



**GRTE18S-E231Z**

GR18

**CYLINDRICAL PHOTOELECTRIC SENSORS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	Part no.
GRTE18S-E231Z	1059409

Other models and accessories → [www.sick.com/GR18](http://www.sick.com/GR18)

### Detailed technical data

#### Features

<b>Functional principle</b>	Photoelectric proximity sensor
<b>Functional principle detail</b>	Energetic
<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>	Axial, fully flush
<b>Sensing range max.</b>	3 mm ... 115 mm <sup>1)</sup>
<b>Sensing range</b>	5 mm ... 100 mm <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 8 mm (100 mm)
<b>Wave length</b>	650 nm
<b>Adjustment</b>	Potentiometer, 270 °
<b>Indication</b>	
	LED green Operating indicator Static on: power on
	LED yellow Status of received light beam Static on: object present Static off: object not present

<sup>1)</sup> Object with 90% remission (based on standard white, DIN 5033).

<sup>2)</sup> Average service life: 100,000 h at T<sub>U</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>	$< 5 V_{pp}$ <sup>2)</sup>
<b>Current consumption</b>	30 mA
<b>Switching output</b>	NPN
<b>Switching mode</b>	Dark switching
<b>Signal voltage NPN HIGH/LOW</b>	Approx. $V_S / \leq 3 V$
<b>Output current <math>I_{max}</math></b>	$\leq 100 mA$ <sup>3)</sup>
<b>Response time</b>	$< 1,000 \mu s$ <sup>4)</sup>
<b>Switching frequency</b>	500 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>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>Electromagnetic compatibility (EMC)</b>	EN 60947-5-2
<b>Ambient operating temperature</b>	$-25 \text{ }^\circ\text{C} \dots +55 \text{ }^\circ\text{C}$ <sup>9)</sup>
<b>Ambient temperature, storage</b>	$-40 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$
<b>UL File No.</b>	NRKH.E348498 & NRKH7.E348498

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

<sup>2)</sup> May not fall below or exceed  $U_V$  tolerances.

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

<sup>4)</sup> Signal transit time with resistive load.

<sup>5)</sup> With light/dark ratio 1:1.

<sup>6)</sup> A =  $V_S$  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  $U_V \leq 24V$  and  $I_A < 50mA$ .

## Classifications

<b>ECLASS 5.0</b>	27270903
<b>ECLASS 5.1.4</b>	27270903
<b>ECLASS 6.0</b>	27270903
<b>ECLASS 6.2</b>	27270903
<b>ECLASS 7.0</b>	27270903
<b>ECLASS 8.0</b>	27270903
<b>ECLASS 8.1</b>	27270903
<b>ECLASS 9.0</b>	27270903
<b>ECLASS 10.0</b>	27270904
<b>ECLASS 11.0</b>	27270904

# GRTE18S-E231Z | GR18

## CYLINDRICAL PHOTOELECTRIC SENSORS

<b>ECLASS 12.0</b>	27270903
<b>ETIM 5.0</b>	EC001821
<b>ETIM 6.0</b>	EC001821
<b>ETIM 7.0</b>	EC002719
<b>ETIM 8.0</b>	EC002719
<b>UNSPSC 16.0901</b>	39121528

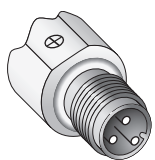
### Adjustments

GRTB18(S), GRTE18(S), Sensing range setting: Potentiometer, 270°

Sensing range

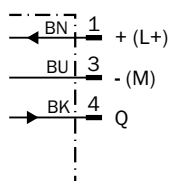


### Connection type



### Connection diagram

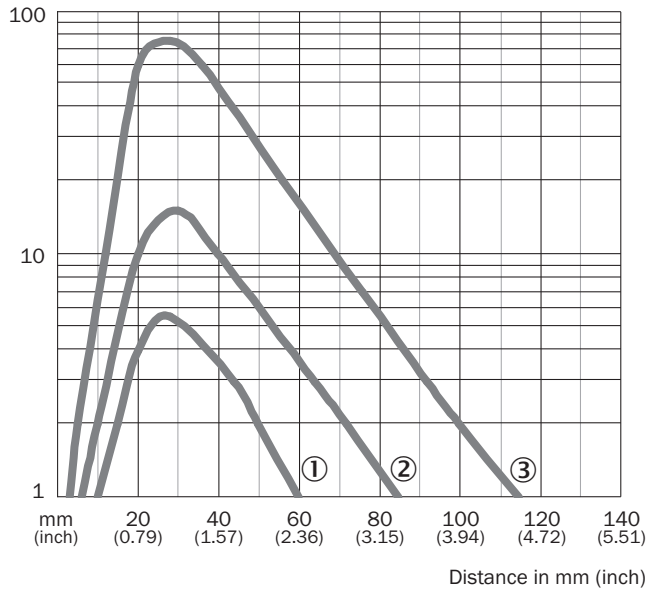
Cd-045



### Characteristic curve

GRTE18S, 100 mm

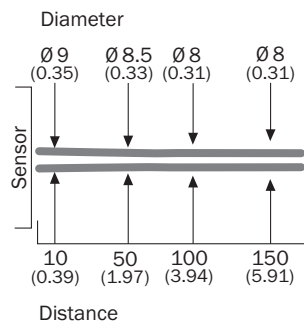
Operating reserve



- ① Sensing range on black, 6% remission factor
- ② Sensing range on gray, 20 % remission
- ③ Sensing range on white, 90% remission factor

### Light spot size

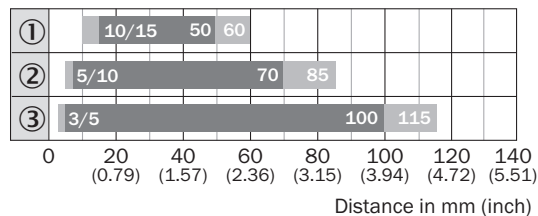
GRTE18S, 100 mm



Dimensions in mm (inch)

## Sensing range diagram

GRTE18S, 100 mm

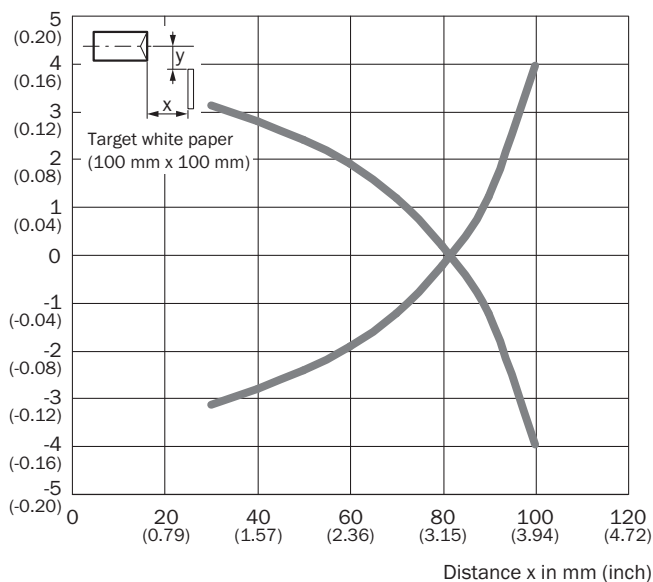


- Sensing range      ■ Sensing range max.
- ① Sensing range on black, 6% remission factor
- ② Sensing range on gray, 20% remission
- ③ Sensing range on white, 90% remission factor

## Response range

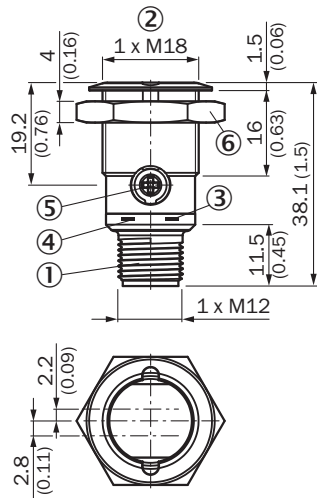
GRTE18S, 100 mm

Parallel operating range y in mm (inch)



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




GR18S, metal, connector, straight, 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/GR18](http://www.sick.com/GR18)

	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
<b>Other mounting accessories</b>			
	Mounting tool for "fully flush" variants	BEF-TO-GR18S	4072132
<b>Others</b>			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 3-pin, straight, A-coded</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, 3-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>	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](http://www.sick.com)