



DATA SHEET

WSE4SP-21311100ZZZ

W4
Photoelectric sensors

SICK

Sensor Intelligence

PHOTOELECTRIC SENSORS

WSE4SP-21311100ZZZ



Illustration may differ

ORDERING INFORMATION

Type	part no.
WSE4SP-21311100ZZZ	1140382

Further device versions and accessories at www.sick.com/W4



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 ₀ = +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	-	
Display		
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 applications	Detection of poorly remitting and tilted objects
Part number of individual components	WSO4SP-213ZZ1A0ZZZ, 2139776 WEO4SP-21311100ZZZ, 2139805

SAFETY-RELATED PARAMETERS

MTTF _D	1,219 years
DC _{avg}	0%

ELECTRONICS

Supply voltage U _B	10 V DC ... 30 V DC ¹⁾																				
Ripple	≤ 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	<table border="0"> <tr> <td>Number</td> <td>1</td> </tr> <tr> <td>Type</td> <td>Push-pull: PNP/NPN</td> </tr> <tr> <td>Switching mode</td> <td>Dark switching</td> </tr> <tr> <td>Signal voltage PNP HIGH/LOW</td> <td>Approx. U_B-2.5 V / 0 V</td> </tr> <tr> <td>Signal voltage NPN HIGH/LOW</td> <td>Approx. U_B / < 2.5 V</td> </tr> <tr> <td>Output current I_{max}</td> <td>≤ 100 mA</td> </tr> <tr> <td>Circuit protection outputs</td> <td>Reverse polarity protected Overcurrent protected Short-circuit protected</td> </tr> <tr> <td>Response time</td> <td>≤ 500 μs</td> </tr> <tr> <td>Repeatability (response time)</td> <td>150 μs</td> </tr> <tr> <td>Switching frequency</td> <td>1,000 Hz</td> </tr> </table>	Number	1	Type	Push-pull: PNP/NPN	Switching mode	Dark switching	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 μs	Repeatability (response time)	150 μs	Switching frequency	1,000 Hz
Number	1																				
Type	Push-pull: PNP/NPN																				
Switching mode	Dark switching																				
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 μs																				
Repeatability (response time)	150 μs																				
Switching frequency	1,000 Hz																				
Pin/Wire assignment, sender																					
Function of pin 4/black (BK)	Input, sender off, LOW active																				
Pin/Wire assignment, receiver																					
Function of pin 4/black (BK)	Digital output, dark switching, object present → output Q HIGH ²⁾																				

¹⁾ Limit values.

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

MECHANICS

Housing	Rectangular						
Design detail	Slim						
Dimensions (W x H x D)	12.1 mm x 41.9 mm x 18.6 mm						
Connection	Connector M8, 3-pin						
Material	<table border="0"> <tr> <td>Housing</td> <td>Plastic, VISTAL®</td> </tr> <tr> <td>Front screen</td> <td>Plastic, PMMA</td> </tr> <tr> <td>Male connector</td> <td>Plastic, VISTAL®</td> </tr> </table>	Housing	Plastic, VISTAL®	Front screen	Plastic, PMMA	Male connector	Plastic, VISTAL®
Housing	Plastic, VISTAL®						
Front screen	Plastic, PMMA						
Male connector	Plastic, VISTAL®						
Maximum tightening torque of the fixing screws	0.4 Nm						

AMBIENT DATA

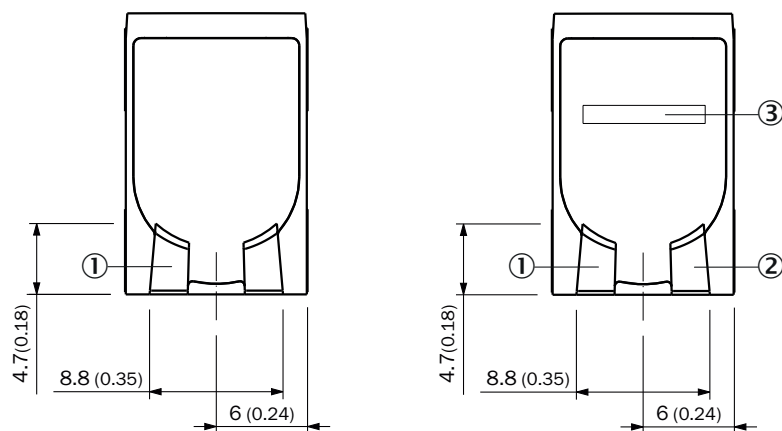
Enclosure rating	IP66 (EN 60529) IP67 (EN 60529)
------------------	------------------------------------

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

CERTIFICATES

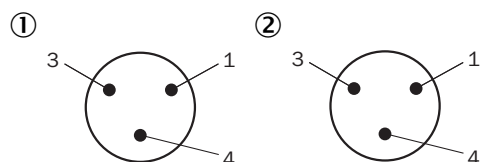
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓

DISPLAY AND ADJUSTMENT ELEMENTS



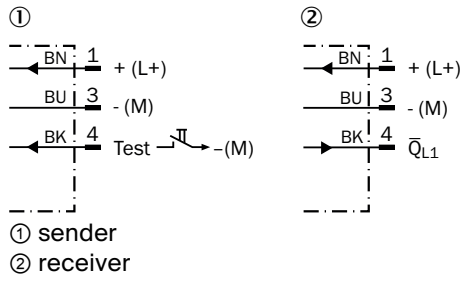
- ① LED green
- ② LED yellow
- ③ LED blue

CONNECTION TYPE CONNECTOR M8, 3-PIN



- ① sender
- ② receiver

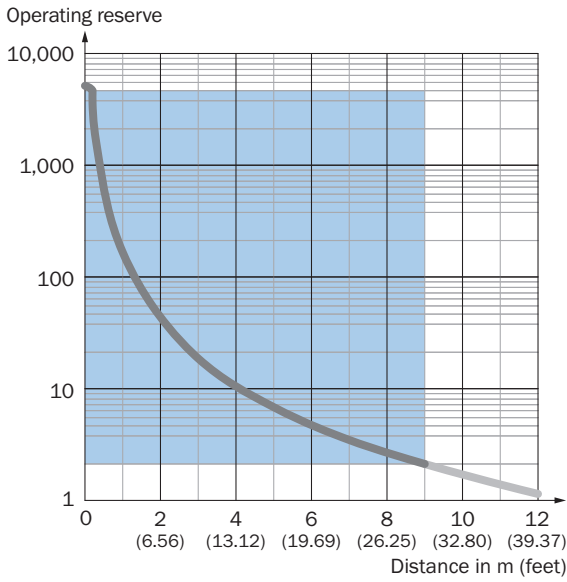
CONNECTION DIAGRAM CD-517



TRUTH TABLE PUSH-PULL: PNP/NPN - DARK SWITCHING \bar{Q}

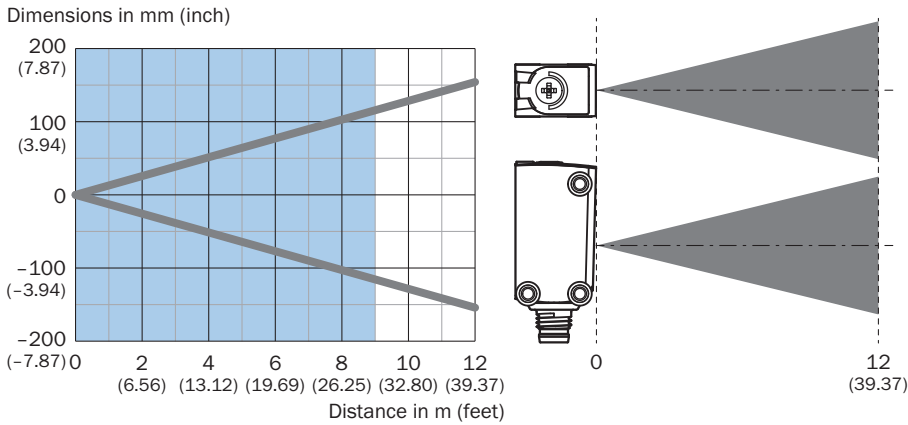
	Dark switching \bar{Q} (normally open (upper switch), normally closed (lower switch))	
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance to L+	⚡	✗
Load resistance to M	✗	⚡

CHARACTERISTIC CURVE



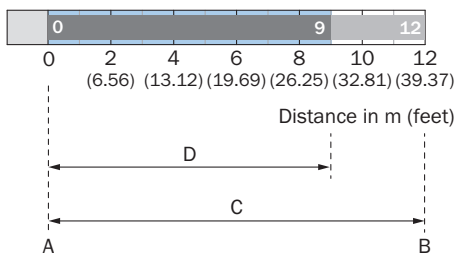
Recommended sensing range for the best performance

LIGHT SPOT SIZE



Recommended sensing range for the best performance

SENSING RANGE DIAGRAM

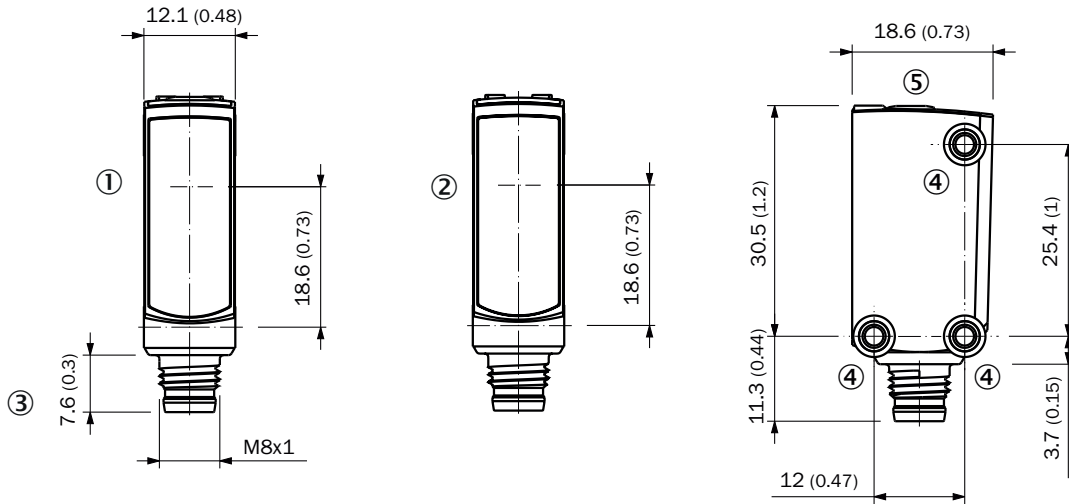


Recommended sensing range for the best performance

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, SENSOR



Dimensions in mm (inch)

- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Connection
- ④ M3 mounting hole
- ⑤ display and adjustment elements

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1140382



SICK AG
WALDKIRCH
GERMANY
SICK.COM

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 partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable 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