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Product data sheet



GSE6L-P4211

G6

MINIATURE PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

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GSE6L-P4211 | G6

MINIATURE PHOTOELECTRIC SENSORS



Illustration may differ

Ordering information

Type	Part no.
GSE6L-P4211	1109729

Other models and accessories → www.sick.com/G6

Detailed technical data

Features

Functional principle	Through-beam photoelectric sensor
Sensing range	
Sensing range min.	0 m
Sensing range max.	40 m
Recommended sensing range for the best performance	0 m ... 30 m
Polarisation filters	No
Emitted beam	
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)
Key laser figures	
Normative reference	IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11
Laser class	1
Wave length	680 nm
Pulse duration	3 µs
Maximum pulse power	≤ 7.8 mW
Average service life	100,000 h at T_a = +25 °C
Smallest detectable object (MDO) typ.	3.5 mm (at 1 m distance (object with 90% remission (corresponds on standard white DIN 5033)))
Adjustment	
Potentiometer	For setting the sensing range
Operating mode switch	For inverting the switching function (light/dark switching)
Indication	
LED green	Operating indicator

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	Static on: power on
LED yellow	Status of received light beam Static on: object present Static off: object not present

Safety-related parameters

$MTTF_D$	1,005 years
DC_{avg}	0 %
T_M (mission time)	10 years (EN 60825-1)

Electrical data

Supply voltage U_B	10 V DC ... 30 V DC [1]
Ripple	< 5 V_{pp}
Usage category	DC-13 (According to EN 60947-5-2)
Current consumption	≤ 20 mA, without load. At U_B = 24 V
Protection class	III
Digital output	
Number	2
Type	PNP
Signal voltage NPN HIGH/LOW	Approx. U_B / ≤ 3 V
Output current $I_{max.}$	≤ 100 mA [2]
Circuit protection outputs	Reverse polarity protected Overcurrent protected Short-circuit protected
Response time	≤ 625 µs
Switching frequency	1,000 Hz [3]
Pin/Wire assignment	
Function of pin 4/black (BK)	Digital output, light switching, object present → output Q HIGH
Function of pin 4/black (BK) – detail	The pin 4 function of the sensor can be switched, Additional possible settings via operating mode switch

[1] Limit values U_B connections, reverse polarity protected.

[2] At U_B > 24 V, I max. = 50 mA.

[3] With light/dark ratio 1:1.

Mechanical data

Housing	Rectangular
Dimensions (W x H x D)	12 mm x 31.5 mm x 21 mm
Connection	Male connector M8, 4-pin
Material	
Housing	Plastic, ABS
Front screen	Plastic, PMMA
Cable	PVC
Male connector	Copper alloy (C3604 CUZN39PB3)
Weight	Approx. 60 g

Ambient data

Enclosure rating	IP67 (EN 60529)
Ambient operating temperature	–20 °C ... +50 °C [1) 2)]
Ambient temperature, storage	–40 °C ... +70 °C
Typ. Ambient light immunity	Sunlight: ≤ 13,000 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 ... 55 Hz (Amplitude 0.5 mm, 3x30 min (EN60068-2-6))
Air humidity	35 % ... 95 %, Relative humidity (no condensation)
Electromagnetic compatibility (EMC)	EN 60947-5-2
UL File No.	NRKH.E348498 & NRKH7.E348498

[1)] As of T_a => 45 °C, a max. supply voltage U_B = 24 V and a max. load current $I_{max.}$ = 50 mA is permitted.

[2)] Below T_a = –20 °C a warm-up time of 3 seconds is required.

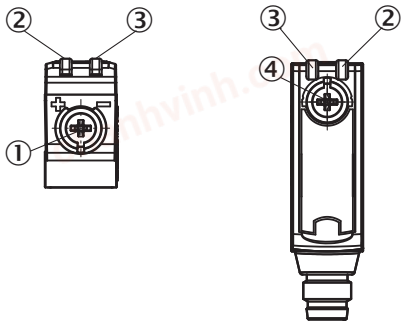
Classifications

ECLASS 5.0	27270901
ECLASS 5.1.4	27270901
ECLASS 6.0	27270901
ECLASS 6.2	27270901
ECLASS 7.0	27270901
ECLASS 8.0	27270901
ECLASS 8.1	27270901
ECLASS 9.0	27270901
ECLASS 10.0	27270901
ECLASS 11.0	27270901
ECLASS 12.0	27270901
ETIM 5.0	EC002716
ETIM 6.0	EC002716
ETIM 7.0	EC002716
ETIM 8.0	EC002716
UNSPSC 16.0901	39121528

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Adjustments

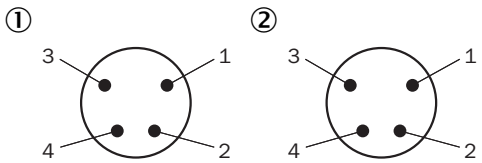
Display and adjustment elements



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

Connection type

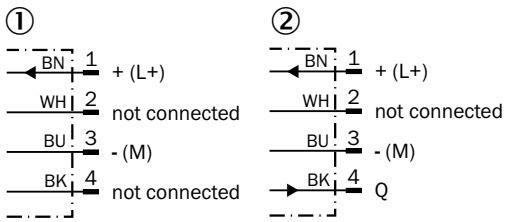
Pin assignment



Male connector M8, 4-pin
① Receiver
② Sender

Connection diagram

Cd-057

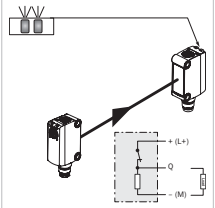
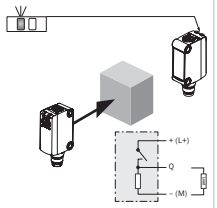


① Sender
② Receiver

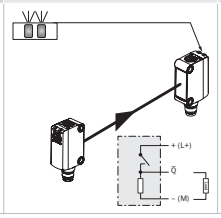
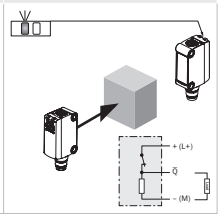
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Truth table

PNP - light switching

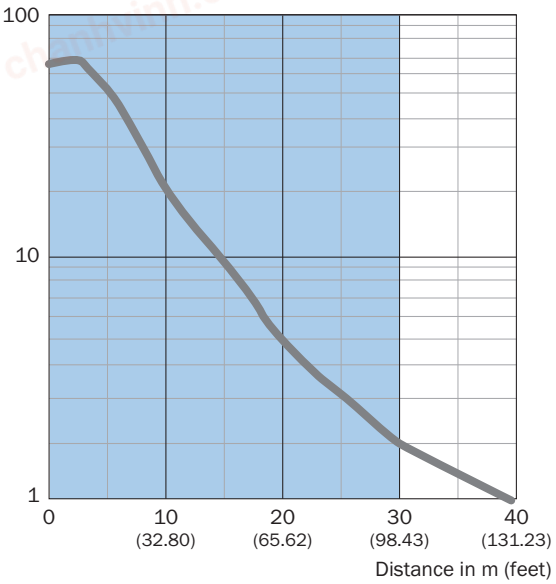
	Light switching Q (normally closed)	
	Object not present ➔ Output HIGH	Object present ➔ Output LOW
Light receive	✓	⊗
Light receive indicator	☀	⊗
Load resistance	⚠	⊗
		

PNP - dark switching

	Dark switching Q̄ (normally open)	
	Object not present ➔ Output LOW	Object present ➔ Output HIGH
Light receive	✓	⊗
Light receive indicator	☀	⊗
Load resistance	⊗	⚠
		

Characteristic curve

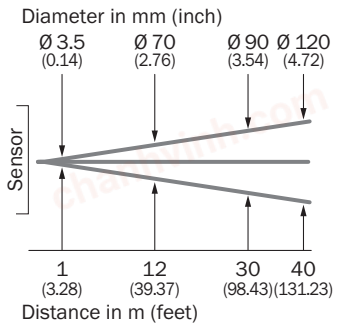
Operating reserve



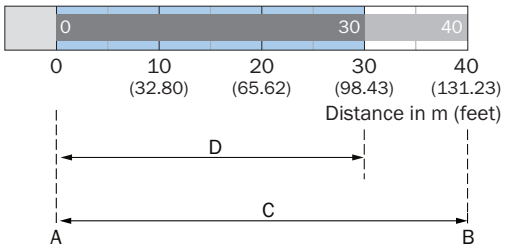
Recommended sensing range for the best performance

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Light spot size



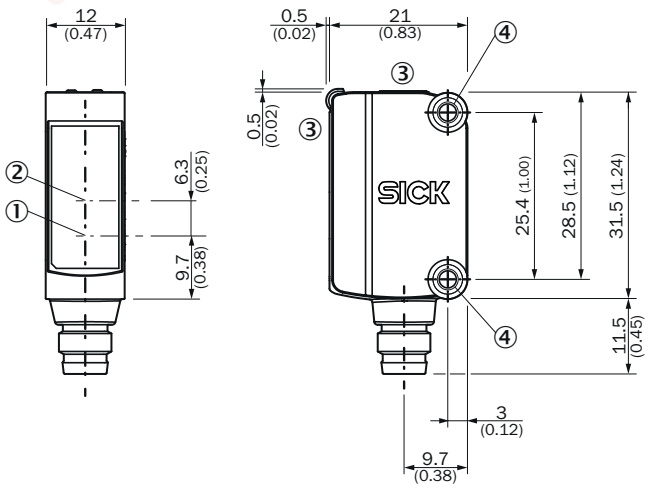
Sensing range diagram



A = Sensing range min. in m
B = Sensing range max. in m
C = Viewing range
D = Adjustable switching threshold

Recommended sensing range for the best performance

Dimensional drawing (Dimensions in mm (inch))

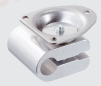


① Center of optical axis, sender
② Center of optical axis, receiver
③ Display and adjustment elements
④ Mounting holes M3

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Recommended accessories

Other models and accessories ➜ 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

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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."

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