

# GRL18SG-F233Z

GR18

**PHOTOELECTRIC SENSORS** 





### Ordering information

Туре	part no.	
GRL18SG-F233Z	1059556	

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 38.1 mm
Housing design (light emission)	Cylindrical
Thread diameter (housing)	M18 x 1
Optical axis	Axial, fully flush
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	Potentiometer, 270°
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
Special feature	Detecting transparent objects
Special applications	Detecting transparent objects

<sup>&</sup>lt;sup>1)</sup> Reflector PL80A.

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

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

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

## Safety-related parameters

MTTF <sub>D</sub>	2,091 years
DC <sub>avg</sub>	0 %

#### Certificates

EU declaration of conformity	✓
UK declaration of conformity	1
ACMA declaration of conformity	1
Moroccan declaration of conformity	✓

 $<sup>^{\</sup>rm 2)}$  May not fall below or exceed UV tolerances.

 $<sup>^{3)}</sup>$  At Uv > 24 V or ambient temperature > 49 °C, IA max. = 50 mA.

<sup>&</sup>lt;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.

 $<sup>^{9)}</sup>$  Temperature stability following adjustment +/-10  $^{\circ}\text{C}.$ 

## **GRL18SG-F233Z | GR18**

## PHOTOELECTRIC SENSORS

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

#### 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

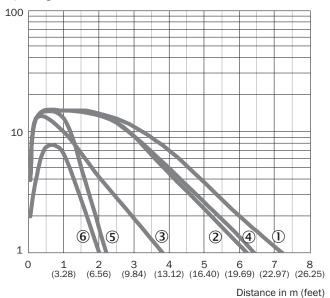
## Connection type



## Connection diagram Cd-045

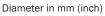
#### Characteristic curve GRL18S

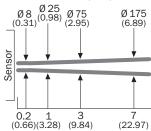




- ① Reflector PL80A
- ② Reflector PL40A
- 3 Reflector PL20A
- 4 Reflector P250
- ⑤ Reflector PL22
- ® Reflective tape REF-Plus 3436

## Light spot size GRL18S





Distance in m (feet)

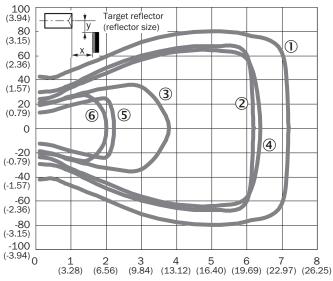
#### Sensing range diagram GRL18S

1	0.03/0.06					6.0		7.2	
2	0.03/0.06				5.2	6.2	2		
3	0.03/0.06	2.9	3.8						
4	0.03/0.06				5.	4 6	.4		
<u>(5)</u>	0.03/0.06	1.9/	2.2						
6	0.06/0.08	1.6/2.0	0						
(	0 1 (3.28) (6.	2 56) (9.		4 3.12)	5 (16.4	10) (19	.69)		8 (26.25 n (fee

- Sensing range
- Sensing range max.
- ① Reflector PL80A
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#### Response range GRL18S

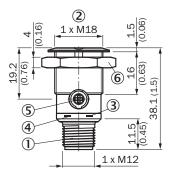
Parallel operating range y in mm (inch)

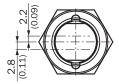


Distance x in m (feet)

- ① Reflector PL80A
- 2 Reflector PL40A
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#### Dimensional drawing GR18S, metal, connector, straight, fully flush, adjustable





Dimensions in mm (inch)

- 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  $\rightarrow$  www.sick.com/GR18

	Brief description	Туре	part no.				
Mounting systems							
40	<ul> <li>Description: Mounting bracket for M18 sensors</li> <li>Material: Steel</li> <li>Details: Steel, zinc coated</li> <li>Items supplied: Without mounting hardware</li> <li>Suitable for: GR18, V180-2, V18, W15, Z1, Z2</li> </ul>	BEF-WN-M18	5308446				
a A A A A A A A A A A A A A A A A A A A	<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: Rectangular, screw connection</li> <li>Dimensions: 51 mm 61 mm</li> <li>Ambient operating temperature: -30 °C +65 °C</li> </ul>	P250	5304812				

## **GRL18SG-F233Z | GR18** PHOTOELECTRIC SENSORS

	Brief description	Туре	part no.
connectors ar	nd cables		
	Connection type head A: Female connector, M12, 3-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 3-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A13-050UB1XLEAX	2095605

## 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

