



# GRTE18S-F231X

GR18

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type          | part no. |
|---------------|----------|
| GRTE18S-F231X | 1059438  |

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

Detailed technical data

Features

|                                 |                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------|
| Functional principle            | Photoelectric proximity sensor                                                       |
| Functional principle detail     | Energetic                                                                            |
| 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                    | Radial, fully flush                                                                  |
| Sensing range max.              | 3 mm ... 115 mm <sup>1)</sup>                                                        |
| Sensing range                   | 5 mm ... 100 mm <sup>1)</sup>                                                        |
| Type of light                   | Visible red light                                                                    |
| Light source                    | PinPoint LED <sup>2)</sup>                                                           |
| Light spot size (distance)      | Ø 8 mm (100 mm)                                                                      |
| Wave length                     | 650 nm                                                                               |
| Adjustment                      | Potentiometer, 270°                                                                  |
| Display                         |                                                                                      |
| LED green                       | Operating indicatorStatic on: power on                                               |
| LED yellow                      | Status of received light beamStatic on: object presentStatic 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 <sub>pp</sub> <sup>2)</sup>                     |
| <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 <sub>S</sub> - (≤ 3 V) / approx. 0 V                |
| <b>Output current I<sub>max.</sub></b>     | ≤ 100 mA <sup>3)</sup>                                |
| <b>Response time</b>                       | < 1,000 μs <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><br>B <sup>7)</sup><br>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 °C ... +55 °C <sup>9)</sup>                       |
| <b>Ambient temperature, storage</b>        | -40 °C ... +70 °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<sub>y</sub> tolerances.

<sup>3)</sup> At U<sub>y</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>y</sub> ≤ 24V and I<sub>A</sub> ≤ 50mA.

## Certificates

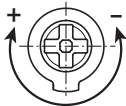
|                                                          |   |
|----------------------------------------------------------|---|
| <b>EU declaration of conformity</b>                      | ✓ |
| <b>UK declaration of conformity</b>                      | ✓ |
| <b>ACMA declaration of conformity</b> 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

Classifications

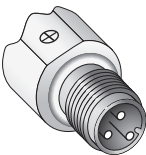
|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270903 |
| <b>ECLASS 5.1.4</b>   | 27270903 |
| <b>ECLASS 6.0</b>     | 27270903 |
| <b>ECLASS 6.2</b>     | 27270903 |
| <b>ECLASS 7.0</b>     | 27270903 |
| <b>ECLASS 8.0</b>     | 27270903 |
| <b>ECLASS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

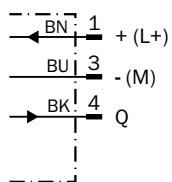
Sensing range



Connection type

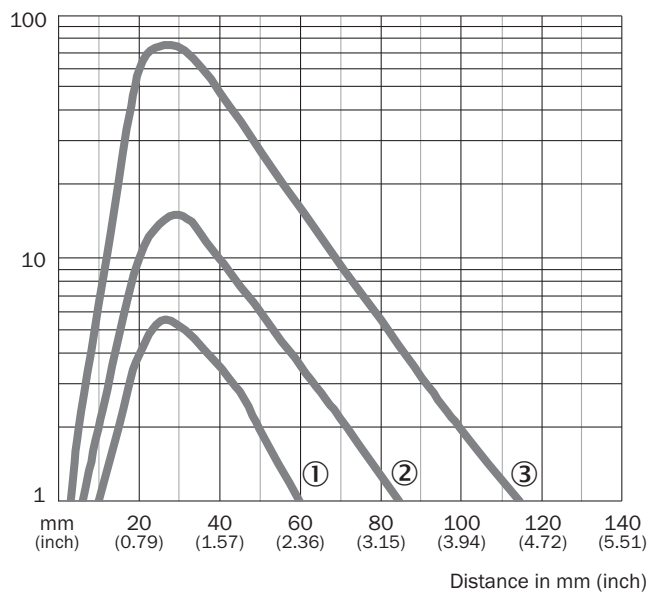


## Connection diagram Cd-045



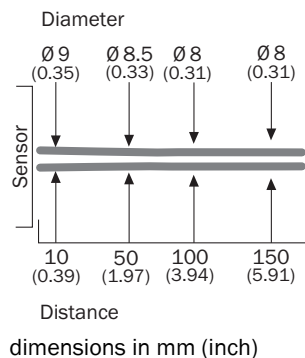
## Characteristic curve GRTE18S, 100 mm

Operating reserve

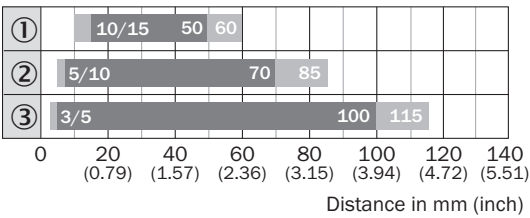


- ① Sensing range on black, 6% remission factor
- ② sensing range to gray, 20% remission factor
- ③ Sensing range on white, 90% remission factor

## Light spot size GRTE18S, 100 mm

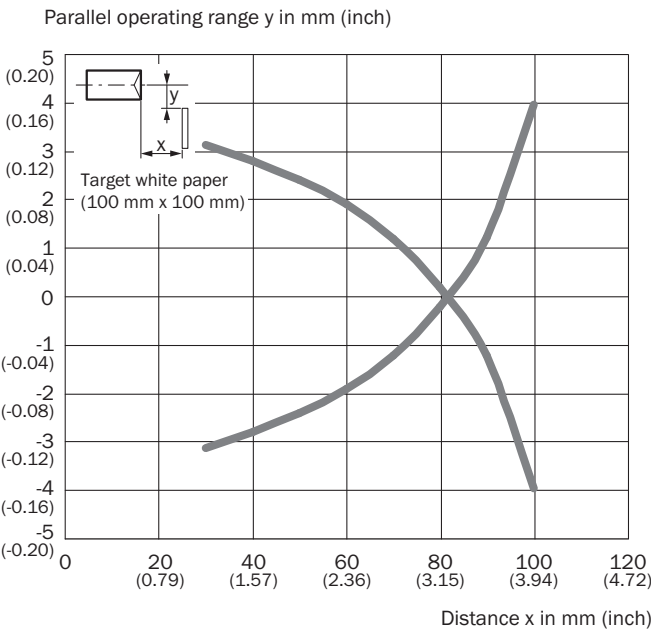


Sensing range diagram GRTE18S, 100 mm

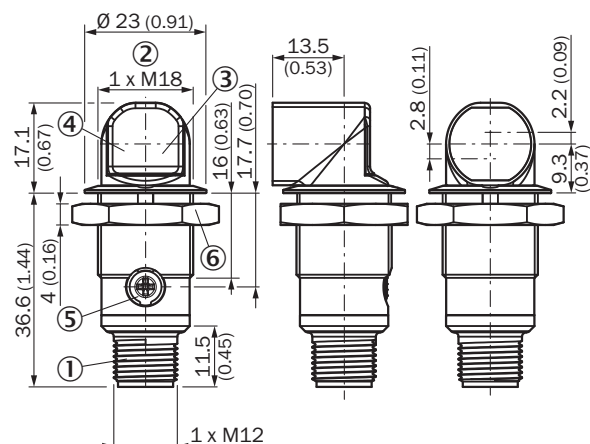


- Sensing range    ■ Sensing range max.
- ① Sensing range on black, 6% remission factor  
② sensing range to gray, 20% remission factor  
③ Sensing range on white, 90% remission factor

Response range GRTE18S, 100 mm



## Dimensional drawing GR18S, metal, connector, angled, 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 → [www.sick.com/GR18](http://www.sick.com/GR18)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Type               | part no. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |          |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket for M18 sensors</li> <li><b>Material:</b> Steel</li> <li><b>Details:</b> Steel, zinc coated</li> <li><b>Items supplied:</b> Without mounting hardware</li> <li><b>Suitable for:</b> GR18, V180-2, V18, W15, Z1, Z2</li> </ul>                                                                                                                                                                    | BEF-WN-M18         | 5308446  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting tool for "fully flush" variants</li> <li><b>Usable for:</b> GR18</li> <li><b>Suitable for:</b> GR18S, radial, fully flush</li> </ul>                                                                                                                                                                                                                                                                     | BEF-TO-GR18S       | 4072132  |
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |          |
|  | <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> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</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.”

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