



DATA SHEET

WLG4FP-1G312130ZZZ

W4
Photoelectric sensors

SICK Sensor Intelligence



Illustration may differ

PHOTOELECTRIC SENSORS

WLG4FP-1G312130ZZZ

ORDERING INFORMATION

Type	part no.
WLG4FP-1G312130ZZZ	1150153

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



DETAILED TECHNICAL DATA

FEATURES

Functional principle		Photoelectric retro-reflective sensor
Functional principle detail		ClearSens, With minimum distance to reflector (dual lens system)
Sensing range		
	Sensing range min.	15 mm
	Sensing range max.	4.5 m
Maximum distance range from reflector to sensor (operating reserve 1)		0.015 m ... 4.5 m
Recommended distance range from reflector to sensor (operating reserve 3,75)		0.035 m ... 3.9 m
Reference reflector		Reflector P250
Recommended sensing range for the best performance		0.035 m ... 3.9 m
Polarisation filter		Yes
Emitted beam		
	Light source	PinPoint LED
	Type of light	Visible red light
	Shape of light spot	Point-shaped
	Light spot size (distance)	Ø 38 mm (1,000 mm)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)		< +/- 1.5° (at T _U = +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		
	Teach-in button	For sensitivity adjustment
Display		
	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	Detecting transparent objects

SAFETY-RELATED PARAMETERS

MTTF _D	1,684 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> <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>Repeatability (response time)</td><td>150 μs ²⁾</td></tr> <tr> <td>Switching frequency</td><td>1,000 Hz ³⁾</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	Repeatability (response time)	150 μs ²⁾	Switching frequency	1,000 Hz ³⁾
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Pin/Wire assignment																					
Function of pin 4/black (BK)	Digital output, light switching, object present → output Q LOW ⁴⁾																				

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

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> <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> <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								

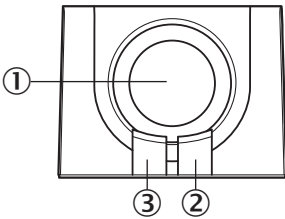
AMBIENT DATA

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: ≤ 50,000 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

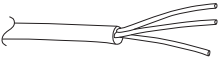
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
China Compulsory Product Certification (CCC) exempt	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	✓

ADJUSTMENTS

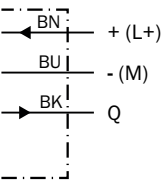


- ① Teach-in button
- ② LED yellow
- ③ LED green

CONNECTION TYPE CABLE, 3-WIRE



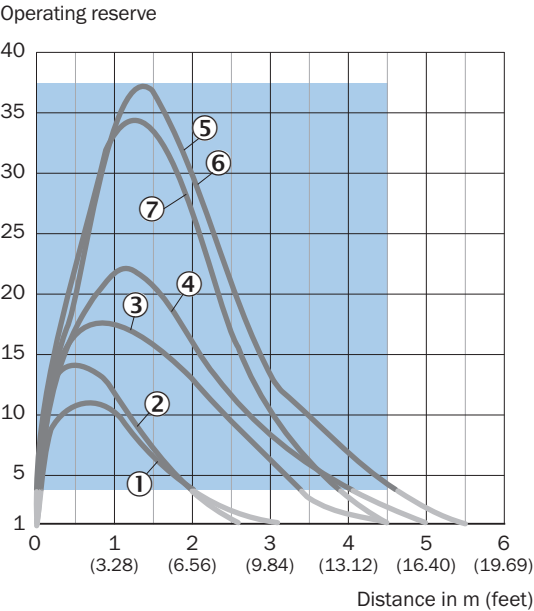
CONNECTION DIAGRAM CD-043



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

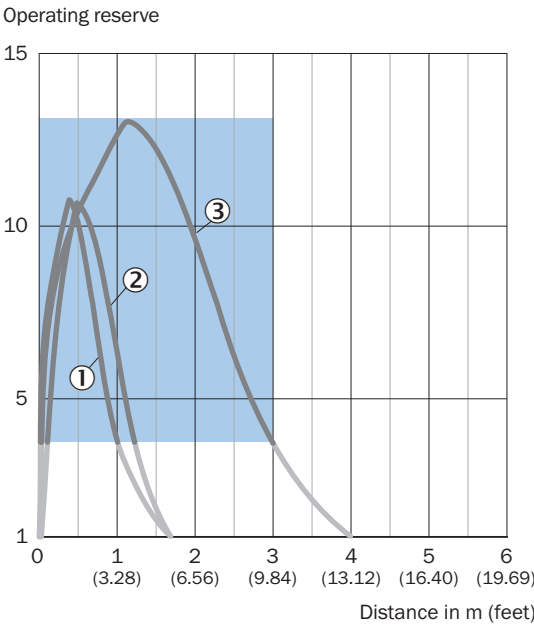
	Light switching Q (normally closed (upper switch), normally open (lower switch))	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance to L+	✗	⚡
Load resistance to M	⚡	✗

CHARACTERISTIC CURVE STANDARD REFLECTORS



- Recommended sensing range for the best performance
- ① Reflector PL22
 - ② Reflector PL20A
 - ③ Reflector PL30A
 - ④ Reflector PL40A
 - ⑤ Reflector PL80A
 - ⑥ Reflector C110A
 - ⑦ Reflector P250

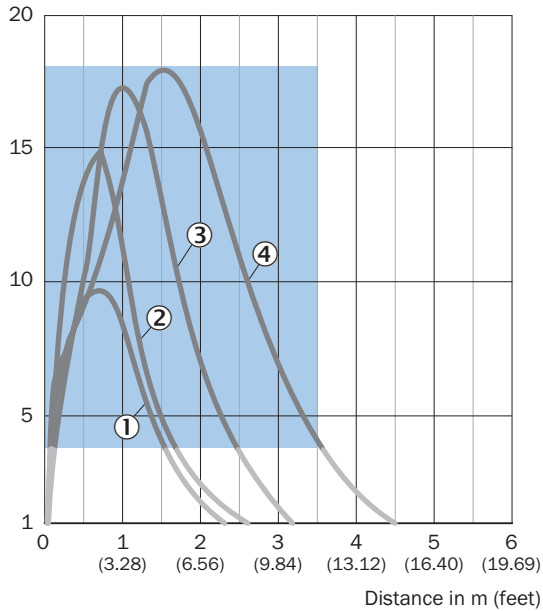
CHARACTERISTIC CURVE REFLECTIVE TAPE



- Recommended sensing range for the best performance
- ① Reflective tape REF-DG
 - ② reflective tape REF-IRF-56
 - ③ Reflective tape REF-AC1000

CHARACTERISTIC CURVE FINE TRIPLE REFLECTORS

Operating reserve

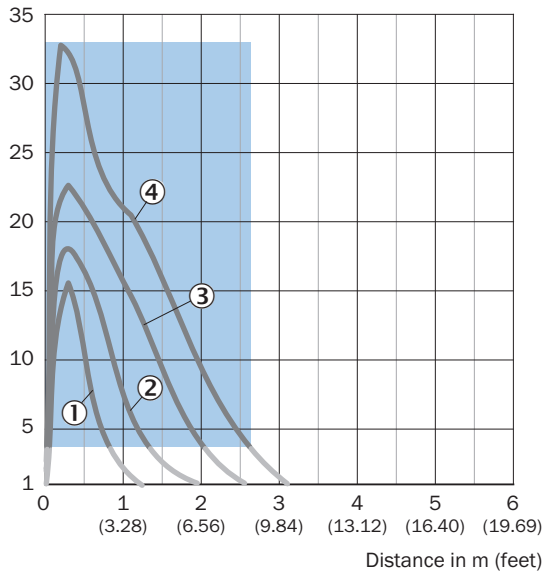


Recommended sensing range for the best performance

- ① PL10FH reflector
- ② PL10F reflector
- ③ Reflector PL20F
- ④ Reflector P250F

CHARACTERISTIC CURVE CHEMICAL-RESISTANT REFLECTORS

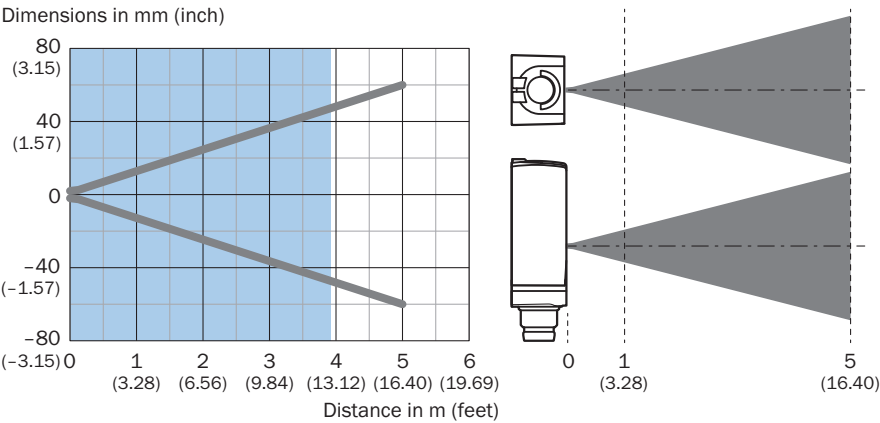
Operating reserve



Recommended sensing range for the best performance

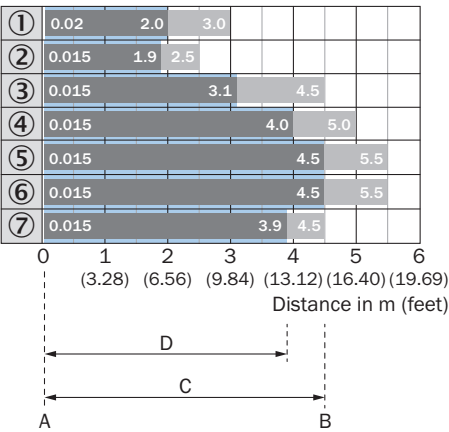
- ① PL10F CHEM reflector
- ② Reflector PL20 CHEM
- ③ Reflector P250 CHEM
- ④ Reflector P250H

LIGHT SPOT SIZE



Recommended sensing range for the best performance

SENSING RANGE DIAGRAM STANDARD REFLECTORS

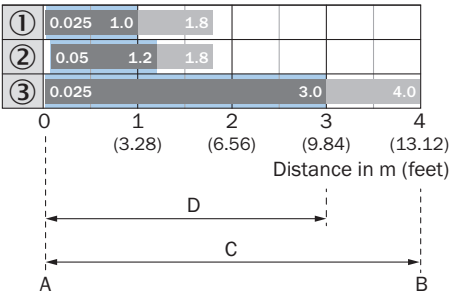


A = Sensing range min. in m
B = Sensing range max. in m
C = Maximum distance range from reflector to sensor (operating reserve 1)
D = Recommended distance range from reflector to sensor (operating reserve 3.75)

Recommended sensing range for the best performance

- ① Reflector PL22
- ② Reflector PL20A
- ③ Reflector PL30A
- ④ Reflector PL40A
- ⑤ Reflector PL80A
- ⑥ Reflector C110A
- ⑦ Reflector P250

SENSING RANGE DIAGRAM REFLECTIVE TAPE

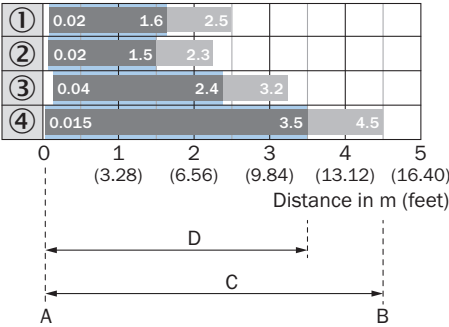


A = Sensing range min. in m
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C = Maximum distance range from reflector to sensor (operating reserve 1)
D = Recommended distance range from reflector to sensor (operating reserve 3.75)

Recommended sensing range for the best performance

- ① Reflective tape REF-DG (50 x 50 mm)
- ② reflective tape REF-IRF-56
- ③ Reflective tape REF-AC1000

SENSING RANGE DIAGRAM FINE TRIPLE REFLECTORS

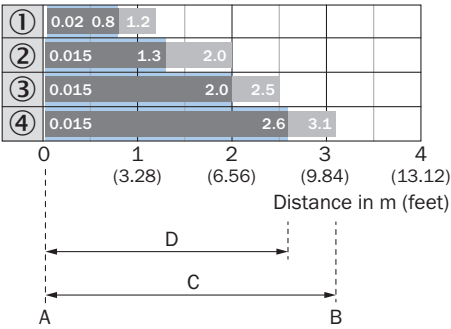


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Recommended sensing range for the best performance

- ① PL10FH reflector
- ② PL10F reflector
- ③ Reflector PL20F
- ④ Reflector P250F

SENSING RANGE DIAGRAM CHEMICAL-RESISTANT REFLECTORS

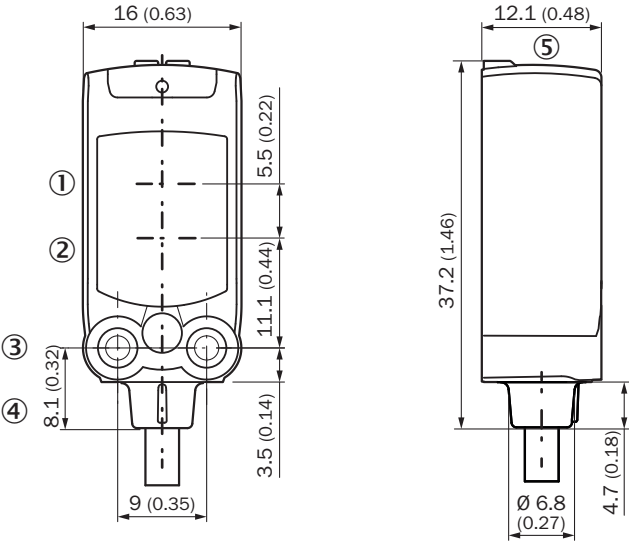


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Recommended sensing range for the best performance

- ① PL10F CHEM reflector
- ② Reflector PL20 CHEM
- ③ Reflector P250 CHEM
- ④ Reflector P250H

DIMENSIONAL DRAWING



- Dimensions in mm (inch)
- ① Center of optical axis, sender
 - ② Center of optical axis, receiver
 - ③ M3 mounting hole
 - ④ Connection
 - 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/1150153

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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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