

# GRL18S-P2431V

GR18

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.

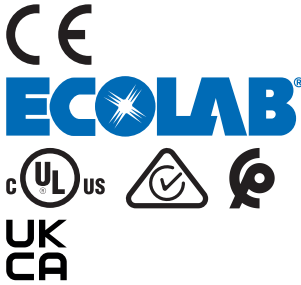


### Ordering information

Type	part no.
GRL18S-P2431V	1085706

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 retro-reflective sensor
<b>Functional principle detail</b>	With minimum distance to reflector (dual lens system)
<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>	0.03 m ... 7.2 m <sup>1)</sup>
<b>Sensing range</b>	0.06 m ... 6 m <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 175 mm (7 m)
<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 not present Static off: object present

<sup>1)</sup> Reflector PL80A.

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

<b>Special applications</b>	Hygienic and washdown zones
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1) Reflector PL80A.

2) 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 <sub>pp</sub> <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_{\text{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>	Male connector M12, 4-pin
<b>Circuit protection</b>	A <sup>7)</sup> B <sup>8)</sup> D <sup>9)</sup>
<b>Protection class</b>	III
<b>Weight</b>	45 g
<b>Polarisation filter</b>	✓
<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>10)</sup> IP69K <sup>11)</sup>
<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>12)</sup>
<b>Ambient temperature, storage</b>	-30 °C ... +75 °C
<b>UL File No.</b>	NRKH.E348498 & NRKH7.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;  $\bar{Q}$  = dark switching.

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

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  $U_V \leq 24\text{ V}$  and  $I_A < 50\text{ mA}$ .

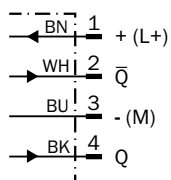
### Certificates

<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>China RoHS</b>	✓
<b>ECOLAB certificate</b>	✓
<b>cULus certificate</b>	✓
<b>Photobiological safety (DIN EN 62471) certificate</b>	✓

### Classifications

<b>ECLASS 5.0</b>	27270902
<b>ECLASS 5.1.4</b>	27270902
<b>ECLASS 6.0</b>	27270902
<b>ECLASS 6.2</b>	27270902
<b>ECLASS 7.0</b>	27270902
<b>ECLASS 8.0</b>	27270902
<b>ECLASS 8.1</b>	27270902
<b>ECLASS 9.0</b>	27270902
<b>ECLASS 10.0</b>	27270902
<b>ECLASS 11.0</b>	27270902
<b>ECLASS 12.0</b>	27270902
<b>ETIM 5.0</b>	EC002717
<b>ETIM 6.0</b>	EC002717
<b>ETIM 7.0</b>	EC002717
<b>ETIM 8.0</b>	EC002717
<b>UNSPSC 16.0901</b>	39121528

### Connection diagram Cd-084



### Characteristic curve GRL18S



- ① Reflector PL80A
- ② Reflector PL40A
- ③ Reflector PL20A
- ④ Reflector P250
- ⑤ Reflector PL22
- ⑥ Reflective tape REF-Plus 3436

### Light spot size GRL18S



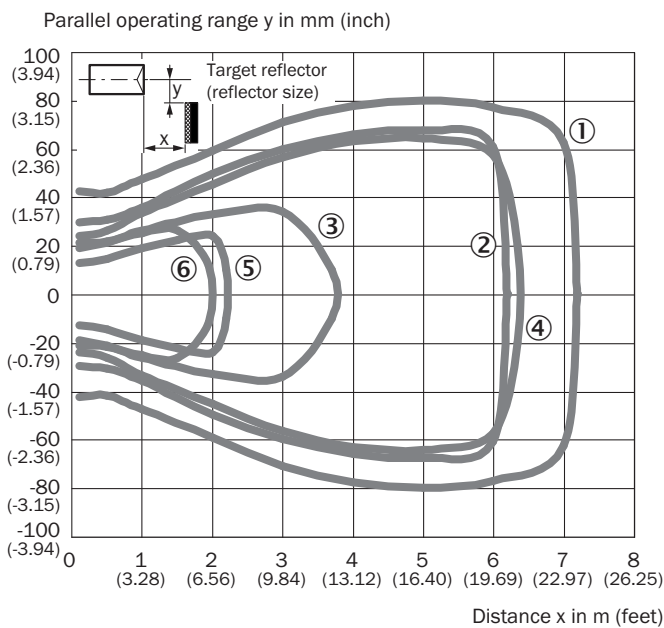
Sensing range diagram GRL18S



■ Sensing range    ■ Sensing range max.

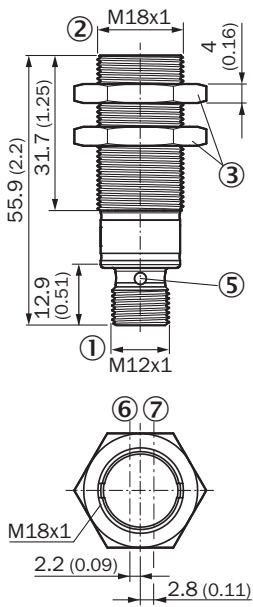
- ① Reflector PL80A
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Response range GRL18S



- ① Reflector PL80A
- ② Reflector PL40A
- ③ Reflector PL20A
- ④ Reflector P250
- ⑤ Reflector PL22
- ⑥ Reflective tape REF-Plus 3436

Dimensional drawing GR18S 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 LED indicator (4 x)
- ⑥ optical axis, receiver
- ⑦ optical axis, sender

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
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Universal mounting bracket for reflectors</li> <li>• <b>Dimensions (W x H x L):</b> 85 mm x 90 mm x 35 mm</li> <li>• <b>Material:</b> Steel</li> <li>• <b>Details:</b> Steel, zinc coated</li> <li>• <b>Suitable for:</b> C110A, P250, PL20, PL30A, PL40A, PL80A</li> </ul>	BEF-WN-REFX	2064574
<b>reflectors and optics</b>			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Chemically resistant, screw connection</li> <li>• <b>Dimensions:</b> 52 mm 61 mm</li> <li>• <b>Ambient operating temperature:</b> -20 °C ... +140 °C</li> </ul>	P250 CHEM	5321097

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 4-wire, PVC</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Note:</b> This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li>• <b>Application:</b> Uncontaminated zones, Hygienic and washdown zones, Zones with chemicals</li> </ul>	YF2AP4-050VB3XLEAX	6052615
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 4-wire, PP</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Note:</b> This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li>• <b>Application:</b> Hygienic and washdown zones, Drag chain operation, Robot, cold bending resistant, seawater resistant</li> </ul>	DOL-1204-G05MRN	6058476

## 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)