



# WLG4SP-21312130ZZZ

## W4

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
WLG4SP-21312130ZZZ	1141247

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

Detailed technical data

Features

<b>Functional principle</b>		Photoelectric retro-reflective sensor
<b>Functional principle detail</b>		Without reflector minimum distance (autocollimation/coaxial optics), ClearSens
<b>Sensing range</b>		
	Sensing range min.	0 m
	Sensing range max.	7.1 m
	Recommended sensing range for the best performance	0 m ... 5 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)	150 mm (5 m)
	Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at T <sub>U</sub> = +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 <sub>a</sub> = +25 °C
<b>Adjustment</b>		
	Teach-in button	BluePilot For sensitivity adjustment
<b>Display</b>		
	LED blue	BluePilot: Alignment aid
	LED green	Operating indicator

	LED yellow	Static on: power on
		Status of received light beam
		Static on: object not present
		Static off: object present
<b>Special applications</b>		Flashing: Below the 1.5 function reserve
		Detecting objects wrapped in film, Detecting transparent objects

## Safety-related parameters

<b>MTTF<sub>D</sub></b>	1,590 years
<b>DC<sub>avg</sub></b>	0%

## Electronics

<b>Supply voltage U<sub>B</sub></b>		10 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>		≤ 5 V <sub>pp</sub>
<b>Usage category</b>		DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
<b>Current consumption</b>		≤ 20 mA, without load. At U <sub>B</sub> = 24 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 <sub>B</sub> -2.5 V / 0 V
	Signal voltage NPN HIGH/LOW	Approx. U <sub>B</sub> / < 2.5 V
	Output current I <sub>max.</sub>	≤ 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
<b>Pin/Wire assignment</b>		
	Function of pin 4/black (BK)	Digital output, light switching, object present → output Q <sub>L1</sub> LOW <sup>2)</sup>

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

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

## Mechanics

<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>		Connector M8, 3-pin
<b>Material</b>		
	Housing	Plastic, VISTAL®
	Front screen	Plastic, PMMA
	Male connector	Plastic, VISTAL®

<b>Maximum tightening torque of the fixing screws</b>	0.4 Nm
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#### 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: ≤ 50,000 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

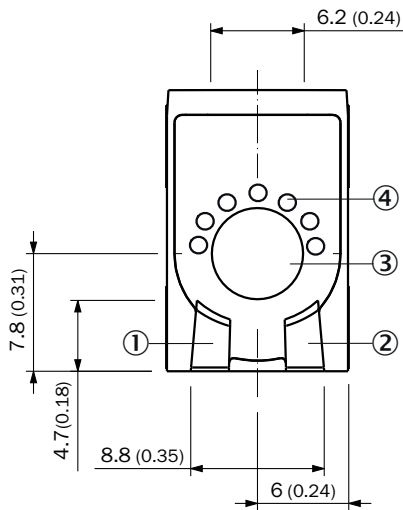
#### Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>cULus certificate</b>	✓

#### Classifications

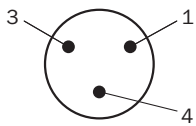
<b>ECLASS 5.0</b>	27270902
<b>ECLASS 5.1.4</b>	27270902
<b>ECLASS 6.0</b>	27270902
<b>ECLASS 6.2</b>	27270902
<b>ECLASS 7.0</b>	27270902
<b>ECLASS 8.0</b>	27270902
<b>ECLASS 8.1</b>	27270902
<b>ECLASS 9.0</b>	27270902
<b>ECLASS 10.0</b>	27270902
<b>ECLASS 11.0</b>	27270902
<b>ECLASS 12.0</b>	27270902
<b>ETIM 5.0</b>	EC002717
<b>ETIM 6.0</b>	EC002717
<b>ETIM 7.0</b>	EC002717
<b>ETIM 8.0</b>	EC002717
<b>UNSPSC 16.0901</b>	39121528

## display and adjustment elements

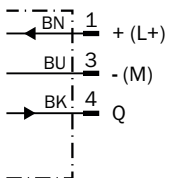


- ① LED green
- ② LED yellow
- ③ Teach-in button
- ④ LED blue

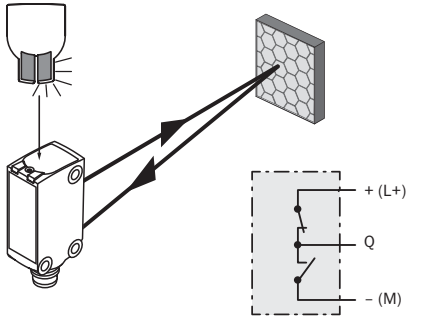
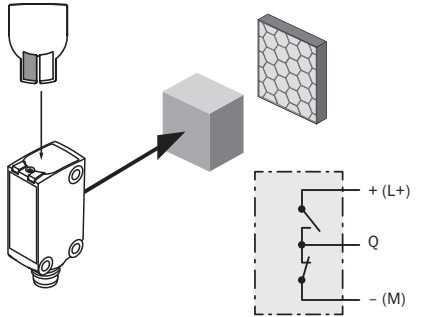
## Connection type Connector M8, 3-pin



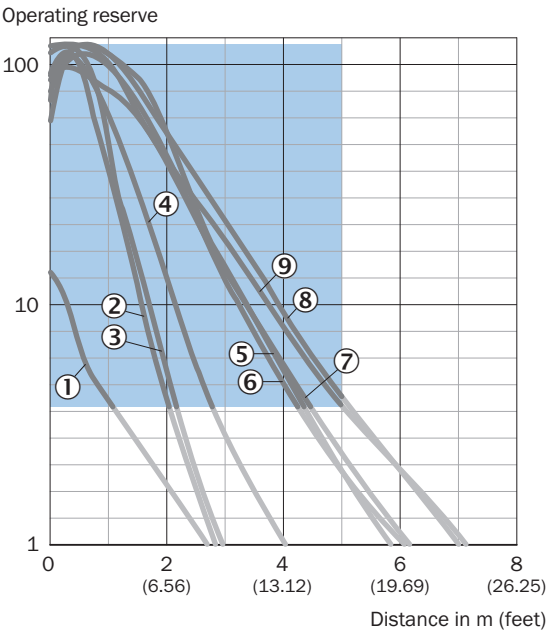
## Connection diagram Cd-045



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	⚡	✗
		

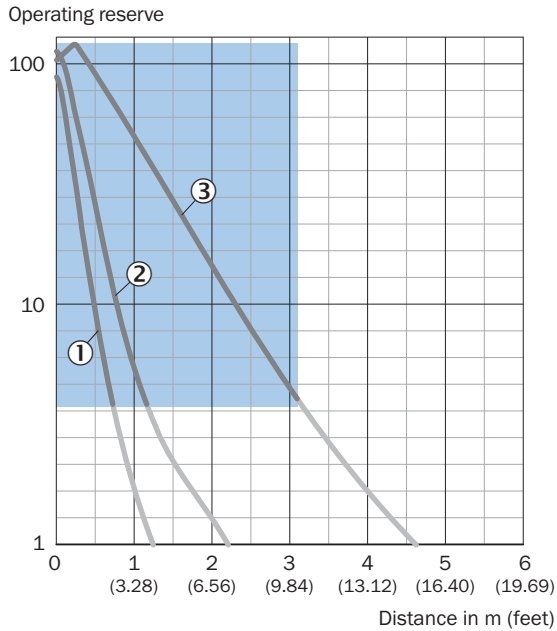
Characteristic curve Standard reflectors



- ① Reflector PL40A Antifog
- ② Reflector PL20A
- ③ reflector PL22-2
- ④ Reflector P250H
- ⑤ Reflector P250

- ⑥ Reflector PL30A
- ⑦ Reflector PL40A
- ⑧ Reflector C110A
- ⑨ Reflector PL80A

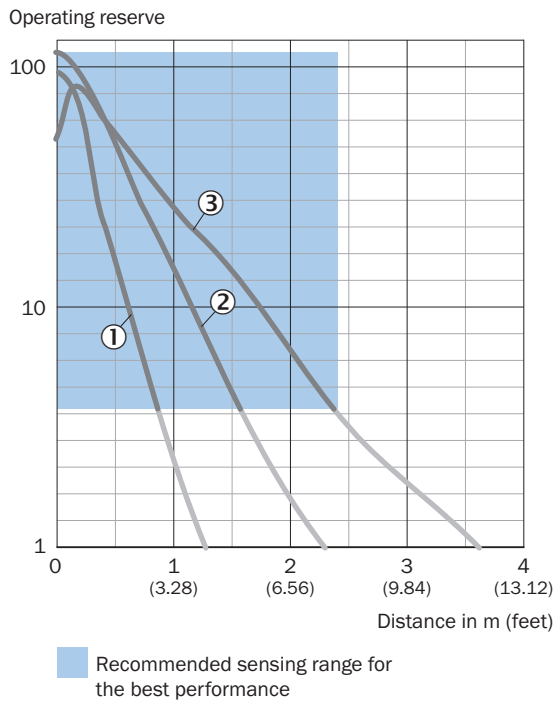
### Characteristic curve Reflective tape



Recommended sensing range for the best performance

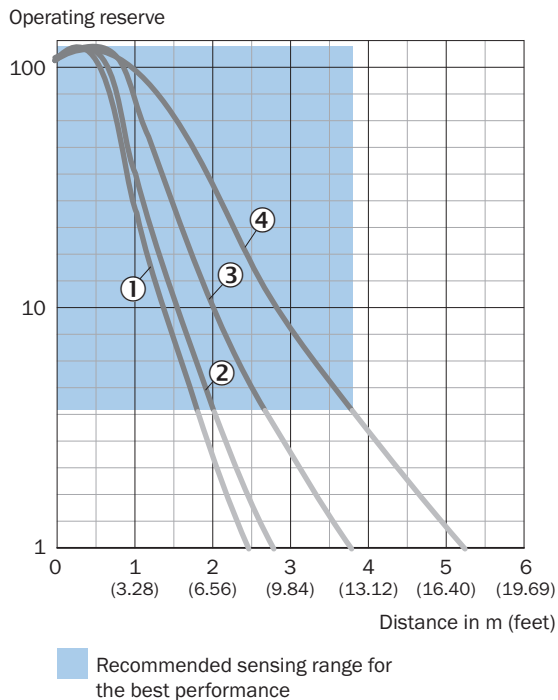
- ① Reflective tape REF-DG
- ② Reflective tape REF-IRF-56
- ③ Reflective tape REF-AC1000

### Characteristic curve Chemical-resistant reflectors



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

### Characteristic curve Fine triple reflectors



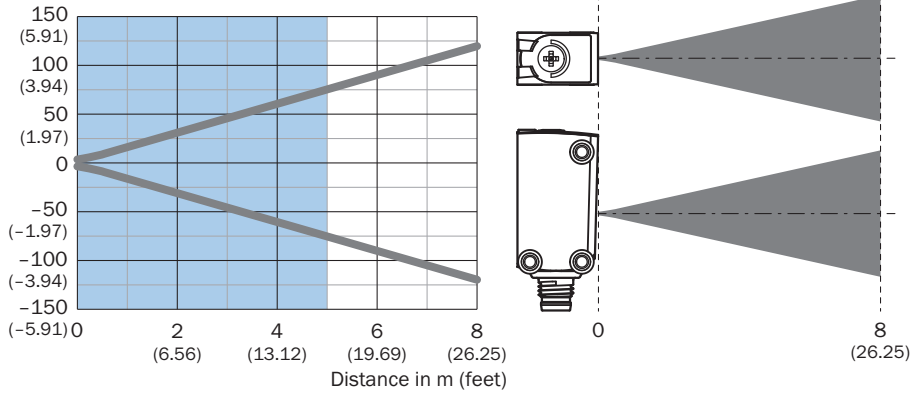
- ① PL10F reflector
- ② PL10FH-1 reflector



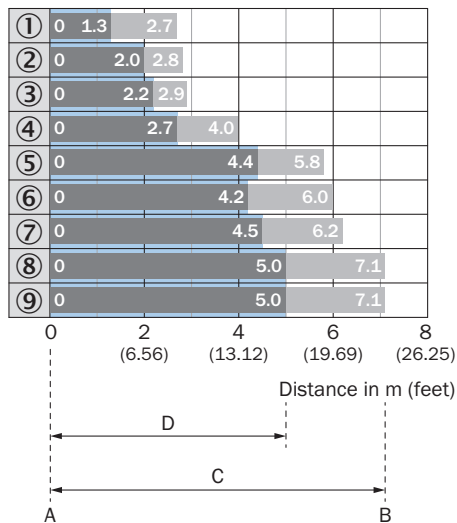
- ③ Reflector PL20F
- ④ Reflector P250F

## Light spot size

Dimensions in mm (inch)



## Sensing range diagram Standard reflectors

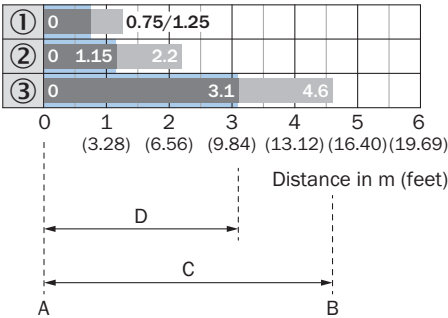


Recommended sensing range for the best performance

1	Reflector PL40A Antifog
2	Reflector PL20A
3	Reflector PL22-2
4	Reflector P250H
5	Reflector P250
6	Reflector PL30A
7	Reflector PL40A
8	Reflector C110A

9	Reflector PL80A
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 re- flector to sensor (operating reserve 3,75)

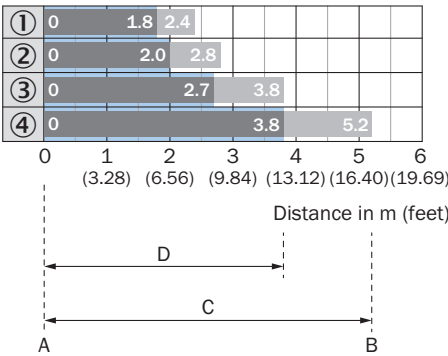
Sensing range diagram Reflective tape



Recommended sensing range for the best performance

1	Reflective tape REF-DG
2	Reflective tape REF-IRF-56
3	Reflective tape REF-AC1000
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 re- flector to sensor (operating reserve 3,75)

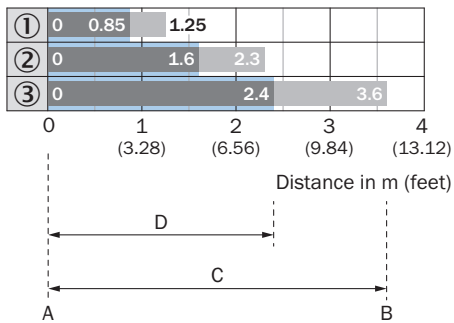
Sensing range diagram Fine triple reflectors



Recommended sensing range for the best performance

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

### Sensing range diagram Chemical-resistant reflectors



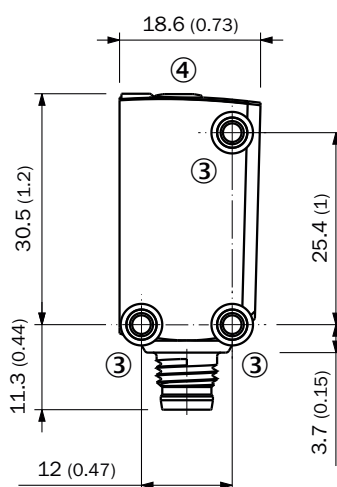
Recommended sensing range for the best performance

1	PL10F CHEM reflector
2	Reflector PL20 CHEM
3	Reflector P250 CHEM
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)

Technical drawing of a pin with the following dimensions:

- Overall length: 18.6 (0.73)
- Head length: 7.6 (0.3)
- Head diameter: 12.1 (0.48)
- Thread: M8x1

The drawing includes callouts ① for the main body and ② for the head.






① Center of optical axis




② Connection

③ M3 mounting hole

- ④ display and adjustment elements

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

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Plate N08 for universal clamp bracket</li><li>• <b>Material:</b> Steel, zinc diecast</li><li>• <b>Details:</b> Zinc plated steel (sheet), Zinc die cast (clamping bracket)</li><li>• <b>Items supplied:</b> Universal clamp (5322626), mounting hardware</li><li>• <b>Usable for:</b> W100, W150, W4S, W4F, W8, W9-3, W8G, W8 Laser, W8 Inox, G6, W100 Laser, W100-2, W10, G6 Inox, RAY10, W4SLG-3, W9, GR18, MultiPulse, Reflex Array, MultiLine, LUT3, KT5, KT8, KT10, CS8</li></ul>	BEF-KHS-N08	2051607
	<ul style="list-style-type: none"><li>• <b>Material:</b> Stainless steel</li><li>• <b>Details:</b> Stainless steel (1.4301)</li><li>• <b>Suitable for:</b> W4S, W4S</li></ul>	BEF-WN-G6	2062909
reflectors and optics			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Rectangular, screw connection</li><li>• <b>Dimensions:</b> 84 mm 84 mm</li><li>• <b>Ambient operating temperature:</b> -30 °C ... +65 °C</li></ul>	PL80A	1003865

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 3-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul>	YF8U13-050VA1XLEAX	2095884
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 3-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF8U13-050UA1XLEAX	2094788
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M8, 3-pin, straight, A-coded</li> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> 0.14 mm² ... 0.5 mm²</li> </ul>	STE-0803-G	6037322

## 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:

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