



**GRL18S-P2351**

GR18S

**CYLINDRICAL PHOTOELECTRIC SENSORS**

**SICK**  
Sensor Intelligence.



### Ordering information

| Type         | Part no. |
|--------------|----------|
| GRL18S-P2351 | 1064158  |

Included in delivery: P250 (1)

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

Illustration may differ



### Detailed technical data

#### Features

|                                        |                                |
|----------------------------------------|--------------------------------|
| <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>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                           |

<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> |
| <b>Ripple</b>              | < 5 V <sub>pp</sub> <sup>2)</sup> |
| <b>Current consumption</b> | 30 mA                             |
| <b>Switching output</b>    | PNP                               |

<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.

|                                                   |                                                                    |
|---------------------------------------------------|--------------------------------------------------------------------|
| <b>Switching mode</b>                             | Light switching                                                    |
| <b>Signal voltage PNP HIGH/LOW</b>                | $V_S - (\leq 3 \text{ V}) / \text{approx. } 0 \text{ V}$           |
| <b>Output current <math>I_{\text{max}}</math></b> | $\leq 100 \text{ mA}^{3)}$                                         |
| <b>Response time</b>                              | $< 500 \mu\text{s}^{4)}$                                           |
| <b>Switching frequency</b>                        | $1,000 \text{ Hz}^{5)}$                                            |
| <b>Circuit protection</b>                         | A <sup>6)</sup><br>B <sup>7)</sup><br>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), Reflector P250                               |
| <b>Electromagnetic compatibility (EMC)</b>        | EN 60947-5-2                                                       |
| <b>Ambient operating temperature</b>              | $-25 \text{ }^\circ\text{C} \dots +55 \text{ }^\circ\text{C}^{9)}$ |
| <b>Ambient temperature, storage</b>               | $-40 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$      |

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

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

3) At  $U_V > 24 \text{ V}$  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  $U_V \leq 24 \text{ V}$  and  $I_A < 50 \text{ mA}$ .

## Safety-related parameters

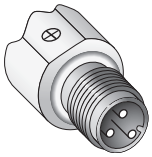
|                                     |             |
|-------------------------------------|-------------|
| <b>MTTF<sub>D</sub></b>             | 2,712 years |
| <b>DC<sub>avg</sub></b>             | 0 %         |
| <b>T<sub>M</sub> (mission time)</b> | 20 years    |

## 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 |

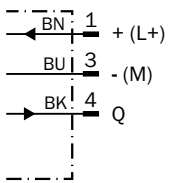
|                       |          |
|-----------------------|----------|
| <b>ETIM 6.0</b>       | EC002717 |
| <b>ETIM 7.0</b>       | EC002717 |
| <b>ETIM 8.0</b>       | EC002717 |
| <b>UNSPSC 16.0901</b> | 39121528 |

### Connection type



### Connection diagram

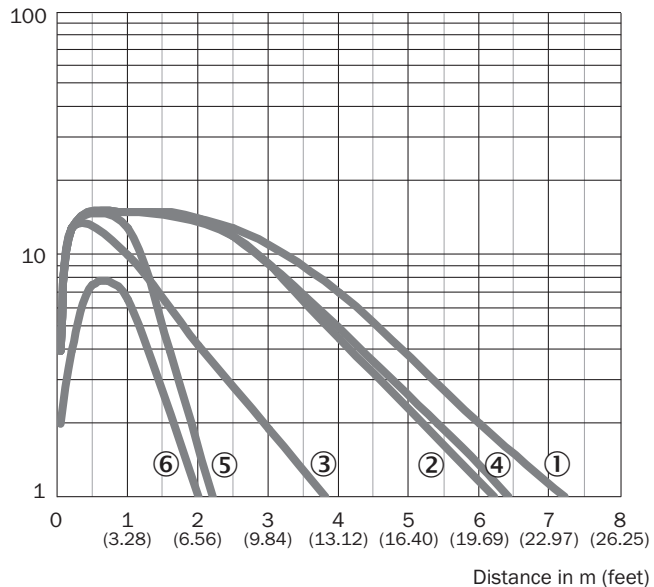
Cd-045



### Characteristic curve

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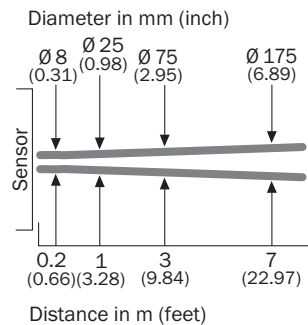
Operating reserve



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

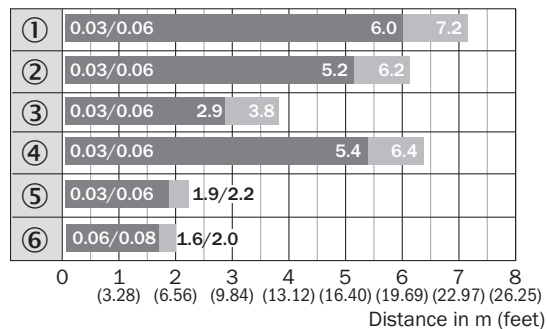
### Light spot size

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### Sensing range diagram

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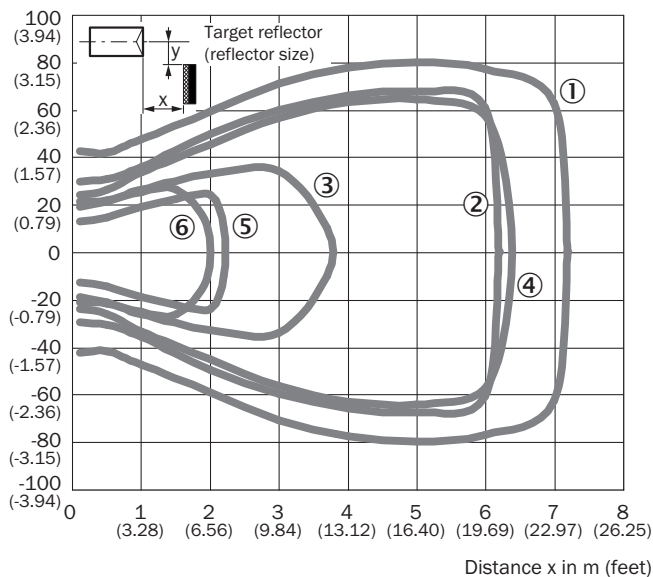
■ Sensing range    ■ Sensing range max.

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

### Response range

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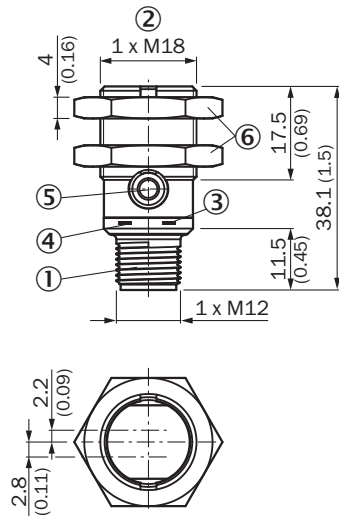
Parallel operating range y in mm (inch)



- 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, straight



- ① Connector M12, 3-pin
- ② Threaded mounting hole M18 x 1
- ③ LED indicator yellow
- ④ LED indicator green
- ⑤ Dummy plug
- ⑥ Fastening nuts (2x); width across 24, metal

Recommended accessories

Mounting brackets and plates

Mounting brackets

Reflectors

Angular

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

| Brief description                                                                                                                                                                                                                                                                                                                        | Type        | Part no. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| <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> Universal mounting bracket for reflectors</li> <li>• <b>Dimensions (W x H x L):</b> 85 mm x 90 mm x 35 mm</li> <li>• <b>Material:</b> Steel</li> <li>• <b>Details:</b> Steel, zinc coated</li> <li>• <b>Suitable for:</b> C110A, P250, PL20, PL30A, PL40A, PL80A</li> </ul> | BEF-WN-REFX | 2064574  |
| Brief description                                                                                                                                                                                                                                                                                                                        | Type        | Part no. |
| <ul style="list-style-type: none"> <li>• <b>Description:</b> Rectangular, screw connection</li> <li>• <b>Dimensions:</b> 51 mm 61 mm</li> <li>• <b>Ambient operating temperature:</b> -30 °C ... +65 °C</li> </ul>                                                                                                                       | 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)