



# GL6L-P4212

G6

MINIATURE PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	Part no.
GL6L-P4212	1115573

**Included in delivery:** BEF-W100-A (1), P250F (1)

Other models and accessories → [www.sick.com/G6](http://www.sick.com/G6)

### Detailed technical data

#### Features

<b>Functional principle</b>	Photoelectric retro-reflective sensor
<b>Sensing range</b>	
Sensing range min.	0.08 m
Sensing range max.	12 m
Maximum distance range from reflector to sensor (operating reserve 1)	0.08 m ... 12 m
Recommended distance range from reflector to sensor (operating reserve 2)	0.08 m ... 10 m
Reference reflector	Reflector P250F
Recommended sensing range for the best performance	0.08 m ... 4.2 m
<b>Polarisation filters</b>	Yes
<b>Emitted beam</b>	
Light source	Laser
Type of light	Visible red light
Shape of light spot	Point-shaped
Light spot size (distance)	Ø 3.5 mm (1,000 mm)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at Ta = +23 °C)
<b>Key laser figures</b>	
Normative reference	IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11
Laser class	1
Wave length	680 nm
Pulse duration	2 µs
Maximum pulse power	≤ 11.9 mW
Average service life	100,000 h at Ta = +25 °C
<b>Smallest detectable object (MDO) typ.</b>	

		3.5 mm (at 1 m distance (object with 90% remission factor (corresponds to standard white according to DIN 5033)))
<b>Adjustment</b>	Potentiometer	For setting the sensing range
	Operating mode switch	For inverting the switching function (light/dark switching)
<b>Indication</b>	LED green	Operating indicator Static on: power on
	LED yellow	Status of received light beam Static on: object not present Static off: object present
<b>Items supplied</b>		Reflector P250F, Stainless steel mounting bracket (1.4301/304) BEF-W100-A

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	1,005 years
<b>DC<sub>avg</sub></b>	0 %
<b>T<sub>M</sub> (mission time)</b>	10 years (EN 60825-1)

### 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-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	PNP
	Switching mode	Light/dark switching
	Signal voltage PNP HIGH/LOW	Approx. U <sub>B</sub> -3 V / 0 V
	Output current I <sub>max.</sub>	≤ 100 mA <sup>2)</sup>
	Circuit protection outputs	Reverse polarity protected Overcurrent protected Short-circuit protected
	Response time	≤ 625 μs
	Switching frequency	1,000 Hz <sup>3)</sup>
<b>Pin/Wire assignment</b>	Function of pin 4/black (BK)	Digital output, light switching, object present → output Q LOW
	Function of pin 4/black (BK) – detail	The pin 4 function of the sensor can be switched, Additional possible settings via operating mode switch

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

<sup>2)</sup> At U<sub>B</sub> > 24 V, I max. = 50 mA.

<sup>3)</sup> With light/dark ratio 1:1.

### Mechanics

<b>Housing</b>	Rectangular
<b>Dimensions (W x H x D)</b>	12 mm x 31.5 mm x 21 mm
<b>Connection</b>	Male connector M8, 4-pin

<b>Material</b>	Housing	Plastic, ABS
	Front screen	Plastic, PMMA
	Cable	Plastic, PVC
	Male connector	Metal, copper alloy (C3604 CUZN39PB3)
<b>Weight</b>	Approx. 60 g	

### Ambient data

<b>Enclosure rating</b>	IP67 (EN 60529)
<b>Ambient operating temperature</b>	-20 °C ... +50 °C <sup>1) 2)</sup>
<b>Ambient temperature, storage</b>	-40 °C ... +70 °C
<b>Typ. Ambient light immunity</b>	Sunlight: ≤ 13,000 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 ... 55 Hz (Amplitude 0.5 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>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

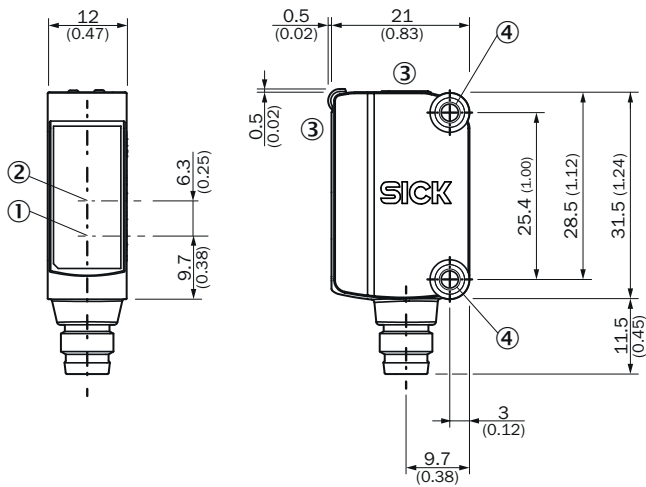
<sup>1)</sup> As of  $T_a \Rightarrow 45 \text{ °C}$ , a max. supply voltage  $U_B = 24 \text{ V}$  and a max. load current  $I_{max.} = 50 \text{ mA}$  is permitted.

<sup>2)</sup> Below  $T_u = -20 \text{ °C}$ , a warm-up time of 3 seconds is required.

### 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

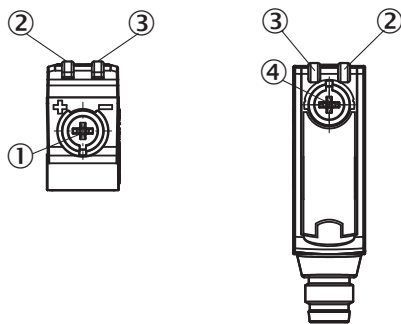
Dimensional drawing (Dimensions in mm (inch))



- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Display and adjustment elements
- ④ Mounting holes M3

Adjustments

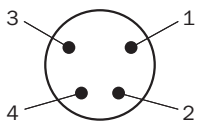
Display and adjustment elements



- ① Potentiometer
- ② LED yellow
- ③ LED green
- ④ Operating mode switch

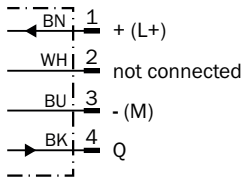
Connection type

Male connector M8, 4-pin



### Connection diagram

Cd-066



### Truth table

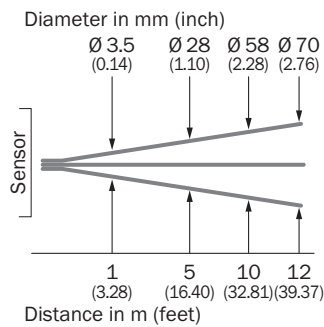
PNP - light switching

	Light switching Q (normally closed)	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	☑	☒
Light receive indicator	☑	☒
Load resistance	⚠	☒

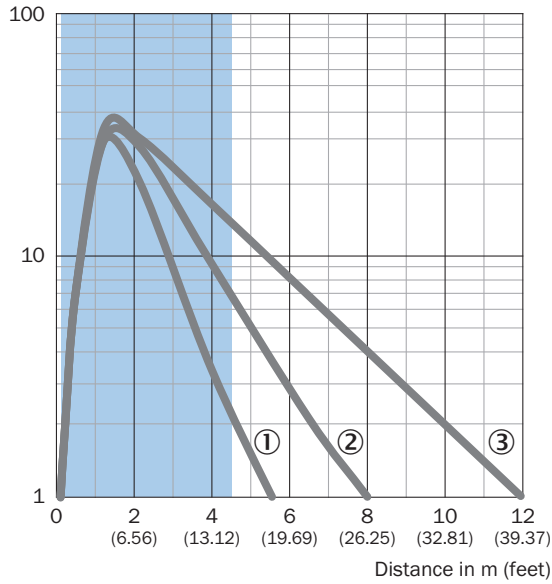
PNP - dark switching

	Dark switching $\bar{Q}$ (normally open)	
	Object not present → Output LOW	Object present → Output HIGH
Light receive	☑	☒
Light receive indicator	☒	☑
Load resistance	☒	⚠

### Characteristic curve



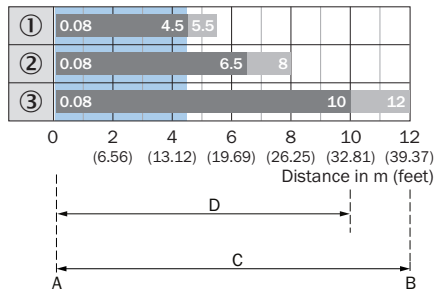
Operating reserve



Recommended sensing range for the best performance

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

Sensing range diagram






- 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 2)

Recommended sensing range for the best performance

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

### Recommended accessories

Other models and accessories → [www.sick.com/G6](http://www.sick.com/G6)

	Brief description	Type	Part no.
Universal bar clamp systems			
	Clamp bar to fix G6 sensors on rods of 12 mm, clamp-on design up to 4 mm wall thickness, aluminum (clamp bar), stainless steel (bracket), clamp bar mounting and clamp function, mounting bracket, mounting hardware	BEF-KHS-IS12G6	2086865
Mounting brackets and plates			
	Stainless steel (1.4301)	BEF-WN-G6	2062909
Reflectors			
	Fine triple reflector, screw connection, suitable for laser sensors, 20 mm x 60 mm, PM-MA/ABS, Screw-on, 2 hole mounting	PL20F	5308844



## 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:

Contacts and other locations –[www.sick.com](http://www.sick.com)