



# GTB20G-3ASD116GZZZ

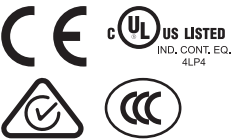
## G20

COMPACT PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type               | Part no. |
|--------------------|----------|
| GTB20G-3ASD116GZZZ | 1120792  |

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

Detailed technical data

Features

|                                                                                                 |                                                                                       |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Functional principle</b>                                                                     | Photoelectric proximity sensor                                                        |
| <b>Functional principle detail</b>                                                              | Background suppression                                                                |
| <b>Sensing range</b>                                                                            |                                                                                       |
| 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                                                      |
| <b>Emitted beam</b>                                                                             |                                                                                       |
| Light source                                                                                    | LED                                                                                   |
| Type of light                                                                                   | Visible red 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)                                                           |
| <b>Key LED figures</b>                                                                          |                                                                                       |
| Normative reference                                                                             | EN 62471:2008-09   IEC 62471:2006, modified                                           |
| LED risk group marking                                                                          | Free group                                                                            |
| Wave length                                                                                     | 630 nm                                                                                |
| Average service life                                                                            | 100,000 h at Ta = +25 °C                                                              |
| <b>Adjustment</b>                                                                               |                                                                                       |
| 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                                                 |
| <b>Indication</b> | LED green       | Operating indicator<br>Static on: power on<br>Static off: object not present |
|                   | LED yellow      | Status of received light beam<br>Static on: object present                   |

## Electronics

|                               |                                 |                                                                                                                                                                                                                            |
|-------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage U <sub>e</sub> |                                 | 24 V AC/DC ... 240 V AC/DC <sup>1)</sup>                                                                                                                                                                                   |
| Ripple                        |                                 | < 10 %                                                                                                                                                                                                                     |
| Usage category                |                                 | DC-13 (according to EN 60947-1)<br>AC-15 (according to EN 60947-1)                                                                                                                                                         |
| Current consumption           |                                 | ≤ 10 mA, ≤ 45 mA, Without load At 230 V AC/DC, Without load At 24 V AC/DC                                                                                                                                                  |
| Protection class              |                                 | II                                                                                                                                                                                                                         |
| Digital output                |                                 |                                                                                                                                                                                                                            |
|                               | Number                          | 2 (Complementary)                                                                                                                                                                                                          |
|                               | Type                            | Relay, SPDT, electrically isolated <sup>2)</sup>                                                                                                                                                                           |
|                               | Switching mode                  | Light/dark switching                                                                                                                                                                                                       |
|                               | Output current I <sub>max</sub> | 4 A@250 V AC, 4 A@24 VDC, 0.11 A@250 V DCUL: 4 A@250 V AC, general use4 A @ 250 V AC, resistive (NO)3 A @ 250 V AC, resistive (NC)4 A @ 24 V DC, NO, general use3 A @ 24 V DC, NC, general useR300/B300 (NO contacts only) |
|                               | Response time                   | ≤ 15 ms                                                                                                                                                                                                                    |
|                               | Switching frequency             | 10 Hz <sup>3)</sup>                                                                                                                                                                                                        |
|                               | 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           |                                 |                                                                                                                                                                                                                            |
|                               | BN 1                            | L/(+)                                                                                                                                                                                                                      |
|                               | BU 2                            | N/(-)                                                                                                                                                                                                                      |
|                               | GY 3                            | Relay COM                                                                                                                                                                                                                  |
|                               | BK 4                            | Relay NO<br>Relay output, light switching, object present → output HIGH                                                                                                                                                    |
|                               | WH 5                            | Relay NC<br>Relay output, dark switching, object present → output LOW                                                                                                                                                      |

<sup>1)</sup> +- 10 %.

<sup>2)</sup> 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.

<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 63 mm                                |
| <b>Connection</b>             | Cable with Q6 male connector, 6-pin, AC/UC-coded, 300 mm |
| <b>Connection detail</b>      |                                                          |
| Deep-freeze property          | Do not bend below 0 °C                                   |
| Length of cable (L)           | 270 mm                                                   |

|                 |                |               |
|-----------------|----------------|---------------|
| <b>Material</b> | Housing        | Plastic, ABS  |
|                 | Front screen   | Plastic, PMMA |
|                 | Cable          | Plastic, PVC  |
|                 | Male connector | Plastic, PC   |
| <b>Weight</b>   | Approx. 155 g  |               |

#### Ambient data

|                                            |                                                                                                   |
|--------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Enclosure rating</b>                    | IP65 (EN 60529)                                                                                   |
| <b>Ambient operating temperature</b>       | -30 °C ... +60 °C <sup>1)</sup>                                                                   |
| <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, EN 61000-6-3                                                                        |
| <b>UL File No.</b>                         | NRKH.E348498 & NRKH7.E348498                                                                      |

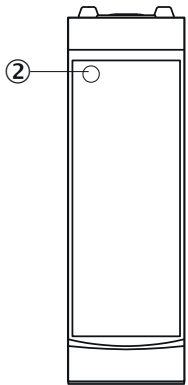
<sup>1)</sup> The max. ambient temperature is 50 °C (UL).

#### 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 |

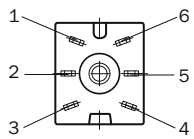
## Adjustments

Display and adjustment elements



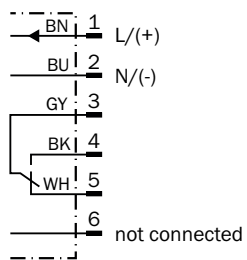
② LED yellow

## Connection type



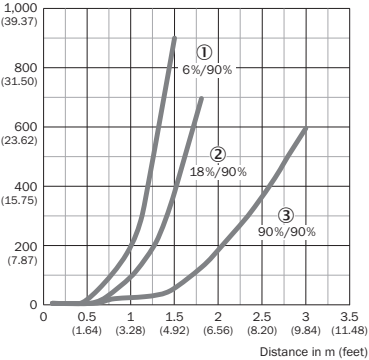
## Connection diagram

Cd-181

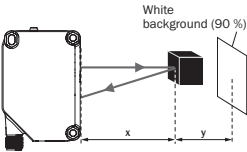


Characteristic curve

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



Example:  
Safe suppression of the background

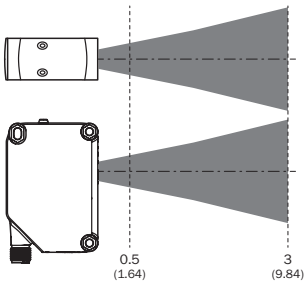
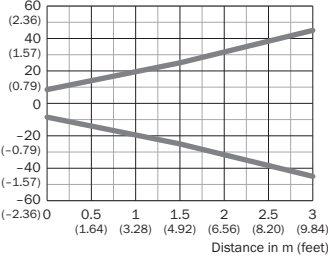


Black object (6 % remission)  
Set sensing range x = 1.0 m  
Needed minimum distance to white background y = 200 mm

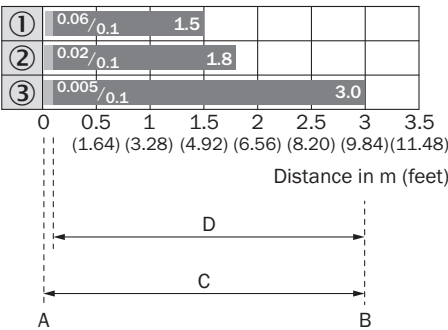
- ① Black object, 6% remission factor
- ② Gray object, 18% remission factor
- ③ White object, 90% remission factor

Light spot size

Dimensions in mm (inch)



Sensing range diagram



|   |       |     |     |  |  |     |  |  |
|---|-------|-----|-----|--|--|-----|--|--|
| ① | 0.06  | 0.1 | 1.5 |  |  |     |  |  |
| ② | 0.02  | 0.1 | 1.8 |  |  |     |  |  |
| ③ | 0.005 | 0.1 |     |  |  | 3.0 |  |  |

0 0.5 1 1.5 2 2.5 3 3.5  
(1.64) (3.28) (4.92) (6.56) (8.20) (9.84) (11.48)

Distance in m (feet)

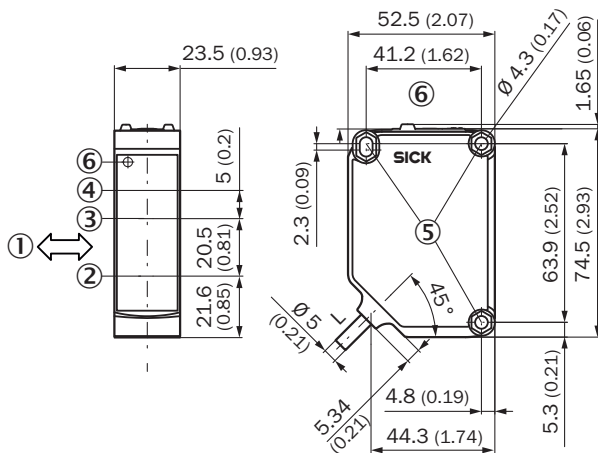
A B

D C

|   |                                    |
|---|------------------------------------|
| 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                      |

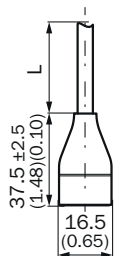
|   |                                                           |
|---|-----------------------------------------------------------|
|   |                                                           |
| D | Adjustable switching threshold for background suppression |

### 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



For length of cable (L), see technical data

### Recommended accessories

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

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                | Type     | Part no. |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|
| Mounting brackets and plates                                                        |                                                                                                                                                                                                                                                                                                                                  |          |          |
|  | <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  |

## 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:

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