

## PRK 2

## Miniature retro-reflective photoelectric sensor with polarization filter

2024/03/04 50112210

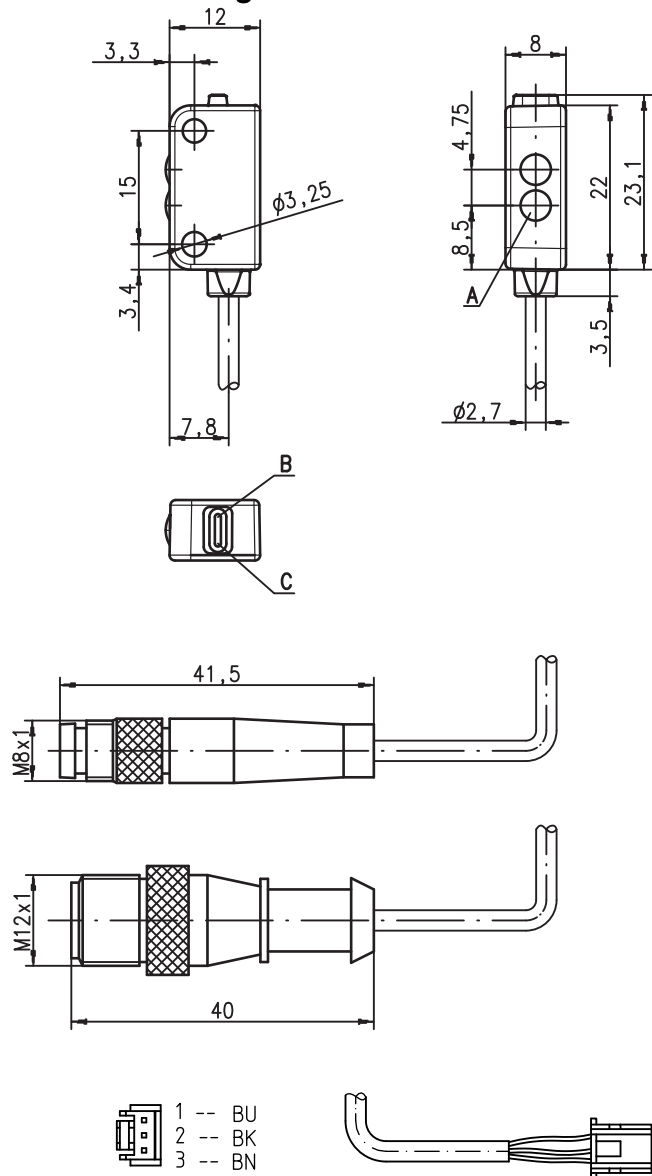


Figure can vary

0.07 ... 4m

- Miniature retro-reflective photoelectric sensor with visible red light
- Homogeneous, clearly visible light spot through pin-point LED
- Universal connection options
- Miniature construction with temperature-stable plastic housing with degree of protection IP 67 and 2 inlaid metal fastening sleeves for secure mounting

## Dimensioned drawings



- A Transmitter  
B Yellow indicator diode  
C Green indicator diode

All dimensions in millimeters

## Accessories:

(available separately)

- Mounting device BT 002 M.5 (50112206)
- Cable with M8 or M12 connector (K-D ...)
- Reflectors
- Reflective tapes

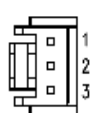
## Electrical connection

## Connector, 4-pin

|             |   |       |
|-------------|---|-------|
| 10-30V DC + | 1 | br/BN |
| OUT 2       | 2 | ws/WH |
| GND         | 3 | bl/BU |
| OUT 1       | 4 | sw/BK |

## Cable, 4 wires

|             |       |
|-------------|-------|
| 10-30V DC + | br/BN |
| OUT 2       | ws/WH |
| GND         | bl/BU |
| OUT 1       | sw/BK |



| Pin | Color | Signal         |
|-----|-------|----------------|
| 1   | BU    | GND            |
| 2   | BK    | OUT            |
| 3   | BN    | 10 - 30 V DC + |

### Technical data

#### Optical data

|  |   |
|--|---|
| Typ. operating range limit <sup>1)</sup> | 0.07 ... 4 m with TKS 100x100 reflector                   |
| Operating range <sup>2)</sup>            | See tables  |
| Light beam characteristic                | Divergent, typ. light spot Ø 5 mm at a distance of 200 mm |
| Light source <sup>3)</sup>               | LED (modulated light)                                     |
| Wavelength                               | 640nm (visible red light, polarized)                      |

#### Time behavior

|                     |         |
|---------------------|---------|
| Switching frequency | 700Hz   |
| Response time       | 0.72ms  |
| Repeatability       | 175µs   |
| Readiness delay     | ≤ 120ms |

#### Electrical data

|                                       |   |
|---------------------------------------|---|
| Operating voltage $U_B$ <sup>4)</sup> | 10 ... 30VDC (incl. residual ripple)  |
| Residual ripple                       | ≤ 10 % of $U_B$   |
| Open-circuit current                  | ≤ 20mA  |
| Switching output                      | OUT1 (pin 4): PNP light switching<br>OUT2 (pin 2): NPN light switching<br>OUT1 (Pin 4): PNP dark switching<br>OUT2 (Pin 2): NPN dark switching<br>Bipolar transistor with open collector,<br>Leakage current (OFF):<br>PNP=10µA, NPN=10µA,<br>Saturation voltage (ON, at 50 mA):<br>PNP=2V, NPN=2V<br>Max. 50mA (per output and total)<br>$C \leq 2,2\mu F$ |
| Output configuration                  | .../42<br>.../42D   |
| Output current                        |   |
| Load                                  |   |

#### Indicators

|                             |                                      |
|-----------------------------|--------------------------------------|
| Green LED continuous light  | Ready                                |
| Green LED flashing          | Output overloaded                    |
| Yellow LED continuous light | Light path free                      |
| Yellow LED, flashing        | Light path free, no function reserve |

#### Mechanical data

|                 |   |
|-----------------|---|
| Housing         | Plastic (TPE)   |
| Optics cover    | Plastic (PC)  |
| Fastening       | By means of 2 brass sleeves integrated in the housing   |
| Weight          | With 2 m cable: 50g<br>With 150mm cable and connector: 20g  |
| Connection type | 2m cable, PVC, 4-wire, wire cross section 4x0.14mm <sup>2</sup> ,<br>150mm cable with M8/M12 connector, 4-pin,<br>300mm cable and JST connector, 3-pin<br>500 mm cable and JST connector, 3-pin |

#### Environmental data

|                                   |  |
|-----------------------------------|--|
| Ambient temp. (operation/storage) | -30°C ... +55°C/-30°C ... +75°C                      |
| Protective circuit <sup>5)</sup>  | 1, 2, 3, 4   |
| VDE protection class              | III  |
| Degree of protection              | IP 67  |
| LED class                         | 1 (acc. to EN 60825-1)                               |
| Standards applied                 | IEC 60947-5-2  |
| Certifications                    | cURus (Recognised Component Mark for Canada and USA) |

- 1) Typ. operating range limit: max. attainable range without function reserve  
2) Operating range: recommended range with function reserve  
3) Average life expectancy 100,000h at an ambient temperature of 25°C  
4) For UL applications: use is permitted exclusively in Class 2 circuits according to NEC  
5) 1=overload protection, 2=polarity reversal protection, 3=short circuit protection for all transistor outputs,  
4=transient protection max. ± 50V

### Tables

| Reflectors |        |         | Operating range |
|------------|--------|---------|-----------------|
| 1          | TK(S)  | 100x100 | 0.07 ... 3.5m   |
| 2          | TK     | 40x60   | 0.07 ... 2.5m   |
| 3          | TK     | 20x40   | 0.02 ... 1.3m   |
| 4          | Film 4 | 50x50   | 0.12 ... 0.9m   |

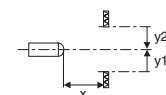
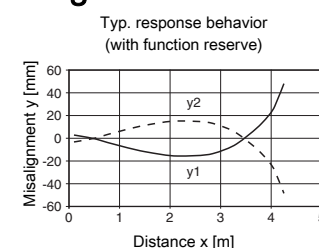
  

|   |      |     |     |     |   |
|---|------|-----|-----|-----|---|
| 1 | 0.07 |     |     | 3.5 | 4 |
| 2 | 0.07 |     | 2.5 | 2.9 |   |
| 3 | 0.02 | 1.3 | 1.5 |     |   |
| 4 | 0.12 | 0.9 | 1.1 |     |   |

□ Operating range [m]  
□ Typ. operating range limit [m]

TK ... = adhesive  
TKS ... = screw type

### Diagrams



### NOTES



#### Approved purpose

The retro-reflective photoelectric sensors are optoelectronic sensors for optical, contactless detection of objects. This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not intended as personnel protection.

## PRK 2

## Miniature retro-reflective photoelectric sensor with polarization filter

## Part number code

|   |   |   |   |   |   |   |   |  |  |  |  |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|--|--|--|--|---|---|---|---|---|---|---|---|
| P | R | K | 2 | / | 4 | 2 | D |  |  |  |  | , | 1 | 5 | 0 | - | S | 1 | 2 |
|---|---|---|---|---|---|---|---|--|--|--|--|---|---|---|---|---|---|---|---|

## Operating principle

|      |  |
|------|--|
| HRTR | Miniature diffuse sensor with background suppression, red light          |
| PRK  | Miniature retro-reflective photoelectric sensor with polarization filter |
| LSSR | Miniature throughbeam photoelectric sensor, red-light transmitter        |
| LSER | Miniature throughbeam photoelectric sensor, red-light receiver           |

## Series

|   |          |
|---|----------|
| 2 | 2 series |
|---|----------|

## Switching output

|     |  |
|-----|--|
| /42 | Bipolar transistor output open collector, OUT 1 (pin 4): PNP, OUT 2 (pin 2): NPN |
|-----|--|

## Switching output function

|     |                                      |
|-----|--------------------------------------|
| N/A | OUT 1 and OUT 2 both light switching |
| D   | OUT 1 and OUT 2 both dark switching  |

## Range (only with operating principle HRTR)

|      |                           |
|------|---------------------------|
| -15F | Maximum range set to 15mm |
| -30F | Maximum range set to 30mm |
| -50F | Maximum range set to 50mm |

## Electrical connection

|          |   |
|----------|---|
| N/A      | Cable, PVC, standard length 2000mm, 4-wire                |
| ,150-S8  | Cable, PVC, length 150mm with M8 connector, 4 pin, axial  |
| ,150-S12 | Cable, PVC, length 150mm with M12 connector, 4 pin, axial |
| ,300-JST | PVC cable, length 300 mm with JST connector, 3-pin        |
| ,500-JST | PVC cable, length 500 mm with JST connector, 3-pin        |

## Order guide

The sensors listed here are preferred types; current information at [www.leuze.com](http://www.leuze.com)

| Order code         | Part no. |
|--------------------|----------|
| PRK 2/42           | 50112136 |
| PRK 2/42, 150-S8   | 50112137 |
| PRK 2/42, 150-S12  | 50112138 |
| PRK 2/42D          | 50112139 |
| PRK 2/42D, 150-S8  | 50112140 |
| PRK 2/42D, 150-S12 | 50112141 |
| PRK 2/42, 300-JST  | 50142332 |
| PRK 2/42, 500-JST  | 50142333 |