



# GRL18SG-F233X

GR18S

CYLINDRICAL PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	Part no.
GRL18SG-F233X	1059557

Other models and accessories → [www.sick.com/GR18S](http://www.sick.com/GR18S)

Illustration may differ



## Detailed technical data

### Features

<b>Sensor/ detection principle</b>	Photoelectric retro-reflective sensor, Dual lens
<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>	Radial, fully flush
<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>	Potentiometer, 270°
<b>Special applications</b>	Detecting transparent objects

<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</b>	10 V DC ... 30 V DC <sup>1)</sup>
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<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> A = V<sub>S</sub> connections reverse-polarity protected.

<sup>7)</sup> B = inputs and output reverse-polarity protected.

<sup>8)</sup> D = outputs overcurrent and short-circuit protected.

<sup>9)</sup> At U<sub>V</sub> ≤ 24V and I<sub>A</sub> < 50mA.

<sup>10)</sup> Temperature stability following adjustment +/-10 °C.

<b>Ripple</b>	$\pm 5 V_{pp}^{2)}$
<b>Current consumption</b>	30 mA
<b>Switching output</b>	PNP
<b>Switching mode</b>	Dark switching
<b>Signal voltage PNP HIGH/LOW</b>	$V_S - (\leq 3 V) / \text{approx. } 0 V$
<b>Output current <math>I_{max.}</math></b>	100 mA <sup>3)</sup>
<b>Response time</b>	$< 500 \mu s^{4)}$
<b>Switching frequency</b>	1,000 Hz <sup>5)</sup>
<b>Connection type</b>	Connector M12, 3-pin
<b>Circuit protection</b>	A <sup>6)</sup> B <sup>7)</sup> D <sup>8)</sup>
<b>Protection class</b>	III
<b>Polarisation filter</b>	✓
<b>Housing material</b>	Metal, Nickel-plated brass and ABS
<b>Optics material</b>	Plastic, PMMA
<b>Enclosure rating</b>	IP67
<b>Items supplied</b>	Fastening nuts (2 x)
<b>Special feature</b>	Detecting transparent objects
<b>EMC</b>	EN 60947-5-2
<b>Ambient operating temperature</b>	$-25 \text{ }^\circ\text{C} \dots +55 \text{ }^\circ\text{C}^{10) 9)}$
<b>Ambient storage temperature</b>	$-40 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$
<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

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

2) May not exceed or fall below  $U_V$  tolerances.

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

4) Signal transit time with resistive load.

5) With light/dark ratio 1:1.

6) A =  $V_S$  connections reverse-polarity protected.

7) B = inputs and output reverse-polarity protected.

8) D = outputs overcurrent and short-circuit protected.

9) At  $U_V \leq 24V$  and  $I_A < 50mA$ .

10) Temperature stability following adjustment  $\pm 10 \text{ }^\circ\text{C}$ .

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	2,053 years
<b>DC<sub>avg</sub></b>	0%

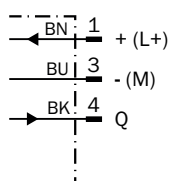
### Classifications

<b>ECl@ss 5.0</b>	27270902
<b>ECl@ss 5.1.4</b>	27270902
<b>ECl@ss 6.0</b>	27270902
<b>ECl@ss 6.2</b>	27270902
<b>ECl@ss 7.0</b>	27270902
<b>ECl@ss 8.0</b>	27270902

<b>ECl@ss 8.1</b>	27270902
<b>ECl@ss 9.0</b>	27270902
<b>ECl@ss 10.0</b>	27270902
<b>ECl@ss 11.0</b>	27270902
<b>ETIM 5.0</b>	EC002717
<b>ETIM 6.0</b>	EC002717
<b>ETIM 7.0</b>	EC002717
<b>UNSPSC 16.0901</b>	39121528

## Connection diagram

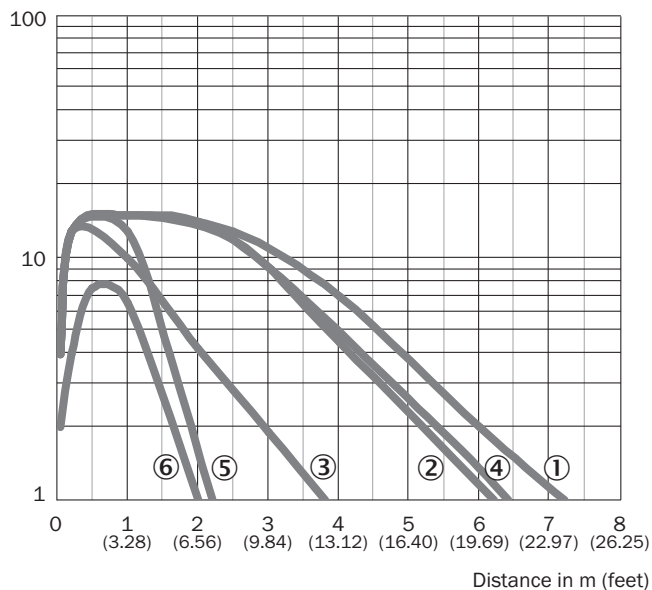
Cd-045



## Characteristic curve

GRL18S

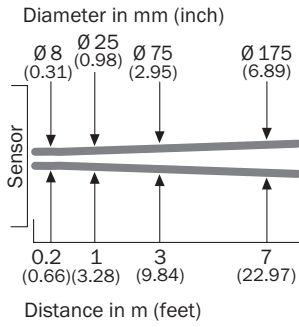
Operating reserve



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

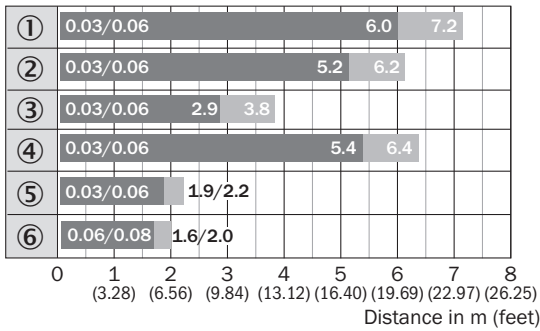
### Light spot size

GRL18S



### Sensing range diagram

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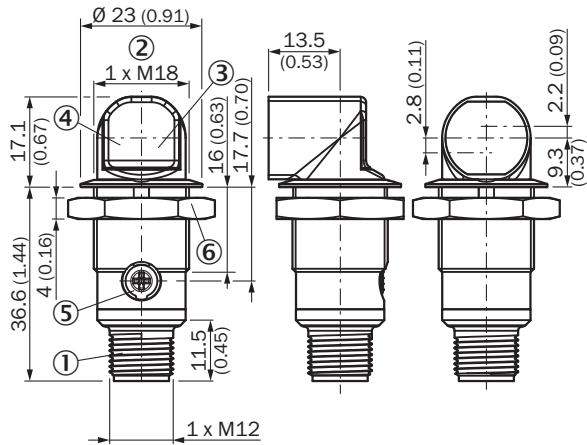


■ Sensing range      ■ Sensing range max.

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

**Dimensional drawing** (Dimensions in mm (inch))





GR18S, metal, connector, angled, fully flush, adjustable



- ① Connector M12, 3-pin
- ② Threaded mounting hole M18 x 1
- ③ LED indicator yellow
- ④ LED indicator green
- ⑤ Sensitivity control: potentiometer 270°
- ⑥ Fastening nut; 24 mm hex, metal

**Recommended accessories**

Other models and accessories → [www.sick.com/GR18S](http://www.sick.com/GR18S)

	Brief description	Type	Part no.
<b>Mounting brackets and plates</b>			
	Mounting bracket for M18 sensors, steel, zinc coated, without mounting hardware	BEF-WN-M18	5308446
	Universal mounting bracket for reflectors, steel, zinc coated	BEF-WN-REFX	2064574
<b>Other mounting accessories</b>			
	Mounting tool for "fully flush" variants	BEF-TO-GR18S	4072132
<b>Reflectors</b>			
	Rectangular, screw connection, 47 mm x 47 mm, PMMA/ABS, Screw-on, 2 hole mounting	P250	5304812

## 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)