



GTB6SP-1GA1116EZZZ

G6

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	part no.
GTB6SP-1GA1116EZZZ	1141178

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.	5 mm	
Sensing range max.	400 mm	
Adjustable switching threshold for background suppression	35 mm ... 400 mm	
Minimum distance between set sensing range and background (black 6% / white 90%)	5 mm, at a distance of 120 mm	
Recommended sensing range for the best performance	35 mm ... 140 mm	
Emitted beam		
Light source	PinPoint LED	
Type of light	Visible red light	
Shape of light spot	Point-shaped	
Light spot size (distance)	Ø 5.6 mm (150 mm)	
Key LED figures		
Normative reference	EN 62471:2008-09 IEC 62471:2006, modified	
LED risk group marking	Free group	
Wave length	640 nm	
Average service life	100,000 h at $T_a = +25$ °C	
Smallest detectable object (MDO) typ.	Object with 90% remission factor (complies with standard white according to DIN 5033)	
Adjustment	Potentiometer	
	For setting the sensing range, 5 rotations	

Display	Operating mode switch	For inverting the switching function (light/dark switching)
	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	3,564 years
DC_{avg}	0%
T_M (mission time)	20 years

Electronics

Supply voltage U_B	10 V DC ... 30 V DC ¹⁾
Ripple	≤ 5 V _{pp}
Usage category	DC-12 (According to EN 60947-5-2) DC-13 (According to EN 60947-5-2)
Current consumption	Without load. At U _B = 24 V
Protection class	III
Digital output	
Number	1
Type	PNP
Switching mode	Light 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 ³⁾
Switching frequency	1,000 Hz ⁴⁾
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

¹⁾ Limit values.

²⁾ At U_B > 24 V, I max. = 50 mA.

³⁾ Signal transit time with resistive load.

⁴⁾ With light/dark ratio 1:1.

Mechanics

Housing	Rectangular
Dimensions (W x H x D)	12 mm x 31.6 mm x 21 mm
Connection	Cable, 3-wire, 2 m
Connection detail	
Deep-freeze property	Do not bend below 0 °C
Conductor size	0.14 mm ²

	Cable diameter	Ø 3.4 mm
	Length of cable (L)	2 m
Material	Housing	Plastic, ABS
	Front screen	Plastic, PMMA
	Cable	Plastic, PVC
Weight	Approx. 40 g	
Maximum tightening torque of the fixing screws	0.4 Nm	

Ambient data

Enclosure rating	IP67 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C
Ambient temperature, storage	-40 °C ... +70 °C
Typ. Ambient light immunity	Sunlight: ≤ 30,000 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

Certificates

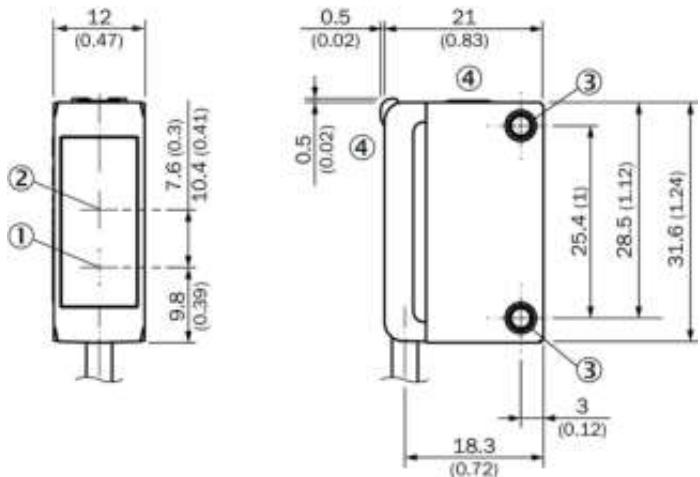
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
cULus certificate	✓

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

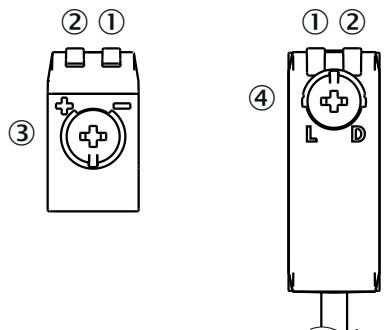
Dimensional drawing



Dimensions in mm (inch)

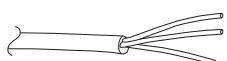
- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Mounting holes M3
- ④ display and adjustment elements

display and adjustment elements

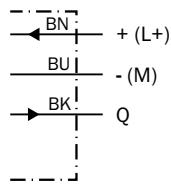


- ① LED green
- ② LED yellow
- ③ Potentiometer
- ④ operating mode switch

Connection type Cable, 3-wire

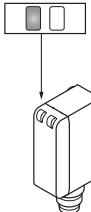
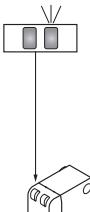
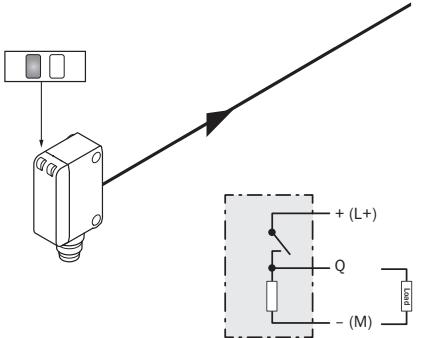
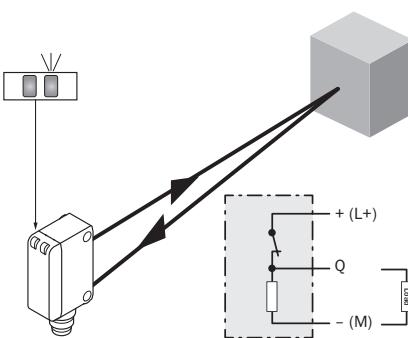


Connection diagram Cd-043

Truth table PNP - dark switching \bar{Q}

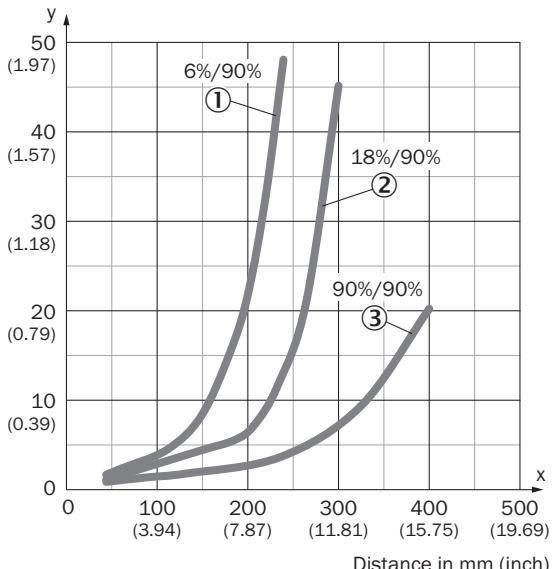
Dark switching \bar{Q} (normally open)		
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✓	✗
Light receive indicator	✗	✗
Load resistance	✗	⚡

Truth table PNP - light switching Q

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

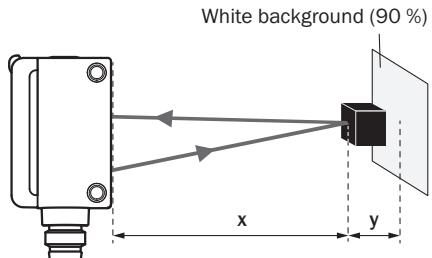
Characteristic curve

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



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

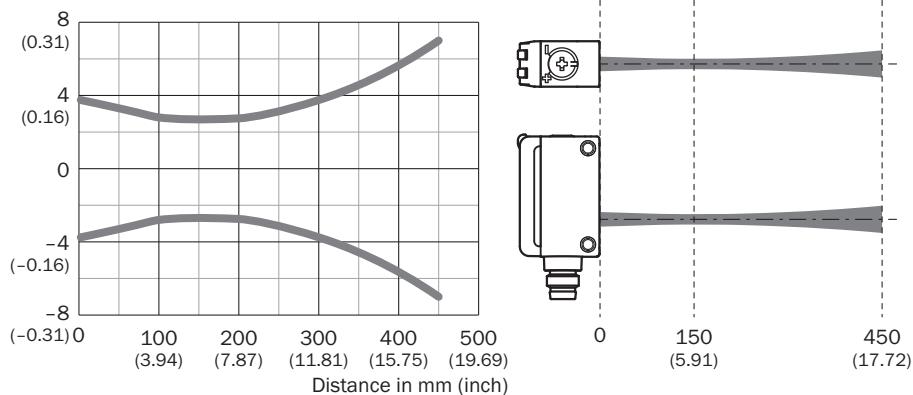
Example:
Safe suppression of the background



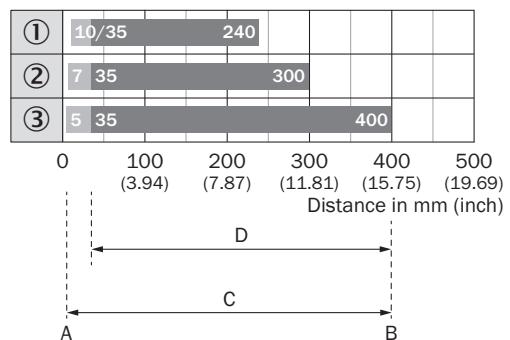
White background (90 %)
Black object (6 % remission factor)
Set sensing range $x = 120$ mm
Needed minimum distance to white background $y = 5$ mm

Light spot size

Dimensions in mm (inch)



Sensing range diagram



	1	Black object, 6% remission factor
	2	Gray object, 18% remission factor
	3	White object, 90% remission factor
	A	Sensing range min. in mm
	B	Sensing range max. in mm
	C	Maximum distance range from sensor to object
	D	Recommended distance range from sensor to object

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 thicknessMaterial: SteelDetails: 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 steelDetails: 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