

# GRL18S-P2431V GR18

**PHOTOELECTRIC SENSORS** 





### Ordering information

Туре	part no.
GRL18S-P2431V	1085706

Other models and accessories → www.sick.com/GR18

Illustration may differ



#### Detailed technical data

### **Features**

Functional principle		Photoelectric retro-reflective sensor
Functional principle detail		With minimum distance to reflector (dual lens system)
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.		0.03 m 7.2 m <sup>1)</sup>
Sensing range		0.06 m 6 m <sup>1)</sup>
Type of light		Visible red light
Light source		PinPoint LED <sup>2)</sup>
Light spot size (distance)		Ø 175 mm (7 m)
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 not present Static off: object present

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

<sup>&</sup>lt;sup>2)</sup> Average service life: 100,000 h at  $T_U$  = +25 °C.

#### **Special applications**

Hygienic and washdown zones

### Mechanics/electronics

Supply voltage U <sub>B</sub>	10 V DC 30 V DC <sup>1)</sup>
Ripple	< 5 V <sub>pp</sub> <sup>2)</sup>
Current consumption	30 mA
Switching output	PNP
Output function	Complementary
Switching mode	Light/dark switching <sup>3)</sup>
Signal voltage PNP HIGH/LOW	$V_S$ - ( $\leq 3 \text{ V}$ ) / approx. 0 V
Output current I <sub>max.</sub>	$\leq$ 100 mA $^{4)}$
Response time	< 500 μs <sup>5)</sup>
Switching frequency	1,000 Hz <sup>6)</sup>
Connection type	Male connector M12, 4-pin
Circuit protection	A <sup>7)</sup> B <sup>8)</sup> D <sup>9)</sup>
Protection class	III
Weight	45 g
Polarisation filter	✓
Housing material	Metal, Stainless steel V4A (1.4404, 316L)
Optics material	Plastic, PMMA
Tightening torque, max.	90 Nm
Enclosure rating	IP67 IP68 <sup>10)</sup> IP69K <sup>11)</sup>
Items supplied	Fastening nuts (2 x)
Electromagnetic compatibility (EMC)	EN 60947-5-2
Ambient operating temperature	-25 °C +55 °C <sup>12)</sup>
Ambient temperature, storage	-30 °C +75 °C
UL File No.	NRKH.E348498 & NRKH7.E348498

 $<sup>^{1)}\,\</sup>mbox{Limit}$  values. Operated in short-circuit protected network: max. 8 A.

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

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

 $<sup>^{2)}\,\</sup>mbox{May}$  not fall below or exceed  $\mbox{U}_{\mbox{\scriptsize V}}$  tolerances.

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

 $<sup>^{4)}</sup>$  At Uv > 24 V or ambient temperature > 49 °C, IA max. = 50 mA.

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

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

 $<sup>^{7)}\,\</sup>mathrm{A}=\mathrm{V}_{\mathrm{S}}$  connections reverse-polarity protected.

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

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

 $<sup>^{10)}</sup>$  According to EN 60529 (10 m water depth / 24 h).

<sup>&</sup>lt;sup>11)</sup> According to ISO 20653:2013-03.

 $<sup>^{12)}</sup>$  At  $\rm U_{V}$  <=24V and  $\rm I_{A}{<}50mA.$ 

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### PHOTOELECTRIC SENSORS

### Certificates

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

### Classifications

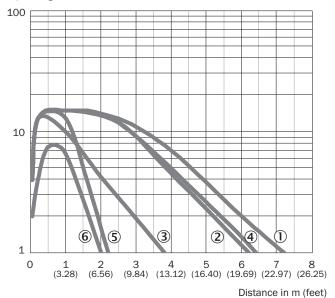
ECLASS 5.0	27270902
ECLASS 5.1.4	27270902
ECLASS 6.0	27270902
ECLASS 6.2	27270902
ECLASS 7.0	27270902
ECLASS 8.0	27270902
ECLASS 8.1	27270902
ECLASS 9.0	27270902
ECLASS 10.0	27270902
ECLASS 11.0	27270902
ECLASS 12.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	EC002717
ETIM 8.0	EC002717
UNSPSC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

### Connection diagram Cd-084

$$\begin{array}{c|c} & BN & 1 \\ \hline & BN & 2 \\ \hline & BU & 3 \\ \hline & & -(M) \\ \hline & BK & 4 \\ \hline & Q \\ \hline \end{array}$$

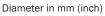
#### Characteristic curve GRL18S

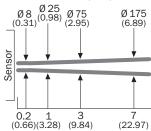




- ① Reflector PL80A
- ② Reflector PL40A
- 3 Reflector PL20A
- 4 Reflector P250
- ⑤ Reflector PL22
- ® Reflective tape REF-Plus 3436

### Light spot size GRL18S





Distance in m (feet)

### Sensing range diagram GRL18S

1	0.03/0.06					6	6.0		7.2	
2	0.03/0.06				5.2		6.2			
3	0.03/0.06	3	2.9	3.8						
4	0.03/0.06				5.	.4	6	.4		
(5)	0.03/0.06	1	.9/2	.2						
6	0.06/0.08	1.6	/2.0							
(	(3.28)	2 (6.56)	(9.8	4) (13	5 (16.	40)		69)		8 (26.25 ı (feet

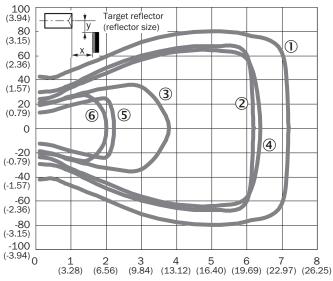
Sensing range

Sensing range max.

- ① Reflector PL80A
- 2 Reflector PL40A
- 3 Reflector PL20A
- 4 Reflector P250
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### Response range GRL18S

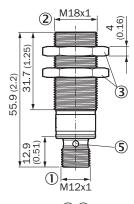
Parallel operating range y in mm (inch)

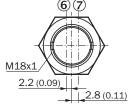


Distance x in m (feet)

- ① Reflector PL80A
- 2 Reflector PL40A
- 3 Reflector PL20A
- 4 Reflector P250
- ⑤ Reflector PL22
- ® 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
- ⑤ LED indicator (4 x)
- 6 optical axis, receiver
- 7 optical axis, sender

#### Recommended accessories

Other models and accessories → www.sick.com/GR18

	Brief description	Туре	part no.			
Mounting syst	tems					
40	Description: Mounting bracket for M18 sensors     Material: Stainless steel     Details: Stainless steel     Items supplied: Without mounting hardware	BEF-WN-M18N	5320947			
0 0 A 100	<ul> <li>Description: Universal mounting bracket for reflectors</li> <li>Dimensions (W x H x L): 85 mm x 90 mm x 35 mm</li> <li>Material: Steel</li> <li>Details: Steel, zinc coated</li> <li>Suitable for: C110A, P250, PL20, PL30A, PL40A, PL80A</li> </ul>	BEF-WN-REFX	2064574			
reflectors and optics						
	<ul> <li>Description: Chemically resistant, screw connection</li> <li>Dimensions: 52 mm 61 mm</li> <li>Ambient operating temperature: -20 °C +140 °C</li> </ul>	P250 CHEM	5321097			

### PHOTOELECTRIC SENSORS

	Brief description	Туре	part no.
connectors ar	nd cables		
	Connection type head A: Female connector, M12, 4-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PVC Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: 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 & hydrogen peroxide (H2O2) Application: Hygienic and washdown zones	DOL-1204-G05MNI	6052615
	Connection type head A: Female connector, M12, 4-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PP Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H202 and CH202. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H202) Application: Hygienic and washdown zones, Drag chain operation	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

