

## Technical data sheet

### Polarized retro-reflective photoelectric

Part no.: 50137161

PRK3C.B1/6G-M8



Figure can vary

#### Contents

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



## Technical data

### Basic data

|                     |                      |
|---------------------|----------------------|
| Series              | 3C                   |
| Operating principle | Reflection principle |

### Optical data

|                          |                                           |
|--------------------------|-------------------------------------------|
| 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 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

|                         |                                          |
|-------------------------|------------------------------------------|
| Voltage type            | DC                                       |
| Switching current, max. | 100 mA                                   |
| Switching voltage       | high: $\geq(U_B - 2V)$<br>Low: $\leq 2V$ |

### Switching output 1

|                     |                                            |
|---------------------|--------------------------------------------|
| Assignment          | Connection 1, pin 4                        |
| Switching element   | Transistor, Push-pull                      |
| Switching principle | Light switching (PNP)/dark switching (NPN) |

### Switching output 2

|                     |                                            |
|---------------------|--------------------------------------------|
| Assignment          | Connection 1, pin 2                        |
| Switching element   | Transistor, Push-pull                      |
| Switching principle | Dark switching (PNP)/light switching (NPN) |

### Timing

|                     |          |
|---------------------|----------|
| Switching frequency | 1,500 Hz |
| Response time       | 0.33 ms  |
| Readiness delay     | 300 ms   |

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| 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          | Two M3 threaded sleeves      |
|                            | Via optional mounting device |
| Compatibility of materials | ECOLAB                       |

### Operation and display

|                                     |                        |
|-------------------------------------|------------------------|
| Type of display                     | LED                    |
| Number of LEDs                      | 2 Piece(s)             |
| Operational controls                | 270° potentiometer     |
| Function of the operational control | Sensitivity adjustment |

### Environmental data

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

### Certifications

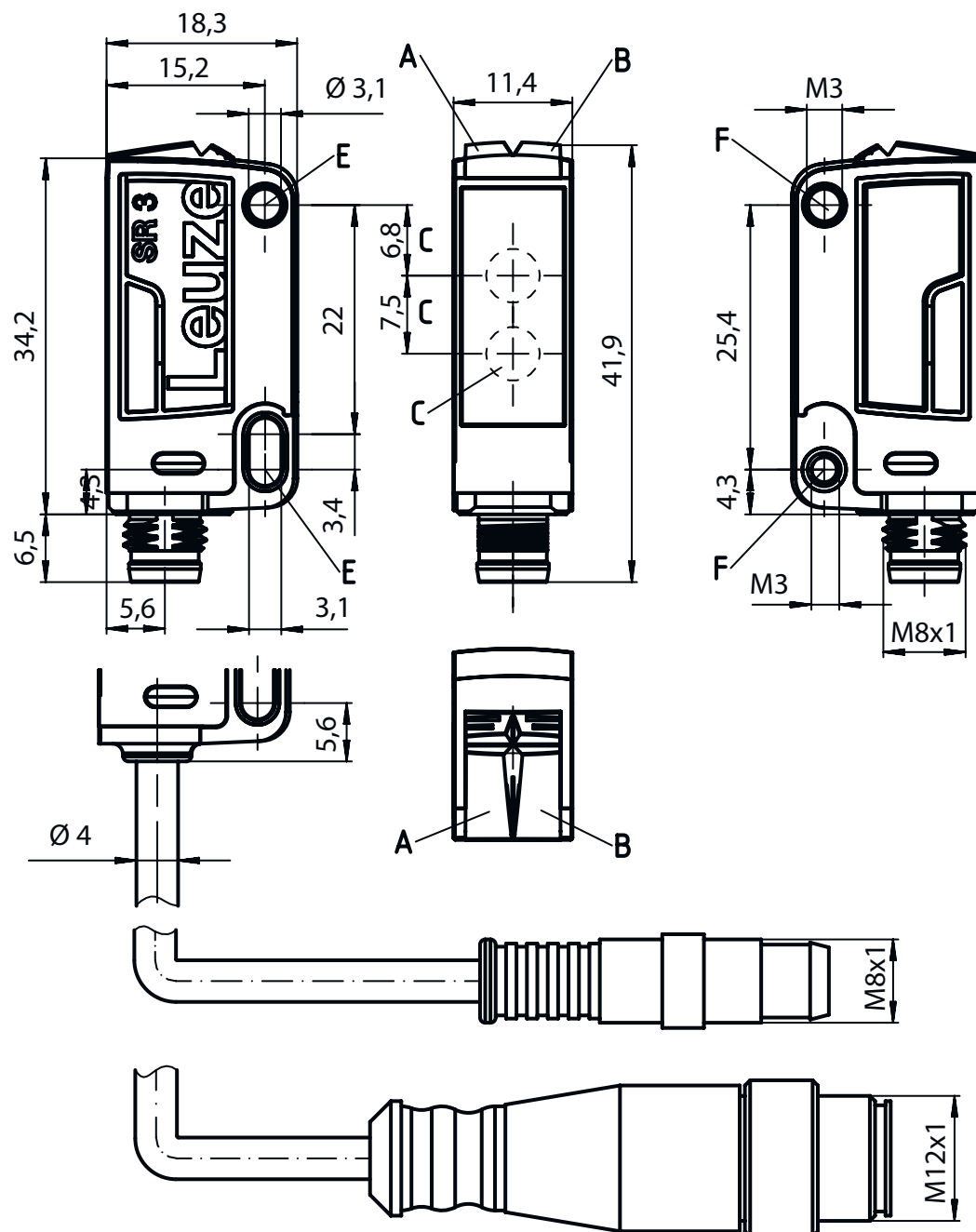
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
|                      | IP 69K        |
| Protection class     | III           |
| Certifications       | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27270902 |
| eCl@ss 9.0            | 27270902 |
| ETIM 5.0              | EC002717 |
| ETIM 6.0              | EC002717 |

## Dimensioned drawings

All dimensions in millimeters



A Green LED  
B Yellow LED  
C Optical axis

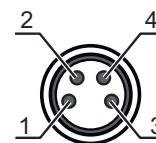
E Mounting sleeve (standard)  
F Threaded sleeve (3C.B series)

## Electrical connection

### Connection 1

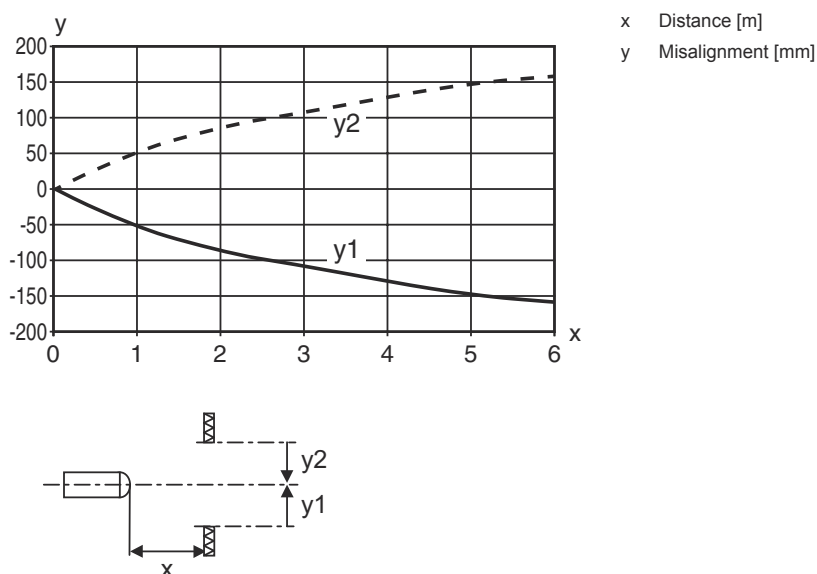
|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material          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

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

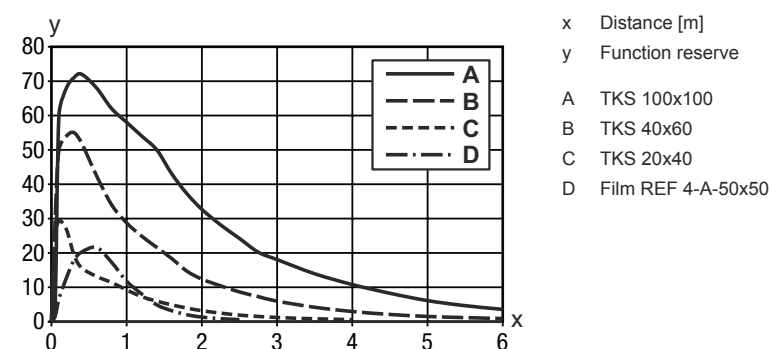


## Diagrams

### Typ. response behavior



### Typ. function reserve



## Operation and display

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

## Reflectors & reflective tapes

|                                                                                     | Part no. | Designation   | Operating range<br>Operating range | 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   |

## Reflectors & reflective tapes

|                                                                                   | Part no. | Designation | Operating range<br>Operating range | Description                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------|-------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |

## Part number code

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

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA3C</b> | <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                                                                                                                                                                                                                                                                                                                                 |
| <b>d</b>     | <b>Light type</b><br>n/a: red light<br>I: infrared light                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>EE</b>    | <b>Light source</b><br>n/a: LED<br>L1: laser class 1<br>L2: laser class 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>f</b>     | <b>Preset range (optional)</b><br>n/a: operating range acc. to data sheet<br>xxxF: preset range [mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>GG</b>    | <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<br>X: extended model                                                                                                                          |
| <b>H</b>     | <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                                                                                                                                                                                                                                                                                                                                                                   |
| <b>i</b>     | <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 interface (SIO mode: PNP light switching, NPN dark switching)<br>8: activation input (activation with high signal)<br>X: pin not used<br>1: IO-Link / light switching (NPN) / dark switching (PNP) |
| <b>J</b>     | <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: pin not used<br>8: activation input (activation with high signal)<br>9: deactivation input (deactivation with high signal)<br>T: teach-in via cable                                 |

## Part number code

|   |                                                                       |
|---|-----------------------------------------------------------------------|
| K | <b>Electrical connection</b>                                          |
|   | n/a: cable, standard length 2000 mm, 4-wire                           |
|   | 5000: cable, standard length 5000 mm, 4-wire                          |
|   | M8: M8 connector, 4-pin (plug)                                        |
|   | M8.3: M8 connector, 3-pin (plug)                                      |
|   | 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)   |
|   | 200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug) |
|   | 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

- Light source: Average life expectancy 100,000h at an ambient temperature of 25 °C
- Response time: For short decay times, an ohmic load of approx. 5kOhm 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.

## Accessories

## Connection technology - Connection cables

|                                                                                                                                                                         | 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 |

## Accessories

|                                                                                   | Part no. | Designation       | Article          | Description                                                                                                                                       |
|-----------------------------------------------------------------------------------|----------|-------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |

## Mounting technology - Mounting brackets

|                                                                                   | Part no. | Designation | Article         | Description                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|----------|-------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |

## Mounting technology - Rod mounts

|                                                                                     | Part no. | Designation  | Article         | Description                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50117255 | BTU 200M-D12 | Mounting system | 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 |

## Standard reflectors

|                                                                                     | Part no. | Designation | Article   | Description                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------|-------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |
|  | 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 |

### Note



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