Product data sheet

GTE6L-F6211

G6

MINIATURE PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
GTE6L-F6211	1109686

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

Detailed technical data

Features

Functional principle	Photoelectric proximity sensor
Functional principle detail	Energetic
Sensing range	
Sensing range min.	0 mm
Sensing range max.	450 mm
Reference object	Object with 90% remission factor (complies with standard white according to DIN 5033)
Recommended sensing range for the best performance	5 mm ... 400 mm
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 0.4 mm (150 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.	0.4 mm (at 150 mm distance (object with 90% remission (corresponds to standard white DIN 5033)))
Adjustment	

Potentiometer	For setting the sensing range, 5 rotations
Operating mode switch	For inverting the switching function (light/dark switching)
Indication	
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object present Static off: object not present

Safety-related parameters

$MTTF_D$	662 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 (Complementary)
Type	PNP
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 HIGH
Function of pin 4/black (BK) – detail	The pin 4 function of the sensor can be switched
Function of pin 2/white (WH)	Digital output, dark switching, object present → output $\bar{Q}$ LOW
Function of pin 2/white (WH) – detail	The pin 2 function of the sensor can be switched

[1] Limit values.
[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	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	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.

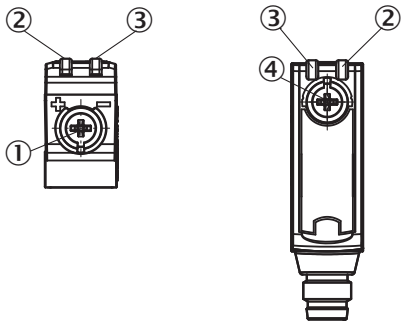
[2)] Below T_a = –20 °C a warm-up time of 3 seconds is required.

Classifications

ECLASS 5.0	27270903
ECLASS 5.1.4	27270903
ECLASS 6.0	27270903
ECLASS 6.2	27270903
ECLASS 7.0	27270903
ECLASS 8.0	27270903
ECLASS 8.1	27270903
ECLASS 9.0	27270903
ECLASS 10.0	27270904
ECLASS 11.0	27270904
ECLASS 12.0	27270903
ETIM 5.0	EC001821
ETIM 6.0	EC001821
ETIM 7.0	EC002719
ETIM 8.0	EC002719
UNSPSC 16.0901	39121528

Adjustments

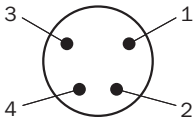
Display and adjustment elements



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

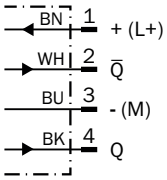
Connection type

Male connector M8, 4-pin



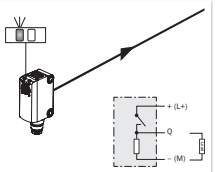
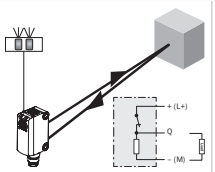
Connection diagram

Cd-084

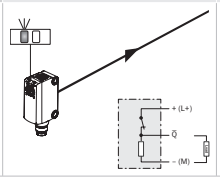
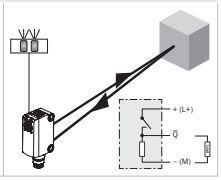


Truth table

PNP - light switching

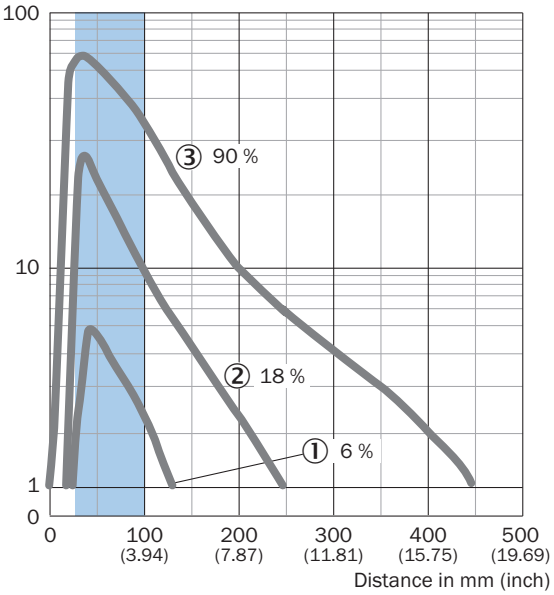
	Light switching Q (normally open)	
	Object not present ➜ Output LOW	Object present ➜ Output HIGH
Light receive	⊗	●
Light receive indicator	⊗	☀
Load resistance	⊗	⚠
		

PNP - dark switching

	Dark switching Q̄ (normally closed)	
	Object not present ➜ Output HIGH	Object present ➜ Output LOW
Light receive	⊗	●
Light receive indicator	⊗	☀
Load resistance	⚠	⊗
		

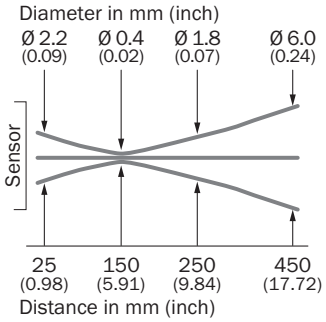
Characteristic curve

Operating reserve

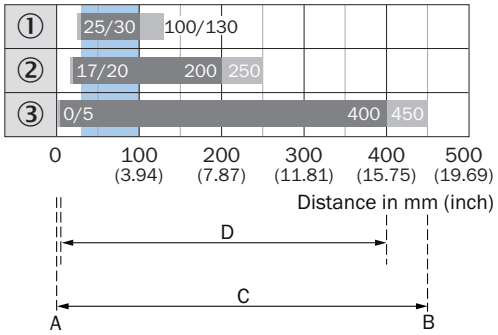


Recommended sensing range for the best performance

① Black object, 6% remission factor
② Gray object, 18% remission factor
③ White object, 90% remission factor



Sensing range diagram

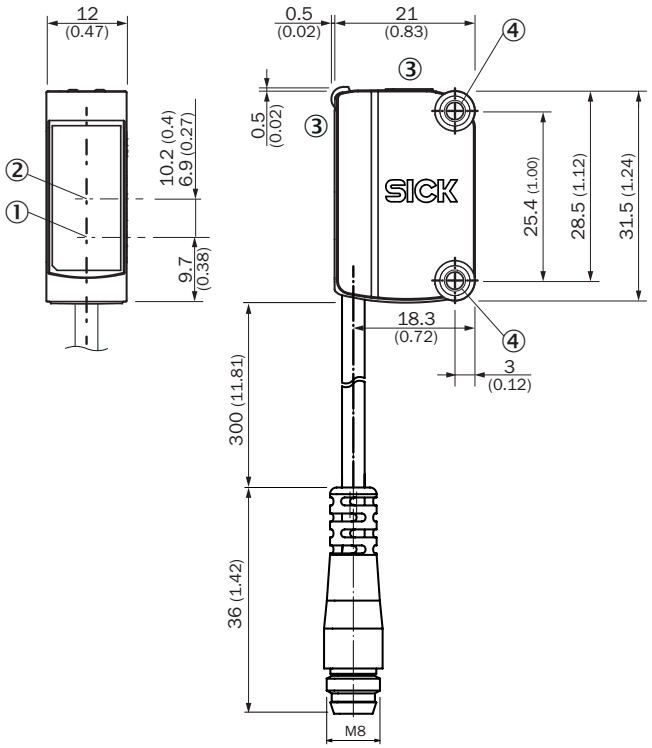


A = Sensing range min. in mm
B = Sensing range max. in mm
C = Viewing range
D = Adjustable switching threshold

Recommended sensing range for the best performance

① Black object, 6% remission factor
② Gray object, 18% remission factor
③ White object, 90% remission factor

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

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

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