



# GTB20M-1H11160ZZZ

G20

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
GTB20M-1H111160ZZZ	1120795

Other models and accessories → [www.sick.com/G20](http://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 Ta = +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 Ta = +25 °C
Adjustment	
Potentiometer	For setting the sensing range, 7 rotations

<b>Display</b>		
	LED green	Operating indicatorStatic on: power onStatic off: object not present
	LED yellow	Status of received light beamStatic on: object presentStatic off: object not present

#### Safety-related parameters

<b>MTTF<sub>D</sub></b>	806 years
<b>DC<sub>avg</sub></b>	0%

#### Electronics

Supply voltage U <sub>B</sub>		10 V DC ... 30 V DC <sup>1)</sup>
Ripple		< 5 V <sub>pp</sub>
Usage category		DC-13 (according to EN 60947-1)
Current consumption		≤ 30 mA, without load. At U <sub>B</sub> = 24 V
Protection class		III
Digital output		
	Number	2 (Complementary)
	Type	Push-pull: PNP/NPN
	Switching mode	Light/dark switching
	Signal voltage PNP HIGH/LOW	V <sub>S</sub> - (≤ 3 V) / approx. 0 V
	Signal voltage NPN HIGH/LOW	V <sub>S</sub> - (≤ 3 V) / approx. 0 V
	Output current I <sub>max</sub> .	≤ 100 mA <sup>2)</sup>
	Circuit protection outputs	Reverse polarity protected
		Overcurrent protected
		Short-circuit protected
	Response time	≤ 1.67 ms
	Switching frequency	300 Hz <sup>3)</sup>
Pin/Wire assignment		
	BN	+ (L+)
	WH	Q̄Digital output, dark switching, object present → output Q̄ LOW
	BU	- (M)
	BK	QDigital output, light switching, object present → output Q HIGH

<sup>1)</sup> Limit values.

<sup>2)</sup> At U<sub>B</sub> > 24 V, I max. = 100 mA.

<sup>3)</sup> With light/dark ratio 1:1.

#### Mechanics

<b>Housing</b>		Rectangular
<b>Dimensions (W x H x D)</b>		23.5 mm x 74.5 mm x 52.5 mm
<b>Connection</b>		Cable, 4-wire, 2 m
<b>Connection detail</b>		
	Deep-freeze property	Do not bend below 0 °C
	Conductor size	0.14 mm²
	Cable diameter	Ø 5 mm
	Length of cable (L)	2 m

<b>Material</b>		
	Housing	Plastic, ABS
	Front screen	Plastic, PMMA
	Cable	Plastic, PVC
<b>Weight</b>		Approx. 120 g

#### Ambient data

<b>Enclosure rating</b>	IP67 (EN 60529)
<b>Ambient operating temperature</b>	-30 °C ... +60 °C
<b>Ambient temperature, storage</b>	-40 °C ... +70 °C
<b>Typ. Ambient light immunity</b>	Sunlight: ≤ 20,000 lx
<b>Shock resistance</b>	30 g, 11 ms (3 positive and 3 negative shocks along X, Y, Z axes, 18 total shocks (EN60068-2-27))
<b>Vibration resistance</b>	10 Hz ... 1,000 Hz (Amplitude 1 mm, 3 x 30 min (EN60068-2-6))
<b>Air humidity</b>	35 % ... 95 %, relative humidity (no condensation)
<b>Electromagnetic compatibility (EMC)</b>	EN 60947-5-2
<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

#### Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓
<b>cULus certificate</b>	✓
<b>Photobiological safety (IEC EN 62471)</b>	✓

#### Classifications

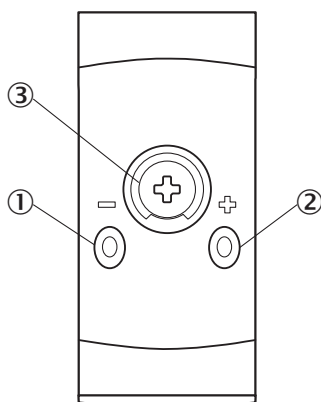
<b>ECLASS 5.0</b>	27270904
<b>ECLASS 5.1.4</b>	27270904
<b>ECLASS 6.0</b>	27270904
<b>ECLASS 6.2</b>	27270904
<b>ECLASS 7.0</b>	27270904
<b>ECLASS 8.0</b>	27270904
<b>ECLASS 8.1</b>	27270904
<b>ECLASS 9.0</b>	27270904
<b>ECLASS 10.0</b>	27270904
<b>ECLASS 11.0</b>	27270904
<b>ECLASS 12.0</b>	27270903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

## display and adjustment elements



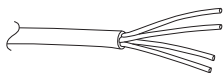
② LED yellow

## display and adjustment elements

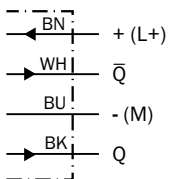


① LED green  
② LED yellow  
③ Potentiometer

## Connection type Cable, 4-wire

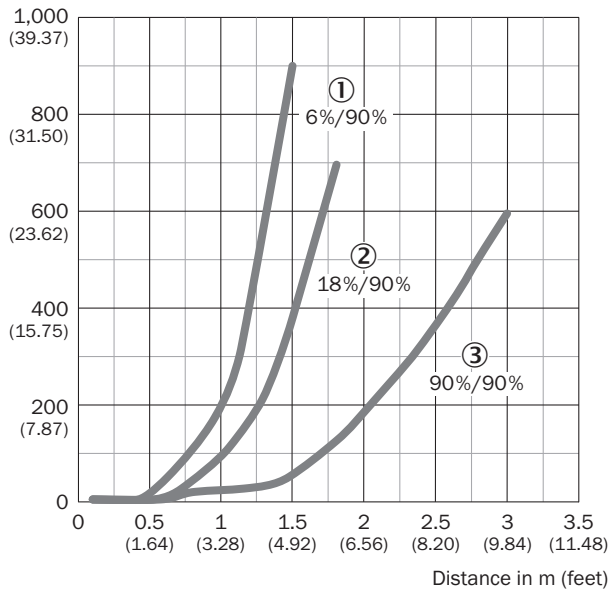


## Connection diagram Cd-094



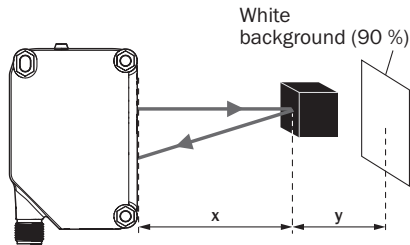
## Characteristic curve

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



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

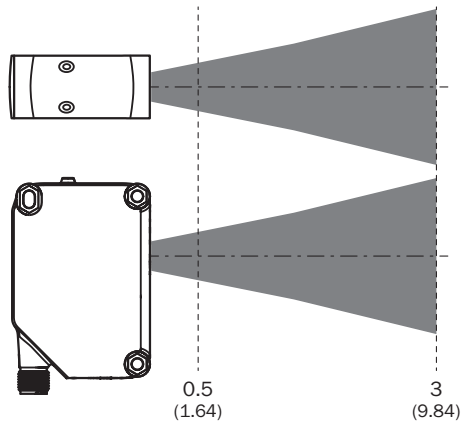
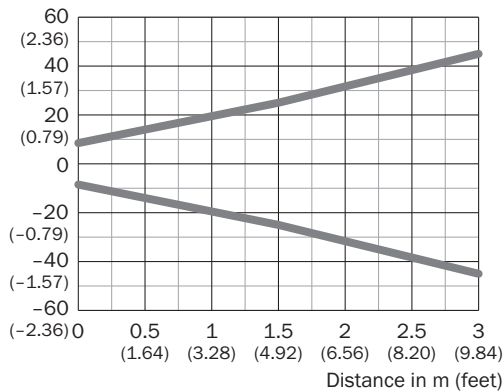
Example:  
Safe suppression of the background



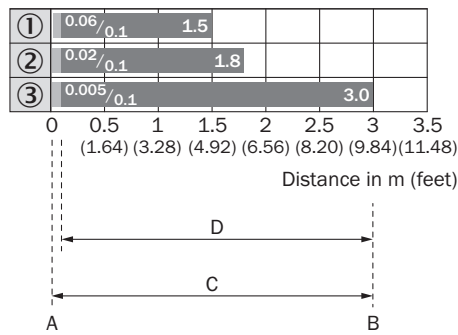
Black object (6 % remission)  
Set sensing range  $x = 1.0$  m  
Needed minimum distance to white background  $y = 200$  mm

## Light spot size

Dimensions in mm (inch)

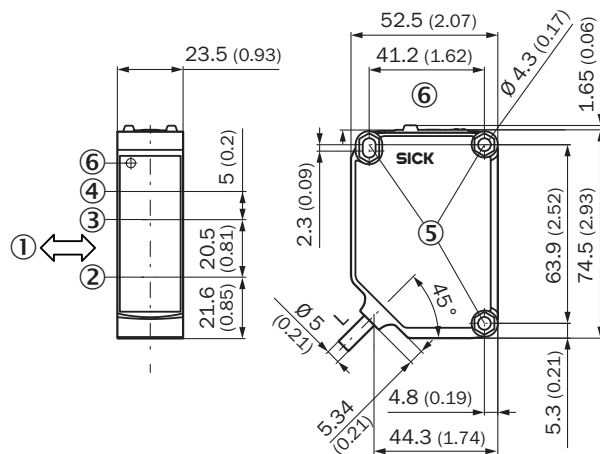


## Sensing range diagram



1	Black object, 6% remission factor
2	Gray object, 18% remission factor
3	White object, 90% remission factor
A	Sensing range min. in 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

- 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  $\varnothing 4.3$  mm, both sides for hexagon nut M4
- ⑥ display and adjustment elements

### Recommended accessories

Other models and accessories → [www.sick.com/G20](http://www.sick.com/G20)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Mounting bracket</li> <li>• <b>Material:</b> Stainless steel</li> <li>• <b>Details:</b> Stainless steel V2A (1.4301)</li> <li>• <b>Items supplied:</b> 2 screws, 2 nuts, 2 circlips, 2 washers for mounting the sensor</li> <li>• <b>Suitable for:</b> W280-2, G20</li> </ul>	BEF-W280	5313885
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	STE-1204-G	6009932
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Connection systems:</b> Cutting technology</li> <li>• <b>Permitted cross-section:</b> 0.34 mm<sup>2</sup> ... 0.75 mm<sup>2</sup></li> </ul>	STE-1204-GQU8	6044998



## 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](http://www.sick.com)