



DATA SHEET

WSE4FP-1G312100ZZZ

W4
Photoelectric sensors

SICK Sensor Intelligence

PHOTOELECTRIC SENSORS

WSE4F-
P-1G312100ZZZ

ORDERING INFORMATION

Type	part no.
WSE4FP-1G312100ZZZ	1120403

Further device versions and accessories at 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.	10 m	
Maximum distance range from receiver to sender (operating reserve 1)	0 m ... 10 m	
Recommended distance range from receiver to sender (operating reserve 2)	0 m ... 7.5 m	
Recommended sensing range for the best performance	0 m ... 7.5 m	
Emitted beam		
Light source	PinPoint LED	
Type of light	Visible red light	
Shape of light spot	Point-shaped	
Light spot size (distance)	Ø 40 mm (1,000 mm)	
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		
Wire/pin	For deactivation of the sender and execution of test logic	
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
Part number of individual components	WSO4FP-1G3ZZ1A0ZZZ, 2121133 WEO4FP-1G312100ZZZ, 2121134

SAFETY-RELATED PARAMETERS

MTTF ₀	574 years
DC _{avg}	0 %
T _M (mission time)	20 years

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>Light 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>Switching frequency</td> <td>1,000 Hz²⁾</td> </tr> </table>	Number	1	Type	Push-pull: PNP/NPN	Switching mode	Light 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	Switching frequency	1,000 Hz ²⁾
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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, light switching, object present → output Q LOW ³⁾																		

¹⁾ Limit values.

²⁾ With light/dark ratio 1:1.

³⁾ This switching output must not be connected to another output.

MECHANICS

Housing	Rectangular								
Design detail	Flat								
Dimensions (W x H x D)	16 mm x 40.1 mm x 12.1 mm								
Connection	Cable, 3-wire, 2 m								
Connection detail	<table border="0"> <tr> <td>Deep-freeze property</td> <td>Do not bend below 0 °C</td> </tr> <tr> <td>Conductor size</td> <td>0.14 mm²</td> </tr> <tr> <td>Cable diameter</td> <td>Ø 3.4 mm</td> </tr> <tr> <td>Length of cable (L)</td> <td>2 m</td> </tr> </table>	Deep-freeze property	Do not bend below 0 °C	Conductor size	0.14 mm ²	Cable diameter	Ø 3.4 mm	Length of cable (L)	2 m
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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>Cable</td> <td>Plastic, PVC</td> </tr> </table>	Housing	Plastic, VISTAL®	Front screen	Plastic, PMMA	Cable	Plastic, PVC		
Housing	Plastic, VISTAL®								
Front screen	Plastic, PMMA								
Cable	Plastic, PVC								
Weight	Approx. 30 g								

Maximum tightening torque of the fixing screws	0.4 Nm
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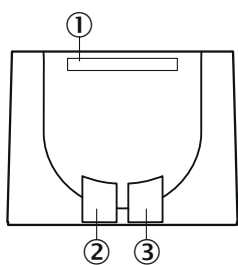
AMBIENT DATA

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

CERTIFICATES

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

DISPLAY AND ADJUSTMENT ELEMENTS



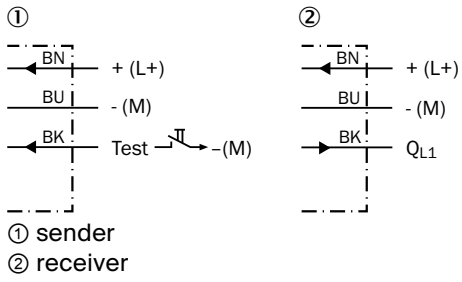
- ① LED blue
- ② LED green
- ③ LED yellow

CONNECTION TYPE CABLE, 3-WIRE



- ① sender
- ② receiver

CONNECTION DIAGRAM CD-519



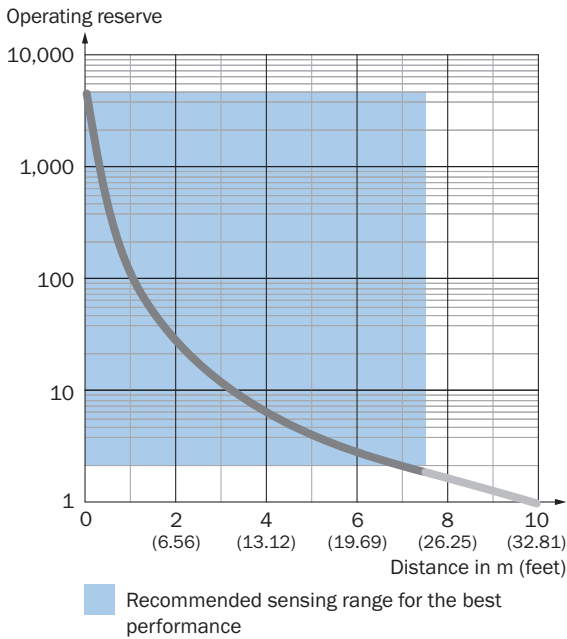
TRUTH TABLE PUSH-PULL: PNP/NPN - DARK SWITCHING \bar{Q}

	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	✗	⚡

TRUTH TABLE PUSH-PULL: PNP/NPN - LIGHT SWITCHING Q

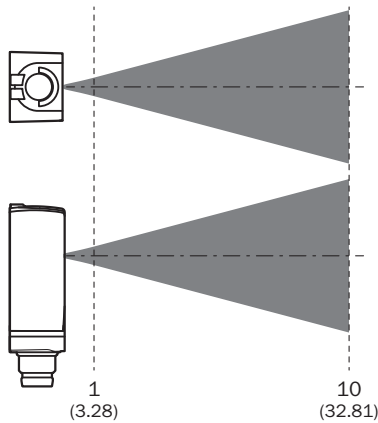
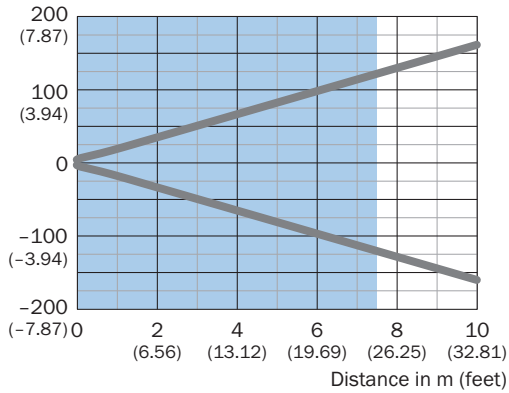
	Light switching Q (normally closed (upper switch), normally open (lower switch))	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance to L+	✗	⚡
Load resistance to M	⚡	✗

CHARACTERISTIC CURVE



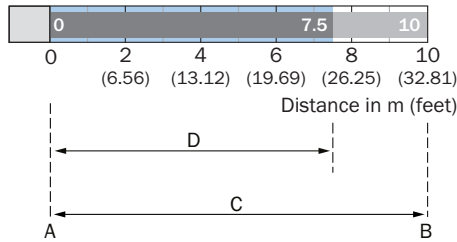
LIGHT SPOT SIZE

Dimensions in mm (inch)



Recommended sensing range for the best performance

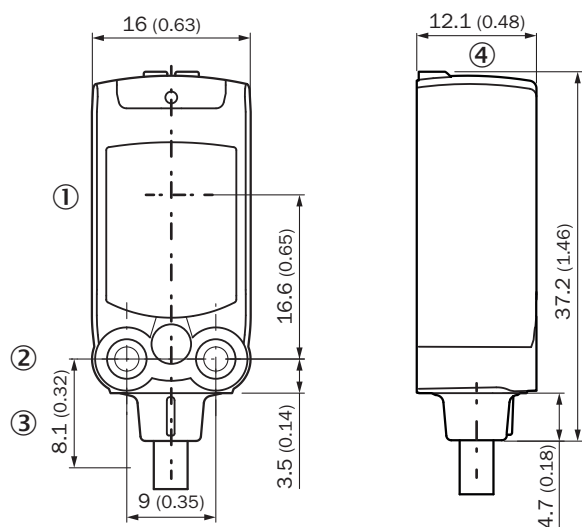
SENSING RANGE DIAGRAM



- 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

Recommended sensing range for the best performance

DIMENSIONAL DRAWING



Dimensions in mm (inch)

- ① Center of optical axis
- ② M3 mounting hole
- ③ Connection
- ④ 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/1120403



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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

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