Data sheet



GL6L-E4212

G6

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ

Ordering information

Type	part no.
GL6L-E4212	1115582

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

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

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
Recommended sensing range for the best performance	0.08 m ... 4.2 m
Polarisation filters	Yes
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	2 µs
Maximum pulse power	≤ 11.9 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 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 indicatorStatic on: power on
LED yellow	Status of received light beamStatic on: object not presentStatic off: object present
Items supplied	Reflector P250F, Stainless steel mounting bracket (1.4301/304) BEF-W100-A

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	2 (Complementary)
Type	NPN
Switching mode	Light/dark switching
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
Function of pin 2/white (WH)	Digital output, dark switching, object present → output $\bar{Q}$ LOW

[1] Limit values.

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

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

Function of pin 2/white (WH) – detail	The pin 2 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_u = –20 °C, a warm-up time of 3 seconds is required.

Certificates

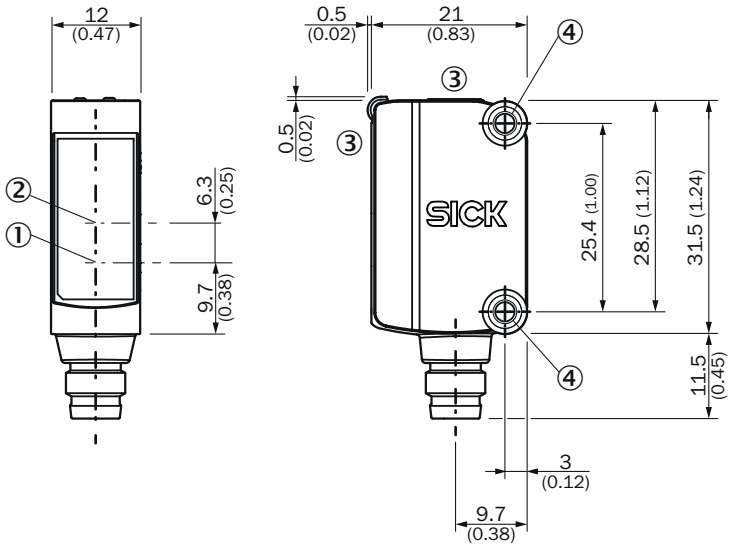
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
cULus certificate	✓
EAC certificate / DoC	✓
Laser safety (IEC 60825-1) declaration of manufacturer	✓

Classifications

ECLASS 5.0	27270902
ECLASS 5.1.4	27270902

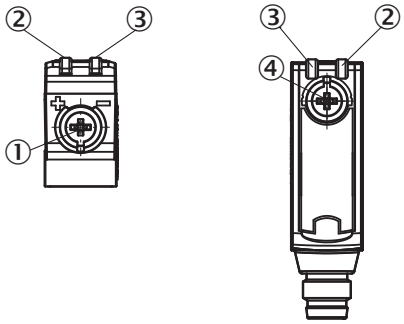
ECLASS 6.0	27270902
ECLASS 6.2	27270902
ECLASS 7.0	27270902
ECLASS 8.0	27270902
ECLASS 8.1	27270902
ECLASS 9.0	27270902
ECLASS 10.0	27270902
ECLASS 11.0	27270902
ECLASS 12.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	EC002717
ETIM 8.0	EC002717
UNSPSC 16.0901	39121528

Dimensional drawing



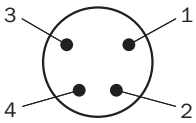
Dimensions in mm (inch)
① Center of optical axis, sender
② Center of optical axis, receiver
③ display and adjustment elements
④ Mounting holes M3

display and adjustment elements

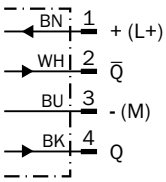


① Potentiometer
② LED yellow
③ LED green
④ operating mode switch

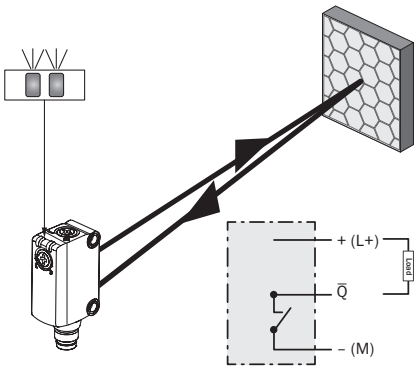
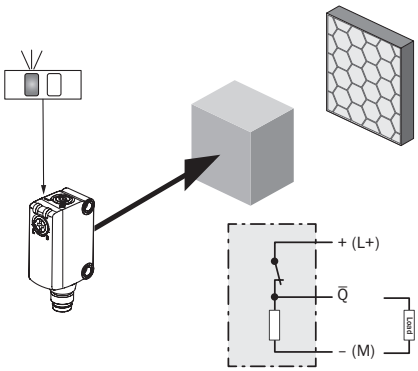
Connection type Male connector M8, 4-pin



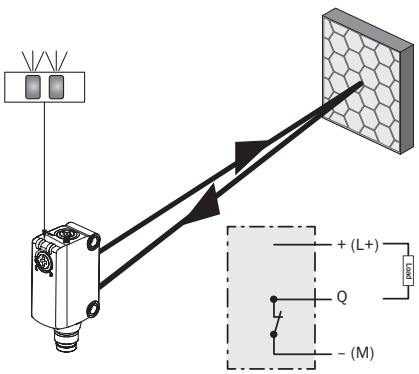
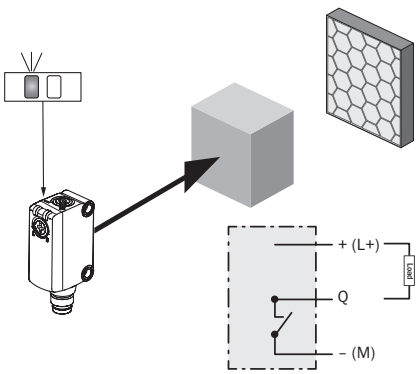
Connection diagram Cd-084



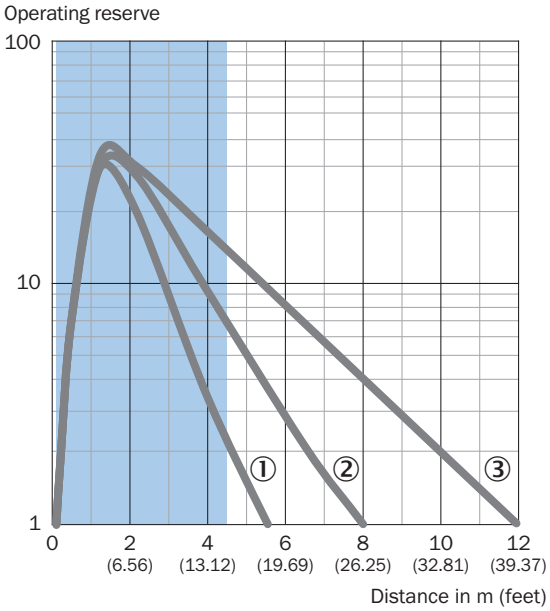
Truth table NPN - dark switching

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

Truth table NPN - light switching

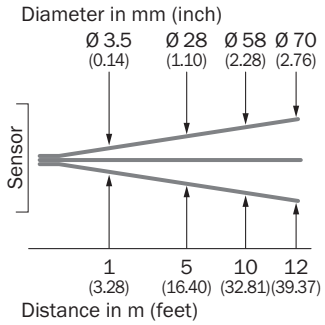
	Light switching Q (normally closed)	
	Object not present ➜ Output LOW	Object present ➜ Output HIGH
Light receive	✓	✗
Light receive indicator	☀	✗
Load resistance	⚠	✗
		

Characteristic curve

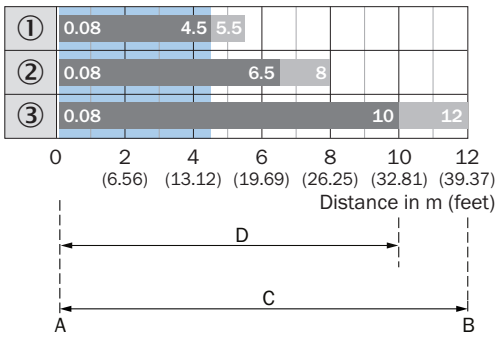


① PL10F reflector
② Reflector PL20F
③ Reflector P250F

Characteristic curve



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

	Brief description	Type	part no.
Mounting systems			
	• **Description:** Clamp bar to fix G6 sensors on rods of 12 mm, clamp-on design up to 4 mm wall thickness • **Material:** Steel • **Details:** Aluminum (clamp bar), stainless steel (bracket) • **Items supplied:** Clamp bar mounting and clamp function, mounting bracket, mounting hardware	BEF-KHS-IS12G6	2086865
	• **Material:** Stainless steel • **Details:** Stainless steel (1.4301) • **Suitable for:** W4S	BEF-WN-G6	2062909
reflectors and optics			
	• **Description:** Fine triple reflector, screw connection, suitable for laser sensors • **Dimensions:** 20 mm 60 mm • **Ambient operating temperature:** –30 °C ... +65 °C	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