



GTB6L-N4211

G6

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

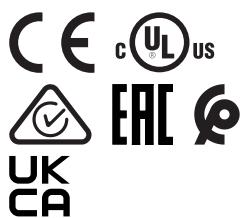


Ordering information

Type	part no.
GTB6L-N4211	1109658

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

Illustration may differ



Detailed technical data

Features

Functional principle	Photoelectric proximity sensor	
Functional principle detail	Background suppression	
Sensing range		
Sensing range min.	10 mm	
Sensing range max.	400 mm	
Adjustable switching threshold for background suppression	30 mm ... 400 mm	
Reference object	Object with 90% remission factor (complies with standard white according to DIN 5033)	
Minimum distance between set sensing range and background (black 6% / white 90%)	3 mm, at a distance of 75 mm	
Recommended sensing range for the best performance	30 mm ... 180 mm	
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 $T_a = +25^\circ\text{C}$
Smallest detectable object (MDO) typ.		0.4 mm (at 150 mm distance (object with 90% remission factor (corresponds to standard white according to DIN 5033)))
Adjustment		
	Potentiometer	For setting the sensing range, 5 rotations
	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 presentStatic off: object not present

Safety-related parameters

MTTF_D	662 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
	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
Pin/Wire assignment	Switching frequency
	1,000 Hz ³⁾
	Function of pin 4/black (BK)
	Digital output, light switching, object present → output Q LOW
	The pin 4 function of the sensor can be switched
	Function of pin 4/black (BK) – detail
	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 $T_a \Rightarrow 45$ °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

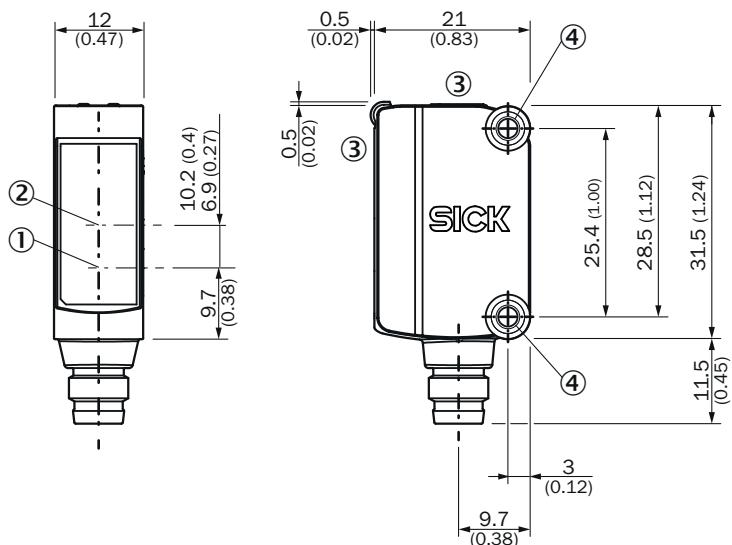
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
cULus certificate	✓
EAC certificate / DoC	✓
Laser safety (IEC 60825-1) declaration of manufacturer	✓

Classifications

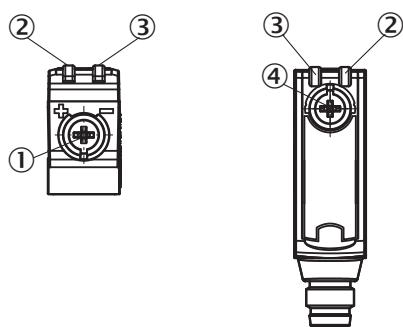
ECLASS 5.0	27270904
ECLASS 5.1.4	27270904
ECLASS 6.0	27270904
ECLASS 6.2	27270904
ECLASS 7.0	27270904
ECLASS 8.0	27270904
ECLASS 8.1	27270904

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

Dimensional drawing



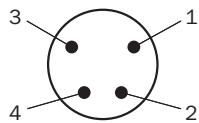
display and adjustment elements



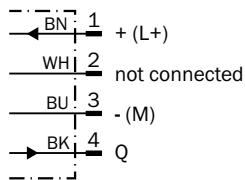
- ① Potentiometer
- ② LED yellow

③ LED green
 ④ operating mode switch

Connection type Male connector M8, 4-pin



Connection diagram Cd-066



Truth table NPN - dark switching

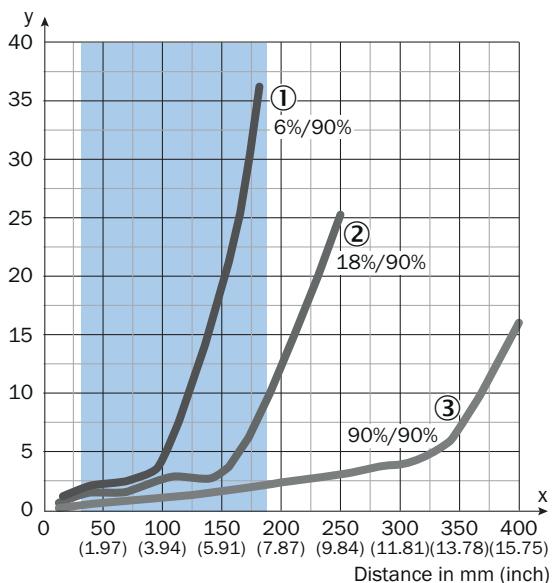
Dark switching \bar{Q} (normally closed)		
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✖	✓
Light receive indicator	✖	✖
Load resistance	⚠	✖

Truth table NPN - light switching

	Light switching Q (normally open)	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	×	✓
Light receive indicator	✗	✗
Load resistance	✗	⚡

Characteristic curve

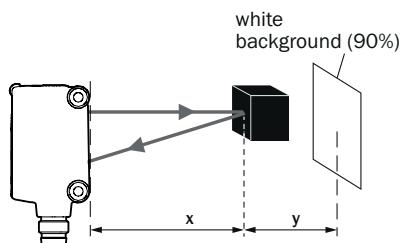
Minimum distance in mm (y) between the set sensing range (x) and white background (90% remission)



Recommended sensing range for the best performance

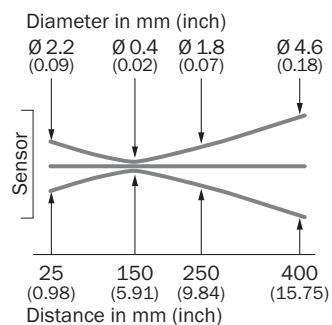
- ① Black object, 6% remission factor
- ② Gray object, 18% remission factor
- ③ White object, 90% remission factor

Example:
Safe suppression of the background

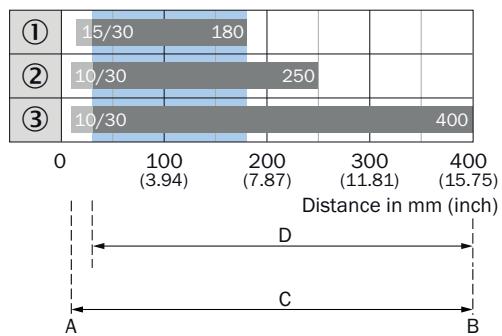


Black object (6% remission)
Set sensing range $x = 150$ mm. Needed
minimum distance to white background $y = 20$ mm.

Light spot size



Sensing range diagram



A = Sensing range min. in mm

B = Sensing range max. in mm

C = Viewing range

D = Adjustable switching threshold for background suppression

■ 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

Recommended accessories

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

	Brief description	Type	part no.
Mounting systems			
 <ul style="list-style-type: none"> • 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	
 <ul style="list-style-type: none"> • Material: Stainless steel • Details: Stainless steel (1.4301) • Suitable for: W4S 	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