



GTB20M-341116GZZZ

G20

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

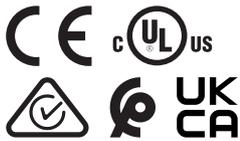


Ordering information

| Type | part no. |
|--------------------|----------|
| GTB20M-3411116GZZZ | 1136809 |

Other models and accessories → www.sick.com/G20

Illustration may differ



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 _a = +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 Static off: object not present |

Safety-related parameters

| | |
|-------------------------|-----------|
| MTTF_D | 596 years |
| DC_{avg} | 0% |

Electronics

| | |
|-------------------------------------|---|
| Supply voltage U_B | 10 V DC ... 30 V DC ¹⁾ |
| Ripple | < 5 V _{pp} |
| Usage category | DC-13 (according to EN 60947-1) |
| Current consumption | ≤ 30 mA, Without load At 24 V AC/DC |
| Protection class | III |
| Digital output | |
| Number | 2 (Complementary) |
| Type | Push-pull: PNP/NPN |
| Switching mode | Light/dark switching |
| Signal voltage PNP HIGH/LOW | V _S - (≤ 3 V) / approx. 0 V |
| Signal voltage NPN HIGH/LOW | V _S - (≤ 3 V) / approx. 0 V |
| Output current I _{max.} | ≤ 100 mA ²⁾ |
| Circuit protection outputs | Reverse polarity protected Overcurrent protected Short-circuit protected |
| Response time | ≤ 1.67 ms |
| Switching frequency | 300 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 | |
| BN 1 | + (L+) |
| WH 2 | \bar{Q} Digital output, dark switching, object present → output \bar{Q} LOW |
| BU 3 | - (M) |

¹⁾ Limit values.

²⁾ At U_B > 24 V, I max. = 100 mA.

³⁾ With light/dark ratio 1:1.

| | |
|------|--|
| BK 4 | Q Digital output, light switching, object present → output Q HIGH |
|------|--|

¹⁾ Limit values.

²⁾ At $U_B > 24\text{ V}$, $I_{\text{max.}} = 100\text{ mA}$.

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 M12 male connector, 4-pin, 315 mm |
| Connection detail | |
| Deep-freeze property | Do not bend below 0 °C |
| Conductor size | 0.34 mm ² |
| Cable diameter | Ø 5 mm |
| Length of cable (L) | 270 mm |
| Material | |
| Housing | Plastic, ABS |
| Front screen | Plastic, PMMA |
| Cable | Plastic, PVC |
| Weight | Approx. 121 g |

Ambient data

| | |
|--|---|
| Enclosure rating | IP67 (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 |
| 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

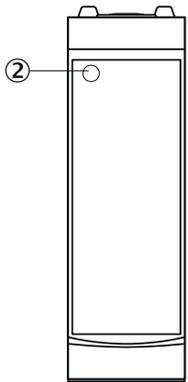
| | |
|--|---|
| EU declaration of conformity | ✓ |
| UK declaration of conformity | ✓ |
| ACMA declaration of conformity | ✓ |
| Moroccan declaration of conformity | ✓ |
| China-RoHS | ✓ |
| cULus certificate | ✓ |
| Photobiological safety (IEC EN 62471) | ✓ |

Classifications

| | |
|-------------------|----------|
| ECLASS 5.0 | 27270904 |
|-------------------|----------|

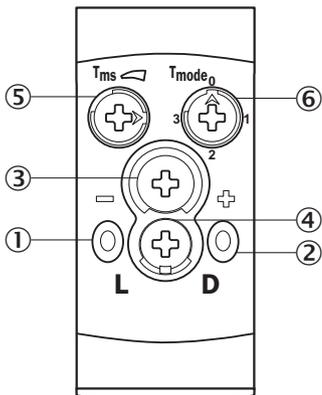
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|-----------------------|----------|
| ECLASS 5.1.4 | 27270904 |
| ECLASS 6.0 | 27270904 |
| ECLASS 6.2 | 27270904 |
| ECLASS 7.0 | 27270904 |
| ECLASS 8.0 | 27270904 |
| ECLASS 8.1 | 27270904 |
| ECLASS 9.0 | 27270904 |
| ECLASS 10.0 | 27270904 |
| 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 |

display and adjustment elements



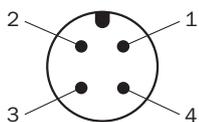
② LED yellow

display and adjustment elements

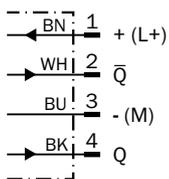


- ① LED green
- ② LED yellow
- ③ Potentiometer 1
- ④ operating mode switch
- ⑤ Potentiometer 2
- ⑥ Potentiometer 3

Connection type M12 male connector, 4-pin

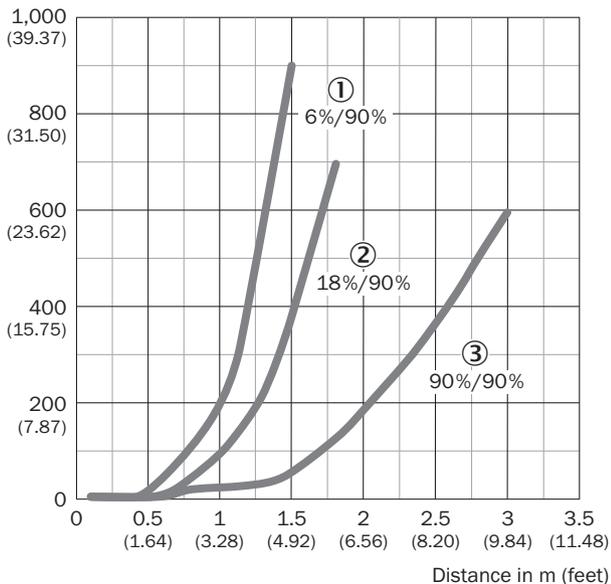


Connection diagram Cd-084



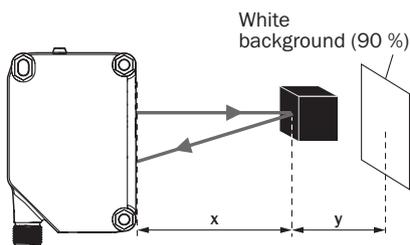
Characteristic curve

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

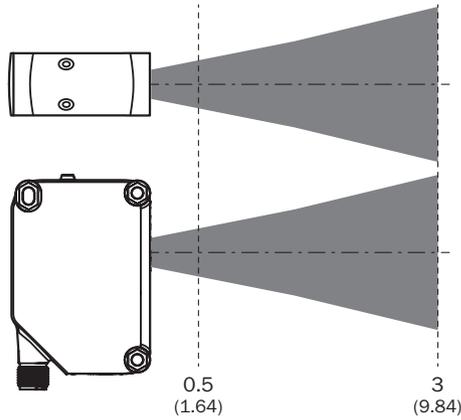
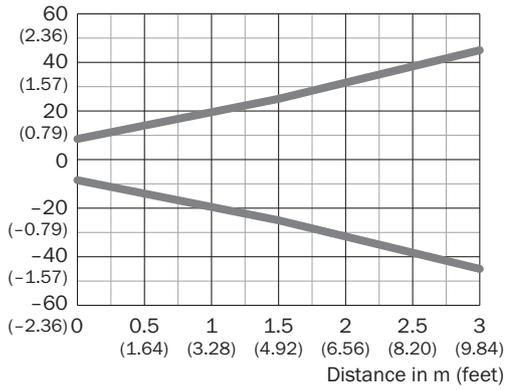
Example:
Safe suppression of the background



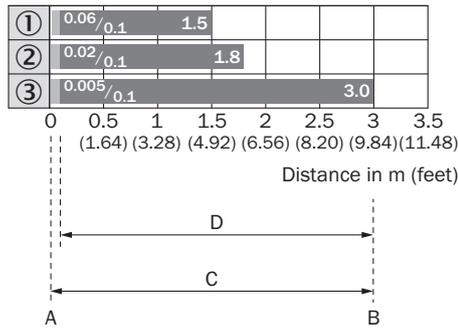
Black object (6 % remission)
Set sensing range $x = 1.0$ m
Needed minimum distance to white background $y = 200$ mm

Light spot size

Dimensions in mm (inch)

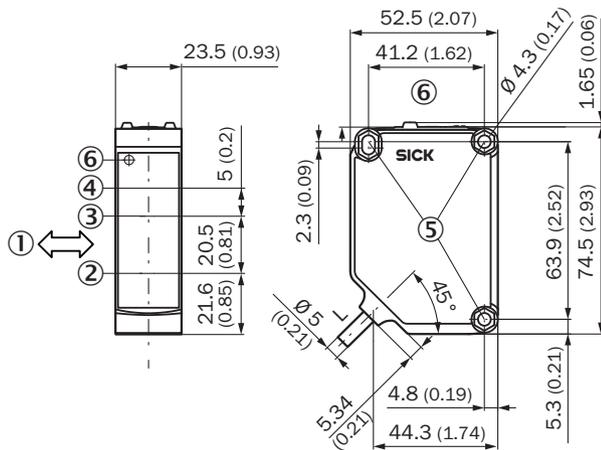


Sensing range diagram



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

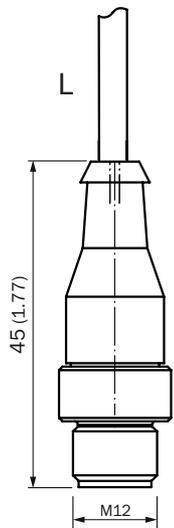


Dimensions in mm (inch)

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

Dimensional drawing Cable with M12 male connector



Dimensions in mm (inch)

- ① For length of cable, see technical data

Recommended accessories

Other models and accessories → www.sick.com/G20

| | Brief description | Type | part no. |
|--|--|--------------------|----------|
| Mounting systems | | | |
|  | <ul style="list-style-type: none"> • Description: Mounting bracket • Material: Stainless steel • Details: Stainless steel V2A (1.4301) • Items supplied: 2 screws, 2 nuts, 2 circlips, 2 washers for mounting the sensor • Suitable for: W280-2, G20 | BEF-W280 | 5313885 |
| connectors and cables | | | |
|  | <ul style="list-style-type: none"> • Connection type head A: Male connector, M12, 4-pin, straight, A-coded • Description: Unshielded • Connection systems: Screw-type terminals • Permitted cross-section: ≤ 0.75 mm² | STE-1204-G | 6009932 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 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: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation | YF2A14-050UB3XLEAX | 2095608 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 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: Zones with chemicals, Uncontaminated zones | YF2A14-050VB3XLEAX | 2096235 |

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