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DATA SHEET

GTB6SP-22E116EZZZ

G6
Photoelectric sensors

SICK Sensor Intelligence

PHOTOELECTRIC SENSORS

GT-
B6SP-22E1116EZZZ



Illustration may differ

ORDERING INFORMATION

Type	part no.
GTB6SP-22E1116EZZZ	1141177

Further device versions and accessories at 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	<table border="0"> <tr> <td>Number</td> <td>1</td> </tr> <tr> <td>Type</td> <td>NPN: open collector</td> </tr> <tr> <td>Switching mode</td> <td>Light/dark switching</td> </tr> <tr> <td>Signal voltage NPN HIGH/LOW</td> <td>Approx. U_B / ≤ 3 V</td> </tr> <tr> <td>Output current I_{max.}</td> <td>≤ 100 mA²⁾</td> </tr> <tr> <td>Circuit protection outputs</td> <td>Reverse polarity protected Overcurrent protected Short-circuit protected</td> </tr> <tr> <td>Response time</td> <td>≤ 625 μs³⁾</td> </tr> <tr> <td>Switching frequency</td> <td>1,000 Hz⁴⁾</td> </tr> </table>	Number	1	Type	NPN: open collector	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 ³⁾	Switching frequency	1,000 Hz ⁴⁾
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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	<table border="0"> <tr> <td>Housing</td> <td>Plastic, ABS</td> </tr> <tr> <td>Front screen</td> <td>Plastic, PMMA</td> </tr> <tr> <td>Male connector</td> <td>Metal, copper alloy (C3604 CUZN39PB3)</td> </tr> </table>	Housing	Plastic, ABS	Front screen	Plastic, PMMA	Male connector	Metal, copper alloy (C3604 CUZN39PB3)
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						

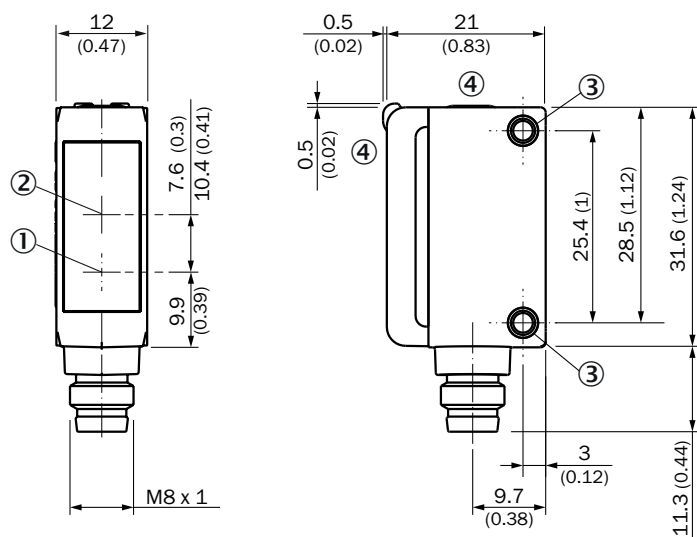
AMBIENT DATA

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	✓
China RoHS	✓
cULus certificate	✓

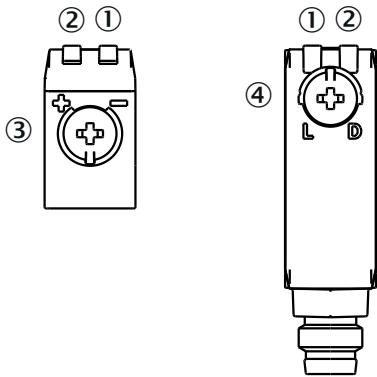
DIMENSIONAL DRAWING



Dimensions in mm (inch)

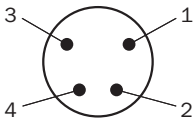
- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Mounting holes M3
- ④ display and adjustment elements

DISPLAY AND ADJUSTMENT ELEMENTS

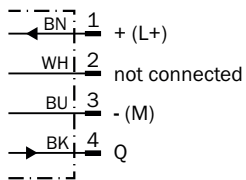


- ① LED green
- ② LED yellow
- ③ Potentiometer
- ④ operating mode switch

CONNECTION TYPE MALE CONNECTOR M8, 4-PIN



CONNECTION DIAGRAM CD-066



TRUTH TABLE NPN - DARK SWITCHING \bar{Q}

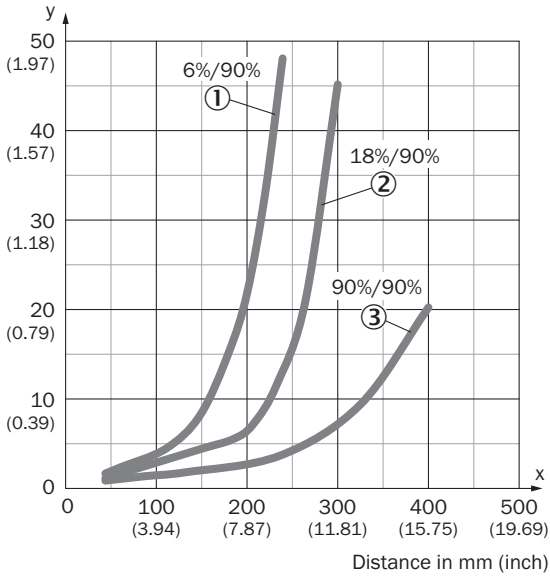
	Dark switching \bar{Q} (normally closed)	
	Object not present → Output LOW	Object present → Output HIGH
Light receive	✗	✔
Light receive indicator	✗	☀
Load resistance	⚡	✗

TRUTH TABLE NPN - LIGHT SWITCHING Q

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

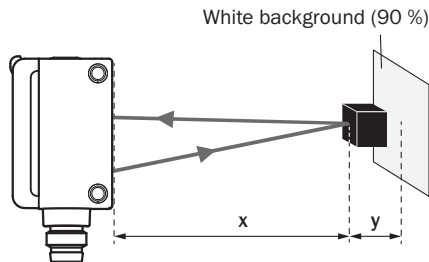
CHARACTERISTIC CURVE

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



Example:

Safe suppression of the background

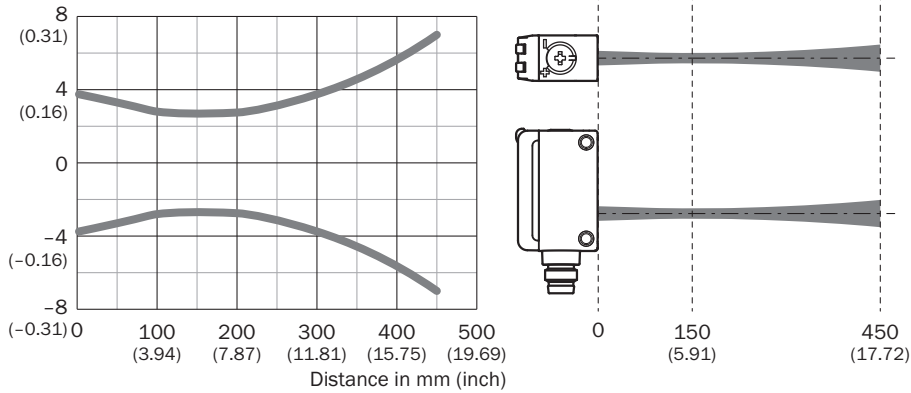


Black object (6 % remission factor)
 Set sensing range $x = 120$ mm
 Needed minimum distance to white background $y = 5$ mm

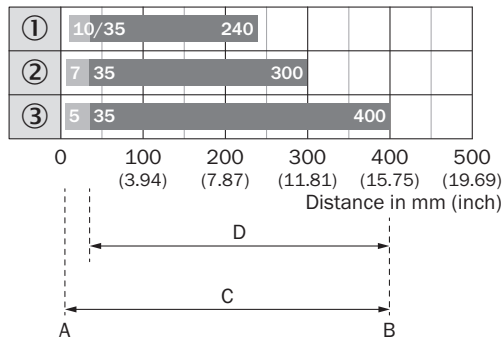
- ① Black object, 6% remission factor
- ② Gray object, 18% remission factor
- ③ White object, 90% remission factor

LIGHT SPOT SIZE

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

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1141177



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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

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