

## Technical data sheet

### Polarized retro-reflective photoelectric sensor

Part no.: 50117927

PRK28/2N



For illustration purposes only

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## Technical data

### Basic data

|                     |                      |
|---------------------|----------------------|
| Series              | 28                   |
| Operating principle | Reflection principle |

### Optical data

|                          |                                                                           |
|--------------------------|---------------------------------------------------------------------------|
| Operating range          | 0.02 ... 4.5 m (guaranteed operating range), With reflector TK(S) 100x100 |
| Operating range limit    | 0.02 ... 6 m (typical operating range), With reflector TK(S) 100x100      |
| Light source             | LED, Red                                                                  |
| Wavelength               | 620 nm                                                                    |
| Transmitted-signal shape | Pulsed                                                                    |
| LED group                | Exempt group (in acc. with EN 62471)                                      |

### Electrical data

|                    |                              |
|--------------------|------------------------------|
| Protective circuit | Polarity reversal protection |
|                    | Short circuit protected      |

### Performance data

|                      |                                        |
|----------------------|----------------------------------------|
| Supply voltage $U_B$ | 10 ... 30 V, DC, Incl. residual ripple |
| Residual ripple      | 0 ... 15 %, From $U_B$                 |
| Open-circuit current | 0 ... 20 mA                            |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 2 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |                                               |
|-------------------------|-----------------------------------------------|
| Type                    | Digital switching output                      |
| Voltage type            | DC                                            |
| Switching current, max. | 100 mA                                        |
| Switching voltage       | high: $\geq(U_B - 2.5V)$<br>low: $\leq 2.5 V$ |

### Switching output 1

|                     |                           |
|---------------------|---------------------------|
| Assignment          | Connection 1, conductor 4 |
| Switching element   | Transistor, NPN           |
| Switching principle | Light switching           |

### Switching output 2

|                     |                           |
|---------------------|---------------------------|
| Assignment          | Connection 1, conductor 2 |
| Switching element   | Transistor, NPN           |
| Switching principle | Dark switching            |

### Time behavior

|                     |        |
|---------------------|--------|
| Switching frequency | 500 Hz |
| Response time       | 1 ms   |
| Readiness delay     | 300 ms |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

### Connection 1

|                      |                     |
|----------------------|---------------------|
| Function             | Signal OUT          |
|                      | Voltage supply      |
| Type of connection   | Cable               |
| Cable length         | 2,000 mm            |
| Sheathing material   | PUR                 |
| Cable color          | Black               |
| Number of conductors | 4 -wire             |
| Wire cross section   | 0.2 mm <sup>2</sup> |

### Mechanical data

|                                                |                           |
|------------------------------------------------|---------------------------|
| Dimension (W x H x L)                          | 15 mm x 46.5 mm x 31.8 mm |
| Thread size                                    | M18                       |
| Housing material                               | Plastic                   |
| Plastic housing                                | ABS                       |
| Lens cover material                            | Plastic                   |
| Net weight                                     | 75 g                      |
| Housing color                                  | Black                     |
|                                                | Red                       |
| Recommended tightening torque for M3 fastening | 0.9 N·m                   |

### Operation and display

|                 |            |
|-----------------|------------|
| Type of display | LED        |
| Number of LEDs  | 2 Piece(s) |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 60 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

### Certifications

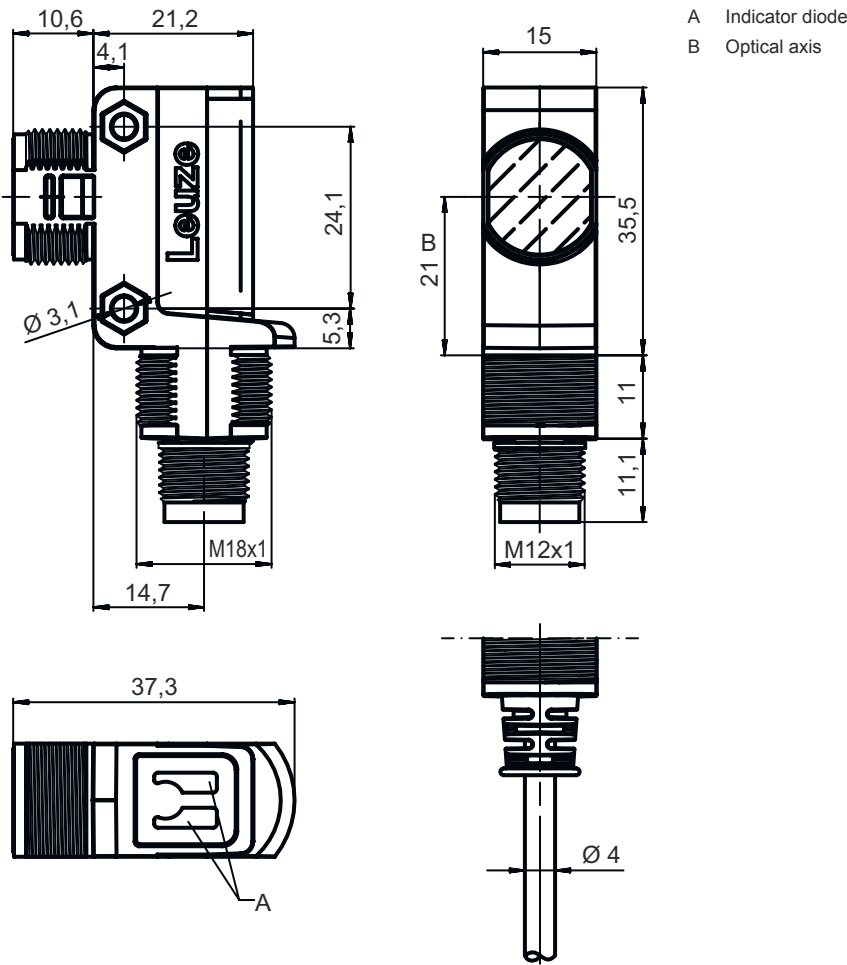
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270902 |
| ECLASS 8.0            | 27270902 |
| ECLASS 9.0            | 27270902 |
| ECLASS 10.0           | 27270902 |
| ECLASS 11.0           | 27270902 |
| ECLASS 12.0           | 27270902 |
| ECLASS 13.0           | 27270902 |
| ECLASS 14.0           | 27270902 |
| ECLASS 15.0           | 27270902 |
| ETIM 5.0              | EC002717 |
| ETIM 6.0              | EC002717 |
| ETIM 7.0              | EC002717 |
| ETIM 8.0              | EC002717 |
| ETIM 9.0              | EC002717 |
| ETIM 10.0             | EC002717 |

Dimensioned drawings

All dimensions in millimeters



Electrical connection

Connection 1

|                      |                |
|----------------------|----------------|
| Function             | Signal OUT     |
|                      | Voltage supply |
| Type of connection   | Cable          |
| Cable length         | 2,000 mm       |
| Sheathing material   | PUR            |
| Cable color          | Black          |
| Number of conductors | 4 -wire        |
| Wire cross section   | 0.2 mm²        |

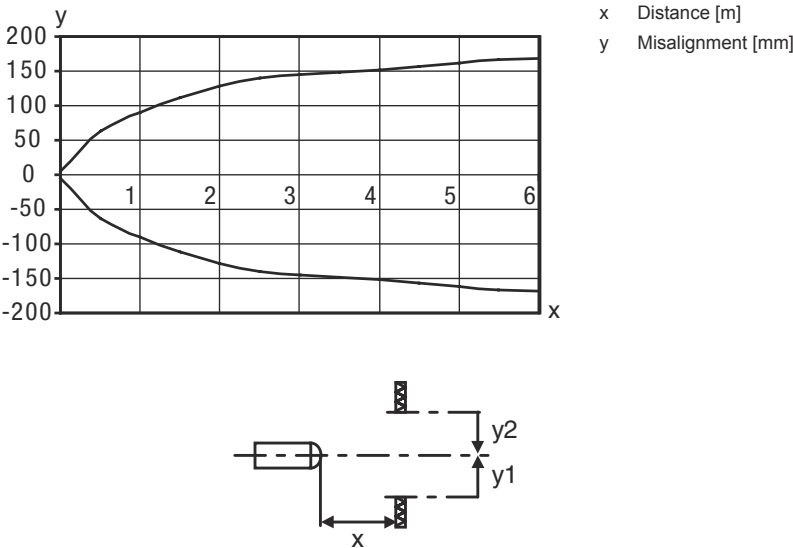
Conductor color

Conductor assignment

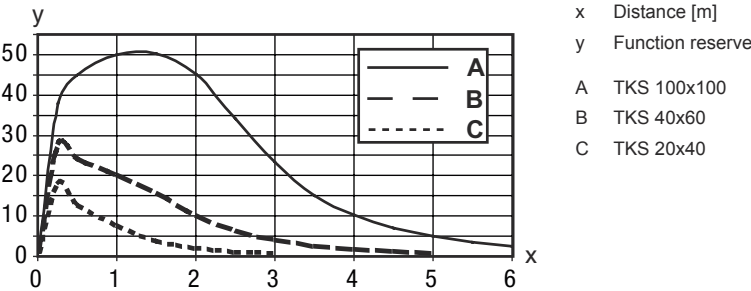
|       |       |
|-------|-------|
| Brown | V+    |
| White | OUT 2 |
| Blue  | GND   |
| Black | OUT 1 |

Diagrams

Typ. response behavior (TKS100x100)



Typ. function reserve



Operation and display

| LED | Display                  | Meaning               |
|-----|--------------------------|-----------------------|
| 1   | Green, continuous light  | Operational readiness |
| 2   | Yellow, continuous light | Light path free       |
|     | Yellow, flashing         | No function reserve   |

Reflectors & reflective tapes

| Part no. | Designation   | Operating range<br>Operating range<br>limit | Description                                                                                                                                             |
|----------|---------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50108300 | REF 4-A-50x50 | 0.08 ... 1.4 m<br>0.08 ... 2 m              | Design: Rectangular<br>Reflective surface: 50 mm x 50 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-adhesive |

## Reflectors & reflective tapes

|                                                                                     | Part no. | Designation | Operating range<br>Operating range<br>limit | Description                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|----------|-------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50003192 | TK 100x100  | 0.02 ... 4.5 m<br>0.02 ... 6 m              | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 96 mm x 96 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Rear side can be glued                    |
|    | 50003189 | TK 30x50    | 0.03 ... 1.9 m<br>0.03 ... 2.5 m            | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 29 mm x 45 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Rear side can be glued                    |
|    | 50024127 | TK 82.2     | 0.05 ... 3.6 m<br>0.05 ... 4.5 m            | Design: Round<br>Triple reflector size: 4 mm<br>Reflective surface, diameter: 79 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Rear side can be glued |
|   | 50022816 | TKS 100X100 | 0.02 ... 4.5 m<br>0.02 ... 6 m              | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 96 mm x 96 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive           |
|  | 50081283 | TKS 20X40   | 0.04 ... 1.6 m<br>0.04 ... 2.2 m            | Design: Rectangular<br>Triple reflector size: 2.3 mm<br>Reflective surface: 16 mm x 38 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive         |
|  | 50023525 | TKS 30X50   | 0.03 ... 1.9 m<br>0.03 ... 2.5 m            | Design: Rectangular<br>Triple reflector size: 3 mm<br>Reflective surface: 27 mm x 44 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive           |
|  | 50040820 | TKS 40X60   | 0.02 ... 3 m<br>0.02 ... 4 m                | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 37 mm x 56 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive           |

## Part number code

Part designation: **AAA28D-E.F/GG-HH**

|              |                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA28</b> | <b>Operating principle / construction</b><br>LS28: throughbeam photoelectric sensor transmitter<br>LE28: throughbeam photoelectric sensor receiver<br>ET28: energetic diffuse reflection sensor<br>FT28: diffuse reflection sensor with fading<br>PRK28: retro-reflective photoelectric sensor with polarization filter                                                                                |
| <b>d</b>     | <b>Light type</b><br>n/a: red light<br>I: infrared light                                                                                                                                                                                                                                                                                                                                               |
| <b>E</b>     | <b>Preset range (optional)</b><br>n/a: operating range acc. to data sheet<br>xxxF: Preset range [mm]                                                                                                                                                                                                                                                                                                   |
| <b>F</b>     | <b>Equipment</b><br>3: teach-in via button                                                                                                                                                                                                                                                                                                                                                             |
| <b>GG</b>    | <b>Switching output / function (OUT1 = pin 4, OUT2 = pin 2):</b><br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>9: deactivation input (deactivation with high signal)<br>D: Input for transmitter deactivation (deactivation with LOW signal)<br>X: pin not used |
| <b>HH</b>    | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)<br>200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)                                                                                                                                                                            |

### Note



↗ A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## Notes



### Observe intended use!



- ↗ This product is not a safety sensor and is not intended as personnel protection.
- ↗ The product may only be put into operation by competent persons.
- ↗ Only use the product in accordance with its intended use.

### For UL applications:



- ↗ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- ↗ These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/ CYJV7 or PVVA/PVVA7)

## Further information

- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C

## Accessories

### Mounting technology - Mounting brackets

|                                                                                  | Part no. | Designation   | Article             | Description                                                                                                                                                                                               |
|----------------------------------------------------------------------------------|----------|---------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50124651 | BT 205M-10SET | Mounting device set | Contains: 10x<br>Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Metal |

### Mounting technology - Rod mounts

|                                                                                   | Part no. | Designation  | Article         | Description                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------|----------|--------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50117255 | BTU 200M-D12 | Mounting system | Contains: 2x M3 x 16 screw, 2 M3 x 20 screws, 2x position washers<br>Design of mounting device: Mounting system<br>Fastening, at system: For 12 mm rod, Sheet-metal mounting<br>Mounting bracket, at device: Screw type, Suited for M3 screws<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal |

#### Note



↗ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.