Data sheet

# GRL18S-F233W

## GR18

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

## Ordering information

| Type | part no. |
|---|---|
| GRL18S-F233W | 1058209 |

Other models and accessories ➜ www.sick.com/GR18

## 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** | Radial, fully flush |
| **Sensing range max.** | 0.03 m ... 7.2 m [1] |
| **Sensing range** | 0.06 m ... 6 m [1] |
| **Type of light** | Visible red light |
| **Light source** | PinPoint LED [2] |
| **Light spot size (distance)** | Ø 175 mm (7 m) |
| **Wave length** | 650 nm |
| **Adjustment** | None |
| **Display** | |
| LED green | Operating indicator<br>Static on: power on |
| LED yellow | Status of received light beam<br>Static on: object not present<br>Static off: object present |

[1] Reflector PL80A.

[2] Average service life: 100,000 h at $T_U$ = +25 °C.

## Mechanics/electronics

| | |
|---|---|
| **Supply voltage $U_B$** | 10 V DC ... 30 V DC [1] |
| **Ripple** | < 5 $V_{pp}$ [2] |
| **Current consumption** | 30 mA |
| **Switching output** | PNP |
| **Switching mode** | Dark switching |
| **Signal voltage PNP HIGH/LOW** | $V_S$ - (≤ 3 V) / approx. 0 V |
| **Output current $I_{max.}$** | ≤ 100 mA [3] |
| **Response time** | < 500 µs [4] |
| **Switching frequency** | 1,000 Hz [5] |
| **Connection type** | Connector M12, 3-pin |
| **Circuit protection** | A [6]<br>B [7]<br>D [8] |
| **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) |
| **Electromagnetic compatibility (EMC)** | EN 60947-5-2 |
| **Ambient operating temperature** | –25 °C ... +55 °C [9] |
| **Ambient temperature, storage** | –40 °C ... +70 °C |
| **UL File No.** | NRKH.E348498 & NRKH7.E348498 |

[1] Limit values. Operated in short-circuit protected network: max. 8 A.
[2] May not fall below or exceed $U_V$ tolerances.
[3] At Uv > 24 V or ambient temperature > 49 °C, IA max. = 50 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 $U_V$ <=24V and $I_A$<50mA.

## Safety-related parameters

| | |
|---|---|
| **$MTTF_D$** | 2,281 years |
| **$DC_{avg}$** | 0 % |

## Certificates

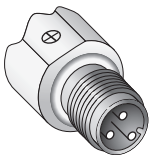
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China RoHS** | ✓ |

| | |
|---|---|
| **ECOLAB certificate** | ✓ |
| **cULus certificate** | ✓ |
| **Photobiological safety (DIN EN 62471) certificate** | ✓ |

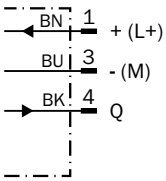
## Classifications

| | |
|---|---|
| **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 |

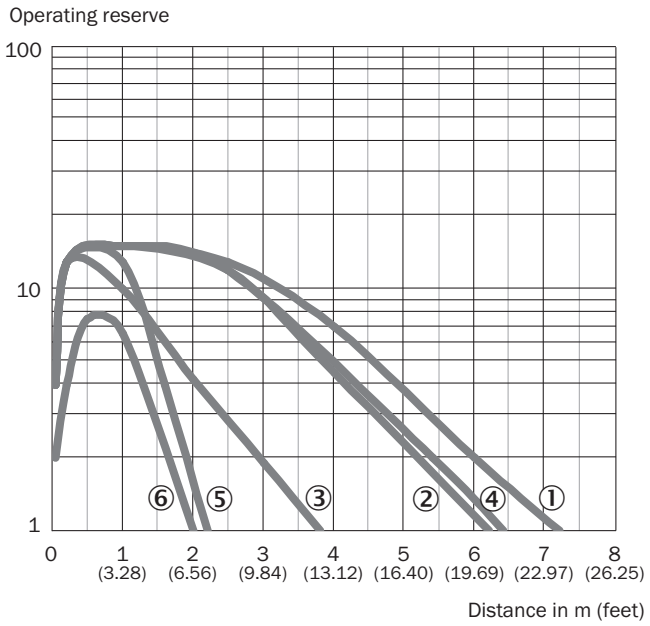
## Connection type



## Connection diagram Cd-045

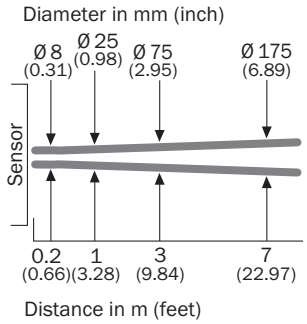


## Characteristic curve GRL18S

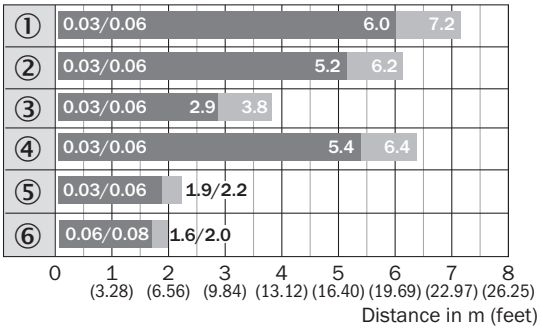



① Reflector PL80A
② Reflector PL40A
③ Reflector PL20A
④ Reflector P250
⑤ Reflector PL22
⑥ Reflective tape REF-Plus 3436

## Light spot size GRL18S



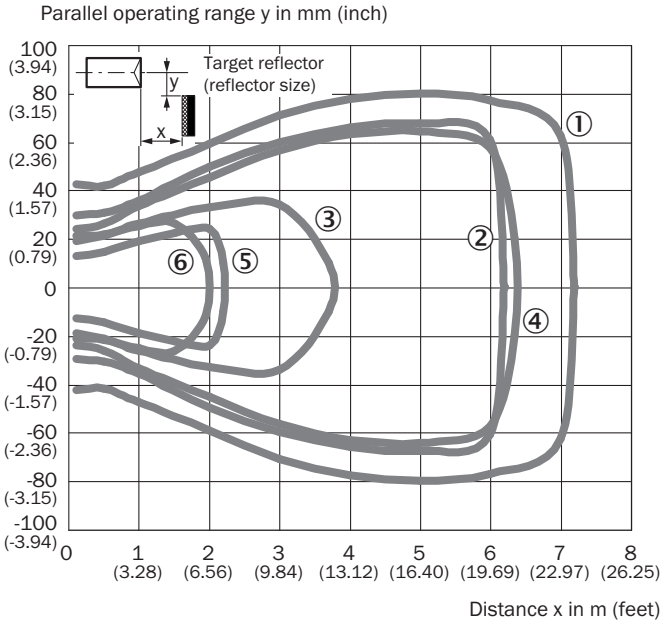
## Sensing range diagram GRL18S




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 GRL18S

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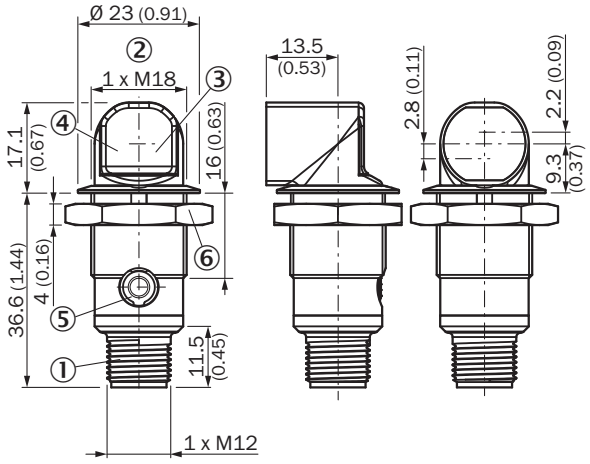
## Dimensional drawing GR18S, metal, connector, angled, fully flush




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 Dummy plug
⑥ fastening nut; 24 mm hex, metal

## Recommended accessories

Other models and accessories ➜ www.sick.com/GR18

| | Brief description | Type | part no. |
|---|---|---|---|
| Mounting systems | | | |
| | • **Description:** Mounting bracket for M18 sensors<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Items supplied:** Without mounting hardware<br>• **Suitable for:** GR18, V180-2, V18, W15, Z1, Z2 | BEF-WN-M18 | 5308446 |
| | • **Description:** Universal mounting bracket for reflectors<br>• **Dimensions (W x H x L):** 85 mm x 90 mm x 35 mm<br>• **Material:** Steel<br>• **Details:** Steel, zinc coated<br>• **Suitable for:** C110A, P250, PL20, PL30A, PL40A, PL80A | BEF-WN-REFX | 2064574 |
| | • **Description:** Mounting tool for "fully flush" variants<br>• **Usable for:** GR18<br>• **Suitable for:** GR18S, radial, fully flush | BEF-TO-GR18S | 4072132 |
| reflectors and optics | | | |
| | • **Description:** Rectangular, screw connection<br>• **Dimensions:** 51 mm 61 mm<br>• **Ambient operating temperature:** –30 °C ... +65 °C | 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.”**

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