



# GRTB18S-F3017S21

GR18

CYLINDRICAL PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	Part no.
GRTB18S-F3017S21	1122051

Other models and accessories → [www.sick.com/GR18](http://www.sick.com/GR18)

Illustration may differ



## Detailed technical data

### Features

<b>Functional principle</b>	Photoelectric proximity sensor				
<b>Functional principle detail</b>	Background suppression				
<b>Dimensions (W x H x D)</b>	18 mm x 18 mm x 38.1 mm				
<b>Housing design (light emission)</b>	Cylindrical				
<b>Thread diameter (housing)</b>	M18 x 1				
<b>Optical axis</b>	Axial				
<b>Sensing range max.</b>	3 mm ... 300 mm <sup>1)</sup>				
<b>Sensing range</b>	20 mm ... 150 mm <sup>1)</sup>				
<b>Type of light</b>	Visible red light				
<b>Light source</b>	PinPoint LED <sup>2)</sup>				
<b>Light spot size (distance)</b>	Ø 7 mm (100 mm)				
<b>Wave length</b>	650 nm				
<b>Adjustment</b>	Potentiometer, 270 °				
<b>Indication</b>	<table border="0"> <tr> <td style="padding-right: 20px;">LED green</td> <td>Operating indicator Static on: power on</td> </tr> <tr> <td>LED yellow</td> <td>Status of received light beam Static on: object present Static off: object not present</td> </tr> </table>	LED green	Operating indicator Static on: power on	LED yellow	Status of received light beam Static on: object present Static off: object not present
LED green	Operating indicator Static on: power on				
LED yellow	Status of received light beam Static on: object present Static off: object not present				
<b>Special features</b>	Cable with M8 male connector, 4-pin, 300 mm				

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

<sup>2)</sup> Average service life: 100,000 h at T<sub>J</sub> = +25 °C.

### Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>	< 5 V <sub>pp</sub> <sup>2)</sup>
<b>Current consumption</b>	30 mA
<b>Switching output</b>	PNP
<b>Switching mode</b>	Dark switching
<b>Signal voltage NPN HIGH/LOW</b>	Approx. V <sub>S</sub> / ≤ 3 V
<b>Output current I<sub>max.</sub></b>	≤ 100 mA <sup>3)</sup>
<b>Response time</b>	< 500 μs <sup>4)</sup>
<b>Switching frequency</b>	1,000 Hz <sup>5)</sup>
<b>Connection type</b>	Cable with M8 male connector, 4-pin, 300 mm <sup>6)</sup>
<b>Cable material</b>	PVC
<b>Circuit protection</b>	A <sup>7)</sup> B <sup>8)</sup> D <sup>9)</sup>
<b>Protection class</b>	III
<b>Housing material</b>	Plastic, ABS
<b>Optics material</b>	Plastic, PMMA
<b>Enclosure rating</b>	IP67
<b>Items supplied</b>	Fastening nuts (2 x)
<b>Electromagnetic compatibility (EMC)</b>	EN 60947-5-2
<b>Ambient operating temperature</b>	-25 °C ... +55 °C <sup>10)</sup>
<b>Ambient temperature, storage</b>	-40 °C ... +70 °C
<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

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

<sup>2)</sup> May not exceed or fall below U<sub>v</sub> tolerances.

<sup>3)</sup> At U<sub>v</sub> > 24 V or ambient temperature > 49 °C, I<sub>A</sub> max. = 50 mA.

<sup>4)</sup> Signal transit time with resistive load.

<sup>5)</sup> With light/dark ratio 1:1.

<sup>6)</sup> Do not bend below 0 °C.

<sup>7)</sup> A = V<sub>S</sub> connections reverse-polarity protected.

<sup>8)</sup> B = inputs and output reverse-polarity protected.

<sup>9)</sup> D = outputs overcurrent and short-circuit protected.

<sup>10)</sup> At U<sub>v</sub> ≤ 24V and I<sub>A</sub> < 50mA.

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	985 years
<b>DC<sub>avg</sub></b>	0 %

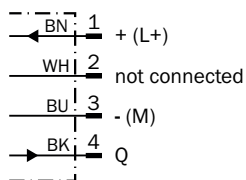
### Classifications

<b>eCl@ss 5.0</b>	27270904
<b>eCl@ss 5.1.4</b>	27270904
<b>eCl@ss 6.0</b>	27270904
<b>eCl@ss 6.2</b>	27270904
<b>eCl@ss 7.0</b>	27270904

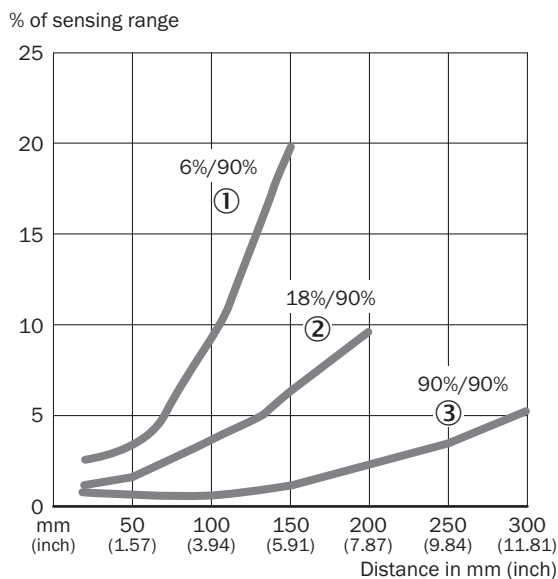
<b>eCl@ss 8.0</b>	27270904
<b>eCl@ss 8.1</b>	27270904
<b>eCl@ss 9.0</b>	27270904
<b>eCl@ss 10.0</b>	27270904
<b>eCl@ss 11.0</b>	27270904
<b>eCl@ss 12.0</b>	27270903
<b>ETIM 5.0</b>	EC002719
<b>ETIM 6.0</b>	EC002719
<b>ETIM 7.0</b>	EC002719
<b>ETIM 8.0</b>	EC002719
<b>UNSPSC 16.0901</b>	39121528

## Connection diagram

Cd-066



## Characteristic curve

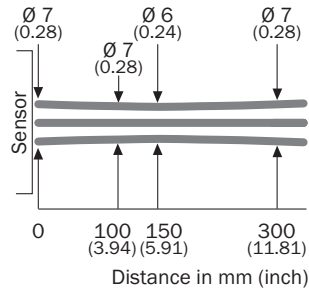


- ① Sensing range on black, 6% remission
- ② Sensing range on gray, 18% remission
- ③ Sensing range on white, 90% remission

## Light spot size

GRTB18(S)

mm (inch)



## Sensing range diagram



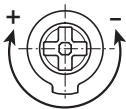
■ Sensing range    ■ Sensing range max.

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

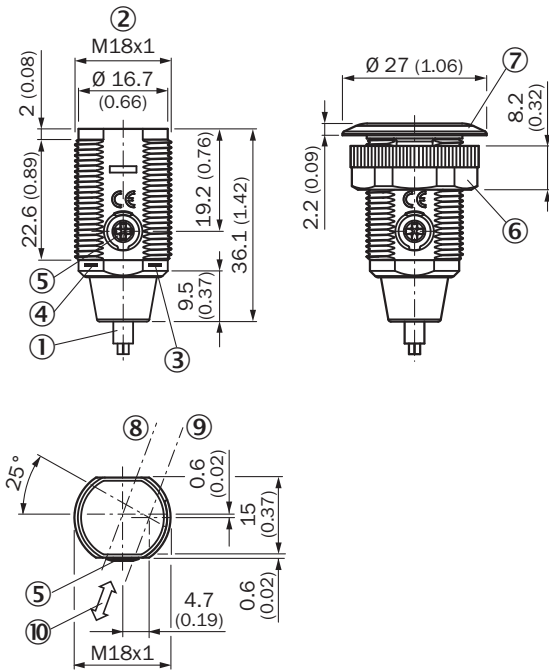
## Adjustments

GRTB18(S), GRTE18(S), Sensing range setting: Potentiometer, 270°

Sensing range




Dimensional drawing (Dimensions in mm (inch))



- ① Cable with M8 male connector, 4-pin
- ② Threaded mounting hole M18 x 1
- ③ LED indicator yellow
- ④ LED indicator green
- ⑤ Sensitivity control: potentiometer 270°
- ⑥ Fastening nut; 22 mm hex, plastic
- ⑦ Mounting ring
- ⑧ Optical axis, receiver
- ⑨ Optical axis, sender
- ⑩ Standard direction of the material being detected

Recommended accessories

Other models and accessories → [www.sick.com/GR18](http://www.sick.com/GR18)

	Brief description	Type	Part no.
Mounting brackets and plates			
	Mounting bracket for M18 sensors, steel, zinc coated, without mounting hardware	BEF-WN-M18	5308446

## 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](http://www.sick.com)