

SICK.COM



DATA SHEET

GL6L-P4231

G6
Photoelectric sensors

SICK Sensor Intelligence

PHOTOELECTRIC SENSORS

GL6L-P4231

ORDERING INFORMATION

Type	part no.
GL6L-P4231	1133749

Further device versions and accessories at www.sick.com/G6



Illustration may differ



DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric retro-reflective sensor	
Sensing range	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
Polarisation filter		Yes
Emitted beam	Light source	Laser
	Type of light	Visible red light
	Shape of light spot	Point-shaped
	Light spot size (distance)	Ø 6 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 laser figures	Normative reference	IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11
	Laser class	1 ⁹⁾
	Wave length	680 nm
	Pulse duration	2 µs
	Maximum pulse power	≤ 11.9 mW
	Average service life	100,000 h at T _a = +25 °C
Smallest detectable object (MDO) typ.		

⁹⁾ Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

		6 mm, at 1 m distance (object with 90% remission factor (corresponds to standard white according to DIN 5033))
Adjustment	Potentiometer	For setting the sensing range
	Operating mode switch	For inverting the switching function (light/dark switching)
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

¹⁾ Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

SAFETY-RELATED PARAMETERS

MTTF _D	1,005 years
DC _{avg}	0 %
T _M (mission time)	10 years

ELECTRONICS

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	1
Type	PNP
Switching mode	Light/dark switching
Signal voltage PNP HIGH/LOW	Approx. U _B -3 V / 0 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 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

¹⁾ Limit values.

²⁾ At U_B > 24 V, I_{max.} = 50 mA.

³⁾ With light/dark ratio 1:1.

MECHANICS

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	Plastic, PVC
Male connector	Metal, 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, 3 x 30 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

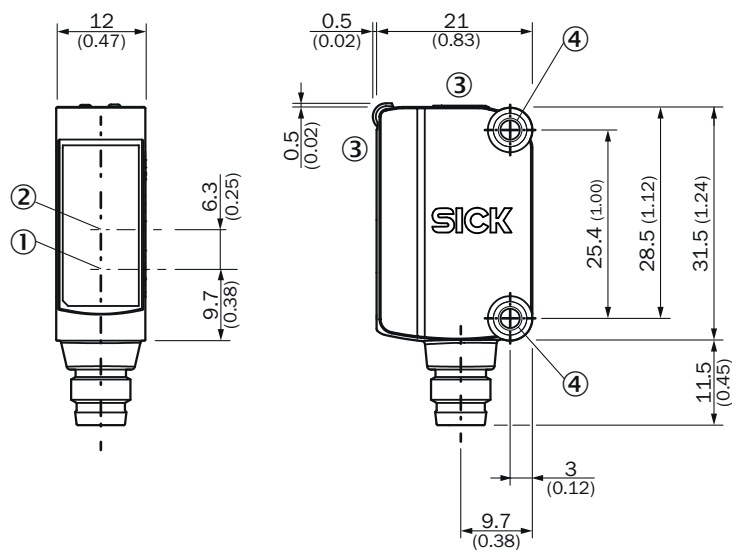
¹⁾ As of T_a => 45 °C, a max. supply voltage U_B = 24 V and a max. load current I_{max} = 50 mA is permitted.

²⁾ Below T_v = -20 °C, a warm-up time of 3 seconds is required.

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Laser safety (IEC 60825-1) declaration of manufacturer	✓

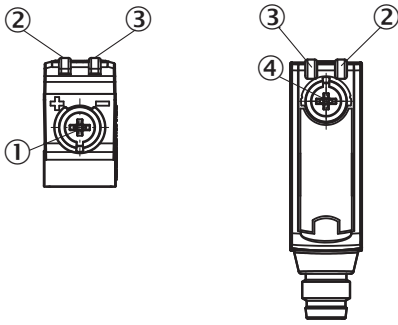
DIMENSIONAL DRAWING



Dimensions in mm (inch)

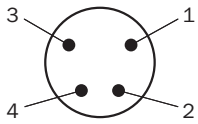
- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ display and adjustment elements
- ④ Mounting holes M3

DISPLAY AND ADJUSTMENT ELEMENTS

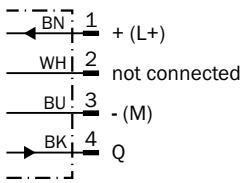


- ① Potentiometer
- ② LED yellow
- ③ LED green
- ④ operating mode switch

CONNECTION TYPE MALE CONNECTOR M8, 4-PIN



CONNECTION DIAGRAM CD-066



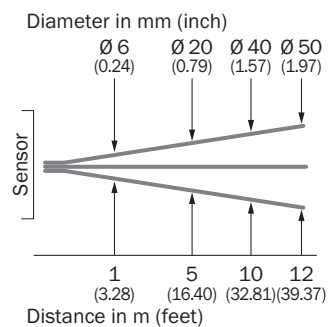
TRUTH TABLE PNP - LIGHT SWITCHING

	Light switching Q (normally closed)	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✔	✘
Light receive indicator	☀	✘
Load resistance	⚡	✘

TRUTH TABLE PNP - DARK SWITCHING

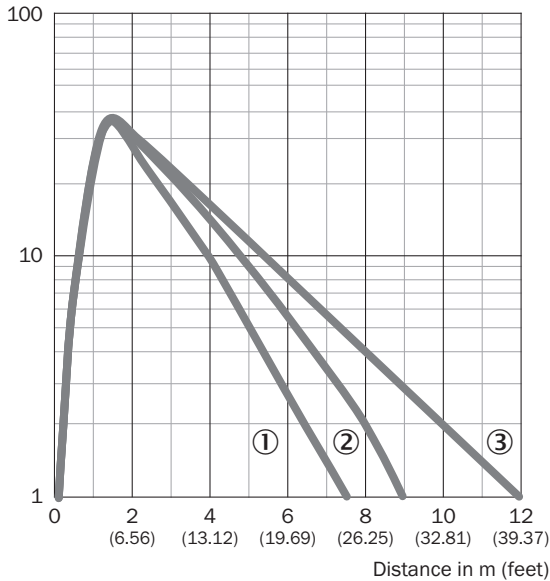
	Dark switching \bar{Q} (normally open)	
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance	✗	⚡

CHARACTERISTIC CURVE



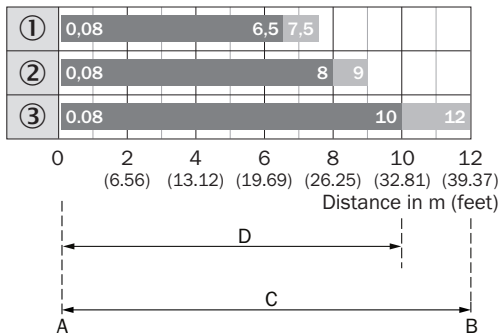
CHARACTERISTIC CURVE

Operating reserve



- 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)

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

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/1133749



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SICK AT A GLANCE

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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.

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