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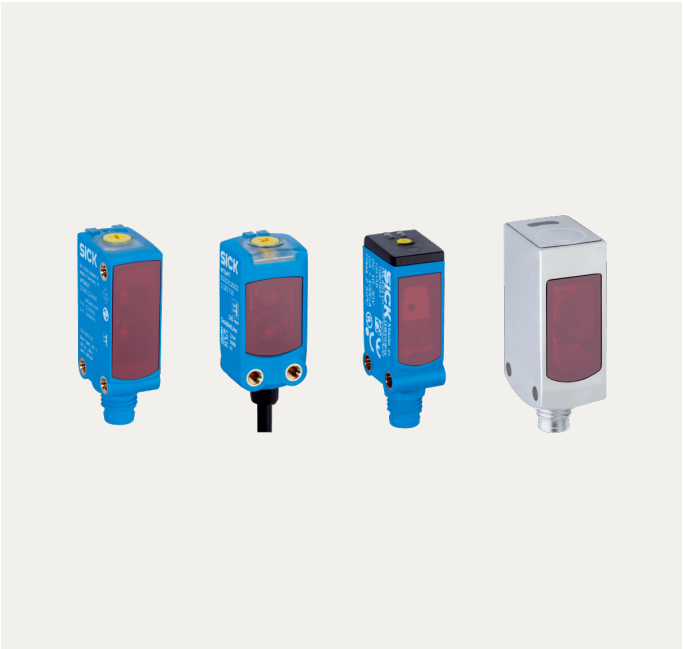
PRODUCT OVERVIEW

W4

Photoelectric sensors

SICK

Sensor Intelligence



PHOTOELECTRIC SENSORS

W4

Powerful miniature photoelectric sensors and photoelectric proximity sensors for automation

W4 miniature photoelectric sensors and photoelectric proximity sensors are the ideal solution for the intelligent automation of industrial processes. The powerful sensors in the miniature housing reliably detect glossy, flat, uneven, perforated and transparent objects and detect a wide range of parameters such as remission and distance values. Due to the selection of different designs, housing materials and light sources, the sensors are well-suited to countless applications and nearly any assembly situation. The profile is rounded out with an intuitive operating concept and intelligent diagnostic functions.

W4 AT A GLANCE

BENEFITS

- Fault-free system operation thanks to reliable and rugged object detection with Optical Experts
- The all-in-one photoelectric proximity sensor, WTM4FF (housing: flat), WTM4SF (housing: slim), for a variety of applications reduces the effort for storage and handling, saves costs and simplifies processes
- Solution for demanding detection tasks thanks to different light sources
- Intuitive and quick commissioning, alignment and adjustment
- Protection from disruptive environmental influences

FEATURES

- DoubleLine, ClearSens, V-Optik, Spot Size Recognition
- Two independent switching points, fast distance value output, DustAlert
- Powerful, well-visible LEDs: PinPoint-Pro, PinPoint; Infrared; Laser: red light
- Optical alignment aid, Teach-Turn adjustment, IO-Link
- Housing: VISTAL or stainless steel, –40 °C ... +60 °C

TECHNICAL DATA OVERVIEW

Dimensions (W x H x D)	12.1 mm x 41.9 mm x 18.6 mm 15.25 mm x 44.5 mm x 22.2 mm 15.25 mm x 49.2 mm x 22.2 mm 15.25 mm x 63.2 mm x 22.2 mm 16 mm x 40.1 mm x 12.1 mm 22 mm x 42 mm x 21.8 mm
Functional principle	Through-beam photoelectric sensor Photoelectric retro-reflective sensor Photoelectric proximity sensor
Functional principle detail	Background suppression MultiSwitch MultiPulse MultiMode DoubleLine Distance value LineSpot technology V-optics Without reflector minimum distance (autocollimation/coaxial optics)
Sensing range max.	0 m ... 60 m [1] 0 m ... 12 m [2] 0 mm ... 500 mm [3]
Light source	PinPoint LED LED Laser
Type of light	Visible red light Infrared light
Enclosure rating	IP66 IP67 IP68 IP69K
Housing material	Plastic Metal
Adjustment	Teach-in button Potentiometer IO-Link Teach-Turn adjustment None Wire/pin

[1] Through-beam photoelectric sensor.

[2] Photoelectric retro-reflective sensor.

[3] Photoelectric proximity sensor.

TYPE CODE

Detection principle

TB	Photoelectric proximity sensor, background suppression
TF	Photoelectric proximity sensor, foreground suppression
TM	Photoelectric proximity sensor, MultiMode
LA	Photoelectric retro-reflective sensor, autocollimation, polarizing filter
LG	Photoelectric retro-reflective sensor, autocollimation, polarizing filter, AutoAdapt for transparent objects
LD	Photoelectric retro-reflective sensor, dual-lens system, polarizing filter
LF	Photoelectric retro-reflective sensor, dual-lens system, Power-WL
LH	Photoelectric retro-reflective sensor, dual-lens system, without polarizing filter
SE	One-way system, pair (sender and receiver)
SO	Sender
EO	Receiver

Design

F	Flat
S	Slim

Light sender

P	Red light, PinPoint LED
A	Red light, 1 x line light spot
E	Red light, PinPoint LED, small
F	Red light, PinPoint Pro LED
D	Red light, PinPoint Dual LED
T	Red light, DoubleLine, 2 x line light spots
I	Infrared light, PinPoint LED
Q	Infrared light, DoubleLine, 2 x line light spots

Connection type

2	Plug
1	Cable, PVC, 2 m
5	Cable, PVC, 3 m
6	Cable, PVC, 5 m
3	Cable, PVC, 77 mm
8	Cable, PVC, 140 mm
9	Cable, PVC, 300 mm
K	Cable, PUR, 182 mm
X	Special

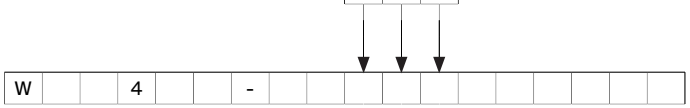
Connection type

1	M8 plug, 3-pin
2	M8 plug, 4-pin
4	M12 plug, 4-pin
7	M8 plug, 3-pin, with knurled screw connection
8	M8 plug, 4-pin, with knurled screw connection
G	Cable, 3-wire
H	Cable, 4-wire
X	Special

W			4			-											

Pin/Wire Assignment (for WTF: Q and Q/ are inverted; for WTM: see data sheet)

1	6	1	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q, white: Q/
1	6	2	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: Q
1	6	3	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q, white: Alarm
1	6	4	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q, white: Health
1	6	5	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: Alarm
1	6	6	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: Health
1	6	7	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q, white: Teach -> L+
1	6	A	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q, white: no function
1	6	D	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q, white: Q
1	6	K	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: Teach -> L+
1	6	N	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: no function
1	6	R	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: Q/
8	6	1	WTx, WTF (IO-Link, PNP): black: Q, white: Q/
8	6	2	WTx, WTF (IO-Link, PNP): black: Q/, white: Q
5	6	K	WTx, WTF (IO-Link, push-pull: PNP/NPN): black: Q/, white: Teach -> M
1	1	1	WTx, WTF (push-pull: PNP/NPN): black: Q, white: Q/
1	1	2	WTx, WTF (push-pull: PNP/NPN): black: Q/, white: Q
3	1	1	WTx, WTF (push-pull: PNP/NPN): black: Q, white: no function
3	1	2	WTx, WTF (push-pull: PNP/NPN): black: Q/, white: no function
8	1	1	WTx, WTF (PNP): black: Q, white: Q/
8	1	2	WTx, WTF (PNP): black: Q/, white: Q
A	1	1	WTx, WTF (PNP): black: Q, white: no function
A	1	2	WTx, WTF (PNP): black: Q/, white: no function
E	1	1	WTx, WTF (NPN, open collector): black: Q, white: no function
E	1	2	WTx, WTF (NPN, open collector): black: Q/, white: no function
1	6	1	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q/, white: Q
1	6	2	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q, white: Q/
1	6	3	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q/, white: Alarm
1	6	4	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q, white: Health
1	6	5	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q, white: Alarm
1	6	6	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q/, white: Health
1	6	7	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q/, white: Teach -> L+
1	6	A	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q/, white: no function
1	6	K	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q, white: Teach -> L+
1	6	N	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q, white: no function
8	6	1	WLA, WLD, WLG, WEO (IO-Link, PNP): black: Q/, white: Q
8	6	2	WLA, WLD, WLG, WEO (IO-Link, PNP): black: Q, white: Q/
5	6	K	WLA, WLD, WLG, WEO (IO-Link, push-pull: PNP/NPN): black: Q, white: Teach -> M
1	1	1	WLA, WLD, WLG, WEO (push-pull: PNP/NPN): black: Q/, white: Q
1	1	2	WLA, WLD, WLG, WEO (push-pull: PNP/NPN): black: Q, white: Q/
3	1	1	WLA, WLD, WLG, WEO (push-pull: PNP/NPN): black: Q/, white: no function
3	1	2	WLA, WLD, WLG, WEO (push-pull: PNP/NPN): black: Q, white: no function
8	1	1	WLA, WLD, WLG, WEO (PNP): black: Q/, white: Q
8	1	2	WLA, WLD, WLG, WEO (PNP): black: Q, white: Q/
A	1	1	WLA, WLD, WLG, WEO (PNP): black: Q/, white: no function
A	1	2	WLA, WLD, WLG, WEO (PNP): black: Q, white: no function
E	1	1	WLA, WLD, WLG, WEO (NPN, open collector): black: Q/, white: no function
E	1	2	WLA, WLD, WLG, WEO (NPN, open collector): black: Q, white: no function
3	Z	Z	WSO: black: Test -> M, white: no function



Sensing range

1	Sensing range, standard, see data sheet
2	Sensing range, NarrowBeam, see data sheet
3	Sensing range, see data sheet
4	Sensing range, see data sheet
6	Sensing range, see data sheet
7	Sensing range, see data sheet
8	Sensing range, see data sheet
A	Sensing range, see data sheet
X	Special

Setting

0	no adjustment, BluePilot, blue LED
2	with Teach-Turn adjustment, BluePilot, blue LED
3	with teach pushbutton, BluePilot, blue LED
5	with 1 x teach pushbutton for setting two sensing ranges, BluePilot, blue LED
A	without settings, without BluePilot

Setting

0	without settings

Smart Sensor

A	0	0	Smart Sensor Standard (IO-Link)
Z	Z	Z	without Smart Sensor

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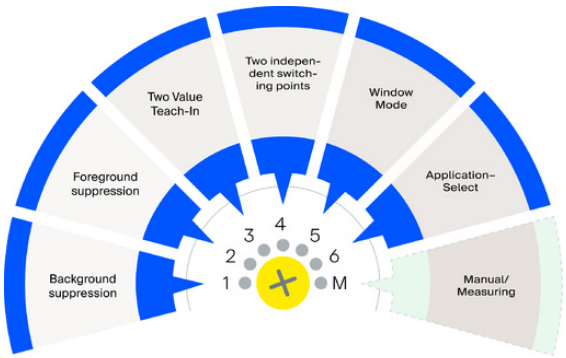
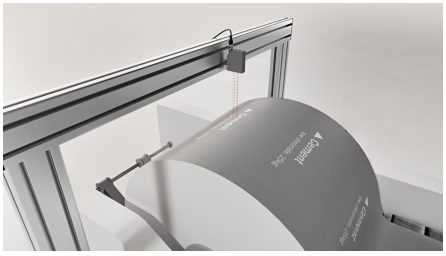
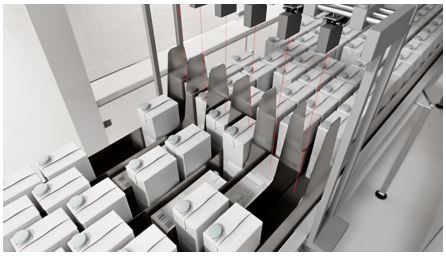
ADVANTAGES



The WTM4FF, WTM4SF, WTM12F, WTM12L, WTM16F, WTM26F variants come with a MultiMode feature: Various operating modes such as background suppression, foreground suppression, Two Value Teach-in, two independent switching points or Window mode can be set directly on the device or via IO-Link. It is also possible to read the distance value from the device. The advantage: The same sensor can meet a wide variety of detection requirements. This means, for example, that the settings can be adjusted with a single action when changing the product. A sensor for almost any challenge – reduces the number of variants and simplifies warehousing.

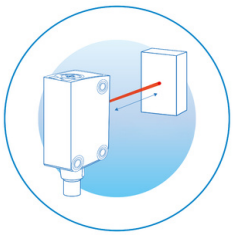


Distance values via IO-Link: the output of precise distance values during detection extends the application possibilities of the photoelectric proximity sensors. The values can, for example, be used for positioning tasks in downstream processes.

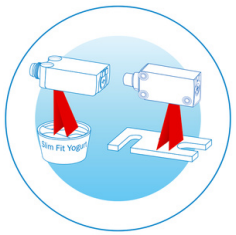


The sensor has two independent switching points that can be taught in separately (e.g. standing or lying object).

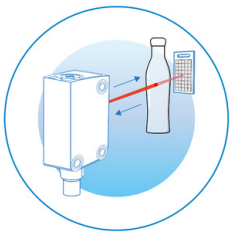
Predictive maintenance thanks to alarm function: MultiMode is the first photoelectric proximity sensor with a configurable warning. DustAlert detects critical contamination states early and avoids unplanned plant downtimes.



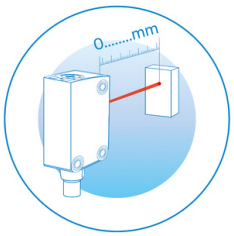
Thanks to the integrated ApplicationSelect mode, the sensor functions can be adapted to the specific requirements of the application. Even objects in an oblique orientation or with a low remission factor can thereby be reliably detected.



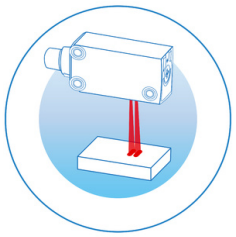
The LineSpot technology ensures perforated, textured, and uneven objects can be reliably detected.



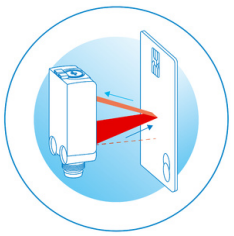
In the case of transparent objects such as glass bottles or cling film, the ClearSens technology guarantees reliable detection results.



The sensors can provide the distance value in millimeters and the remission value of the detected object via IO-Link.



Thanks to foreground suppression, the sensors reliably detect very flat, poorly remitting, reflective, and uneven objects.



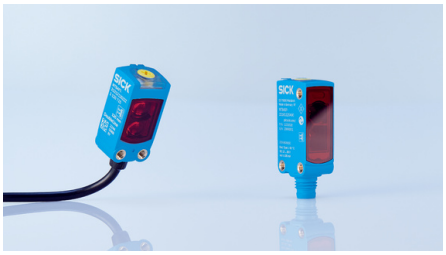
The integrated v-optics technology helps the device detect highly reflective and transparent objects such as wafers or displays by means of a very small, laser-like light spot.

⟶ Thanks to innovative technologies, the sensors can solve the most demanding detection tasks in almost any application regardless of the object properties

ADVANTAGES

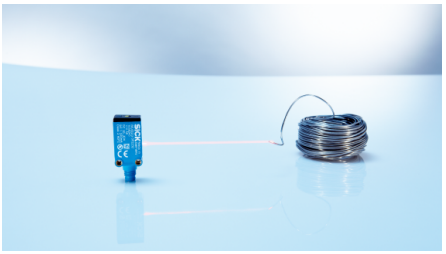
Diverse application possibilities thanks to different product variants

W4 photoelectric sensors are characterized by the range of individual variants available. With the ability to select from a variety of designs, you can obtain the most suitable sensor for your specific installation situation. Thanks to the compact sensor housing, the different designs can be integrated easily and in a space-saving manner even in very tight installation spaces. The availability of a variety of housing materials also opens up numerous applications. You also have freedom of choice when it comes to the light source. No matter what your particular application, SICK offers a reliable solution to precisely suit your specific requirements.



W4 sensors are available in either a Slim or Flat design. The standardized mounting ensures uncomplicated installation regardless of the design selected.

The sensors come with a housing made from either VISTAL or stainless steel. A hygienic stainless steel version is available for applications in sterile environments.



Red laser light provides the ideal basis for detecting even very small objects. The other light sources available are the highly-visible PinPoint LED, or an infrared LED.

→ Various designs, housing materials and light sources provide a great deal of flexibility when selecting the most suitable sensor for your needs

High user-friendliness through easy commissioning and operation

Besides their high detection reliability, the latest generation of W4 photoelectric sensors stand out on account of their particularly easy handling. Thanks to the intuitive BluePilot operating concept, the sensors can be configured in a matter of seconds via a push-turn mechanism and tailored to the specific application. A blue LED indicator gives you immediate feedback on the optimal alignment of the sensor. If the detection quality drops due to contamination or vibrations, you are alerted to this via a well visible LED. This enables malfunctions to be correctly early, and unplanned system downtimes to be avoided.

Using a combination of teach-in button and potentiometer, the required settings can be easily configured directly on the device

The blue LED alignment aid accelerates the process of optimally aligning the sensor, and indicates any changes in the operational safety at a glance

Thanks to the intuitive operating concept, the mode selection can be effortlessly performed and read directly on the device

→ The BluePilot operating concept allows convenient commissioning of the sensor in just a few seconds. The operating concept also minimizes the risk of unplanned downtimes.

Increased productivity thanks to innovative functions

The latest generation of W4 photoelectric sensors acquire a variety of performance parameters such as temperature, operating hours, remission values and distances values. The acquisition of these parameters provides the foundation for automated condition monitoring, which enables unplanned downtimes to be avoided. You can also flexibly and precisely tailor the sensor settings to your application. Condition monitoring and adjustments help increase your machine productivity. W4 photoelectric sensors therefore offer a future-proof solution for your system.

→ Innovative monitoring and diagnostic features allow powerful process control and thereby increase the machine productivity

Select the right product variant and accessories directly online. There you will also find example applications as well as downloads such as CAD dimensional models, operating instructions and software.
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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnership with our customers is more than just a promise: Together, we optimize productivity, elevate quality, protect health and safety, and sustain the future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions.

SICK

Sensor Intelligence