Data sheet




# GL6L-E6212

G6

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ

## Ordering information

| Type | part no. |
|---|---|
| GL6L-E6212 | 1115583 |

**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** | Cable with M8 male connector, 4-pin, 336 mm |
| **Connection detail** | |
| Deep-freeze property | Do not bend below 0 °C |
| Conductor size | 0.14 mm² |
| Cable diameter | Ø 8 mm |
| Length of cable (L) | 300 mm |
| **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

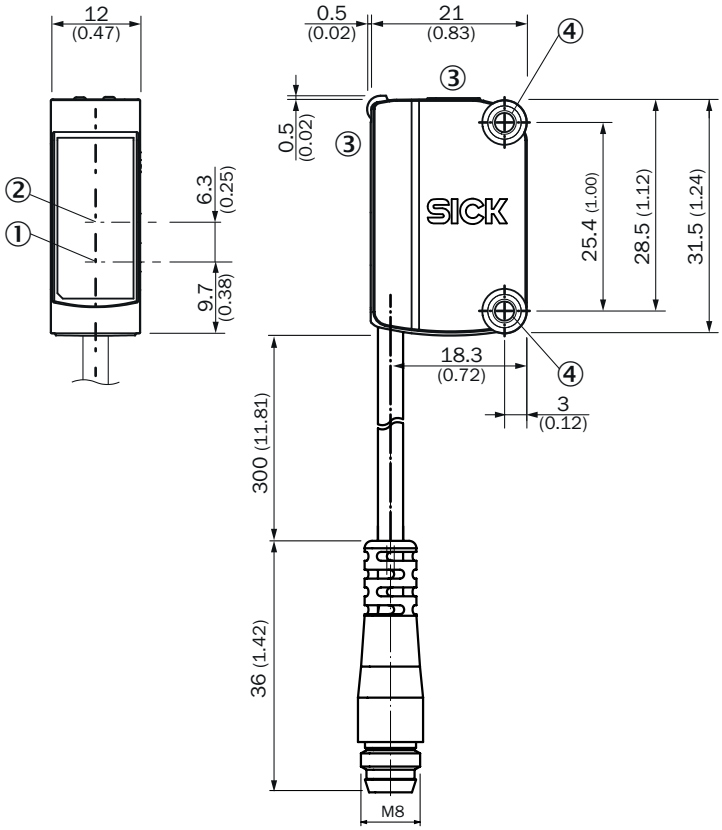
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China-RoHS** | ✓ |
| **cULus certificate** | ✓ |
| **EAC certificate / DoC** | ✓ |

| | |
|---|---|
| **Laser safety (IEC 60825-1) declaration of manufacturer** | ✓ |

## Classifications

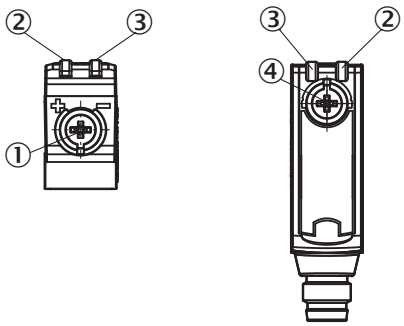
| | |
|---|---|
| **ECLASS 5.0** | 27270902 |
| **ECLASS 5.1.4** | 27270902 |
| **ECLASS 6.0** | 27270902 |
| **ECLASS 6.2** | 27270902 |
| **ECLASS 7.0** | 27270902 |
| **ECLASS 8.0** | 27270902 |
| **ECLASS 8.1** | 27270902 |
| **ECLASS 9.0** | 27270902 |
| **ECLASS 10.0** | 27270902 |
| **ECLASS 11.0** | 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



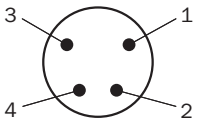

Dimensions in mm (inch)
① Center of optical axis, sender
② Center of optical axis, receiver
③ display and adjustment elements
④ Mounting holes M3

## display and adjustment elements

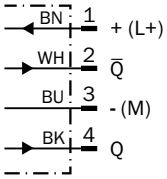



① Potentiometer
② LED yellow
③ LED green
④ operating mode switch

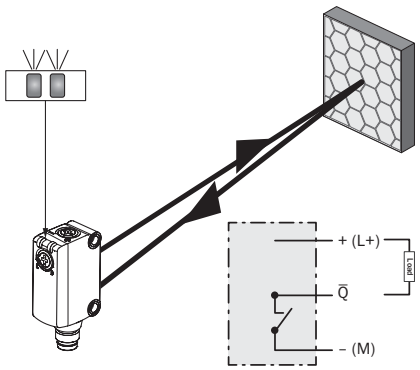
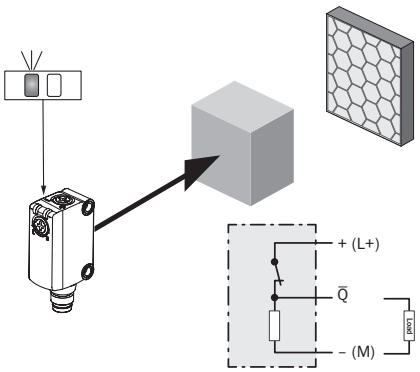
## Connection type Male connector M8, 4-pin



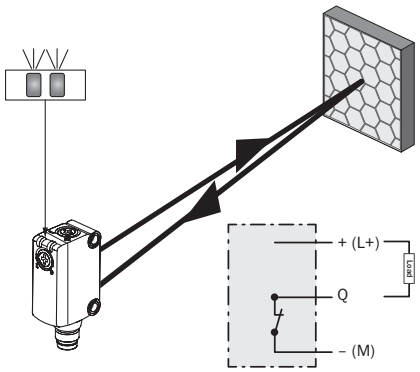
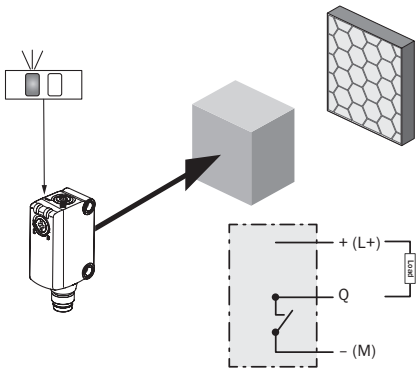

## Connection diagram Cd-084




## Truth table NPN - dark switching

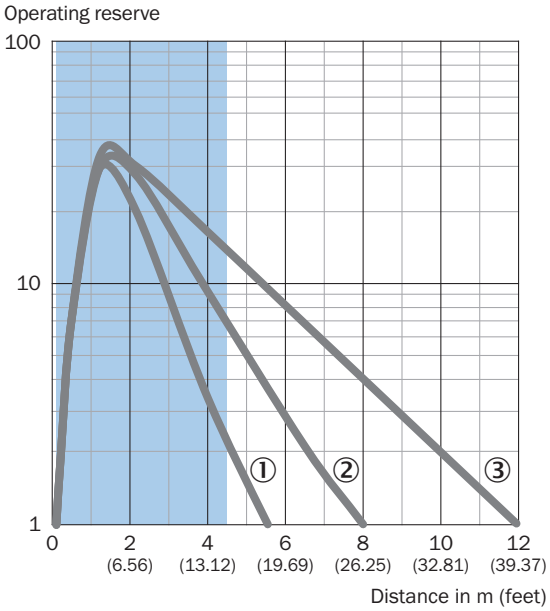
| | Dark switching Q̄ (normally open) | |
|---|---|---|
| | Object not present ➜ Output HIGH | Object present ➜ Output LOW |
| Light receive | ✓ | ✗ |
| Light receive indicator | ☀ | ✗ |
| Load resistance | ✗ | ⚠ |
| |  |  |

## 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** | ⚠ | ✗ |
| |  |  |

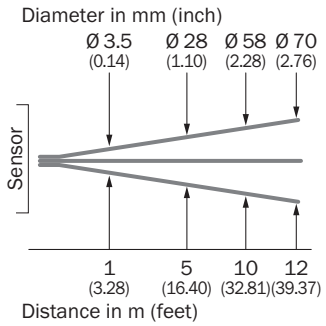


## Characteristic curve

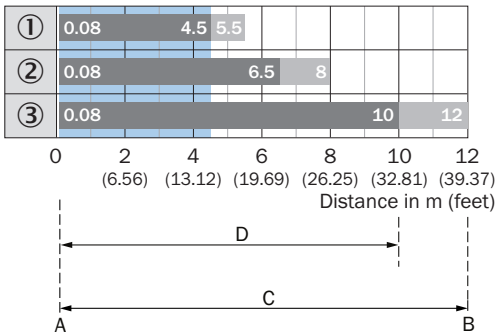



① PL10F reflector
② Reflector PL20F
③ Reflector P250F

## Characteristic curve




## Sensing range diagram



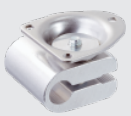

A = Sensing range min. in m
B = Sensing range max. in m
C = Maximum distance range from reflector to sensor (operating reserve 1)
D = Recommended distance range from reflector to sensor (operating reserve 2)

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<br>• **Material:** Steel<br>• **Details:** Aluminum (clamp bar), stainless steel (bracket)<br>• **Items supplied:** Clamp bar mounting and clamp function, mounting bracket, mounting hardware | BEF-KHS-IS12G6 | 2086865 |
|  | • **Material:** Stainless steel<br>• **Details:** Stainless steel (1.4301)<br>• **Suitable for:** W4S | BEF-WN-G6 | 2062909 |

| | Brief description | Type | part no. |
|---|---|---|---|
| reflectors and optics | | | |
|  | • **Description:** Fine triple reflector, screw connection, suitable for laser sensors<br>• **Dimensions:** 20 mm 60 mm<br>• **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