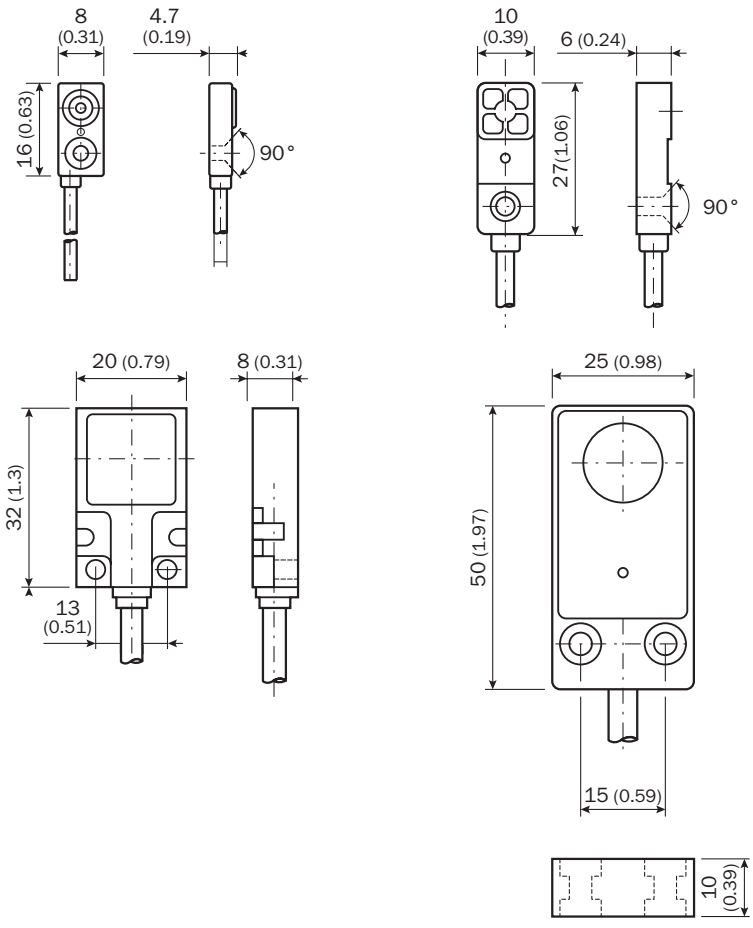
At a glance

- Flat, compact design
- Long sensing distance up to 7mm
- One or two screw installation
- Easily visible indication LEDs
- Available in a plastic (IQ04 and IQ06) and metal housing (IQ20 and IQ25)

Your benefits

- Reduced mechanical damage due to space-saving flat housing, which does not protrude from sensor
- Time-saving simple installation with one or two screws
- No restrictions on machine design

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/IQ_Flat

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Technical details and ordering information

- Installation type: flush
- Supply voltage: 10 ... 30 V DC
- Operating temperature: –25 °C ... + 70 °C
- Enclosure rating: IP 67
- Other models available on request or at www.sick.com

B

IQ Flat

Housing [W x H x D] in mm	Nominal sensing range [mm]	Output type	Output function	Connection	Model name	Part no.
8 x 16 x 4.7	1.5	PNP	NOC	Cable, 3-wire, PVC, 2 m	IQ04-1B5PSKW2S	6042017
			NCC	Cable, 3-wire, PVC, 2 m	IQ04-1B5P0KW2S	6042018
		NPN	NOC	Cable, 3-wire, PVC, 2 m	IQ04-1B5NSKW2S	6042019
			NCC	Cable, 3-wire, PVC, 2 m	IQ04-1B5N0KW2S	6042020
10 x 27 x 6	3	PNP	NOC	Cable, 3-wire, PUR, 2 m	IQ06-03BPSKU2S	6042022
			NCC	Cable, 3-wire, PUR, 2 m	IQ06-03BP0KU2S	6042023
		NPN	NOC	Cable, 3-wire, PUR, 2 m	IQ06-03BNSKU2S	6042024
			NCC	Cable, 3-wire, PUR, 2 m	IQ06-03BN0KU2S	6042025
20 x 32 x 8	7	PNP	NOC	Cable with plug, M8, 3-pin, PUR, 0,3 m	IQ20-07BPSDP0S	6042043
			Complementary	Cable with plug, M12, 4-pin, PUR, 0,3 m	IQ20-07BPPDQ0S	6042045
		NPN	NOC	Cable with plug, M8, 3-pin, PUR, 0,3 m	IQ20-07BNSDP0S	6042044
25 x 50 x 10	5	PNP	NOC	Cable, 3-wire, PUR, 2 m	IQ25-05BPSDU2S	6042046
			Complementary	Cable, 4-wire, PUR, 2 m	IQ25-05BPPDU2S	6042047

Cables and connectors → p. 142

B

Product description

A small package with a lot of power. The IQ10 rectangular sensor family impresses with sensing ranges up to 6 mm, outperforming many larger sensors. Thanks to its compact design, it is perfectly at home even in applications where space is at a premium, and is also easy to install. With a stable plastic housing with IP 67 rating, it has nothing to fear from tough conditions either.

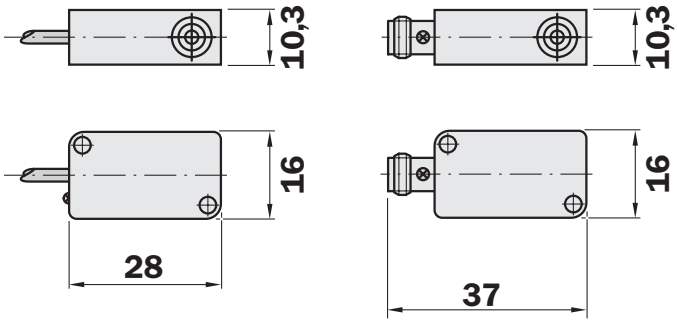
At a glance

- Increased sensing range up to 6 mm
- Small size

Your benefits

- Trouble-free placement in space-critical applications
- Reliable detection of rapid handling and assembly processes
- Quick and easy installation
- High degree of design freedom thanks to compact form

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/IQ_Standard

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Technical details and ordering information

- Supply voltage: 10 ... 30 V DC / 10 ... 60 V DC (terminal connection)
- Output type: PNP
- Operating temperature: –25 °C ... +70 °C
- Enclosure rating: IP 67
- Other models available on request or at www.sick.com

Installation type	Nominal sensing range [mm]	Connection	Model name	Part no.
Flush	3	M8, 3-pin	IQ10-03BPS-KT1	7900205
		Cable, PVC, 2 m	IQ10-03BPS-KW1	7900203
Non-flush	6	M8, 3-pin	IQ10-06NPS-KT1	7900209
		Cable, PVC, 2 m	IQ10-06NPS-KW1	7900207

Cables and connectors ➔ p. 142

B

Product description

The reliable IQ40 rectangular design has proven its worth for many years, not only in handling and warehousing systems, but also in many other industrial sectors. Versatile installation options, highly reliable design, and long sensing ranges are just a few of the features behind the success of the IQ40 family. Corner LEDs, easily visible from a number of angles, display the output state and operational state clearly, even under unfavorable installation conditions. Thanks to the adjustable sensor head, which can be turned in five different directions, the IQ40 family adapts quickly to varying application requirements.

At a glance

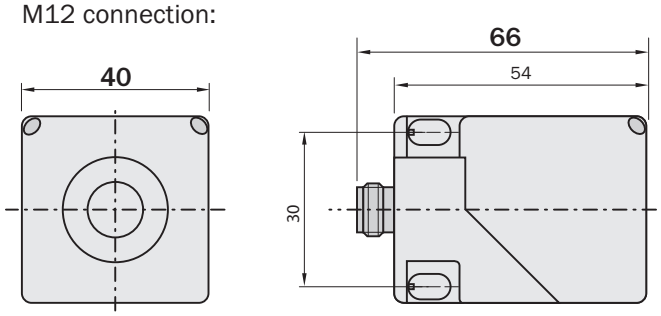
- Increased sensing range up to 40 mm
- Corner LEDs
- Sensing face can be rotated in five directions
- Sturdy and compact design
- Integrated mounting clamp

Your benefits

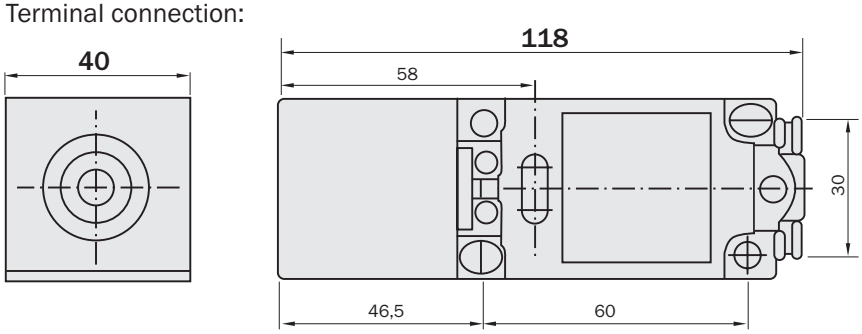
- Versatile mounting options
- Simple monitoring of the output state and operational state
- Cost reduction through higher tolerances in machine design, thanks to increased sensing range
- Shorter installation times due to integrated mounting fixture
- Durable and tough

Dimensions

M12 connection:



Terminal connection:



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/IQ_Standard

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Technical details and ordering information

- Output type: PNP
- Operating temperature: –25 °C ... +70 °C
- Enclosure rating: IP 67 (IP 68 for terminal connection)
- Other models available on request or at www.sick.com

Installation type	Output function	Nominal sensing range [mm]	Connection	Model name	Part no.
Flush	Complementary	20	M12, 4-pin	IQ40-20BPPKC0K	6037072
	Normally open	20	M12, 4-pin	IQ40-20BPSKC0K	6037070
	Complementary	15	Terminals	IQ40-15BPP-KK1	6025814
Non-flush	Complementary	40	M12, 4-pin	IQ40-40NPPKC0K	6037073
	Normally open	40	M12, 4-pin	IQ40-40NPSKC0K	6037071
	Complementary	20	Terminals	IQ40-20NPP-KK1	6025815

Cables and connectors ➔ p. 142

C

Close to the action – reliable operation in demanding applications

CQ28

Limit monitoring of liquids

CM30

Level monitoring and final inspection when filling packages

CM30

Use in filling plants

Detection through walls? There's nothing simpler.

Sometimes you just want to know what is hidden behind a surface. Behind a wall, for example, or in a storage container, in a shipping container, or behind a cover. Capacitive proximity sensors are ideal for level and feed monitoring. From solid material, such as paper or wood, to granules or liquids, they reliably detect the status of the product during the production process and final inspection. Is there something behind that cover? Is the filled package really full? How much paint is still left in the tank? These are easy questions for capacitive sensors to answer.

SICK's capacitive sensors are always close to the action. Sensing ranges between 1 and 25 mm allow them to fit nearly any installation situation, and they are extremely adaptable for a wide range of applications.

These sensors are also suitable for extremely adverse industrial environments. Impurities, contamination, dust, and airborne particles have little effect on them. They also offer maximum immunity to electromagnetic interference. No wonder they are installed in diverse markets, such as the food industry, automotive industry, or in handling and warehousing systems.

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C

Capacitive proximity sensors

C

Product description

Just being there is enough: metallic or non-metallic, solid or liquid, compact or free flowing – capacitive sensors can detect them all. Other than gaseous materials, capacitive sensors can detect any materials that come within the sensor's electromagnetic field. And liquid substances are particularly easy to detect by capacitive sensors.

At a glance

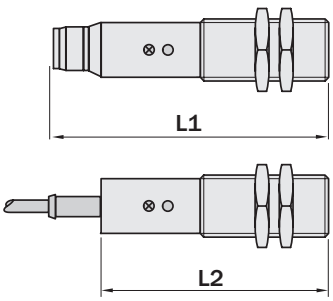
- Detects liquids and solids
- Extremely high electromagnetic immunity
- Sensitivity adjustment with potentiometer (CM18/30, CQ35)
- Teach-in via pushbutton or remote input (CQ28)
- Enclosure rating IP 67 (CM18/30, CQ35) or IP 68 (CQ28)
- Diverse mounting options (CQ28)
- Programmable output function (CQ28) or complementary design (CM18/30, CQ35)
- Also available with PTFE (Teflon) housing (CM18)

Your benefits

- Non-contact level measurement possible even through walls
- Tough and reliable in harsh industrial applications
- Quick and easy adjustment of the switching point
- Can be used for a very wide range of media

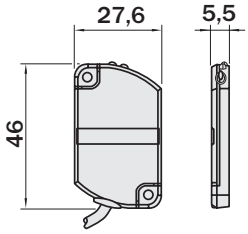
Dimensions

CM

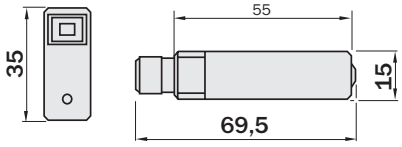


		Thread type L1 [mm]	Cable type L2 [mm]
CM18	flush	83,5	71,5
	non-flush	91,5	79,5
CM30	flush	79	63,6
	non-flush	91	75,6

CQ28



CQ35



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

- www.mysick.com/en/CM
- www.mysick.com/en/CQ

8013958/2011-08-29
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Technical details and ordering information

- Electrical wiring: DC 4-wire
- Supply voltage: 10 ... 40 V DC
- Short-circuit protection (pulsed)
- High electromagnetic immunity
- Housing material: plastic or Teflon
- Other models available on request or at www.sick.com

CM – cylindrical housings

Housing	Installation type	Output function	Nominal sensing range [mm]	Output type	Connection	Model name	Part no.
M18	Flush	Complementary	8	PNP	M12, 4-pin	CM18-08BPP-KC1	6020388
					Cable, PVC, 2 m	CM18-08BPP-KW1	6020136
	Non-flush	Complementary	12	PNP	Cable, PVC, 2 m	CM18-12NPP-KW1	6020389
					M12, 4-pin	CM18-12NPP-KC1	6020410
				NPN	M12, 4-pin	CM18-12NNP-KC1	6021458
	Flush	Complementary	8	PNP	Cable, PVC, 2 m	CM18-08BPP-TW0 [1]	6026195
				NPN	Cable, PVC, 2 m	CM18-08BNP-TW0 [1]	6026194
M30	Flush	Complementary	16	PNP	M12, 4-pin	CM30-16BPP-KC1	6020475
				NPN	M12, 4-pin	CM30-16BNP-KC1	6021460
				PNP	Cable, PVC, 2 m	CM30-16BPP-KW1	6020473
	Non-flush	Complementary	25	PNP	Cable, PVC, 2 m	CM30-25NPP-KW1	6020476
					M12, 4-pin	CM30-25NPP-KC1	6020477
				NPN	M12, 4-pin	CM30-25NNP-KC1	6021462

[1] Teflon housing

CQ – rectangular housings

Housing [mm]	Installation type	Output function	Nominal sensing range [mm]	Output type	Connection	Model name	Part no.
28 x 46 x 5.5	Non-flush	Programmable	10	PNP	Cable, PVC, 2 m	CQ28-10NPP-KW1	6030132
				NPN	Cable, PVC, 2 m	CQ28-10NNP-KW1	6030133
35 x 15 x 55	Non-flush	Complementary	25	PNP	Cable, PVC, 2 m	CQ35-25NPP-KW1	6020478
					M12, 4-pin	CQ35-25NPP-KC1	6020479
				NPN	Cable, PVC, 2 m	CQ35-25NNP-KW1	6021463
					M12, 4-pin	CQ35-25NNP-KC1	6021464

Recommended accessories

Name	Design	Material	Size	Model name	Part no.
Mounting bracket	90° bracket	Zinc plated steel	M18	BEF-WN-M18	5308446
		Stainless steel	M18	BEF-WN-M18N	5320947
		Zinc plated steel	M30	BEF-WN-M30	5308445
Clamping block	–	PA12, glass fiber reinforced	M12	BEF-KHF-M12	2051479
	–	PA12, glass fiber reinforced	M18	BEF-KHF-M18	2051481
Installation adapter for silo and tank applications	–	Plastic (POM)	M30	BEF-EA-CM30	2043770

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

D

Small size – long sensing range

Built to withstand the harshest environments

SICK offers a thorough portfolio of magnetic proximity sensors in metric (MM) and rectangular (MQ) configurations. The MM sensors are available with standard sensing ranges and, in the Advanced series, with extended sensing ranges. This, together with the use of smaller magnets, opens up a whole new range of application possibilities. The NAMUR version of the MM sensors completes this comprehensive series. The MQ sensors offer all the advantages of a magnetic proximity sensor in a compact plastic housing.

Magnetic proximity sensors are designed for use in harsh environments and are unaffected by dust, heat, or vibrations. The SICK magnetic proximity sensors withstand environments where other sensors fail.

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D

Magnetic proximity sensors

D

Product description

Permanent magnets can be detected with precision at long ranges with magnetic proximity sensors. Magnetic proximity sensors are designed for use in harsh environments and are unaffected by dust, heat, or vibrations. The SICK magnetic proximity sensors withstand environments where other sensors fail.

At a glance

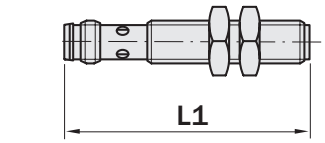
- Detection of permanent magnets through non-ferromagnetic substances, such as stainless steel, aluminum, plastic, or wood
- Precise switching point and exact hysteresis
- Suitable for detection of objects in high temperature zones
- Very long sensing ranges together with small housing sizes

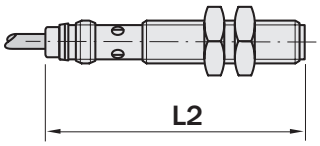
Your benefits

- Unaffected by mechanical influences (shock, impacts, vibration)
- Space saving installation due to small size
- Reliable switching, even with high target position tolerances

Dimensions

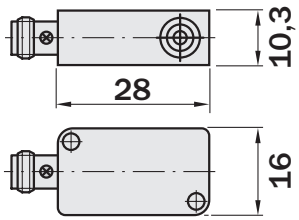
MM





	Connector type L1 [mm]	Cable type L2 [mm]
MM8	46	48
MM12	46	44
MM18	50	48

MQ10



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

- www.mysick.com/en/MM
- www.mysick.com/en/MQ

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Technical details and ordering information

- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67
- Short-circuit protection, pulsed
- Other models available on request or at www.sick.com

MM – cylindrical housings

Housing	Output function	Nominal sensing range [mm]	Output type	Connection	Model name	Part no.
M8	Normally open	60	NPN	M8, 3-pin	MM08-60ANS-ZTK	1040068
				Cable, PUR, 2 m	MM08-60ANS-ZUK	1040066
			PNP	M8, 3-pin	MM08-60APS-ZTK	1040067
				Cable, PUR, 2 m	MM08-60APS-ZUK	1040027
M12	Normally open	60	NPN	M12, 4-pin	MM12-60ANS-ZCK	1040071
				Cable, PUR, 2 m	MM12-60ANS-ZUK	1040026
			PNP	M12, 4-pin	MM12-60APS-ZCK	1040070
				Cable, PUR, 2 m	MM12-60APS-ZUK	1040069
	Normally closed	60	PNP	Cable, PUR, 2 m	MM12-60APO-ZUK	1040065
M18	Normally open	70	NPN	M12, 4-pin	MM18-70ANS-ZCK	1040073
				Cable, PUR, 2 m	MM18-70ANS-ZUK	1040085
			PNP	M12, 4-pin	MM18-70APS-ZCK	1040072
				Cable, PUR, 2 m	MM18-70APS-ZUK	1040029
	Normally closed	70	PNP	M12, 4-pin	MM18-70APO-ZCK	1047255

MQ – rectangular housings

Housing (WxHxL) [mm]	Output function	Nominal sensing range [mm]	Output type	Connection	Model name	Part no.
10.3 x 16 x 28	Normally open	60	PNP	M8, 3-pin	MQ10-60APS-KT0	7900280
				Cable, PVC, 2 m	MQ10-60APS-KUO	7900278
			NPN	Cable, PVC, 2 m	MQ10-60ANS-KUO	7900279
				M8, 3-pin	MQ10-60ANS-KT0	7900281

Recommended accessories

Name	Material	Dimensions	Model name	Part no.
Magnet	Samarium-cobalt	Ø: 10 mm, height: 3 mm	MAG-1003-S	7901782
	AlNiCo	Ø: 6 mm, height: 25 mm	MAG-0625-A	7901783
	Barium ferrite	Ø: 20 mm, height: 6.5 mm	MAG-2006-B	7901784
		Ø: 30 mm, height: 10 mm	MAG-3010-B	7901785
		Ø: 31 mm, height: 15 mm	MAG-3015-B	7901786
		Ø: 36 mm, height: 19.5 mm	MAG-3515-B	7902086
Mounting bracket	Stainless steel	M8	BEF-WN-M08	5321721
		M12	BEF-WN-M12	5308447
		M18	BEF-WN-M18	5308446
Clamping block	PA12, glass fiber reinforced	M12	BEF-KHF-M12	2051479
		M18	BEF-KHF-M18	2051481

Cables and connectors → p. 142 Additional mounting brackets → p. 146

E

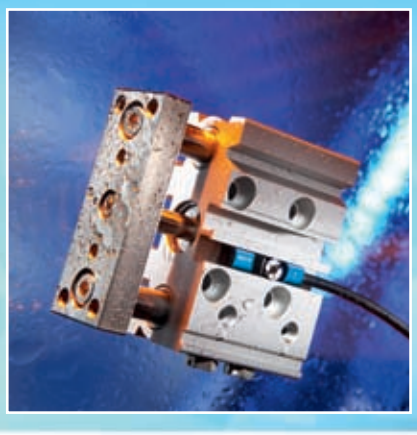
With millimeter precision: cylinder sensors from SICK

MPS

MPS in use on an assembly line for analog measurement of piston travel in a pneumatic cylinder

MZ2Q

One sensor, two adjustable switching points: saves space, time, and costs



MZT8

MZT8 offers optimum switching characteristics, maximum ease of handling, and is as tough as they come

Cylinder solutions from SICK: precise and reliable detection to enhance productivity

Detecting, measuring, positioning, quality control – all crucial tasks in industrial automation.

Magnetic cylinder sensors from SICK developed for faster and more accurate detection of piston positions in compact pneumatic cylinders offer unprecedented performance levels. This results in wider fields of application for pneumatic cylinders, with new potential for machinery and production plants.

And with our huge range of magnetic cylinder sensors to choose from, we have everything you could need. With features like ease of handling, the option of an analog output, optimum switching characteristics, suitability for use in the food and beverage industry, support for the latest IO-Link technology, and universal mounting options with our comprehensive range of adapters, magnetic cylinder sensors from SICK are equipped for all installation locations and conditions.

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E

Magnetic cylinder sensors

Easy to select:
Selection guide for magnetic cylinder sensors

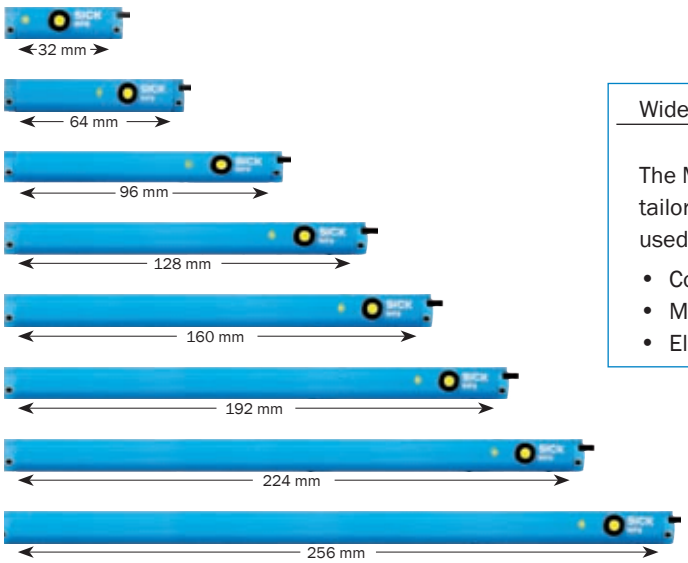
Product	Cylinder type		Dimensions W x H x D [mm]	Output type		Output function		
	Without adapter	With adapter to fit		PNP	NPN	Normally closed	Normally open	Analog
MPS	T-slot	• Integrated profile cylinders • Tie-rod cylinders • Round body cylinders • Dovetail groove cylinders • SMC rail cylinders ECDQ, CDQ2	13.6 x 14.2 x 45/77/109/141/173/205/237/269					■
MZT8			5 x 5.5 x 24	■	■	■	■	
MZT6			6.1 x 4.5 x 31.5	■	■	■	■	
MZ2Q	C-slot, T-slot		6.2 x 4.3 x 19	■			■	
MZN1	C-slot	• SMC rail cylinders ECDQ, CDQ2	3.6 x 2.8 x 25	■	■	■	■	

Full "active coverage" of pneumatic cylinders for improved application potential – an idea implemented by the MPS position sensors. With sizes from 32 to 256 mm and corresponding ranges of measuring and switching functions:

- 1 ms sampling rate and 0.3 mm linearity set new precision benchmarks in this sensor class, and the MPS features a top-notch operating concept
- Can be oriented as desired when mounting
- LED in-range indicator

Example applications

- Magnetic position sensors enable the use of low-cost pneumatic cylinders instead of costly linear drives and offer benefits for all fields of application
- More speed for metering systems
- More accurate press-in work on automatic assembly machines
- Efficient quality controls
- Fast product changeovers e.g. for clamping operations



Widest portfolio of measurement!

The MPS series offers a practical variety of sizes, tailored to the dimensions of the most commonly used pneumatic cylinders.

- Compact design
- Minimal blind zones, wide measuring ranges
- Electronic zero point and end point setting

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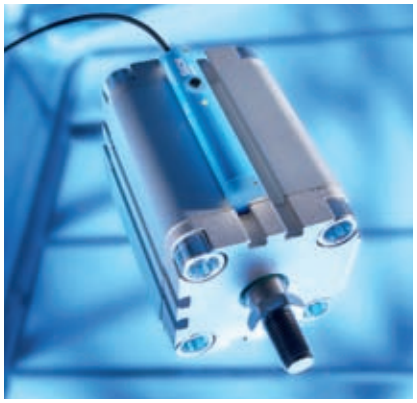
Enclosure rating	Connection		Certification	Special features	Page
	Cable	Cable with connector			
IP 67	■	■	CE	Analog	44
IP 68, IP 69K	■	■	CE cULus LISTED IP69K	–	46
IP 68, IP 69K	■	■	CE cULus LISTED IP69K JohnsonDiversey	Ex ATEX 3D/3G	48
IP 67	■	■	CE	1 sensor – 2 switching points, IO-Link	50
IP 67	■	■	CE cULus LISTED	–	52

E



MPS, magnetic position sensors

Now offering more operating space for low-cost, high-performance pneumatic cylinders – through magnetic position sensors in new sizes.

- Measuring ranges between 32 and 256 mm
- High sampling rate of 1 ms
- Repeatability 0.1 mm
- Resolution 0.05 mm
- Individually teachable measuring ranges
- Time saving installation and evaluation

MZT8, space saving design

Small and rugged, with sensing face on the tip: The MZT8 sensor is the ideal solution for short-stroke pneumatic cylinders, and provides a wealth of technical advantages:

- The shortest sensor on the market, at 24 mm
- ASIC technology from SICK ensures optimum switching performance
- IP 68 / IP 69 K
- One-handed assembly using hex key or screwdriver

MZ2Q C and T, magnetic cylinder sensors

An ingenious principle in two sizes for C- and T-slots: MZ2Q series sensors have 2 adjustable switching points.

- Simple 2-point teach-in procedure
- Cabling reduced by half
- Can be mounted from above
- Can be fully flush mounted into the slot
- IO-Link enabled
- Detection zone up to 50 mm

E

Product description

The MPS analog position sensors expand the available functionality for pneumatic and hydraulic cylinders. The wide spectrum of measuring ranges makes it possible to cover a great variety of cylinders along their entire stroke. With appropriate functionality in terms of output function, switching and measuring performance, and teaching, many new applications become possible that were previously not possible at all or only with costly systems.

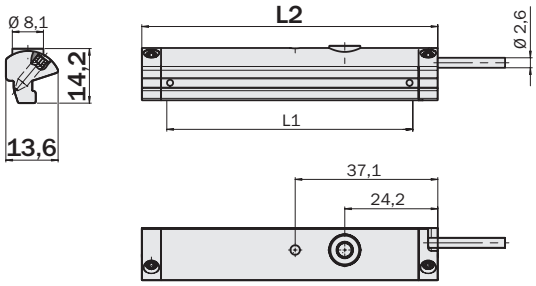
At a glance

- Magnetic position sensor for pneumatic and hydraulic cylinders with T-slot
- Output signal: analog, 4 ... 20 mA current and 0 ...10 V voltage (in one sensor)
- Maximum precision: 0.05 mm resolution, 0.1 mm repeatability, 0.3 mm linearity
- Electric setting of zero point and end point via teach-in button

Your benefits

- Maximum flexibility with measuring ranges 32 mm, 64 mm, 96 mm, 128 mm, 160 mm, 192 mm, 224 mm, 256 mm
- Measuring range can be customized using the teach-in function
- Drop-in slot mounting from above makes handling and assembly easy
- Sensor can be oriented as desired when mounting, allowing you to optimize cabling
- Minimal blind zones and therefore no loss of stroke, for optimized application solutions

Dimensions



Measuring length L1 [mm]	Housing length L2 [mm]
32	45
64	77
96	109
128	141
160	173
192	205
224	237
256	269

CE

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/MPS

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Technical details and ordering information

- Electrical wiring: DC 4-wire
- Supply voltage: 15 ... 30 V DC
- Analog output current: 4 ... 20 mA; voltage: 0 ...10 V
- Operating temperature: –20 ... +70 °C
- Enclosure rating IP 67
- Repeatability: 0.1 mm
- Linearity: +/- 0.3 mm
- Resolution: 0.05 mm
- Measurement output rate: 1 ms
- Impact/oscillation load 30 g, 11 ms/10 ... 55 Hz, 1 mm

Slot	Output type	Measuring ranges [mm]	Connection type	Model name	Part no.
T-slot	Analog 0 ... 10 VDC 4 ... 20 mA	32	Cable with connector, M8 x 1, PUR, 300 mm	MPS-032TSTP0	1045666
			Cable, PUR, 2 m	MPS-032TSTU0	1045667
		64	Cable with connector, M8 x 1, PUR, 300 mm	MPS-064TSTP0	1045668
			Cable, PUR, 2 m	MPS-064TSTU0	1045669
		96	Cable with connector, M8 x 1, PUR, 300 mm	MPS-096TSTP0	1045670
			Cable, PUR, 2 m	MPS-096TSTU0	1045671
		128	Cable with connector, M8 x 1, PUR, 300 mm	MPS-128TSTP0	1045672
			Cable, PUR, 2 m	MPS-128TSTU0	1045673
		160	Cable with connector, M8 x 1, PUR, 300 mm	MPS-160TSTP0	1050685
			Cable, PUR, 2 m	MPS-160TSTU0	1050740
		192	Cable with connector, M8 x 1, PUR, 300 mm	MPS-192TSTP0	1047728
			Cable, PUR, 2 m	MPS-192TSTU0	1050738
		224	Cable with connector, M8 x 1, PUR, 300 mm	MPS-224TSTP0	1050686
			Cable, PUR, 2 m	MPS-224TSTU0	1050741
		256	Cable with connector, M8 x 1, PUR, 300 mm	MPS-256TSTP0	1050551
			Cable, PUR, 2 m	MPS-256TSTU0	1050739

All M12 models have rotating coupling nuts

Brackets for pneumatic cylinders

Cylinder type	Material	Model name	Part no.
Dovetail groove	Aluminum	BEF-KHZ-ST1	2022703
Tie-rod/integrated profile cylinder	Die-cast zinc	BEF-KHZ-PT1	2022702
SMC rail cylinder, model ECDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT1	2046439
SMC rail cylinder, model CDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT2	2046440

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

E

Product description

The MZT8 magnetic cylinder sensor is used for detecting the position of pistons in pneumatic cylinders. The MZT8 can be mounted by dropping it directly into the T-slot from above. The MZT8's extreme resilience to shock and vibration, its resistance to media, and its resistance to leaking make it especially well suited to applications where those features are essential.

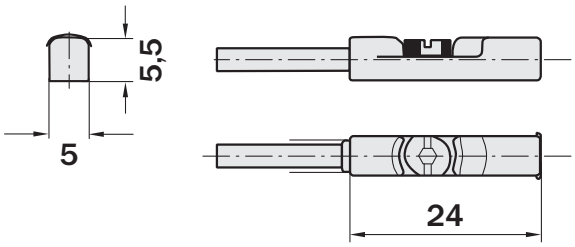
At a glance

- Magnetic cylinder sensor for pneumatic and hydraulic cylinders with T-slot
- Housing length 24 mm
- Sensor element at the tip of the housing
- SICK-GMR-ASIC technology
- Enclosure rating: IP 68 / IP 69K
- Captive screw
- cULus

Your benefits

- Shortest sensor on the market – allows applications with short-stroke cylinders
- Sensor element at the tip of the sensor – piston detection possible without stroke loss
- Captive fixing screw – enables secure and optimized commissioning
- Easy installation: one-handed assembly using hex key
- Compact and flush fitting

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/MZT8

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Technical details and ordering information

- Supply voltage: 10 ... 30 V DC
- Continuous current output: <= 200 mA
- Operating temperature: –30 ... +80 °C
- Enclosure rating: IP 68 / IP 69K
- Impact/oscillation load: 30 g, 11 ms / 10 ... 55 Hz, 1 mm

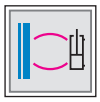
Slot	Output type	Output function	Overrun distance, typical	Connection	Model name	Part no.
T-slot	PNP	Normally open	4 mm	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT8-03VPS-KP0	1044458
				Cable with connector, M8, 3-pin, with rotating coupling nut, PUR, 0.5 m	MZT8-03VPS-KR0	1044459
				Cable, PUR, 2 m	MZT8-03VPS-KU0	1044469
				Cable with connector, M12, 3-pin, PUR, 0.3 m	MZT8-03VPS-KQ0	1044460
			9 mm	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT8-28VPS-KP0	1048048
				Cable, PUR, 2 m	MZT8-28VPS-KU0	1048049
				Cable with connector, M8, 3-pin, with rotating coupling nut, PUR, 0.5 m	MZT8-28VPS-KR0	1048050
				Cable with connector, M12, 3-pin, PUR, 0.3 m	MZT8-28VPS-KQ0	1048051
		Normally closed	4 mm	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT8-03VPO-KP0	1044930
				Cable, PUR, 2 m	MZT8-03VPO-KU0	1044931
	NPN	Normally open	4 mm	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT8-03VNS-KP0	1044932
				Cable with connector, M8, 3-pin, with rotating coupling nut, PUR, 0.5 m	MZT8-03VNS-KR0	1044935
				Cable, PUR, 2 m	MZT8-03VNS-KU0	1044934

All M12 models have rotating coupling nut

Brackets for pneumatic cylinders

Cylinder type	Material	Model name	Part no.
Dovetail groove	Aluminum	BEF-KHZ-ST1	2022703
Round body cylinder with piston diameter up to 25 mm	Plastic / nickel silver	BEF-KHZ-RT1-25	5311171
Round body cylinder with piston diameter up to 63 mm	Plastic / nickel silver	BEF-KHZ-RT1- 63	5311172
Round body cylinder with piston diameter up to 130 mm	Plastic / nickel silver	BEF-KHZ-RT1-130	5311506
Tie-rod/integrated profile cylinder	Die-cast zinc	BEF-KHZ-PT1	2022702
SMC rail cylinder, model ECDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT1	2046439
SMC rail cylinder, model CDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT2	2046440

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146



E

Product description

The MZT6 magnetic cylinder sensor is used for detecting the positions of pistons in pneumatic cylinders. The MZT6 can be mounted by dropping it directly into the T-slot from above. With its SICK-GMR-ASIC technology, the switching response of the MZT6 is unsurpassed. The MZT6's high resistance to shock and vibration, its resistance to media, and its resistance to leaking mean it is also suitable for harsh environments.

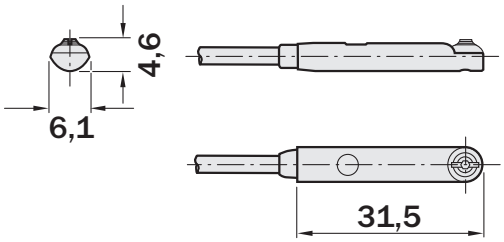
At a glance

- Optimum switching characteristics through SICK-GMR-ASIC technology
- ATEX 3D/3G
- Fits all commonly used cylinders with T-slots, e.g. FESTO or SMC
- cULus
- Enclosure rating: IP 68 / IP 69K
- Fixed in place with combined slot/hex socket screw

Your benefits

- Top switching performance allows precision applications
- High resilience to shock and vibration and resistance to media, highly leakproof
- Simple “drop-in mounting” is possible
- Compact housing design
- Combined fixing system: hex socket/slot screw

Dimensions



IP 69K

JohnsonDiversey

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/MZT6

Technical details and ordering information

- Supply voltage: 10 ... 30 V DC
- Continuous current output: <= 200 mA
- Operating temperature: –30 ... +80 °C
- Enclosure rating: IP 68 / IP 69K
- Impact/oscillation load 30 g, 11 ms/10 ... 55 Hz, 1mm
- ATEX 3D/3G

MZT6

Slot	Output type	Output function	Connection	Model name	Part no.
T-slot	PNP	Normally open	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT6-03VPS-KP0	1023971
			Cable with connector, M8, 3-pin, with rotating coupling nut, PUR, 0.5 m	MZT6-03VPS-KR0	1023972
			Cable, PUR, 2 m	MZT6-03VPS-KU0	1043369
			Cable, PVC, 5 m	MZT6-03VPS-KWB	1025809
			Cable with connector, M12, 3-pin, PUR, 0.3 m	MZT6-03VPS-KQ0	1025550
		Normally closed	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT6-03VPO-KP0	1028741
	NPN	Normally open	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT6-03VNS-KP0	1029402
			Cable, PVC, 2 m	MZT6-03VNS-KW0	1029401

MZT6 ATEX

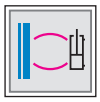
Slot	Output type	Output function	ATEX	Connection	Model name	Part no.
T-slot	PNP	Normally open	3D/3G	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZT6-03VPS-KPX	1028629
				Cable with connector, M12, 3-pin, PUR, 0.3 m	MZT6-03VPS-KQX	1029161
				Cable, PVC, 2 m	MZT6-03VPS-KWX	1025827

Brackets for pneumatic cylinders

Cylinder type	Material	Model name	Part no.
Dovetail groove	Aluminum	BEF-KHZ-ST1	2022703
Round body cylinder with piston diameter up to 25 mm	Plastic / nickel silver	BEF-KHZ-RT1-25	5311171
Round body cylinder with piston diameter up to 63 mm	Plastic / nickel silver	BEF-KHZ-RT1- 63	5311172
Round body cylinder with piston diameter up to 130 mm	Plastic / nickel silver	BEF-KHZ-RT1-130	5311506
Tie-rod/integrated profile cylinder	Die-cast zinc	BEF-KHZ-PT1	2022702
SMC rail cylinder, model ECDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT1	2046439
SMC rail cylinder, model CDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT2	2046440

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

E



Product description

The MZ2Q sensor series was developed for quicker and more economical end position definition and intermediate position detection on pneumatic cylinders. This was realized with two individually adjustable switching points in one sensor housing. As a result, only one slot is occupied, greatly reducing mounting and cabling requirements and providing an efficient solution for the application.

At a glance

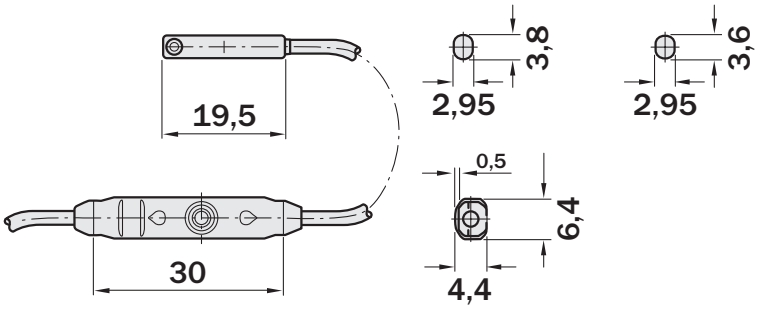
- Magnetic cylinder sensor for pneumatic and hydraulic cylinders with C/T-slot
- One sensor with two adjustable switching points
- Detection zone up to 50 mm stroke
- IO-Link communication

Your benefits

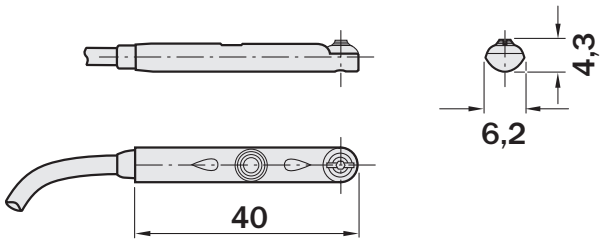
- One sensor, two switching points: only one slot required
- Saves time, space, and costs – greatly reducing mounting and cabling requirements
- Maximum flexibility: detection zone up to 50 mm stroke
- Allows precision pneumatic applications due to simple and precise definition of two switching points

Dimensions

MZ2Q (C-SLOT)



MZ2Q (T-SLOT)



CE IO-Link

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/MZ2Q-T

▸ www.mysick.com/en/MZ2Q-C

Technical details and ordering information

- Supply voltage: 12 ... 30 V DC
- Continuous current output: <= 100 mA
- Operating temperature: –20 ... +75 °C
- Enclosure rating: IP 67
- Impact/oscillation load 30 g, 11 ms/10 ... 55 Hz, 1 mm
- Detection zone: up to 50 mm

Slot	Output type	Output function	Connection	Model name	Part no.
T-slot	PNP	Normally open	Cable, PUR, 2 m	MZ2Q-FTZPS-KU0	1029845
			Cable with connector, M12, 4-pin, PUR, 0.3 m	MZ2Q-FTZPS-KQ0	1041323
			Cable with connector, M8, 4-pin, with rotating coupling nut, PUR, 0.5 m	MZ2Q-FTZPS-KR0	1041322
Festo C-slot	PNP	Normally open	Cable with connector, M8, 4-pin, PUR, 0.3 m	MZ2Q-CFSPSKP0	1042242
			Cable with connector, M12, 4-pin, PUR, 0.3 m	MZ2Q-CFSPSKQ0	1042244
			Cable with connector, M8, 4-pin, with rotating coupling nut, PUR, 0.5 m	MZ2Q-CFSPSKR0	1042243
			Cable, PUR, 2 m	MZ2Q-CFSPSKU0	1042241
			Cable with connector, M12, 4-pin, PUR, 0.3 m	MZ2Q-CFLPSKQ0	1043697
SMC C-slot	PNP	Normally open	Cable with connector, M8, 4-pin, PUR, 0.3 m	MZ2Q-CSSPSKP0	1042238
			Cable with connector, M12, 4-pin, PUR, 0.3 m	MZ2Q-CSSPSKQ0	1042240
			Cable with connector, M8, 4-pin, with rotating coupling nut, PUR, 0.5 m	MZ2Q-CSSPSKR0	1042239
			Cable, PUR, 2 m	MZ2Q-CSSPSKU0	1042237
			Cable with connector, M12, 4-pin, PUR, 0.3 m	MZ2Q-CSLPSKQ0	1043696

Brackets for pneumatic cylinders

Cylinder type	Material	Model name	Part no.
Dovetail groove	Aluminum	BEF-KHZ-ST1	2022703
Round body cylinder with piston diameter up to 25 mm	Plastic / nickel silver	BEF-KHZ-RT1-25	5311171
Round body cylinder with piston diameter up to 63 mm	Plastic / nickel silver	BEF-KHZ-RT1- 63	5311172
Round body cylinder with piston diameter up to 130 mm	Plastic / nickel silver	BEF-KHZ-RT1-130	5311506
Tie-rod/integrated profile cylinder	Die-cast zinc	BEF-KHZ-PT1	2022702
SMC rail cylinder, model ECDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT1	2046439
SMC rail cylinder, model CDQ 2 (T-slot)	Aluminum	BEF-KHZ-TT2	2046440
SMC rail cylinder, model ECDQ 2 (C-slot)	Aluminum	BEF-KHZ-TC1	2046441
SMC rail cylinder, model CDQ 2 (C-slot)	Aluminum	BEF-KHZ-TC2	2046442

Cables and connectors ➔ p. 142 Additional mounting brackets ➔ p. 146

E

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Product description

The magnetic cylinder sensor is used for detecting the positions of pistons in pneumatic cylinders. The MZN1 can be mounted by dropping it directly into the C-slot from above. With its SICK-GMR-ASIC technology, the switching response of the MZN1 is unsurpassed. The MZN1's high resilience to shock and vibration, its resistance to media, and its resistance to leaking mean it is also suitable for harsh environments.

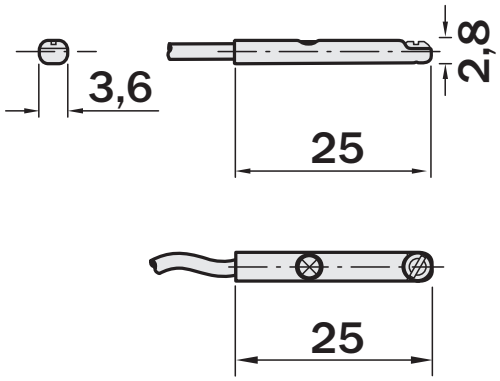
At a glance

- Fits all commonly used cylinders with C-slots, e.g. FESTO or SMC
- Optimum switching characteristics through SICK-GMR-ASIC technology
- Enclosure rating IP 67
- cULus

Your benefits

- Best in class switching performance allows precision applications
- High resilience to shock and vibration and resistance to media, highly leakproof
- Simple “drop-in mounting” is possible
- Compact housing design

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/MZN1

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Technical details and ordering information

- Supply voltage: 10 ... 30 V DC
- Continuous current output: <= 100 mA
- Operating temperature: –25 ... +75 °C
- Enclosure rating: IP 67
- Impact/oscillation load 30 g, 11 ms/10 ... 55 Hz, 1 mm

Slot	Output type	Output function	Connection	Model name	Part no.
C-slot	PNP	Normally open	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZN1-06VPS-KP0	1022054
			Cable with connector, M8, 3-pin, with rotating coupling nut, PUR, 0.5 m	MZN1-06VPS-KRD	1023985
			Cable, PUR, 2 m	MZN1-06VPS-KU0	1022053
			Cable with connector, M12, 3-pin, PUR, 0.3 m	MZN1-06VPS-KQ0	1042443
		Normally closed	Cable with connector, M8, 3-pin, with rotating coupling nut, PUR, 0.5 m	MZN1-06VPO-KR0	1048217
	NPN	Normally open	Cable with connector, M8, 3-pin, PUR, 0.3 m	MZN1-06VNS-KP0	1029903
			Cable, PUR, 2 m	MZN1-06VNS-KU0	1029904

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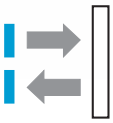
Brackets for pneumatic cylinders

Name	Material	Model name	Part no.
Mounting bracket for mounting on SMC rail ECDQ2 (C-slot)	Aluminum	BEF-KHZ-TC1	2046441
Mounting bracket for mounting on SMC rail CDQ2 (C-slot)	Aluminum	BEF-KHZ-TC2	2046442

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

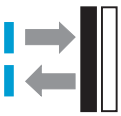
Detection. Identification. Positioning. Counting. Photoelectric sensors from SICK.

F



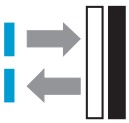
Photoelectric proximity sensors, energetic

- Sender and receiver in a single housing
- No reflector required
- Responds to the reflection from the detected object



Photoelectric proximity sensors with background suppression, BGS

- Detects objects within a defined scanning distance. Objects behind are suppressed.



Photoelectric proximity sensors with foreground suppression, FGS

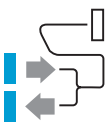
- Detects dark and very shiny objects within a defined zone.
- A defined background is used as a reference, and is covered by an object to produce reliable switching

Photoelectric retro-reflective sensors

- Sender and receiver in a single housing
- Different reflector sizes for various scanning ranges and object sizes
- Polarizing filters allow reflective objects to be detected as well
- Automatic sensitivity adjustment on sensors for clear material detection

Through-beam photoelectric sensors

- Separate sender and receiver, two devices
- Very long ranges and signal reserves even under harsh conditions
- Reliable detection of reflective objects



Fiber-optic photoelectric sensors

- Sender and receiver in a single housing
- Two fiber-optic cables, choice of proximity switch or through-beam functionality
- The right fiber-optic cable for every task
- Especially suitable for tight spaces and harsh environments

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Photoelectric sensors

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Product family		Dimensions W x H x D [mm]	Sensing range: Photoelectric proximity sensor	Photoelectric retro-reflective sensor	Photoelectric through-beam sensor
 W2	Slim	7.6 x 20.6 x 12.5	0.115 m	0.8 m	1.2 m
	Flat	14 x 19.5 x 3.5			
 W4	Slim	12.2 x 41.8 x 17.3	0.5 m	5 m	5 m
	Standard	16 x 39.5 x 12			
	Inox	15.3 x 44.7 x 22.3			
 W8 / W8 Inox		11 x 31 x 20	0.5 m	6.5 m	45 m
 W100		11 x 32 x 20	1 m	12 m	35 m
 G6		12 x 31.5 x 21	0.25 m	7.2 m	15 m
 W9		12 x 40 x 22 12.2 x 52.2 x 23.6	0.8 m	12 m	50 m
 W11		15.6 x 48.5 x 42	1.1 m	10 m	20 m
 W12		15.6 x 48.5 x 42	0.6 m	18 m	80 m
 W14		17.6 x 75.5 x 33.5	1.5 m	17 m	15 m
 W18		17.6 x 75.5 x 33.5	1 m	7 m	20 m
 W23		24.6 x 80.6 x 54	2.3 m	15 m	–
 W27		24.6 x 80.6 x 54	2.5 m	19 m	35 m
 W280		23.5 x 74.5 x 63	1.7 m	15 m	45 m
 W34		27 x 92 x 70	2.5 m	22 m	60 m
 MH15(V)		Ø M18 x 1	0.35 m	3.5 m	5 m
 V180-2		Ø M18 x 1	1.1 m	7 m	28 m
 V18V		Ø M18 x 1	0.8 m	5 m	20 m
 W15		16.2 x 48.5 x 31.9	0.35 m	5 m	5 m
 ELF		23.8 x 24.3 x 33.6	0.1 m	4.8 m	–
 Z-Sensor		13.6 x 34.8 x 23 13.6 x 45.2 x 31.7	0.115 m	4.8 m	–

Light source				Enclosure rating	Housing material			Technology	Page
IR	Red	Red Pin-Point	Red Laser		Plastic	Metal	Stainless steel		
–	■	■	–	IP 67	■	–	–	PinPoint by SICK	70
–	■	■	–	IP 66, IP 67, IP 69K	■	–	■	PinPoint by SICK IO-Link	72
–	■	–	■	IP 66, IP 67, IP 68, IP 69K	■	–	■		76
–	■	–	■	IP 65, IP 67	■	–	–		80
–	■	■	–	IP 67	■	–	–	PinPoint by SICK	82
■	■	■	■	IP 66, IP 67, IP 69K	■	–	–	PinPoint by SICK VISTAL™	86
–	■	–	–	IP 66, IP 67, IP 69K	■	–	–	PinPoint by SICK	90
■	■	■	■	IP 66, IP 67, IP 69K	–	■	–	PinPoint by SICK IO-Link	92
■	■	■	–	IP 67	■	–	–	PinPoint by SICK	94
■	■	–	–	IP 67	■	–	–	IO-Link	96
■	■	■	■	IP 65	■	–	–	PinPoint by SICK	100
■	■	■	–	IP 65, IP 69K	■	–	–	PinPoint by SICK IO-Link	102
–	■	–	–	IP 66	■	–	–	–	104
■	■	–	–	IP 67	■	–	–	–	106
■	■	■	–	IP 67, IP 69K	■	–	■	PinPoint by SICK	122
–	■	–	–	IP 67	■	■	–	–	126
–	■	–	–	IP 69K	–	–	■	–	128
■	■	■	–	IP 65	■	–	–	PinPoint by SICK	130
■	■	–	–	IP 67	■	–	–	–	132
■	■	–	–	IP 67	■	–	–	–	134

Other devices and configurations on request or at www.sick.com

F

Easy to select: Photoelectric proximity sensors

F

Product family	Sensing range by proximity sensing technology				Page
	FGS	BGS		Energetic	
 W2	–	1 ... 30 mm	–	1 ... 115 mm	70
 W4	–	4 ... 180 mm	–	–	72
 W4 Inox	20 ... 200 mm	3 ... 500 mm	–	–	74
 W8	–	5 ... 300 mm	–	–	76
 W8 Inox	–	5 ... 500 mm	–	0 ... 950 mm	78
 W100	–	–	–	0 ... 1000 mm	80
 G6	–	0 ... 250 mm	–	–	82
 W9	–	20 ... 800 mm	–	–	86
 W11	30 ... 350 mm	30 ... 1100 mm	–	40 ... 1000 mm	90
 W12	35 ... 350 mm	20 ... 600 mm	–	–	92
 W14	–	100 ... 1300 mm	–	300 ... 1500 mm	94
 W18	–	50 ... 1000 mm	–	–	96
 W23	–	50 ... 1100 mm	–	50 ... 2300 mm	100
 W27	–	30 ... 2500 mm	–	–	102
 W280	–	–	–	10 ... 1700 mm	104
 W34	–	100 ... 2500 mm	–	–	106
 MH15	–	3 ... 300 mm	–	5 ... 350 mm	122
 MH15V	–	2 ... 300 mm	–	10 ... 350 mm	124
 V180-2	–	10 ... 300 mm	1 ... 450 mm	1 ... 1100 mm	126
 V18V	–	0 ... 140 mm	–	5 ... 800 mm	128
 W15	–	4 ... 200 mm	–	10 ... 350 mm	130
 ELF	–	–	1 ... 50 mm	1 ... 100 mm	132
 Z-Sensor	–	0 ... 500 mm	–	5 ... 115 mm	134

Other devices and configurations on request or at www.sick.com

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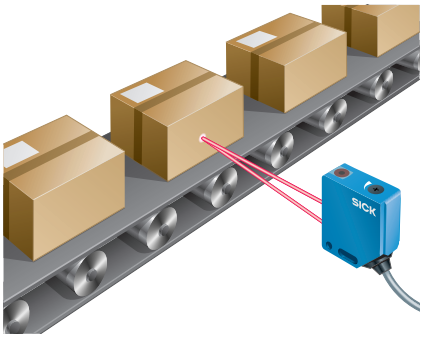
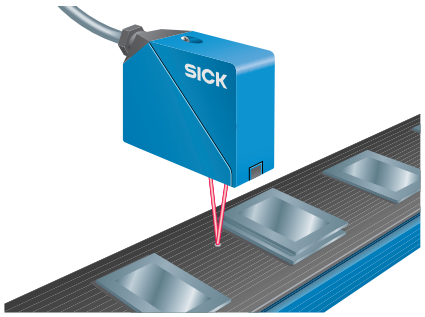
The detection principles in detail:

Photoelectric proximity sensors, energetic

The most affordable solution is the energetic photoelectric proximity sensor with adjustable sensitivity. A light-colored surface reflects more light than a dark one and can therefore be detected from a greater distance away. To achieve similar results with a dark surface, the sensitivity of the sensor must be increased. Detecting a dark object against a light background will be problematic for energetic sensors. The object is obscured by the brighter background due to its higher reflectivity. Light-colored objects against dark backgrounds are easier to detect.



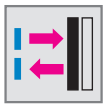


Photoelectric proximity sensors with foreground suppression, FGS

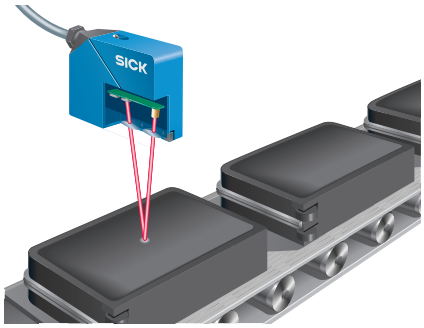
Photoelectric proximity sensors with foreground suppression (FGS) are able to detect objects at a defined scanning distance. All objects between the scanning distance (set to the background) and the sensor are detected. The foreground is suppressed as a result of the special geometric configuration of the sending and receiving elements. For reliable functioning of these sensors, the background (for example, a conveyor belt) needs to be relatively bright and should not vary in height.

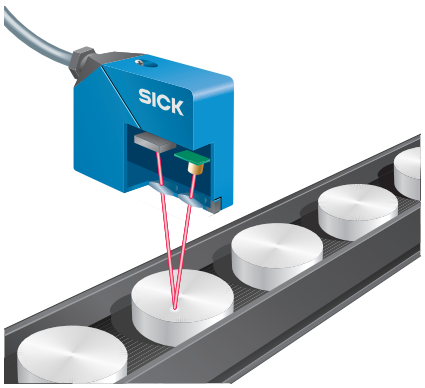
F

Photoelectric proximity sensors with background suppression, BGS



Photoelectric proximity sensors with background suppression (BGS) operate on the basis of the geometric relation between the sending and receiving elements. The sensor is set to the object lying on the scanning plane. Signals from objects lying behind the set scanning plane are suppressed. Photoelectric proximity sensors with background suppression can be disrupted by highly reflective objects in the background, such as panes of glass, polished sheet metal, etc. These effects can increase if there is a non-defined background within the set sensor scanning distance. Shielding or tilting the devices can solve this problem.





Photoelectric proximity sensors with background blanking, BGB

Background blanking can be achieved for photoelectric proximity sensors either optically by changing the geometric relation between the sender and receiver element, or electronically. With the optical solution, the angle between the sent and received beam of light is changed when setting the scanning distance onto the object. Objects at the point of intersection between the two beams are detected. Anything lying behind that is suppressed, as too little or no light from it reaches the receiver element. With the electronic solution, PSD elements (Position Sensitive Device) are used. The sent beam of light is reflected back from the object and strikes the PSD receiver element. Signals from the background are identified as such according to the location of the returning light beam, and are suppressed electronically.

Easy to select: Photoelectric retro-reflective sensors

F

Product family	Sensing range by retro-reflective sensing technology			Page
	Autocollimation	Standard	Clear material detection	
 W2	–	0.045 ... 0.8 m	–	70
 W4	0 ... 4 m	–	0 ... 5 m	72
 W4 Inox	0 ... 5 m	–	0 ... 5 m	74
 W8	0 ... 4 m	–	0 ... 3 m	76
 W8 Inox	–	0.01 ... 6.5 m	–	78
 W100	–	0.08 ... 12 m	–	80
 G6	–	0.3 ... 7.2 m	–	82
 W9	0 ... 5 m	0.1 ... 12 m	0 ... 5 m	86
 W11	–	0.05 ... 10 m	0 ... 4 m	90
 W12	0 ... 18 m	–	0 ... 4 m	92
 W14	–	0.15 ... 17 m	–	94
 W18	0 ... 7 m	–	0 ... 2 m	96
 W23	–	0.1 ... 15 m	–	100
 W27	–	0.1 ... 19 m	0.5 ... 4.5 m	102
 W280	–	0.01 ... 15 m	–	104
 W34	–	0.03 ... 22 m	–	106
 MH15	–	3.5 m	0.035 ... 1.5 m	122
 MH15V	–	3.5 m	–	124
 V180-2	–	0.05 ... 7 m	–	126
 V18V	–	0.1 ... 5 m	0.1 ... 4.5 m	128
 W15	–	0.035 ... 5 m	–	130
 ELF	–	0 ... 4.8 m	–	132
 Z-Sensor	–	0 ... 4.8 m	–	134

Other devices and configurations on request or at www.sick.com

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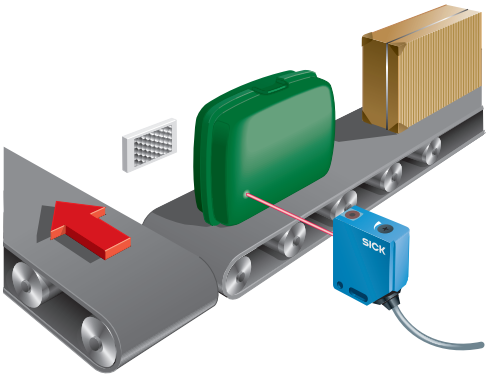
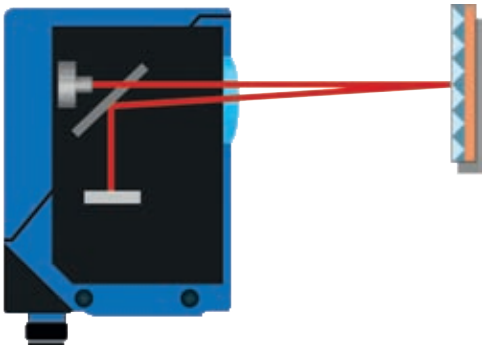
The detection principles in detail:

Photoelectric retro-reflective sensors

With a photoelectric retro-reflective sensor, the emitted light is returned by a reflector and is received and evaluated by the device. Polarizing filters prevent errors when detecting reflective objects. Transparent plastic wrapping and stretch film can affect the functioning of photoelectric retro-reflective sensors with polarizing filters. In such cases it helps to use devices with reduced sensitivity. The use of laser diodes allows greater scanning ranges while simultaneously maintaining a high resolution. Focus ranges can be set with high precision.



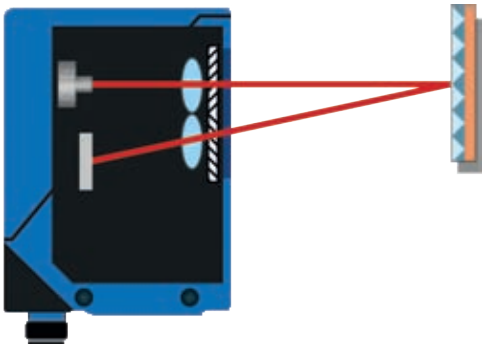


Sensor with autocollimation

Photoelectric retro-reflective sensors with autocollimation

With the autocollimation principle, which unlike the dual lens principle uses only one optical lens, both the beam of light emitted by the sensor and the beam reflected by the reflector lie on a single optical axis. The emitted light passes through a semitransparent mirror before exiting the optical unit. After being returned by the reflector, the beam of light is diverted to the receiver with the aid of the same mirror (see illustration).

This technical principle allows minimization of the so-called blind spot, meaning the area directly in front of the sensor, where an object cannot be detected. That permits reliable detection of the smallest objects even at extremely close range.



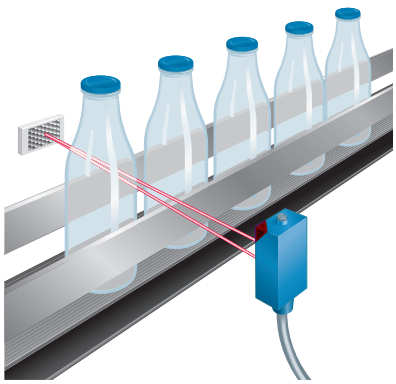
Sensor with dual lens

Photoelectric retro-reflective sensors with standard dual lens

With the dual lens system, the sent and received beams are geometrically separated and are positioned at a small angle to one another. The sent and received beams overlap only in a certain range segment. At close range there is a “blind spot” where an object cannot be detected. When using sensors with dual lens optics, it is therefore important to note the specified minimum range, which should never be undercut.

Photoelectric retro-reflective sensors for detecting clear materials

These photoelectric retro-reflective sensors are characterized by an especially low switching hysteresis. Even minimal light attenuation between the sensor and reflector, such as would be caused by glass bottles or even PET bottles, is detected reliably. An innovative system monitoring feature, continuous threshold adaptation, continuously regulates and adapts the switching threshold in the event of gradual contamination that would otherwise lead to failure.



Easy to select: Through-beam photoelectric sensors

F

Product family	Sensing range for through-beam photoelectric sensors	Page
 W2	0 ... 1,2 m	70
 W4	0 ... 5 m	72
 W4 Inox	0 ... 5 m	74
 W8	0 ... 10 m	76
 W8 Inox	0 ... 45 m	78
 W100	0 ... 35 m	80
 G6	0 ... 15 m	82
 W9	0 ... 50 m	86
 W11	0 ... 20 m	90
 W12	0 ... 80 m	92
 W14	0 ... 15 m	94
 W18	0 ... 20 m	96
 W27	0 ... 35 m	102
 W280	0 ... 45 m	104
 W34	0 ... 60 m	106
 MH15	0 ... 5 m	122
 MH15V	0 ... 5 m	124
 V180-2	0 ... 20 m	126
 V18V	0 ... 20 m	128
 W15	0 ... 5 m	130

Other devices and configurations on request or at www.sick.com

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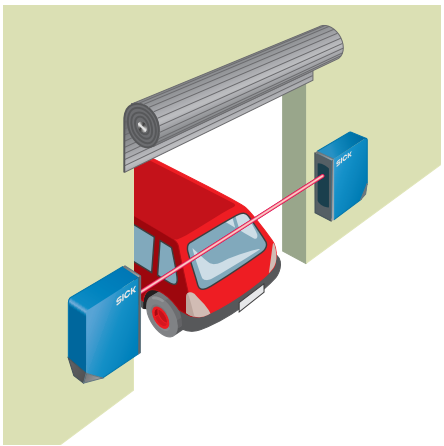
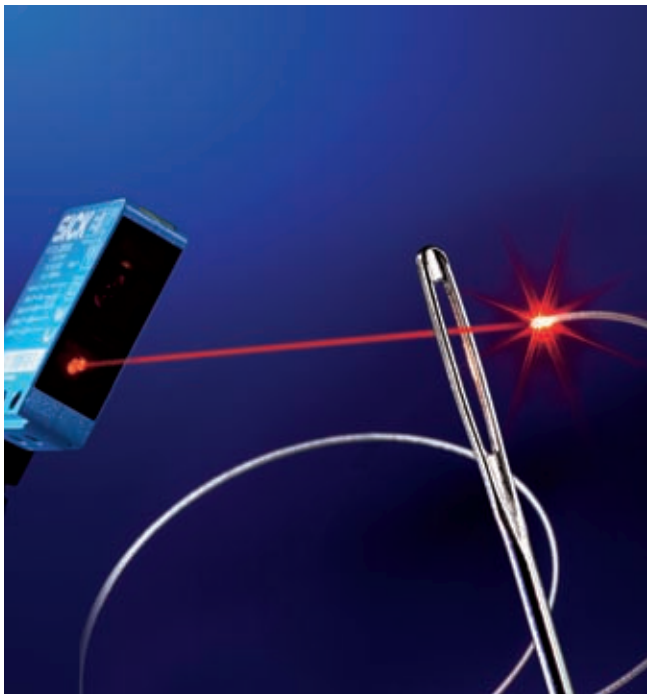
The through-beam photoelectric sensor in detail:



Through-beam photoelectric sensors are composed of two devices, a sender and a receiver. They are physically separate from one another and each are contained in its own housing. The sender contains a light emitting diode (LED) or laser diode, and the receiver detects the incident light with a photodiode.

The separation of sender and receiver allows extremely long scanning ranges, especially with the use of laser diodes. They can therefore reliably detect opaque and reflective objects. However, they are not well suited for clear material detection.

F



Light spot: extremely small along its entire length

Sensors equipped with a laser diode allow for the precise detection of objects, no matter how small, thanks to the extremely small laser beam. They are also ideal for applications where the laser beam needs to be guided through small openings or holes.

Features

- Extremely small light spot for highly precise detection tasks
- Light spot diameter of 0.1–2 mm
- Extremely long sensing ranges for photoelectric retro-reflective sensors and through-beam sensors
- Simple installation due to highly visible light spot
- Safety through laser classes 1 and 2

F

Series with laser and PinPoint technology:

W100 Laser, technology in mini housing

- One of the smallest laser sensors on the market
- Simple alignment thanks to red light laser
- Switching frequency of 2000 Hz
- Polarizing filter for reliable detection of shiny objects
- Laser protection class 1

W9 Laser, advanced technology in a compact housing

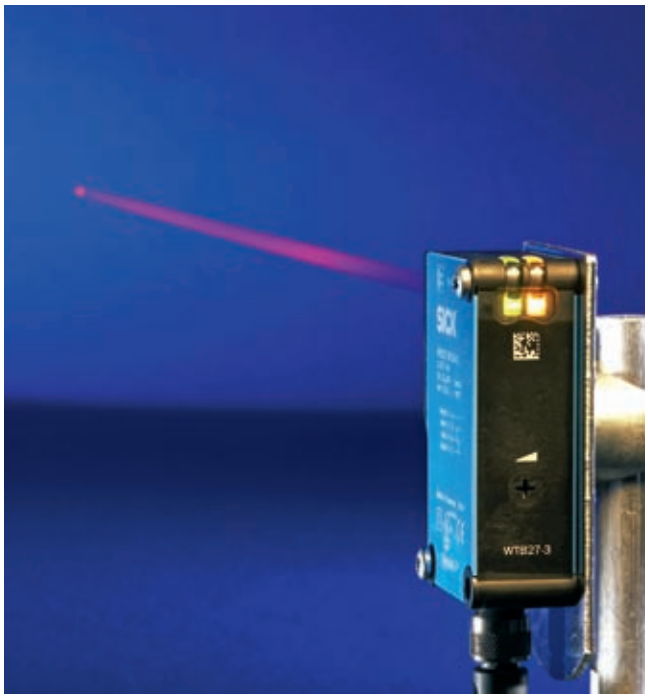
- Advanced laser technology for performance in a compact housing
- Temperature-compensated laser protection electronics for constant laser performance and compliance with the laser protection class
- Small design with outstanding performance
- Adjustable background suppression
- UL, CE, CDRH approvals for worldwide use

W12-2 Laser, proven in use thousands of times

- Best laser photoelectric sensor performance in metal housing
- The original – tried and tested thousands of times in applications
- Precise autocollimation optics
- Adjustable focus for the photoelectric retro-reflective sensor
- High switching frequency of 2.5 kHz
- Laser protection class 1 and 2

Other devices and configurations on request or at www.sick.com

Light spot: extremely small and highly visible



PinPoint is an innovative red light LED in SICK's photoelectric sensor products. The PinPoint LED concentrates the energy into a small area, increasing the light intensity and visibility of the light spot. This makes it much easier for the user to align a photoelectric sensor, creating opportunities for increasing the sensing ranges of the photoelectric retro-reflective and proximity sensors.

Features

- Simple commissioning due to highly visible homogenous light spot
- Light spot diameter of 1–12 mm (depending on sensor type and scanning range)
- Increased sensing distances in the red emitted light range
- No laser safety measures required
- Wide temperature range from –40 to +60 °C
- Long service life of the PinPoint LED

F

W4-3, W4-3 Inox, W4S-3, miniature sensors

- Best-in-class performance
- Best background suppression in its class
- Best suppression of extraneous light
- IO-Link
- Brightest light spot in its class
- Autocollimation photoelectric retro-reflective sensor for transparent objects, with continuous threshold adaptation

W12-3, best performance in a metal housing

- Tough metal housing with dovetail mounting
- Setting by potentiometer, teach-in, or double teach-in
- High reliability in industrial environments, such as with ambient light, optical reflections, and devices mounted opposite one another
- Optional Teflon coating
- Rotatable M12 connector
- IO-Link

MH15, MH15V, cylindrical photoelectric sensors

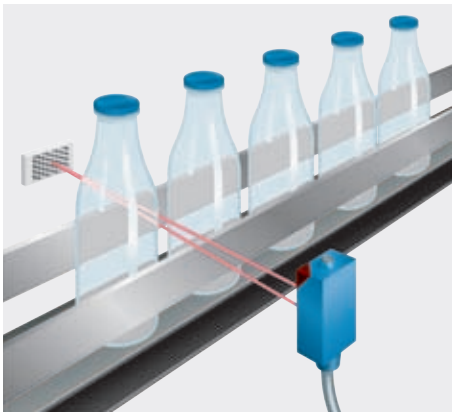
- Best-in-class performance
- Shortest housing in its class provides access to applications with tight installation conditions
- Small, highly visible light spot
- Model with stainless steel housing available for use in the food & beverage industry

Other devices and configurations on request or at www.sick.com

Easy to select: Sensors for clear material detection

F

Product		Dimensions W x H x D [mm]	Sensing range max.	Detectable attenuation range (0 % / 10 % / 18 % / 40 ... 100%)	Continuous threshold adaptation	Auto-collimation
	**WLG4S**	12.2 x 41.8 x 17.3	0 ... 5 m	■	■	■
	**WLG4S Inox**	15.3 x 44.7 x 22.3	0 ... 5 m	■	■	■
	**WL8G**	11 x 31 x 20	0 ... 3 m	■	–	–
	**WL9G**	12.2 x 23.6 x 52.5	0 ... 5 m	■	■	■
	**WL11G**	15.6 x 48.5 x 42	0 ... 4 m	■	–	■
	**WL12G**	15 x 49 x 41.5	0 ... 4 m	■	■	■
	**WL18**	17.6 x 75.5 x 33.5	0 ... 2 m	■	–	■
	**WL27**	24.6 x 80 x 54.2	0.5 ... 4.5 m	■	■	–
	**MH15**	Ø M18 x 1	0.035 ... 1.5 m	■	–	–
	**V18V**	Ø M18 x 1	4.5 m	■	–	–



Signal attenuation due to an object in the light path

Transparent objects such as plastic wrap, film, glass and PET bottles lower the intensity of light reflected back to the sensor. This signal weakening or attenuation varies depending on the transparency of the object.

Advanced SICK technologies such as continuous threshold adaptation and autocollimation principle provide reliable detection of highly transparent objects such as plastic wrapping or PET bottles which cause only very minimal signal attenuation in the light path.

Examples of the signal attenuation of various materials	
About 10% signal attenuation	Clean PET bottles, clear glass, thin and clear films (e.g. cellophane), household plastic film, plastic wrapping
About 18% signal attenuation	Clean clear glass bottles, thick films, film and wrapping folded multiple times
About 40% signal attenuation	Green and brown glass, colored glass bottles

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Light source		Connection			Enclosure rating	Adjustment				Light spot size	Page
Red	IR	Con-nector	Cable	Pigtail		Teach-in [cable]	Teach-in [button]	IO-Link	Potentio-meter		
■	–	■	–	–	IP 66, IP 67	–	■	–	–	45 mm at 1.5 m	72
■	–	■	■	–	IP 66, IP 67, IP 69K	■	–	–	–	45 mm at 1.5 m	74
■	–	■	–	–	IP 67	–	–	–	■	70 mm at 2 m	76
■	–	■	–	–	IP 66, IP 67, IP 69K	–	■	–	–	45 mm at 1.5 m	86
■	–	■	–	–	IP 67	–	–	–	■	25 mm at 1.5 m	90
■	■	■	–	–	IP 67, IP 69K	■	■	■	–	25 mm at 1.5 m / 8 x 13 mm at 200 mm	92
■	–	–	–	■	IP 65, IP 67	–	■	–	–	70 mm at 2 m	96
■	–	–	–	■	IP 67	–	■	–	–	50 mm line	102
■	–	■	–	–	IP 67	–	–	–	■	25 mm at 1 m	122
■	–	■	–	–	IP 67, IP 69K	–	■	–	–	60 mm at 1 m	128

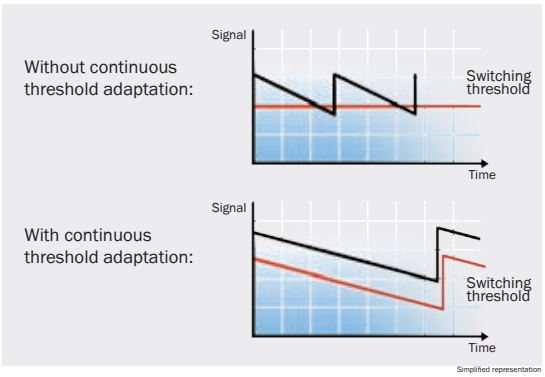
Other devices and configurations on request or at www.sick.com

F

Continuous threshold adaptation

Photoelectric sensors designed for the detection of transparent objects feature continuous threshold adaptation, which enables adaptation to optical conditions.

For example, if these are impaired due to contamination, such as dust on the sensor lenses, the sensor adjusts itself to the new conditions with the aid of continuous threshold adaptation, guided by microprocessor analysis.



Maintenance of the devices is therefore not necessary until contamination is so heavy as to reach the system limits of the glass sensor. In other words, significantly later than with conventional sensors. The signal and the threshold return to the original level automatically after cleaning.

This guarantees enhanced performance, even under harsh and contaminant-heavy application conditions.

Best in class – minimum size for the toughest requirements

W2

Sensors scan highly transparent films under extreme space restrictions

W4

Space-saving design

W8

W8 sensors provide reliable detection even in harsh industrial conditions

Performance that won't be overlooked: SICK's mini sensors

High performance combined with minimum space requirements: the challenge for sensor technology. Tiny machines, intricate and convoluted systems, the toughest ambient conditions, and objects of any kind – the answer to this combination comes from SICK. Equipped with the latest PinPoint LED, intelligent ASIC, microcontroller and IO-Link technologies, packed into rugged, ultracompact housings, combined with a wide assortment of accessories, these sensors offer the reliable solution for the widest possible range of applications and installation conditions.

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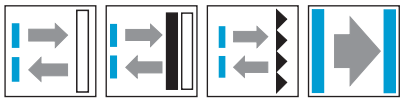
G

Miniature photoelectric sensors



G

Product description

The subminiature photoelectric sensor family is available in two housing shapes, Flat and Slim. The use of optical one-chip systems in highly integrated IC technology provide subminiature sensors with extraordinary performance characteristics. The W2 in Flat housing, with a height of just 3.5 mm, can be installed practically anywhere. The W2 in Slim housing offers an outstanding BGS sensor with a laser-like light spot, despite its miniature size, allowing precise, repeatable detection tasks to be carried out in the tightest of spaces. Photoelectric retro-reflective sensors and through-beam photoelectric sensors in Slim housing enable detection at long sensing ranges.

At a glance

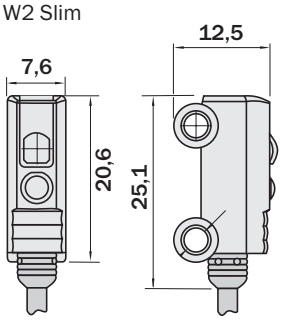
- Sturdy overmolded housing with metal sleeves for M3 fixing bolts
- Photoelectric proximity sensors with precise BGS and fixed focusing. Two sensing distances with 15 mm and 30 mm are available.
- Enclosure rating IP 67
- All models with M8 cable connector
- PinPoint LED in all W2 Slim models

Your benefits

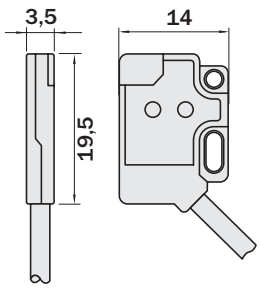
- High performance solutions for very tight spaces
- The laser-like light spot means fast response time with high repeatability and precise switching points, allowing higher process speeds
- The high enclosure rating and the sturdy housing allow for use in harsh ambient conditions
- Compact and space saving machine designs resulting from high scanning ranges onto small reflectors
- Stable detection of transparent films under varying process conditions, without the use of reflectors

Dimensions

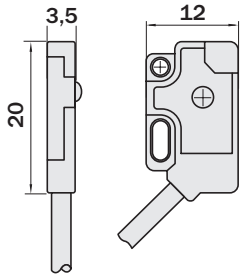
W2 Slim



W2 Flat
Proximity and retro-reflective



W2 Flat Through-beam



▸ www.mysick.com/en/W2

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

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Technical details and ordering information

- Light source: Red PinPoint
- Enclosure rating: IP 67
- Metal-reinforced fixing holes
- Cable and cable connector in M8 size available

W2 Slim

Sensor type	Sensing technology	Sensing range	Output type	Operating mode	Connection	Model name	Part no.
Proximity	BGS	1 ... 30 mm	PNP	Light	M8, 3-pin, pigtail	WT2S-P231	1022659
			NPN	Light	Cable 2 m, 3-wire	WT2S-N131	1022663
		1 ... 15 mm	PNP	Light	M8, 3-pin, pigtail	WT2S-P211	1022658
			NPN	Light	Cable 2 m, 3-wire	WT2S-N111	1022662
	Energetic	1 ... 55 mm	PNP	Light	M8, 3-pin, pigtail	WT2S-P261	1023640
Retro-reflective	Standard	0.045 ... 0.8 m	PNP	Dark	M8, 3-pin, pigtail	WL2S-F211	1023868
Through-beam	Standard	0 ... 1.2 m	PNP	Dark	M8, 3-pin, pigtail	WS/WE2S-F213	1023650

W2 Flat

Sensor type	Sensing technology	Sensing range	Output type	Operating mode	Connection	Model name	Part no.
Proximity	Energetic, V optics	2 ... 18 mm	PNP	Light	Cable, 2 m	WT2F-P140	6030584
		1 ... 9 mm	PNP	Light	M8, 3-pin, pigtail	WT2F-P270	6030589
	Energetic	2 ... 34 mm	PNP	Light	Cable, 2 m	WT2F-P150	6030580
		4 ... 115 mm	PNP	Light	M8, 3-pin, pigtail	WT2F-P280	6030574
Through-beam	Standard	0 ... 0.5 m	PNP	Dark	M8, 3-pin, pigtail	WS/WE2F-F210	6030570

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Ball-and-socket bracket		Plastic	–	BEF-GH-Mini01	2023160
Mounting bracket	Floor mounting	Zinc plated steel	–	BEF-W2S-A	4034748
	Wall mounting	Zinc plated steel	–	BEF-W2S-B	4034749
		Zinc plated steel	–	BEF-W2S-C	2033270
Reflector	2-hole mounting	Plastic	20 x 32.5	PL10F	5311210
			20 x 60	PL20A	1012719
Reflector, round	Self adhesive	Plastic	Ø 25.5	PL22-2	1003621

Cables and connectors → p. 142 Additional reflectors → p. 148 Additional mounting brackets → p. 146

PinPoint by SICK

IO-Link

ECOLAB

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

Product description

The W4 miniature photoelectric sensors cater to every need with availability in the Flat, Slim and Teflon housing. The W4 family features excellent detection characteristics, high immunity to ambient light and other sources of interference, and mounting stability. Whether transparent, reflective, or textured, all objects are detected reliably. With the advancement of miniaturization in most industries, these miniature sensors are keeping pace.

At a glance

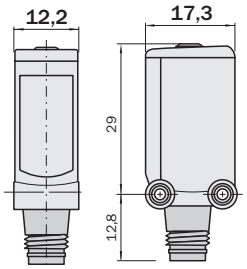
- Different housing shapes provide quick and compact integration into the machine
- PinPoint technology in all models
- Integrated threaded inserts for mounting
- Precise background suppression (best in class)
- Teach-in via IO-Link, externally via cable, potentiometer, or teach-in button
- Photoelectric retro-reflective sensor for transparent objects, with automatic adaptation of switching threshold
- A range of light spot geometries, specially tailored to applications

Your benefits

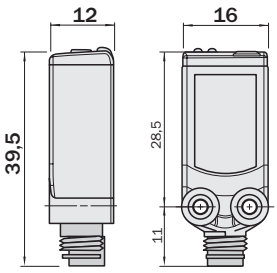
- Secure and precise setting with 5-turn potentiometer or teach-in button
- High process reliability, even with jet black objects, such as solar wafers and black textiles, will be detected reliably
- Easy and accurate alignment of the sensors, with PinPoint technology, makes the light spot clearly visible
- Photoelectric proximity sensors with a line-shaped light spot allow reliable detection of textured objects such as electronic circuit boards
- Detection of reflective and clear materials
- Great variety of customer-specific designs

Dimensions

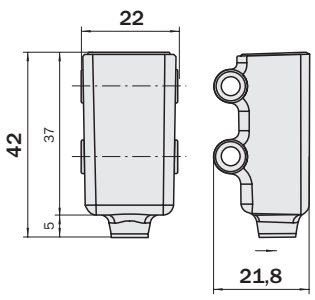
W4 Slim



W4 Standard



W4 Standard Teflon



www.mysick.com/en/W4

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Technical details and ordering information

- Light source: Red PinPoint LED
- Enclosure rating: IP 67
- Supply voltage: 10 ... 30 V DC

W4 Slim

- Proximity sensors and photoelectric retro-reflective sensors with IO-Link available
- Response time (proximity sensors and photoelectric retro-reflective sensors): 0.5 ms

Sensor type	Sensing technology	Sensing range	Output type	Operating mode	Additional function	Connection	Model name	Part no.
Proximity	BGS	4 ... 180 mm	PNP	Light	External teach-in	M8, 4-pin	WTB4S-3P2264	1042034
			NPN	Light	Potentio-meter	Cable 2 m, 3-wire	WTB4S-3N1361	1042046
		4 ... 120 mm	PNP	Light	Potentio-meter	M8, 4-pin	WTB4S-3P2231	1042057
			NPN	Light	External teach-in	Cable 2 m, 4-wire	WTB4S-3N1134	1042052
Retro-reflective	Autocollima-tion	0 ... 4 m (PL80A)	PNP	Complemen-tary	Fixed setting	M8, 4-pin	WL4S-3P2230	1042066
	Autocollima-tion [1]	0 ... 5 m (PL80A)	PNP	Comple-mentary	–	M8, 4-pin	WLG4S-3P2232	1044186
				Dark	Alarm output	M8, 4-pin	WLG4S-3V2232	1042087
Through-beam	Standard	0 ... 5 m	PNP	Dark	–	M8, 3-pin, pigtail	WSE4S-3F3130	1042089

[1] Transparent object detection

W4 Standard

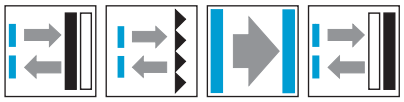
- Output type: PNP (NPN devices at www.sick.com)

Sensor type	Sensing tech-nology	Sensing range [mm]	Operating mode	Additional function	Connection	Model name	Part no.
Proximity	BGS	4 ...150	Light	–	M8, 3-pin	WTB4-3P2161	1028099
			Complementary	IO-Link	M12, 4-pin	WTB4C-3P3464	1040119
		3 ... 50	Complementary	Line shaped light spot	M8, 3-pin, pigtail	WTV4-3P2271	1046644
		4 ... 120	Light	Teflon hous-ing, external teach-in	Cable 5 m, 4-wire	WTB4T-3P1264	1028091

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system	–	Zinc plated steel	–	BEF-KHS-N08	2051607
Ball-and-socket bracket	–	Plastic	–	BEF-GH-Mini01	2023160
Mounting bracket	Wall mounting	Stainless steel	–	BEF-W4-A	2051628
Protective bracket	Floor mounting	Stainless steel	–	BEF-SW-W4S	2051497
Reflector	2-hole mounting	Plastic	20 x 32.5	PL10F	5311210
			20 x 60	PL20A	1012719
Reflector, round	Self adhesive	Plastic	Ø 25.5	PL22-2	1003621

Cables and connectors → p. 142 Additional reflectors → p. 148 Additional mounting brackets → p. 146



Product description

The W4S-3 Inox photoelectric sensor series combines a tough stainless steel housing with best-in-class performance. Operation is robust and 100% sealed with the use of a stainless steel membrane, via cable, or by IO-Link. The glass photoelectric sensor reliably detects all known objects, thanks to continuous adaptation of the switching threshold. The diffuse sensor with background suppression is the best in its class. The W4S-3 Inox thus performs its tasks more reliably and for longer in hygienically critical and harsh environments.

At a glance

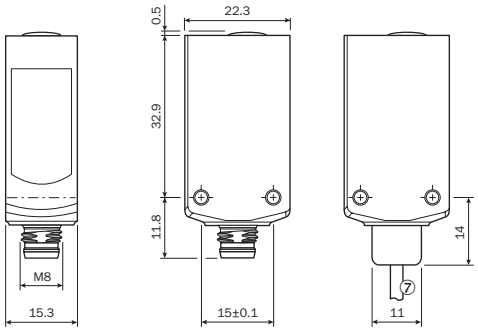
- Can be used in conditions above and beyond IP 69K
- Stainless steel housing (316L/1.4404)
- Available in Washdown and Hygiene housing designs
- Can be cleaned with steam cleaners up to 80 °C
- Resistant to all well-known cleaning agents
- All transparent objects are detected by the glass photoelectric sensor
- All models with PinPoint technology
- Extremely quick and easy set-up with teach-in membrane or external teach-in

Your benefits

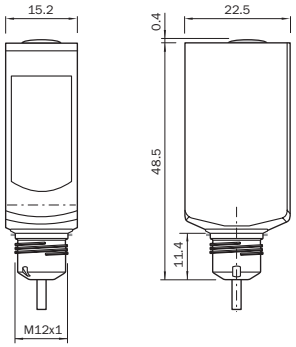
- High machine availability due to long-life sensor, which resists the harshest conditions
- No restrictions in choice of cleaning procedures
- Reliable detection of all objects
- Can be set with new stainless steel membrane teach-in switch or via cable
- Simple and fast alignment due to highly visible PinPoint light spot
- Monitoring via IO-Link

Dimensions

W4S-3 Inox



W4S-3 Inox Hygiene



www.mysick.com/en/W4_Inox

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

Technical details and ordering information

- Light source: Red PinPoint LED
- Enclosure rating: IP 66, IP 67, IP 69K
- Output type: PNP (IO-Link), NPN
- Inputs: ET (teach-in via cable), IO-Link
- Housing design: Washdown version
- Adjustment via metal teach-in membrane

W4S-3 Inox

Sensor type	Sensing technology	Sensing range	Output type	Operating mode	Connection	Additional function	Model name	Part no.
Proximity	BGS	3 ... 500 mm	PNP	Complementary	M12, 4-pin	–	WTB4S-3P2462V	1054675
					M8, 4-pin	IO-Link	WTB4SC-3P2262V	1045092
			NPN	Complementary	Cable 2 m, 4-wire	–	WTB4S-3N1162V	1046391
		3 ... 120 mm	PNP	Complementary	M8, 4-pin	–	WTB4S-3P2232V	1046396
	FGS	20 ... 200 mm	PNP	Complementary	M8, 4-pin	–	WTF4S-3P2262V	1046410
Retro-reflective	Autocollimation	0 ...4 m	PNP	Complementary	M8, 4-pin	–	WL4S-3P2230V	1045095
			NPN	Dark	Cable 2 m, 3-wire	–	WL4S-3E1330V	1046420
		0 ... 5 m	PNP	Dark	M8, 4-pin	Alarm output	WL4S-3V2232V	1046422
				Complementary	M12, 4-pin, pigtail, 150 mm	–	WL4S-3P3432V	1046426
Retro-reflective [1]	Continuous threshold adaptation	0 ... 5 m	PNP	Dark	M8, 4-pin	External teach-in	WLG4S-3F2234V	1047653
			NPN	Complementary	Cable 2 m, 4-wire	–	WLG4S-3N1132V	1046450
Through-beam	Standard	0 ... 5 m	PNP	Dark	M8, 3-pin, pigtail	–	WSE4S-3F2130V	1045099

[1] Clear material detection

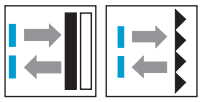
W4S-3 Inox Hygiene

Sensor type	Sensing technology	Sensing range	Output type	Operating mode	Connection	Model name	Part no.
Proximity	BGS	3 ... 500 mm	PNP	Light	M8, 4-pin, pigtail, 150 mm	WTB4S-3P3264H	1048047
Retro-reflective	Clear material detection	0 ... 5 m	PNP	Dark	M8, 4-pin, pigtail, 150 mm	WLG4S-3F3234H	1048121
		0 ... 5m	NPN	Complementary	Cable, 2 m, 4-wire	WLG4S-3N1132H	1048123

Recommended accessories

Name	Material	Dimensions [mm]	Enclosure rating	Model name	Part no.
Universal clamp system (UKS)	Plate and clamp	Stainless steel 1.4571	–	BEF-KHS-N08N	2051616
	Mounting rod straight	Stainless steel 1.4571	300	BEF-MS12G-NB	4058915
	Rod mounting clamp	Aluminium	37 x 26,4 x 30	BEF-RMC-D12	5321878
Mounting bracket	Wall mounting	Stainless steel 1.4571	–	BEF-W4-A	2051628
Tube base	For W4S-3 Inox Hygiene	Stainless steel 1.4571	Ø 18 x 100	BEF-MR18G-NA	4065853
Reflektor	Chemical resistant	Plastic	47 x 47	P250CHEM	5321097

Cables and connectors → p. 142 Additional reflectors → p. 148 Additional mounting brackets → p. 146



Product description

The W8 is a high-quality, miniature product family specially designed for close-range applications. Autocollimation, background suppression, and high switching frequencies of 2 kHz open up a broad range of possible applications for these sensors. The series comprises the WTB8 proximity switch and the WL8 photoelectric retro-reflective sensor. The housing design with M3 threaded inserts can be mounted easily and securely.

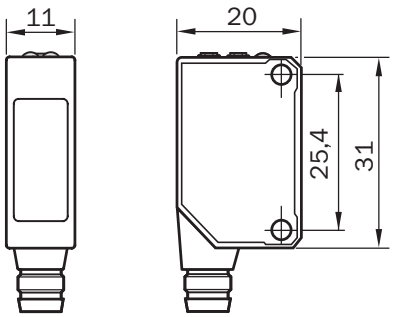
At a glance

- Miniature housing with integrated M3 threaded mounting holes
- Switching frequency up to 2 kHz
- BEF-W100-A stainless steel mounting bracket (1.4301/304) included in the delivery

Your benefits

- Maximum flexibility in the design and operation of facilities thanks to reliable detection of objects in any situation
- Quick and easy mounting thanks to universally compatible M3 thread
- Even quickly running applications release a 2 kHz switching frequency, so that production processes can be optimized
- Everything complete at the installation site – the stainless steel mounting bracket is included in delivery
- Everything from one family – a wide variety of principles of operation, brought together, reduces the documentation work

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W8

Technical details and ordering information

- Adjustment: potentiometer
- Operating mode: light/dark with rotary switch
- Enclosure rating: IP 67
- Switching frequency: Up to 2 kHz

W8

Sensor type	Sensing technology	Output type	Sensing range	Connection	Model name	Part no.
Proximity	BGS	PNP	5...100 mm [1]	Connector M8, 3-pol	WTB8-P2111	6033213
			30...300 mm [1]	Connector M8, 4-pin	WTB8-P2231	6033209
				Cable 2m, PVC	WTB8-N1131	6033204
Retro-reflective	Autokollimation	PNP	0...4 m (PL80A)	Connector M8, 4-pin	WL8-P2231	6033182
	Autokollimation, transparent objects	PNP	0...3 m (PL80A)	Connector M8, 4-pin	WL8G-P2231	6033188
Throug-beam	–	PNP	0...10 m	Connector M8, 4-pin	WSE8-P2231	6035583

1) Objects to be detected having 90% remission (based on DIN 5033 Standard White)

W8 Red laser

- Red laser protection class 1

Sensor type	Sensing technology	Output type	Sensing range	Light spot size	Model name	Part no.
Proximity	BGS	NPN	5 ... 100 mm [1]	1 mm at 100 mm	WTB8L-P2211	6033227
			30 ... 300 mm [1]	1.5 mm at 300 mm	WTB8L-P2231	6033221

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

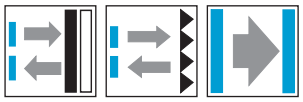
G

Recommended accessories

Name	Design	Material	Dimensions [mm]	Comment	Model name	Part no.
Universal clamp system (UKS)	Plate and clamp	Clamp: Stainless steel (1.4408), Plate: Stainless steel (1.4571	–	–	BEF-KHS-N08N	2051616
	Mounting rod straight	Stainless steel (1.4571)	300	–	BEF-MS12G-NB	4058915
	Rod mounting clamp	Aluminum	37 x 26,4 x 30	–	BEF-RMC-D12	5321878
Mounting bracket	Wall mounting	Stainless steel	29,3 x 14 x 32,4	–	BEF-W100-A [1]	5311520
	Floor mounting	Stainless steel	44,6 x 16 x 21,2	–	BEF-W100-B [1]	5311521
Reflector	Standard	PMMA/ABS	47 x 47 (Reflection area)	–	P250 [1]	5304812
	Fine triple	PMMA/ABS	47 x 47 (Reflection area)	For laser sensors	P250F [1]	5308843

[1] Included in delivery

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146



G

Product description

W8 Inox is a miniature product family especially for applications in harsh am-bient conditions. The high-quality stainless steel housing (1.4404/ SUS316L) in combination with high-performance plastics means these sensors are suitable for a broad range of applications. The mounting system is compatible with the mounting by M3 thread introduced to the market. Beside its convincing LED technology, W8 Inox is appealing due to the minimal effort required for mounting and maximum resistance and variety in the product range. The four models – through-beam and photoelectric retro-reflective sensors and energetic photoelectric proximity sensors and those with background suppression (BGS) – provide a convincing solution for customers worldwide.

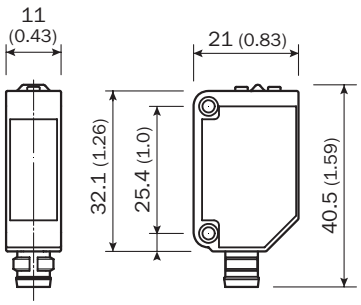
At a glance

- Robust stainless steel housing 1.4404/316L with enclosure rating IP 69K
- Front screen made of thermically and chemically resistant high-performance plastic PPSU
- Control element made of mechanically stable high-performance plastic PEEK
- Materials with FDA approval
- Sharply defined, highly visible light spot
- M3 threaded mounting hole and stainless steel mounting bracket (1.4301/304)

Your benefits

- High system availability, even when aggressive cleaning agents or cooling lubricants are used, is guaranteed by enclosure rating IP 69K and mechanically robust stainless steel housing
- Quick and easy mounting thanks to universally compatible M3 thread
- Minimum space requirement due to compact housing (same construction as W8 plastic version)
- Easy alignment of the sensor thanks to a sharply defined and highly visible light spot
- Everything complete at the installation site – the stainless steel mounting bracket is included in the delivery

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W8_Inox

8013958/2011-08-29
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Technical details and ordering information

- Housing material: Stainless steel 1.4404 / 316L
- Light source: red light
- Enclosure rating: IP 69K
- Adjustment: potentiometer
- Operating mode: light/dark with rotary switch

W8 Inox

Sensor type	Sensing technology	Sensing range	Output type	Connection	Model name	Part no.
Proximity	Background suppression	10 ... 500 mm [1]	PNP	Connector M8, 3-pin	WTB8-P2131V	6041466
			NPN	Connector M8, 4-pin	WTB8-N2231V	6041463
		5 ... 150 mm [1]	PNP	Cable, 3-wire, PVC, 2 m	WTB8-P1111V	6041457
			NPN	Cable with plug, M12, 4-pin, PVC, 300 mm	WTB8-N3311V	6041456
	Energetic	0 ... 950 mm [1]	PNP	Cable with plug, M12, 4-pin, PVC, 300 mm	WTE8-P3331V	6041476
Retro-reflective	Standard	0.01 ... 6.5 m [2]	PNP	Cable with plug, M12, 4-pin, PVC, 300 mm	WL8-P3331V	6041484
Through-beam	Standard	0 ... 45 m	PNP	Cable with plug, M12, 4-pin, PVC, 300 mm	WSE8-P3331V	6041492

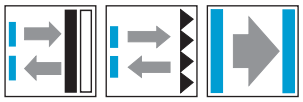
[1] Object with 90 % reflectance (referred to standard white DIN 5033)
[2] with reflector P250

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	Plate and clamp	Clamp: Stainless steel (1.4408), Plate: Stainless steel (1.4571	–	BEF-KHS-N08N	2051616
	Mounting rod straight	Stainless steel (1.4571)	300	BEF-MS12G-NB	4058915
	Rod mounting clamp	Aluminum	37 x 26,4 x 30	BEF-RMC-D12	5321878
Mounting bracket	Wall mounting	Stainless steel	29,3 x 14 x 32,4	BEF-W100-A	5311520
	Floor mounting	Stainless steel	44,6 x 16 x 21,2	BEF-W100-B	5311521
Reflector	Standard	PMMA/ABS	47 x 47 (Reflection area)	P250	5304812
	Chemical resistant	Plastic	47 x 47 (Reflection area)	P250CHEM	5321097

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

G



Product description

The W100 is a complete family of photoelectric sensors in miniature format, which provide large scanning ranges for standard applications. The well-established housing design with M3 threaded inserts allows simple, standardized, and inexpensive mounting. The W100 is available with a standardized emitter LED, with a bright light LED, or in a laser version. The W100 is therefore an all-purpose, economical option – particularly for handling and warehousing systems.

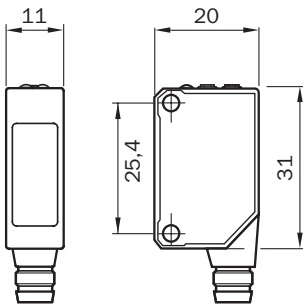
At a glance

- Standardized miniature housing with integrated M3 threaded mounting holes
- Optics with standardized red LED, bright light LED or laser LED
- Connector and cable versions
- Light/dark switchover
- Complete product family
- Extensive range of accessories

Your benefits

- Simple, standardized mounting
- Highly visible light spot or laser light spot
- Everything from one family – a wide variety of principles of operation, brought together, reduces the documentation effort

Dimensions



CE CDRH

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W100

Technical details and ordering information

- Enclosure rating: IP 65 / 67 (depending on type)
- Adjustment: potentiometer
- Operating mode: light/dark with rotary switch
- Switching frequency: 1 kHz

W100

Sensor type	Sensing technology	Light source	Output type	Sensing range	Connection	Model name	Part no.
Proximity	Energetic	Redlight	PNP	0 ... 900 mm [1]	Connector M8, 3-pol	WT100-P3419	6026116
			NPN	0 ... 900 mm [1]	Cable, PVC, 2m	WT100-N1419	6026113
		BrightLight	PNP	0 ... 1000 mm [1]	Connector M8, 4-pol	WT100-P4409 [2]	6036506
Retro-reflective	Standard	Redlight	PNP	0,01 ... 6 m	Connector M8, 3-pol	WL100-P3439	6026073
		BrightLight	NPN	0,1 ... 7,5 m	Connector M8, 4-pol	WL100-P4409 [2]	6036512
	Standard, transparent objects	Redlight	PNP	0,01 ... 3 m	Connector M8, 4-pol	WL100-P4429	6028611
Throug-beam	–	BrightLight	PNP	0 ... 30 m	Connector M8, 4-pol	WS/WE100-P4409 [2]	6036518
		Redlight	NPN	0 ... 15 m	Cable, PVC, 2m	WS/WE100-N1439	6026040

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)
[2] IP 67

W100 Red laser

- Output type: PNP
- Light source: laser

Sensor type	Sensing technology	Sensing range	Light spot size	Connection	Model name	Part no.
Proximity	Energetic	0 ... 450 mm [1]	2 mm at 400 mm	Connector M8, 4-pol	WT100L-F2241	6030704
Retro-reflective	Standard	0.08 ... 12 m	12 mm at 10 m	Connector M8, 3-pol	WL100L-F2131	6030709
Throug-beam	–	0 ... 35 m	30 mm at 30 m	Cable, PVC, 2 m	WS/WE100L-F1131	6030714

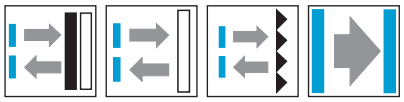
[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

Recommended accessories

Name	Design	Material	Dimensions [mm]	Comment	Model name	Part no.
Universal clamp system (UKS)	Plate and clamp	Clamp: Stainless steel (1.4408), Plate: Stainless steel (1.4571	–	–	BEF-KHS-N08N	2051616
	Mounting rod straight	Stainless steel (1.4571)	300	–	BEF-MS12G-NB	4058915
	Rod mounting clamp	Aluminium	37 x 26,4 x 30	–	BEF-RMC-D12	5321878
Mounting bracket	Wall mounting	Stainless steel	29,3 x 14 x 32,4	–	BEF-W100-A1)	5311520
	Floor mounting	Stainless steel	44,6 x 16 x 21,2	–	BEF-W100-B1)	5311521
Reflector	Standard	PMMA/ABS	47 x 47 (Reflection area)	–	P2501)	5304812
	Fine triple	PMMA/ABS	47 x 47 (Reflection area)	For laser sensors	P250F1)	5308843

[1] Included in delivery

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146



Product description

G6 global sensor – photoelectric sensor series in miniature housing with optimal price/performance ratio. Even when mounted using a standard 1-inch hole distance, the global sensor performs outstandingly in all function-relevant features. With PinPoint LEDs, metal sockets, large-sized, bright indicator LEDs, user-friendly setting screws plus IP 67 and the very latest SICK-ASIC technology, the Global Sensor leaves the standard trailing well behind it.

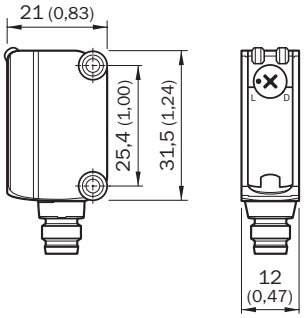
At a glance

- PinPoint LED for an extra bright, precise light spot
- Robust metal inserts with inner thread
- SICK-ASIC – the result of decades of experience in photoelectric sensors
- Large, user-friendly setting screws
- Bright, large-sized indicator LEDs
- Enclosure rating IP 67

Your benefits

- Easy-to-align and precise detection with highly visible PinPoint light spot
- Easy-to-mount with maximum robustness due to metal inserts with inner thread
- SICK-ASIC for performance and reliability
- Easy-to-adjust with large, user-friendly setting screws
- Easy-to-monitor due to extra bright, large-sized indicator LEDs
- Easily installed with SICK accessories

Dimensions



CE

PinPoint by SICK

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/G6

8013958/2011-08-29
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Technical details and ordering information

- Light source: Red PinPoint LED
- Enclosure rating: IP 67
- Operating mode: Light/dark-switching, selectable via light/dark selector
- Switching frequency: 1 kHz

G6 Global Sensor

Sensor type	Sensing technology	Sensing range	Adjustment	Output type	Connection	Model name	Part no.
Proximity	BGS	0 ... 250 mm [1]	Potentiometer	PNP	Connector M8, 4-pin	GTB6-P4211	1052438
					Cable, 3-wire, PVC, 2 m	GTB6-P1211	1052440
				NPN	Connector M8, 4-pin	GTB6-N4211	1052439
					Cable, 3-wire, PVC, 2 m	GTB6-N1211	1052441
Retro-reflective	Standard	0.3 ... 7.2 m [2]	–	PNP	Connector M8, 4-pin	GL6-P4111	1050706
					Cable, 3-wire, PVC, 2 m	GL6-P1111	1050708
					Pigtail, M8, 4-pin, PVC, 200 mm	GL6-P0511S03	1052911
					Pigtail, M12, 4-pin, PVC, 300 mm	GL6-P7111	1052966
				NPN	Connector M8, 4-pin	GL6-N4111	1050707
					Cable, 3-wire, PVC, 2 m	GL6-N1111	1050709
Through-beam	–	0 ... 15 m	–	PNP	Cable, 3-wire, PVC, 2 m	GSE6-P1111	1052448
				NPN	Cable, 3-wire, PVC, 2 m	GSE6-N1111	1052449

[1] Object with 90 % reflectance (referred to standard white DIN 5033)

[2] PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Steel, zinc coated	–	BEF-KHS-L01	2051607
	Mounting rod straight	Stainless steel (1.4571)	300	BEF-MS12G-NB	4058915
	Rod mounting clamp	Aluminum	37 x 26,4 x 30	BEF-RMC-D12	5321878
Mounting bracket	Wall mounting	Stainless steel	29,3 x 14 x 32,4	BEF-W100-A	5311520
	Floor mounting	Stainless steel	44,6 x 16 x 21,2	BEF-W100-B	5311521
Reflector	Standard	PMMA/ABS	47 x 47 (Reflection area)	P250	5304812

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146

The packaging wizard – handy helpers for process optimization

W9

Robust integration - reliable detection

W18

Presence checking in the textile industry

W12

The W12 – for reliable clear material detection

H

Innovation and cost efficient: SICK's small sensors

The wet world of the beverage industry, the design requirements of the packaging industry, and cigarette manufacturing at top speeds – all pose special challenges for sensors.

Equipped with the latest PinPoint LED, intelligent ASIC, µC and IO-Link technologies, packed into easy-to-handle advanced housing technology, these small sensors detect each object, even under difficult conditions. High performance electronics combined with sophisticated optics enable reliable detection even of difficult or transparent objects in the world of consumer goods. Communication capabilities with innovative IO-Link technology and intelligent electronics provide long-term reliability for applications and functions by remote control. Flexible mounting and connection systems help with optimum integration.

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H

Small photoelectric sensors

VISTAL™

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

Product description

The W9-3 is robustness, performance and variance in a compact housing size. With the VISTAL™ housing comes a outstanding mechanical robustness, optics and ASIC technology by SICK generates the best-in-class performance. All this is available in a unique variance regarding connection, mounting variability and optic spezifications available. – These features makes the W9-3 a perfect solution for the challeging automation application.
Add this advantage to your machine.

At a glance

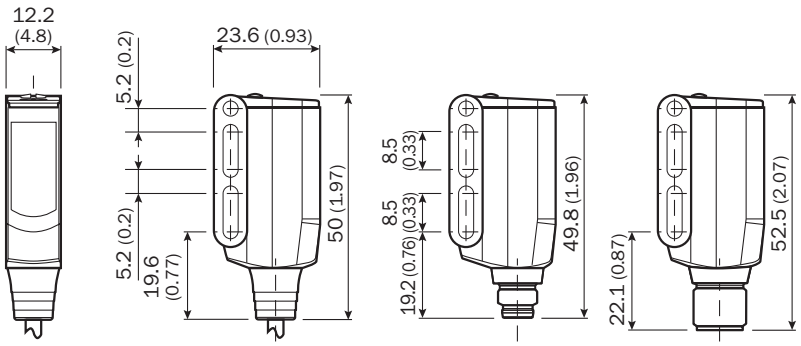
- Performance in ultra-robust VISTAL™ housing
- PinPoint LED for highly visible and precise light spot
- Automatic switching threshold adjustment (depending on type)
- Two emitter LEDs for best-in-class background suppression
- Variable mounting with M3 or M4 hole pattern
- Wide range of facilities for connecting

Your benefits

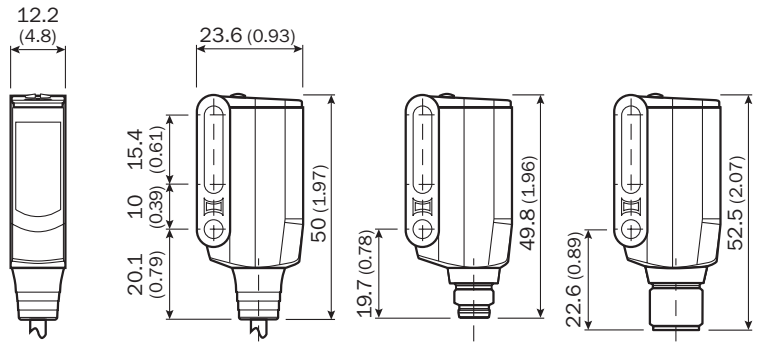
- Robustness with the VISTAL™ housing
- Best-in-class performance
- Wide variance in connection, mouting and optics

Dimensions

M3



M4



www.mysick.com/en/W9-3

Technical details and ordering information

- Light source: Red PinPoint LED
- Enclosure rating: IP 66, IP 67, IP 69K
- Switching output: PNP, complementary
- Operating temperature: -40 °C ... +60 °C
- Chemical resistance certified by ECOLAB
- For NPN devices, see www.sick.com

W9-3

Sensor type	Sensor technology	Mounting (Slotted holes)	Light source	Sensing range	Adjustment	Connection	Model name	Part no.
Proximity	BGS	M3	PinPoint	350 mm	Potentiometer, 5-turn	Connector M8, 4-pin	WTB9-3P1161	1049043
						Connector M12, 4-pin	WTB9-3P2261	1049047
						Cable, 4-wire, PVC, 2 m	WTB9-3P2461	1049049
						Cable with plug, M12, 4-pin, PVC, 120 mm	WTB9-3P3461	1049051
			IR	500 mm	Potentiometer, 5-turn	Connector M8, 4-pin	WTB9-3P2211	1049045
						Connector M12, 4-pin	WTB9-3P2411	1049048
				800 mm	Potentiometer, 5-turn	Connector M8, 4-pin	WTB9-3P2211S14	1052171
						Connector M12, 4-pin	WTB9-3P2411S14	1052172
		M4	PinPoint	350 mm	Potentiometer, 5-turn	Connector M8, 4-pin	WTB9M4-3P2261	1051889
						Connector M12, 4-pin	WTB9M4-3P2461	1051891
			IR	500 mm	Teach	Connector M8, 4-pin	WTB9M4-3P2211	1051888
						Connector M12, 4-pin	WTB9M4-3P2411	1051890
Retro-reflective	Autocollimation	M3	PinPoint	5 m	–	Cable, 4-wire, PVC, 2 m	WL9-3P1130	1049055
					Teach	Connector M8, 4-pin	WL9-3P2232	1049060
						Connector M12, 4-pin	WL9-3P2432	1049063
						Cable with plug, M12, 4-pin, PVC, 120 mm	WL9-3P3432	1049067
		M4	PinPoint	5 m	Teach	Connector M8, 4-pin	WL9M4-3P2234	1051906
						Connector M12, 4-pin	WL9M4-3P2432	1051896
	Transparent objects	M3	PinPoint	5 m	Teach	Connector M8, 4-pin	WL9G-3P2232	1049082
						Connector M12, 4-pin	WL9G-3P2432	1049083
		M4	PinPoint	5 m	Teach	Connector M8, 4-pin	WL9M4G-3P2232	1051899
						Connector M12, 4-pin	WL9M4G-3P2432	1051900
Through-beam	–	M3	PinPoint	10 m	Potentiometer, 5-turn	Connector M8, 4-pin	WSE9-3P2230	1049076
						Connector M12, 4-pin	WSE9-3P2430	1049077

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	90° bracket	Zinc-plated steel	–	BEF-KHS-N08	2051607
Mounting bracket	90° bracket	Zinc-plated steel	17 x 44 x 17	BEF-WN-W9-2	2022855
Reflector	2-hole mounting	PMMA/ABS	20 x 40	PL20A	1012719
			40 x 60	PL40A	1012720
			47 x 47	P250	5304812
			80 x 80	PL80A	1003865
Mask card	Slot width: 0,5/1,0/1,5/2,0 mm	–	–	BL-9-2	4033253

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

Product description

The W9 Laser series is as multifaceted as the field of automation itself. Even in tight installation conditions, the compact housing enables powerful and reliable laser sensors to be used. The micro-laser spot reliably solves tasks involving applications with the smallest of objects and high precision requirements. The wide range combined with output logic, principles of operation, and types of connection means that a huge variety of sensor types is available to choose from.

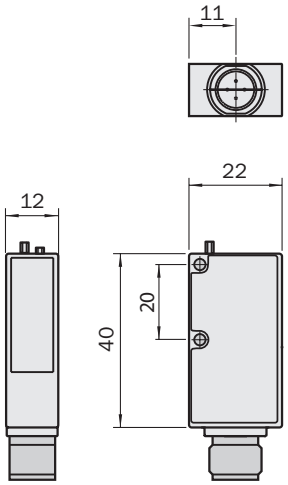
At a glance

- Advanced laser technology for performance and safety
- Temperature-compensated laser protection electronics for constant laser power and compliance with the laser class
- High-precision adjustable photoelectric proximity sensor with background suppression
- Photoelectric sensor and through-beam system with teach-in and large sensing ranges
- UL, CE, CDRH approval

Your benefits

- High availability with maximum eye protection due to laser control
- Precise micro-laser spot detection of the smallest of objects and features
- Approvals for worldwide use
- Easily installed with SICK accessories

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/W9_Laser

Technical details and ordering information

- Light source: Red laser class 2
- Enclosure rating: IP 67, IP 69K
- Operating mode: Complementary
- Chemcial resistance certified by ECOLAB and JohnsonDiversey

W9 Red laser

- Light source: Red laser class 2

Sensor type	Sensor technology	Mounting (Slotted holes)	Light source	Sensing range	Adjustment	Connection	Model name	Part no.
Proximity	BGS	0,5 mm at 60 mm	30 ... 150 mm [1]	Potentio-meter	PNP	M12, 4-polig	WT9L-P430	1023959
						M8, 4-polig	WT9L-P330	1023977
					NPN	M12, 4-polig	WT9L-N430	1023990
						M8, 4-polig	WT9L-N330	1023991
Retro-reflective	Standard	1 mm at 500 mm	0,1 ... 12 m [2]	Teach-in	PNP	M12, 4-polig	WL9L-P430	1023958
						M8, 4-polig	WL9L-P330	1023976
Through-beam	–	1 mm at 500 mm	0 ... 50 m	Teach-in	PNP	M12, 4-polig	WS/WE9L-P430	1023992
						M8, 4-polig	WS/WE9L-P330	1023993

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard white)

[2] With reflector PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc-plated steel	–	BEF-KHS-N08	2051607
Mounting bracket	90° bracket	Zinc-plated steel	17 x 44 x 17	BEF-WN-W9-2	2022855
Fine triple reflector	2-hole mounting	PMMA/ABS	18 x 18	PL10F	5311210
			16 x 28	PL20F	5308844
			47 x 47	P250F	5308843
			45 x 76	PL81-1F	5325060
Reflective tape	Self-adhesive	–	225 x 225	REF-AC1000	5319429

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146

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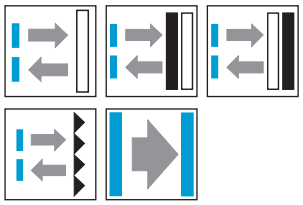


Product description

W11-2 represents sensor technology designed optimally for individual applications, thus enabling a wide range of applications in automation technology. Whether in the material handling industry or in packaging systems, the W11-2 offers optimum performance in a rugged small housing, dependable object detection, and high reliability in industrial environments.
The W11-2 caters to every need.

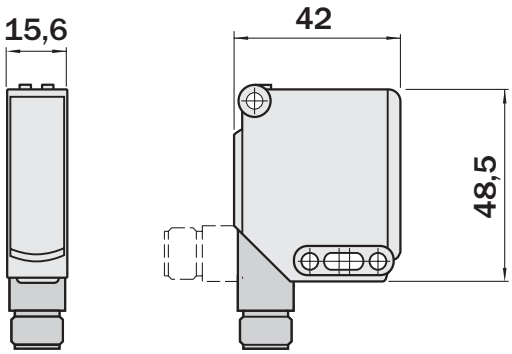
At a glance

- Outstanding background suppression through OES3 technology
- Highly visible and precise light spot due to PinPoint LED
- Compact and rugged plastic housing
- Connection via cable or sturdy rotating connector
- Versatile mounting options with through holes, slotted holes and dovetail
- Complete series from clear material detection through to background suppression

Your benefits

- Reliable detection thanks to superior background suppression and high immunity to ambient light
- Fast installation due to highly visible light spot
- Flexibility in installation due to rotating connector and versatile mounting options
- Universal application potential due to wide range of products in rugged housing
- Easily installed with SICK accessories

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/W11

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 69K
  (devices with push button teach: IP 67)
- Operating mode: Complementary
- Operating temperature: -30 °C ... +60 °C
- Rugged plastic housing
- Rotatable M12 connector or rotatable cable

Sensor type	Sensing technology	Sensing range	Output type	Adjustment	Connection	Model name	Part no.
Proximity	BGS	30 ... 1100 mm [1]	PNP	Potentiometer	M12, 4-pin	WTB11-2P2461	1044442
		40 ... 350 mm [1]	PNP	Potentiometer	M12, 4-pin	WTB11-2P2431	1041376
	FGS	30 ... 350 mm [1]	PNP	Potentiometer	M12, 4-pin	WTF11-2P2431	1041380
	Energetic	40 ... 1000 mm [1]	PNP	Teach-in	M12, 4-pin	WTE11-2P2432	1041381
			NPN	Teach-in	M12, 4-pin	WTE11-2N2432	1041383
	BGS	40 ... 350 mm [1]	NPN	Potentiometer	M12, 4-pin	WTB11-2N2431	1041378
Retro-reflective	Standard	0.05 m...10 m [2]	NPN	–	M12, 4-pin	WL11-2N2430	1041387
			PNP	–	M12, 4-pin	WL11-2P2430	1041385
				Teach-in	M12, 4-pin	WL11-2P2432	1048542
	Transparent objects	0 ... 4 m [2]	Qp and Qn	Potentiometer	M12, 4-pin	WL11G-2B2531	1041390
Through-beam	Standard	0 ... 20 m	NPN	–	M12, 4-pin	WSE11-2N2430	1041396
			PNP	–	M12, 4-pin	WSE11-2P2430	1041394

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

[2] With reflector PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc plated steel	–	BEF-KHS-N02	2051608
Mounting bracket, large	90° bracket	Stainless steel	–	BEF-WG-W12	2013942
Mounting bracket, small	90° bracket	Stainless steel	–	BEF-WK-W12	2012938
Protective housing	For universal clamp	Zinc plated steel	–	BEF-SG-W12-3	2045175
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865
	Suitable up to 100 °C	PMMA/ABS	52 x 62	P250H	5315124
	Center hole mounting	PMMA/ABS	Ø 83	C110A	5304549
Mask card for WSE11-2	Slot width: 0.5/1.0/1.5/2.0 mm	–	–	BL12-SKN	4031815

Cables and connectors → p. 142 Additional reflectors → p. 148 Additional mounting brackets → p. 146

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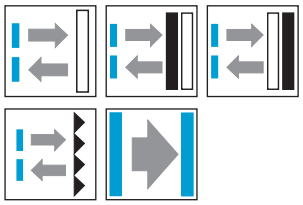


Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

Product description

For your applications, do you expect optical sensors that can cope with demanding tasks, are suited to high process speeds, and achieve high reliability in industrial environments? Then the new W12-3 series is the right choice. W12-3: the complete range of small photoelectric sensors in metal housings offers clear advantages over conventional optical sensors in areas of object detection, reliability in industrial environments, and sensor monitoring. Whether in packaging technology, the pharmaceutical industry, food environments, or the bottling industry – the W12-3 is the right choice every time.

At a glance

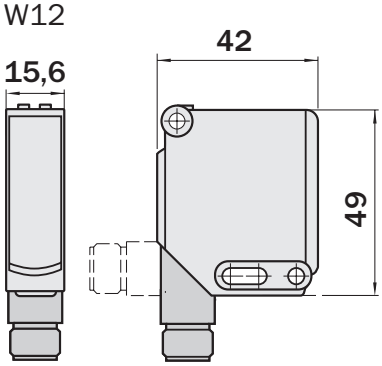
- Best-in-class optical performance due to superior OES technology
- Autocollimation optics
- Background suppression with second emitter LED
- Highly visible and precise light spot due to PinPoint LED; IR emitter and laser classes 1 and 2 available
- Compact and sturdy metal housing, Teflon coating optional
- Connection via cable or sturdy rotating connector
- Versatile mounting options with through holes, blind holes, slotted hole and dovetail
- IO-Link communication
- Unprecedented variety of product options including laser

Your benefits

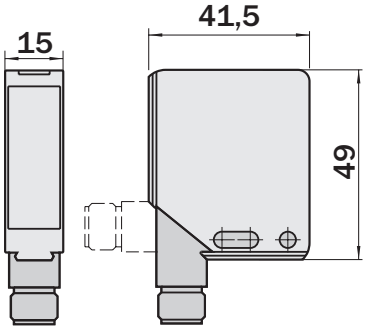
- Maximum electrical, optical, and mechanical performance
- Fast installation due to highly visible light spot
- Flexibility in mounting due to rotating connector and versatile mounting options
- Versatile sensor for a wealth of applications in industrial environments
- IO-Link enables remote diagnostics and remote maintenance
- Easily installed with SICK accessories

Dimensions

W12



W12 Laser



▸ www.mysick.com/en/W12

8013958/2011-08-29
Subject to change without notice

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 69K
  (devices with push button teach: IP 67)
- Operating mode: Complementary
- Can be set via potentiometer or push button teach-in
- Sturdy metal housing, optional Teflon coating
- Rotatable M12 connector or rotatable cable

W12

Sensor type	Sensing technology	Light source	Sensing range	Output type	Connection, M12 connector	Model name	Part no.
Proximity	BGS	Red	20 ... 350 mm [1]	PNP	4-pin	WTB12-3P2431	1041411
				NPN	4-pin	WTB12-3N2431	1041416
		IR	20 ... 600 mm [1]	PNP	4-pin	WTB12-3P2411	1041422
				NPN	4-pin	WTB12-3N2411	1041427
	FGS	Red	35 ... 350 mm [1]	PNP	4-pin	WTF12-3P2431	1041404
				NPN	4-pin	WTF12-3N2431	1041408
				PNP, IO-Link	4-pin	WTF12C-3P2431	1042001
	BGS	Red	20 ... 350 mm [1]	PNP, IO-Link	4-pin	WTB12C-3P2431	1042002
Retro-reflective	Autocollimation	Red	0 ... 7 m [2]	PNP	4-pin	WL12-3P2431	1041436
				NPN	4-pin	WL12-3N2431	1041440
	Clear material detection	Red	0 ... 4 m [2]	Qp and Qn	5-pin	WL12G-3B2531	1041456
	Clear material detection [3]	Red, PinPoint	0 ... 4 m [2]	PNP	5-pin	WL12G-3P2572	1053535
		IR	0 ... 4 m [2]	PNP	5-pin	WL12G-3P2582	1053536
Through-beam	Standard	Red	0 ... 20 m	PNP	4-pin	WSE12-3P2431	1041459

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

[2] With reflector PL80A

[3] Adaptable switching threshold

W12 Red laser

- Red laser, laser protection class 1 or laser protection class 2
- Operating range from –10 C ° to +50 °C
- With WL: adjustable focus and sensitivity

Sensor type	Sensing technology	Light source	Sensing range	Output type	Connection, M12 connector	Model name	Part no.
Proximity	BGS	Red laser class 1	30 ... 200 mm [1]	PNP/NPN [3]	5-pin	WT12L-2B551	1047958
		Red laser class 2	30 ... 200 mm [1]	PNP/NPN [3]	5-pin	WT12L-2B530	1018250
Retro-reflective	Auto-collimation	Red laser class 1	0 ... 18 m [2]	PNP/NPN [3]	5-pin	WL12L-2B531	1047959
		Red laser class 2	0 ... 18 m [2]	PNP/NPN [3]	5-pin	WL12L-2B530	1018252
Through-beam	Standard	Red laser class 1	0 ... 80 m	PNP, comple-mentary	4-pin	WS/WE12L-2P431	1047960
		Red laser class 2	0 ... 80 m	PNP, comple-mentary	4-pin	WS/WE12L-2P430	1018254

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

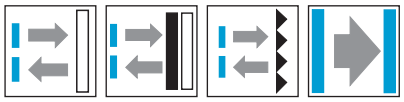
[2] With reflector PL80A

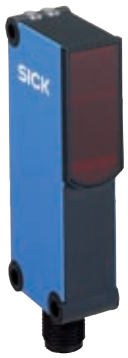
[3] Switching type can be selected via control cable

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc plated steel	–	BEF-KHS-N02	2051608
Mounting bracket, large	90° bracket	Stainless steel	–	BEF-WG-W12	2013942
Mounting bracket, small	90° bracket	Stainless steel	–	BEF-WK-W12	2012938
Clamp	For dovetail groove mounting	Aluminum, anodized	14 x 15.3	BEF-KH-W12	2013285
Protective housing	For universal clamp	Zinc plated steel	–	BEF-SG-W12-3	2045175
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 85	PL80A	1003865
Mask card for WSE12-3	Slot width: 0.5/1.0/1.5/2.0 mm	–	–	BL12-SKN	4031815

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146





Product description

Reliable object detection combined with competitive pricing – these are the principal requirements of a sensor for standard industrial applications. The W14-2 series from SICK combines the two superbly – and does so without restricting product variety or the potential for customization. What's more, individual products in the series offer smart details, such as features that help to simplify mounting and installation or increase user friendliness. The devices with PinPoint technology, for example, have a bright, focused light spot that permits fast and precise alignment of the sensor. An extensive range of accessories completes the W14-2 portfolio, including mounting systems, sensor protection equipment, reflectors, and connection systems from SICK.

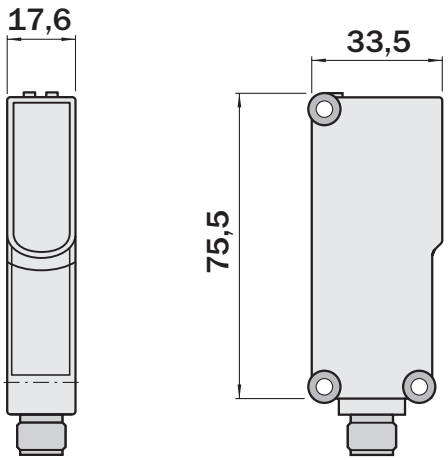
At a glance

- Outstanding background suppression through OES3 technology
- Highly visible and precise light spot due to PinPoint LED
- Slim, sturdy plastic housing
- Complete series featuring all important principles of operation

Your benefits

- Reliable detection thanks to outstanding background suppression and high immunity to ambient light
- Fast installation due to highly visible light spot
- Universal application potential due to wide range of products
- Easily installed with SICK accessories

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/W14

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67
- Output type: PNP
- Operating mode: Complementary
- Housing material: ABS

Sensor type	Sensing technology	Light source	Sensing range	Adjustment	Connection	Model name	Part no.
Proximity	BGS	IR	80 ... 500 mm [1]	Potentiometer	Cable 2 m, 4-wire	WT14-2P122	1026051
					M12, 4-pin	WT14-2P422	1026052
		Red	50 ... 250 mm [1]	Potentiometer	Cable 2 m, 4-wire	WT14-2P132	1026055
					M12, 4-pin	WT14-2P432	1026056
		Red PinPoint	200 ... 1300 mm [1]	Potentiometer	M12, 4-pin	WT14-2P432S08	1045104
	Energetic	IR	300 ... 1500 mm [1]	Teach-in, single teach-in button	Cable 2 m, 4-wire	WT14-2P111	1026058
					M12, 4-pin	WT14-2P411	1026059
Retro-reflective	Standard	Red	6 m [2]	–	Cable 2 m, 4-wire	WL14-2P130	1026050
					M12, 4-pin	WL14-2P430	1026049
		Red PinPoint	0.15 ... 17 m [2]	–	M12, 4-pin	WL14-2P430S07	1045089
				Teach-in, single teach-in button	M12, 4-pin	WL14-2P431	1050271
Through-beam	Standard	Red	15 m	–	Cable 2 m, 3/4-wire	WS/WE14-2P130	1026430
					M12, 4-pin	WS/WE14-2P430	1026431

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

[2] With reflector PL80A

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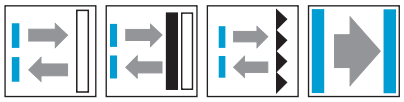
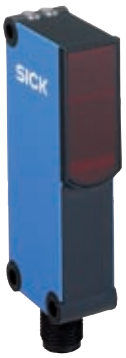
Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system	–	Zinc plated steel	–	BEF-KHS-N03	2051609
Mounting bracket	–	Zinc plated steel	–	BEF-WN-W14	2019084
	With articulated arm	Zinc plated steel	–	BEF-WN-W18	2009317
Protective housing with bracket	For universal clamp system	Zinc plated steel	–	BEF-SG-W27	2039601
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			52 x 62	P250	5304812
			84 x 84	PL80A	1003865

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146





Product description

The optical sensors in SICK's W18-3 series can be found anywhere objects need to be detected reliably under difficult conditions. Whether photoelectric proximity sensors with high-precision background suppression, photoelectric retro-reflective sensors with autocollimation, or through-beam photoelectric sensors with high operating reserves – the W18-3 unites the latest technology for reliable object detection with dependable availability in the field. Neither ambient light shining in, nor reflections from the background, nor light absorbing objects can distract the W18-3. Moreover, in especially critical applications, SICK can work with the customer to tailor the sensors to the specific application conditions on site, in order to achieve an optimum solution. And the W18-3 is naturally equipped for the future: IO-Link, the new sensor communication standard of the future, is already available.

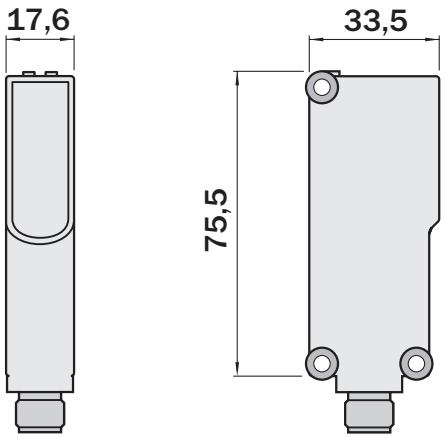
At a glance

- Best-in-class optical performance due to superior OES technology
- Autocollimation optics
- Background suppression with second emitter LED
- Slim, sturdy plastic housing
- IO-Link communication
- Operation via double teach-in or potentiometer
- Exceptionally diverse product range in terms of operation, connection, and optical performance

Your benefits

- Reliable detection thanks to best-in-class background suppression and high immunity to ambient light
- Universal application potential due to wide range of products
- High reliability in industrial environments
- IO-Link enables remote diagnosis and remote maintenance
- Easily installed with SICK accessories

Dimensions



IO-Link

ECOLAB

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W18

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67
- Output type: PNP
- Operating mode: Complementary
- Housing material: ABS
- ECOLAB
- Device models with IO-Link technology available

Sensor type	Sensing technology	Light source	Sensing range	Adjustment	Connection	Model name	Part no.
Proximity	BGS	Red	50 ... 600 mm [1]	Potentiometer	M12, 4-pin	WT18-3P430	1025896
				Teach-in, double teach-in button	M12, 4-pin	WT18-3P431	1026032
		IR	50 ... 700 mm [1]	Potentiometer	Cable 2 m, 4-wire	WT18-3P110	1025887
					M12, 4-pin	WT18-3P410	1025889
				Teach-in, double teach-in button	M12, 4-pin	WT18-3P411	1026031
			50 ... 1000 mm [1]	Potentiometer	M12, 4-pin	WT18-3P420	1025905
Retro-reflective	Autocollimation	Red	7 m [2]	Potentiometer	Cable 2 m, 4-wire	WL18-3P130	1025909
					M12, 4-pin	WL18-3P430	1025911
	Autocollimation	Red	7 m [2]	Potentiometer	Cable 2 m, 5-wire	WL18-3P730 [3]	1026029
	Autocollimation, clear materials detection	Red	2 m [2]	Potentiometer	M12 connector, 4-pin, 0.2 m pigtail	WL18-3P030S07	1042484
Through-beam	Standard	Red	20 m	Potentiometer	M12, 4-pin	WS/WE18-3P430	1025923
		IR	20 m	Potentiometer	M12, 4-pin	WS/WE18-3P410	1025927

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

[2] With reflector PL80A

[3] with test input function

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system	–	Zinc plated steel	–	BEF-KHS-N03	2051609
Mounting bracket	–	Zinc plated steel	–	BEF-WN-W14	2019084
	With articulated arm	Zinc plated steel	–	BEF-WN-W18	2009317
Protective housing with bracket	For universal clamp system	Zinc plated steel	–	BEF-SG-W27	2039601
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			52 x 62	P250	5304812
			84 x 84	PL80A	1003865

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146

Multitalented – precise, sturdy, powerful

W27 Reflex Array

The one with the light array

W27

Always dependable, even in harsh conditions

W34

Sturdy and precise

I

Sturdiness is their strength: SICK's compact sensors

The harsh climate of a harbour, the high temperature of a steel mill, or a throughput-optimized logistics center: the challenge is precise and reliable functioning, even under the harshest conditions.

Equipped with the latest PinPoint LED, intelligent ASIC, µC and IO-Link technologies, packed into sturdy housings of plastic, SICK's compact sensors guarantee long term and reliable operation.

Comprehensive specialized accessories expand the application possibilities.

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Compact photoelectric sensors

Product description

Plug & play is central to this series: install the sensor, connect it electrically, quickly align it with the highly visible red light spot, and the sensor is ready to go. In addition to standard products, the series also includes special variants to address specific applications, such as detecting plastic wrap in material handling and distribution.

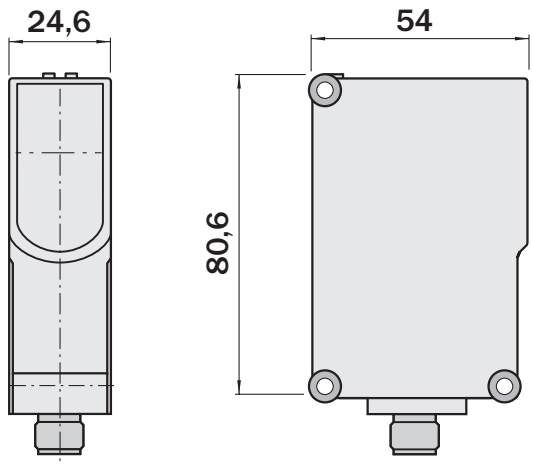
At a glance

- Energetic photoelectric proximity sensors with easy teach-in
- Photoelectric proximity sensors with background suppression
- PinPoint technology: light-intensive red emitter LED with light spot
- Photoelectric retro-reflective sensor with and without adjustability
- Teach-in for quick sensitivity adjustment

Your benefits

- Ready for operation with easy teach-in
- Faster alignment with highly visible light spot
- Diagnostics with 360° indicator LEDs
- Laser proximity sensor for detecting the extremely small parts

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W23

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67
- Output type: PNP
- Output mode: Complementary
- Operating temperature: –25 ... +60 °C
- Housing material: ABS; optics: PMMA
- For NPN devices, see www.sick.com

Sensor type	Sensing technology	Light source	Sensing range	Adjustment	Connection	Model name	Part no.
Proximity	Energetic	IR	50 ... 2300 mm [1]	Teach-in: teach-in button	M12, 4-pin	WTE23-2P2412	1027781
	BGS	IR	50 ... 1000 mm [1]	Potentiometer	M12, 4-pin	WT23-2P2421	1027778
		Red PinPoint	50 ... 1100 mm [1]	Potentiometer	M12, 4-pin	WTB23-2P2461	1044164
Retro-reflective	Standard	Red PinPoint	0.1 ... 15 m (PL80A)	Teach-in: teach-in button	M12, 4-pin	WL23-2P2432S02	1043566
			0.1 ... 12 m (PL80A)	–	M12, 4-pin	WL23-2P2460	1044165
		Red	0.1 ... 10 m (PL80A)	–	Cable, PVC, 2 m	WL23-2P1130	1027784
					M12, 4-pin, PVC, 270 mm pigtail	WL23-2P3430	1027786
					M12, 4-pin	WL23-2P2430P02 [2]	1028056
			0.1 ... 4 m (PL80A)	–	M12, 4-pin	WL23-2P2430S01	1041159

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

[2] Sensor kit with mounting bracket BEF-WN-W23 and reflector PL40A

W23 Red laser

- Operating temperature: –10 ... + 45 °C

Sensor type	Sensing technology	Light source	Sensing range	Adjustment	Connection	Model name	Part no.
Proximity	BGS	Red laser, protection class 1	50 ... 800 mm [1]	Potentiometer	M12, 4-pin	WT23L-F430	1045643

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc plated steel	–	BEF-KHS-N04	2051610
Mounting bracket	90° bracket	Zinc plated steel	–	BEF-WN-W23	2019085
			–	BEF-WN-W27	2009122
Protective housing complete with bracket and screws for rod mounting	–	Zinc plated steel	–	BEF-SG-W27	2039601
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865

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Additional reflectors → p. 148
Additional mounting brackets → p. 146

Product description

The strengths of the multitalented W27-3 come into play in harsh industrial environments, with its ability to handle heavy vibration, shocks, and extreme temperature variations. The photoelectric proximity sensor is a leader in its class, especially through its detection capacity at long ranges. A diverse range of functions, such as time delays, IO-Link, and front screen heating, simplify system integration and mounting compatibility.

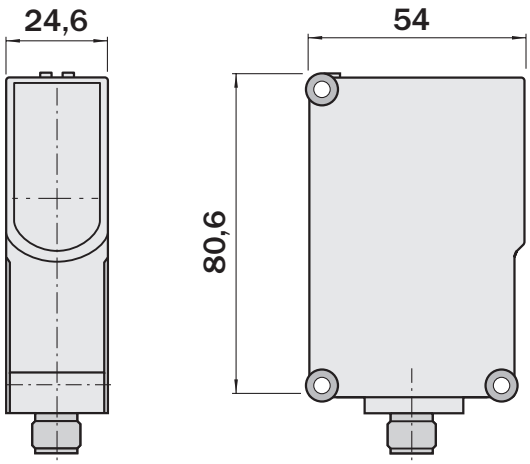
At a glance

- PinPoint technology: light-intensive red emitter LED
- Long sensing ranges with IR light LED and PinPoint LED
- Precise background suppression without scanning distance drift
- Universal voltage supply (DC, DC/AC)
- IP 69K and ECOLAB
- IO-Link
- ATEX: sensors compliant with category 3G/3D
- Reflex array sensor: 24 or 50 mm area detection

Your benefits

- Simple installation due to highly visible light spot
- PinPoint technology can replace laser photoelectric proximity sensors in some applications, eliminating the need for laser safety measures, and the service life of the PinPoint LED is double that of laser diodes
- Reliable in operation with ambient light, optical reflections, and when devices are mounted opposite one another
- Very high availability thanks to high operating reserve at long sensing ranges
- Extremely vibration resistant and therefore independent of ambient conditions
- Reflex array sensor provides reliable leading edge detection of irregular-shaped objects and reduces installation costs by up to 50 % when compared with light grids and other photoelectric sensors options

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
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- Applications
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▸ www.mysick.com/en/W27

Technical details and ordering information

- Supply voltage: 10 ... 30 V DC or 24 ... 240 V DC / 24 ... 240 V AC
- Enclosure rating: IP 69K or IP 65
- Operating temperature: –40 ... +60 °C
- Adjustment: potentiometer or double teach-in button
- Housing material: ABS; optics: PMMA
- For NPN devices, ATEX sensors, Laser proximity switches and IO-Link models, see www.sick.com

Sensor type	Sensing technology	Light source	Sensing range	Output type	Time delay	Connection	Model name	Part no.
Proximity	BGS	Red PinPoint	30 ... 2000 mm [1]	PNP, complementary	–	M12, 4-pin	WTB27-3P2461 [3]	1044163
		Red	30 ... 1100 mm [1]	PNP, complementary	–	M12, 4-pin	WTB27-3P2443 [2] [3] [5]	1027745
		IR	30 ... 1600 mm [1]	PNP, complementary	–	M12, 4-pin	WTB27-3P2411 [3]	1025994
					Selectable	M12, 4-pin	WTB27-3F2411 [3]	1027753
			30 ... 2500 mm [1]	PNP, complementary	–	M12, 4-pin	WTB27-3P2411S18 [3]	1044508
		Red	30 ... 1100 mm [1]	Relay	Selectable	Q6, 6-pin, AC/UC	WTB27-3R2641 [4] [5]	1027750
		IR	30 ... 1600 mm [1]	Relay	Selectable	Q6, 6-pin, AC/UC	WTB27-3R2611 [4] [5]	1027763
Retro-reflective	Standard	Red PinPoint	0.1 ... 19 m (PL80A)	PNP, complementary	–	M12, 4-pin	WL27-3P2461 [3]	1044166
		Red	0.1 ... 15 m (PL80A)	PNP, complementary	Selectable	Q6, 6-pin, DC	WL27-3F2631 [3] [5]	1027772
				Relay	Selectable	Q6, 6-pin, AC/UC	WL27-3R2631 [4] [5]	1027776
Through-beam	Standard	Red	0 ... 35 m	PNP, complementary	–	M12, 4-pin	WSE27-3P2430 [3]	1027790
					Selectable	Q6, 6-pin, DC	WSE27-3F2631 [3] [5]	1027792

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

[2] Double teach-in button

[3] 10 ... 30 V DC

[4] 24 ... 240 V DC / 24 ... 240 V AC

[5] Enclosure rating: IP 65

Retro-reflective array sensor

- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67
- Output type: PNP, complementary
- Continuous threshold adaption
- Minimum distance sensor to reflector: 0.5 m
- Connection: Pigtail, M12, 4-pin, PVC, 270 mm

Sensor type	Sensing technology	Light source	Sensing range	Detection height [mm]	Min. object size [mm]	Model name	Part no.
Retro-reflective	Standard	Red PinPoint	0 ... 1.5 m [1]	24	5	WL27-3P3402S17	1051529
			0 ... 4.5 m [1]	50	12	WL27-3P3402S13	1046538

[1] PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc plated steel	–	BEF-KHS-N04	2051610
Mounting bracket	90° bracket	Zinc plated steel	–	BEF-WN-W23	2019085
			–	BEF-WN-W27	2009122
Protective housing	With bracket and screws	Zinc plated steel	–	BEF-SG-W27	2039601
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865

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Product description

In the W280 photoelectric sensor family, three powerful device types – energetic photoelectric proximity sensors, photoelectric retro-reflective sensors, and through-beam photoelectric sensors – cover the main areas of application for doors and gates. The product family is also ideal for price-sensitive projects in material handling and warehousing.

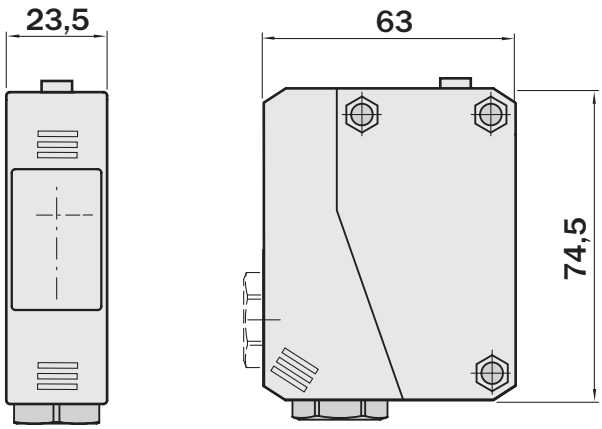
At a glance

- Visible red light
- Light/dark selectable (DC devices only)
- Rotatable connector, cable connection, or terminal connection
- Universal voltage supply (DC, DC/AC)
- DC/AC devices are compliant with EN-61000-6-3 (electromagnetic interference for “residential, commercial and light-industrial environments”)

Your benefits

- The visible red light simplifies alignment of the sensors
- The devices with light/dark selectable options provide flexibility in application and reduce the variety of devices and therefore storage requirements
- Flexible in installation thanks to rotatable connector
- Everything you need is at the installation site, as the mounting bracket (stainless steel 1.4301) and reflector (WL280 only) are included in delivery

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/W280

Technical details and ordering information

- Light source: red
- Enclosure rating: IP 66
- Operating temperature: –25 ... +55 °C
- Adjustment: potentiometer
- Operating mode: Light/Dark selectable
- Housing material: ABS; optics: PMMA
- Mounting bracket (stainless steel 1.4301) included in delivery
- For NPN devices, see www.sick.com

Sensor type	Sensing technology	Sensing range	Output type	Supply voltage	Connection	Model name	Part no.
Proximity	Energetic	10 ... 1700 mm [1]	PNP	DC 10 ... 30 V	M12, 4-pin	WT280-P430	6028280
					Terminal	WT280-P230	6028276
			Relay	AC/DC 24 ... 240 V	Terminal	WT280-S230	6027480
Retro-reflective	Standard	0.01 ... 15 m (PL80A)	PNP	DC 10 ... 30 V	M12, 4-pin	WL280-P430 [2]	6028286
					Terminal	WL280-P230 [2]	6028282
			Relay	AC/DC 24 ... 240 V	Terminal	WL280-S230 [2]	6027484
				AC/DC 24 ... 240 V	Cable, 2 m	WL280-S132 [2]	6027486
					Cable, 5 m	WL280-S135 [2]	6028865
					Terminal	WL280-S230P01 [3]	1041210
Through-beam	Standard	0 ... 45 m	PNP	DC 10 ... 30 V	M12, 4-pin	WS/WE280-P430	6028293
			Relay	AC/DC 24 ... 240 V	Terminal	WS/WE280-S230	6027488
					Cable, 2 m	WS/WE280-S132	6027490

[1] Objects to be detected having 90 % remission (based on DIN 5033 Standard White)

[2] Reflector P250 also included in delivery

[3] Reflector C110A also included in delivery

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc plated steel	–	BEF-KHS-N04	2051610
Mounting bracket	90° bracket	Stainless steel	–	BEF-W280	5313885
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865

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Product description

A hallmark of this series is that all controls are protected under the “hood,” allowing these sensors to be used outdoors. The housing in diecast zinc is recommended especially for tough and extreme ambient conditions. Front screen heating is also available in cases of rapidly changing ambient temperatures. The basic configuration of the sensors includes a variety of functions, in order to reduce stocking. The photoelectric proximity sensors with BGS are characterized by high precision at long distances, and are highly immune to ambient light.

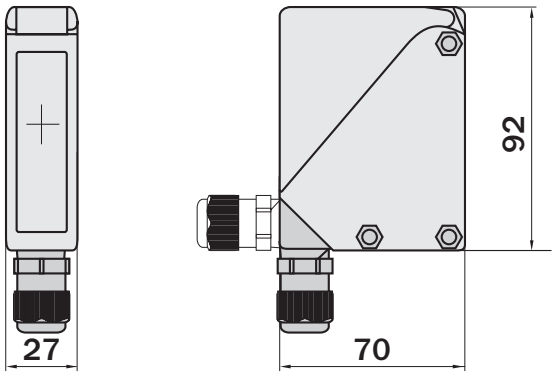
At a glance

- Housing in sturdy plastic or in diecast zinc
- Controls are protected under a cover
- High ambient light immunity
- Universal voltage supply (DC, DC/AC)
- Optional: test input, time delays, and contamination signaling output
- M16 screw connection, or device connector that can be rotated 90°

Your benefits

- Excellent resistance to chemicals, which increases life
- Controls under the “hood” provide flexibility and optimum protection and reduce the variety of devices needed for stocking
- Reliable in operation with ambient light and when devices are mounted opposite one another (cross talk immunity)
- Maximum availability due to very high operating reserve of photoelectric sensor and through-beam photoelectric sensor

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W34

Technical details and ordering information

- Housing material: ABS
- Available as W24-2 in die-cast zinc at www.sick.com
- Enclosure rating IP 67
- Operating temperature: –40 ... +60 °C
- Supply voltage:
  10 ... 30 V DC or 24 ... 240 V DC / 24 ... 240 V AC
- Output can be changed between PNP/NPN and light/dark switching
- For devices with test input, time delay, and contamination signaling output, see www.sick.com

Sensor type	Sensing technology	Light source	Sensing range	Output type	Connection	Model name	Part no.
Proximity	BGS	IR	100 ... 2500 mm [1]	PNP/NPN, light/dark	M12, 4-pin	WT34-B410 [2]	1019229
					Terminals	WT34-V210 [2]	1019280
				Relay	Terminals	WT34-R210 [3]	1019232
						WT34-R220 [3]	1019233
		Red	100 ... 1200 mm [1]	PNP/NPN, light/dark	M12, 4-pin	WT34-B440 [2]	1019237
Retro-reflective	Standard	Red	0.03 ... 22 m (PL80A)	PNP/NPN, light/dark	Terminals	WL34-V230 [2]	1019243
						WL34-V240 [2]	1019244
					M12, 4-pin	WL34-B430 [2]	1019245
				Relay	Terminals	WL34-R230 [3]	1019249
						WL34-R240 [3]	1019250
Through-beam	Standard	Red	0 ... 60 m	PNP/NPN, light/dark	Terminals	WS/WE34-V240 [2]	1019251
				Relay	Terminals	WS/WE34-R230 [3]	1019257

[1] Objects to be detected having 90 % remission (based on DIN 5033 Standard White)

[2] 10 ... 30 V DC

[3] 24 ... 240 V DC / 24 ... 240 V AC

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Mounting bracket	90° bracket	Stainless steel	–	BEF-WK-W24	4027532
		Zinc plated steel	–	BEF-WN-W24	2015248
			–	BEF-WN-W32	2005806
Weather hood	For universal clamp	Zinc plated steel	–	OBW-KHS-M01	2023240
Reflector	2-hole mounting	PMMA/ABS	20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865

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The flexible option – fibers that bend light

WLL180T
Detection of glass bottles

WLL180T
The WLL180T in bus configuration

WLL180T
Precise level measurement

SICK's fiber-optic cables

SICK's fiber-optic sensors perform amazingly well in areas that are challenging for other sensors - explosive atmospheres, chemical environments and tight spaces.

With innovate, microcontroller-supported electronics, IO-Link technology, intelligent display screens for menu navigation, and standardized mounting, these sensors are equipped for applications in difficult conditions.

The effective use of these technologies is made possible by a wide range of fiber-optic cables made with plastic and glass fibers, with optical heads tailored to the application. This allows the challenges of the electronics industry to be met, just as easily as the intelligent control of an assembly line. Specialized accessories and the option of customization extend the application possibilities to include higher temperatures, longer fiber lengths and all the features needed to satisfy customer requirements.

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Fiber-optic cables and fiber-optic sensors

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Fiber-optic cables provide a “slimline” connection between the sensor and the sensing target. They are an important key to sensing solutions and often the only way to detect inaccessible objects, details, and markings.

OPTICAL FIBER

Optical fibers in plastic or glass. Properties to suit every requirement.

Plastic fiber-optic cable
- Mono fiber or fiber bundle
- Smallest bend radii
- Extremely flexible
- Low weight
- Standard length 2 m
- Can be cut to desired length
- Operating temperatures from –40 °C to +180 °C

Glass fiber-optic cable
- Fiber bundle
- Chemically resistant
- For extreme temperatures from –55 °C to +250 °C

END SLEEVE

Assembly-oriented end sleeves, enabling the fiber-optic cable to be mounted directly in the required sensing position.

End sleeve options
- Very thin end sleeves from ø 1.5 mm
- Long, slim end tips
- Flexible end tubes
- Integrated 90° deflection
- Special end sleeves

PROTECTIVE SHEATHING

Protects the fiber core from mechanical or chemical damage. Sleeve designs are optimized for load resistance.

Plastic sheathing
- Lightweight
- Flexible
- Generally resistant
- For standard applications

Protective metal sheathing
- For temperatures up to +250 °C
- Protection from mechanical stress

Teflon sheathing
- Protection from extremely aggressive chemicals

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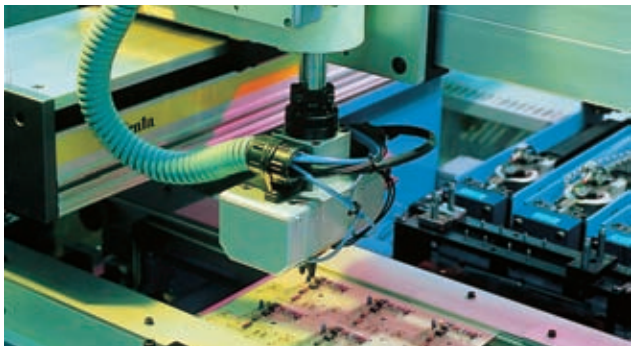
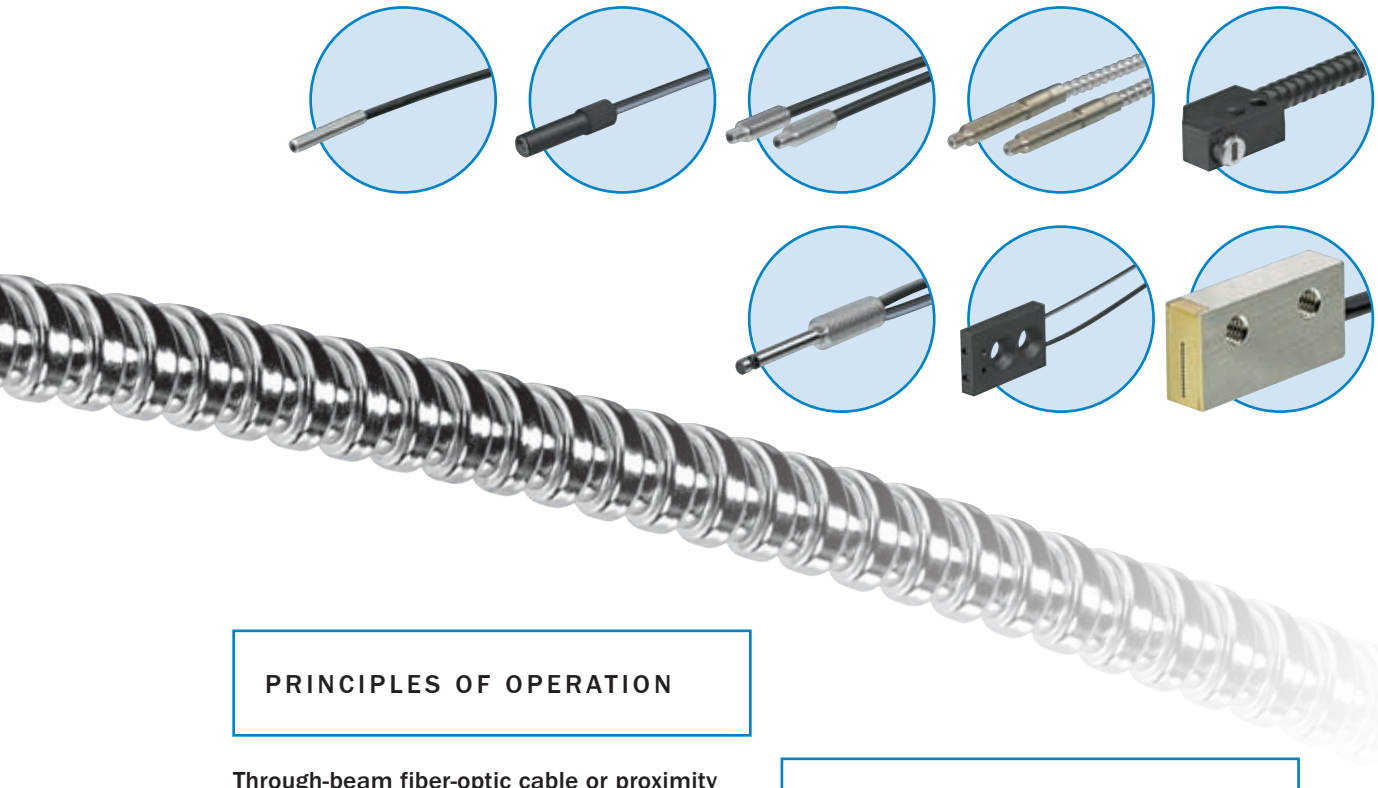
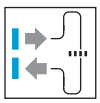


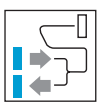


PRINCIPLES OF OPERATION

Through-beam fiber-optic cable or proximity fiber-optic cable: both basic options are available.



Through-beam principle
- Sender and receiver fibers are mounted separately
- Very long ranges
- For accurate positioning
- Detection of smallest objects
- Standard applications



Proximity principle
- Sender and receiver fibers are sheathed and mounted together
- Easy mounting
- Standard applications
- Ideal for registration marks

TIP ADAPTORS

Tip adaptor lenses expand the cable's functionality.
They bundle, focus, and deflect.

Tip adaptors for through-beam fiber-optic cables
- Light spot control
- Very long ranges
- Right angle deflection, plus long ranges

Tip adaptors for proximity fiber-optic cables
- Precise, focused light spot
- Detection of very small parts
- Detection of registration marks
- Suppression of background interference

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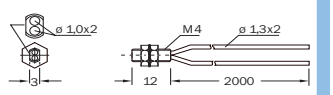
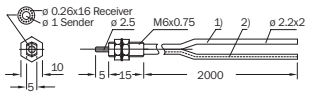
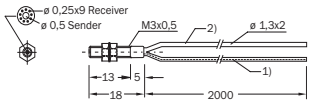
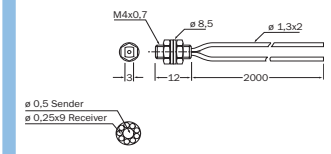
LL3-DM01	LL3-DB01	LL3-DT01	LL3-DM02
			
Part no.: 5308071	**Part no.:** 5308074	**Part no.:** 5308076	**Part no.:** 5308077
Standard type	**Coaxial cable**	**Coaxial cable**	**Coaxial cable**
Features:	**Features:**	**Features:**	**Features:**
Minimum object size: Ø 0.015 mm	Minimum object size: Ø 0.015 mm	Minimum object size: Ø 0.015 mm	Minimum object size: Ø 0.015 mm
Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)
LL3 length: 2 m	LL3 length: 2 m	LL3 length: 2 m	LL3 length: 2 m
Minimum bend radius: R25 mm	Minimum bend radius: R25 mm	Minimum bend radius: R15 mm	Minimum bend radius: R15 mm
Mounting sleeve size: M4	Mounting sleeve size: M6	Mounting sleeve size: M3	Mounting sleeve size: M4

WLL170(T)-2 - scanning distance in [mm]			
Red light	Red light	Red light	Red light
160	150	70	70
Green light	Green light	Green light	Green light
45	45	10	10
High-speed	High-speed	High-speed	High-speed
60	60	20	20

WLL180 - scanning distance in [mm]			
Response time: 16 µs	Response time: 16 µs	Response time: 16 µs	Response time: 16 µs
75	90	40	40
Response time: 70 µs	Response time: 70 µs	Response time: 70 µs	Response time: 70 µs
255	280	130	130
Response time: 250 µs	Response time: 250 µs	Response time: 250 µs	Response time: 250 µs
420	500	200	200
Response time: 2 ms	Response time: 2 ms	Response time: 2 ms	Response time: 2 ms
800	900	350	350
Response time: 8 ms	Response time: 8 ms	Response time: 8 ms	Response time: 8 ms
1300	1350	600	600

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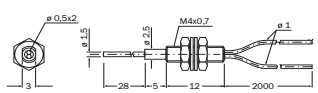
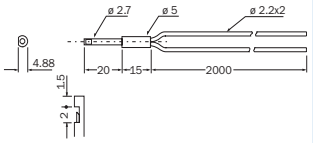
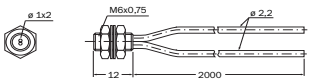
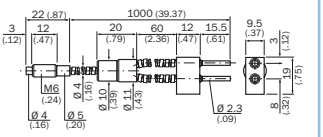
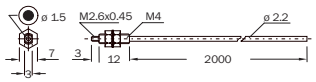
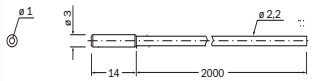
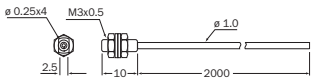
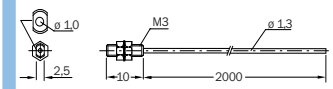
Subject to change without notice

LL3-DT05	LL3-DV01	LL3-DK67	LL3-DW01
			
Part no.: 5313028	**Part no.:** 5308088	**Part no.:** 5313025	**Part no.:** 5315234
Long end sleeves	**Integrated right angle lens**	**Super flexible**	**Temperature-resistant to 200 °C**
Features:	**Features:**	**Features:**	**Features:**
Minimum object size: Ø 0.015 mm	Minimum object size: Ø 0.025 mm	Minimum object size: Ø 0.015 mm	Minimum object size: Ø 0.02 mm
Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)
LL3 length: 2 m	LL3 length: 2 m	LL3 length: 2 m	LL3 length: 1 m
Minimum bend radius: R15 mm	Minimum bend radius: R25 mm	Minimum bend radius: R2 mm	Minimum bend radius: R25 mm
Mounting sleeve size: M4	Mounting sleeve size: Ø 5 mm	Mounting sleeve size: M6	Mounting sleeve size: M6
			Core: glass Sheath: 1.4305

WLL170 - scanning distance in [mm]			
Red light	**Red light**	**Red light**	**Red light**
45	**90**	**110**	**140**
Green light	**Green light**	**Green light**	**Green light**
7	**25**	**25**	**25**
High-speed	**High-speed**	**High-speed**	**High-speed**
15	**40**	**45**	**55**

WLL180 - scanning distance in [mm]			
Response time: 16 µs	**Response time: 16 µs**	**Response time: 16 µs**	**Response time: 16 µs**
10	**40**	**90**	**85**
Response time: 70 µs	**Response time: 70 µs**	**Response time: 70 µs**	**Response time: 70 µs**
28	**135**	**300**	**250**
Response time: 250 µs	**Response time: 250 µs**	**Response time: 250 µs**	**Response time: 250 µs**
45	**180**	**500**	**400**
Response time: 2 ms	**Response time: 2 ms**	**Response time: 2 ms**	**Response time: 2 ms**
95	**270**	**900**	**700**
Response time: 8 ms	**Response time: 8 ms**	**Response time: 8 ms**	**Response time: 8 ms**
170	**330**	**1400**	**1000**

J

LL3-TB01	LL3-TK05	LL3-TR02	LL3-TM01
			
Part no.: 5308050	**Part no.:** 5313034	**Part no.:** 5308053	**Part no.:** 5308068
Standard type	**Super flexible**	**Flexible**	**Smallest tip**
Features:	**Features:**	**Features:**	**Features:**
Minimum object size: Ø 0.5 mm	Minimum object size: Ø 0.2 mm	Minimum object size: Ø 0.1 mm	Minimum object size: Ø 0.2 mm
Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)
LL3 length: 2 m	LL3 length: 2 m	LL3 length: 2 m	LL3 length: 2 m
Minimum bend radius: R30 mm	Minimum bend radius: R2 mm	Minimum bend radius: R4 mm	Minimum bend radius: R25 mm
Mounting sleeve size: M4	Mounting sleeve size: Ø 3 mm	Mounting sleeve size: M3	Mounting sleeve size: M3

WLL170(T)-2 - range in [mm]			
Red light	Red light	Red light	Red light
700	360	110	450
Green light	Green light	Green light	Green light
350	110	20	130
High-speed	High-speed	High-speed	High-speed
350	120	35	160

WLL180 - range in [mm]			
Response time: 16 µs	Response time: 16 µs	Response time: 16 µs	Response time: 16 µs
300	220	60	220
Response time: 70 µs	Response time: 70 µs	Response time: 70 µs	Response time: 70 µs
950	650	175	680
Response time: 250 µs	Response time: 250 µs	Response time: 250 µs	Response time: 250 µs
1700	1200	330	1200
Response time: 2 ms	Response time: 2 ms	Response time: 2 ms	Response time: 2 ms
3500	2750	750	2500
Response time: 8 ms	Response time: 8 ms	Response time: 8 ms	Response time: 8 ms
4000	4000	1100	4000

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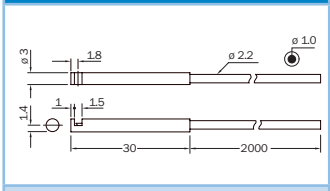
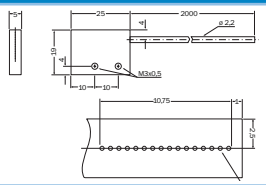
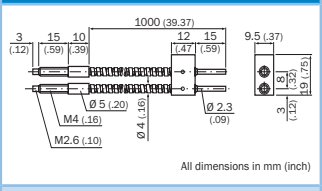
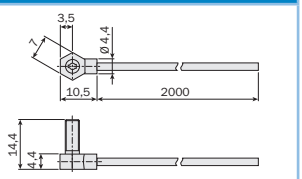
LL3-TS08	LL3-TS14	LL3-TW01	LL3-TV07
			
Part no.: 5308061	**Part no.:** 5313039	**Part no.:** 5315233	**Part no.:** 5322548
Integrated right angle lens	**Fiber-optic cable cell**	**Temperature-resistant to 200 °C**	**Integrated right angle lens**
Features:	**Features:**	**Features:**	**Features:**
Minimum object size: Ø 0.2 mm	Minimum object size: Ø 0.5 mm	Minimum object size: Ø 0.4 mm	Minimum object size: Ø 0.4 mm
Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)	Standard object (white 90%)
LL3 length: 10 m	LL3 length: 2 m	LL3 length: 1 m	LL3 length: 2 m
Minimum bend radius: R25 mm	Minimum bend radius: R25 mm	Minimum bend radius: R25 mm	Minimum bend radius: R2 mm
Mounting sleeve size: Ø 3 mm	Mounting sleeve size: 19 x 25 x 5 mm	Mounting sleeve size: M4	Mounting sleeve size: 8 x 10.5 x 14.4 mm
		Core: glass Sheath: 1.4305	

WLL170 - range in [mm]			
Red light	**Red light**	**Red light**	**Red light**
350	**330**	**350**	**270**
Green light	**Green light**	**Green light**	**Green light**
110	**82**	**130**	**130**
High-speed	**High-speed**	**High-speed**	**High-speed**
120	**120**	**150**	**130**

WLL180 - range in [mm]			
Response time: 16 µs	**Response time: 16 µs**	**Response time: 16 µs**	**Response time: 16 µs**
170	**130**	**60**	**340**
Response time: 70 µs	**Response time: 70 µs**	**Response time: 70 µs**	**Response time: 70 µs**
500	**400**	**200**	**1000**
Response time: 250 µs	**Response time: 250 µs**	**Response time: 250 µs**	**Response time: 250 µs**
1000	**800**	**350**	**1800**
Response time: 2 ms	**Response time: 2 ms**	**Response time: 2 ms**	**Response time: 2 ms**
2300	**2000**	**750**	**4000**
Response time: 8 ms	**Response time: 8 ms**	**Response time: 8 ms**	**Response time: 8 ms**
3000	**3500**	**1100**	**4000**

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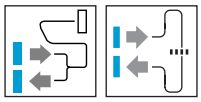


Product description

This fiber-optic photoelectric sensor with its standard operating system is especially suitable for basic applications, but also when rapid response times are crucial. Specialized WLL170(T) versions are available, optimized for a number of key applications, such as detection of very small objects, registration marks, or transparent objects. There are 2 models of the WLL170 family. The WLL170T-2 is a teach-in version, where the switching threshold is set automatically by pressing a button or via a cable (teach-in). The WLL170-2 has a manual switching threshold adjustment via a potentiometer. Both models are available in a high-speed version for up to 10,000 switching operations per second for extremely fast responses. For optimum detection of color contrasts, you can choose between red or green emitter LEDs. The detection tasks are carried out securely and reliably with the fiber-optic cables of the LL3 series.

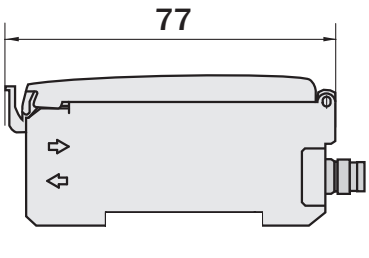
At a glance

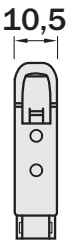
- Rapid response time (50 µs)
- Switching threshold adjustment via potentiometer or teach-in (button or cable)
- Four different teach-in modes
- Simple installation
- Red or green emitter LED

Your benefits

- Reliable detection of rapid processes
- Short commissioning time saves on installation costs
- The optimum setting for every application due to different teach-in modes, making the sensor customized to the specific application
- Ideal emitted light for color or contrast detection

Dimensions





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Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/WLL170-2

Technical details and ordering information

- Sensing range, through-beam: 0 ... 4000 mm
- Sensing range, proximity: 0 ... 160 mm
- Operating mode: Light/dark selectable
- Supply voltage: 10 ... 30 V DC
- Selectable OFF delay: 40 ms
- Enclosure rating IP 66
- CE, UR

Light source	Input/output	Response time	Output type	Adjustment	Connection	Model name	Part no.
Red	Q	< 250 µs	PNP	Potentiometer	M8, 4-pin	WLL170-2P430	6029514
			NPN	Potentiometer	Cable, 2 m	WLL170-2N132	6029515
	Q, external teach-in	< 250 µs	PNP	Teach-in	M8, 4-pin	WLL170T-2P430	6033950
			NPN	Teach-in	Cable, 2 m	WLL170T-2N132	6033951
Green	Q	< 250 µs	PNP	Potentiometer	M8, 4-pin	WLL170-2P490	6029522
			NPN	Potentiometer	M8, 4-pin	WLL170-2N490	6029526
Red	Q	< 50 µs	PNP	Potentiometer	M8, 4-pin	WLL170-2P460	6029530
			NPN	Potentiometer	Cable, 2 m	WLL170-2N162	6029531
Green	Q, external teach-in	< 250 µs	PNP	Teach-in	M8, 4-pin	WLL170T-2P490	6033956
Red	Q, external teach-in	< 50 µs	PNP	Teach-in	M8, 4-pin	WLL170T-2P460	6033965
			NPN	Teach-in	Cable, 2 m	WLL170T-2N162	6033960

Recommended accessories

Name	Material	Model name	Part no.
Mounting bracket [1]	Zinc plated steel	BEF-WLL170	5306574
Endcap for block installation on DIN-rail mounting	Zinc plated steel	BEF-EB01-W190	5313011

[1] Included in delivery

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146

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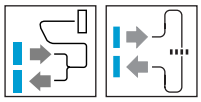


Product description

The WLL180T are the world's fastest sensor, with a response time of 16 µs. At the same time, these sensors offer good values for sensing range and operating reserve due to its high light intensity and resolution. That considerably increases process reliability when used in dusty or moist environments. Commissioning is simple – either via the external teach-in input or directly on the evaluation unit. The evaluation unit provides a visualization of all programming steps, status displays, and target and actual values on two four-digit displays. The WLL180T can be operated either as an individual sensor or in a sensor group, depending on requirements. For sensor groups, the devices have an internal bus that allows networking of multiple sensors. This configuration also enables the settings on one WLL180T to be copied to all other devices on the bus. Mutual interference by fiber-optic heads installed in close proximity is excluded by their integrated anti-interference logic.

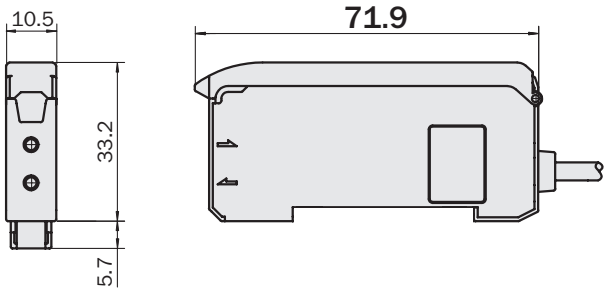
At a glance

- Selectable response time up to 16 µs
- Sensing range up to 20 m
- Bus-compatible with anti-interference
- 2 x 4-digit display
- Adjustable hysteresis
- Rotatable display screen
- High-resolution signal processing
- Programmable time delays

Your benefits

- Extremely rapid processes are detected reliably
- Workpieces are detected reliably even under the most difficult of ambient conditions such as dust or spray mist
- Fiber-optic heads mounted in close proximity do not affect each other
- Easy monitoring of process parameters
- Hysteresis can be adapted to suit the application, e.g. when detecting tiny or transparent objects
- The display is easy to read, even under difficult installation conditions
- Tiny objects can be detected due to the high-resolution signal processing
- Time delays can be adjusted individually to suit the application

Dimensions



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Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/WLL180T

Technical details and ordering information

- Sensing range, through-beam: 0 ... 20 m
- Sensing range, proximity: 0 ... 1400 mm
- Selectable response time: 16 µs / 70 µs / 250 µs / 2 ms / 8 ms
- Operating mode: Light/dark selectable
- Supply voltage: 12 ... 24 V DC
- Time delay: adjustable 0 ... 9999 ms
- 2 x 4-digit display
- Enclosure rating: IP 50
- External input
- Continuous threshold adaptation

Bus-compatible	Output type	Connection	Model name	Part no.
No	PNP	Cable, 2 m	WLL180T-P432	6039093
		M8, 4-pin	WLL180T-P434	6039095
	NPN	Cable, 2 m	WLL180T-N432	6039094
		M8, 4-pin	WLL180T-N434	6039096
Yes	PNP	Cable, 2 m	WLL180T-M432	6039097
		Cable, 2 m	WLL180T-F232	6039098
		M8, 4-pin	WLL180T-M434	6039101
		M8, 4-pin	WLL180T-F434	6039102
	NPN	Cable, 2 m	WLL180T-L432	6039099
		Cable, 2 m	WLL180T-E232	6039100
		M8, 4-pin	WLL180T-L434	6039103
			WLL180T-E434	6039104

Recommended accessories

Name	Material	Model name	Part no.
Mounting bracket [1]	Zinc plated steel	BEF-WLL170	5306574
Endcap for block installation on DIN-rail mounting	Zinc plated steel	BEF-EB01-W190	5313011

[1] Included in delivery

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146

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A well-rounded package

V180-2

Mounting options for any application – even on roller conveyors

W15

Reliable detection of all objects

MH15

Part detection in material handling and warehousing systems

Versatile and easy to install: SICK's cylindrical sensors

No tools required: the cylindrical sensor is easy to install by hand and ready for operation in no time.

With the broadest portfolio on the market, this sensor family offers total versatility: Equipped with an innovative mounting system, short-body or or plastic and with versions suitable for food and beverage. The comprehensive range covers the entire application spectrum of modern photoelectric sensor technology.

SICK's cylindrical sensors are simply designed for every area of application.

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Cylindrical photoelectric sensors

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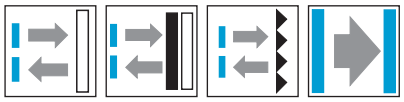


Product description

The compact MH15 offers the shortest M18 housing on the market. Combined with flush mounting via an innovative mounting ring, the MH15 is versatile, fast and cost effective. The short housing length means short installation depth and easy handling. The variable housing type (straight or right-angle) is ideal for smart integration of the MH15 into any machine. Flush mounting with the innovative mounting accessories (included) allows the MH15 photoelectric sensors to be installed anywhere. An added bonus: photoelectric proximity sensors with an outstanding sensing range of 300 mm and background suppression (with PinPoint LED) for detecting critical objects even in front of difficult backgrounds.

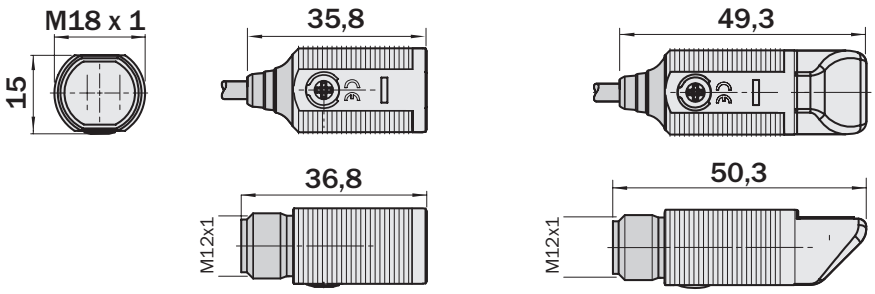
At a glance

- Comprehensive and complete product range in short M18 housing
- Reliable detection of objects
- Shortest housing for cylindrical photoelectric sensors: functional design for smart, space saving solutions
- Flush mounting with innovative mounting accessories: cost effective and fast

Your benefits

- Innovative mounting accessories (included) for quick, cost effective mounting
- Very short housing length and therefore minimal installation depth for space saving design
- Choice of straight or right-angle housing type for space saving integration into the system or machine
- Photoelectric proximity sensors with an outstanding sensing range of 300 mm and background suppression (with PinPoint LED) for detecting critical objects even in front of difficult backgrounds

Dimensions



Class 2

PinPoint by SICK

ECOLAB

IP 69K

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Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/MH15

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67, IP 69K
- Operating mode: light/dark
- Operating temperature: –25 ... +55 °C
- Adjustable sensitivity/sensing distance (proximity)
- Housing material: ABS; optics: PMMA

Sensor type	Sensing technology	Sensing range	Output type	Housing type	Connection	Model name	Part no.
Proximity	BGS	3 ... 300 mm	PNP, Light	Straight	M12, 3-pin	MHTB15-P3367	1046535
					Cable 2 m	MHTB15-P2367	1046534
	Energetic	10 ... 100 mm	PNP, Light	Straight	M12, 3-pin	MHT15-P3317	1026097
					Cable 2 m	MHT15-P2317	1026096
		5 ... 90 mm	PNP, Light	Right-angle	M12, 3-pin	MHT15-P3319	1026105
		10 ... 350 mm	PNP, Light	Straight	Cable 2 m	MHT15-P3347	1026113
		15 ... 250 mm	PNP, Light	Right-angle	Cable 2 m	MHT15-P3349	1026121
		10 ... 350 mm	NPN, Light	Straight	M12, 3-pin	MHT15-N2347	1026108
Retro-reflective	Standard	3.5 m (PL80A)	PNP, Dark	Straight	M12, 3-pin	MHL15-P3236	1026127
			PNP, Light			MHL15-P3336	1026129
			PNP, Dark	Right-angle	M12, 3-pin	MHL15-P3238	1026135
	Clear material detection	0.035 ... 1.5 m (PL80A)	PNP, Light	Right-angle	M12, 3-pin	MHL15-P3329S06	1042806
Through-beam	Standard	0 ... 5 m	PNP, Dark	Straight	M12, 3-pin	MHSE15-P3236	1026143

Recommended accessories

Name	Design	Material	Dimensions [mm]	Comment	Model name	Part no.
Universal clamp system (UKS)	–	Zinc plated steel	–	–	BEF-KHS-N06	2051612
Mounting bracket	90° bracket	Zinc plated steel	–	–	BEF-WN-M18	5308446
Mounting plate	Straight	Zinc plated steel	–	–	BEF-WG-M18	5321870
Mounting ring for MH15	–	Plastic	–	Included in delivery	BEF-WN-MH15-1	4039533
Ball-joint bracket M18	–	Plastic	–	–	BEF-WN-M18-ST02	5312973
Reflector	2-hole mounting	Plastic	42 x 62	–	P250	5304812
		Plastic	84 x 84	–	PL80A	1003865
			40 x 60	–	PL40A	1012720

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146

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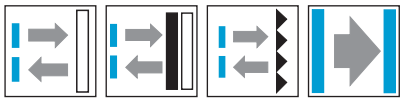


Product description

With the shortest M18 housing on the market, rugged materials and smart accessories for flush mounting – the MH15V series provides the solution for all standard tasks in the food and beverage industry. Their stainless steel encapsulated housing is combined with leak resistance and industrial toughness. They resist high humidity and chemical cleaning processes with high water pressures. Certification from ECOLAB confirms the qualities of this product series.

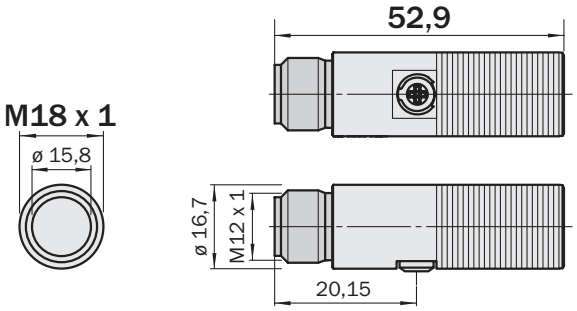
At a glance

- Complete family of M18 stainless steel photoelectric sensors for the food and beverage industry
- Photoelectric proximity sensor, sensing range up to 300 mm, with BGS background suppression, adjustable scanning distance
- Extremely watertight (IP 69K)
- Stainless steel housing (316L/1.4404)
- Resistant to industrial cleaning agents, ECOLAB certified

Your benefits

- Higher machine availability due to reliable sensors
- Hygienic processes due to suitable sensor housing material and design
- Resistant to all common cleaning agents – certified by independent institutes
- Space saving mounting thanks to the shortest M18 stainless steel housing on the market

Dimensions



Class 2

LISTED 87LL

PinPoint by SICK

ECOLAB

IP 69K

Stainless Steel

K

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/MH15V

Technical details and ordering information

- Light source: Red PinPoint LED
- Supply voltage: 10 ... 30 V DC
- Enclosure rating: IP 67, IP 68, IP 69K
- Output type: PNP, light or dark
- Housing material: stainless steel (316L/1.4404)
- Connection: connector M12, 4-pin
- Housing type: Straight

Sensor type	Sensing technology	Sensing range	Operating mode	Adjustment	Model name	Part no.
Proximity	BGS	2 ... 300 mm	Light	Potentiometer 270°	MHTB15-P3367V	1046537
	Energetic	10 ... 100 mm	Light	Potentiometer 270°	MHT15-P3317V	1043806
		10 ... 350 mm	Light	Potentiometer 270°	MHT15-P3347V	1043811
Retro-reflective	Standard	3.5 m (PL80A)	Dark	–	MHL15-P3236V	1043814
Through-beam	Standard	0 ... 5 m	Dark	–	MHSE15-P3236V	1043818

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Stainless steel	–	BEF-KHS-N06N	2051622
Mounting bracket	90° bracket	Stainless steel	–	BEF-WN-M18N	5320947
Mounting plate	Straight	Stainless steel	–	BEF-WG-M18N	5320948
Mounting ring	Flush installation M18	Stainless steel	–	BEF-WN-MH15-2	4053358
Reflector	2-hole mounting	Chemical resistant plastic	52 x 62	P250CHEM	5321097
			20 x 60	PL20CHEM	5321089
		Plastic	52 x 62	P250H	5315124
			84 x 84	PL80A	1003865

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146

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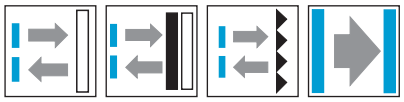


Product description

Top performance for universal applications and quick selection of the right option: The V180-2 series is designed to meet the requirements of the market. Choose from the entire family, comprising photoelectric proximity sensors in three different sensing ranges, photoelectric retro-reflective sensors, and through-beam photoelectric sensors. Quick alignment and commissioning, reliable detection, and dependable switching are achieved with the aid of long sensing ranges, extremely short response time, the red-light emitter LED, and sensitivity adjustment.

At a glance

- High switching frequencies of 1.000 Hz
- Very long sensing ranges and distances
- Visible red light enables quick and easy commissioning and adjustment
- 2 indicator LEDs with 360° display combined with sensitivity control permit convenient and quick commissioning
- Compact housing with M12 cable / device connector provide space-saving installation

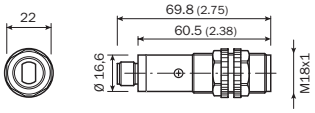
Your benefits

- Reliable switching thanks to long sensing ranges and very short response time
- Quick and easy planning and commissioning thanks to a complete family of sensors
- Operating reserve and access to new solutions due to strong ranges and homogeneous system specifications for all variants
- The answer to economic challenges thanks to simple assembly, standardized connection technology, and universal use
- Convenient, fast, compatible thanks to optimally visible emitter LED, 2 status indicator LEDs with 360° visibility, very short housing.
- Compatible and economical due to standardized M18 housing and interfaces

Dimensions

VTx / VSE plastic

straight



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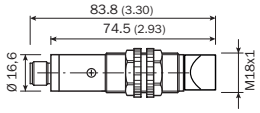
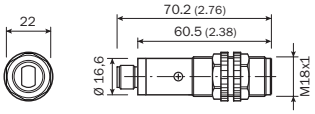


VL plastic

straight



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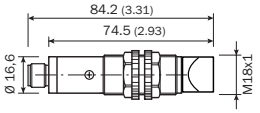
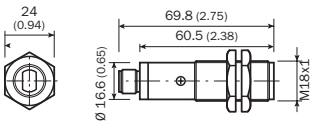


VTx / VSE metal

straight



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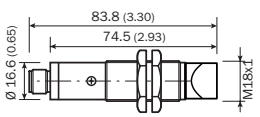
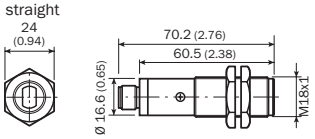


VL metal

straight



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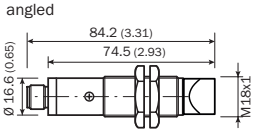


▸ www.mysick.com/en/V180-2

K

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

Technical details and ordering information

- Light source: Red light
- Enclosure rating: IP 67
- Supply voltage: 10 ... 30 V DC
- Output type: PNP
- Operating mode: Light/dark switching, selectable by control line
- Connection: connector M12, 4-pin
- Other models available on request or at www.sick.com

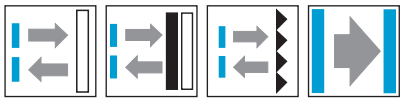
Sensor type	Sensing technology	Housing type	Housing material	Sensing range	Adjusment	Model name	Part no.
Proximity	BGS	Straight	Metal	10 ... 300 mm	Potentiometer 270°	VTB180-2P42412	6043870
			Plastic	10 ... 300 mm	Potentiometer 270°	VTB180-2P42417	6043874
	BGB	Straight	Metal	1 ... 100 mm	Potentiometer 270°	VTF180-2P42412	6041803
				1 ... 450 mm	Potentiometer 270°	VTE180-2P42442	6041807
			Plastic	1 ... 100 mm	Potentiometer 270°	VTF180-2P42417	6037480
				1 ... 450 mm	Potentiometer 270°	VTE180-2P42447	6037484
		Angled, 90°	Metal	1 ... 100 mm	Potentiometer 270°	VTF180-2P42414	6043806
				1 ... 450 mm	Potentiometer 270°	VTE180-2P42444	6043815
			Plastic	1 ... 100 mm	Potentiometer 270°	VTF180-2P42419	6043811
				1 ... 450 mm	Potentiometer 270°	VTE180-2P42449	6043819
	Energetic	Straight	Metal	1 ... 1.100 mm	Potentiometer 270°	VTE180-2P42482	6041811
			Plastic	1 ... 1.100 mm	Potentiometer 270°	VTE180-2P42487	6037488
		Angled, 90°	Metal	1 ... 1.100 mm	Potentiometer 270°	VTE180-2P42484	6043823
			Plastic	1 ... 1.100 mm	Potentiometer 270°	VTE180-2P42489	6043827
Retro-reflective	Standard	Straight	Metal	0.05 ... 7 m [1]	–	VL180-2P42431	6041819
			Plastic	0.05 ... 7 m [1]	–	VL180-2P42436	6037496
		Angled, 90°	Metal	0.05 ... 7 m [1]	–	VL180-2P42433	6043834
			Plastic	0.05 ... 7 m [1]	–	VL180-2P42438	6043838
Through-beam	–	Straight	Metal	0 ... 28 m	Potentiometer 270°	VSE180-2P42432	6041823
			Plastic	0 ... 28 m	Potentiometer 270°	VSE180-2P42437	6037500
		Angled, 90°	Metal	0 ... 28 m	Potentiometer 270°	VSE180-2P42434	6043850
			Plastic	0 ... 28 m	Potentiometer 270°	VSE180-2P42439	6043854

[1] PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Zinc-plated steel	–	BEF-KHS-N06	2051612
Mounting bracket	90° bracket	Zinc-plated steel	–	BEF-WN-M18	5308446
Mounting plate	Straight	Zinc-plated steel	–	BEF-WG-M18	5321870
Ball-joint bracket M18	–	Plastic	–	BEF-WN-M18-ST02	5312973
Reflector	2-hole mounting	Plastic	52 x 62	P250	5304812
		Plastic	40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146



Product description

Patented touch-teach technology, optimized materials: the V18V series offers long sensing ranges and resists stresses from chemical cleaning processes, high ambient temperatures, humidity, and highly pressurized water. With its patented touch-teach sensitivity control, the V18V offers sensitivity adjustment directly on the sensor as usual, but without mechanical controls.

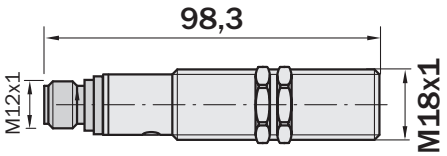
At a glance

- Complete M18 stainless steel family for the food and beverage industry
- Extremely watertight (IP 68/IP 69K)
- Stainless steel housing (316L/1.4404)
- Patented Touch-Teach-in: adjustment directly on the sensor without mechanical controls
- Extended temperature range from –40 °C ... +80 °C; short term tolerance (15 min) up to 100 °C
- Resistant to industrial cleaning agents, ECOLAB and JohnsonDiversey certified
- FDA-certified plastics

Your benefits

- Higher machine availability due to reliable sensors
- Suitable for hygienic processes due to suitable sensor housing material and design
- Resistant to all common cleaning agents and certified by independent institutes
- Largest M18 Inox photoelectric sensor family, offers wide range of options for simple and reliable sensor solutions
- Encapsulated casting and expanded operating temperature range provides maximum resistance to harsh environments experienced in food and beverage applications

Dimensions



Class 2

ECOLAB

IP 69K

JohnsonDiversey

Stainless Steel

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/V18V

Technical details and ordering information

- Light source: Red light
- Enclosure rating: IP 68, IP 69K
- Supply voltage: 10 ... 30 V DC
- Output type: PNP
- Operating mode: Light/dark switching, selectable by control line
- Housing material: stainless steel (316L, 1.4404)
- Housing type: straight
- Connection: connector M12, 4-pin
- Other models available on request or at www.sick.com

Sensor type	Sensing technology	Sensing range	Adjustment	Model name	Part no.
Proximity	BGS	0 ... 140 mm	Teach-In	VTB18-4P1240V	6035493
	BGS focused	0 ... 100 mm	Teach-in	VTB18-4P1240VS01	6037754
	Energetic	5 ... 100 mm	Teach-in	VTF18-4P1240V	6035487
		5 ... 400 mm	Teach-in	VTE18-4P4240V	6035489
		5 ... 800 mm	Teach-in	VTE18-4P8240V	6035491
Retro-reflective	Standard	0.1 ... 5 m (PL80A)	–	VL18-4P3140V	6035495
	Clear material detection	0.1 ... 4.5 m (PL80A)	Teach-in	VL18-4P2240V	6035497
Through-beam	Standard	20 m	–	VS/VE18-4P3140V	6035499

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Stainless steel	–	BEF-KHS-N06N	2051622
Mounting bracket	90° bracket	Stainless steel	–	BEF-WN-M18N	5320947
Mounting plate	Straight	Stainless steel	–	BEF-WG-M18N	5320948
Mounting ring	Flush installation M18	Stainless steel	–	BEF-WN-MH15-2	4053358
Reflector	2-hole mounting	Chemical resistant plastic	52 x 62	P250CHEM	5321097
			20 x 60	PL20CHEM	5321089
		Plastic	52 x 62	P250H	5315124
			84 x 84	PL80A	1003865

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146

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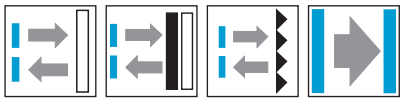


Product description

The W15 photoelectric sensor with its hybrid housing is flexible and versatile. It brings together modern industrial design with SICK technology for the optimum application solution. The WTB15 proximity sensor offers our proven “best in class” background suppression based on OES3 ASIC technology. The WTE15 energetic sensor with IR optics, the WL15 photoelectric sensor with dual lens optics, and the WSE15 through-beam sensor complete the product family. One appealing feature of the series is its flexibility in mounting. With the M18 front mount, the sensor can be flush-mounted with a snap ring. This is especially useful for applications in conveying systems. There is also the option of side mounting.

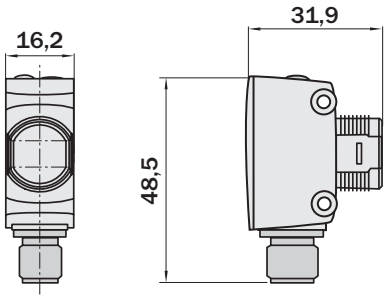
At a glance

- Best-in-class background suppression through OES3-ASIC and a second emitter LED
- M18 thread mounting from the front and side-mount through holes
- Innovative snap ring for flush mounting
- Highly visible and precise light spot due to PinPoint LED in the WTB15
- Flexible output configuration: bipolar (PNP/NPN) or complementary (light/dark selectable)
- Very highly visible LED indicators at top and behind the transparent back of the housing

Your benefits

- Reliable detection thanks to best-in-class background suppression and high immunity to ambient light
- Versatile mounting options
- Flush-mounting allows sensor to be installed close to the process without interfering
- Fast installation due to highly visible light spot
- Easily installed with SICK accessories

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

▸ www.mysick.com/en/W15

Technical details and ordering information

- Light source: Red PinPoint LED
- Enclosure rating: IP 67
- Connection: connector M12, 4-pin

Sensor type	Sensing technology	Light source	Sensing range	Output type	Operating mode	Model name	Part no.
Proximity	Energetic	IR	10 ... 350 mm [1]	PNP	Light/dark, selectable	WTE15-P2411	1043314
				PNP/NPN	Light	WTE15-B2411	1043317
	BGS	Red PinPoint	4 ... 200 mm [1]	PNP	Light/dark, selectable	WTB15-P2431	1044305
				NPN	Light/dark, selectable	WTB15-N2431	1044306
				PNP/NPN	Dark	WTB15-A2431	1043325
					Light	WTB15-B2431	1043326
Retro-reflective	Standard	Red	0.035 ... 5 m (PL80A)	PNP	Light/dark, selectable	WL15-P2430	1043321
				PNP/NPN	Dark	WL15-A2430	1043323
				PNP	Light/dark, selectable	WL15-F2433	1043319
Through-beam	Standard	Red	0 ... 5 m	PNP/NPN	Dark	WSE15-A2430	1043327
					Light	WSE15-B2430	1043328

[1] Objects to be detected having 90% remission (based on DIN 5033 Standard White)

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Universal clamp system (UKS)	–	Stainless steel	–	BEF-KHS-N06N	2051622
Mounting bracket M18	90° bracket	Zinc plated steel	–	BEF-WN-M18	5308446
Mounting bracket	With rotating insert	ABS	–	MB-BS18MM-M4	2049694
Reflector	2-hole mounting	PMMA/ABS	40 x 60	PL40A	1012720
Reflective tape for photoelectric sensors	–	Acrylic	Roll: 25 x 22.8 [1]	REF-PLUS-R25	5319929

[1] Rolls can also be supplied cut to customized size

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146

K

Product description

The ELF sensor is a miniature photoelectric sensor with basic functions packed into a housing, which is optimized for customer demands. Standard applications reside in the short range. Examples of applications are conveyor systems, vending machines, packaging lines, or other standard on/off applications. The ELF sensor does not have specific adjustment possibilities or additional functions.

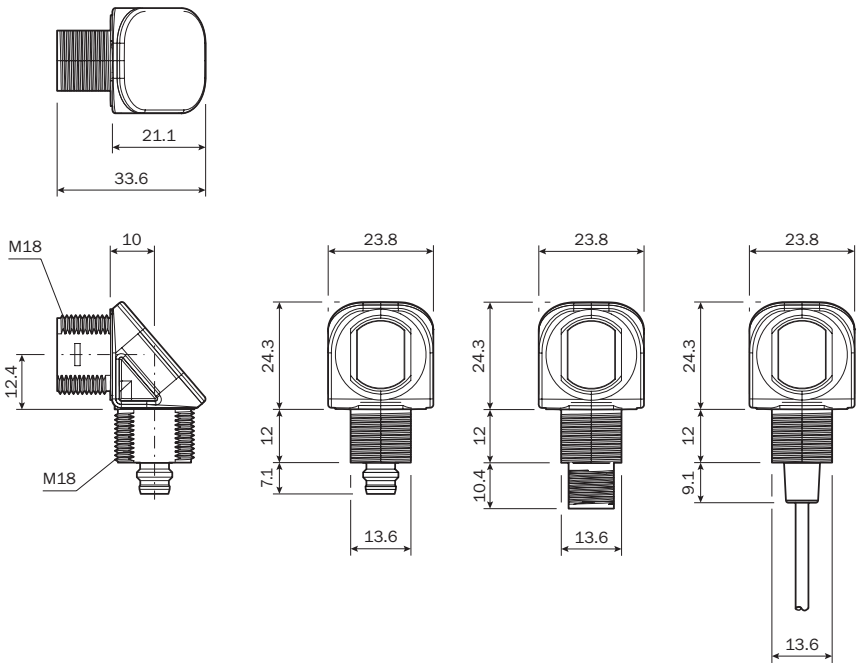
At a glance

- Integrated M18 threads for front and base mounting
- Integrated ASIC-technology by SICK guarantees the best optical performance
- Photoelectric proximity and retro-reflective sensors with different sensing ranges
- Available as cable, M8 and M12 plug types
- Clear back cover for highly visible power and output indication

Your benefits

- Fast and cost-effective mounting solutions
- Only little view space required behind the sensor
- Convenient handling, perfect display LED visibility, adjustment possibilities
- Economical hybrid sensor type for cost-sensible applications
- More flexibility caused by multiple sensing ranges

Dimensions



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/ELF

Technical details and ordering information

- Light source: Red light
- Enclosure rating: IP 67
- Supply voltage: 10 ... 30 V DC
- Output type: PNP
- Housing material: plastic

Sensor type	Sensing technology	Sensing range	Light source	Output type	Connection	Model name	Part no.
Proximity	BGB	1 ... 50 mm	Infrared	PNP, light	Cable, 2m	ET3-P3215	1045187
					Plug M12, 4-pin	ET3-P3228	1045211
					Plug M8, 4-pin	ET3-P3238	1045219
	Energetic	1 ... 100 mm	Infrared	PNP, light	Cable, 2m	ET3-P4215	1045191
					Plug M12, 4-pin	ET3-P4228	1045215
					Plug M8, 4-pin	ET3-P4238	1045281
Retro-reflective	Standard	0 ...4,8 m [1]	Red	PNP, dark	Cable, 2m	EL3-F2415	1043961
					Plug M12, 4-pin	EL3-F2428	1044705
					Plug M8, 4-pin	EL3-F2438	1044717

[1] PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Model name	Part no.
Mounting bracket	90° bracket	Zinc-plated steel	–	BEF-WN-M18	5308446
		Stainless steel	–	MB-W1000	7023800
Reflector	2-hole mounting	Plastic	52 x 62	P250	5304812
			20 x 60	PL20A	1012719
			40 x 60	PL40A	1012720
			84 x 84	PL80A	1003865

Cables and connectors → p. 142
Additional reflectors → p. 148
Additional mounting brackets → p. 146

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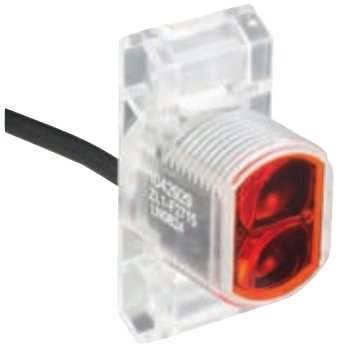


Product description

The Z photoelectric sensor family incorporates SICK technology into a clear housing design that provides 360° status indication for presence detection applications. These sensors have an IP 67 enclosure rating for harsh environments and offer a high level of functionality at a low cost. In addition, customers can choose the cable length, connectors, brackets and more to suit their specific needs.

At a glance

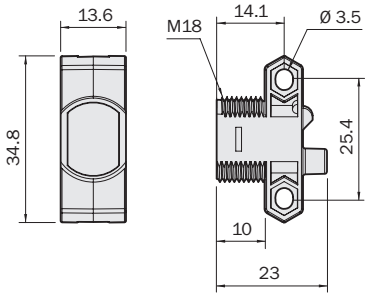
- Optical and electronical elements can be integrated into specific housings
- The Z1 and Z2 models come with integrated M18 threads. The Z3 model, or the “Eyeball”, can be aligned in any direction, just like the human eye 18 mm front and flange mounting possibility
- The eyeball-shaped housing allows for infinite adjustability and the indicator LED to be seen from 360° around the device.
- Compact, transparent housing
- Proximity sensors with 3 different sensing ranges and retro-reflective sensors are available

Your benefits

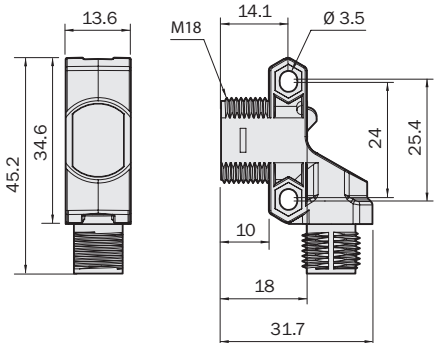
- Customer-specific housing modifications
- Simple and unique mounting options lower installation costs
- Compatibility with competitor products for easy integration into existing systems
- Low-cost sensor for standard applications with small sensing distances
- Small size fits applications with limited space
- High performance at a low cost

Dimensions

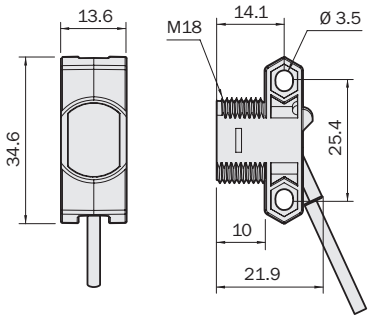
ZT1 /ZL1



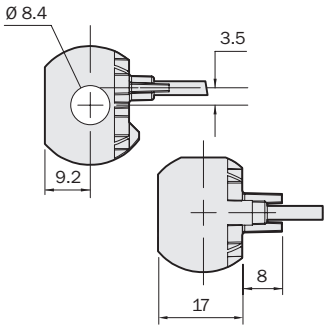
ZT2



ZL2



ZL3



www.mysick.com/en/Z-Sensor

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

Technical details and ordering information

- Light source: Red light
- Enclosure rating: IP 67
- Supply voltage: 10 ... 30 V DC
- Housing material: Plastic

Sensor type	Sensing technology	Light source	Sensing range	Output type	Connection	Model name	Part no.
Proximity	BGS	Infrared	0 ... 50 mm	NPN, light	Cable, PVC, 2 m	ZT1-N3215	1045562
	Energetic, V-optics	Infrared	5 ... 155 mm	PNP, light	Plug M12, 4-pin	ZT2-P5228	1045469
Retro-reflective	Standard	Red light	0 ... 4,8 m [1]	PNP, light	Cable, PVC, 2 m	ZL1-P2415	1045497
				NPN, dark	Cable, PVC, 2 m	ZL2-E2415	1045390
				PNP, dark	Pigtail M12, 4-pin, 150 mm	ZL1-F2421	1045502
					Plug M12, 4-pin	ZL2-F2428	1045371
					Pigtail M12, 4-pin, 150 mm	ZL3-F2421	1045535

[1] PL80A

Recommended accessories

Name	Design	Material	Dimensions [mm]	Comment	Model name	Part no.
Mounting bracket	With rotary insert	–	–	For Z1, Z2, Z3	MB-BS18MM-M4	2049694
				For Z3	MB-BS24MM-M4	2049695
	90° bracket	Zinc-plated steel	–	For Z1, Z2	BEF-WN-M18	5308446
		Stainless steel	–	For Z1, Z2	MB-W1000	7023800
Reflector	2-hole mounting	Plastic	52 x 62	–	P250	5304812
			20 x 60	–	PL20A	1012719
			40 x 60	–	PL40A	1012720
			84 x 84	–	PL80A	1003865

Cables and connectors ➔ p. 142 Additional reflectors ➔ p. 148 Additional mounting brackets ➔ p. 146

K

In another jam?
We can help.

ZLM
The ZLM in industrial use

WTR
Detection of car tires

WTR
The WTR with attached solenoid valve

Sensors designed for accumulation on roller conveyors

The sensors are designed to support the accumulation and zone control process on roller conveyors in material handling and logistics operations. They help regulate the flow and accumulation materials and products at distribution stations. All with no complicated programming and less cabling, thus increasing the availability of the conveyor systems.

WTR and WLR: “3 in 1” – photoelectric proximity sensors and specialized photoelectric sensors combined with valves and logic to form a compact unit for buffering of conveyed products without pressure. The special slimline housing in the top section of the WTR and WLR allows easy mounting under or between the rollers of a conveyor system. At the same time, this mounting method offers protection against damage and reduces the amount of cabling required by integrating the components.

The ZLM1 contains the logic and valve for control of the accumulation conveyor and is the ideal solution for installation in the side tray rollers. Suitable photoelectric or inductive SICK sensors can be connected to the ZLM1. Furthermore, the ZLM1 can be easily combined to operate with the WTR or WLR.

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Sensors for roller conveyors & zone control

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Product description

WTR sensors control the material flow on accumulation conveyors. They ensure very high availability of the conveyor systems by controlling the material flow, thus reducing the costs. The integrated or separate logic modules eliminate any need for programming, with less cabling required as well. The photoelectric proximity sensor, valves, and logic form a functional unit. However, they are also available separately as modules (WTR sensor, ZLM logic module, valve), offering many solution options for the designer. A core element is the sensor with its long, adjustable sensing range and background suppression for reliable detection of the conveyed products. The special slimline housing in the top section of the WTR fits between all common roller spacings. At the same time, this mounting method offers protection against damage and simplifies installation.

At a glance

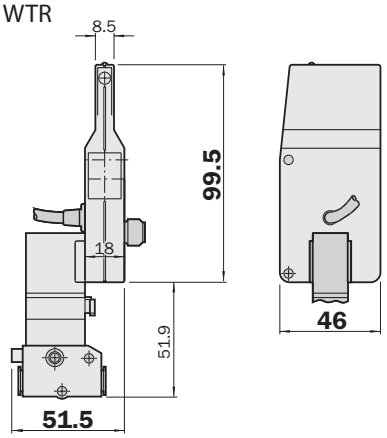
- Sensor, logic, and valve in one housing
- Housing design adapted to suit roller conveyor modules
- Precise background suppression with photoelectric proximity sensors with long, adjustable sensing range
- Integrated logic ensures controlled flow of goods from conveyor systems e.g. single feed & block feed or single/block release
- Electrical output for motor actuation or integrated solenoid valve
- Modular structure (with/without solenoid valve or motor actuation, with/without logic)

Your benefits

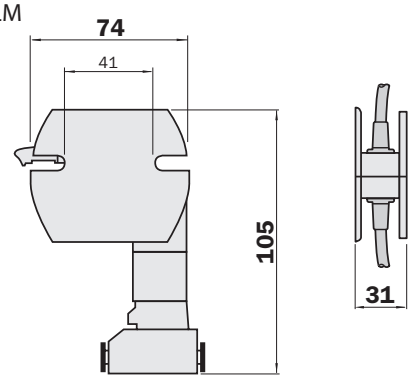
- All-in-one solution: sensor + logic + valve in one housing
- Space-saving and protected mounting, integration below conveying level
- Reliable detection of the transported products and containers without the addition of reflectors
- The ideal standalone solution, saving cabling, simplifying control, and permitting the modular expansion of conveyor systems
- Controlled flow of goods with starting/stopping within a conveyor belt – easy and reliable
- Very high availability of the conveyor systems thanks to controlled flow of material – and therefore reduced costs
- Flexible process engineering through modularity

Dimensions

WTR



ZLM



Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

www.mysick.com/en/WTR

Technical details and ordering information

- Sensor type: photoelectric proximity sensor
- Sensing range: 60 ... 900 mm (500 mm), adjustable
- Adjustment range: 300 ... 900 mm (500 mm)
- Separate ZLM logic module: see www.sick.com

WTR

Actuator control	Logic	Operating mode	Output type	Sensing range	Connection	Model name	Part no.
Electric	No logic	Light	PNP	900 mm	M12, 4-pin	WTR2-P511	1015158
		Dark	PNP	900 mm	M12, 4-pin	WTR2-P521	1015074
		Dark, pin 4	PNP	900 mm	M12, 4-pin	WTR2-P521S09	1024302
		Light & Dark	PNP	900 mm	M12, 4-pin	WTR2-P551S08	1022927
			NPN	900 mm	M12, 4-pin	WTR2-N551	1018877
Pneumatic	Single	Air-to-Drive	PNP	900 mm	M12, 4-pin, 1.2 m	WTR1-P421S02	1015388
					M12, 4-pin	WTR1-P421	1013260
Penumatic	Single	Air-to-Brake	PNP	500 mm	M12, 4-pin, 1.2 m	WTR1-P721S11	1018923
		Air-to-Brake	PNP	900 mm	M12, 4-pin, 1.2 m	WTR1-P721	1015301
Electric	Single, sleep function	Dark	PNP	900 mm	M12, 4-pin to motor	WTR2-P621S27	1042271
					Cable 1.2 m to motor	WTR2-P621S22	1040597

ZLM

- Connection to following ZLM: M12, 4-pin

Mode of operation	Connection type to the sensor	Model name	Part no.
Air-to-brake	Cable with receptacle, M12, 4-pin	ZLM1-B1612E42	7028842
	Cable with receptacle, M8, 4-pin	ZLM1-B1622E42	7028844
Air-to-drive	Cable with receptacle, M12, 4-pin	ZLM1-B1612E43	7028843
	Cable with receptacle, M8, 4-pin	ZLM1-B1622E43	7028845

Recommended accessories

Name	Material	Model name	Part no.
Mounting bracket, large	Zinc plated steel	BEF-WN-WTR	2017417
Mounting bracket, small	Zinc plated steel	BEF-WK-WTR	2051786

Cables and connectors ➔ p. 142
Additional mounting brackets ➔ p. 146

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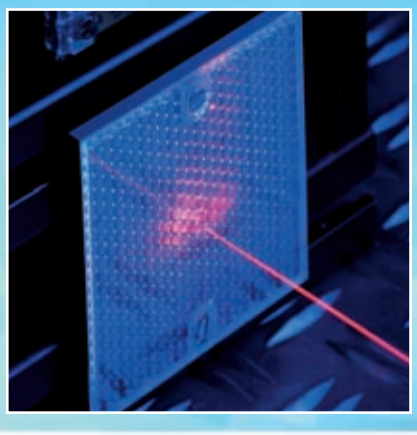
Accessories from SICK.
To suit any application.



A winning combination: sensors and accessories from SICK

For optimal integration of sensors in to your systems, the use of perfectly matched accessories is indispensable.

Reliable signal transmission is critical to productivity – high-quality connectivity components with long service life can lower your costs. That is why SICK offers the right connection systems for any application in any industry, whether material handling, packaging, automotive, or the food and beverage industry. The extensive range of plug connectors and junction boxes makes it possible to achieve the right cabling for every application, even under the harshest and most difficult conditions.

The requirements of mounting systems for sensors are just as diverse as their areas of application. Whether for fine adjustment on precision machines or protection from extreme ambient conditions, SICK offers the right solutions with clever mounting concepts for the installation, alignment, and protection of SICK industrial sensors. Efficient and functional.

Whether round or rectangular, made from plastic or from glass, self adhesive or screwed in place, as a reflector or reflective tape: it's the reflectors specially developed for optical sensors that make it possible for SICK photoelectric retro-reflective sensors to reach their full potential – even with a critical light environment, extreme temperatures, or aggressive ambient conditions.

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Accessories

M

Product description

A wide range of terminal screwed male and female connectors allows the user to implement their own customized wiring solutions. Different lengths and qualities of cable can be put together to suit the application, quickly and smoothly. Connecting cables, having a molded round connector on one end and the other end open, offer a maximum of flexibility for the wiring of sensors. Permanently molded cables with molded round connectors on both ends are used as extension cables for connecting to sensor/actuator junction boxes or fieldbus modules. The molding on both ends is especially good at protecting against humidity and contamination. Both connecting cables and extension cables are available in PVC, PUR, and IP 69K models.

At a glance

- Terminal screwed connectors with screw connection or push-in connection (M8 angled)
- Connecting and extension cables with PUR cable for flexible and demanding areas of application. Very high resistance to oils, lubricants, and coolants.
- Connecting and extension cables with PVC cable for use with medium mechanical stresses in dry zones, such as assembly lines, packaging, and material handling. The outer sheath features good resistance to chemicals, but PVC has only limited resistance to lubricants and coolants.
- Connecting and extension cables from the IP 69K series are especially suitable for use in the food and beverage industry due to their high resistance to chemicals, acids, alkalis, and cleaning agents

Your benefits

- Operational reliability because the connection systems are designed for the sensors
- High quality components with long service life helps reduce costs
- Reliable signal transmission is critical to high productivity

CE

M

Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

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Technical details and ordering information

Connecting cables

Connection	Contacts	Design	Cable	Length [m]	Model name	Part no.
M8	3	Female connector, straight	PVC, orange	2	DOL-0803-G02M	6010785
				5	DOL-0803-G05M	6022009
			PUR, black	2	DOL-0803-G02MC	6025888
				5	DOL-0803-G05MC	6025889
			PVC, orange, IP 69k	2	DOL-0803-G02MN	6033664
				5	DOL-0803-G05MN	6033665
		Female connector, angled	PVC, orange	2	DOL-0803-W02M	6008489
				5	DOL-0803-W05M	6022010
			PUR, black	2	DOL-0803-W02MC	6025891
				5	DOL-0803-W05MC	6025892
			PVC, orange, IP 69k	2	DOL-0803-W02MN	6033667
				5	DOL-0803-W05MN	6033668
	4	Female connector, straight	PVC, orange	2	DOL-0804-G02M	6009870
				5	DOL-0804-G05M	6009872
			PUR, black	2	DOL-0804-G02MC	6025894
				5	DOL-0804-G05MC	6025895
			PVC, orange, IP 69k	2	DOL-0804-G02MN	6033670
				5	DOL-0804-G05MN	6033671
		Female connector, angled	PVC, orange	2	DOL-0804-W02M	6009871
				5	DOL-0804-W05M	6009873
			PUR, black	2	DOL-0804-W02MC	6025897
				5	DOL-0804-W05MC	6025898
			PVC, orange, IP 69k	2	DOL-0804-W02MN	6033673
				5	DOL-0804-W05MN	6033674
M12	4	Female connector, straight	PVC, orange	2	DOL-1204-G02M	6009382
				5	DOL-1204-G05M	6009866
			PUR, black	2	DOL-1204-G02MC	6025900
				5	DOL-1204-G05MC	6025901
			PVC, orange, IP 69k	2	DOL-1204-G02MN	6028128
				5	DOL-1204-G05MN	6028130
		Female connector, angled	PVC, orange	2	DOL-1204-W02M	6009383
				5	DOL-1204-W05M	6009867
			PUR, black	2	DOL-1204-W02MC	6025903
				5	DOL-1204-W05MC	6025904
			PVC, orange, IP 69k	2	DOL-1204-W02MN	6028129
				5	DOL-1204-W05MN	6028131
		Female connector, angled, 3xLED	PVC, orange, IP 69k	2	DOL-1204-L02MN	6028136
				5	DOL-1204-L05MN	6028137

continued on page 144

M

Connection	Contacts	Design	Cable	Length [m]	Model name	Part no.
M12	5	Female connector, straight	PVC, orange	2	DOL-1205–G02M	6008899
				5	DOL-1205-G05M	6009868
			PUR, black	2	DOL-1205-G02MC	6025906
				5	DOL-1205-G05MC	6025907
			PVC, orange, “hygienic and wet zones”	2	DOL-1205-G02MN	6028140
				5	DOL-1205-G05MN	6028141
		Female connector, angled	PVC, orange	2	DOL-1205–W02M	6008900
				5	DOL-1205-W05M	6009869
			PUR, black	2	DOL-1205-W02MC	6025906
				5	DOL-1205-W05MC	6025907

Extension cables

Female connection	Female contacts	Male connection	Male contacts	Design	Cable	Length [m]	Model name	Part no.
M8	3	M8	3	Female connector, straight / male connector, straight	PUR, black	0.6	DSL-0803-G0M6C	6029404
						2	DSL-0803-G02MC	6029406
		M12	3	Female connector, straight / male connector, straight	PVC, orange	0.6	DSL-8203-G0M6	6022570
						2	DSL-8203-G02M	6022572
					PUR, black	0.6	DSL-8203-G0M6C	6025914
						2	DSL-8203-G02MC	6025915
				Female connector, angled / male connector, straight	PUR, black	0.6	DSL-8203-B0M6C	6025916
						2	DSL-8203-B02MC	6025917
	4	M8	4	Female connector, straight / male connector, straight	PVC, orange	0.6	DSL-0804-G0M6	6034664
						2	DSL-0804-G02M	6034665
					PUR, black	0.6	DSL-0804-G0M6C	6039089
						2	DSL-0804-G02MC	6036335
		M12	4	Female connector, straight / male connector, straight	PVC, orange	0.6	DSL-8204-G0M6	6022571
						2	DSL-8204-G02M	6022573
					PUR, black	0.6	DSL-8204-G0M6C	6025918
						2	DSL-8204-G02MC	6025919
				Female connector, angled / male connector, straight	PUR, black	0.6	DSL-8204-B0M6C	6025920
						2	DSL-8204-B02MC	6025921
M12	3	M8	3	Female connector, straight / male connector, straight	PVC, orange	0.6	DSL-1203-G0M6	6022564
						2	DSL-1203-G02M	6022566
		M12	3	Female connector, straight / male connector, straight	PUR, black	0.6	DSL-1203-G0M6C	6025922
						2	DSL-1203-G02MC	6025923

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Female connection	Female contacts	Male connection	Male contacts	Design	Cable	Length [m]	Model name	Part no.
M12	4	M8	3	Female connector, straight / male connector, straight	PUR, black	0.6	DSL-2803-G0M6C	6039183
						2	DSL-2803-G02MC	6039184
			4	Female connector, straight / male connector, straight	PUR, black	0.6	DSL-2804-G0M6C	6037595
						2	DSL-2804-G02MC	6039180
		M12	4	Female connector, straight / male connector, straight	PVC, orange	2	DSL-1204-G02M	6022567
						5	DSL-1204-G05M	6022569
					PUR, black	0.6	DSL-1204-G0M6C	6025926
						2	DSL-1204-G02MC	6025927
					PVC, orange, “hygienic and wet zones”	0.6	DSL-1204-G0M6N	6028194
						2	DSL-1204-G02MN	6028195
				Female connector, angled / male connector, straight	PUR, black	0.6	DSL-1204-B0M6C	6025928
						2	DSL-1204-B02MC	6025929
					PVC, orange	0.6	DSL-1204-B0M6N	6028197
						2	DSL-1204-B02MN	6028198
	5	M12	5	Female connector, straight / male connector, straight	PUR, black	0.6	DSL-1205-G0M6C	6025930
						2	DSL-1205-G02MC	6025931

Terminal screwed round connectors

Connection	Contacts	Design	Cable diameter [mm]	Locking nut material	Model name	Part no.
M8	3	Female connector, straight	3.5 ... 5	CuZn	DOS-0803-G	7902077
		Female connector, angled	4 ... 5	CuZn	DOS-0803-W	7902078
		Male connector, straight	3.5 ... 5	CuZn	STE-0803-G	6037322
	4	Female connector, straight	3.5 ... 5	CuZn	DOS-0804-G	6009974
		Female connector, angled	4 ... 5	CuZn	DOS-0804-W	6009975
		Male connector, straight	3.5 ... 5	CuZn	STE-0804-G	6037323
M12	4	Female connector, straight	3 ... 6.5	CuZn	DOS-1204-G	6007302
				Stainless steel	DOS-1204-GN	6028357
		Female connector, angled	3 ... 6.5	CuZn	DOS-1204-W	6007303
				Stainless steel	DOS-1204-WN	6028358
		Male connector, straight	3 ... 6.5	CuZn	STE-1204-G	6009932
	5	Female connector, straight	3 ... 6.5	CuZn	DOS-1205-G	6009719
		Female connector, angled	3 ... 6.5	CuZn	DOS-1205-W	6009720
		Male connector, straight	3 ... 6.5	CuZn	STE-1205-G	6022083

M

Product description

To integrate SICK sensors perfectly into a machine or system, mounting equipment tailored precisely to the sensors is required. Whether for fine adjustment on precision machines or protection from extreme ambient conditions, such as in the timber industry, SICK offers the right systems and products for the mounting, alignment, and protection of SICK sensors. For special applications, we also offer the option of working closely with you to develop customized mounting elements for your systems and requirements, which we then deliver together with the sensor.

At a glance

- Mounting systems, designed for SICK's sensor series
- A wide range of mounting brackets and plates to choose from for easy sensor mounting
- Flexible sensor alignment which is right for the application with SICK's universal clamp system
- Protective devices shield sensors from mechanical stresses or protect from weather, which could impair the functioning of the sensors
- Application-specific solutions possible for sensor mounting, alignment, or protection

Your benefits

- Fast commissioning and maintenance of systems and machines due to simple, practical sensor mounting
- Optimum alignment of the sensor to the object using the universal clamp system
- Prevention of sensor damage and securing of sensor functionality with the aid of SICK sensor protection solutions

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Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

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Technical details and ordering information

Universal clamp system

- For rod diameter 12 mm
- Material: stainless steel (1.4408) (also available in zinc plated steel)

Description	Included in delivery	For series...	Model name	Part no.
Plate 8 for universal clamp	Universal clamp and mounting hardware	W160, W4S-3 Inox, W11-2, W12-3, W250	BEF-KHS-N02N	2051618
Plate 3 for universal clamp	Universal clamp and mounting hardware	W11-2, W12-3, W14-2, W18-3, W24-2, PL20A, PL30A, PL40A, PL50A, PL80A, P250	BEF-KHS-N03N	2051619
Plate 4 for universal clamp	Universal clamp and mounting hardware	W11-2, W12-3, W14-2, W18-3, W23-2, W24-2, W27-3, W260, W280, W30, W32, W34, W36, PL20A, PL40A, PL50A, PL80A, P250	BEF-KHS-N04N	2051620
Plate 5 for universal clamp	Universal clamp and mounting hardware	V12-2	BEF-KHS-N05N	2051621
Plate 6 for universal clamp	Universal clamp and mounting hardware	MH15, V18, W4-3, W15	BEF-KHS-N06N	2051622
Plate 7 for universal clamp	Universal clamp and mounting hardware	PL20A, PL40A, PL50A, P250, C110	BEF-KHS-N07N	2051623
Plate 8 for universal clamp	Universal clamp and mounting hardware	W4-3, W4S-3, W8, W100, W140, W150, W170, W9-3, W9 Laser	BEF-KHS-N08N	2051616
Universal clamp	–	–	BEF-KHS-KH3N	5322627
Mounting rod, straight	–	–	BEF-MS12G-NA	4058914
Mounting rod, L-shaped	–	–	BEF-MS12L-NA	4058912
Mounting rod, Z-shaped	–	–	BEF-MS12Z-NA	4058916

Mounting brackets and clamps

Description	Material	Included in delivery	For series...	Model name	Part no.
Mounting bracket for wall mounting	Stainless steel (1.4571)	Mounting hardware included	W4-3, W4S-3, W4S-3 Inox, W8, W100	BEF-W4-A	2051628
	Stainless steel (1.4305)	Mounting hardware included	W8, W100	BEF-W100-A	5311520
	Zinc plated steel	Mounting hardware included	W9-3, W9 Laser	BEF-WN-W9-2	2022855
Mounting bracket for floor mounting	Stainless steel (1.4301)	Mounting hardware included	W11-2, W12-3	BEF-WG-W12	2013942
Mounting bracket with articulated arm, floor mounting	Zinc plated steel	Mounting hardware included	W14-2, W18-3	BEF-WN-W18	2009317
			W23-2, W27-3	BEF-WN-W27	2009122
Mounting bracket for floor mounting	Zinc plated steel	–	IM08, IME08, MM08	BEF-WN-M08	5321721
			V12, IM12, IME12, MM12	BEF-WN-M12	5308447
			MH15, V18, IM18, IME18, MM18, CM18	BEF-WN-M18	5308446
Clamping block with fixed stop for cylindrical sensors	PA12, glass fiber reinforced	Mounting hardware included	IM08, IME08, MM08	BEF-KHF-M08	2051478
		Mounting hardware included	V12, IM12, IME12, MM12	BEF-KHF-M12	2051480
		Mounting hardware included	MH15, V18, IM18, IME18, MM18, CM18	BEF-KHF-M18	2051482

Protective devices

Description	Material	Included in delivery	For series...	Model name	Part no.
Protective bracket for floor mounting	Stainless steel (1.4571)	Mounting hardware included	W4S-3, W4S-3 Inox, W8, W100	BEF-SW-W4S	2051497
Protective housing for universal clamp	Zinc plated steel	Universal clamp, mounting hardware	W11-2, W12-3	BEF-SG-W12-3	2045175
			W14-2, W18-3, W23-2, W27-3	BEF-SG-W27	2039601
Dust protection tube, air-purged	Aluminum, anodized	Mounting hardware included	W24-2	OBS-W24	2015069

M

Product description

The quality of the reflector is a crucial factor for the use of a photoelectric retro-reflective sensor. Only in combination with the original SICK reflectors can the full performance of SICK's sensors be realized. This is why SICK offers an especially large range of reflectors. The basic range contains a wealth of standard reflectors in various sizes, round or rectangular, for screw, adhesion or plug-in mounting. Then there are also reflectors available for critical areas of application, such as in the food and beverage industry or in the extreme high or low temperature range, which can be relied on to function correctly even under these difficult conditions. The portfolio is completed by SICK reflective tape, which is used wherever the installation of conventional reflectors is not possible.

At a glance

- Large range of reflectors of various sizes, shapes, and mounting methods
- Chemically resistant reflectors are unaffected by aggressive cleaning agents
- Reflectors with special antifog coating prevent water condensation
- Reflectors for use in high or low temperatures

Your benefits

- SICK has the right reflector for every application
- The CHEM reflectors suffer no damage from aggressive cleaning agents
- Can be used in damp or humid environments, or with rapid temperature fluctuations, without reflector fogging
- Customized reflector solutions are possible for specialized requirements

CE

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Further information

www.mysick.com/products

Enter part number for:

- Dimensional drawings
- Data sheet
- Applications
- Additional accessories

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Technical details and ordering information

Reflectors

- Suitable for sensors with polarizing filter
- Material: plastic

Design	Description	Dimensions reflection area [mm]	Model name	Part no.
Round	Self adhesive	Ø 22	PL22-2	1003621
	M4 setscrew	Ø 21	P25	5315172
	1-hole mounting	Ø 80	C110A	5304549
Rectangular	2-hole mounting	15 x 38	PL20A	1012719
		28 x 56	PL30A	1002314
		37 x 56	PL40A	1012720
		47 x 47	P250	5304812
	M6 setscrew	45 x 75	PL72-2	5322723
	2-hole mounting	80 x 80	PL80A	1003865
		18 x 18	PL10F [1]	5311210
		16 x 38	PL20F [1]	5308844
		47 x 47	PL250F [1]	5308843

[1] Suitable for laser sensors

Special reflectors

- Suitable for sensors with polarizing filter

Design	Description	Dimensions [mm]	Enclosure rating / certification	Model name	Part no.
Round	High-temperature reflector, up to 300 °C	Ø 60	–	OP61	1002627
Rectangular	High-temperature reflector, up to 110 °C	47 x 47	–	P250H	5315124
	Antifog reflector	37 x 56	–	PL40A Antifog	5322011
	Reflector with integrated regulated heating	width across flats 48	–	PL50HS	1009871
	Chemically resistant reflector up to 140 °C	15 x 38	IP 69K, ECOLAB, TÜV Rheinland	PL20CHEM	5321089
		47 x 47	IP 69K, ECOLAB, TÜV Rheinland	P250CHEM	5321097
		18 x 18	IP 69K, ECOLAB, TÜV Rheinland	PL10F-CHEM [1]	5321636
		15 x 38	IP 69K, ECOLAB, TÜV Rheinland	PL20F-CHEM [1]	5326089
		37 x 56	IP 69K, ECOLAB, TÜV Rheinland	PL40B-CHEM	5326088

[1] Suitable for laser sensors

Reflective tape

- Suitable for sensors with polarizing filter

Description	Ambient temperature for operation [°C]	Dimensions [mm]	Model name	Part no.
Reflective tape, self adhesive, for laser sensors	–20 ... 60	56.3 mm x 56.3 mm	REF-AC1000-56 [2]	4063030
Reflective tape, selfadhesive, roll	–20 ... 60	Roll 22.8 mm x 25 m [1]	REF-PLUS-R25	5319929
		Roll 22.8 mm x 50 m [1]	REF-PLUS-R50	5319981
		Roll 22.8 mm x 100 m [1]	REF-PLUS-R100	5319915

[1] Rolls can also be supplied cut to customized size

[2] Suitable for laser sensors

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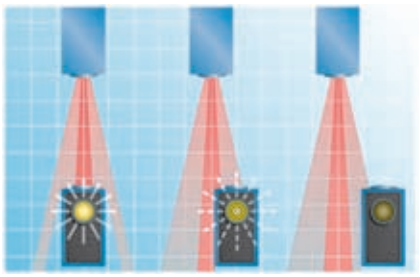
Technical terms in the field of automation

Alignment aid

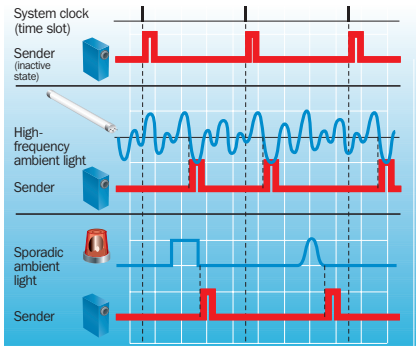
Optical and electronic alignment aids are used for quickly and easily aligning sensors to receiver elements, reflectors, or objects to be detected. This is especially important when the emitted light beam is difficult or impossible to see and when long distances need to be crossed, sometimes up to several hundred meters. An alignment sight is the simplest form of optical alignment aid. It is mainly used for rough alignment. Fine adjustment of a sensor is generally done with the assistance of optical indicators on the device. Alignment accuracy is indicated by these indicators lighting up, flashing, and going out; sometimes also by a red/green LED changing color. The visible red light of many sensors provides further aid. It can be seen clearly when aligning the sensors as a light spot on a reflector or an object to be detected.



↑ Optical alignment aid

Ambient light immunity

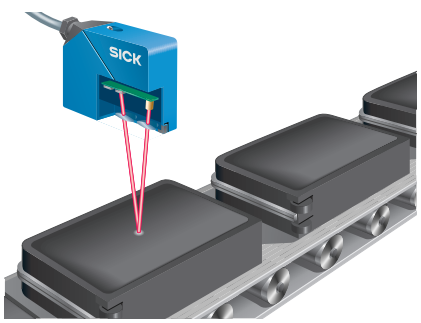
To detect objects, photoelectric retro-reflective and proximity sensors evaluate their own emitted light or its reflection from a reflector or the surface of a scanned object. At the same time, other light sources emit light too – from the sun to sources of high-frequency radiation. This light is known as ambient light. This light should not be allowed to affect the sensors, otherwise incorrect switching could occur. Therefore one of the central requirements of users is maximum immunity to ambient light, especially to high-frequency lights or strobe warning lamps, without reducing the performance of the sensors.



The sender only issues a pulse during a defined timeframe, and the receiver unit is only active during that timeframe, and observes the surroundings. If the receiver does not detect any interfering pulses, the emitted pulse is set at the end of the timeframe and detection is then carried out. If periodic interference occurs, the intelligent electronics determine the most favorable time for detection and adjusts itself accordingly. The optical sensor is then able to process only its own emitted light in that interference-free zone.

Background suppression, BGS

Photoelectric proximity sensors use the reflective characteristics of the scanned objects for their detection. In the case of energetic sensors, that means: light colored surface = sensing range; dark objects = shorter sensing range. These devices reach their limits especially in cases where dark objects need to be detected against a light background, as the volume of light from the plane behind the object to be detected creates glare, which “dazzles” the energetic sensor. In such cases, photoelectric proximity sensors with background suppression are the appropriate solution. These devices operate on the “glare-free” triangulation principle, with two separate receiver elements for detecting the reflection from a scanned object. BGS works as follows: The BGS photoelectric proximity sensor is set with its light spot positioned on the object to be detected in such a way that the reflection is detected solely by receiver E2. Anything lying behind that focal plane is suppressed. The possible distance between the object surface and the background plane varies depending on the reflectance of the object to be detected (see illustration). When the object leaves the sensor’s range of detection, the angle of reflection changes. The reflected beam is detected by receiver element E1 instead and is suppressed electronically. Incorrect switching does not occur.



↑ Principle of operation of background suppression

Cable

PUR cable:

- Oil-resistant cable
- Not resistant to hydrolysis

PVC cable

- Not for long-term use in surroundings containing oil
- Not ozone- or UV-resistant PUR-PVC cable
- A PVC cable sheathed with PUR

Due to the risk of breakage, the cables must not be moved after the temperature falls below –5 °C.

Capacitive proximity sensors

Capacitive proximity sensors detect metallic and non-metallic objects. The sensing range increases with the dielectric constant of the object to be detected. They are used in applications such as the following:

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- Level monitoring when filling containers
- Level monitoring of bulk materials
- Final inspection in packaging processes

Conformity

Consumer and capital goods sold in the European internal market must comply with specific guidelines and directives. Opto-electronic sensors are governed primarily by two laws:

- The EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC.
- By affixing the CE marking to the product, SICK, as the manufacturer, declares the requirements set out in these Directives to be fulfilled.

The operation of electrical devices in the USA is subject to federal regulations and is governed by the OSHA (Occupational Safety and Health Act) and the NEC (National Electrical Code). Testing and inspection is carried out by Underwriters Laboratories, which also issues the necessary marking. “R” here stands for “recognized” and means that the sensor has component approval.

The conditions of approval must be observed and complied with when the component is used. Devices with individual approval and an approval number from Underwriters Laboratories bear the letter “L” for “Listed” in the logo. This marking permits the authority to carry out unannounced inspection of production facilities.

In Canada, the operating regulations for electrical systems and components are subject to the Canadian Electrical Code (CEC). It prescribes CSA conformity for all devices. The corresponding marking is issued by the Canadian Standards Association following successful individual inspection.

Alternatively, UL offers a combined certification for the USA and Canada.

Depending on the likelihood of potentially explosive atmospheres, electrical equipment for use in such areas may need to be designed, marked, and certified by an independent testing and inspection authority, such as the Physikalisch Technischer Bundesanstalt in Braunschweig, Germany.

Contamination control

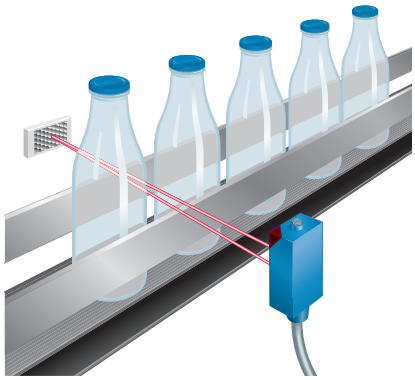
Photoelectric retro-reflective sensors and proximity sensors sensor when the received light signal is clearly over a programmed switching threshold. Mist, dust, dirt, water spray, and cleaning work in the system are just a few of the things that can result in deposits forming on the device optics or reflectors over time. This causes the level of received light to fall, approaching the set switching threshold. If the level drops below the threshold, the device is no longer able to detect objects. To give the user early warning of an impending device failure due to contamination, most SICK devices are equipped with contamination control. If the intensity of the received light is less than 50% over the switching threshold, the receive indicator starts flashing. Some devices also offer a signaling output separate from the switching outputs for the purpose of monitoring the contamination level.

Continuous threshold adaptation

Sensors designed for the detection of transparent objects feature continuous threshold adaptation, which ensures adaptation to optical conditions. For example, if these are impaired due to contamination, such as dust deposited on the sensor lenses, the sensor signals this and adjusts itself to the new conditions with the aid of continuous threshold adaptation. This guarantees enhanced availability even under harsh and contaminant-heavy application conditions.

Detection of transparent objects

Transparent objects such as clear plastic wrapping, transparent cellulose paper, transparent labeling film, glass bottles, and filled PET mineral water bottles, have long been considered some of the hardest objects to detect in the packaging and filling industries. Moreover, the gradual contamination of the sensors by escaping product, dust, vapors, or water spray impairs reliable detection considerably, because the “dirty” reflector signal gradually approaches the switching threshold, often leading to incorrect switching after even short periods of time. In contrast, the “glass detection method” applied offers a high degree of detection and switching reliability. This method centers on retaining the level interval of the reflector and the switching signal. The switching threshold is set to the



↑ Detection of transparent objects

unimpeded light path between the sensor and the reflector. Different operating modes can be selected depending on the signal attenuation expected: microprocessor evaluation is applied to adapt the switching threshold continually to any contamination occurring, with the interval between the reflector signal and the switching threshold being kept constant electronically. As a result, the dirt-attenuated reflector signal does not approach the set switching threshold in such a way as to impede detection. Maintenance of the devices is therefore not necessary until contamination is

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so heavy as to reach the system limits of the glass sensor – in other words, significantly later than with conventional sensors. The signal and the threshold return to the original level automatically after cleaning.

Emitted light configurations

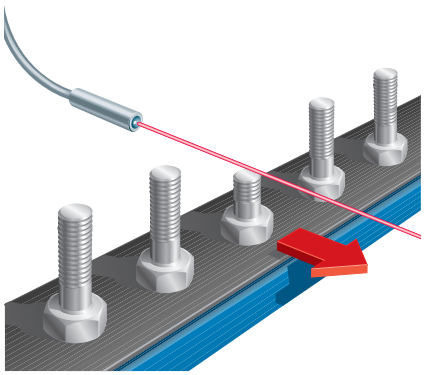
Emitted light can be divergent, convergent, or parallel, depending on the task for which a photoelectric sensor and its light source are designed. Divergent emitted light is used in through-beam systems, for example. The sender and receiver have similar sending and receiving characteristics in terms of the scattering of their beam path. The advantages of this are simple alignment, and insensitivity to oscillations, vibration, and minor misalignment. One particular advantage is the capacity for exact positioning of objects. Precision and the detection of small parts can be improved even more by the use of slotted diaphragms. Photoelectric retro-reflective sensors aligned to reflectors usually operate on the same principle. In some cases, the lack of resolution of the divergent emitted light can prove to be critical. One advantage is the lower amount of cabling required. If small objects need to be detected in rapid succession with a high degree of accuracy, specially designed photoelectric proximity sensors are used. The path of their emitted light beam is convergent, i.e. merging, with a point of intersection at a defined distance – which is termed the focal plane. This is the exact point at which the generated light spot is smallest, which means precise object detection at higher resolution. In order to make use of these advantages, various requirements must be fulfilled including mounting that is virtually free of vibration, and a constant scanning distance. With laser diodes, largely parallel light can be generated. This has the advantage of long sensing ranges due to its minimal diffusion. A further plus for laser technology is the small light spot dimensions that can be generated on the objects, permitting detection of even the smallest of objects.

Enclosure ratings

Enclosure ratings indicate the extent of protection of a machine or sensor to touch and to the ingress of impurities and water. The enclosure ratings begin with the letters IP, followed by the first digit, which indicates the degree of protection provided against touch and impurities. The second digit shows the enclosure's protection against the ingress of water. The higher the number, the greater the protection indicated by that digit. Enclosure ratings of IP 65 and higher have established themselves as the standard for industrial applications.

Fiber-optic photoelectric sensors

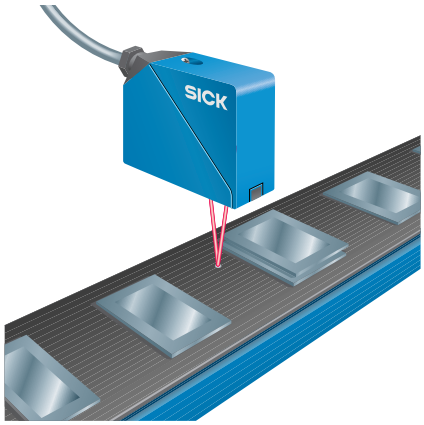
With fiber-optic photoelectric sensors, the sender and receiver are contained in a single housing. For use as a through-beam system, separate fiber-optic cables are used for the sender and the receiver. For a proximity system, the sender and receiver fiber-optic cables are joined in one fiber-optic cable.



↑ Fiber-optic photoelectric sensors

Foreground suppression FGS

The technique of foreground suppression makes it possible to use photoelectric triangulation scanning to detect objects reliably regardless of their height or surface qualities. Foreground suppression is especially useful when surfaces exhibit great variation in reflectivity, or when flat objects on conveyor belts are to be detected, or when the object is highly textured or glossy. FGS works as follows: The FGS photoelectric



↑ Principle of operation of foreground suppression

proximity sensor is set with its visible light spot positioned on the background, such as on a conveyor belt, in such a way that the reflection from that focal plane is detected solely by receiver E1. If that is the case, the electronics close the circuit and a signal is active at the switching output. If an object passes through the area between the focal plane and the sensor, the angle of reflection changes. The reflected beam is detected by receiver element E2 instead. The receive indicator that had been lit up before goes out and the switching signal drops out, meaning the object is detected.

Function indicator

The switched state of the output (low resistance) is indicated by an LED. On some sensors, operational readiness is also signaled by a second LED.

Housing materials

- Nickel-plated brass
- Stainless steel
- Aluminum
- Plastic (PA12, PBT, PPE)

If frequently or constantly exposed to chemicals, operational testing should be performed and/or more information can be requested from SICK.

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Description of the hazard class	Class 1	Class 2	Class 3A	Class 3B *)	Class 4
	Integral safety through design features.	Low power; eyes are normally protected by the blink retro-reflective.	As for Class 2. Looking directly into the beam through optical instruments can be hazardous.	Looking directly into the beam through optical instruments can be hazardous.	High power; even diffuse reflection can be hazard-ous.
Remote interlocks	Not required			To be integrated into room or door power circuits	
Key-operated switch	Not required			Take out the key when not in opera-tion	
Beam attenuator	Not required			Permanently attached devices are to be fitted to attenuate or block the beam	
Beam indicator	Not required			Must indicate when the laser is in operation	
Warning symbol	Not required			Warning symbol instructions must be followed	
Beam path limitation	Not required	Use fixtures to terminate the beam once it reaches the end of its useful path.			
Specular reflection	No preventive measures required			Unintended reflection to be excluded by fixtures	
Protective eyewear	No requirements		Required if design and organizational measures are not possible and the maximum safe radiation levels are exceeded		
Protective clothing	Not required			May be necessary in some cases	According to the special require-ments
Training	No requirements		Required for operating and service personnel		

*) Class 3B lasers that do not exceed five times the limits of Class 2 in the wavelength range from 400 mm to 700 mm are treated like 3A lasers in respect of interlocking, keyswitches, beam warnings, and attenuators.

↑ Summary of the laser protection classes

Hysteresis

The term hysteresis is used to refer to the differential travel between the switch-on point and the switch-off point as attenuating material approaches or retreats. It is necessary for stable switching free of chatter. It is stated as a percentage of the real sensing range, or in mm.

Inductive proximity sensors

Inductive proximity sensors have found a place as reliable indicators in virtually all areas and sectors of industry. They detect metallic objects and are suitable for diverse applications due to their variety of housing shapes and sizes; applications such as the following:

- Position sensing
- Transport monitoring
- Pulse generation
- Rpm monitoring
- Detection of direction of rotation
- Feed and reject control
- Monitoring of idle running or congestion

IO-Link

IO-Link is a neutral, backwards compatible, point-to-point communication system for sensors and actuators below the fieldbus level. This communication technology and its features allow machines and systems to be operated much more effectively.

- Reduction of machine downtimes, setup and changeover times
- Easy setting and management of parameters
- Improved process quality through continuous monitoring of process parameters
- Reduced maintenance costs through problem-oriented diagnostics
- Investment security through open standard transfer of parameters (e.g. scanning distance, hysteresis, etc.) from PLC or IPC direct to the sensor. Thus format or product changes can be handled within a few milliseconds even with inaccessible sensors
- Reduced downtimes through detailed diagnostics (“see what the sensor sees”)

Laser protection classes

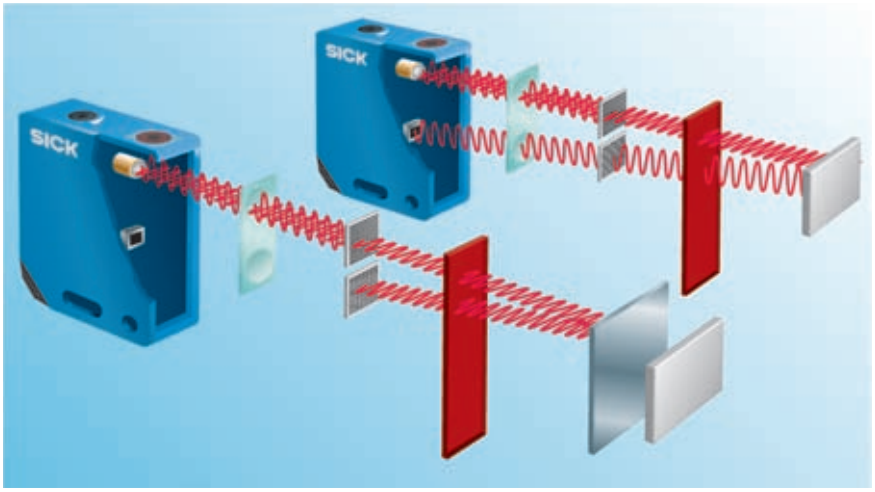
The following table shows a summary of the EN 60825 and VDE 0837 laser classes. For the complete provisions, see the text of the standard.

Magnetic cylinder sensors

For many tasks in automation it is necessary to detect the motions of pneumatic cylinders and to determine their settings exactly. SICK offers specially designed magnetic cylinder sensors for this purpose, which are used to determine the position of the pistons in pneumatic cylinders. They are mounted directly on the cylinder body. They reliably detect a magnet in the piston through the housing wall of aluminum, brass, or stainless steel, and trigger a switching signal. The magnetic cylinder sensors from SICK feature high sensitivity and operating precision, plus practical mounting fittings for all commonly used pneumatic cylinders.

Magnetic proximity sensors

The outstanding feature of magnetic proximity sensors is long sensing ranges, even with small housing sizes. They detect magnetic objects, usually permanent magnets, which are used to trigger switching. As magnetic fields can penetrate many non-magnetizable materials, switching can be triggered even through other materials. By the use of magnetic conductors (such as iron) the magnetic field can also be transported relatively long distances, for example in order to take the signal out of an area of high temperature. The range of possible applications is correspondingly diverse, including:



↑ Polarizing filter

- Object detection through plastic containers/tubes
- Object detection in aggressive media through a protective Teflon wall
- Object detection in high temperature zones
- Detection of coding using magnets

No false triggering on power-up

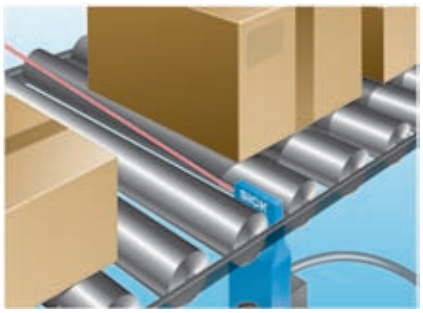
With electronic devices, the start of power supply – in other words, when the device is switched on – is not the same as the normal start of sensor function. First the device electronics check certain operational states. To prevent a false pulse from causing incorrect switching and thus premature starting of systems controlled by the sensor, SICK's photoelectric sensors have an electronic "no false triggering on power-up" feature. It ensures that the switching outputs are not enabled until the device has checked itself completely and successfully for proper functioning – a procedure that can take up to 150 ms depending on the sensor.

Polarizing filter

Photoelectric retro-reflective sensors, aligned to a reflector, detect the presence of objects when the light path is interrupted (i.e. the reflection fails to arrive), triggering a switching signal. Since the objects to be detected may have high-gloss or reflective surfaces – such as stainless steel, aluminum, or tin, for example – the possibility of incorrect detection and switching as a result must be reliably ruled out. This is achieved effectively by the use of polarizing filters. One of these linear filters aligns the randomly oscillating emitted light to a plane of polarization, e.g. horizontal. If the light path is unobstructed, it strikes an optically active reflector, which rotates the plane of polarization by 90°, returning the light vertically polarized. This rotated beam passes back into the device through a second, correspondingly rotated polarizing filter before reaching the photoelectric retro-reflective sensor's receiver element. As a shiny object does not rotate the plane of polarization, however, the light reflected from it remains horizontal and is not detected by the vertically polarized receiver – just as it should be. The object is thus detected as an interruption in the light path, triggering the switching output. Photoelectric retro-reflective sensors with polarizing filters will not be disrupted by surface reflections. However optically transparent materials do pose a problem, such as acrylic glass covers, lamination, or unprinted sections of film. Here it is not the surface shine that is disruptive, but rather the back of the transparent material. Due to their molecular structure, acrylic glass and some optically clear films display a property that rotates the plane of polarization: The polarized light from the light source is rotated when passing through the film medium, for example by 45° from its original direction of oscillation. After reflecting off the back of the material, it passes through the material and rotates 45° again. The total rotation is therefore 90° – or a multiple of that. In such cases the photoelectric retro-reflective sensor can respond in an unintended way. The influence of this disruption is relatively minor, however; reducing the system sensitivity slightly (by turning the sensitivity controller to the left) eliminates the effect. Further improvement can be achieved by altering the scanning angle from the photoelectric sensor to the object surface.

Photoelectric proximity sensor, energetic

The most affordable solution is the energetic photoelectric proximity sensor with adjustable sensitivity. A light colored surface reflects more light than a dark one and can therefore be detected from a greater distance away. To achieve similar results with a dark surface, the sensitivity of the sensor must be increased. Detecting a dark object against a light background is not without its problems for energetic sensors. The object is obscured by glare from the background due to the higher reflectivity of the latter. Light colored objects against dark backgrounds are easier to detect.



↑ Accumulating roller conveyor

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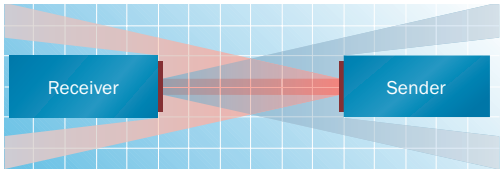
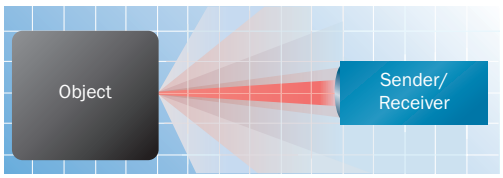
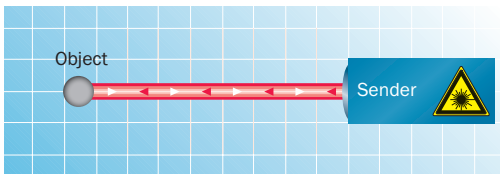


↑ Divergent emitted light: photoelectric through-beam and retro-reflective sensors



↑ Convergent, focused emitted light: photoelectric proximity sensors



↑ Parallel emitted light: laser proximity sensors and photoelectric retro-reflective sensors

Photoelectric proximity sensor for accumulating roller conveyors, BGS

Specially designed for materials handling, these photoelectric proximity sensors between the rollers detect the conveyed product without contact. The detection signal is evaluated in the logic unit and actuated via the valve of the electro-pneumatic cylinder. This technique allows the principle of accumulating conveying to be realized without the use of additional control elements.

Photoelectric proximity sensor with background suppression, BGS

Photoelectric proximity sensors with background suppression (BGS) operate on the basis of the geometric relation between the sending and receiving elements. The sensor is set to the object lying on the sensing plane. Signals from objects lying behind the set scanning plane are suppressed. Photoelectric proximity sensors with background suppression can be disrupted by highly reflective objects in the background, such as panes of glass, polished sheet metal, etc. These effects can increase if there is a non-defined background within the set sensor scanning distance. Shielding or tilting the devices can solve this problem.

Photoelectric proximity sensor with background blanking, BGB

Background blanking can be achieved for photoelectric proximity sensors either optically by changing the geometric relation between the sender and receiver element, or electronically. With the optical solution, the angle between the sent and received beam of light is changed when setting the scanning distance onto the object. Objects at the point of intersection between the two beams are detected. Anything lying behind that is suppressed, as too little or no light from it reaches the receiver element. With the electronic solution, PSD elements (Position Sensitive Device) are used. The sent beam of light is reflected back from the object and strikes the PSD receiver element. Signals from the background are identified as such according to the location of the impinging light beam, and are suppressed electronically.

Photoelectric proximity sensor with foreground suppression, FGS

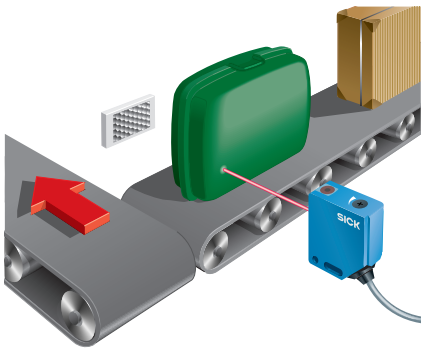
Photoelectric proximity sensors with foreground suppression (FGS) are able to detect objects at a defined scanning distance. All objects between the scanning distance (set to the background) and the sensor are detected. The foreground is suppressed as a result of the special geometric configuration of the sending and receiving elements. For reliable functioning of these sensors, the background (for example, a conveyor belt) needs to be relatively bright and should not vary in height.

Photoelectric retro-reflective sensors

With a photoelectric retro-reflective sensor, the emitted light is returned by a reflector and is received and evaluated by the device. Polarizing filters prevent errors when detecting reflective objects. Transparent plastic wrapping and stretch film can affect the functioning of photoelectric retro-reflective sensors with polarizing filters. In such cases it helps to use devices with reduced sensitivity. The use of laser diodes allows greater scanning ranges while simultaneously maintaining a high resolution. Focus ranges can be set with high precision.

Photoelectric retro-reflective sensors for detecting transparent objects

These photoelectric retro-reflective sensors are characterized by an especially low switching hysteresis. Even minimal light attenuation between the sensor and reflector, such as would be caused by glass bottles or even PET bottles, is detected reliably. An innovative system monitoring feature continuously regulates and adapts the switching threshold in the event of gradual contamination that would otherwise lead to failure.



↑ Photoelectric retro-reflective sensor

Requirements for explosion-protected electrical equipment

Potentially explosive atmospheres can arise wherever dust, flammable gases or flammable liquids are manufactured, transported, processed, or stored. An explosion can occur if three factors come together at the same time:

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- Flammable substance: e.g. gas, vapor, mist, dust
- Sufficient oxygen: e.g. from ambient air
- Source of ignition: e.g. sparks or hot surfaces

Sensors for potentially explosive atmospheres: devices are offered that have been developed especially for potentially explosive atmospheres. These are designed in accordance with the relevant standards, based on the European Directive 94/9/EC (ATEX). Depending on their specific design, devices can be used in zones 1 and 2 (gas) and in zone 22 (non-conductive dust).

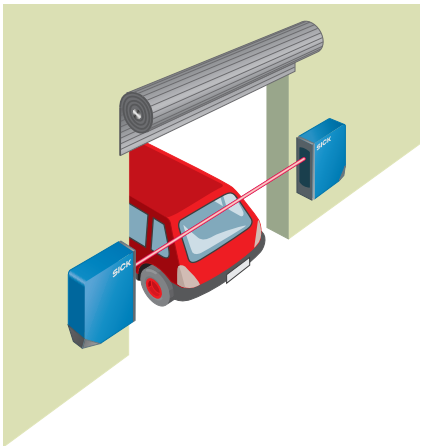
Teach-in

Teach-in means teaching an electronic evaluation module one or more of the features of an object to be tested or detected. Many photoelectric retro-reflective sensors, photoelectric proximity sensors, contrast scanners, color sensors, luminescence scanners, and light section sensors offer this possibility. When “teaching”, an object is placed in the light path of the sensor. The reflection is evaluated in the device’s receiver.

The detected switching threshold is then saved by pressing a button on the device or via an external control cable. The advantage of teach-in is that the switching threshold is set electronically instead of by using a potentiometer, which simplifies and speeds up the commissioning of the sensor or its adaptation to new applications.

Through-beam photoelectric sensors

The through-beam photoelectric sensor comprises two devices, a sender and the receiver. The separate layout makes long sensing ranges possible. The use of laser diodes allows greater sensing ranges while simultaneously maintaining a high resolution. Focus ranges can be set with high precision.



Responsibility of the sensor manufacturer	Responsibility of the machine manufacturer					
Category	Can be used in zone (gas)	Can also be used in zone (gas)	Can be used in zone (dust)	Can also be used in zone (dust)	Definition (94/9/EC) Explosive atmospheres are present:	Certification by
1G/1D	0 (0)	1 and 2	20 (10)	21 and 22	Always, for long periods, or often	Known authority
2G/2D	1 (1)	2	21 (11) Zone 22: conductive dust	22	Occasionally	Known authority
3G/3D	2 (2)	-	Zone 22: non-conductive dust	22	Occasionally	Known authority

G = gas, D = dust; () = older code in parentheses

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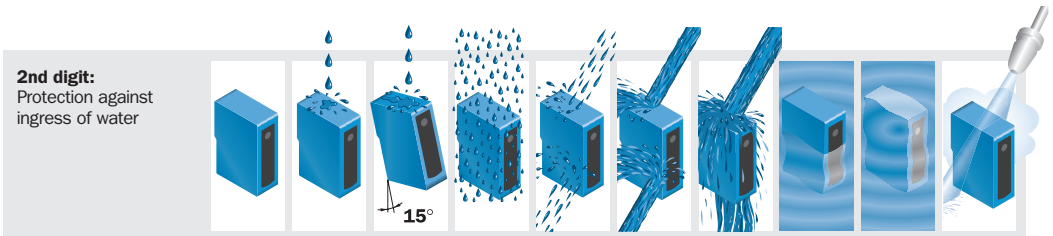

2nd digit: Protection against ingress of water										
1st digit: Protection against ingress of foreign bodies	No protection	Drip-water vertical	Drip-water tilted	Spray water	Splash water	Jet water	Strong jet of water	Temporary immersion	Lasting immersion	100 bar, 16 l/min., 80 °C
IEC 529 DIN 40050	**IP…0**	**IP…1**	**IP…2**	**IP…3**	**IP…4**	**IP…5**	**IP…6**	**IP…7**	**IP…8**	**IP…9K**
IP 0… No protection	IP 00									
IP 1… Size of foreign body ≥ 50 mm l	IP 10	IP 11	IP 12							
IP 2… Size of foreign body ≥ 12 mm l	IP 20	IP 21	IP 22	IP 23						
IP 3… Size of foreign body ≥ 2.5 mm l	IP 30	IP 31	IP 32	IP 33	IP 34					
IP 4… Size of foreign body ≥ 1 mm l	IP 40	IP 41	IP 42	IP 43	IP 44					
IP 5… Dust-protected	IP 50			IP 53	IP 54	IP 55	IP 56			
IP 6… Dust-proof	IP 60					IP 65	IP 66	IP 67		IP 69K

↑ Enclosure ratings overview

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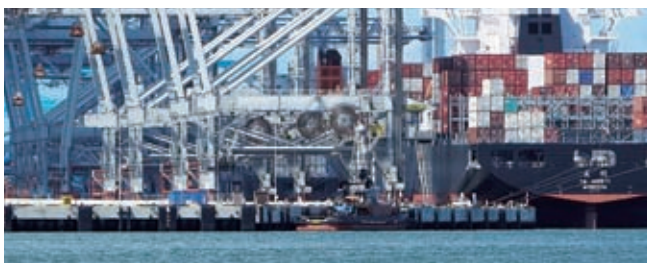

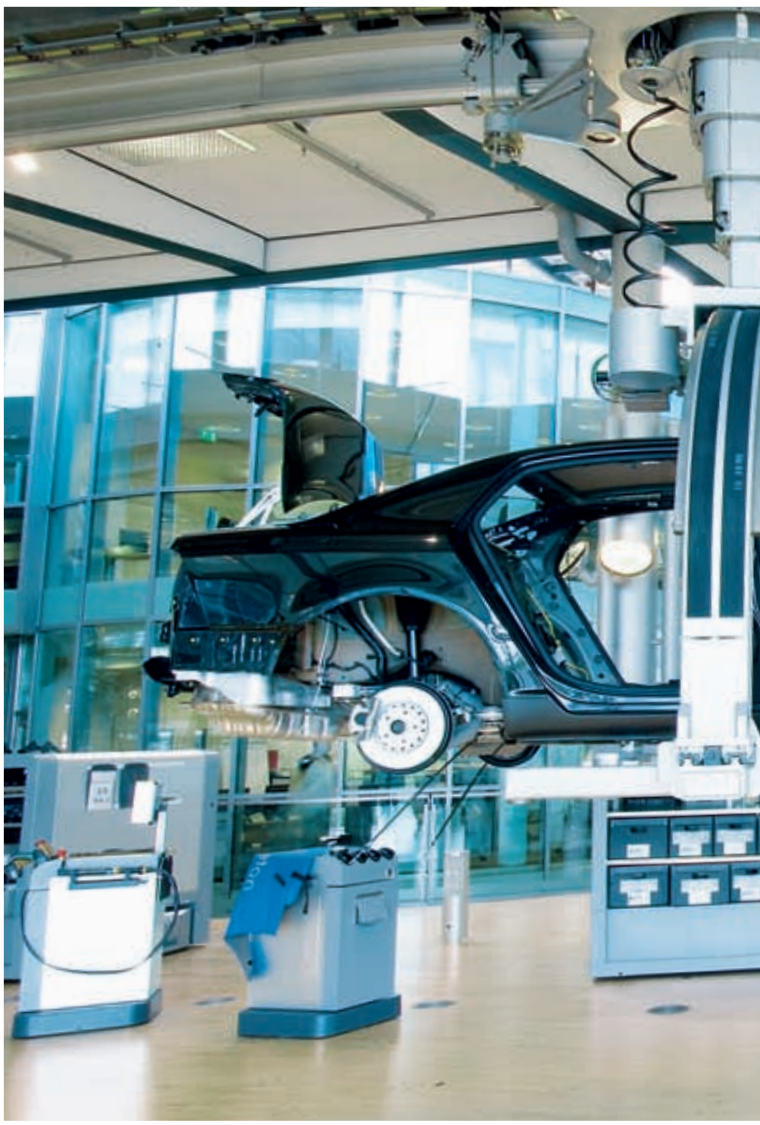

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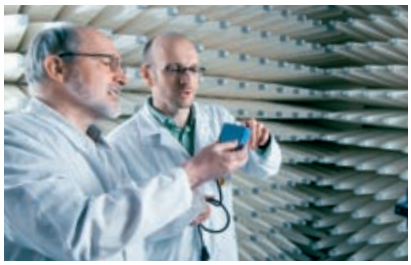
SICK at a glance



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