



GTB6SP-22A1116EZZZ

G6

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
GTB6SP-22A1116EZZZ	1141176

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

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

Operating mode switch		For inverting the switching function (light/dark switching)
Display		
	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	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	≤ 20 mA, 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	Male connector M8, 4-pin
Material	
	Housing Plastic, ABS

	Front screen	Plastic, PMMA
	Male connector	Metal, copper alloy (C3604 CUZN39PB3)
Weight		Approx. 10 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	✓
cULus certificate	✓

Classifications

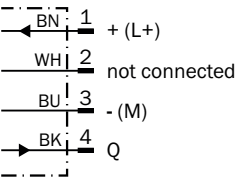
ECLASS 5.0	27270904
ECLASS 5.1.4	27270904
ECLASS 6.0	27270904
ECLASS 6.2	27270904
ECLASS 7.0	27270904
ECLASS 8.0	27270904
ECLASS 8.1	27270904
ECLASS 9.0	27270904
ECLASS 10.0	27270904
ECLASS 11.0	27270904
ECLASS 12.0	27270903
ETIM 5.0	EC002719
ETIM 6.0	EC002719
ETIM 7.0	EC002719
ETIM 8.0	EC002719
UNSPSC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

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

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

A circle with four points labeled 1, 2, 3, and 4. Point 1 is at the top right, point 2 is at the bottom right, point 3 is at the top left, and point 4 is at the bottom left.

Connection diagram Cd-066



Truth table PNP - dark switching \bar{Q}

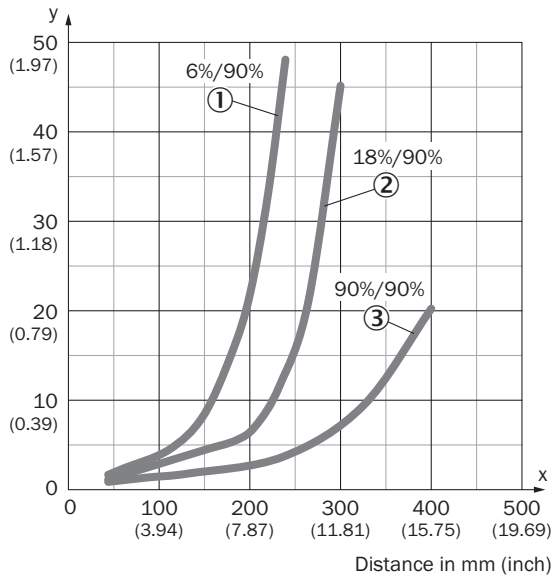
	Dark switching \bar{Q} (normally closed)	
	Object not present → Output HIGH	Object present → Output LOW
Light receive	✗	✓
Light receive indicator	✗	☀
Load resistance	⚡	✗

Truth table PNP - light switching Q

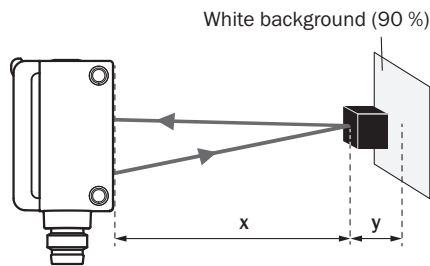
	Light switching Q (normally open)	
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✗	✓
Light receive indicator	✗	☀
Load resistance	✗	⚡

Characteristic curve

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



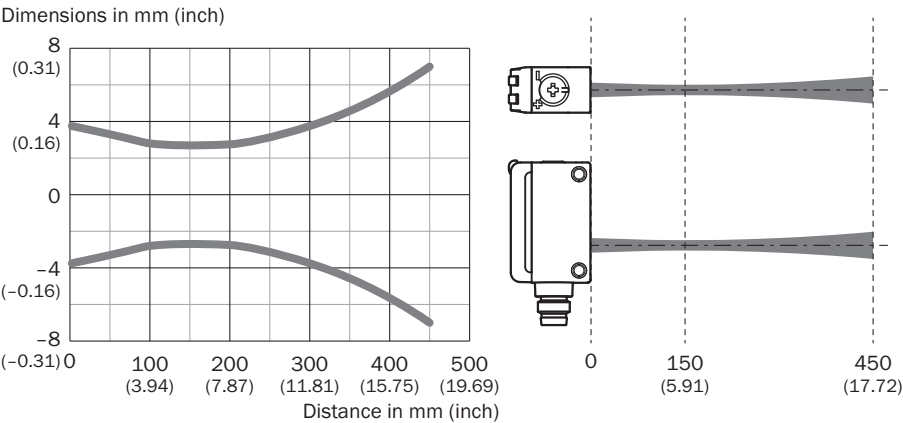
Example:
Safe suppression of the background



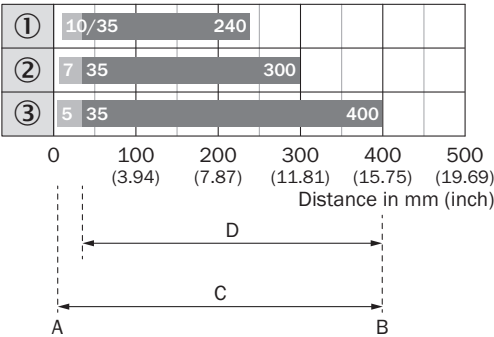
Black object (6 % remission factor)
Set sensing range $x = 120$ mm
Needed minimum distance to white background $y = 5$ mm

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

Light spot size



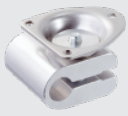


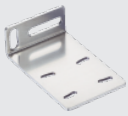


Sensing range diagram



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 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"> Description: Plate N11N for universal clamp bracket Material: Stainless steel Details: Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp) Items supplied: Universal clamp (5322627), mounting hardware Usable for: DeltaPac, Glare, WTD20E 	BEF-KHS-N11N	2071081
	<ul style="list-style-type: none"> Description: Mounting bracket for wall mounting Material: Stainless steel Details: Stainless steel Items supplied: Mounting hardware included Suitable for: W8, W8G, W8 Laser, W8 Inox, G6, G6 Inox, W100 Laser, W100-2, KTM Core, KTM Prime, CSM, LUTM, W4S 	BEF-W100-A	5311520
	<ul style="list-style-type: none"> Material: Stainless steel Details: Stainless steel (1.4301) Suitable for: W4S, W4S 	BEF-WN-G6	2062909
connectors and cables			
	<ul style="list-style-type: none"> Connection type head A: Female connector, M8, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PVC Description: Sensor/actuator cable, unshielded Application: Uncontaminated zones, Zones with chemicals 	YF8U14-050VA3XLEAX	2095889
	<ul style="list-style-type: none"> Connection type head A: Female connector, M8, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation 	YF8U14-050UA3XLEAX	2094792

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