



DATA SHEET

GRTB18S-P1131V

GR18
Photoelectric sensors

SICK

Sensor Intelligence



Illustration may differ

PHOTOELECTRIC SENSORS

GRTB18S-P1131V

ORDERING INFORMATION

Type	part no.
GRTB18S-P1131V	1085747

Further device versions and accessories at www.sick.com/GR18



DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric proximity sensor
Functional principle detail	Background suppression
Dimensions (W x H x D)	18 mm x 18 mm x 55.9 mm
Housing design (light emission)	Cylindrical
Housing length	55.9 mm
Thread length	31.7 mm
Thread diameter (housing)	M18 x 1
Optical axis	Axial
Sensing range max.	3 mm ... 100 mm ¹⁾
Sensing range	15 mm ... 100 mm ¹⁾
Type of light	Visible red light
Light source	PinPoint LED ²⁾
Light spot size (distance)	Ø 7 mm (100 mm)
Wave length	650 nm
Adjustment	None
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

¹⁾ Object with 90% remission (based on standard white, DIN 5033).

²⁾ Average service life: 100,000 h at T_u = +25 °C.

Special applications	Hygienic and washdown zones
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²⁾ Average service life: 100,000 h at $T_u = +25\text{ °C}$.

MECHANICS/ELECTRONICS

Supply voltage U_s	10 V DC ... 30 V DC ¹⁾
Ripple	$< 5\text{ V}_{pp}$ ²⁾
Current consumption	30 mA
Switching output	PNP
Output function	Complementary
Switching mode	Light/dark switching ³⁾
Signal voltage PNP HIGH/LOW	$V_s - (\leq 3\text{ V}) / \text{approx. } 0\text{ V}$
Output current I_{max}	$\leq 100\text{ mA}$ ⁴⁾
Response time	$< 500\text{ }\mu\text{s}$ ⁵⁾
Switching frequency	1,000 Hz ⁶⁾
Connection type	Cable, 4-wire, 2 m ⁷⁾
Cable material	Plastic, PVC
Conductor cross section	0.14 mm ²
Cable diameter	Ø 4.8 mm
Circuit protection	A ⁸⁾ B ⁹⁾ D ¹⁰⁾
Protection class	III
Weight	100 g
Housing material	Metal, Stainless steel V4A (1.4404, 316L)
Optics material	Plastic, PMMA
Tightening torque, max.	90 Nm
Enclosure rating	IP67 IP68 ¹¹⁾ IP69K ¹²⁾
Items supplied	Fastening nuts (2 x)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Ambient operating temperature	$-25\text{ °C} \dots +55\text{ °C}$ ¹³⁾
Ambient temperature, storage	$-30\text{ °C} \dots +75\text{ °C}$

¹⁾ Limit values. Operated in short-circuit protected network: max. 8 A.

²⁾ May not fall below or exceed U_s tolerances.

³⁾ Q = light switching; $\bar{Q}$ = dark switching.

⁴⁾ At $U_v > 24\text{ V}$ or ambient temperature $> 49\text{ °C}$, $I_A \text{ max.} = 50\text{ mA}$.

⁵⁾ Signal transit time with resistive load.

⁶⁾ With light/dark ratio 1:1.

⁷⁾ Do not bend below 0 °C .

⁸⁾ A = V_s connections reverse-polarity protected.

⁹⁾ B = inputs and output reverse-polarity protected.

¹⁰⁾ D = outputs overcurrent and short-circuit protected.

¹¹⁾ According to EN 60529 (10 m water depth / 24 h).

¹²⁾ According to ISO 20653:2013-03.

¹³⁾ At $U_v \leq 24\text{ V}$ and $I_A \leq 50\text{ mA}$.

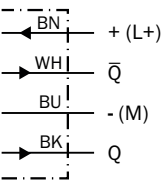
UL File No.	NRKH.E348498 & NRKH7.E348498
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- ¹⁾ Limit values. Operated in short-circuit protected network: max. 8 A.
- ²⁾ May not fall below or exceed U_{I} tolerances.
- ³⁾ Q = light switching; $\bar{Q}$ = dark switching.
- ⁴⁾ At $U_{\text{V}} > 24 \text{ V}$ or ambient temperature $> 49 \text{ }^{\circ}\text{C}$, $I_{\text{A max.}} = 50 \text{ mA}$.
- ⁵⁾ Signal transit time with resistive load.
- ⁶⁾ With light/dark ratio 1:1.
- ⁷⁾ Do not bend below $0 \text{ }^{\circ}\text{C}$.
- ⁸⁾ A = V_{S} connections reverse-polarity protected.
- ⁹⁾ B = inputs and output reverse-polarity protected.
- ¹⁰⁾ D = outputs overcurrent and short-circuit protected.
- ¹¹⁾ According to EN 60529 (10 m water depth / 24 h).
- ¹²⁾ According to ISO 20653:2013-03.
- ¹³⁾ At $U_{\text{I}} \leq 24 \text{ V}$ and $I_{\text{A}} < 50 \text{ mA}$.

CERTIFICATES

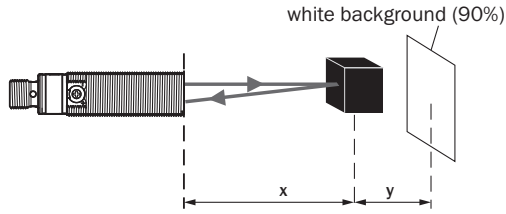
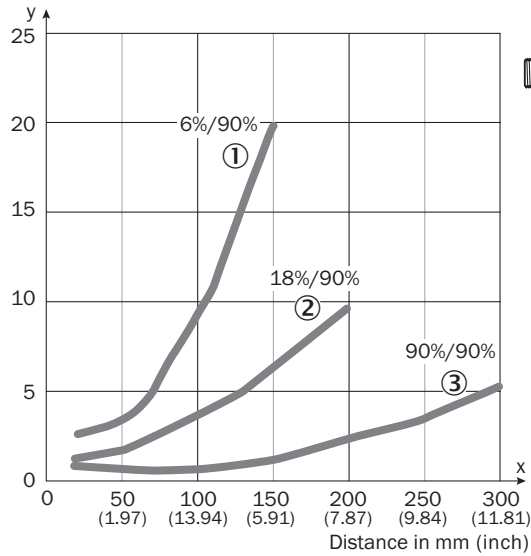
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China Compulsory Product Certification (CCC) exempt	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	✓

CONNECTION DIAGRAM CD-094



CHARACTERISTIC CURVE GRTB18(S) INOX

Minimum distance between set sensing range and background (white, 90%) in % of sensing range



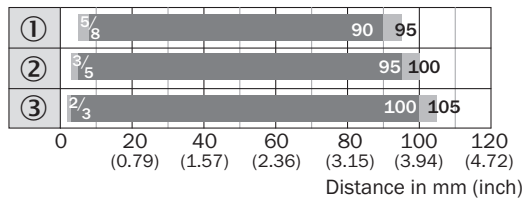
Example:

Sensing range on black, 6%

$x = 100 \text{ mm}$, $y = (10\% \text{ of } 100 \text{ mm}) = 10 \text{ mm}$

- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission

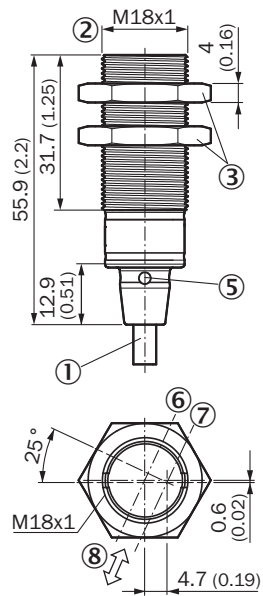
SENSING RANGE DIAGRAM GRTB18(S) INOX



■ Sensing range ■ Sensing range max.

- ① Sensing range on black, 6% remission factor
- ② Sensing range on gray, 18% remission factor
- ③ Sensing range on white, 90% remission factor

DIMENSIONAL DRAWING GRTB18S INOX, CABLE, STRAIGHT



Dimensions in mm (inch)

- ① Connection
- ② Threaded mounting hole M18 x 1
- ③ fastening nuts (2 x); width across 24, stainless steel
- ⑤ LED indicator (4 x)
- ⑥ optical axis, receiver
- ⑦ optical axis, sender
- ⑧ Standard direction

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/1085747



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SICK AT A GLANCE

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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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