



Figure can vary

**Part no.: 50137154**

**PRK3C/6G-M8**

**Polarized retro-reflective photoelectric sensor**



## Contents

- Technical data
- Reflectors & reflective tapes
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Accessories
- Notes

Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric

## Technical data

| <b>Basic data</b>                   |   |
|-------------------------------------|---|
| Series                              | 3C  |
| Operating principle                 | Reflection principle                                    |
| <b>Optical data</b>                 |   |
| Operating range                     | Guaranteed operating range                              |
| Operating range                     | 0.1 ... 5 m, With reflector TK(S) 100x100               |
| Operating range limit               | Typical operating range                                 |
| Operating range limit               | 0.1 ... 6 m, With reflector TK(S) 100x100               |
| Light source                        | LED, Red  |
| LED light wavelength                | 633 nm  |
| Transmitted-signal shape            | Pulsed  |
| LED protection class                | Exempt group (in acc. with EN 62471)                    |
| <b>Electrical data</b>              |   |
| Protective circuit                  | Polarity reversal protection<br>Short circuit protected |
| <b>Performance data</b>             |   |
| Supply voltage                      | 10 ... 30 V, DC, Incl. residual ripple                  |
| Residual ripple                     | 0 ... 15 %, From $U_B$                                  |
| Open-circuit current                | 0 ... 20 mA   |
| <b>Outputs</b>                      |   |
| Number of digital switching outputs | 2 Piece(s)  |
| <b>Switching outputs</b>            |   |
| Voltage type                        | DC  |
| Switching current, max.             | 100 mA  |
| Switching voltage                   | Low: $\leq 2V$<br>High: $\geq (U_B - 2V)$               |
| <b>Switching output 1</b>           |   |
| Assignment                          | Connection 1, pin 4                                     |
| Switching element                   | Transistor, Push-pull                                   |
| Switching principle                 | Light switching (PNP)/dark switching (NPN)              |
| <b>Switching output 2</b>           |   |
| Assignment                          | Connection 1, pin 2                                     |
| Switching element                   | Transistor, Push-pull                                   |
| Switching principle                 | Dark switching (PNP)/light switching (NPN)              |
| <b>Timing</b>                       |   |
| Switching frequency                 | 1,500 Hz  |
| Response time                       | 0.33 ms   |
| Readiness delay                     | 300 ms  |
| <b>Connection</b>                   |   |

## Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric

### Connection 1

|                    |                              |
|--------------------|------------------------------|
| Type of connection | Connector                    |
| Function           | Signal OUT<br>Voltage supply |
| Thread size        | M8                           |
| Type               | Male                         |
| Material           | Metal                        |
| No. of pins        | 4 -pin                       |

### Mechanical data

|                            |   |
|----------------------------|---|
| Dimension (W x H x L)      | 11.4 mm x 34.2 mm x 18.3 mm                           |
| Housing material           | Plastic, PC-ABS                                       |
| Lens cover material        | Plastic / PMMA  |
| Net weight                 | 10 g  |
| Housing color              | Red   |
| Type of fastening          | Via optional mounting device<br>Through-hole mounting |
| Compatibility of materials | ECOLAB  |

### 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<br>IP 69K |
| Protection class     | III             |
| Certifications       | c UL US         |
| Standards applied    | IEC 60947-5-2   |

### Classification

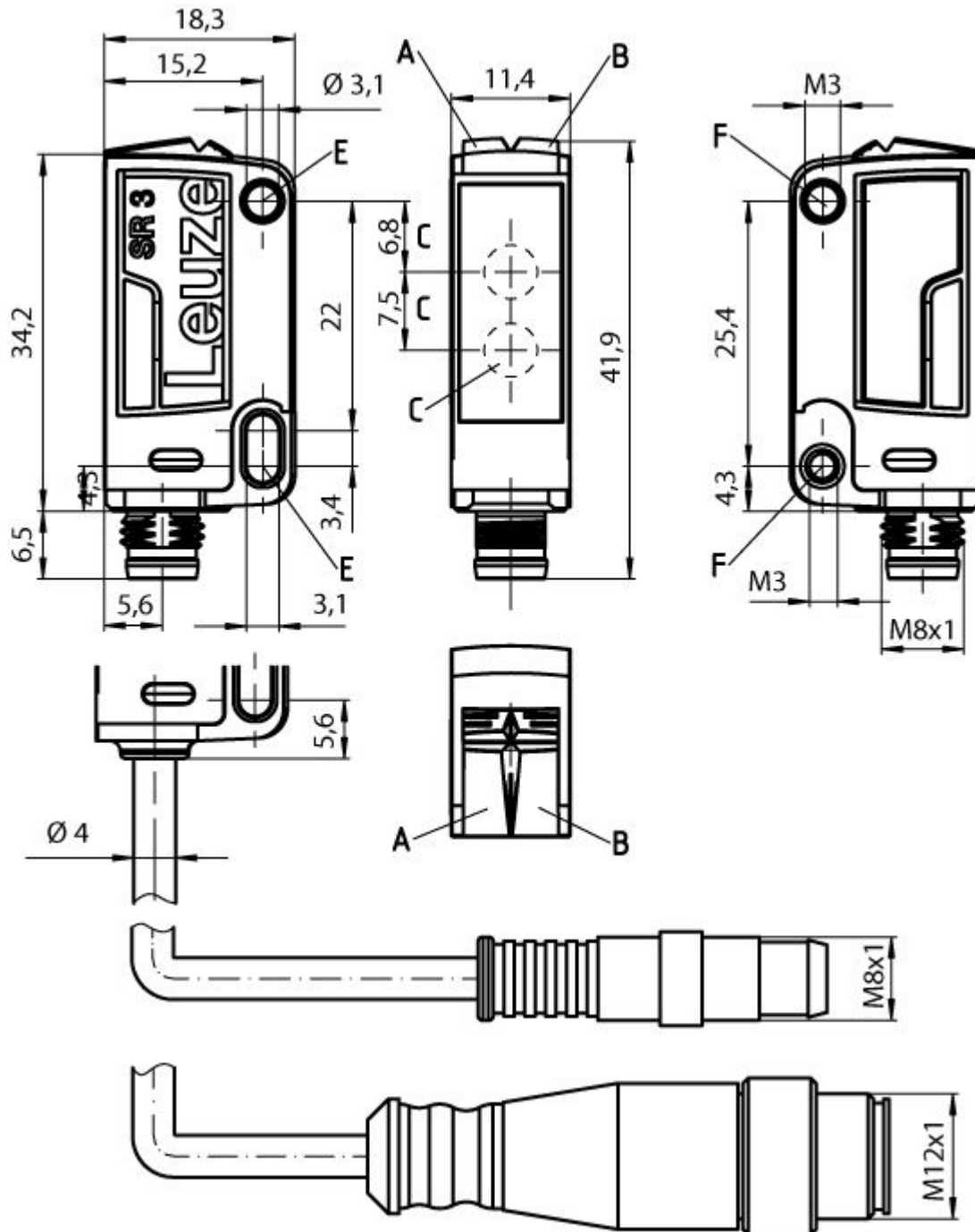
|            |          |
|------------|----------|
| eCl@ss 8.0 | 27270902 |
| eCl@ss 9.0 | 27270902 |
| ETIM 5.0   | EC002717 |

## Reflectors & reflective tapes

|   | Part no. | Designation   | Operating range/<br>Operating range limit | Description  |
|---|----------|---------------|---|--|
|    | 50108300 | REF 4-A-50x50 | 0.1 ... 1.2 m<br>0.1 ... 1.6 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  |
|    | 50003192 | TK 100x100    | 0.1 ... 5 m<br>0.1 ... 6 m                | Design: Rectangular<br>Reflective surface: 96 mm x 96 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Adhesive                          |
|    | 50003189 | TK 30x50      | 0.1 ... 1.2 m<br>0.1 ... 1.6 m            | Design: Rectangular<br>Reflective surface: 29 mm x 45 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Adhesive                          |
|   | 50024127 | TK 82.2       | 0.1 ... 1.2 m<br>0.1 ... 1.6 m            | Design: Round<br>Triple reflector size: 4 mm<br>Reflection surface diameter: 79 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive        |
|  | 50022816 | TKS 100X100   | 0.1 ... 5 m<br>0.1 ... 6 m                | Design: Rectangular<br>Reflective surface: 96 mm x 96 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |
|  | 50081283 | TKS 20X40     | 0.1 ... 1.5 m<br>0.1 ... 2 m              | Design: Rectangular<br>Reflective surface: 16 mm x 38 mm<br>Triple reflector size: 2.3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |
|  | 50023525 | TKS 30X50     | 0.1 ... 1.2 m<br>0.1 ... 1.6 m            | Design: Rectangular<br>Reflective surface: 27 mm x 44 mm<br>Triple reflector size: 3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |
|  | 50040820 | TKS 40X60     | 0.1 ... 3 m<br>0.1 ... 3.6 m              | Design: Rectangular<br>Reflective surface: 37 mm x 56 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |

## Dimensioned drawings

All dimensions in millimeters

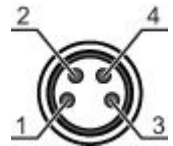


- A Green LED
- B Yellow LED
- C Optical axis
- E Mounting sleeve (standard)
- F Threaded sleeve (3C.B series)

## Electrical connection

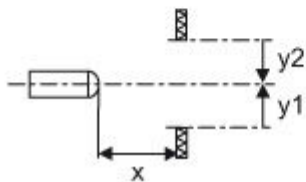
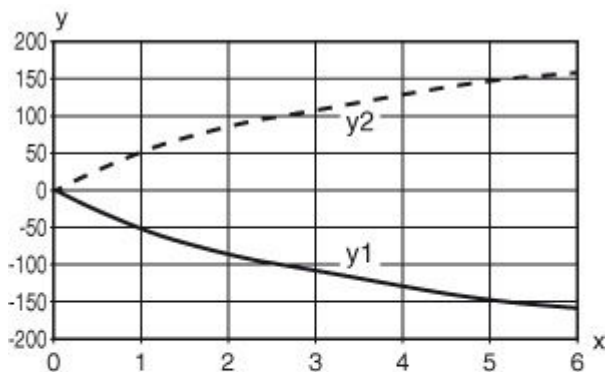
| Connection 1       |                              |
|--------------------|------------------------------|
| Type of connection | Connector                    |
| Function           | Signal OUT<br>Voltage supply |
| Thread size        | M8                           |
| Type               | Male                         |
| Material           | Metal                        |
| No. of pins        | 4 -pin                       |
| Encoding           |                              |

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | OUT 2          |
| 3   | GND            |
| 4   | OUT 1          |



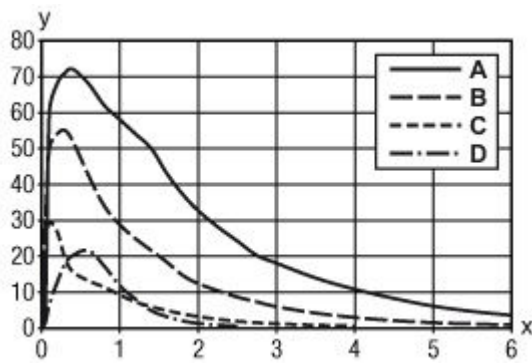
## Diagrams

Typ. response behavior



x Distance [m]  
y Misalignment [mm]

## Typ. function reserve



x Distance [m]  
y Function reserve  
A TKS 100x100  
B TKS 40x60  
C TKS 20x40  
D Film REF 4-A-50x50

## Operation and display

### LEDs

| LED | Display                  | Meaning                              |
|-----|--------------------------|--------------------------------------|
| 1   | Green, continuous light  | Ready                                |
| 2   | Yellow, continuous light | Light path free                      |
|     | Yellow, flashing         | Light path free, no function reserve |

## Part number code

Part designation: **AAA 3C d EE-f.GG H/i J-K**





|       |   |
|-------|---|
| AAA3C | <b>Operating principle / construction:</b><br>HT3C: diffuse reflection sensor with background suppression<br>LS3C: throughbeam photoelectric sensor transmitter<br>LE3C: throughbeam photoelectric sensor receiver<br>PRK3C: retro-reflective photoelectric sensor with polarization filter   |
| d     | <b>Light type:</b><br>n/a: red light<br>I: infrared light   |
| EE    | <b>Light source:</b><br>n/a: LED<br>L1: laser class 1<br>L2: laser class 2  |
| f     | <b>Pre-set range (optional):</b><br>n/a: operating range acc. to data sheet<br>XXXX: pre-set range [mm]   |
| GG    | <b>Equipment:</b><br>n/a: standard<br>A: autocollimation principle (single lens) for positioning tasks<br>B: housing model with two M3 threaded sleeves, brass<br>F: permanently set range<br>L: long light spot<br>S: small light spot<br>T: autocollimation principle (single lens) for highly transparent bottles without tracking<br>TT: autocollimation principle (single lens) for highly transparent bottles with tracking<br>V: V-optics<br>XL: extra long light spot |

## Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric

|   |  |
|---|--|
| H | <b>Operating range adjustment:</b><br>n/a with HT: range adjustable via 8-turn potentiometer<br>n/a with retro-reflective photoelectric sensors (PRK): operating range not adjustable<br>1: 270° potentiometer<br>3: teach-in via button<br>6: auto-teach  |
| i | <b>Switching output/function OUT 1/IN: Pin 4 or black conductor:</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>6: push-pull switching output, PNP light switching, NPN dark switching<br>G: push-pull switching output, PNP dark switching, NPN light switching<br>L: IO-Link<br>8: activation input (activation with high signal)<br>X: pin not used   |
| J | <b>Switching output / function OUT 2/IN: pin 2 or white conductor:</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>6: push-pull switching output, PNP light switching, NPN dark switching<br>G: push-pull switching output, PNP dark switching, NPN light switching<br>W: warning output<br>X: not connected (n. c.)<br>8: activation input (activation with high signal)<br>9: deactivation input (deactivation with high signal)<br>T: teach-in via cable |
| K | <b>Electrical connection:</b><br>n/a: cable, PVC, standard length 2000 mm, 4-wire<br>5000: cable, PVC, standard length 5000 mm, 4-wire<br>M8: M8 connector, 4-pin (plug)<br>M8.3: M8 connector, 3-pin (plug)<br>200-M8: cable, PVC, length 200 mm with M8 connector, 4-pin, axial (plug)<br>200-M8.3: cable, PVC, length 200 mm with M8 connector, 3-pin, axial (plug)<br>200-M12: cable, PVC, length 200 mm with M12 connector, 4-pin, axial (plug)   |









## Accessories

### Connection technology - Connection cables



|   | Part no. | Designation       | Article          | Description  |
|---|----------|-------------------|------------------|--|
|  | 50106152 | K-D M8A-4P-2m-FAB | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: FAB  |
|  | 50106153 | K-D M8A-4P-5m-FAB | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: FAB  |
|  | 50106154 | K-D M8W-4P-2m-FAB | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: FAB |
|  | 50106155 | K-D M8W-4P-5m-FAB | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: FAB |



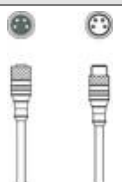
# Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric

|   | Part no. | Designation       | Article          | Description   |
|---|----------|-------------------|------------------|---|
|    | 50130854 | KD U-M8-4A-P1-020 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PUR   |
|    | 50130856 | KD U-M8-4A-P1-050 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR   |
|    | 50130857 | KD U-M8-4A-P1-100 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 10,000 mm<br>Sheathing material: PUR  |
|   | 50130848 | KD U-M8-4A-V1-020 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PVC   |
|  | 50130850 | KD U-M8-4A-V1-050 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC   |
|  | 50130851 | KD U-M8-4A-V1-100 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 10,000 mm<br>Sheathing material: PVC  |
|  | 50130873 | KD U-M8-4W-P1-020 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PUR  |
|  | 50130875 | KD U-M8-4W-P1-050 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR  |
|  | 50130876 | KD U-M8-4W-P1-100 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 10,000 mm<br>Sheathing material: PUR |
|  | 50130869 | KD U-M8-4W-V1-020 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PVC  |






## Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric

|   | Part no. | Designation       | Article          | Description   |
|---|----------|-------------------|------------------|---|
|  | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC  |
|  | 50130872 | KD U-M8-4W-V1-100 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 10,000 mm<br>Sheathing material: PVC |

## Connection technology - Interconnection cables





|   | Part no. | Designation              | Article               | Description   |
|---|----------|--------------------------|-----------------------|---|
|  | 50130916 | KDS U-M8-4A-M8-4A-P1-020 | Interconnection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connection 2: Connector, M8, Axial, Male, 4 -pin<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PUR |

## Mounting technology - Mounting brackets





|   | Part no. | Designation   | Article             | Description   |
|---|----------|---------------|---------------------|---|
|  | 50118542 | BT 200M.5     | Mounting bracket    | 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: Adjustable<br>Material: Stainless steel   |
|  | 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 |
|  | 50060511 | BT 3          | Mounting device     | 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                  |
|  | 50105585 | BT 3.1        | Mounting strap set  | Contains: 10x<br>Design of mounting device: Retaining clip<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Metal |
|  | 50105546 | BT 3B         | Mounting device     | 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                  |

Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric




## Mounting technology - Rod mounts

|  | Part no. | Designation    | Article         | Description   |
|--|----------|----------------|-----------------|---|
|   | 50117256 | BTU 200M-D10   | Mounting system | Contains: 2x M3 x 18 screw, 2x position washers<br>Design of mounting device: Mounting system<br>Fastening, at system: For 10 mm rod, Sheet-metal mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal         |
|   | 50117255 | BTU 200M-D12   | Mounting system | Contains: 2x M3 x 18 screw, 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<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal         |
|   | 50117254 | BTU 200M-D14   | Mounting system | Contains: 2x M3 x 18 screw, 2x position washers<br>Design of mounting device: Mounting system<br>Fastening, at system: For 14 mm rod, Sheet-metal mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal         |
|  | 50120426 | BTU 200M.5-D12 | Mounting system | Contains: 2x M3 x 18 screw, 2x M3 mounting nut, 2x position washers<br>Design of mounting device: Mounting system<br>Fastening, at system: For 12 mm rod<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Turning, 360°, Clampable, Adjustable<br>Material: Stainless steel |


## Standard reflectors

|   | Part no. | Designation | Article   | Description  |
|---|----------|-------------|-----------|--|
|  | 50003192 | TK 100x100  | Reflector | Design: Rectangular<br>Reflective surface: 96 mm x 96 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Adhesive                        |
|  | 50003189 | TK 30x50    | Reflector | Design: Rectangular<br>Reflective surface: 29 mm x 45 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Adhesive                        |
|  | 50024127 | TK 82.2     | Reflector | Design: Round<br>Triple reflector size: 4 mm<br>Reflection surface diameter: 79 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive      |
|  | 50022816 | TKS 100X100 | Reflector | Design: Rectangular<br>Reflective surface: 96 mm x 96 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |

## Part no.: 50137154 – PRK3C/6G-M8 – Polarized retro-reflective photoelectric

|   | Part no. | Designation | Article   | Description  |
|---|----------|-------------|-----------|--|
|  | 50081283 | TKS 20X40   | Reflector | Design: Rectangular<br>Reflective surface: 16 mm x 38 mm<br>Triple reflector size: 2.3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |
|  | 50023525 | TKS 30X50   | Reflector | Design: Rectangular<br>Reflective surface: 27 mm x 44 mm<br>Triple reflector size: 3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |
|  | 50040820 | TKS 40X60   | Reflector | Design: Rectangular<br>Reflective surface: 37 mm x 56 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |

## Reflective tapes for standard applications

|   | Part no. | Designation   | Article         | Description   |
|---|----------|---------------|-----------------|---|
|  | 50108300 | REF 4-A-50x50 | Reflective tape | Design: Rectangular<br>Reflective surface: 50 mm x 50 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-adhesive |

## 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)

- Light source: Average life expectancy 100,000 h at an ambient temperature of 25 °C
- Response time: For short decay times, an ohmic load of approx. 5 kOhm is recommended
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C
- The push-pull switching outputs must not be connected in parallel.