

## Technical data sheet

### Polarized retro-reflective photoelectric

Part no.: 50129406

PRK3C.A3/4T-200-M8

#### Contents

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



Figure can vary



## Technical data

### Basic data

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

### Special version

|                 |                 |
|-----------------|-----------------|
| Special version | Autocollimation |
|                 | Teach input     |

### Optical data

|                          |                                         |
|--------------------------|-----------------------------------------|
| Operating range          | Guaranteed operating range              |
| Operating range          | 0 ... 4 m, With reflector TK(S) 100x100 |
| Operating range limit    | Typical operating range                 |
| Operating range limit    | 0 ... 5 m, With reflector TK(S) 100x100 |
| Light source             | LED, Red                                |
| LED light wavelength     | 635 nm                                  |
| LED group                | Exempt group (in acc. with EN 62471)    |
| Transmitted-signal shape | Pulsed                                  |

### 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 ... 15 mA                            |

### Inputs

|                        |            |
|------------------------|------------|
| Number of teach inputs | 1 Piece(s) |
|------------------------|------------|

### Teach inputs

|                   |                                                             |
|-------------------|-------------------------------------------------------------|
| Voltage type      | DC                                                          |
| Switching voltage | high: $\geq 0.65 \times U_B$<br>low: $\leq 0.35 \times U_B$ |
| Delay             | 1 ms                                                        |
| Input resistance  | 20,000 $\Omega$                                             |

### Teach input 1

|                        |                        |
|------------------------|------------------------|
| Assignment             | Connection 1, pin 2    |
| Function               | Keyboard lockout       |
|                        | Light/dark switching   |
|                        | Sensitivity adjustment |
| Active switching state | High                   |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 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, PNP     |
| Switching principle | Light switching     |

### Timing

|                     |             |
|---------------------|-------------|
| Switching frequency | 1,500 Hz    |
| Response time       | 0.33 ms     |
| Readiness delay     | 300 ms      |
| Response jitter     | 110 $\mu$ s |

### Connection

#### Connection 1

|                    |                      |
|--------------------|----------------------|
| Function           | Signal IN            |
|                    | Signal OUT           |
|                    | Voltage supply       |
| Type of connection | Cable with connector |
| Cable length       | 200 mm               |
| Sheathing material | PUR                  |
| Cable color        | Black                |
| Wire cross section | 0.2 mm <sup>2</sup>  |
| 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                 | 20 g                         |
| Housing color              | Red                          |
| Type of fastening          | Through-hole mounting        |
|                            | Via optional mounting device |
| Compatibility of materials | ECOLAB                       |

### Operation and display

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

### Environmental data

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

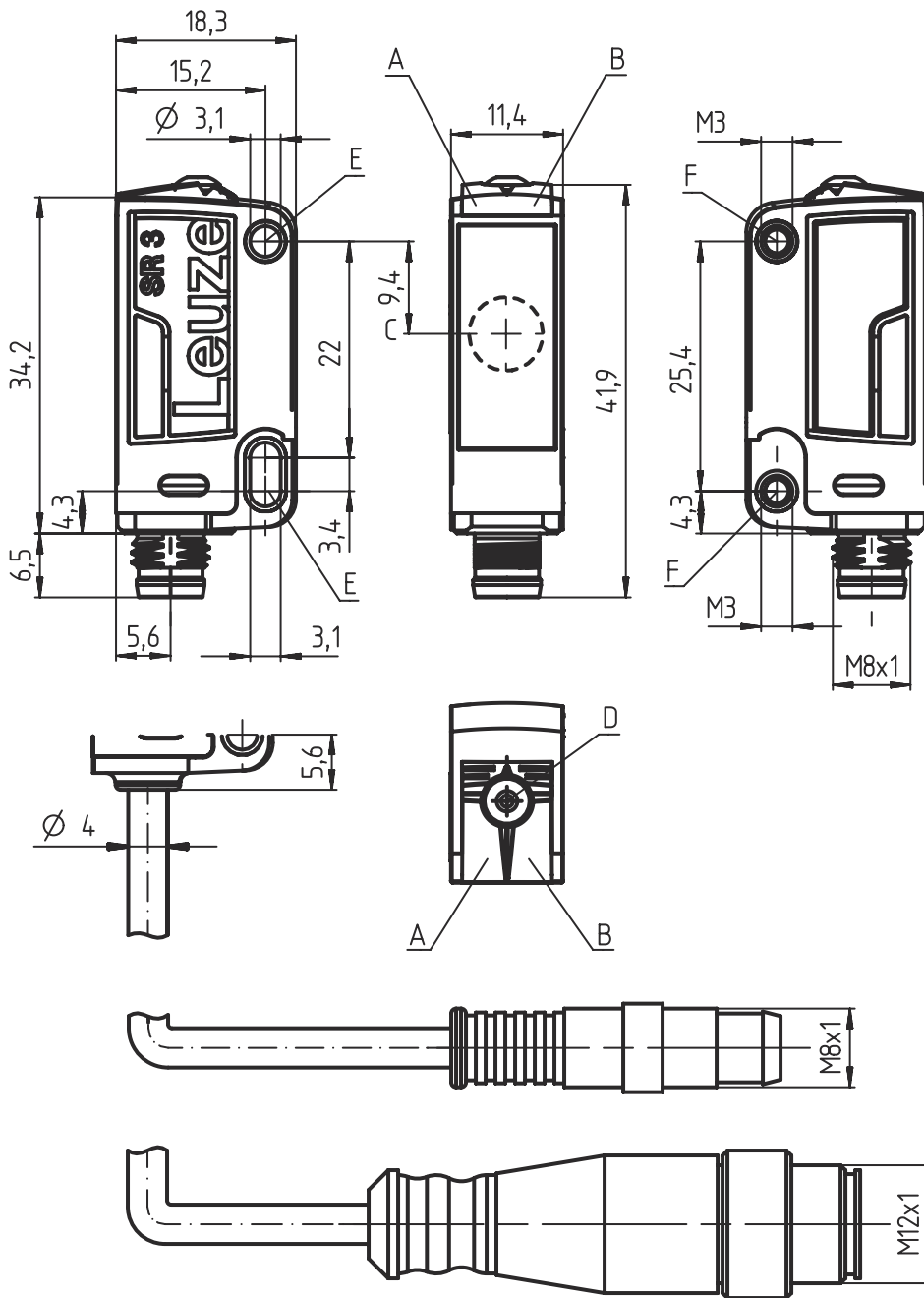
### Certifications

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

All dimensions in millimeters



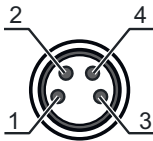
- |   |              |   |                               |
|---|--------------|---|-------------------------------|
| A | Green LED    | D | Teach button                  |
| B | Yellow LED   | E | Mounting sleeve (standard)    |
| C | Optical axis | F | Threaded sleeve (3C.B series) |

Electrical connection

Connection 1

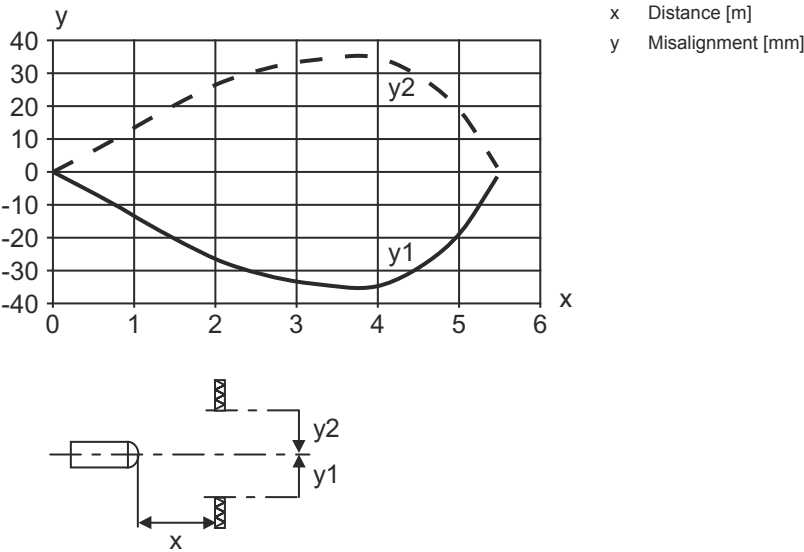
|                    |                      |
|--------------------|----------------------|
| Function           | Signal IN            |
|                    | Signal OUT           |
|                    | Voltage supply       |
| Type of connection | Cable with connector |
| Cable length       | 200 mm               |
| Sheathing material | PUR                  |
| Cable color        | Black                |
| Wire cross section | 0.2 mm²              |
| Thread size        | M8                   |
| Type               | Male                 |
| Material           | Metal                |
| No. of pins        | 4 -pin               |

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



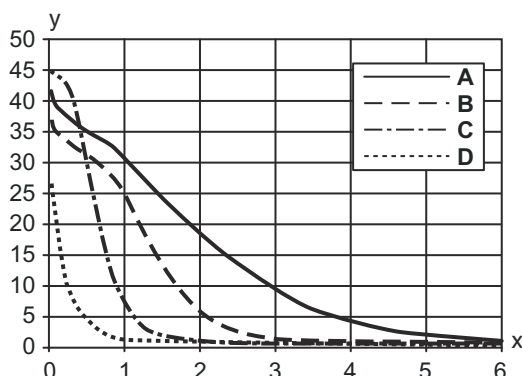
Diagrams

Typ. response behavior



## Diagrams

### 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

| 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 ... 0.7 m<br>0 ... 1 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 ... 4 m<br>0 ... 5 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                          |
|  | 50022816 | TKS 100X100   | 0 ... 4 m<br>0 ... 5 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 ... 1.3 m<br>0 ... 1.5 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 |

## Reflectors & reflective tapes

|                                                                                   | Part no. | Designation | Operating range<br>Operating range | Description                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------|-------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50040820 | TKS 40X60   | 0 ... 2.6 m<br>0 ... 3.2 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

## Accessories

## Connection technology - Connection cables

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

## Accessories

|                                                                                  | 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 |

## 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                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------|-------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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 |
|  | 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   |



Accessories

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 |

Note



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