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DATA SHEET

GRTB18-P2412V

GR18
Photoelectric sensors

SICK
Sensor Intelligence



Illustration may differ

PHOTOELECTRIC SENSORS

GRTB18-P2412V

ORDERING INFORMATION

Type	part no.
GRTB18-P2412V	1085749

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 73.5 mm
Housing design (light emission)	Cylindrical
Housing length	73.5 mm
Thread length	49.3 mm
Thread diameter (housing)	M18 x 1
Optical axis	Axial
Sensing range max.	3 mm ... 300 mm [1]
Sensing range	20 mm ... 150 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	Potentiometer, 270°
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

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

[2] Average service life: 100,000 h at T_U = +25 °C.

MECHANICS/ELECTRONICS

Supply voltage U_B	10 V DC ... 30 V DC [1]
Ripple	< 5 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 - (≤ 3 V) / approx. 0 V
Output current $I_{max.}$	≤ 100 mA [4]
Response time	< 500 µs [5]
Switching frequency	1,000 Hz [6]
Connection type	Male connector M12, 4-pin
Circuit protection	A [7] B [8] D [9]
Protection class	III
Weight	65 g
Housing material	Metal, Stainless steel V4A (1.4404, 316L)
Optics material	Plastic, PMMA
Tightening torque, max.	90 Nm
Enclosure rating	IP67 IP68 [10] IP69K [11]
Items supplied	Fastening nuts (2 x)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Ambient operating temperature	–25 °C ... +55 °C [12]
Ambient temperature, storage	–30 °C ... +75 °C
UL File No.	E348498

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

[2] May not fall below or exceed U_v tolerances.

[3] Q = light switching; Q̄ = dark switching.

[4] At Uv > 24 V or ambient temperature > 49 °C, IA max. = 50 mA.

[5] Signal transit time with resistive load.

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

[7] A = V_S connections reverse-polarity protected.

[8] B = inputs and output reverse-polarity protected.

[9] D = outputs overcurrent and short-circuit protected.

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

[11] According to ISO 20653:2013-03.

[12] At U_v <=24V and I_A<50mA.

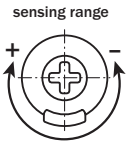
SAFETY-RELATED PARAMETERS

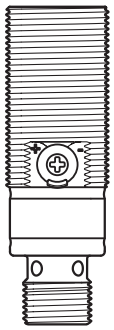
$MTTF_D$	900 years
DC_{avg}	0 %

CERTIFICATES

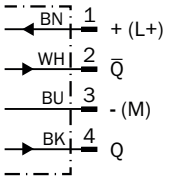
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China Compulsory Product Certification (CCC) exempt	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	✓

ADJUSTMENTS GRTB18(S) INOX, GRTE18(S) INOX, SENSING RANGE SETTING: POTENTIOMETER, 270°



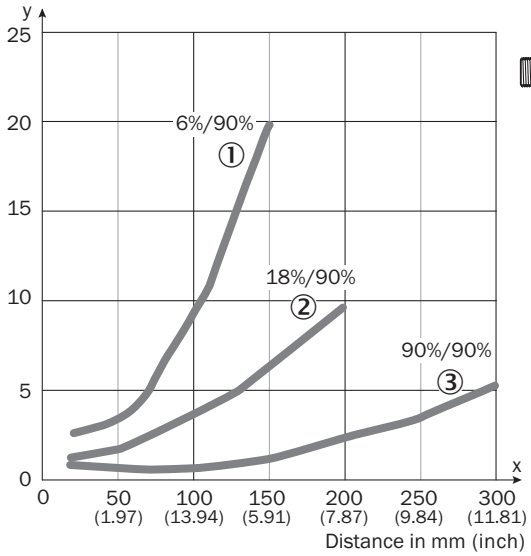


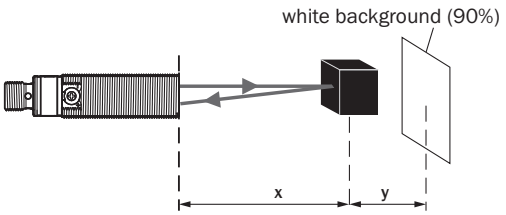
CONNECTION DIAGRAM CD-084



CHARACTERISTIC CURVE GRTB18(S) INOX

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

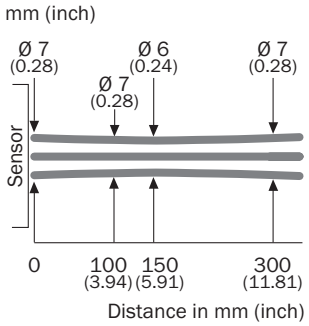




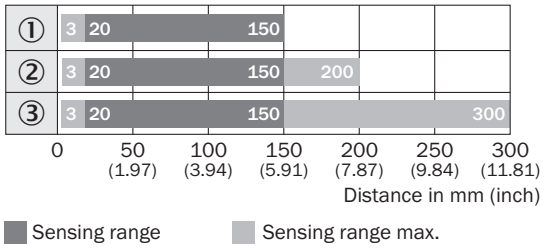
Example:
Sensing range on black, 6%
x = 100 mm, y = (10% of 100 mm) =10 mm

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

LIGHT SPOT SIZE GRTB18(S)



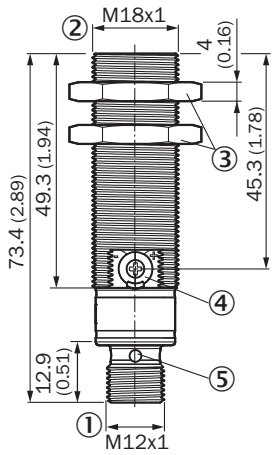
SENSING RANGE DIAGRAM

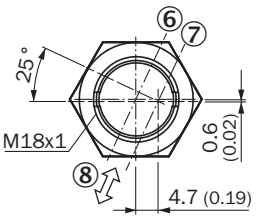


Sensing range Sensing range max.

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 GRTB18 INOX, CONNECTOR, STRAIGHT





Dimensions in mm (inch)
① Connection
② Threaded mounting hole M18 x 1
③ fastening nuts (2 x); width across 24, stainless steel
④ Potentiometer, 270°
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/1085749

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

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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