



WSE4SP-22112100ZZZ

W4

MINIATURE PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
WSE4SP-22112100ZZZ	1142679

Other models and accessories → www.sick.com/W4

Illustration may differ



Detailed technical data

Features

Functional principle	Through-beam photoelectric sensor
Sensing range	
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
Emitted beam	
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 T _a = +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 _a = +25 °C
Adjustment	

	None	-
Indication	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
Special features		On delay 200 ms on pin 2
Special applications		Detection of poorly remitting and tilted objects
Part number of individual components		WS04SP-223ZZ1A0ZZZ, 2137117 WE04SP-22112100ZZZ, 2141087

Electrical data

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

¹⁾ Limit values.

²⁾ This switching output must not be connected to another output.

Mechanical data

Housing		Rectangular
Design detail		Slim
Dimensions (W x H x D)		12.1 mm x 41.9 mm x 18.6 mm
Connection		Male connector M8, 4-pin
Material	Housing	Plastic, VISTAL®
	Front screen	Plastic, PMMA
	Male connector	Plastic, VISTAL®

Maximum tightening torque of the fixing screws	0.4 Nm
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Ambient data

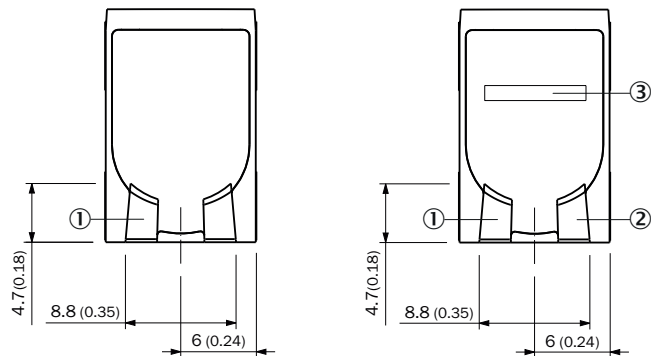
Enclosure rating	IP66 (EN 60529) IP67 (EN 60529)
Ambient operating temperature	-40 °C ... +60 °C
Ambient temperature, storage	-40 °C ... +75 °C
Typ. Ambient light immunity	Artificial light: ≤ 15,000 lx Sunlight: ≤ 50,000 lx
Shock resistance	30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
Vibration resistance	10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))
Air humidity	35 % ... 95 %, relative humidity (no condensation)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Resistance to cleaning agent	ECOLAB
UL File No.	NRKH.E181493 & NRKH7.E181493

Classifications

ECLASS 5.0	27270901
ECLASS 5.1.4	27270901
ECLASS 6.0	27270901
ECLASS 6.2	27270901
ECLASS 7.0	27270901
ECLASS 8.0	27270901
ECLASS 8.1	27270901
ECLASS 9.0	27270901
ECLASS 10.0	27270901
ECLASS 11.0	27270901
ECLASS 12.0	27270901
ETIM 5.0	EC002716
ETIM 6.0	EC002716
ETIM 7.0	EC002716
ETIM 8.0	EC002716
UNSPSC 16.0901	39121528

Adjustments

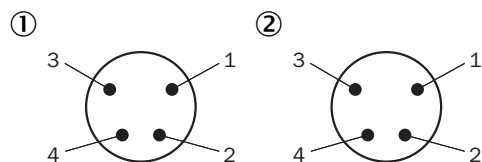
Display and adjustment elements



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

Connection type

Pinouts

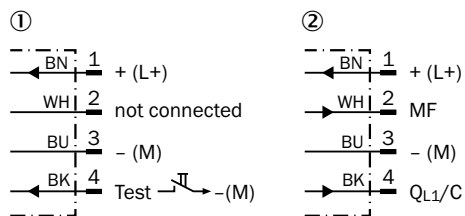


Male connector M8, 4-pin

- ① Receiver
- ② Sender

Connection diagram

Cd-392



- ① Sender
- ② Receiver

Truth table

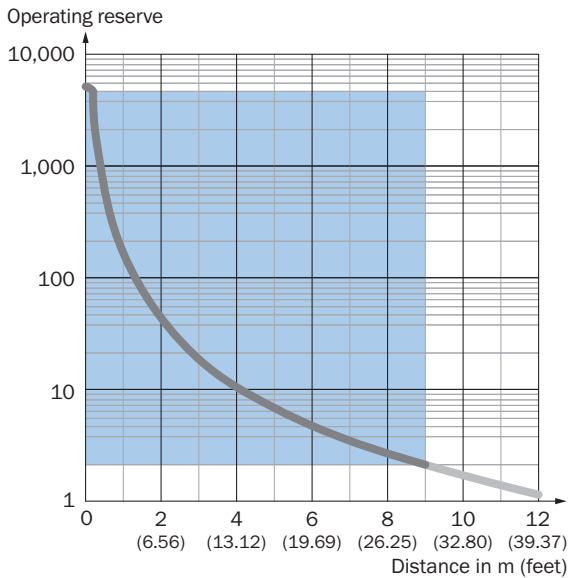
Push-pull: PNP/NPN – dark switching \bar{Q}

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

Push-pull: PNP/NPN - light switching Q

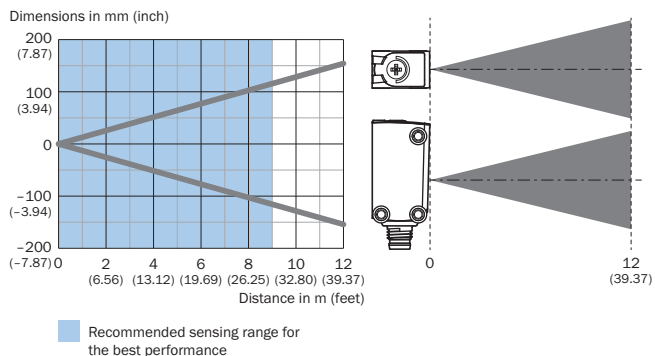
Light switching Q (normally closed (upper switch), normally open (lower switch))		
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✓	✗
Light receive indicator	☉	✗
Load resistance to L+	✗	⚠
Load resistance to M	⚠	✗

Characteristic curve

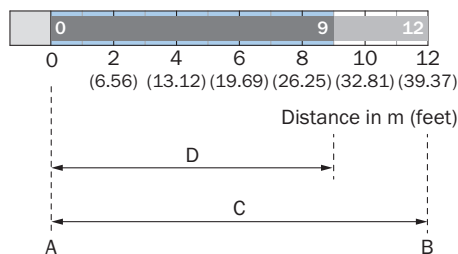


Recommended sensing range for the best performance

Light spot size



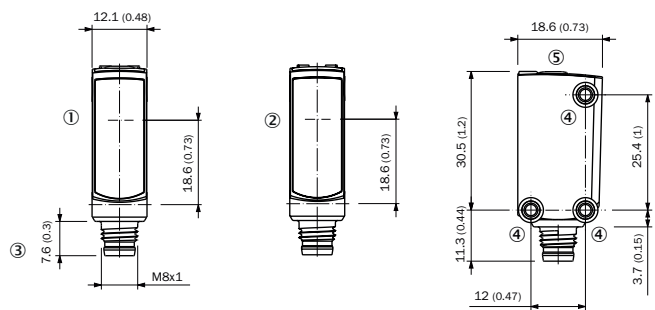
Sensing range diagram



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

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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.”

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