GTB20M-3411116GZZZ
G20

COMPACT PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

GTB20M-3411116GZZZ | G20

COMPACT PHOTOELECTRIC SENSORS
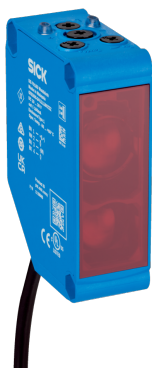
Ordering information

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 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 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
Indication	
LED green	Operating indicator Static on: power on Static off: object not present
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%

Electrical data

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	Q̄ Digital output, dark switching, object present → output Q̄ LOW
BU 3	- (M)
BK 4	Q Digital output, light switching, object present → output Q HIGH

[1] Limit values.

[2] At U$_B$ > 24 V, I max. = 100 mA.

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

Mechanical data

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 mm²
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).

Classifications

| ECLASS 5.0	27270904
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

Adjustments

Display and adjustment elements
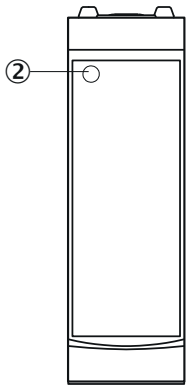
② LED yellow

Display and adjustment elements
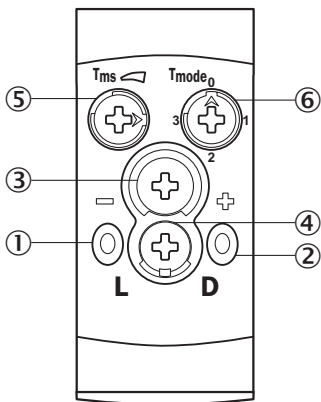
① LED green
② LED yellow
③ Potentiometer 1
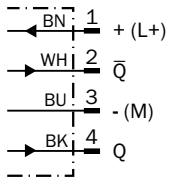④ Operating mode switch
⑤ Potentiometer 2
⑥ Potentiometer 3

Connection type

M12 male connector, 4-pin
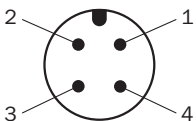
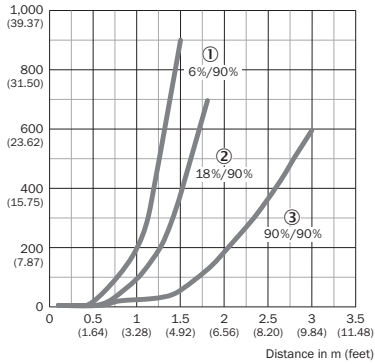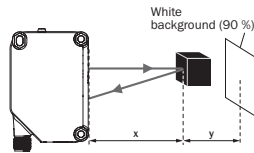## Connection diagram

Cd-084

BN	1	+ (L+)
WH	2	$\overline{Q}$
BU	3	- (M)
BK	4	Q

Characteristic curve

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

① 6%/90%
② 18%/90%
③ 90%/90%

Distance in m (feet)

Example:
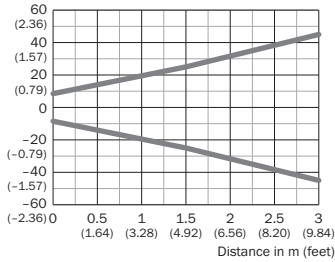Safe suppression of the background

White background (90 %)

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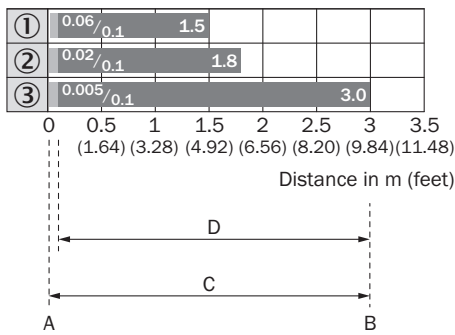Needed minimum distance to white background y = 200 mm

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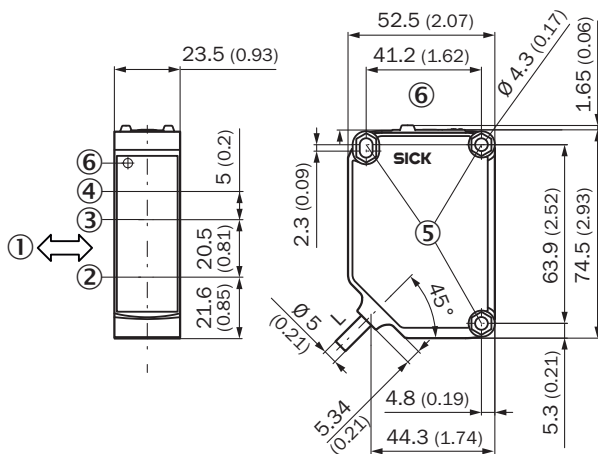
Light spot size

Dimensions in mm (inch)

Distance in m (feet)

0.5 (1.64)　　3 (9.84)
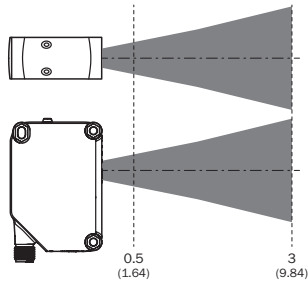
Sensing range diagram

|		
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 ø 4.3 mm, both sides for hexagon nut M4
⑥ Display and adjustment elements

Cable with M12 male connector

L

45 (1.77)

M12
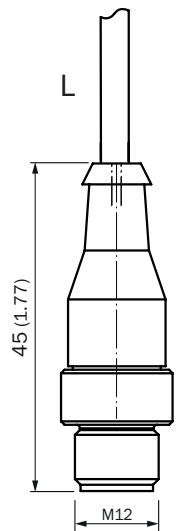
① For length of cable, see technical data

Recommended accessories

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

Brief description	Type	Part no.
Mounting brackets and plates		
Mounting bracket, Stainless steel V2A (1.4301), 2 screws, 2 nuts, 2 circlips, 2 washers for mounting the sensor	BEF-W280	5313885
Others		
• **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

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**

SICK AG | Waldkirch | Germany | www.sick.com