



# WTB4FP-21311120ZZZ

## W4

MINIATURE PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

Type	Part no.
WTB4FP-21311120ZZZ	1125736

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

Detailed technical data

Features

Functional principle	Photoelectric proximity sensor
Functional principle detail	Background suppression, MultiPulse
Sensing range	
Sensing range min.	4 mm
Sensing range max.	220 mm
Adjustable switching threshold for background suppression	15 mm ... 220 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%)	3 mm, at a distance of 80 mm
Recommended sensing range for the best performance	40 mm ... 140 mm
Emitted beam	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	Ø 4.2 mm (130 mm)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at Ta = +23 °C)
Key LED figures	
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 T <sub>a</sub> = +25 °C
<b>Smallest detectable object (MDO) typ.</b>	
	0.2 mm (At 130 mm distance (object with remission factor of 90% (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 Oscillating: object present Static off: object not present
<b>Special features</b>	MultiPulse: sensor with self-monitoring Sensing range: preset 120 mm

#### Safety-related parameters

<b>MTTF<sub>D</sub></b>	642 years
<b>DC<sub>avg</sub></b>	0 %
<b>T<sub>M</sub> (mission time)</b>	20 years (EN ISO 13849) Rate of use: 60 %

#### 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>	≤ 25 mA, without load. At U <sub>B</sub> = 24 V
<b>Protection class</b>	III
<b>Digital output</b>	
Number	1
Type	Push-pull: PNP/NPN
Signal voltage PNP HIGH/LOW	Approx. U <sub>B</sub> -2.5 V / 0 V
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	≤ 0.1 s <sup>2)</sup>
Repeatability (response time)	150 μs
Switching frequency	10 Hz <sup>3)</sup>

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

<sup>2)</sup> Signal transit time with resistive load in switching mode.

<sup>3)</sup> With light/dark ratio 1:1.

<sup>4)</sup> This switching output must not be connected to another output.

Pin/Wire assignment	
Function of pin 4/black (BK)	Digital output, object present → output Q, HIGH/LOW oscillating 10 Hz <sup>4)</sup>

- 1) Limit values.  
 2) Signal transit time with resistive load in switching mode.  
 3) With light/dark ratio 1:1.  
 4) This switching output must not be connected to another output.

## Mechanics

<b>Housing</b>	Rectangular
<b>Design detail</b>	Flat
<b>Dimensions (W x H x D)</b>	16 mm x 40.1 mm x 12.1 mm
<b>Connection</b>	Connector M8, 3-pin
<b>Material</b>	
Housing	Plastic, VISTAL®
Front screen	Plastic, PMMA
Male connector	Plastic, VISTAL®
<b>Weight</b>	Approx. 30 g
<b>Maximum tightening torque of the fixing screws</b>	0.4 Nm

## Ambient data

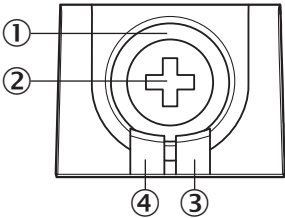
<b>Enclosure rating</b>	IP66 (EN 60529) IP67 (EN 60529)
<b>Ambient operating temperature</b>	–40 °C ... +60 °C
<b>Ambient temperature, storage</b>	–40 °C ... +75 °C
<b>Typ. Ambient light immunity</b>	Artificial light: ≤ 50,000 lx Sunlight: ≤ 50,000 lx
<b>Shock resistance</b>	30 g, 11 ms (3 positive and 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

## Classifications

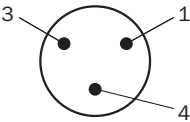
<b>ECLASS 5.0</b>	27270904
<b>ECLASS 5.1.4</b>	27270904
<b>ECLASS 6.0</b>	27270904
<b>ECLASS 6.2</b>	27270904
<b>ECLASS 7.0</b>	27270904
<b>ECLASS 8.0</b>	27270904
<b>ECLASS 8.1</b>	27270904
<b>ECLASS 9.0</b>	27270904
<b>ECLASS 10.0</b>	27270904
<b>ECLASS 11.0</b>	27270904

ECLASS 12.0	27270903
ETIM 5.0	EC002719
ETIM 6.0	EC002719
ETIM 7.0	EC002719
ETIM 8.0	EC002719
UNSPSC 16.0901	39121528

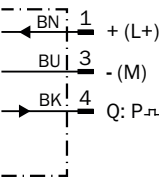
Adjustments



Connection type

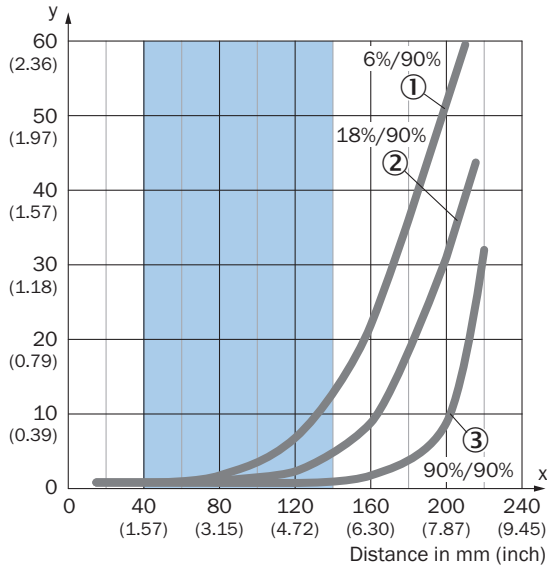


Connection diagram



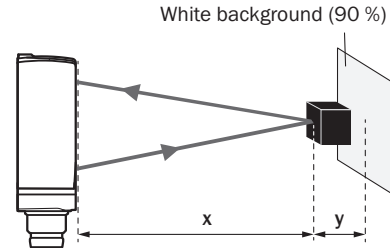
## Characteristic curve

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



Recommended sensing range for the best performance

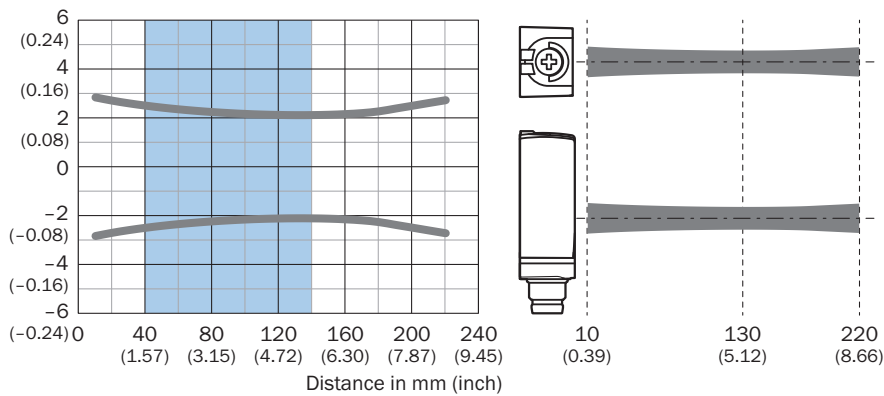
Example:  
Safe suppression of the background



Black object (6 % remission)  
Set sensing range  $x = 120$  mm  
Needed minimum distance to white background  $y = 7$  mm

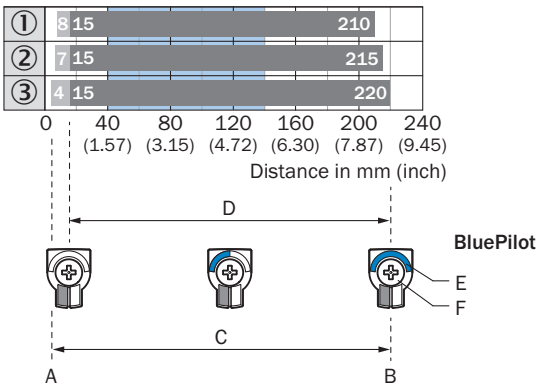
## Light spot size

Dimensions in mm (inch)



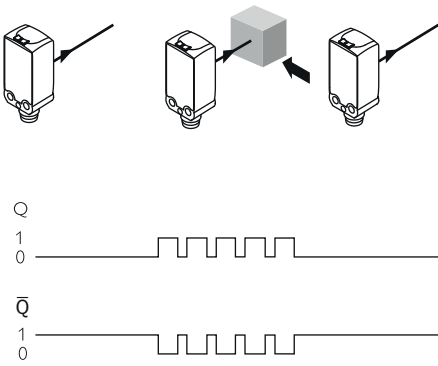
Recommended sensing range for the best performance

Sensing range diagram

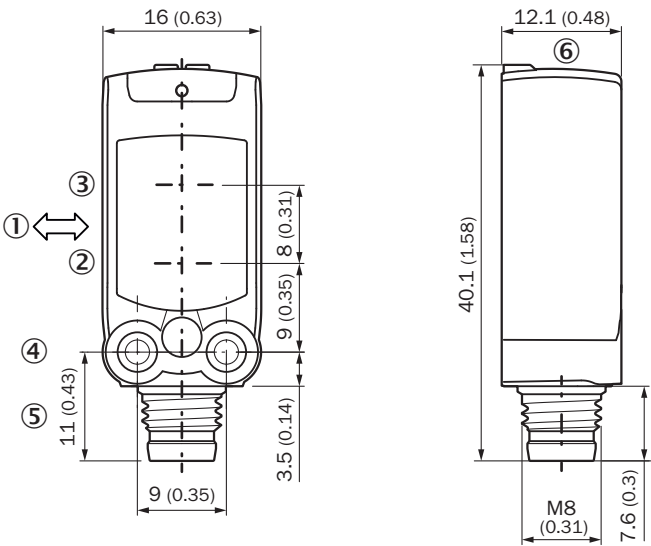


- A = Sensing range min. in mm
- B = Sensing range max. in mm
- C = Viewing range
- D = Adjustable switching threshold for background suppression
- E = Sensing range indicator
- F = Teach-Turn adjustment
- Recommended sensing range for the best performance

Functional principle




Dimensional drawing (Dimensions in mm (inch))



Recommended accessories

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

	Brief description	Type	Part no.
Mounting brackets and plates			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Mounting bracket for wall mounting</li><li>• <b>Material:</b> Stainless steel</li><li>• <b>Details:</b> Stainless steel 1.4571</li><li>• <b>Items supplied:</b> Mounting hardware included</li><li>• <b>Suitable for:</b> W4S, W4F, W4S</li></ul>	BEF-W4-A	2051628



## 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)