PRODUCT INFORMATION




# GR18

## RELIABLE. ECONOMICAL. VERSATILE.

Cylindrical photoelectric sensor

SICK
Sensor Intelligence.

# THE GR18 PRODUCT FAMILY: RELIABLE AND EXTREMELY VERSATILE

Thanks to their versatility, the cylindrical photoelectric sensors from the GR18 product family cover a very wide range of applications. With their seven different housing types, they are ideally suited for both space-saving and flexible mounting solutions.

## One product family for all applications

GR18 cylindrical photoelectric sensors in the cylindrical M18 housing are outstanding in both the short length version (GR18S) and the standard length version (GR18), and offer an optimal price-performance ratio.

These sensors can be used universally in many applications thanks to the seven different housing designs:

- Photoelectric proximity sensors
- Photoelectric retro-reflective sensors
- Through-beam photoelectric sensors
- Photoelectric retro-reflective sensors for transparent objects

THE GR18 PRODUCT FAMILY

GR18S (SHORT HOUSING)

GR18 (LONG HOUSING)






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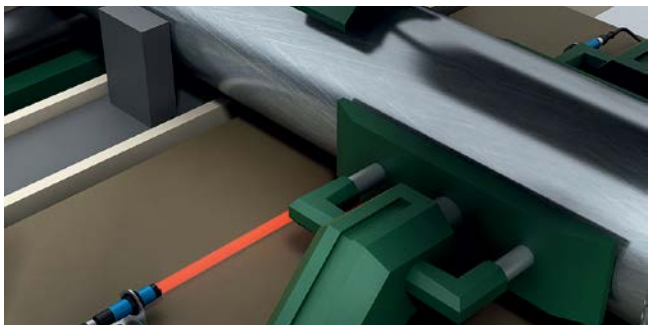
## At a glance

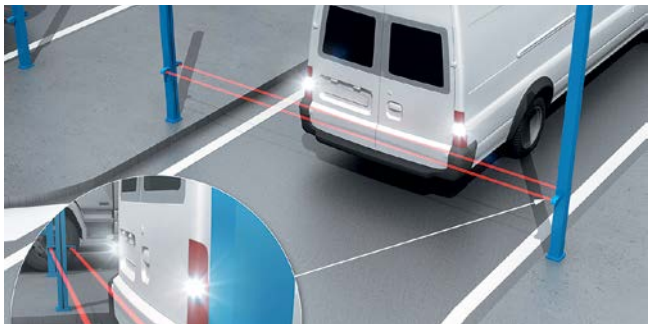
- Cylindrical M18 sensor with greater cost-effectivity
- Seven different housing designs
- Plastic or metal versions with straight or right angle optics
- Very bright and highly visible PinPoint LED
- Highly visible status indicator
- Rugged and reliable due to proven SICK technology
- Enclosure rating IP 67
- Special "fully flush" metal variant (GR18S)

## Ideal for a broad range of applications

SICK's reliable photoelectric sensors are perfectly suited for numerous applications in the field of logistics: From mechanical engineering, through the automotive and electronics industries, right up to the packaging and shipping of goods of all varieties. This is because in any area in which material flows are automated or where sorting and warehousing processes are to be optimized, photoelectric sensors from SICK can guarantee maximum reliability and efficiency. Thanks to the simple hole mounting system of the standard M18 housing, the sensors can be flexibly integrated into automated environments.









# THE GR18 CYLINDRICAL PHOTOELECTRIC SENSOR: OPTIMALLY DESIGNED DOWN TO THE SMALLEST DETAIL




## Housing material for every application

The housing for the GR18 cylindrical photoelectric sensors is available in plastic and metal variants. This allows you to choose the right variant for every application and cost situation.

**Metal and plastic housing**



## Optimal installation, even where space is limited

The GR18S housing is very short and therefore requires little installation space. Additional space can be saved through the use of housing versions with an angled radial design. These are ideal conditions for applications where there is very little space available for installation.

**Straight and right angle optics (GR18S only)**



## For smooth processes

The front is flush with the installation area:
In this way the flush mounting kits of the GR18S cylindrical photoelectric sensors provide superior solutions for all challenges in which it is essential that the objects to be captured can pass without a hindrance.

**Special "fully flush" designs**



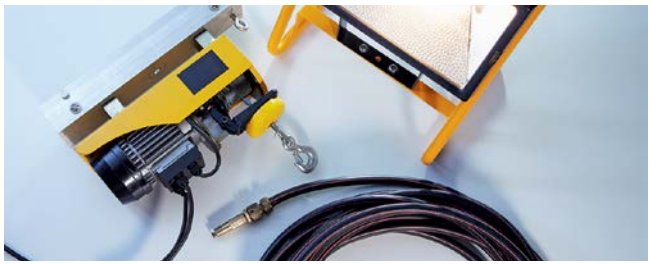


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## Rugged design

Photoelectric sensors from the GR18 product family run absolutely flawlessly, and are not sensitive to ambient light, dirt, moisture, or electrical interference. This makes these photoelectric sensors the ideal solution for every application.

**Sensor technology from SICK**



## Maximum detection reliability

PinPoint technology from SICK, with its highly visible light spot, will facilitate commissioning, and increase the sensing range within the red emitted light area, without the need for any protective measures against lasers.

**PinPoint technology from SICK**



## Comfortable: status indicator visible from any direction

Each GR18 cylindrical photoelectric sensor is equipped with a very bright LED status indicator. The current operational status can be recognized at a glance even from great distances. As a result, sensor commissioning and maintenance times are significantly reduced.

**Highly visible status indicator**



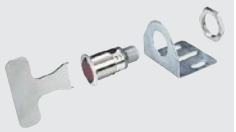
## Sensing range: Quick and easy to adjust

The sensing range of the GR18 cylindrical photoelectric sensors can be quickly and easily adjusted using a standard Phillips-head screwdriver. No special tools are required.

**Easy adjustment**



# A RANGE OF OPTIONS: THE RIGHT SENSOR FOR EVERY SITUATION

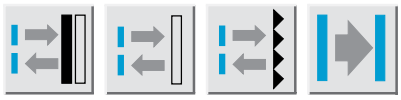
| Cylindrical photoelectric sensors | | | Housing | | | | | Optics/Technology | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Material | | Enclosure rating | Housing design | | Type of light/Light sender | | | |
| | | M18 | | | | | | | | | |
| | | Example installation | Plastic | Metal | IP 67 | Cylindrical, axial | Cylindrical, radial | LED, infrared light | LED, red light | PinPoint LED, red light | |
| GR18 |  |  | | ■ | ■ | ■ | | ■ | ■ | ■ | |
| |  |  | ■ | | ■ | ■ | | ■ | ■ | ■ | |
| GR18S |  |  | | ■ | ■ | ■ | | ■ | ■ | ■ | |
| |  |  | | ■ | ■ | | ■ | ■ | ■ | ■ | |
| |  |  | | ■ | ■ | ■ | | ■ | ■ | ■ | |
| |  |  | ■ | | ■ | ■ | | ■ | ■ | ■ | |
| |  |  | ■ | | ■ | | ■ | ■ | ■ | ■ | |



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| | Sensor principle | | | | Special applications | |
|---|---|---|---|---|---|---|
| | Maximum sensing range | | | | | |
| |  |  |  |  | | |
| | **Photoelectric proximity sensors (background suppression)** | **Photoelectric proximity sensors (energetic)** | **Photoelectric retro-reflective sensor (dual lens)** | **Through-beam photoelectric sensors** | **Detecting transparent objects** | **Detecting small objects** |
| | NEW<br>3 mm ... 300 mm | 3 mm ... 115 mm<br>5 mm ... 550 mm<br>5 mm ... 1000 mm | 0.03 m ... 7.2 m | 0 m ... 15 m | | |
| | **Page** | | | | | |
| | 11 | 12 | 14 | 15 | | ■ |
| | 11 | 13 | 14 | 15 | | ■ |
| | 27 | 29 | 34 | 40 | ■ | ■ |
| | - | 31 | 35 | 41 | ■ | ■ |
| | 27 | 30 | 35 | 40 | ■ | ■ |
| | 28 | 32 | 36 | 41 | ■ | ■ |
| | - | 33 | 37 | 42 | ■ | ■ |

# ROUND, AND COST-EFFECTIVE STANDARD





## Product description

The GR18 product family is enclosed in a cylindrical M18 housing and provides an optimal price-performance ratio. Due to its standard M18 housing design, it is suitable for universal use in many different applications. PinPoint LEDs, plastic and metal housing versions as well as status indicators that are easily visible from all angles round off the sensor's features.

## At a glance

- Economical M18 cylindrical sensors with standard housing design
- Choice of plastic and metal housing variants with straight optical output
- Very bright and highly visible PinPoint LEDs
- Highly visible status indicator
- IP67 enclosure rating

## Your benefits

- A whole range of mounting options thanks to the different housing types
- Simple alignment and precise detection using PinPoint LEDs
- Easy to mount with simple M18 hole mounting. No special mounting brackets required.
- Rugged and reliable operation due to proven SICK sensing technology
- Clearly visible status display reduces maintenance and service time

## Additional information


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→ www.mysick.com/en/GR18

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



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## Detailed technical data

### Features

| | GRTB18 | GRTE18 | GRL18 | GRSE18 |
|---|---|---|---|---|
| **Sensor principle** | Photoelectric proximity sensor | | Photoelectric retro-reflective sensor | Through-beam photo-electric sensor |
| **Detection principle** | Background suppres-sion | Energetic | Dual lens | – |
| **Housing design (light emission)** | Cylindrical, straight | | | |
| **Thread diameter (housing)** | M18 x 1 | | | |
| **Sensing range max.** | 3 mm ... 300 mm [1] | 3 mm ... 115 mm [1]<br>5 mm ... 550 mm [1]<br>5 mm ... 1.000 mm [1]<br>(depending on type) | 0.03 m ... 7.2 m [2] | 0 m ... 15 m |
| **Sensing range** | 20 mm ... 150 mm [1] | 5 mm 100 mm [1]<br>10 mm 400 mm [1]<br>10 mm 800 mm [1]<br>(depending on type) | 0.06 m ... 6 m [2] | 0 m ... 10 m |
| **Type of light** | Visible red light | Infrared light / visible red light (depending on type) | Visible red light | Infrared light / visible red light (depending on type) |
| **Light source** | PinPoint LED [3] | LED [3]<br>PinPoint LED [3]<br>(depending on type) | PinPoint LED [3] | LED [3]<br>PinPoint LED [3]<br>(depending on type) |
| **Light spot size (distance)** | | | | |
| Visible red light | Ø 7 mm (100 mm) | Ø 45 mm (800 mm)<br>Ø 9 mm (400 mm)<br>Ø 8 mm (100 mm)<br>(depending on type) | Ø 175 mm (7 m) | Ø 250 mm (10 m) |
| Infrared light | – | Ø 42 mm (800 mm)<br>Ø 26 mm (400 mm)<br>(depending on type) | – | Ø 420 mm (10 m) |
| **Wave length** | | | | |
| Visible red light | 650 nm | | | |
| Infrared light | – | 850 nm | – | 850 nm |
| **Adjustment** | Potentiometer | | | |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

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

### Mechanics/electronics

| | GRTB18 | GRTE18 | GRL18 | GRSE18 |
|---|---|---|---|---|
| **Supply voltage** [1] | 10 V DC ... 30 V DC | | | |
| **Ripple** [2] | ± 5 $V_{pp}$ | | | |
| **Power consumption** | ≤ 30 mA | | | |
| **Output type** | PNP / NPN (depending on type) | | | |
| **Output function** | Complementary | | | |
| **Switching mode** | Light/dark switching | | | |
| **Signal voltage** | | | | |
| PNP HIGH/LOW | $V_S$ - (≤ 3 V) / approx. 0 V | | | |
| NPN HIGH/LOW | Approx. $V_S$ / ≤ 3 V | | | |
| **Switching frequency** [5] | 1,000 Hz | 500 Hz | 1,000 Hz | |

| | GRTB18 | GRTE18 | GRL18 | GRSE18 |
|---|---|---|---|---|
| **Connection type** | Cable, 2 m [6]<br>Male connector, M12<br>(depending on type) | | | |
| **Circuit protection** | A [7]<br>B [8]<br>D [9] | | | |
| **Protection class** | III | | | |
| **Polarisation filter** | – | | ✔ | – |
| **Housing material** | | | | |
| Plastic axial | ABS | | | |
| Metal axial | Nickel-plated brass and ABS | | | |
| **Optics material** | Plastic, PMMA | | | |
| **Enclosure rating** | IP 67 | | | |
| **Items supplied** | Fastening nuts (2 x) | | Fastening nuts (2 x), Reflector P250 (depending on type) | Fastening nuts (4 x) |
| **EMC** | EN 60947-5-2 | | | |
| **Test input** | – | | | Sender OFF at “Test” 0 V |
| **Ambient operating temperature** [10] | –25 °C ... +55 °C | | | |
| **Ambient storage temperature** | –40 °C ... +70 °C | | | |

[1] Limit values when operated in short-circuit protected network: max. 8 A.

[2] May not exceed or fall below $U_v$ 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] Do not bend below 0 °C.

[7] A = $V_S$ connections reverse-polarity protected.

[8] B = inputs and output reverse-polarity protected.

[9] D = outputs overcurrent and short-circuit protected.

[10] At $U_v$ <=24V and $I_A$<50mA.



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## Ordering information

Other models ➜ www.mysick.com/en/GR18

### GRTB18, metal, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background suppression
- **Light spot size (distance):** Ø 7 mm (100 mm)
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 300 mm | 20 mm ... 150 mm | Visible red light | PinPoint LED | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18-N1112 | 1076119 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18-N2412 | 1076121 |
| | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18-P1112 | 1076115 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18-P2412 | 1076117 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

### GRTB18, plastic, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background suppression
- **Light spot size (distance):** Ø 7 mm (100 mm)
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 300 mm | 20 mm ... 150 mm | Visible red light | PinPoint LED | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18-N1117 | 1076118 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18-N2417 | 1076120 |
| | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18-P1117 | 1076114 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18-P2417 | 1076116 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRTE18, metal, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Light spot size (distance) | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | Visible red light | PinPoint LED | Ø 8 mm (100 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1112 | 1066541 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-N2412 | 1067972 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1112 | 1066542 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-P2412 | 1066543 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | Infrared light | LED | Ø 26 mm (400 mm) | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1152 | 1074997 |
| | | | Visible red light | PinPoint LED | Ø 9 mm (400 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1142 | 1066547 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-N2442 | 1064243 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1142 | 1066548 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-P2442 | 1066549 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | Infrared light | LED | Ø 42 mm (800 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1172 | 1075728 |
| | | | Visible red light | LED | Ø 45 mm (800 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1162 | 1066551 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-N2462 | 1067978 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1162 | 1067976 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-P2462 | 1066552 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)



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## GRTE18, plastic, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Light spot size (distance) | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | Visible red light | PinPoint LED | Ø 8 mm (100 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1117 | 1066539 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-N2417 | 1067971 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1117 | 1066540 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-P2417 | 1064923 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | Visible red light | PinPoint LED | Ø 9 mm (400 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1147 | 1066544 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-N2447 | 1067973 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1147 | 1066545 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-P2447 | 1066546 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | Infrared light | LED | Ø 42 mm (800 mm) | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1177 | 1073145 |
| | | | Visible red light | LED | Ø 45 mm (800 mm) | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-N1167 | 1064925 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-N2467 | 1067975 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18-P1167 | 1067974 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTE18-P2467 | 1066550 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRL18, metal, axial

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | Fastening nuts (2 x) | GRL18-N1132 | 1067980 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-N1152 | 1076985 |
| | | | | | | M12, 4-pin male connector | Cd-084 | Fastening nuts (2 x) | GRL18-N2432 | 1067981 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-N2452 | 1076986 |
| | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | Fastening nuts (2 x) | GRL18-P1132 | 1066556 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-P1152 | 1076982 |
| | | | | | | M12, 4-pin male connector | Cd-084 | Fastening nuts (2 x) | GRL18-P2432 | 1066557 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-P2452 | 1076983 |

[1] PL80A.

## GRL18, plastic, axial

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | Fastening nuts (2 x) | GRL18-N1137 | 1066553 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-N1157 | 1076979 |
| | | | | | | M12, 4-pin male connector | Cd-084 | Fastening nuts (2 x) | GRL18-N2437 | 1067979 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-N2457 | 1076984 |
| | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | Fastening nuts (2 x) | GRL18-P1137 | 1066554 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-P1157 | 1076980 |
| | | | | | | M12, 4-pin male connector | Cd-084 | Fastening nuts (2 x) | GRL18-P2437 | 1066555 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18-P2457 | 1076981 |

[1] PL80A.



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## GRSE18, metal, axial

- **Sensor principle:** Through-beam photoelectric sensor
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Light spot size (distance) | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Infrared light | LED | Ø 420 mm (10 m) | NPN | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-N1122 | 1068334 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-N2422 | 1068335 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-P1122 | 1068333 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-P2422 | 1068336 |
| | | | Visible red light | PinPoint LED | Ø 250 mm (10 m) | NPN | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-N1142 | 1066572 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-N2442 | 1067985 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-P1142 | 1067984 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-P2442 | 1066573 |

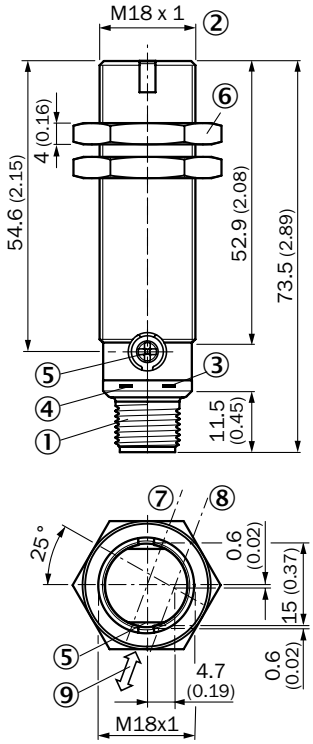
## GRSE18, plastic, axial

- **Sensor principle:** Through-beam photoelectric sensor
- **Switching mode:** Light/dark switching
- **Adjustment:** potentiometer
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Light spot size (distance) | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Infrared light | LED | Ø 420 mm (10 m) | NPN | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-N1127 | 1068331 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-N2427 | 1068332 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-P1127 | 1068329 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-P2427 | 1064922 |
| | | | Visible red light | PinPoint LED | Ø 250 mm (10 m) | NPN | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-N1147 | 1066558 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-N2447 | 1067983 |
| | | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18-P1147 | 1067982 |
| | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18-P2447 | 1064921 |

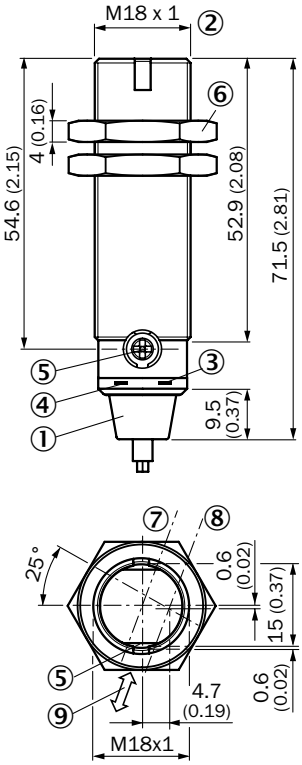
## Dimensional drawings (Dimensions in mm (inch))

### GRTB18, metal, connector, straight



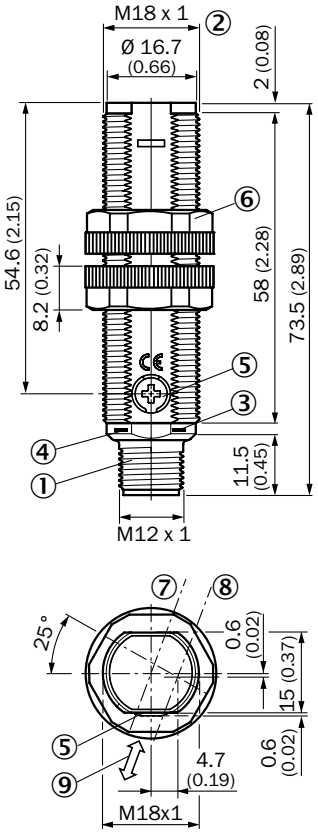

① M12, 4-pin male connector
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

### GRTB18, metal, cable, straight



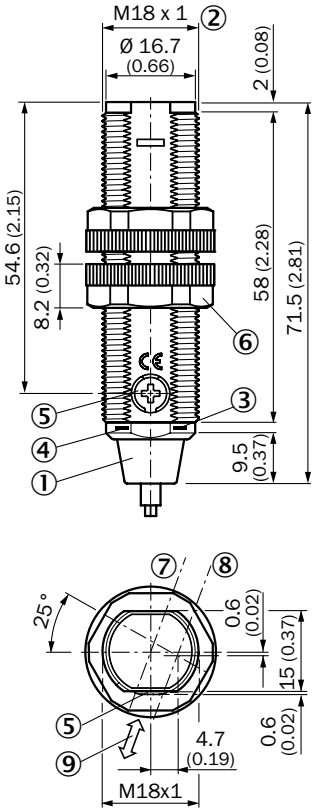

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

### GRTB18, plastic, connector, straight




① M12, 4-pin male connector
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2 x); width across 22, plastic
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

### GRTB18, plastic, cable, straight

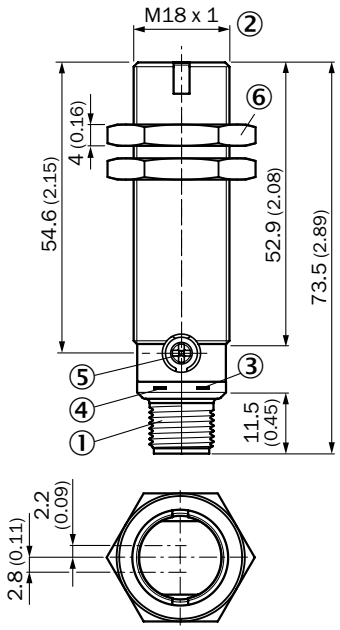



① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2 x); width across 22, plastic
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected



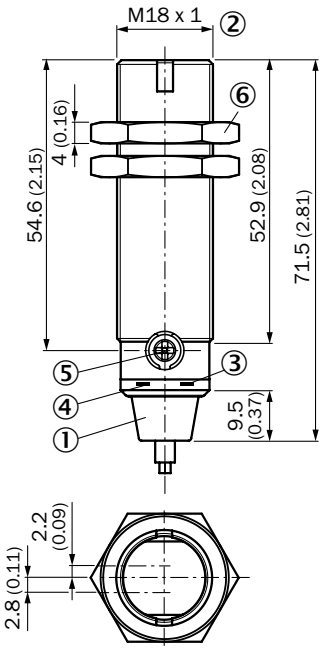
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GRTE18, GRL18, GRSE18, metal, connector, straight



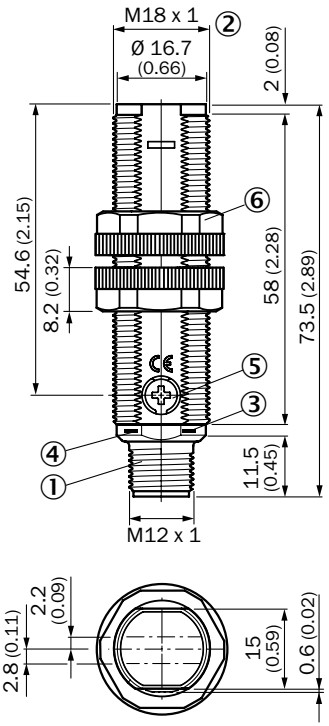

① M12, 4-pin male connector
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal

GRTE18, GRL18, GRSE18, metal, cable, straight



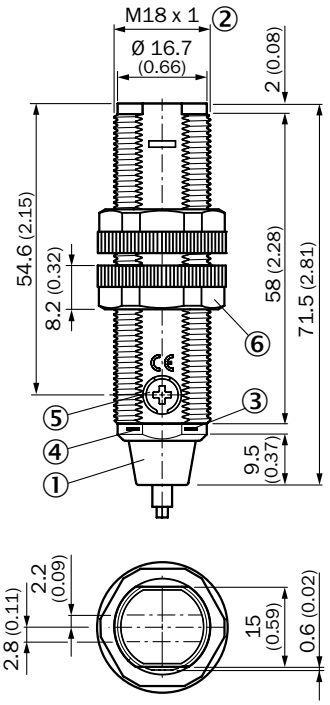

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal

GRTE18, GRL18, GRSE18, plastic, connector, straight




① M12, 4-pin male connector
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2 x); width across 22, plastic

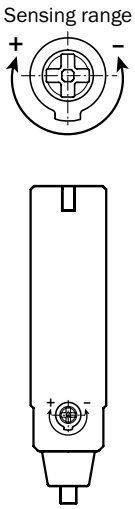
GRTE18, GRL18, GRSE18, plastic, cable, straight



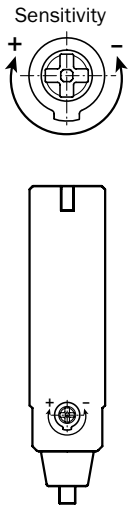

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2 x); width across 22, plastic

## Adjustment options

GRTB18, GRTE18,
Sensing range adjustment:
potentiometer, 270°

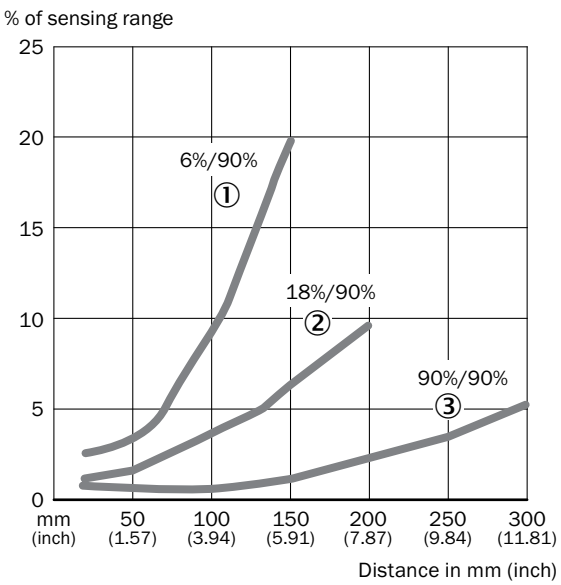



GRTB18, GRTE18,
Sensitivity adjustment:
potentiometer, 270°



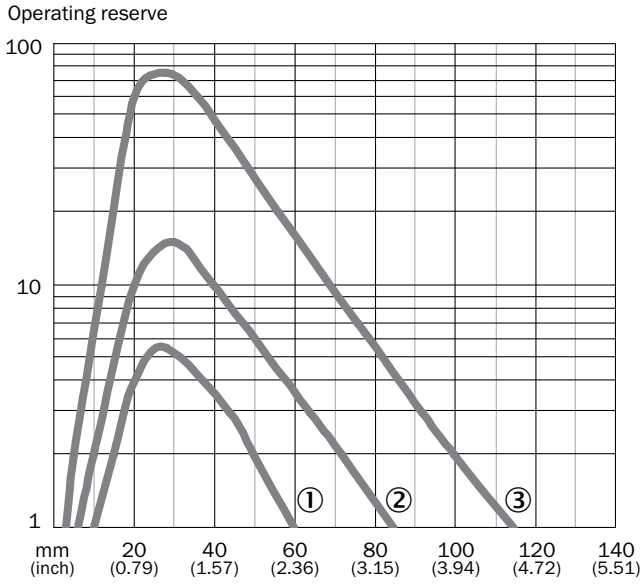

## Operating reserve

GRTB18




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

GRTE18, 100 mm

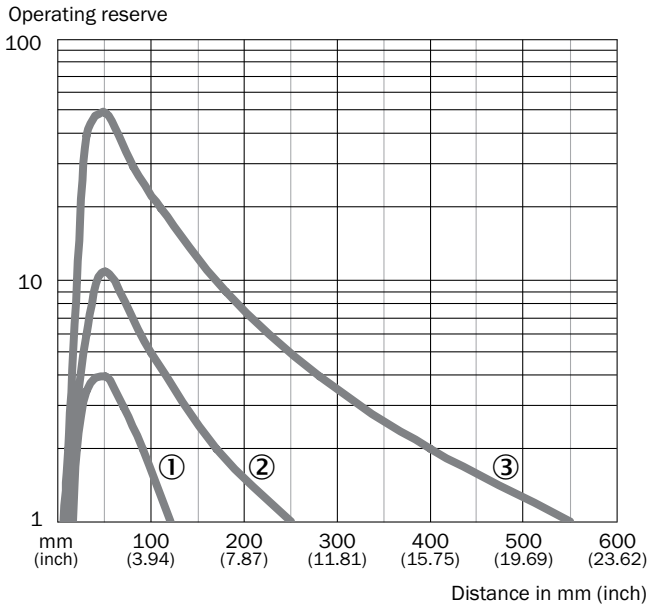



① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission



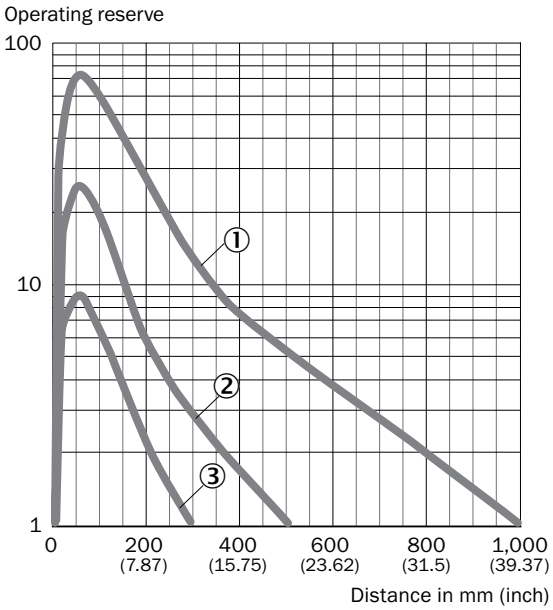
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### GRTE18, 400 mm



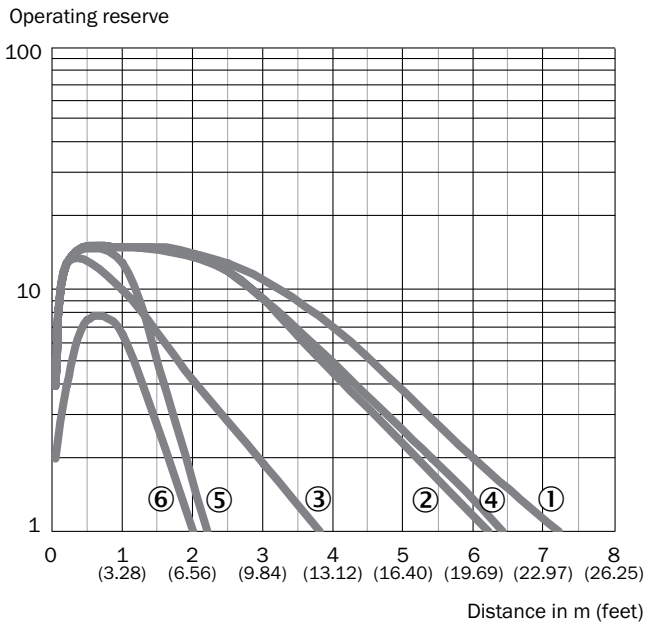

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRTE18, 800 mm



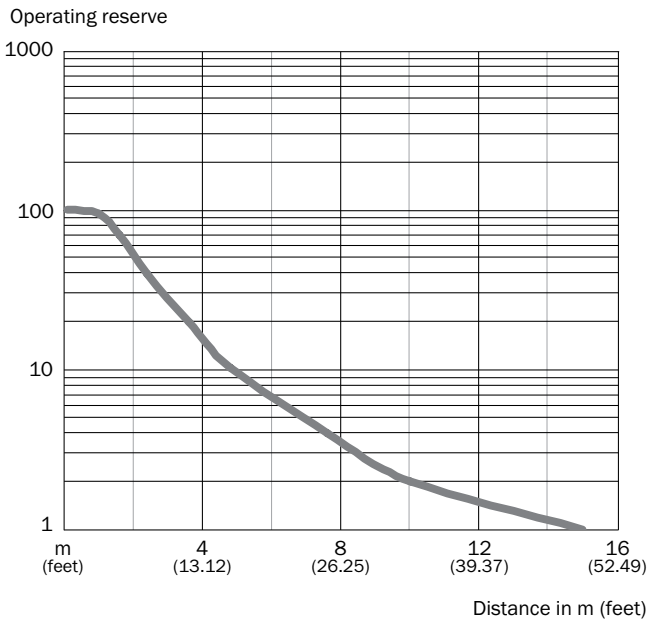

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRL18



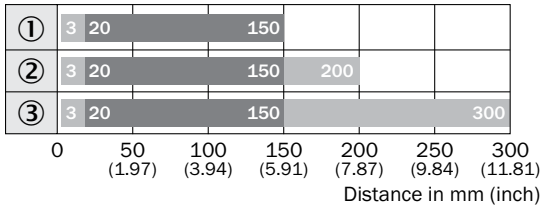

① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

### GRSE18



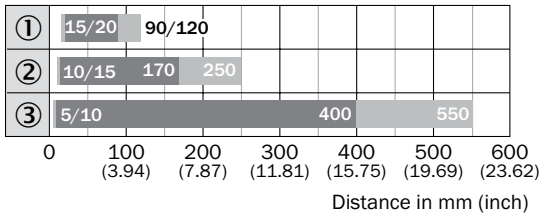
## Sensing range

### GRTB18



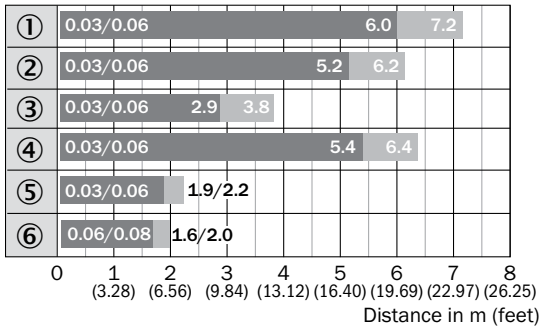

① Sensing range on black, 6% remission
② Sensing range on gray, 18 % remission
③ Sensing range on white, 90% remission

### GRTE18, 400 mm



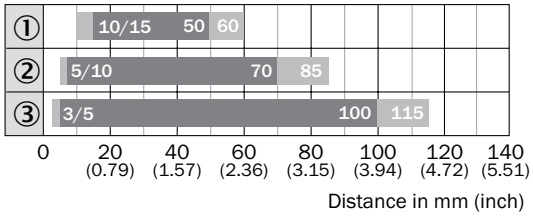

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRL18



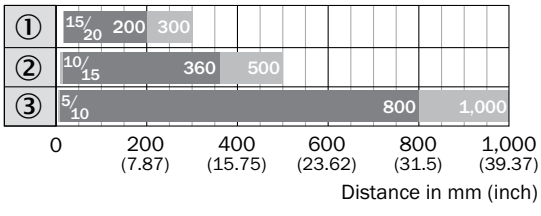

① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

### GRTE18, 100 mm



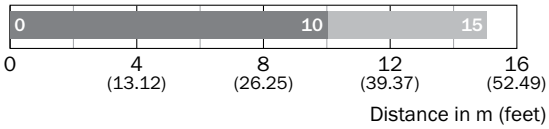

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRTE18, 800 mm




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

### GRSE18

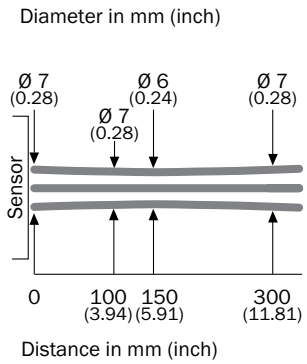




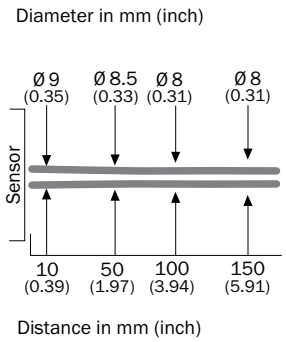

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## Light spot diameter

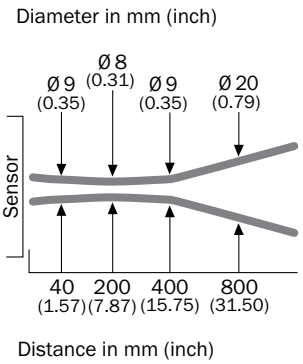
GRTB18



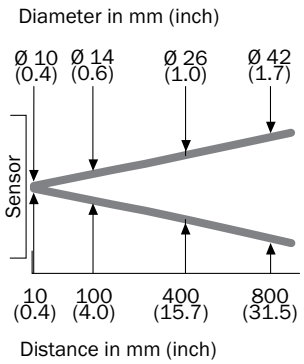

GRTE18, 100 mm, visible red light



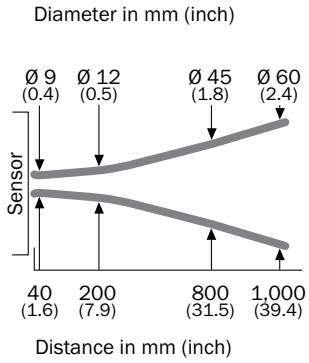

GRTE18, 400 mm, visible red light



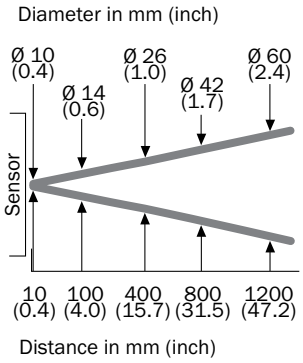

GRTE18, 400 mm, infrared light



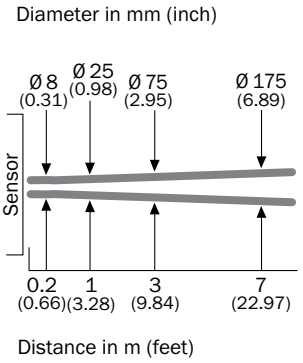

GRTE18, 800 mm, visible red light



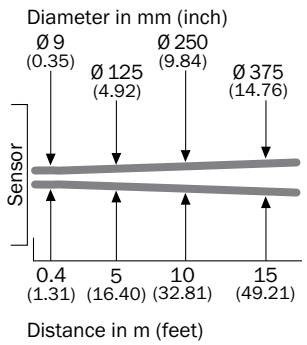

GRTE18, 800 mm, infrared light



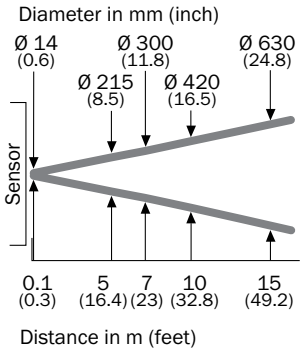

GRL18




GRSE18, visible red light

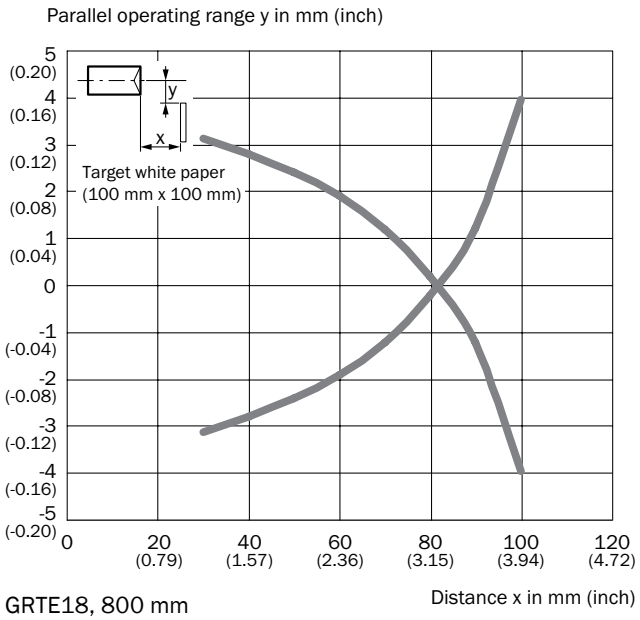



GRSE18, infrared light

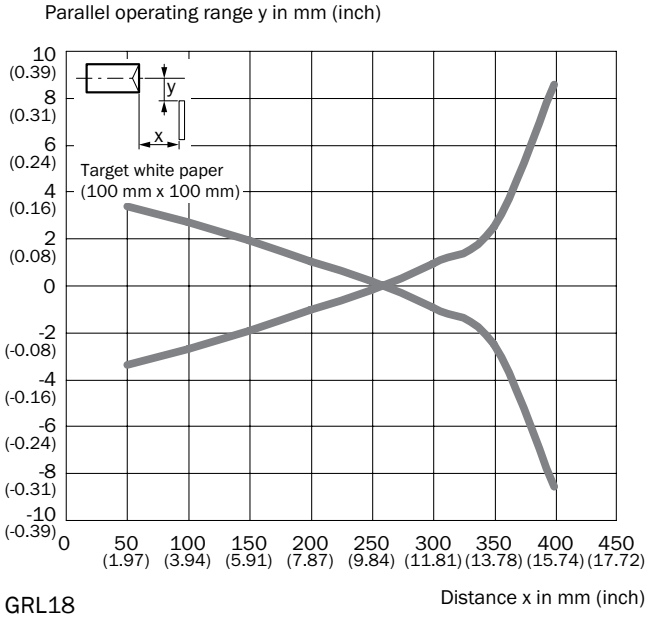


## Response curve

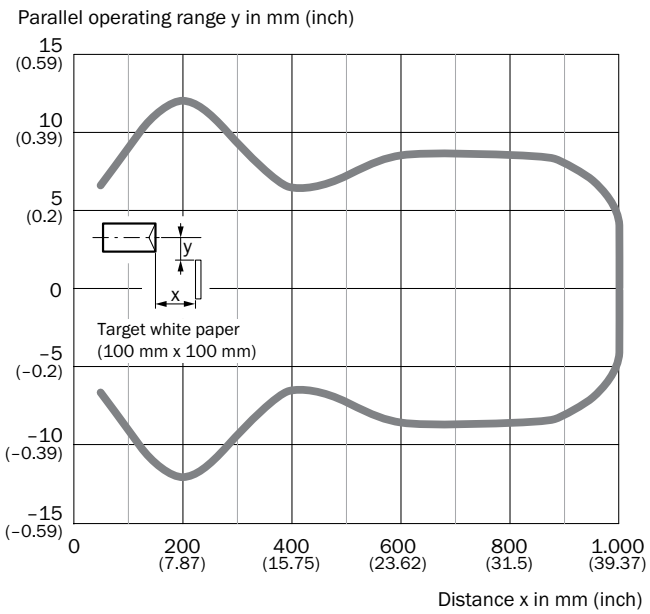
### GRTE18, 100 mm



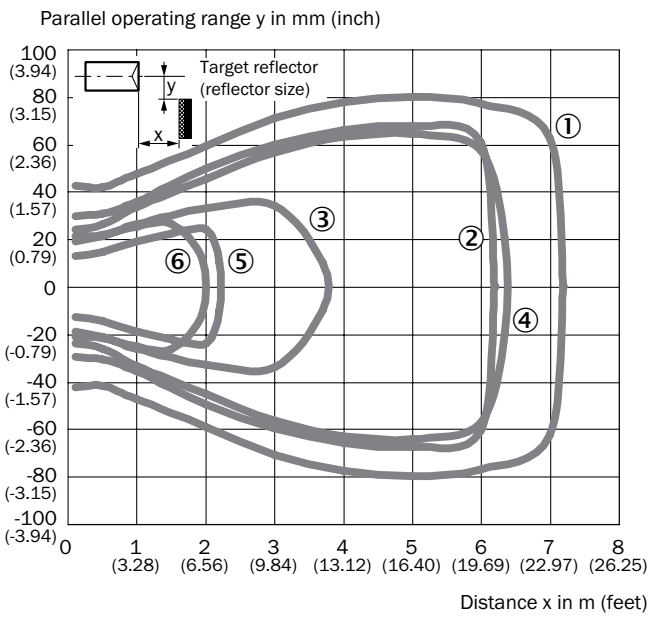

### GRTE18, 400 mm




### GRTE18, 800 mm




### GRL18



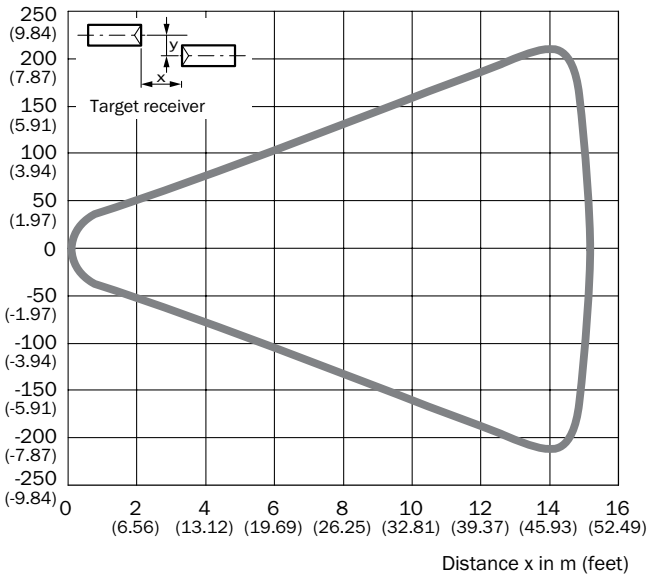

① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436



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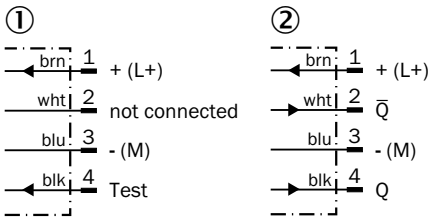
GRSE18

Parallel operating range y in mm (inch)



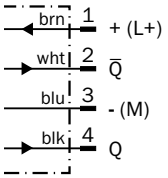

## Connection diagram

Cd-072

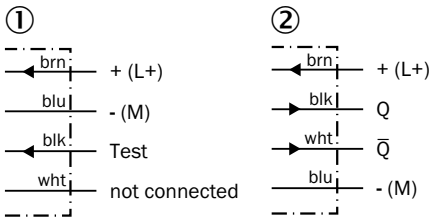



① Sender
② Receiver

Cd-084

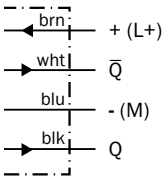



Cd-088

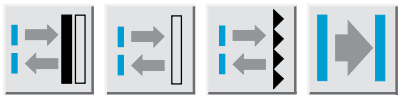



① Sender
② Receiver

Cd-094



# ROUND, SHORT AND ECONOMICALLY UNBEATABLE





## Product description

The GR18S family of photoelectric sensors in cylindrical M18-housings has a special shortened design and offers an optimal price/performance ratio. It can be used universally in many applications thanks to five different housing designs. PinPoint LEDs, plastic and metal housing versions as well as status indicators that are easily visible from all angles round off the sensor family's features. One highlight is the fully-flush metal variant, which has been especially designed for use in harsh industrial environments found in handling and warehousing systems.

## At a glance

- Low-cost cylindrical M18 sensor with extra short housing
- Five different housing styles
- Variety of plastic and metal housing styles, with straight or right angle optics
- Bright and highly visible PinPoint-LED
- Potentiometer for adjustment of switching threshold (depending on type)
- Special flush type, one-piece metal housing
- Highly visible signal indicator LED
- IP 67 rating

## Your benefits

- Space-saving solution due to short housing
- Flexible mounting options due to versatile housing styles
- Easy installation and precise detection due to PinPoint LED
- Reduced maintenance costs due to high tightening torque of single piece flush metal housing
- Rugged and reliable with proven SICK technology
- Highly visible signal indicator LED saves maintenance and commissioning time

## Additional information


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Operating reserve. . . . . 49
Sensing range . . . . . 50
Light spot diameter . . . . . .51
Response curve . . . . . .52
Connection diagram. . . . . 53


→ www.mysick.com/en/GR18S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



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## Detailed technical data

### Features

| | GRTB18S | GRTE18S | GRL18S | GRL18SG | GRSE18S |
|---|---|---|---|---|---|
| **Sensor principle** | Photoelectric proximity sensor | | Photoelectric retro-reflective sensor | | Through-beam photoelectric sensor |
| **Detection principle** | Background suppression | Energetic | Dual lens | | – |
| **Housing design (light emission)** | Cylindrical, straight<br>Cylindrical, straight, fully flush<br>(depending on type) | Cylindrical, straight<br>Cylindrical, straight, fully flush<br>Cylindrical, angled<br>Cylindrical, angled, fully flush<br>(depending on type) | | | |
| **Thread diameter (housing)** | M18 x 1 | | | | |
| **Sensing range max.** | 3 mm ... 300 mm [1] | 3 mm ...<br>115 mm [1]<br>5 mm ...<br>550 mm [1]<br>5 mm ...<br>1.000 mm [1]<br>(depending on type) | 0.03 m ... 7.2 m [2] | | 0 m ... 15 m |
| **Sensing range** | 20 mm ... 150 mm [1] | 5 mm ...<br>100 mm [1]<br>10 mm ...<br>400 mm [1]<br>10 mm ...<br>800 mm [1]<br>(depending on type) | 0.06 m ... 6 m [2] | | 0 m ... 10 m |
| **Type of light** | Visible red light | Visible red light / Infrared light<br>(depending on type) | Visible red light | | Visible red light / Infrared light<br>(depending on type) |
| **Light source** | PinPoint LED [3] | PinPoint LED [3]<br>LED [3]<br>(depending on type) | PinPoint LED [3] | | PinPoint LED [3]<br>LED [3]<br>(depending on type) |
| **Light spot size (distance)** | | | | | |
| Visible red light | Ø 7 mm (100 mm) | Ø 8 mm (100 mm)<br>Ø 9 mm (400 mm)<br>Ø 45 mm (800 mm)<br>(depending on type) | Ø 175 mm (7 m) | | Ø 250 mm (10 m) |
| Infrared light | – | Ø 26 mm (400 mm) | – | | Ø 420 mm (10 m) |
| **Wave length** | | | | | |
| Visible red light | 650 nm | | | | |
| Infrared light | – | | | | 850 nm |
| **Adjustment** | Potentiometer, 270° | | None | None<br>Potentiometer, 270°<br>(depending on type) | |
| **Special feature** | – | | | Detecting transparent objects | – |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

[2] PL80A.

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

## Mechanics/electronics

| | GRTB18S | GRTE18S | GRL18S | GRL18SG | GRSE18S |
|---|---|---|---|---|---|
| **Supply voltage** [1] | 10 V DC ... 30 V DC | | | | |
| **Ripple** [2] | ± 5 $V_{pp}$ | | | | |
| **Power consumption** | ≤ 30 mA | | | | |
| **Output type** | PNP / NPN (depending on type) | | | | |
| **Output function** | Complementary | | | | |
| **Switching mode** | Light switching<br>Dark switching<br>Light/dark switching<br>(depending on type) | | | | |
| **Signal voltage** | | | | | |
| PNP HIGH/LOW | $V_S$ - (≤ 3 V) / approx. 0 V | | | | |
| NPN HIGH/LOW | Approx. $V_S$ / ≤ 3 V | | | | |
| **Switching frequency** [5] | 1,000 Hz | 500 Hz | ± 1,000 Hz | 1,000 Hz | |
| **Connection type** | Cable, 2 m [6]<br>Cable, 5 m [6]<br>Male connector, M12<br>(depending on type) | Cable, 2 m [6]<br>Male connector, M12<br>(depending on type) | Cable, 5 m [6]<br>Cable, 2 m [6]<br>Male connector, M12<br>Cable with male connector, M8, 300 mm [6]<br>(depending on type) | Cable, 2 m<br>Male connector, M12<br>(depending on type) | Cable, 2 m [6]<br>Male connector, M12<br>(depending on type) |
| **Circuit protection** | A [7]<br>B [8]<br>D [9] | | | | |
| **Protection class** | III | | | | |
| **Polarisation filter** | – | | ✔ | | – |
| **Housing material** | | | | | |
| Plastic | ABS | | | | |
| Metal | Nickel-plated brass and ABS | | | | |
| **Optics material** | Plastic, PMMA | | | | |
| **Enclosure rating** | IP 67 | | | | |
| **Items supplied** | Fastening nuts (2 x) | | Fastening nuts (2 x), Reflector P250 (depending on type) | | Fastening nuts (4 x) |
| **EMC** | EN 60947-5-2 | | | | |
| **Test input** | – | | | | Sender OFF at "Test" 0 V |
| **Ambient operating temperature** [10] | –25 °C ... +55 °C | | | –25 °C ... +55 °C [11] | –25 °C ... +55 °C |
| **Ambient storage temperature** | –40 °C ... +70 °C | | | | |

[1] Limit values when operated in short-circuit protected network: max. 8 A.
[2] May not exceed or fall below $U_v$ 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] Do not bend below 0 °C.
[7] A = $V_S$ connections reverse-polarity protected.
[8] B = inputs and output reverse-polarity protected.
[9] D = outputs overcurrent and short-circuit protected.
[10] At $U_v$ <=24V and $I_A$<50mA.
[11] Temperature stability following adjustment +/-10 °C.


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## Ordering information

Other models ➜ www.mysick.com/en/GR18S

### GRTB18S, metal, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background suppression
- **Light spot size (distance):** Ø 7 mm (100 mm)
- **Switching mode:** Light/dark switching
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 300 mm | 20 mm ... 150 mm | Visible red light | PinPoint LED | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18S-N1112 | 1076105 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18S-N2412 | 1076108 |
| | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18S-P1112 | 1076099 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18S-P2412 | 1076102 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

### GRTB18S, metal, axial, fully flush

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background suppression
- **Light spot size (distance):** Ø 7 mm (100 mm)
- **Switching mode:** Light/dark switching
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 300 mm | 20 mm ... 150 mm | Visible red light | PinPoint LED | NPN | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18S-N111Z | 1076106 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18S-N241Z | 1076109 |
| | | | | | PNP | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18S-P111Z | 1076100 |
| | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18S-P241Z | 1076103 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRTB18S, plastic, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** Background suppression
- **Light spot size (distance):** Ø 7 mm (100 mm)
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 300 mm | 20 mm ... 150 mm | Visible red light | PinPoint LED | NPN | Dark switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTB18S-E1317 | 1076112 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTB18S-E2317 | 1076113 |
| | | | | | | Light/ dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18S-N1117 | 1076104 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18S-N2417 | 1076107 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTB18S-N1317 | 1076096 |
| | | | | | | | Cable, 3-wire, 5 m, PVC | Cd-044 | GRTB18S-N1417 | 1077894 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTB18S-N2317 | 1076097 |
| | | | | | PNP | Dark switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTB18S-F1317 | 1076110 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTB18S-F2317 | 1076111 |
| | | | | | | Light/ dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTB18S-P1117 | 1076098 |
| | | | | | | | M12, 4-pin male connector | Cd-084 | GRTB18S-P2417 | 1076101 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTB18S-P1317 | 1076094 |
| | | | | | | | Cable, 3-wire, 5 m, PVC | Cd-044 | GRTB18S-P1417 | 1077893 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTB18S-P2317 | 1076095 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)



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## GRTE18S, metal, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)
- **Type of light:** visible red light

| | Sensing range max. [1] | Sensing range [1] | Light source | Light spot size (distance) | Output type | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | PinPoint LED | Ø 8 mm (100 mm) | NPN | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18S-N1112 | 1069584 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-N1312 | 1058201 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-N2312 | 1059408 |
| | | | | | PNP | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P2412 | 1069583 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P1312 | 1058203 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P2312 | 1058204 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | PinPoint LED | Ø 9 mm (400 mm) | NPN | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18S-N1142 | 1069580 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-N1342 | 1058202 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-N2342 | 1059482 |
| | | | | | PNP | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P2442 | 1069579 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P1342 | 1058205 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P2342 | 1058200 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | LED | Ø 45 mm (800 mm) | NPN | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18S-N1162 | 1069578 |
| | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-N1362 | 1069500 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-N2362 | 1069501 |
| | | | | | PNP | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P1362 | 1069503 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P2362 | 1069504 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRTE18S, metal, axial, fully flush

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Light spot size (distance) | Output type | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | Visible red light | Pin-Point LED | Ø 8 mm (100 mm) | NPN | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-E231Z | 1059409 |
| | | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-N231Z | 1059432 |
| | | | | | | PNP | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F231Z | 1059435 |
| | | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P231Z | 1059436 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | Infrared light | LED | Ø 26 mm (400 mm) | PNP | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P135ZS01 | 1065711 |
| | | | Visible red light | Pin-Point LED | Ø 9 mm (400 mm) | NPN | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-E234Z | 1059483 |
| | | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-N234Z | 1059484 |
| | | | | | | PNP | Dark switching | Cable, 3-wire, 2 m | Cd-044 | GRTE18S-F134Z | 1062423 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-F234Z | 1059486 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m | Cd-044 | GRTE18S-P134Z | 1064171 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P234Z | 1059487 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | Visible red light | LED | Ø 45 mm (800 mm) | NPN | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-E236Z | 1069554 |
| | | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-N236Z | 1069555 |
| | | | | | | PNP | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F236Z | 1069556 |
| | | | | | | | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P246Z | 1069123 |
| | | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P236Z | 1069557 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRTE18S, metal, radial, fully flush

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Output type:** PNP
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Light spot size (distance) | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | Visible red light | PinPoint LED | Ø 8 mm (100 mm) | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F231X | 1059438 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P231X | 1059440 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | Visible red light | PinPoint LED | Ø 9 mm (400 mm) | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F234X | 1059488 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P234X | 1059489 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | Visible red light | LED | Ø 45 mm (800 mm) | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F236X | 1069558 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P236X | 1069559 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRTE18S, plastic, axial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Light spot size (distance) | Output type | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | Visible red light | Pin-Point LED | Ø 8 mm (100 mm) | NPN | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18S-N1117 | 1069581 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-N1317 | 1058194 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-N2317 | 1059378 |
| | | | | | | PNP | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P2417 | 1069582 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P1317 | 1058195 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P2317 | 1058196 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | Visible red light | Pin-Point LED | Ø 9 mm (400 mm) | NPN | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18S-N1147 | 1062024 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-N1347 | 1058393 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-N2347 | 1059441 |
| | | | | | | PNP | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P2447 | 1069073 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P1347 | 1058197 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P2347 | 1058193 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | Visible red light | LED | Ø 45 mm (800 mm) | NPN | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | GRTE18S-N1167 | 1069121 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-N1367 | 1069494 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-N2367 | 1069495 |
| | | | | | | PNP | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P2467 | 1069122 |
| | | | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | GRTE18S-P1367 | 1069496 |
| | | | | | | | | Connector M12, 3-pin | Cd-045 | GRTE18S-P2367 | 1069497 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRTE18S, plastic, radial

- **Sensor principle:** Photoelectric proximity sensor
- **Detection principle:** energetic
- **Output type:** PNP
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Light spot size (distance) | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 3 mm ... 115 mm | 5 mm ... 100 mm | Visible red light | PinPoint LED | Ø 8 mm (100 mm) | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F2319 | 1059406 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P2319 | 1059407 |
| | 5 mm ... 550 mm | 10 mm ... 400 mm | Visible red light | PinPoint LED | Ø 9 mm (400 mm) | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F2349 | 1059480 |
| | | | | | | Light/dark switching | M12, 4-pin male connector | Cd-084 | GRTE18S-P2449 | 1069074 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P2349 | 1059481 |
| | 5 mm ... 1,000 mm | 10 mm ... 800 mm | Visible red light | LED | Ø 45 mm (800 mm) | Dark switching | Connector M12, 3-pin | Cd-045 | GRTE18S-F2369 | 1069498 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRTE18S-P2369 | 1069499 |

[1] Object with 90 % reflectance (referred to standard white, DIN 5033)

## GRL18S, metal, axial

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Adjustment:** none
- **Type of light:** visible red light
- **Light source:** PinPoint LED

| | Sensing range max. [1] | Sensing range [1] | Output type | Switching mode | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | NPN | Dark switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-E1331 | 1059537 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-E1351 | 1064153 |
| | | | | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | Fastening nuts (2 x) | GRL18S-N1131 | 1069588 |
| | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-N1331 | 1059538 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-N1351 | 1064154 |
| | | | PNP | Dark switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-F1331 | 1059541 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F1351 | 1064155 |
| | | | | | Cable, 3-wire, 5 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-P1431 | 1078580 |
| | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-F2331 | 1058198 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F2351 | 1064156 |
| | | | | Light/dark switching | M12, 4-pin male connector | Cd-084 | Fastening nuts (2 x) | GRL18S-P2431 | 1069586 |
| | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-P1331 | 1059542 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P1351 | 1064157 |
| | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-P2331 | 1058199 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P2351 | 1064158 |

[1] PL80A.



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Subject to change without notice

## GRL18S, metal, axial, fully flush

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Output type:** PNP
- **Adjustment:** none

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Switching mode | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | Dark switching | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-F233Y | 1058206 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F235Y | 1064159 |
| | | | | | Light switching | Cable, 3-wire, 2 m | Cd-043 | Fastening nuts (2 x) | GRL18S-P133Y | 1072117 |
| | | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-P233Y | 1058207 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P235Y | 1064160 |

[1] PL80A.

## GRL18S, metal, radial, fully flush

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Output type:** PNP
- **Adjustment:** none

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Switching mode | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | Dark switching | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-F233W | 1058209 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F235W | 1064161 |
| | | | | | Light switching | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-P233W | 1058210 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P235W | 1064162 |

[1] PL80A.

## GRL18S, plastic, axial

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Adjustment:** none
- **Type of light:** visible red light
- **Light source:** PinPoint LED

| | Sensing range max. [1] | Sensing range [1] | Output type | Switching mode | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | NPN | Dark switching | Cable with M8 male connector, 4-pin, 300 mm, PVC | Cd-066 | Fastening nuts (2 x) | GRL18S-E3036S01 | 1065604 |
| | | | | | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-E1336 | 1059530 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-E1356 | 1064143 |
| | | | | Light/dark switching | Cable, 4-wire, 2 m, PVC | Cd-094 | Fastening nuts (2 x) | GRL18S-N1136 | 1069585 |
| | | | | | M12, 4-pin male connector | Cd-084 | Fastening nuts (2 x) | GRL18S-N2436 | 1077674 |
| | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-N1336 | 1059531 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-N1356 | 1064144 |
| | | | PNP | Dark switching | Cable with M8 male connector, 4-pin, 300 mm, PVC | Cd-066 | Fastening nuts (2 x) | GRL18S-F3036S02 | 1067943 |
| | | | | | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-F1336 | 1059532 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F1356 | 1064145 |
| | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-F2336 | 1059533 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F2356 | 1064146 |
| | | | | Light/dark switching | M12, 4-pin male connector | Cd-101 | Fastening nuts (2 x) | GRL18S-K2436 | 1069997 |
| | | | | | | Cd-084 | Fastening nuts (2 x) | GRL18S-P2436 | 1069072 |
| | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-P1336 | 1059534 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P1356 | 1064147 |
| | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-P2336 | 1058192 |
| | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P2356 | 1064148 |

[1] PL80A.



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## GRL18S, plastic, radial

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Output type:** PNP
- **Adjustment:** none

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Switching mode | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | Dark switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-F1338 | 1059535 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F1358 | 1064149 |
| | | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-F2338 | 1058211 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-F2358 | 1064150 |
| | | | | | Light/dark switching | M12, 4-pin male connector | Cd-101 | Fastening nuts (2 x) | GRL18S-K2438 | 1069996 |
| | | | | | | | Cd-084 | Fastening nuts (2 x) | GRL18S-P2438 | 1069071 |
| | | | | | Light switching | Cable, 3-wire, 2 m, PVC | Cd-044 | Fastening nuts (2 x) | GRL18S-P1338 | 1059536 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P1358 | 1064151 |
| | | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18S-P2338 | 1058212 |
| | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18S-P2358 | 1064152 |

[1] PL80A.

## GRL18SG, metal, axial, detecting transparent objects

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Output type:** PNP
- **Adjustment:** Potentiometer, 270°
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | Dark switching | Connector M12, 3-pin | Cd-045 | GRL18SG-F2332 | 1059555 |
| | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRL18SG-P2332 | 1060323 |

[1] PL80A.

## GRL18SG, metal, axial, fully flush, detecting transparent objects

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Adjustment:** none
- **Items supplied:** fastening nuts (2 x)

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Switching mode | Connec-tion | Con-nection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | NPN | Dark switching | Connector M12, 3-pin | Cd-045 | GRL18SG-E233Z | 1061927 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRL18SG-N233Z | 1061928 |
| | | | | | PNP | Dark switching | Connector M12, 3-pin | Cd-045 | GRL18SG-F233Z | 1059556 |
| | | | | | | Light switching | Connector M12, 3-pin | Cd-045 | GRL18SG-P233Z | 1068113 |

[1] PL80A.

## GRL18SG, metal, radial, fully flush, detecting transparent objects

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Output type:** PNP
- **Switching mode:** Dark switching

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Adjust-ment | Connec-tion | Con-nection diagram | Items sup-plied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | None | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18SG-F233X | 1059557 |

[1] PL80A.



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## GRL18SG, plastic, axial, detecting transparent objects

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Adjustment:** none

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Output type | Switching mode | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | NPN | Light/dark switching | Cable, 4-wire, 2 m | Cd-094 | Fastening nuts (2 x) | GRL18SG-N1137 | 1062031 |
| | | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18SG-N1157 | 1068942 |
| | | | | | PNP | Dark switching | Cable, 3-wire, 2 m | Cd-044 | Fastening nuts (2 x) | GRL18SG-F1337 | 1062231 |
| | | | | | | | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18SG-F2337 | 1059553 |
| | | | | | | Light/dark switching | Cable, 4-wire, 2 m | Cd-094 | Fastening nuts (2 x) | GRL18SG-P1137 | 1066421 |
| | | | | | | | | | Fastening nuts (2 x), Reflector P250 | GRL18SG-P1157 | 1066940 |

[1] PL80A.

## GRL18SG, plastic, radial, detecting transparent objects

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Detection principle:** Dual lens
- **Light spot size (distance):** Ø 175 mm (7 m)
- **Output type:** PNP
- **Switching mode:** Dark switching

| | Sensing range max. [1] | Sensing range [1] | Type of light | Light source | Adjustment | Connection | Connection diagram | Items supplied | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 0.03 m ... 7.2 m | 0.06 m ... 6 m | Visible red light | PinPoint LED | None | Connector M12, 3-pin | Cd-045 | Fastening nuts (2 x) | GRL18SG-F2339 | 1059554 |

[1] PL80A.

## GRSE18S, metal, axial

- **Sensor principle:** Through-beam photoelectric sensor
- **Light spot size infrared light (distance):** Ø 420 mm (10 m)
- **Light spot size visible red light (distance):** Ø 250 mm (10 m)
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Output type | Switching mode | Adjustment | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Infrared light | LED | NPN | Light/dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-N1122 | 1069638 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-N2422 | 1069635 |
| | | | | | PNP | Light/dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-P1122 | 1069637 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-P2422 | 1069636 |
| | | | Visible red light | PinPoint LED | NPN | Dark switching | None | Cable, 3-wire, 2 m, PVC | Cd-049 | GRSE18S-E1331 | 1059548 |
| | | | | | | Light/dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-N1142 | 1069630 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-N2442 | 1069628 |
| | | | | | PNP | Dark switching | None | Connector M12, 3-pin | Cd-051 | GRSE18S-F2331 | 1059549 |
| | | | | | | Light/dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-P1142 | 1069629 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-P2442 | 1069125 |
| | | | | | | Light switching | None | Connector M12, 3-pin | Cd-051 | GRSE18S-P2331 | 1059550 |

## GRSE18S, metal, axial, fully flush

- **Sensor principle:** Through-beam photoelectric sensor
- **Light spot size (distance):** Ø 250 mm (10 m)
- **Output type:** PNP
- **Switching mode:** Light switching
- **Adjustment:** none
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Visible red light | PinPoint LED | Cable, 3-wire, 2 m | Cd-044 | GRSE18S-P133Y | 1062422 |
| | | | | | Connector M12, 3-pin | Cd-045 | GRSE18S-P233Y | 1062420 |



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## GRSE18S, metal, radial, fully flush

- **Sensor principle:** Through-beam photoelectric sensor
- **Light spot size (distance):** Ø 250 mm (10 m)
- **Output type:** PNP
- **Adjustment:** none
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Visible red light | PinPoint LED | Dark switching | Connector M12, 3-pin | Cd-051 | GRSE18S-F233W | 1059551 |
| | | | | | Light switching | Connector M12, 3-pin | Cd-051 | GRSE18S-P233W | 1059552 |

## GRSE18S, plastic, axial

- **Sensor principle:** Through-beam photoelectric sensor
- **Light spot size infrared light (distance):** Ø 420 mm (10 m)
- **Light spot size visible red light (distance):** Ø 250 mm (10 m)
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Output type | Switching mode | Adjustment | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Infrared light | LED | NPN | Light/ dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-N1127 | 1069634 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-N2427 | 1069631 |
| | | | | | PNP | Light/ dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-P1127 | 1069632 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-P2427 | 1069633 |
| | | | Visible red light | Pin-Point LED | NPN | Dark switching | None | Cable, 3-wire, 2 m, PVC | Cd-049 | GRSE18S-E1336 | 1059543 |
| | | | | | | Light/ dark switching | None | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-N1136 | 1062122 |
| | | | | | | | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-N1147 | 1069124 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-N2447 | 1069625 |
| | | | | | PNP | Dark switching | None | Cable, 3-wire, 2 m, PVC | Cd-049 | GRSE18S-F1336 | 1059544 |
| | | | | | | | | Connector M12, 3-pin | Cd-051 | GRSE18S-F2336 | 1058214 |
| | | | | | | Light/ dark switching | Potentiometer, 270° | Cable, 4-wire, 2 m, PVC | Cd-088 | GRSE18S-P1147 | 1069626 |
| | | | | | | | | M12, 4-pin male connector | Cd-072 | GRSE18S-P2447 | 1069627 |
| | | | | | | Light switching | None | Cable, 3-wire, 2 m, PVC | Cd-049 | GRSE18S-P1336 | 1059545 |
| | | | | | | | | Connector M12, 3-pin | Cd-051 | GRSE18S-P2336 | 1058215 |

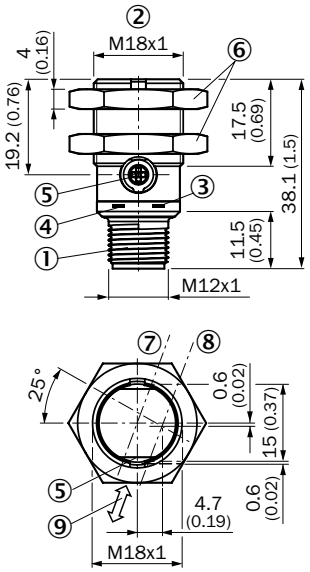
## GRSE18S, plastic, radial

- **Sensor principle:** Through-beam photoelectric sensor
- **Light spot size (distance):** Ø 250 mm (10 m)
- **Output type:** PNP
- **Adjustment:** none
- **Items supplied:** fastening nuts (4 x)

| | Sensing range max. | Sensing range | Type of light | Light source | Switching mode | Connection | Connection diagram | Type | Part no. |
|---|---|---|---|---|---|---|---|---|---|
|  | 0 m ... 15 m | 0 m ... 10 m | Visible red light | PinPoint LED | Dark switching | Connector M12, 3-pin | Cd-051 | GRSE18S-F2338 | 1059546 |
| | | | | | Light switching | Connector M12, 3-pin | Cd-051 | GRSE18S-P2338 | 1059547 |

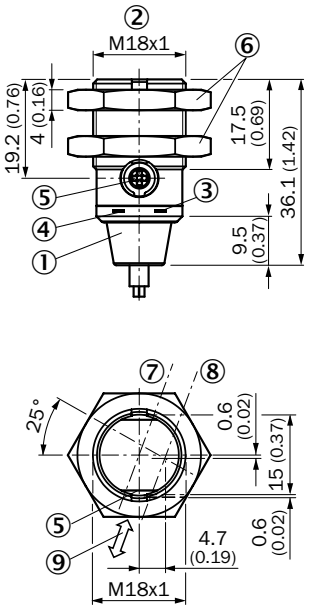
## Dimensional drawings (Dimensions in mm (inch))

GRTB18S, metal, connector, straight, adjustable



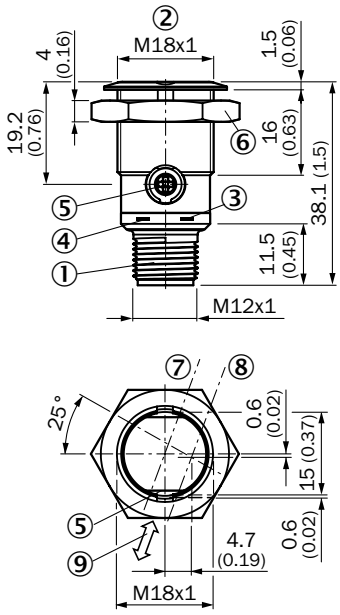

① M12, 4-pin male connector
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

GRTB18S, metal, cable, straight, adjustable



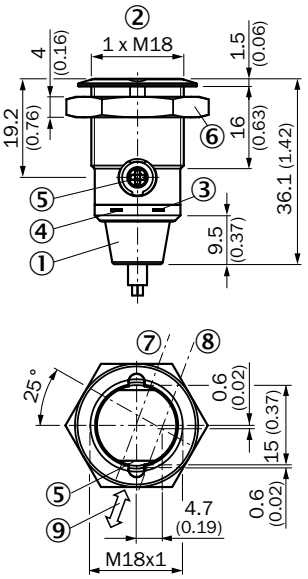

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

GRTB18S, metal, connector, straight, fully flush, adjustable



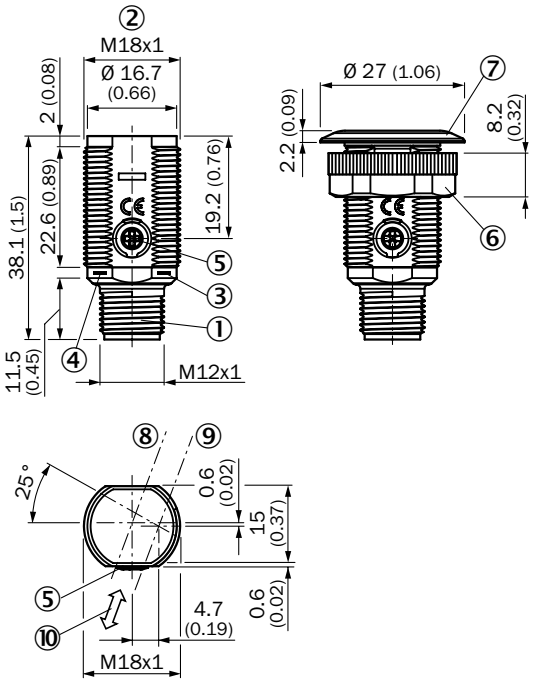

① M12, 4-pin male connector
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 24 mm hex, metal
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

GRTB18S, metal, cable, straight, fully flush, adjustable



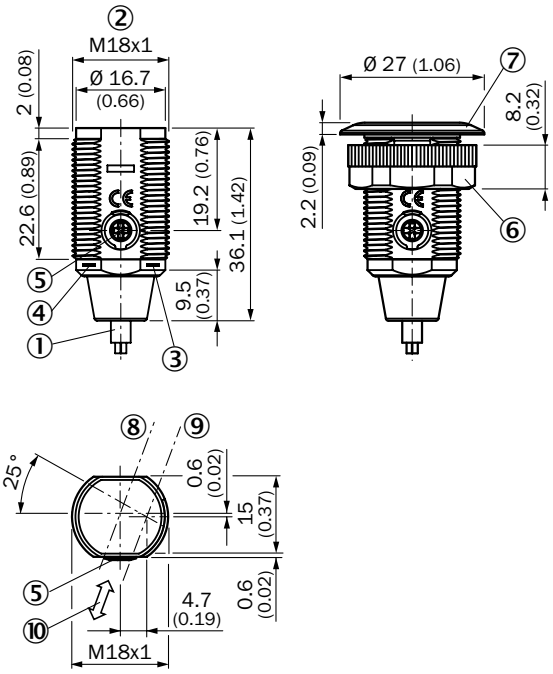

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 24 mm hex, metal
⑦ Optical axis receiver
⑧ Optical axis sender
⑨ Standard direction of the material being detected

GRTB18S, plastic, connector, straight, adjustable



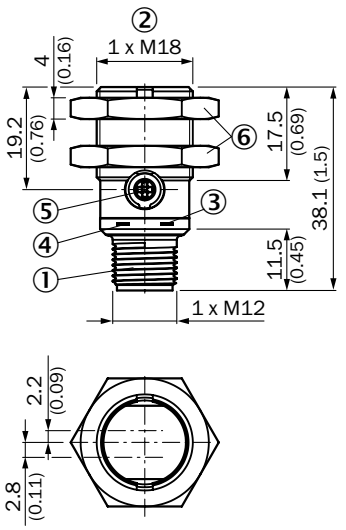

① Connector M12
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 22 mm hex, plastic
⑦ Mounting ring
⑧ Optical axis receiver
⑨ Optical axis sender
⑩ Standard direction of the material being detected

GRTB18S, plastic, cable, straight, adjustable



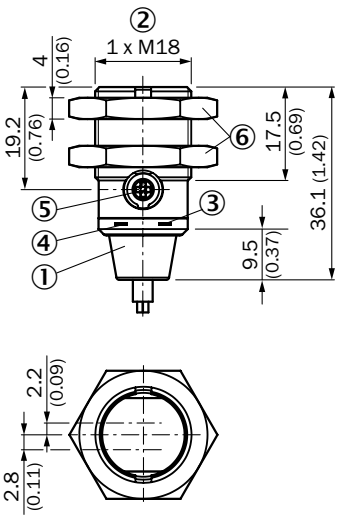

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 22 mm hex, plastic
⑦ Mounting ring
⑧ Optical axis receiver
⑨ Optical axis sender
⑩ Standard direction of the material being detected

GR18S, metal, connector, straight, 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 nuts (2x); width across 24, metal

GR18S, metal, cable, straight, adjustable

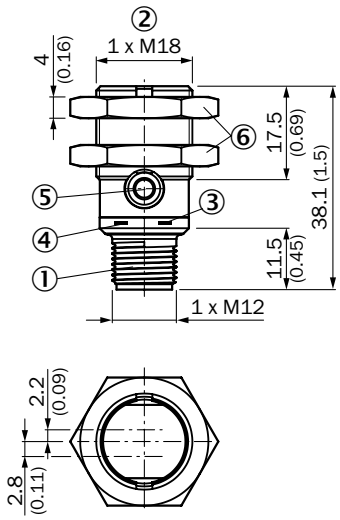



① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nuts (2x); width across 24, metal



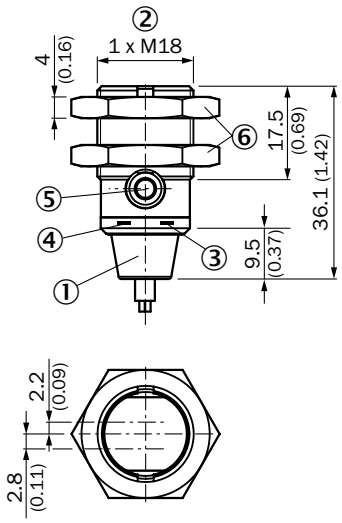
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GR18S, metal, connector, straight,
no adjustment possibility



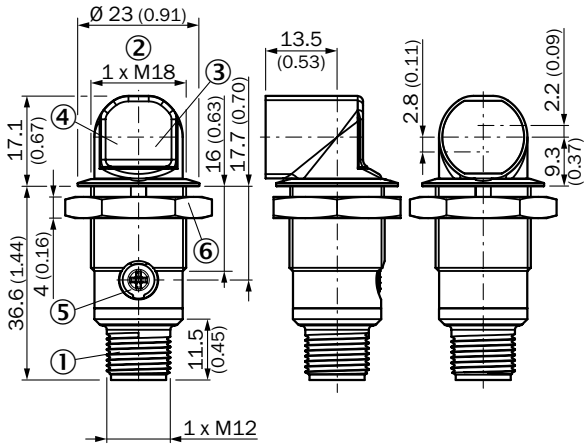

① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Dummy plug
⑥ Fastening nuts (2x); width across 24, metal

GR18S, metal, cable, straight,
no adjustment possibility



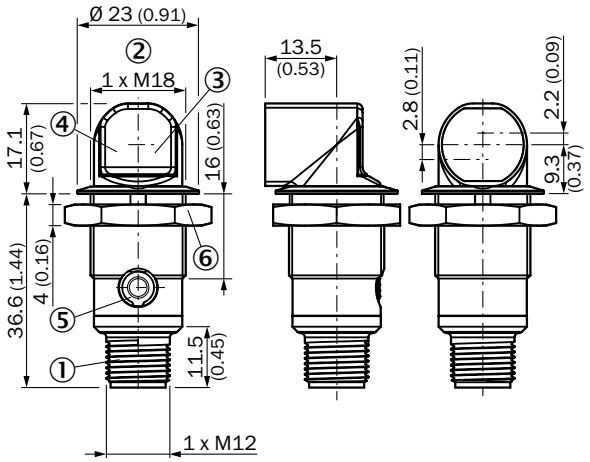

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Dummy plug
⑥ Fastening nuts (2x); width across 24, metal

GR18S, metal, connector, angled, fully flush, adjustable



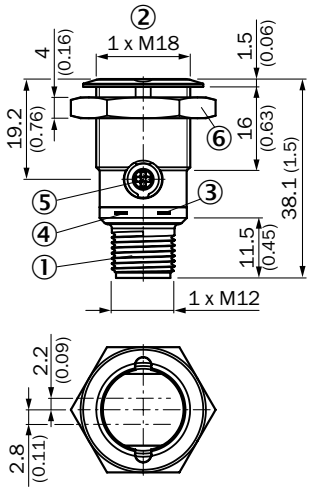

① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 24 mm hex, metal

GR18S, metal, connector, angled, fully flush,
no adjustment possibility



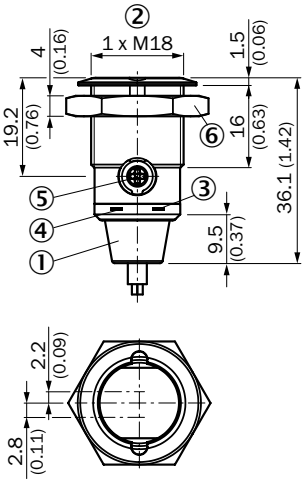

① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Dummy plug
⑥ Fastening nut; 24 mm hex, metal

GR18S, metal, connector, straight, fully flush, adjustable



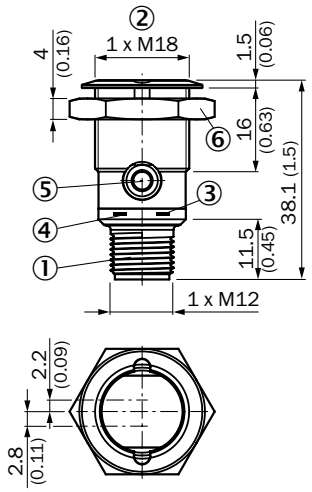

① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 24 mm hex, metal

GR18S, metal, cable, straight, fully flush, adjustable



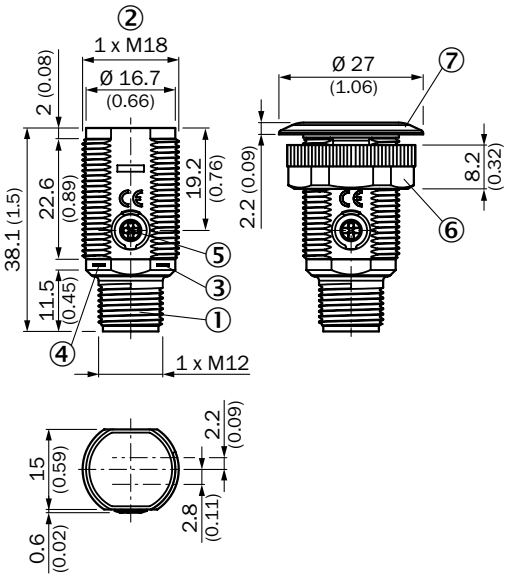

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 24 mm hex, metal

GR18S, metal, connector, straight, fully flush, no adjustment possibility




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

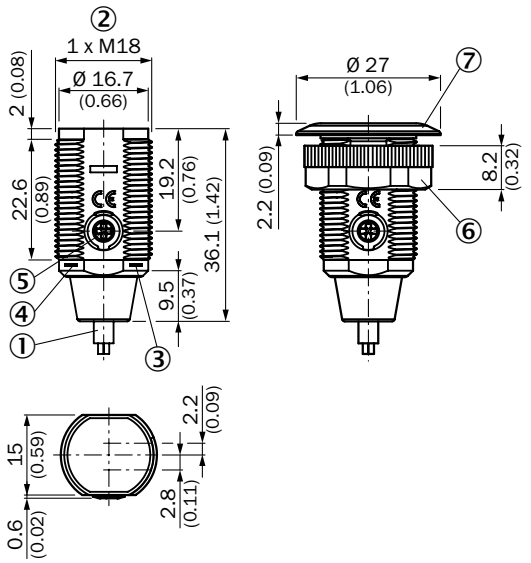
GR18S, plastic, connector, straight, adjustable




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; 22 mm hex, plastic
⑦ Mounting ring

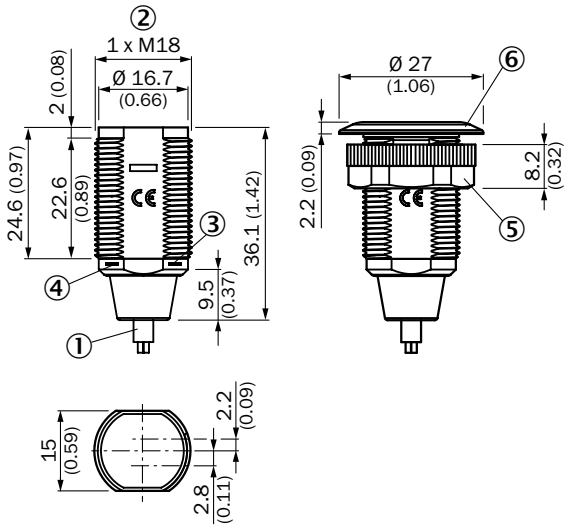

8015168/2016-02-22
Subject to change without notice

GR18S, plastic, cable, straight, adjustable



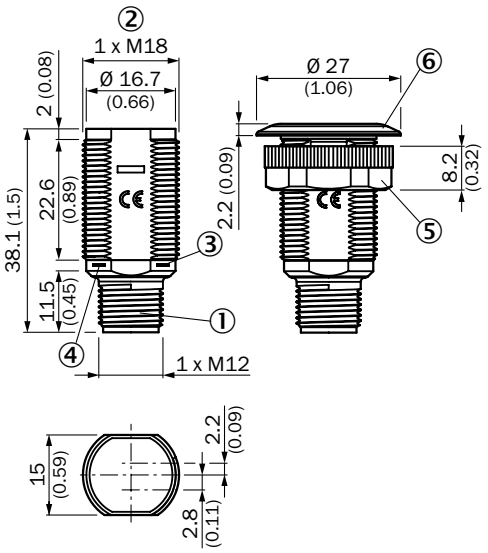

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 22 mm hex, plastic
⑦ Mounting ring

GR18S, plastic, cable (with plug), straight, no adjustment possibility



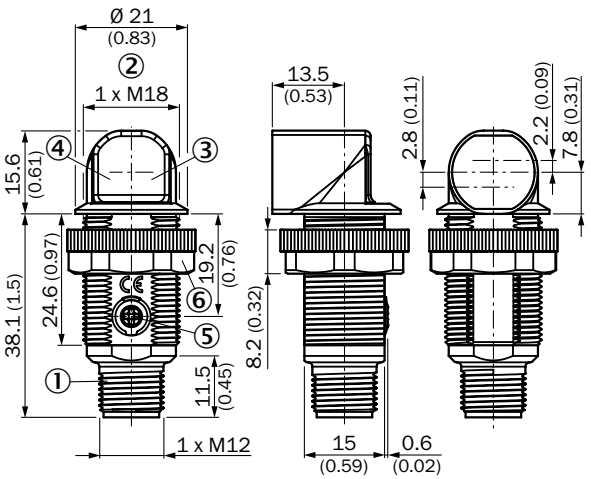

① Cable (with male connector)
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Fastening nut; 22 mm hex, plastic
⑥ Mounting ring

GR18S, plastic, connector, straight, fully flush, no adjustment possibility



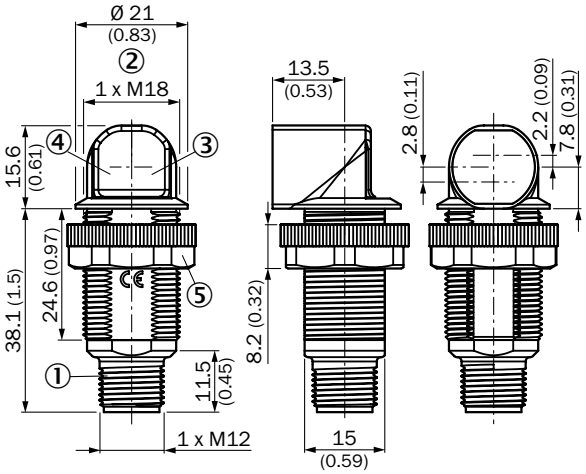

① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Fastening nut; 22 mm hex, plastic
⑥ Mounting ring

GR18S, plastic, connector, angled, adjustable



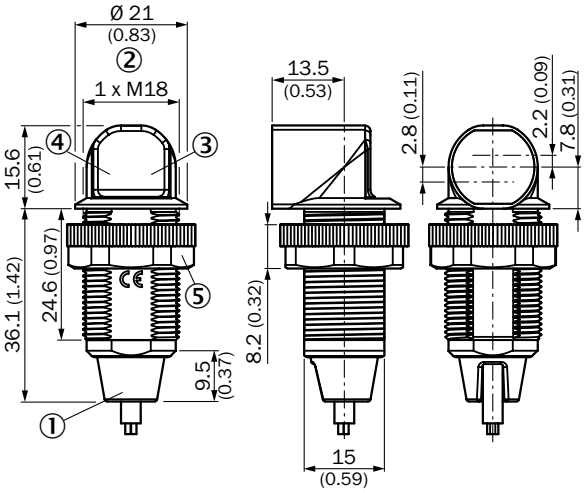

① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control: potentiometer 270°
⑥ Fastening nut; 22 mm hex, plastic

GR18S, plastic, connector, angled,
no adjustment possibility




① Connector M12, 3-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Fastening nut; 22 mm hex, plastic

GR18S, plastic, cable, angled,
no adjustment possibility

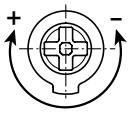


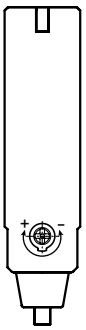

① Connection cable 2 m
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Fastening nut; 22 mm hex, plastic

## Adjustment options

GRTB18S, GRTE18S,
Sensing range adjustment:
potentiometer, 270°

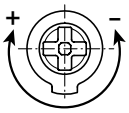
Sensing range

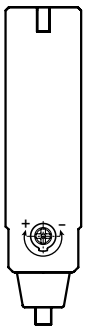


GRTB18S, GRTE18S,
Sensitivity adjustment:
potentiometer, 270°

Sensitivity



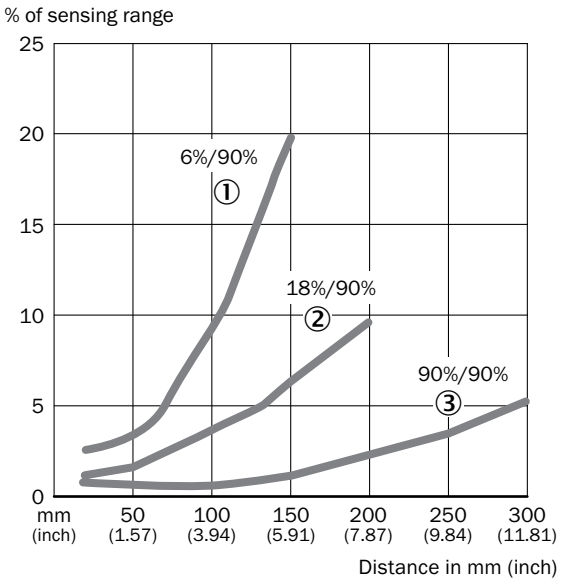





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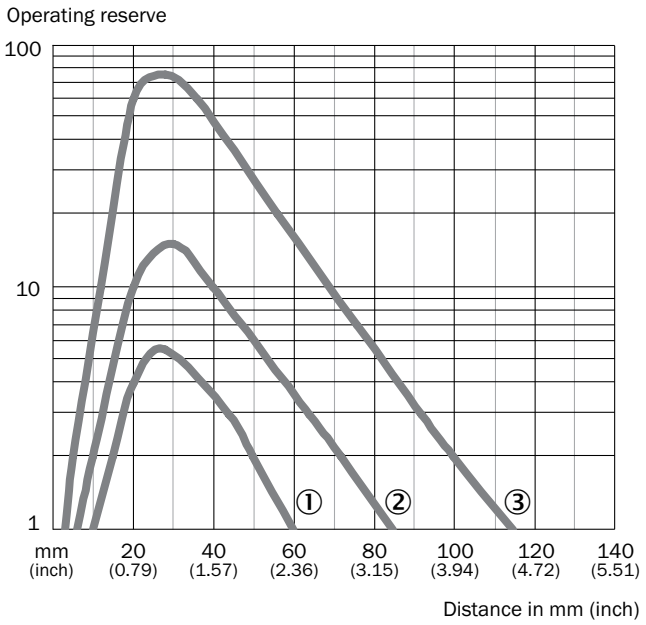
## Operating reserve

### GRTB18S



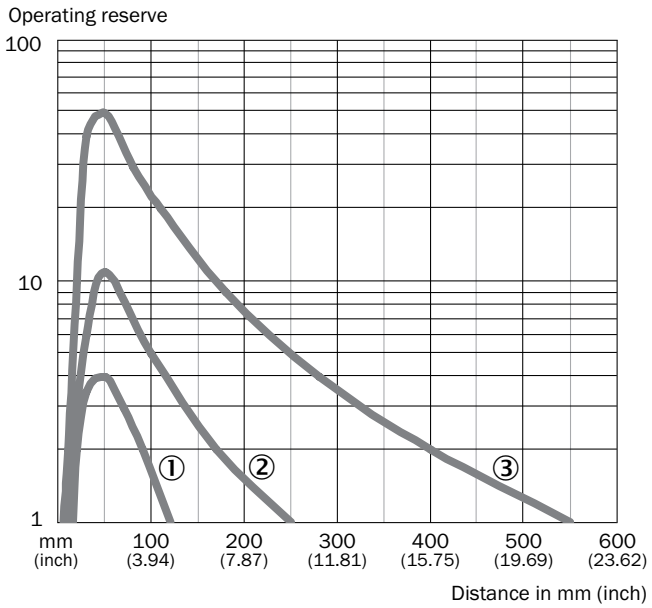

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRTE18S, 100 mm



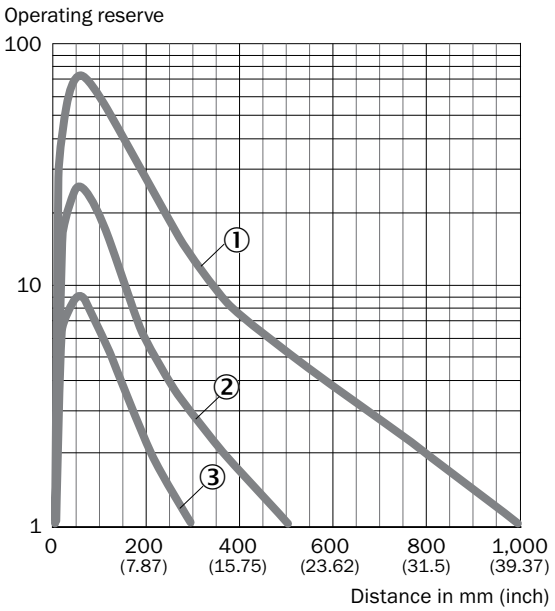

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRTE18S, 400 mm



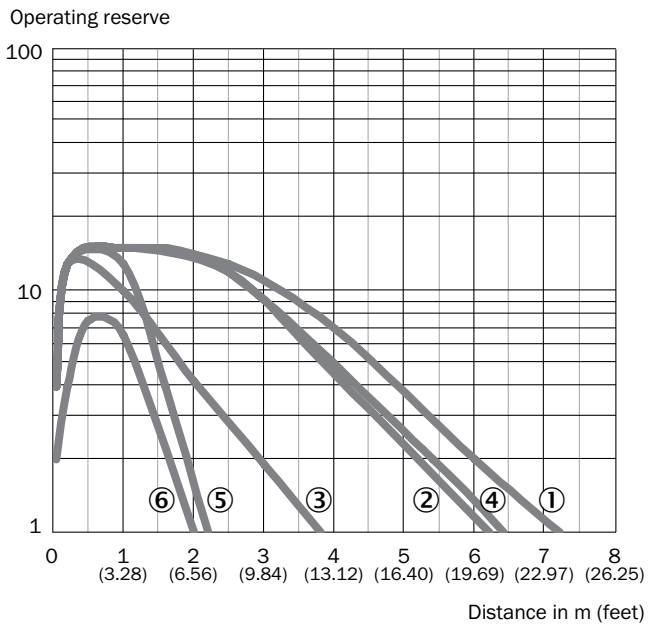

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

### GRTE18S, 800 mm

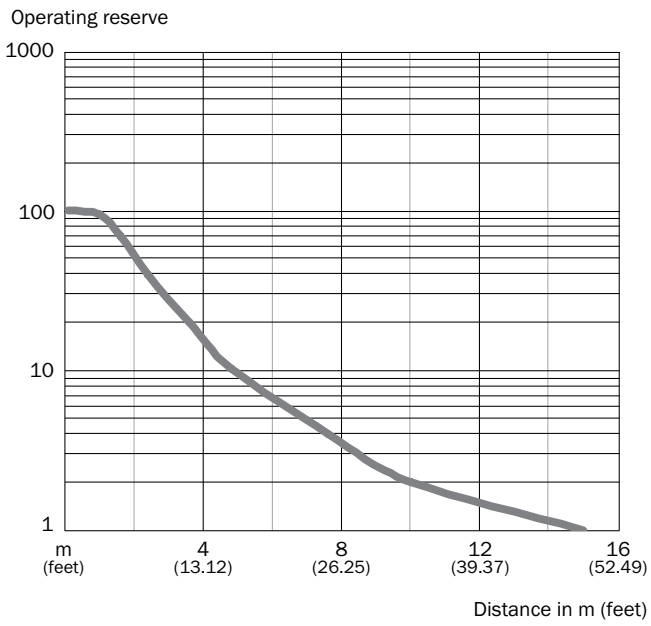



① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

GRL18S



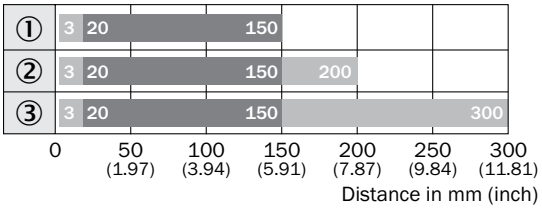

GRSE18S




① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

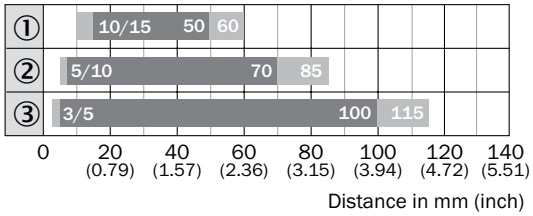
## Sensing range

GRTB18S



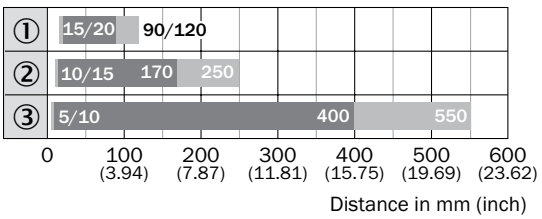

① Sensing range on black, 6% remission
② Sensing range on gray, 18 % remission
③ Sensing range on white, 90% remission

GRTE18S, 100 mm



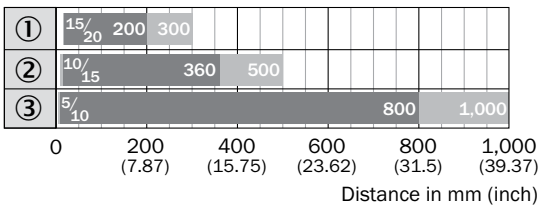

① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission

GRTE18S, 400 mm




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

GRTE18S, 800 mm

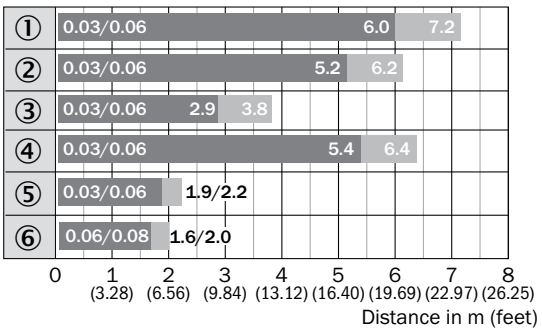



① Sensing range on black, 6% remission
② Sensing range on gray, 20 % remission
③ Sensing range on white, 90% remission



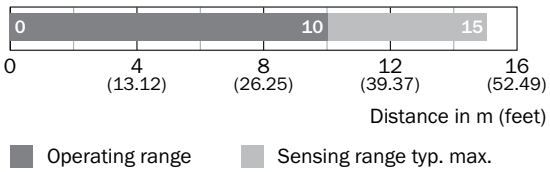
8015168/2016-02-22
Subject to change without notice

GRL18S



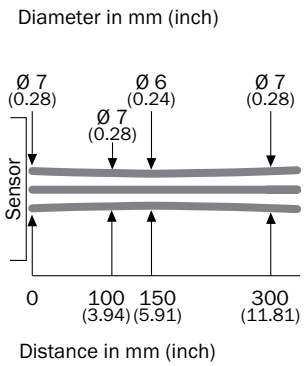

① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436

GRSE18S

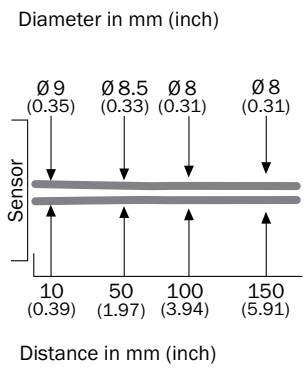



## Light spot diameter

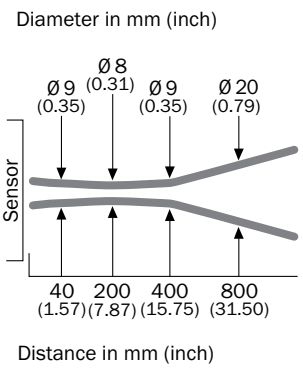
GRTB18S



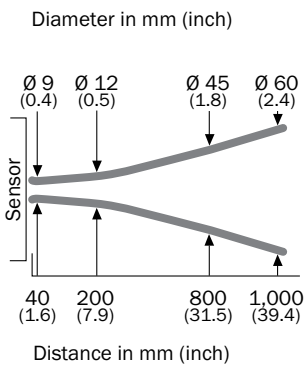

GRTE18S, 100 mm



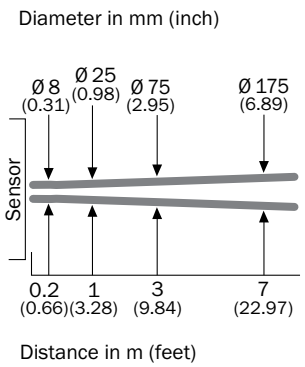

GRTE18S, 400 mm



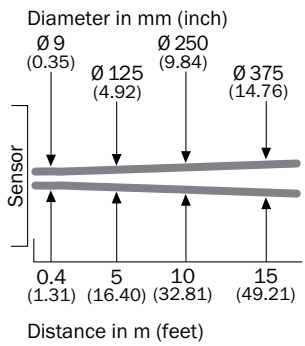

GRTE18S, 800 mm



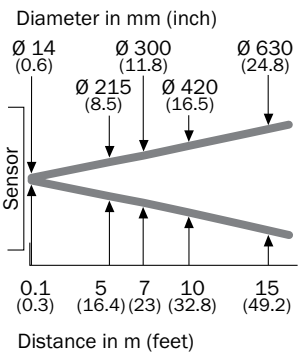

GRL18S




GRSE18S, red light

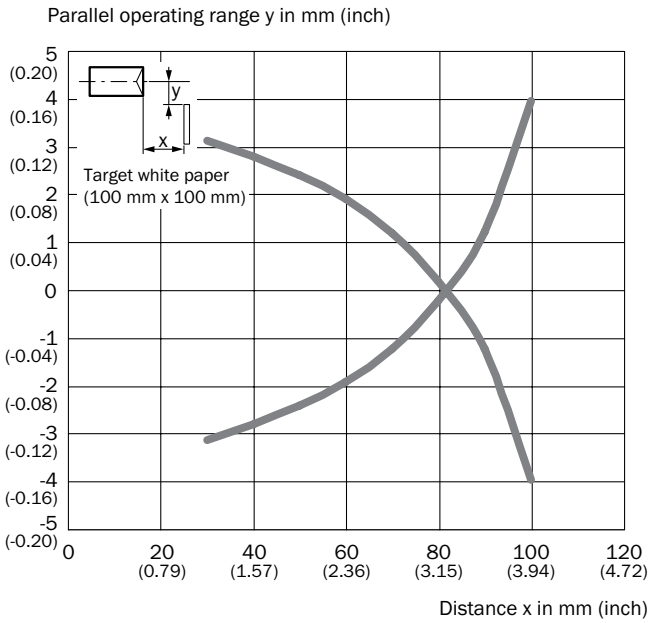



GRSE18S, infrared light

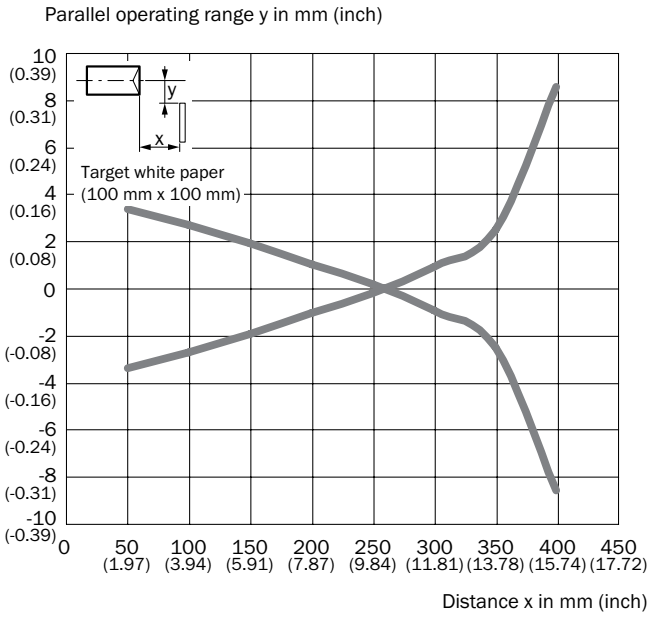


## Response curve

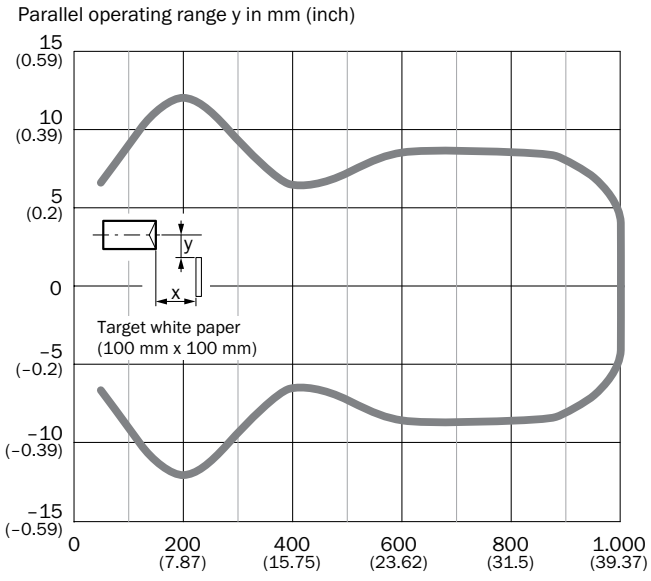
### GRTE18S, 100 mm



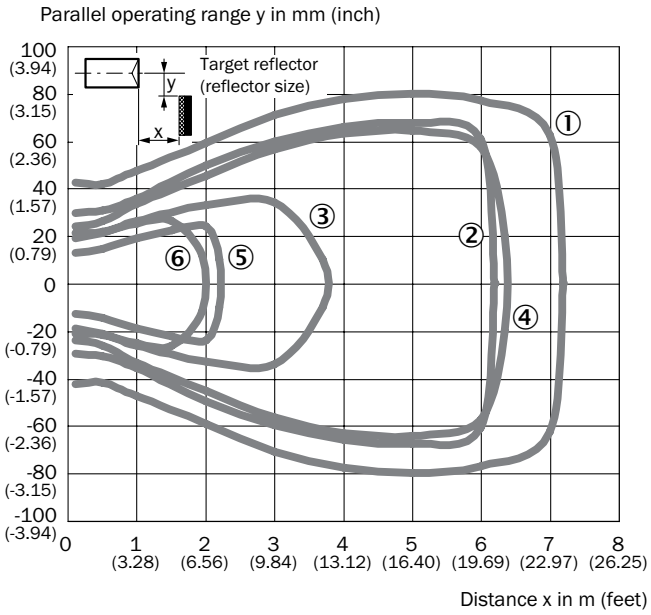

### GRTE18S, 400 mm




### GRTE18S, 800 mm




### GRL18S



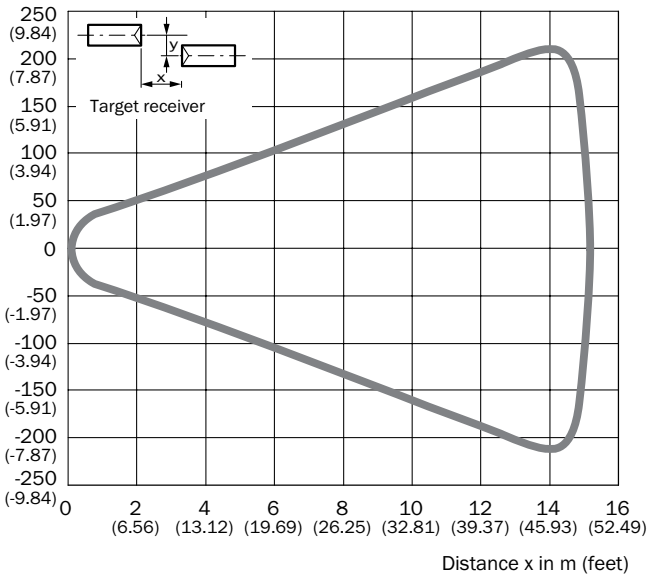

① Reflector type PL80A
② Reflector type PL40A
③ Reflector type PL20A
④ Reflector type P205
⑤ Reflector type PL22-2
⑥ Reflective tape REF-Plus 3436



8015168/2016-02-22
Subject to change without notice

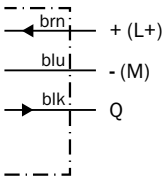
GRSE18S

Parallel operating range y in mm (inch)

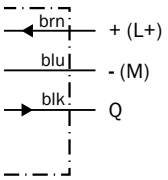



## Connection diagram

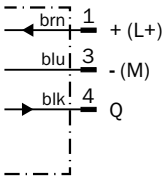
Cd-043



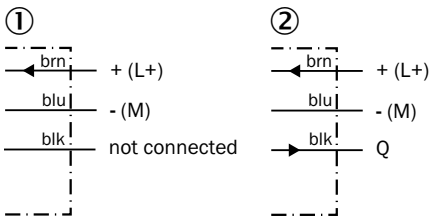

Cd-044




Cd-045

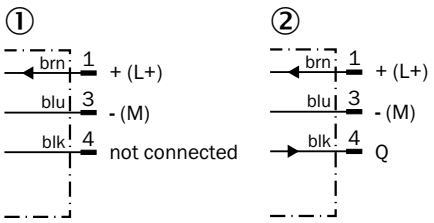



Cd-049



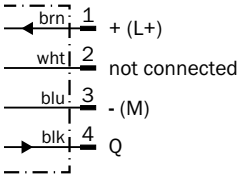

① Sender
② Receiver

Cd-051

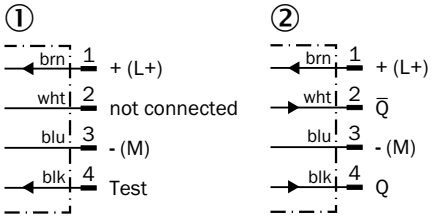



① Sender
② Receiver

Cd-066

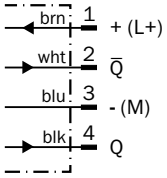


Cd-072

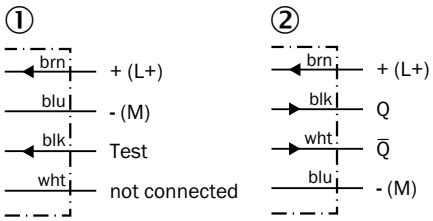



① Sender
② Receiver

Cd-084

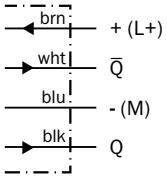



Cd-088

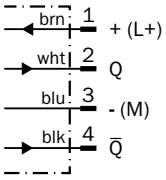



① Sender
② Receiver

Cd-094




Cd-101



## Accessories

### Mounting systems

Universal bar clamp systems

| | Material | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|
|  | Zinc diecast | Universal bar clamp for mounting bars with 12 mm diameter | BEF-KHS-KH3 | 5322626 | ● | ● | ● | ● |
|  | Zinc plated steel (sheet), Zinc die cast (clamping bracket) | Plate N06 for universal clamp bracket, M18 | BEF-KHS-N06 | 2051612 | ● | ● | ● | ● |
| | Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp) | Plate N06N for universal clamp bracket, M18 | BEF-KHS-N06N | 2051622 | ● | ● | ● | ● |
|  | Steel, zinc coated | Mounting bar, straight, 200 mm, steel | BEF-MS12G-A | 4056054 | ● | ● | ● | ● |
| | | Mounting bar, straight, 300 mm, steel | BEF-MS12G-B | 4056055 | ● | ● | ● | ● |
|  | | Mounting bar, L-shaped, 150 mm x 150 mm, steel | BEF-MS12L-A | 4056052 | ● | ● | ● | ● |
| | | Mounting bar, L-shaped, 250 x 250 mm, steel | BEF-MS12L-B | 4056053 | ● | ● | ● | ● |
|  | | Mounting bar, Z-shaped, 150 mm x 70 mm x 150 mm, steel | BEF-MS12Z-A | 4056056 | ● | ● | ● | ● |
| | | Mounting bar, Z-shaped, 150 mm x 70 mm x 250 mm, steel | BEF-MS12Z-B | 4056057 | ● | ● | ● | ● |
|  | Aluminum | Bar clamp for bar diameter of 12 mm (fixing the mounting rod) | BEF-RMC-D12 | 5321878 | ● | ● | ● | ● |

### Reflectors and optics

Masks

| | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|
|  | Front window protection designed for M18 cylindrical photoelectric sensors, nickel-plated brass, glass | BEF-M18-GW | 2075708 | ● | ● | ● | ● |

### Mounting systems

Mounting brackets and mounting plates

Mounting brackets

| | Material | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|
|  | Steel, zinc coated | Mounting plate for M18 sensors | BEF-WG-M18 | 5321870 | ● | ● | ● | ● |
| | Stainless steel | Mounting plate for M18 housing | BEF-WG-M18N | 5320948 | ● | ● | ● | ● |

| | Material | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|
|  | Steel, zinc coated | Mounting bracket, M18 thread | BEF-WN-M18 | 5308446 | ● | ● | ● | ● |
|  | Stainless steel | Mounting bracket for M18 housing | BEF-WN-M18N | 5320947 | ● | ● | ● | ● |

Other mounting accessories

Others

| | Brief description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|
|  | Mounting tool for “fully flush” variants | BEF-TO-GR18S | 4072132 | ● | ● | ● | ● |

Terminal and alignment brackets

Alignment brackets

| | Material | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|
|  | Plastic | Mounting bracket with ball-and-socket | BEF-WN-M18-ST02 | 5312973 | ● | ● | ● | ● |

Terminal brackets

| | Material | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|
|  | Plastic (PA12), glass-fiber reinforced | Clamping block for round sensors M18, without fixed stop | BEF-KH-M18 | 2051481 | ● | ● | ● | ● |
| | | Clamping block for round sensors M18, with fixed stop | BEF-KHF-M18 | 2051482 | ● | ● | ● | ● |
|  | Plastic (PA12) | Integrated adapter | BEF-WN-MH15-1 | 4039533 | ● | ● | ● | ● |
|  | Stainless steel | Mounting ring | BEF-WN-MH15-2V | 4053358 | ● | ● | ● | ● |

## Connection systems

### Plug connectors and cables

Connecting cables with female connector M12, 4-pin, PUR, halogen-free

| | Connection type head A | Connection type head B | Connecting cable | Cable material | Connector material | Locking nut material | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Female connector, M12, 4-pin, angled, unshielded | Cable, open conductor heads | 5 m, 4-wire | PUR, halogen-free | TPU | Zinc die-cast, nickel-plated | DOL-1204-W05MD | 6020399 | ● | ● | ● | ● |

Connecting cables with female connector M12, 4-pin, PUR, halogen-free, Oil / grease resistant

- **Cable material:** PUR, halogen-free
- **Connector material:** TPU
- **Locking nut material:** zinc die-cast, nickel-plated

| | Connection type head A | Connection type head B | Connecting cable | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | Female connector, M12, 4-pin, straight, unshielded | Cable, open conductor heads | 2 m, 4-wire | DOL-1204-G02MC | 6025900 | ● | ● | ● | ● |
| | | | 5 m, 4-wire | DOL-1204-G05MC | 6025901 | ● | ● | ● | ● |
| | | | 10 m, 4-wire | DOL-1204-G10MC | 6025902 | ● | ● | ● | ● |
|  | Female connector, M12, 4-pin, angled, with 3 LEDs, unshielded | Cable, open conductor heads | 2 m, 4-wire | DOL-1204-L02MC | 6039086 | ● | ● | ● | ● |
| | | | 5 m, 4-wire | DOL-1204-L05MC | 6020398 | ● | ● | ● | ● |
| | | | 10 m, 4-wire | DOL-1204-L10MC | 6039088 | ● | ● | ● | ● |
|  | Female connector, M12, 4-pin, angled, unshielded | Cable, open conductor heads | 2 m, 4-wire | DOL-1204-W02MC | 6025903 | ● | ● | ● | ● |
| | | | 5 m, 4-wire | DOL-1204-W05MC | 6025904 | ● | ● | ● | ● |
| | | | 10 m, 4-wire | DOL-1204-W10MC | 6025905 | ● | ● | ● | ● |

Connecting cables with female connector M12, 4-pin, PVC, chemical resistant

- **Cable material:** PVC
- **Connector material:** TPU
- **Locking nut material:** CuZn, nickel-plated brass

| | Connection type head A | Connection type head B | Connecting cable | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | Female connector, M12, 4-pin, straight, unshielded | Cable, open conductor heads | 2 m, 4-wire | DOL-1204-G02M | 6009382 | ● | ● | ● | ● |
| | | | 5 m, 4-wire | DOL-1204-G05M | 6009866 | ● | ● | ● | ● |
| | | | 10 m, 4-wire | DOL-1204-G10M | 6010543 | ● | ● | ● | ● |
| | | | 15 m, 4-wire | DOL-1204-G15M | 6010753 | ● | ● | ● | ● |
|  | Female connector, M12, 4-pin, angled, with 3 LEDs, unshielded | Cable, open conductor heads | 2 m, 4-wire | DOL-1204-L02M | 6027945 | ● | ● | ● | ● |
| | | | 5 m, 4-wire | DOL-1204-L05M | 6027944 | ● | ● | ● | ● |
| | | | 10 m, 4-wire | DOL-1204-L10M | 6027946 | ● | ● | ● | ● |
|  | Female connector, M12, 4-pin, angled, unshielded | Cable, open conductor heads | 2 m, 4-wire | DOL-1204-W02M | 6009383 | ● | ● | ● | ● |
| | | | 5 m, 4-wire | DOL-1204-W05M | 6009867 | ● | ● | ● | ● |
| | | | 10 m, 4-wire | DOL-1204-W10M | 6010541 | ● | ● | ● | ● |

Connecting cables with male connector M12, 4-pin, PUR, halogen-free, Oil / grease resistant

| | Connection type head A | Connection type head B | Connecting cable | Cable material | Connector material | Locking nut material | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Male connector, M12, 4-pin, straight, unshielded | Cable, open conductor heads | 2 m, 4-wire | PUR, halogen-free | TPU | Zinc die-cast, nickel-plated | STL-1204-G02MC | 6028077 | ● | ● | ● | ● |

Female connectors (ready to assemble) M12, 4-pin

- **Locking nut material:** CuZn

| | Connection type head A | Connection type head B | Connector material | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | Female connector, M12, 4-pin, straight, unshielded | Screw-type terminals | PA | DOS-1204-G | 6007302 | ● | ● | ● | ● |
|  | | | | DOS-1204-GX | 6026528 | ● | ● | ● | ● |
|  | Female connector, M12, 4-pin, angled, unshielded | Screw-type terminals | PBT | DOS-1204-W | 6007303 | ● | ● | ● | ● |
|  | | | | DOS-1204-WX | 6025570 | ● | ● | ● | ● |

Female connectors (ready to assemble) M12, 4-pin, hygienic systems

- **Locking nut material:** stainless steel (V4A/1.4404/316L)

| | Connection type head A | Connection type head B | Connector material | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | Female connector, M12, 4-pin, straight, unshielded | Screw-type terminals | PA | DOS-1204-GN | 6028357 | ● | ● | ● | ● |
|  | Female connector, M12, 4-pin, angled, unshielded | Screw-type terminals | PBT | DOS-1204-WN | 6028358 | ● | ● | ● | ● |

Male connectors (ready to assemble) M12, 4-pin

- **Locking nut material:** CuZn

| | Connection type head A | Connection type head B | Connector material | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | Male connector, M12, 4-pin, straight, unshielded | Screw-type terminals | PA | STE-1204-G | 6009932 | ● | ● | ● | ● |

| | Connection type head A | Connection type head B | Connector material | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | Male connector, M12, 4-pin, angled, unshielded | Screw-type terminals | PBT | STE-1204-W | 6022084 | ● | ● | ● | ● |

Male connectors (ready to assemble) M12, 4-pin, hygienic systems

- **Locking nut material:** stainless steel (V4A/1.4404)

| | Connection type head A | Connection type head B | Connector material | Description | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|---|
|  | Male connector, M12, 4-pin, straight, unshielded | Screw-type terminals | PA | – | STE-1204-GN | 6028359 | ● | ● | ● | ● |
|  | | | PBT | For 2 cable connections | STE-1204-TN | 6028360 | ● | ● | ● | ● |

## Reflectors and optics

Reflectors

Angular

| | Material | Description | Dimensions | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | PMMA/ABS | Rectangular, screw connection | 47 mm x 47 mm | P250 | 5304812 | – | – | ● | – |
|  | Plastic | Chemically resistant, screw connection | 47 mm x 47 mm | P250 CHEM | 5321097 | – | – | ● | – |
|  | PMMA/ABS | Rectangular, screw connection | 38 mm x 15 mm | PL20A | 1012719 | – | – | ● | – |
|  | | | 56 mm x 28 mm | PL30A | 1002314 | – | – | ● | – |
|  | | | 37 mm x 56 mm | PL40A | 1012720 | – | – | ● | – |
|  | | Rectangular, screw connection, wrench size 48 mm | – | PL50A | 1000132 | – | – | ● | – |
|  | | Rectangular, screw connection | 80 mm x 80 mm | PL80A | 1003865 | – | – | ● | – |

Fine triple reflectors

| | Material | Description | Dimensions | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | PMMA/ABS | Fine triple, screw connection, suitable for laser sensors | 47 mm x 47 mm | P250F | 5308843 | – | – | ● | – |
|  | | | 18 mm x 18 mm | PL10F | 5311210 | – | – | ● | – |
|  | Plastic | Fine triple, chemically resistant, screw connection | 18 mm x 18 mm | PL10F CHEM | 5321636 | – | – | ● | – |
|  | | | 20 mm x 32 mm | PL10FB-CHEM | 5327722 | – | – | ● | – |
|  | PMMA/ABS | Fine triple, screw connection, suitable for laser sensors | 38 mm x 16 mm | PL20F | 5308844 | – | – | ● | – |
|  | Plastic | Chemically resistant, screw connection, suitable for laser sensors | 16 mm x 38 mm | PL20F-CHEM | 5326089 | – | – | ● | – |
|  | PMMA/ABS | Fine triple, screw connection, suitable for laser sensors | 56 mm x 28 mm | PL30F | 5326523 | – | – | ● | – |
|  | | | 76 mm x 45 mm | PL81-1F | 5325060 | – | – | ● | – |

Reflective tape

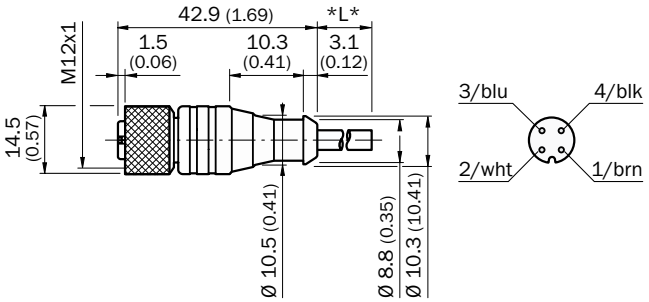
| | Description | Dimensions | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|
|  | Self-adhesive | 50 mm x 60 mm | REF-IRF-56 | 5314244 | – | – | ● | – |
|  | Self-adhesive, customizable length by roll | 5 cm x 22.8 m [1] | REF-PLUS-50-K | 4051185 | – | – | ● | – |
|  | Self-adhesive, roll | 50 mm x 22.8 m | REF-PLUS-R50 | 5319981 | – | – | ● | – |
|  | REF-Plus reflective tape, 100 pieces per pack, suitable for photoelectric retro-reflective sensors with polarisation filter | 34 mm x 36 mm | REF-Plus-3436 | 5321337 | – | – | ● | – |

Round

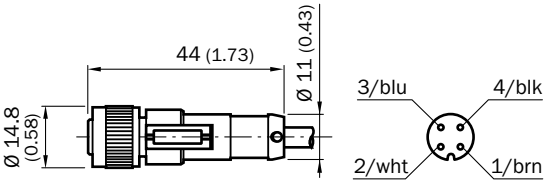
| | Material | Description | Diameter | Type | Part no. | GRTB18(S) | GRTE18(S) | GRL18(S)(G) | GRSE18(S) |
|---|---|---|---|---|---|---|---|---|---|
|  | PMMA/ABS | Fine triple, not self-adhesive, ø 10 mm, ø Reflexionsfläche 8 mm | 10 mm | PL8F | 5327934 | – | – | ● | – |
|  | | Round, screw connection | 80 mm | C110A | 5304549 | – | – | ● | – |
|  | | Round, self-adhesive | 22 mm | PL22-2 | 1003621 | – | – | ● | – |

## Dimensional drawings Connection systems

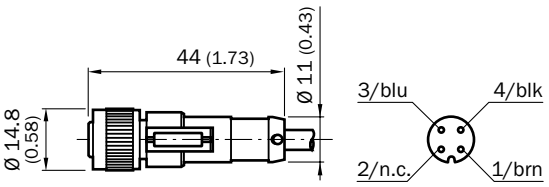
DOL-1204-G02M, DOL-1204-G05M,
DOL-1204-G10M, DOL-1204-G15M



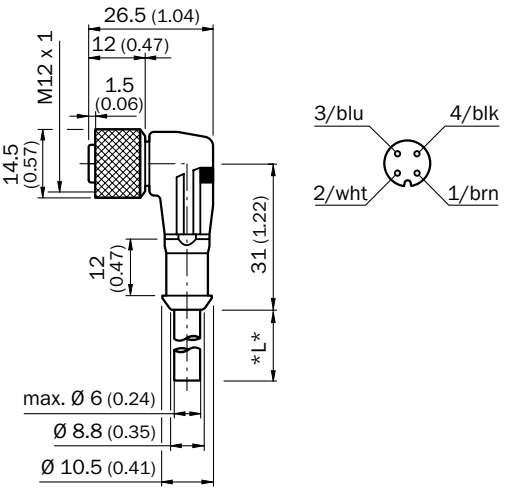

DOL-1204-G02MC, DOL-1204-G05MC
DOL-1204-G10MC



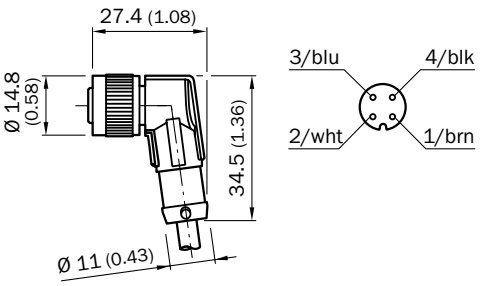

DOL-1204-G25MN



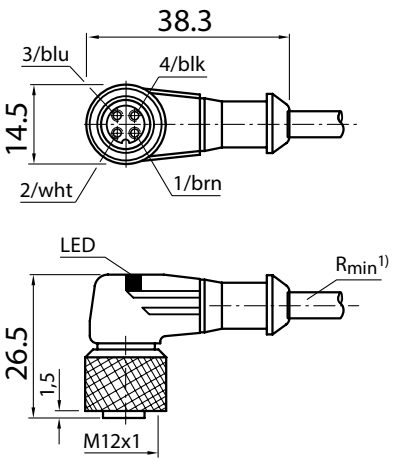

DOL-1204-L02M, DOL-1204-L05M
DOL-1204-L10M



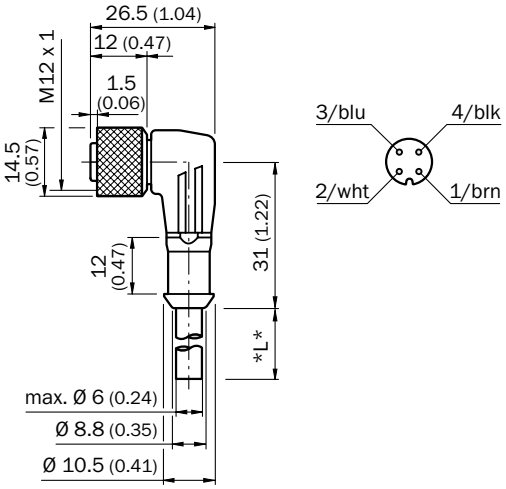

DOL-1204-W02MC, DOL-1204-W05MC
DOL-1204-W10MC



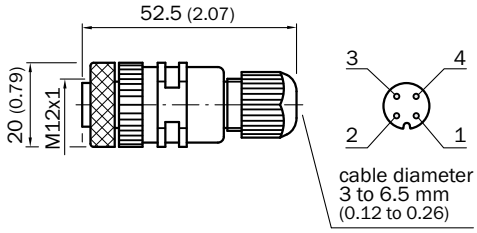
DOL-1204-L02MC, DOL-1204-L05MC
DOL-1204-L10MC



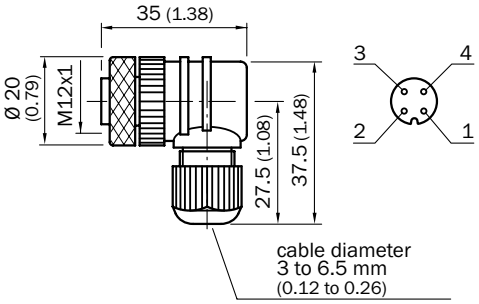

DOL-1204-W02M, DOL-1204-W05M
DOL-1204-W10M



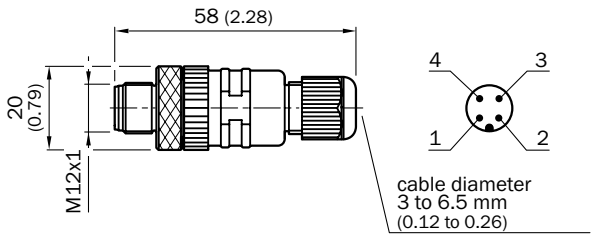

DOS-1204-G



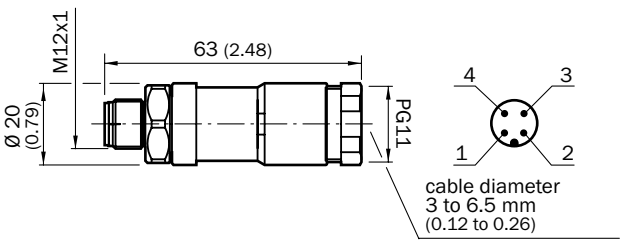

DOS-1204-W



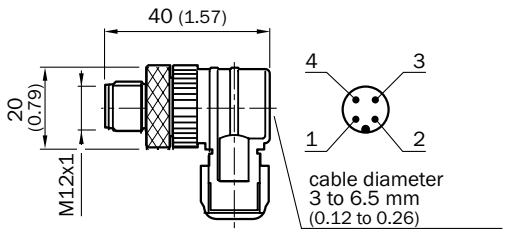

STE-1204-G



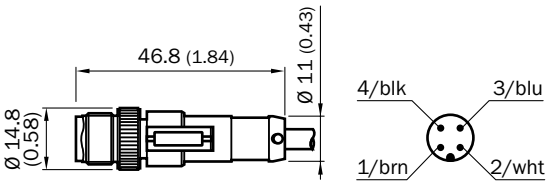

STE-1204-TN




STE-1204-W

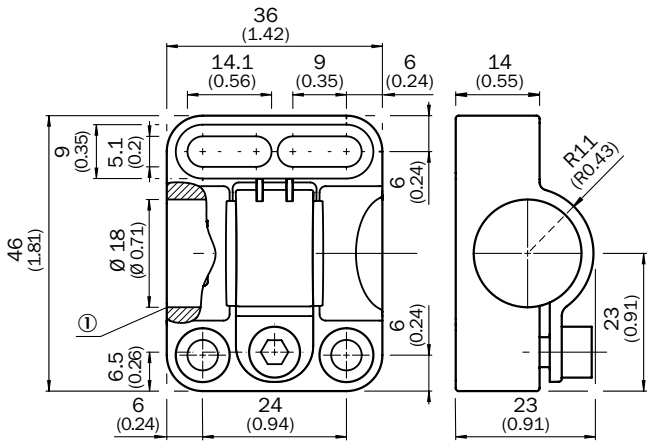



STL-1204-G02MC



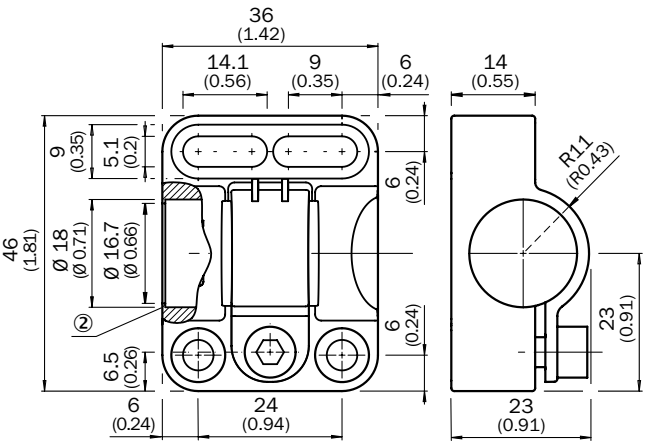
## Dimensional drawings Mounting systems

BEF-KH-M18



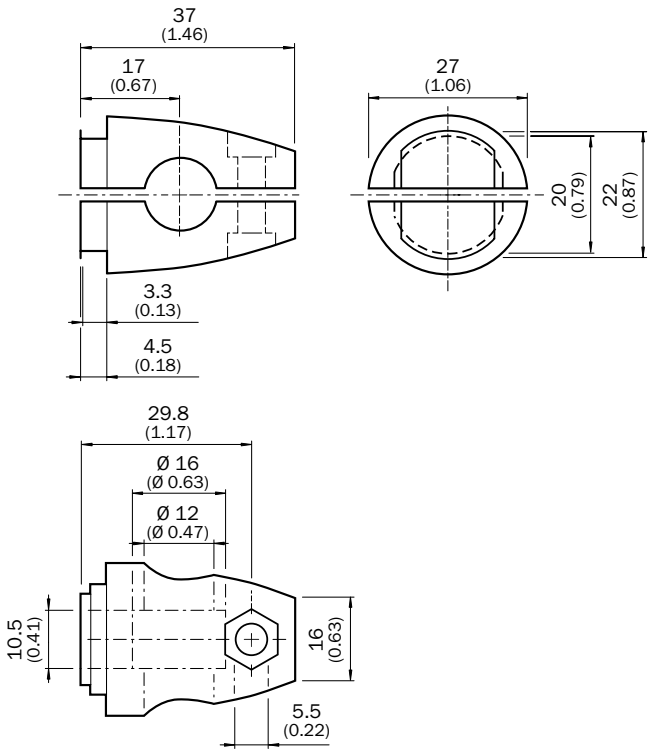

① Without fixed stop

BEF-KHF-M18

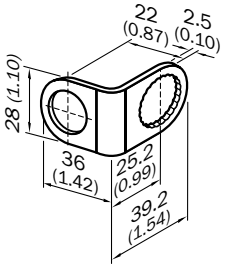



② With fixed stop

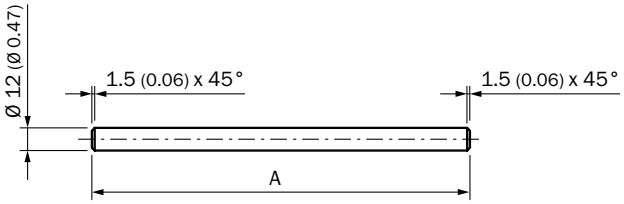
BEF-KHS-KH3




BEF-KHS-N06
BEF-KHS-N06N

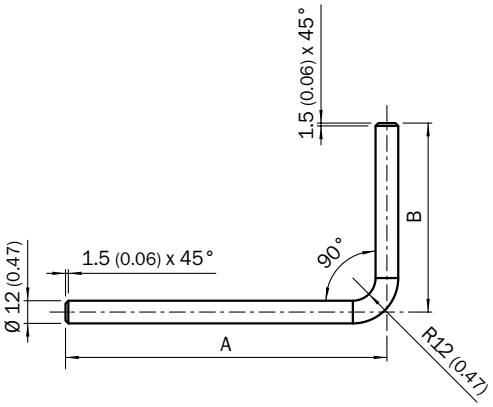


BEF-MS12G-A
BEF-MS12G-B



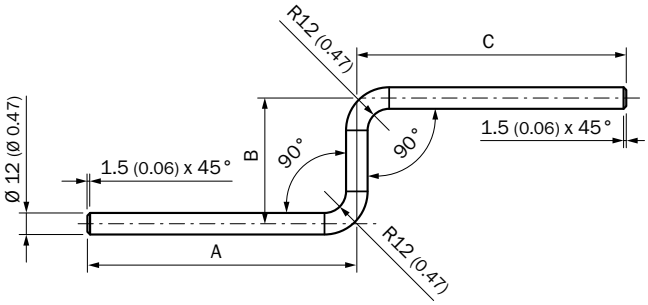

BEF-MS12G-(N)A: A = 200 mm
BEF-MS12G-(N)B: A = 300 mm

BEF-MS12L-A
BEF-MS12L-B



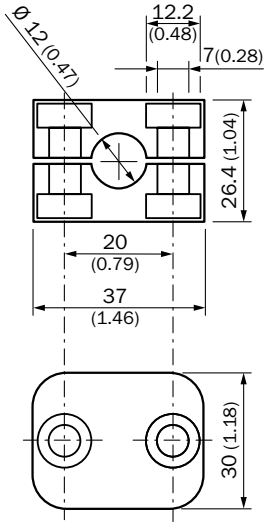

BEF-MS12L-(N)A: A = 200 mm, B = 150 mm
BEF-MS12L-(N)B: A = 250 mm, B = 250 mm

BEF-MS12Z-A
BEF-MS12Z-B

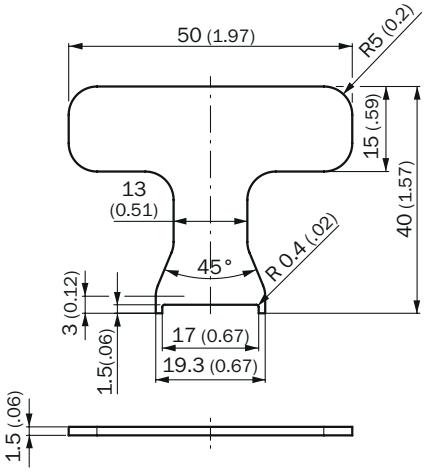



BEF-MS12Z-(N)A: A = 150 mm, B = 70 mm, C = 150 mm
BEF-MS12Z-(N)B: A = 150 mm, B = 70 mm, C = 250 mm

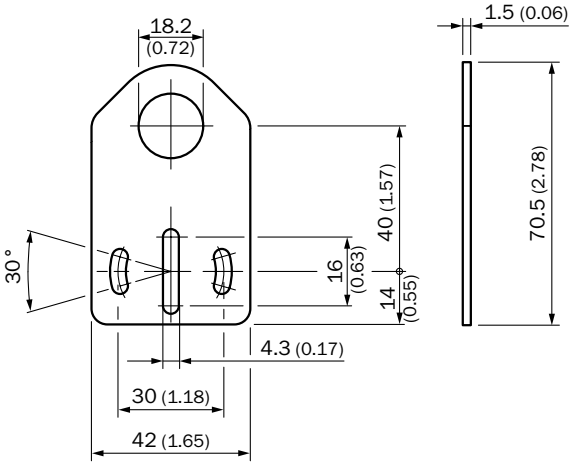
BEF-RMC-D12




BEF-TO-GR18S



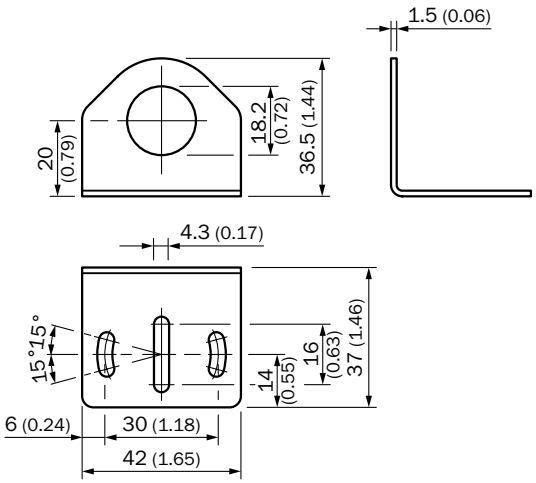

BEF-WG-M18
BEF-WG-M18N



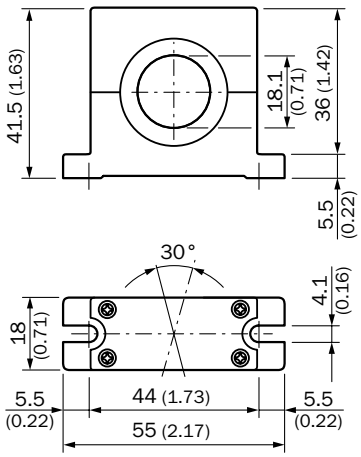


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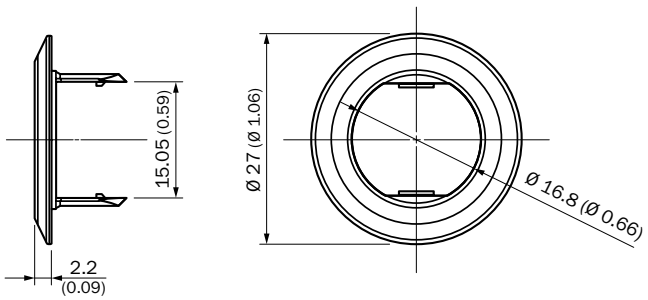
BEF-WN-M18
BEF-WN-M18N



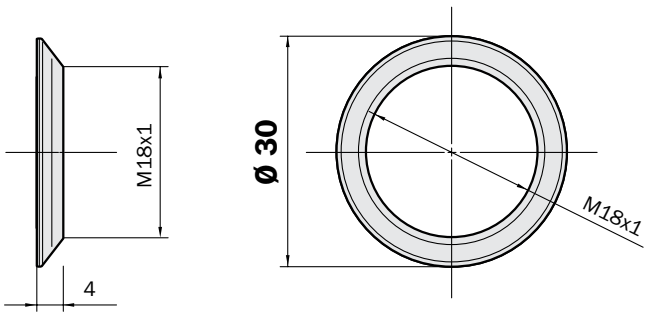

BEF-WN-M18-ST02




BEF-WN-MH15-1

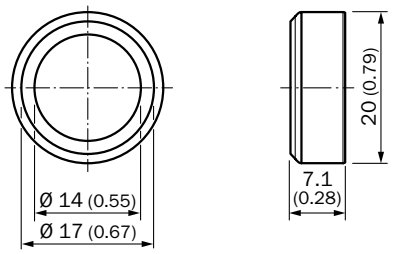



BEF-WN-MH15-2V

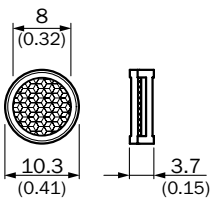



## Dimensional drawings Reflectors and optics

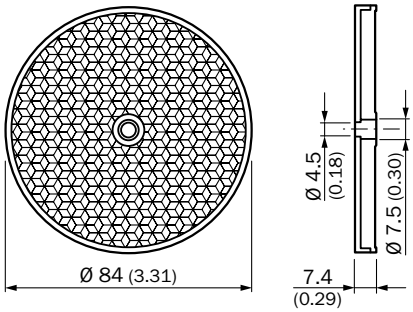
BEF-M18-GW



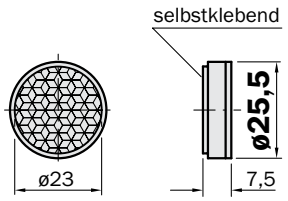

PL8F



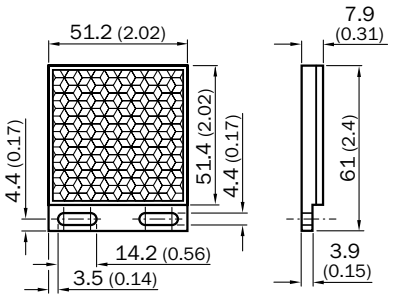

C110A



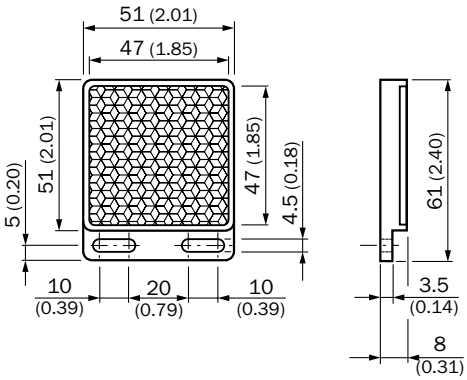

PL22-2



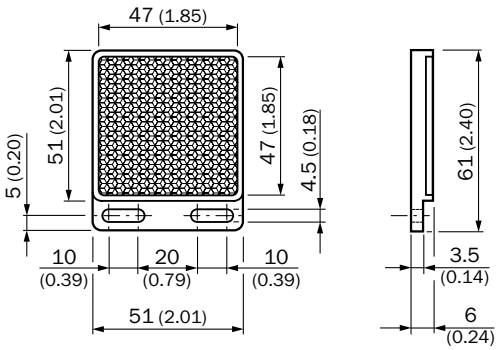
P250



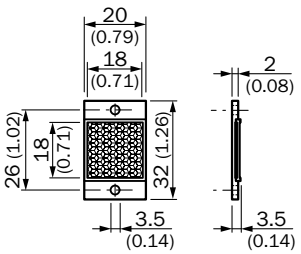

P250 CHEM



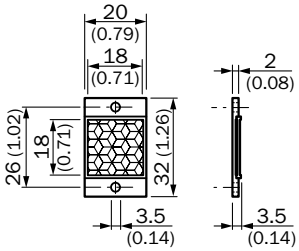

P250F



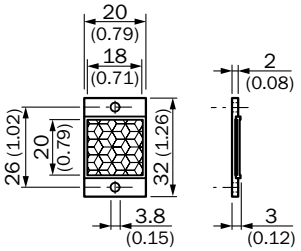

PL10F



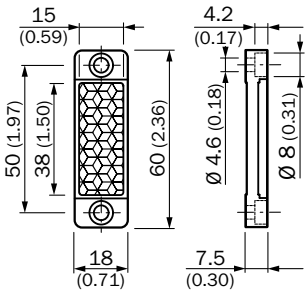

PL10F CHEM



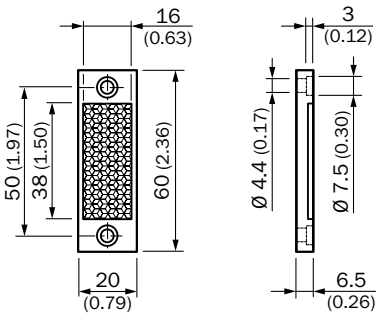

PL10FB-CHEM




PL20A



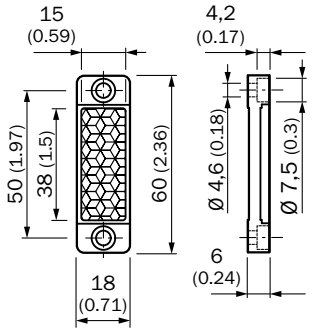

PL20F



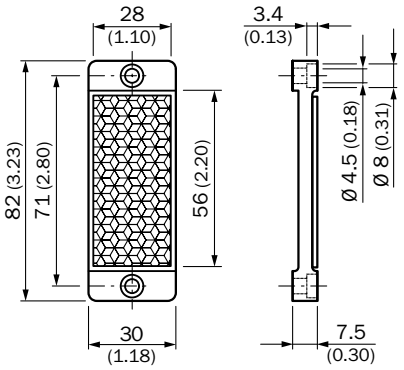



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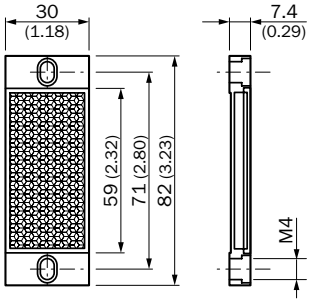
PL20F-CHEM



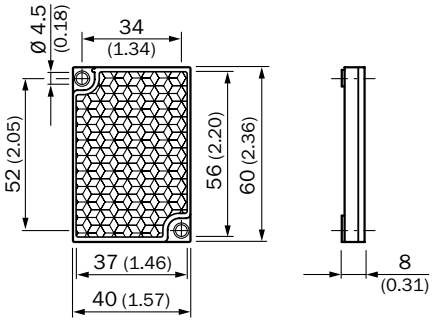

PL30A



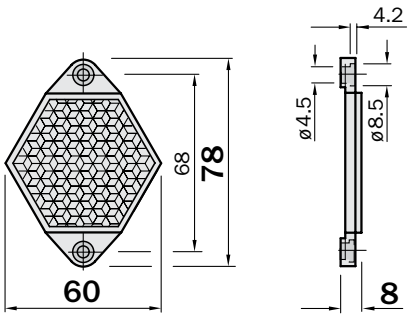

PL30F



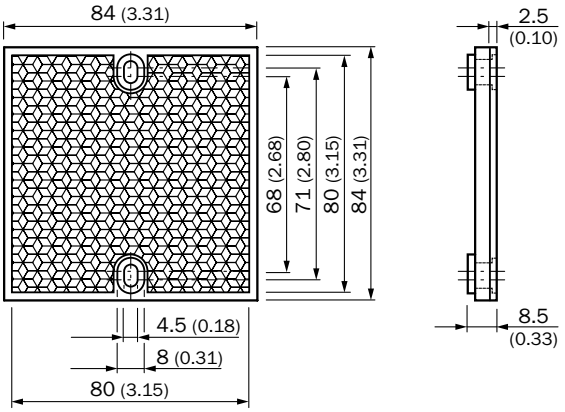

PL40A



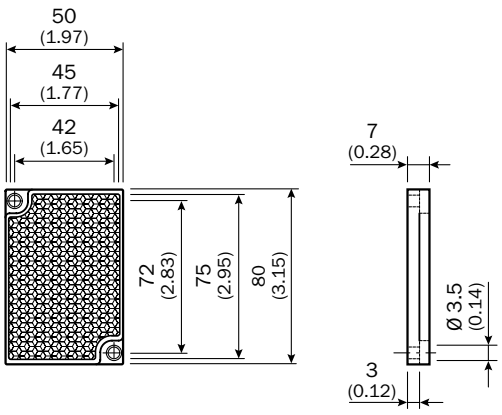

PL50A



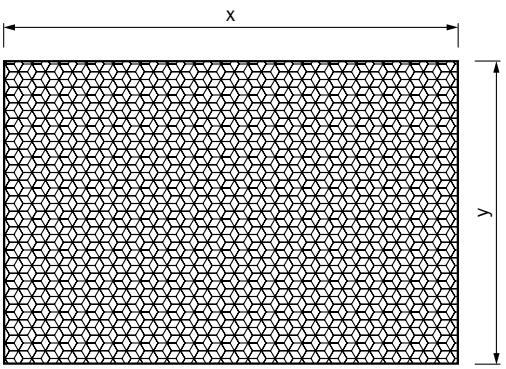

PL80A




PL81-1F

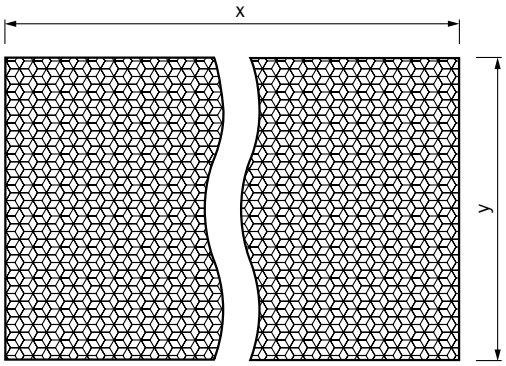



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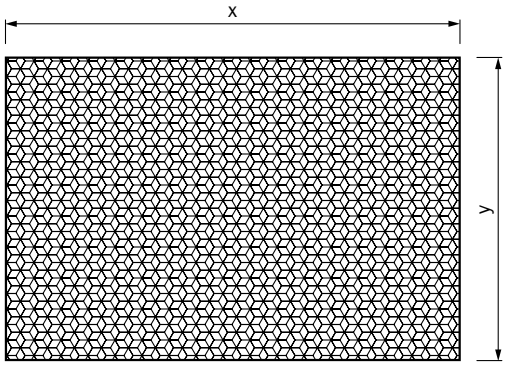

X = 50 mm
Y = 60 mm

REF-PLUS-R50




X = 50 mm
Y = 22.8 m

REF-Plus-3436

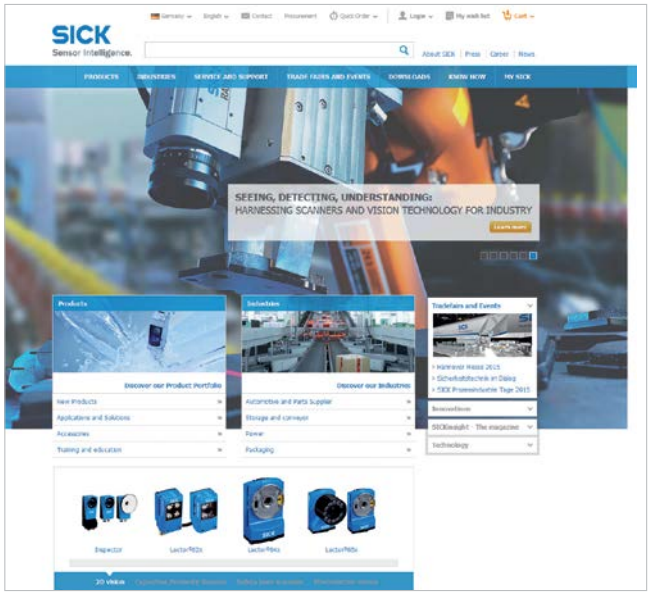



X = 34 mm
Y = 36 mm

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