



WTB4SP-1GE11120ZZZ

W4

## PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
WTB4SP-1GE11120ZZZ	1132088

Other models and accessories → [www.sick.com/W4](http://www.sick.com/W4)

Illustration may differ



## Detailed technical data

## Features

<b>Functional principle</b>	Photoelectric proximity sensor
<b>Functional principle detail</b>	Background suppression
<b>Sensing range</b>	
Sensing range min.	4 mm
Sensing range max.	250 mm
Adjustable switching threshold for background suppression	10 mm ... 250 mm
Reference object	Object with 90% remission factor (complies with standard white according to DIN 5033)
Minimum distance between set sensing range and background (black 6% / white 90%)	5 mm, at a distance of 150 mm
Recommended sensing range for the best performance	40 mm ... 170 mm
<b>Emitted beam</b>	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	4 mm (150 mm)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at Ta = +23 °C)
<b>Key LED figures</b>	
Normative reference	EN 62471:2008-09   IEC 62471:2006, modified
LED risk group marking	Free group
Wave length	635 nm
Average service life	100,000 h at Ta = +25 °C
<b>Smallest detectable object (MDO) typ.</b>	

	0.2 mm (At 180 mm distance) Object with 90% remission factor (complies with standard white according to DIN 5033)
<b>Adjustment</b>	Teach-Turn adjustment BluePilot: For setting the sensing range
<b>Display</b>	LED blue BluePilot: sensing range indicator
	LED green Operating indicator Static on: power on
	LED yellow Status of received light beam Static on: object present Static off: object not present

## Safety-related parameters

<b>MTTF<sub>D</sub></b>	1,404 years
<b>DC<sub>avg</sub></b>	0%

## Electronics

<b>Supply voltage U<sub>B</sub></b>	10 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>	≤ 5 V <sub>pp</sub>
<b>Usage category</b>	DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
<b>Current consumption</b>	≤ 20 mA, without load. At U <sub>B</sub> = 24 V
<b>Protection class</b>	III
<b>Digital output</b>	
Number	1
Type	NPN
Switching mode	Light switching
Signal voltage NPN HIGH/LOW	Approx. U <sub>B</sub> / < 2.5 V
Output current I <sub>max</sub>	≤ 100 mA
Circuit protection outputs	Reverse polarity protected Overcurrent protected Short-circuit protected
Response time	≤ 500 µs
Repeatability (response time)	150 µs
Switching frequency	1,000 Hz
<b>Pin/Wire assignment</b>	
Function of pin 4/black (BK)	Digital output, light switching, object present → output Q LOW

<sup>1)</sup> Limit values.

## Mechanics

<b>Housing</b>	Rectangular
<b>Design detail</b>	Slim
<b>Dimensions (W x H x D)</b>	12.1 mm x 41.9 mm x 18.6 mm
<b>Connection</b>	Cable, 3-wire, 2 m
<b>Connection detail</b>	Do not bend below 0 °C 0.14 mm <sup>2</sup>
Deep-freeze property	
Conductor size	

Cable diameter	Ø 3.4 mm
Length of cable (L)	2 m
<b>Material</b>	Housing Plastic, VISTAL®
	Front screen Plastic, PMMA
	Cable Plastic, PVC
<b>Maximum tightening torque of the fixing screws</b>	0.4 Nm

## Ambient data

<b>Enclosure rating</b>	IP66 (EN 60529) IP67 (EN 60529)
<b>Ambient operating temperature</b>	-40 °C ... +60 °C
<b>Ambient temperature, storage</b>	-40 °C ... +75 °C
<b>Typ. Ambient light immunity</b>	Artificial light: ≤ 50,000 lx Sunlight: ≤ 50,000 lx
<b>Shock resistance</b>	30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
<b>Vibration resistance</b>	10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))
<b>Air humidity</b>	35 % ... 95 %, relative humidity (no condensation)
<b>Electromagnetic compatibility (EMC)</b>	EN 60947-5-2
<b>Resistance to cleaning agent</b>	ECOLAB
<b>UL File No.</b>	NRKH.E181493 & NRKH7.E181493

## Certificates

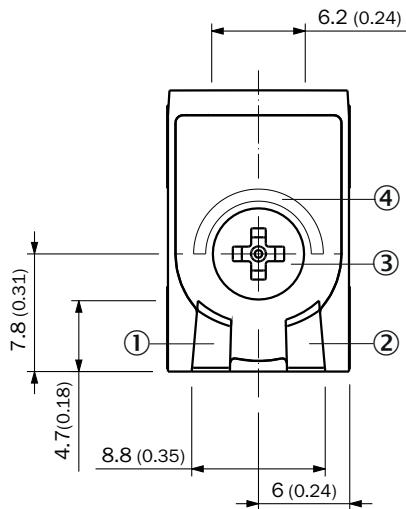
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓
<b>cULus certificate</b>	✓

## Classifications

<b>ECLASS 5.0</b>	27270904
<b>ECLASS 5.1.4</b>	27270904
<b>ECLASS 6.0</b>	27270904
<b>ECLASS 6.2</b>	27270904
<b>ECLASS 7.0</b>	27270904
<b>ECLASS 8.0</b>	27270904
<b>ECLASS 8.1</b>	27270904
<b>ECLASS 9.0</b>	27270904
<b>ECLASS 10.0</b>	27270904
<b>ECLASS 11.0</b>	27270904
<b>ECLASS 12.0</b>	27270903
<b>ETIM 5.0</b>	EC002719

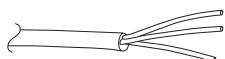
<b>ETIM 6.0</b>	EC002719
<b>ETIM 7.0</b>	EC002719
<b>ETIM 8.0</b>	EC002719
<b>UNSPSC 16.0901</b>	39121528

## display and adjustment elements

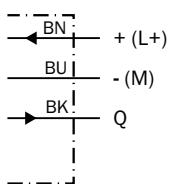


① LED green  
② LED yellow  
③ Teach-Turn adjustment  
④ LED blue

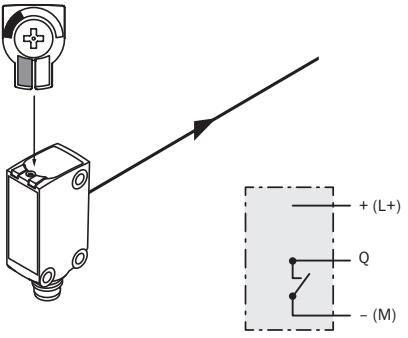
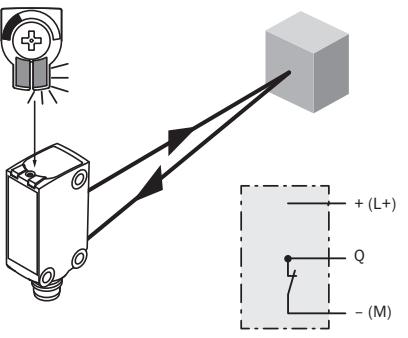
## Connection type Cable, 3-wire



## Connection diagram Cd-043

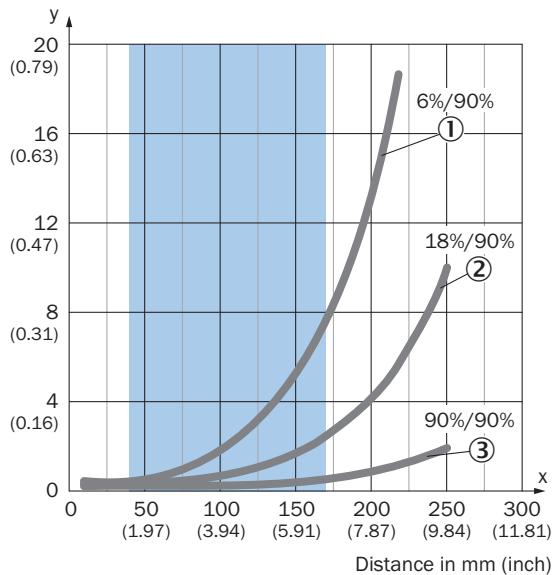


## Truth table NPN - light switching Q

Light switching Q (normally open)		
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✗	✓
Light receive indicator	✗	✗
Load resistance	✗	✗
		

## Characteristic curve

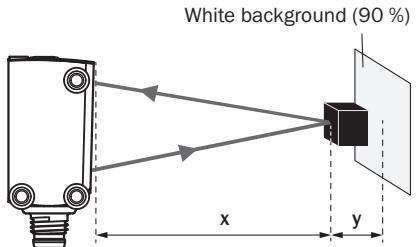
Minimum distance in mm (y) between the set sensing range and white background (90 % remission factor)



■ Recommended sensing range for the best performance

- ① Black object, 6% remission factor
- ② Gray object, 18% remission factor
- ③ White object, 90% remission factor

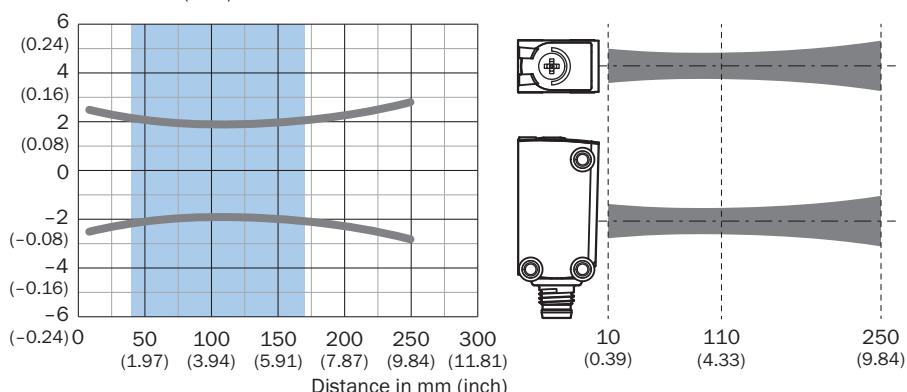
Example:  
Safe suppression of the background



Black object (6 % remission factor)  
Set sensing range x = 150 mm  
Needed minimum distance to white background y = 5.5 mm

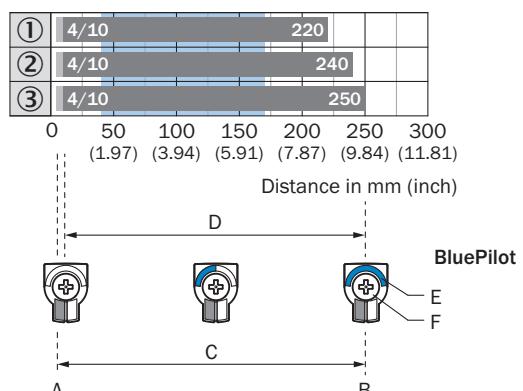
## Light spot size

Dimensions in mm (inch)



Recommended sensing range for the best performance

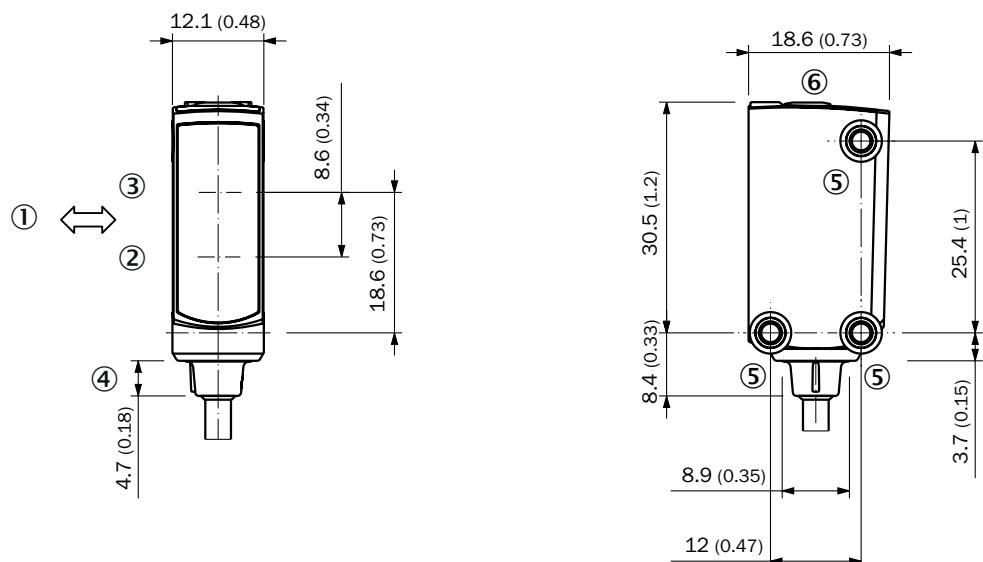
## Sensing range diagram



Recommended sensing range for the best performance

1		Black object, 6% remission factor
2		Gray object, 18% remission factor
3		White object, 90% remission factor
A		Sensing range min. in mm
B		Sensing range max. in mm
C		Field of view
D		Adjustable switching threshold for background suppression
E		Sensing range indicator
F		Teach-Turn adjustment

## Dimensional drawing, sensor



Dimensions in mm (inch)

- ① Standard direction of the material being detected
- ② Center of optical axis, receiver
- ③ Center of optical axis, sender
- ④ Connection
- ⑤ M3 mounting hole
- ⑥ display and adjustment elements

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

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

**For us, that is "Sensor Intelligence."**

## WORLDWIDE PRESENCE:

Contacts and other locations [www.sick.com](http://www.sick.com)