



# GRTB18S-P1031VS20

GR18

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.

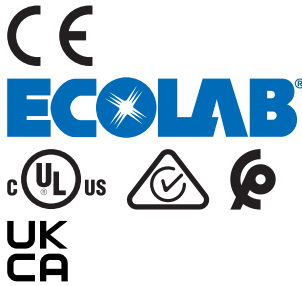


### Ordering information

Type	part no.
GRTB18S-P1031VS20	1111239

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 55.9 mm
<b>Housing design (light emission)</b>	Cylindrical
<b>Housing length</b>	55.9 mm
<b>Thread length</b>	31.7 mm
<b>Thread diameter (housing)</b>	M18 x 1
<b>Optical axis</b>	Axial
<b>Sensing range max.</b>	3 mm ... 100 mm <sup>1)</sup>
<b>Sensing range</b>	15 mm ... 100 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>	None
<b>Display</b>	
	LED green
	Operating indicator Static on: power on
	LED yellow
	Status of received light beam Static on: object present Static off: object not present

<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.

<b>Special applications</b>	Hygienic and washdown zones
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<sup>1)</sup> Object with 90% remission (based on standard white, DIN 5033).

<sup>2)</sup> Average service life: 100,000 h at  $T_U = +25 \text{ °C}$ .

## Mechanics/electronics

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

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

<sup>2)</sup> May not fall below or exceed  $U_V$  tolerances.

<sup>3)</sup> Q = light switching;  $\bar{Q}$  = dark switching.

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

<sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> With light/dark ratio 1:1.

<sup>7)</sup> Do not bend below  $0 \text{ °C}$ .

<sup>8)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>9)</sup> B = inputs and output reverse-polarity protected.

<sup>10)</sup> D = outputs overcurrent and short-circuit protected.

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

<sup>12)</sup> According to ISO 20653:2013-03.

<sup>13)</sup> At  $U_V \leq 24 \text{ V}$  and  $I_A < 50 \text{ mA}$ .

<b>Ambient operating temperature</b>	-25 °C ... +55 °C <sup>13)</sup>
<b>Ambient temperature, storage</b>	-30 °C ... +75 °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 fall below or exceed  $U_V$  tolerances.

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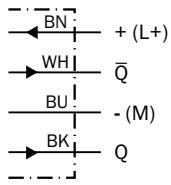
### Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>ECOLAB certificate</b>	✓
<b>cULus certificate</b>	✓
<b>Photobiological safety (DIN EN 62471) certificate</b>	✓

### Classifications

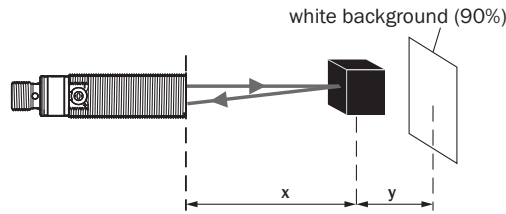
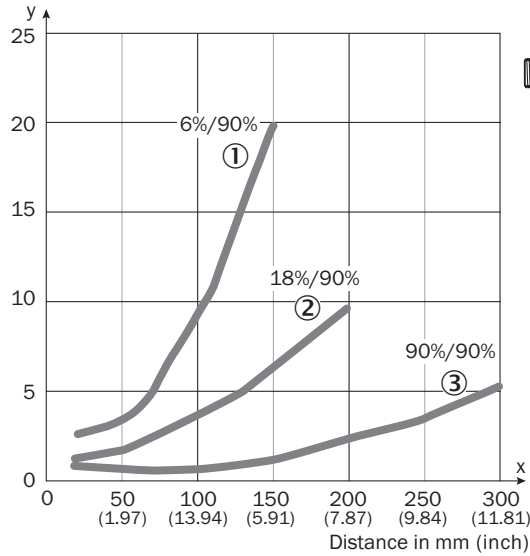
<b>ECLASS 5.0</b>	27270904
<b>ECLASS 5.1.4</b>	27270904
<b>ECLASS 6.0</b>	27270904
<b>ECLASS 6.2</b>	27270904
<b>ECLASS 7.0</b>	27270904
<b>ECLASS 8.0</b>	27270904
<b>ECLASS 8.1</b>	27270904
<b>ECLASS 9.0</b>	27270904
<b>ECLASS 10.0</b>	27270904
<b>ECLASS 11.0</b>	27270904
<b>ECLASS 12.0</b>	27270903
<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-094



Characteristic curve GRTB18(S) Inox

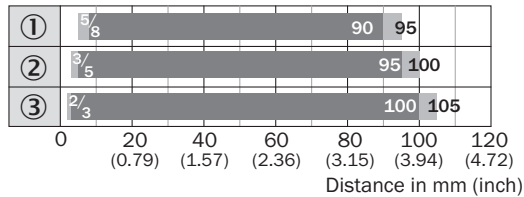
Minimum distance between set sensing range and background (white, 90%) in % of sensing range



Example:  
 Sensing range on black, 6%  
 $x = 100 \text{ mm}, y = (10\% \text{ of } 100 \text{ mm}) = 10 \text{ mm}$

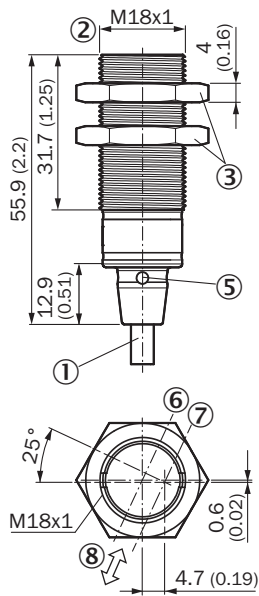
- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission

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
- ④ LED indicator (4 x)
- ⑤ optical axis, receiver
- ⑥ optical axis, sender
- ⑦ Standard direction

### Recommended accessories

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

	Brief description	Type	part no.
<b>Mounting systems</b>			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Mounting bracket for M18 sensors</li> <li>• <b>Material:</b> Stainless steel</li> <li>• <b>Details:</b> Stainless steel</li> <li>• <b>Items supplied:</b> Without mounting hardware</li> </ul>	BEF-WN-M18N	5320947
<b>connectors and cables</b>			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	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](http://www.sick.com)