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DATA SHEET

GTB20M-3ASD116GZZZ

G20
Photoelectric sensors

SICK Sensor Intelligence



Illustration may differ

PHOTOELECTRIC SENSORS

GTB20M-3ASD116GZZZ

ORDERING INFORMATION

Type	part no.
GTB20M-3ASD116GZZZ	1120796

Further device versions and accessories at www.sick.com/G20

DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric proximity sensor
Functional principle detail	Background suppression
Sensing range	
Sensing range min.	0.005 m
Sensing range max.	3 m
Adjustable switching threshold for background suppression	0.1 m ... 3 m
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%)	200 mm, at a distance of 1000 mm
Emitted beam	
Light source	LED
Type of light	Infrared light
Shape of light spot	Rectangular
Light spot size (distance)	Ø 28 mm (500 mm)
Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle)	< +/- 1.5° (at T_U = +23 °C)
Key LED figures	
Normative reference	EN 62471:2008-09 | IEC 62471:2006, modified
LED risk group marking	Free group
Wave length	850 nm
Average service life	100,000 h at T_a = +25 °C
Adjustment	
Potentiometer 1	For setting the sensing range, 7 rotations
Operating mode switch	For inverting the switching function (light/dark switching)
Potentiometer 2	For adjusting the delay time
Potentiometer 3	For selecting the delay time
Display	
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object present

ELECTRONICS

Supply voltage U_e	24 V AC/DC ... 240 V AC/DC [1]
Ripple	< 10 %
Usage category	DC-13 (according to EN 60947-1) AC-15 (according to EN 60947-1)
Current consumption	≤ 10 mA, Without load At 230 V AC/DC ≤ 45 mA, Without load At 24 V AC/DC
Protection class	II
Digital output	
Number	2 (Complementary)
Type	Relay, SPDT, electrically isolated [2]
Switching mode	Light/dark switching
Output current $I_{max.}$	4 A@250 V AC, 4 A@24 VDC, 0.11 A@250 V DC UL: 4 A@250 V AC, general use 4 A @ 250 V AC, resistive (NO) 3 A @ 250 V AC, resistive (NC) 4 A @ 24 V DC, NO, general use 3 A @ 24 V DC, NC, general use R300/B300 (NO contacts only)
Response time	≤ 15 ms
Switching frequency	10 Hz [3]
Time functions	Deactivated (factory setting) Switch-on delay Off delay ON and OFF delay
Delay time	Adjustable via time delay selector switch, 0 ms ... 10,000 ms, 0 ms (factory setting)
Pin/Wire assignment	
Function of pin 4/black (BK)	Relay output, light switching, object present → output HIGH
Pin 5 function/white (WH)	Relay output, dark switching, object present → output LOW

[1] +- 10 %.

[2] Valid only for devices manufactured before June 18, 2023 with a date code of 2324 or earlier. Suitable arc suppression with inductive or capacitive load. Relay contacts are separated from the supply voltage by a base insulation of 3.2 mm. Depending on the application, additional insulation may be required in the user wiring.

[3] With light/dark ratio 1:1.

MECHANICS

Housing	Rectangular
Dimensions (W x H x D)	23.5 mm x 74.5 mm x 63 mm
Connection	Cable with Q6 male connector, 6-pin, AC/UC-coded, 300 mm
Connection detail	
Deep-freeze property	Do not bend below 0 °C
Length of cable (L)	270 mm
Material	
Housing	Plastic, ABS
Front screen	Plastic, PMMA
Cable	Plastic, PVC
Male connector	Plastic, PC
Weight	Approx. 155 g

AMBIENT DATA

Enclosure rating	IP65 (EN 60529)
Ambient operating temperature	–30 °C ... +60 °C [1]
Ambient temperature, storage	–40 °C ... +70 °C
Typ. Ambient light immunity	Sunlight: ≤ 20,000 lx

[1] The max. ambient temperature is 50 °C (UL).

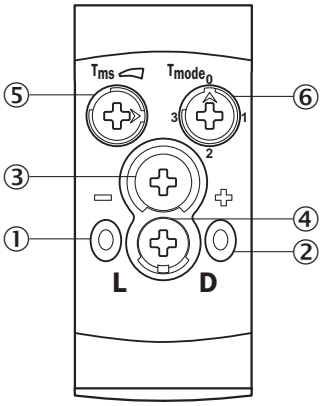
Shock resistance	30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
Vibration resistance	10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))
Air humidity	35 % ... 95 %, relative humidity (no condensation)
Electromagnetic compatibility (EMC)	EN 60947-5-2, EN 61000-6-3
UL File No.	NRKH.E348498 & NRKH7.E348498

[1] The max. ambient temperature is 50 °C (UL).

CERTIFICATES

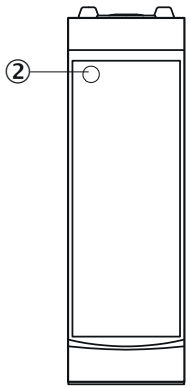
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
CCC certificate	✓
cULus certificate	✓
Photobiological safety (IEC EN 62471)	✓

DISPLAY AND ADJUSTMENT ELEMENTS



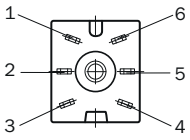
① LED green
② LED yellow
③ Potentiometer 1
④ operating mode switch
⑤ Potentiometer 2
⑥ Potentiometer 3

DISPLAY AND ADJUSTMENT ELEMENTS

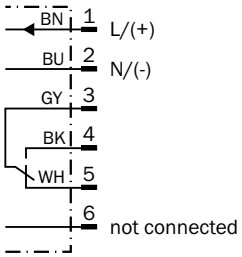


② LED yellow

CONNECTION TYPE

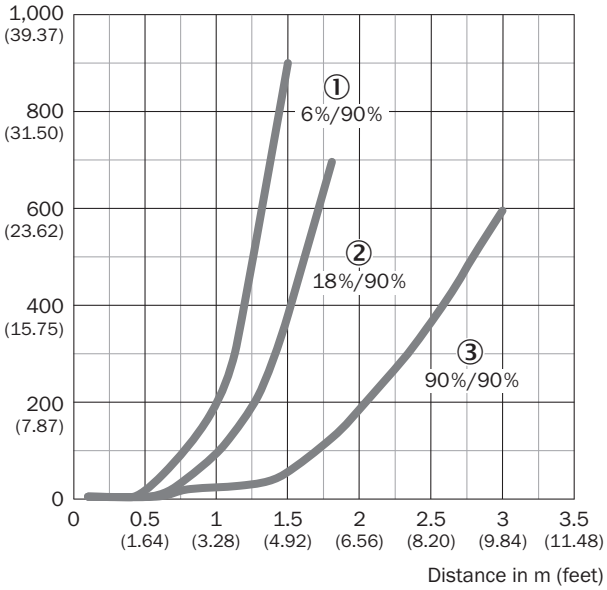


CONNECTION DIAGRAM CD-181

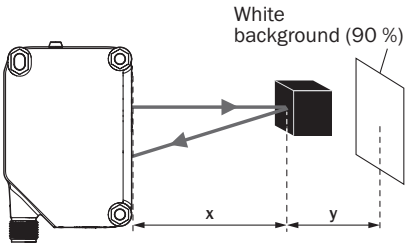


CHARACTERISTIC CURVE

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



Example:
Safe suppression of the background

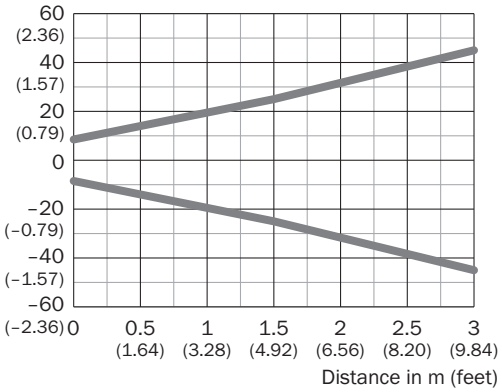


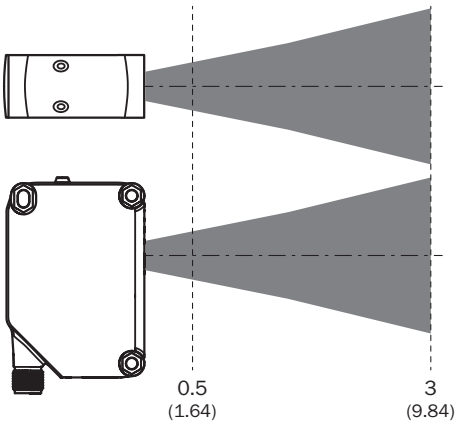
Black object (6 % remission)
Set sensing range x = 1.0 m
Needed minimum distance to white background y = 200 mm

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

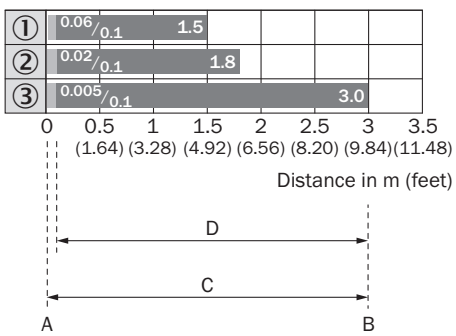
LIGHT SPOT SIZE

Dimensions in mm (inch)



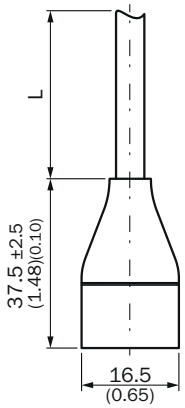


SENSING RANGE DIAGRAM



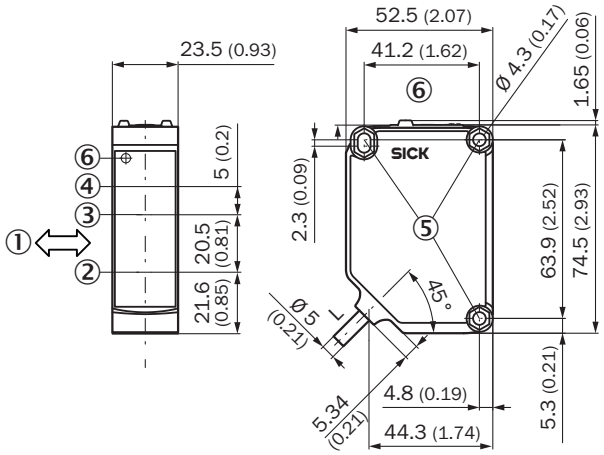
1	Black object, 6% remission factor
2	Gray object, 18% remission factor
3	White object, 90% remission factor
A	Sensing range min. in m
B	Sensing range max. in m
C	Field of view
D	Adjustable switching threshold for background suppression

DIMENSIONAL DRAWING



Dimensions in mm (inch)
For length of cable (L), see technical data

DIMENSIONAL DRAWING



Dimensions in mm (inch)
For length of cable (L), see technical data
① Standard direction of the material being detected
② Center of optical axis, sender
③ Center of optical axis, receiver (close range)
④ Center of optical axis, receiver (far range)
⑤ Fixing hole ø 4.3 mm, both sides for hexagon nut M4
⑥ display and adjustment elements

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/1120796

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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.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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