



# WSE4SP-1G312100ZZZ

W4

MINIATURE PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	Part no.
WSE4SP-1G312100ZZZ	1140383

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

Illustration may differ



## Detailed technical data

### Features

<b>Functional principle</b>	Through-beam photoelectric sensor
<b>Sensing range</b>	
Sensing range min.	0 m
Sensing range max.	12 m
Maximum distance range from receiver to sender (operating reserve 1)	0 m ... 12 m
Recommended distance range from receiver to sender (operating reserve 2)	0 m ... 9 m
Recommended sensing range for the best performance	0 m ... 9 m
<b>Emitted beam</b>	
Light source	PinPoint LED
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	60 mm (2 m)
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 $T_a = +25\text{ °C}$
<b>Adjustment</b>	
None	–
<b>Indication</b>	
LED blue	BluePilot: Alignment aid
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object not present Static off: object present Flashing: Below the 1.5 function reserve
<b>Special applications</b>	Detection of poorly remitting and tilted objects
<b>Part number of individual components</b>	WS04SP-1G3ZZ1A0ZZZ, 2139775 WE04SP-1G312100ZZZ, 2139804

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	1,219 years
<b>DC<sub>avg</sub></b>	0%

### Electrical data

<b>Supply voltage <math>U_B</math></b>	10 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>	$\leq 5\text{ V}_{pp}$
<b>Usage category</b>	DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
<b>Current consumption</b>	$\leq 20\text{ mA}$ , without load. At $U_B = 24\text{ V}$
<b>Protection class</b>	III
<b>Digital output</b>	
Number	1
Type	Push-pull: PNP/NPN
Switching mode	Light switching
Signal voltage PNP HIGH/LOW	Approx. $U_B - 2.5\text{ V} / 0\text{ V}$
Signal voltage NPN HIGH/LOW	Approx. $U_B / < 2.5\text{ V}$
Output current $I_{max}$	$\leq 100\text{ mA}$
Circuit protection outputs	Reverse polarity protected Overcurrent protected Short-circuit protected
Response time	$\leq 500\text{ }\mu\text{s}$
Repeatability (response time)	150 $\mu\text{s}$
Switching frequency	1,000 Hz
<b>Pin/Wire assignment, sender</b>	
Function of pin 4/black (BK)	Input, sender off, LOW active
<b>Pin/Wire assignment, receiver</b>	
Function of pin 4/black (BK)	Digital output, light switching, object present $\rightarrow$ output Q LOW <sup>2)</sup>

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

<sup>2)</sup> This switching output must not be connected to another output.

Mechanical data

<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>	
Deep-freeze property	Do not bend below 0 °C
Conductor size	0.14 mm <sup>2</sup>
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: ≤ 15,000 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

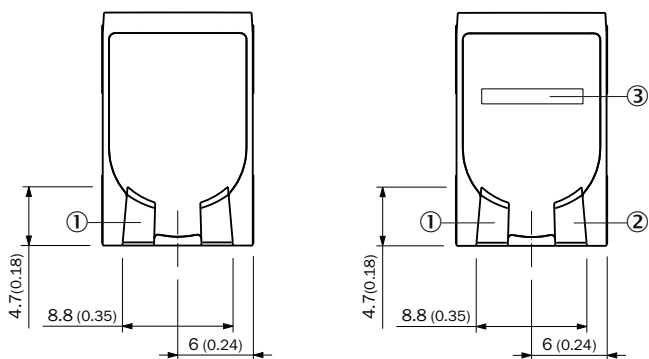
Classifications

<b>ECLASS 5.0</b>	27270901
<b>ECLASS 5.1.4</b>	27270901
<b>ECLASS 6.0</b>	27270901
<b>ECLASS 6.2</b>	27270901
<b>ECLASS 7.0</b>	27270901
<b>ECLASS 8.0</b>	27270901
<b>ECLASS 8.1</b>	27270901
<b>ECLASS 9.0</b>	27270901
<b>ECLASS 10.0</b>	27270901
<b>ECLASS 11.0</b>	27270901
<b>ECLASS 12.0</b>	27270901
<b>ETIM 5.0</b>	EC002716

<b>ETIM 6.0</b>	EC002716
<b>ETIM 7.0</b>	EC002716
<b>ETIM 8.0</b>	EC002716
<b>UNSPSC 16.0901</b>	39121528

## Adjustments

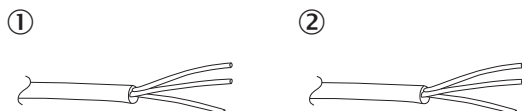
Display and adjustment elements



- ① LED green
- ② LED yellow
- ③ LED blue

## Connection type

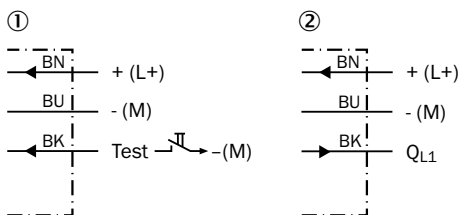
Cable, 3-wire



- ① Sender
- ② Receiver

## Connection diagram

Cd-519



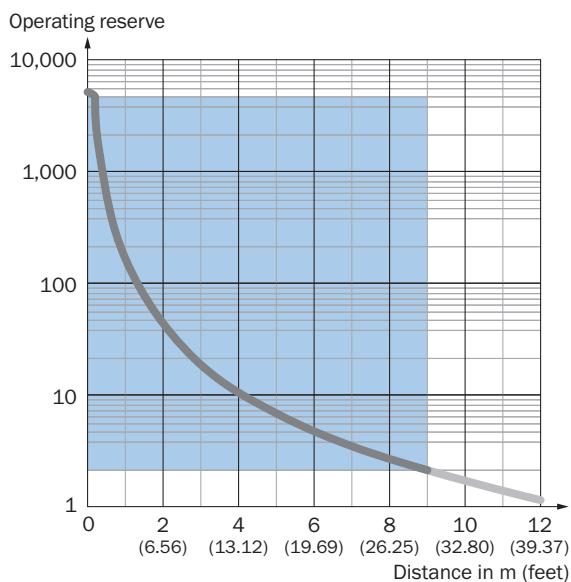
- ① Sender
- ② Receiver

### Truth table

Push-pull: PNP/NPN - light switching Q

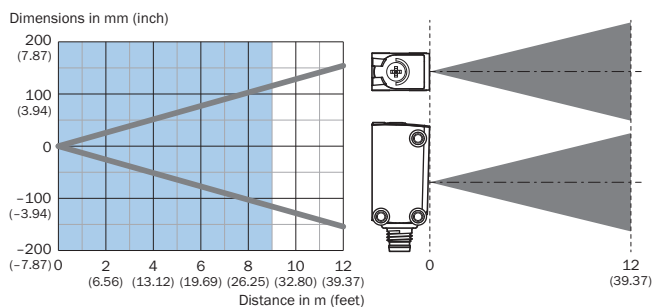
	Light switching Q (normally closed (upper switch), normally open (lower switch))	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✓	✗
Light receive indicator	☉	✗
Load resistance to L+	✗	⚠
Load resistance to M	⚠	✗

### Characteristic curve



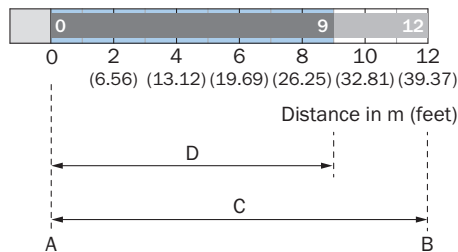
Recommended sensing range for the best performance

### Light spot size



Recommended sensing range for the best performance

### Sensing range diagram

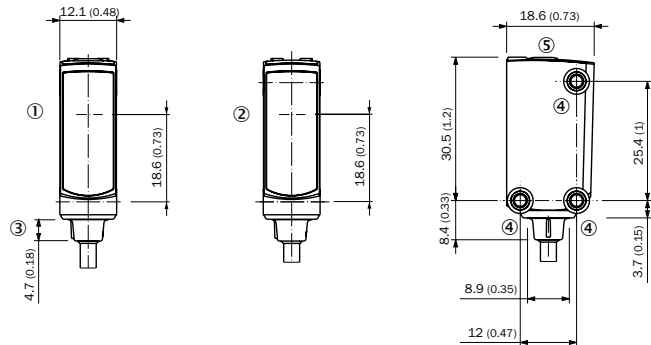


Recommended sensing range for the best performance

A	Sensing range min. in m
B	Sensing range max. in m
C	Maximum distance range from receiver to sender
D	Recommended distance range from receiver to sender

### Dimensional drawing (Dimensions in mm (inch))

Dimensional drawing, sensor



- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Connection
- ④ M3 mounting hole
- ⑤ 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)