



# GRL18S-P1131V

GR18

CYLINDRICAL PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
GRL18S-P1131V	1085707

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>Indication</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
<b>Special applications</b>	Hygienic and washdown zones	

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

<sup>2)</sup> Average service life: 100,000 h at T<sub>J</sub> = +25 °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 <sub>S</sub> - (≤ 3 V) / approx. 0 V
<b>Output current I<sub>max.</sub></b>	≤ 100 mA <sup>4)</sup>
<b>Response time</b>	< 500 μs <sup>5)</sup>
<b>Switching frequency</b>	1,000 Hz <sup>6)</sup>
<b>Connection type</b>	Cable, 4-wire, 2 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>	Ø 4.8 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>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>11)</sup> IP69K <sup>12)</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>13)</sup>
<b>Ambient temperature, storage</b>	-30 °C ... +75 °C

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

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

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

<sup>4)</sup> At U<sub>v</sub> > 24 V or ambient temperature > 49 °C, I<sub>A</sub> max. = 50 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 °C.

<sup>8)</sup> A = V<sub>S</sub> 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<sub>v</sub> ≤ 24V and I<sub>A</sub> < 50mA.

<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498
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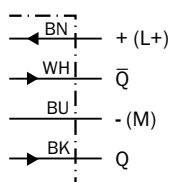
- 1) Limit values. Operated in short-circuit protected network: max. 8 A.
- 2) May not fall below or exceed  $U_V$  tolerances.
- 3) Q = light switching;  $\bar{Q}$  = dark switching.
- 4) At  $U_V > 24$  V or ambient temperature  $> 49$  °C,  $I_A$  max. = 50 mA.
- 5) Signal transit time with resistive load.
- 6) With light/dark ratio 1:1.
- 7) Do not bend below 0 °C.
- 8) A =  $V_S$  connections reverse-polarity protected.
- 9) B = inputs and output reverse-polarity protected.
- 10) D = outputs overcurrent and short-circuit protected.
- 11) According to EN 60529 (10 m water depth / 24 h).
- 12) According to ISO 20653:2013-03.
- 13) At  $U_V \leq 24$ V and  $I_A < 50$ mA.

### 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

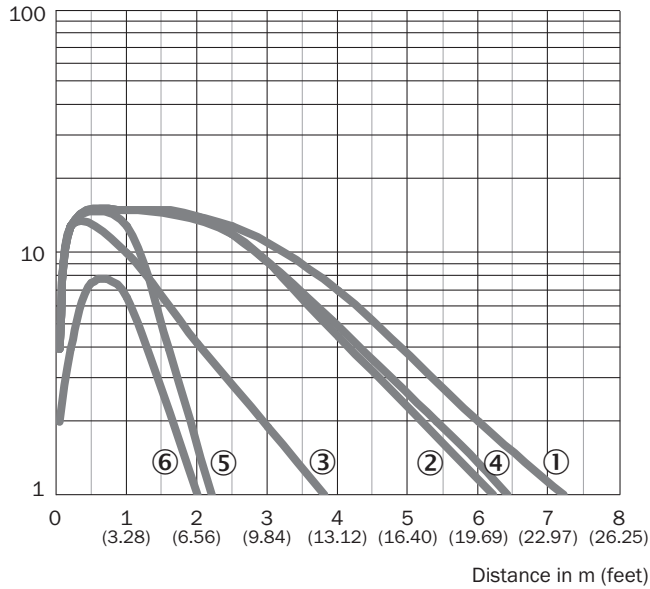
Cd-094



### Characteristic curve

GRL18S

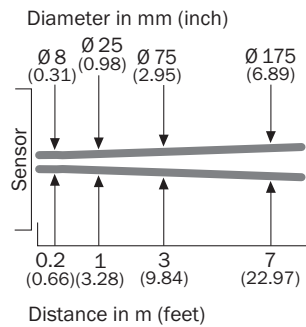
Operating reserve



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

### Light spot size

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Sensing range diagram

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■ Sensing range    ■ Sensing range max.

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

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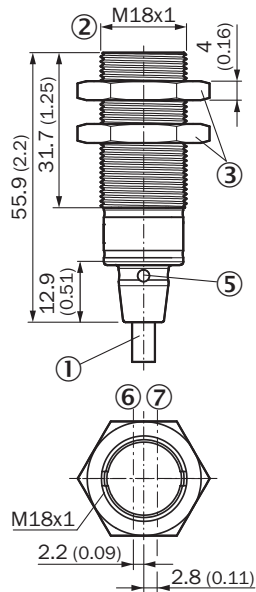
Parallel operating range y in mm (inch)



- ① Reflector PL80A
- ② Reflector PL40A
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**Dimensional drawing** (Dimensions in mm (inch))





GR18S Inox, cable, straight



- 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 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 brackets and plates</b>			
	Mounting bracket for M18 sensors, stainless steel, without mounting hardware	BEF-WN-M18N	5320947
	Universal mounting bracket for reflectors, steel, zinc coated	BEF-WN-REFX	2064574
<b>Reflectors</b>			
	Chemically resistant, screw connection, 52 mm x 61 mm, plastic, Screw-on, 2 hole mounting	P250 CHEM	5321097
<b>Others</b>			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Description:</b> Unshielded</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)