

## Technical data sheet

### Polarized retro-reflective photoelectric sensor

Part no.: 50137058

PRK3CL1.A3/4-200-M8.3



For illustration purposes only

#### Contents

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



CDRH



UK  
CA

## Technical data

### Basic data

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

### Special version

|                 |                 |
|-----------------|-----------------|
| Special version | Autocollimation |
|-----------------|-----------------|

### Optical data

|                                      |                                                                     |
|--------------------------------------|---------------------------------------------------------------------|
| Operating range                      | 0 ... 4 m (guaranteed operating range), With reflector MTKS 50x50.1 |
| Operating range limit                | 0 ... 5 m (typical operating range), With reflector MTKS 50x50.1    |
| Beam path                            | Collimated                                                          |
| Light source                         | Laser, Red                                                          |
| Wavelength                           | 655 nm                                                              |
| Laser class                          | 1, in accordance with IEC 60825-1:2014 (EN 60825-1:2014)            |
| Max. laser power                     | 0.0017 W                                                            |
| Transmitted-signal shape             | Pulsed                                                              |
| Pulse duration                       | 5.3 µs                                                              |
| Light spot size [at sensor distance] | 3 mm [1,000 mm]                                                     |
| Type of light spot geometry          | Round                                                               |
| Shift angle                          | Typ. ± 2°                                                           |

### Electrical data

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Protective circuit | Polarity reversal protection<br>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                            |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

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

### Switching output 1

|                     |                     |
|---------------------|---------------------|
| Assignment          | Connection 1, pin 4 |
| Switching element   | Transistor, PNP     |
| Switching principle | Light switching     |

### Time behavior

|                     |          |
|---------------------|----------|
| Switching frequency | 3,000 Hz |
| Response time       | 0.17 ms  |
| Readiness delay     | 300 ms   |

### Connection

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

### Connection 1

|                    |                              |
|--------------------|------------------------------|
| Function           | Signal OUT<br>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        | 3 -pin                       |
| Version            | Axial                        |

### Mechanical data

|                                                |                                                       |
|------------------------------------------------|-------------------------------------------------------|
| Dimension (W x H x L)                          | 11.4 mm x 34.2 mm x 18.3 mm                           |
| Housing material                               | Plastic                                               |
| Plastic housing                                | PC-ABS                                                |
| Lens cover material                            | Plastic / PMMA                                        |
| Net weight                                     | 20 g                                                  |
| Housing color                                  | Red                                                   |
| Type of fastening                              | Through-hole mounting<br>Via optional mounting device |
| Recommended tightening torque for M3 fastening | 0.9 N·m                                               |
| Compatibility of materials                     | ECOLAB                                                |

### Operation and display

|                                     |                        |
|-------------------------------------|------------------------|
| Type of display                     | LED                    |
| Operational controls                | Teach button           |
| Function of the operational control | Sensitivity adjustment |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 55 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

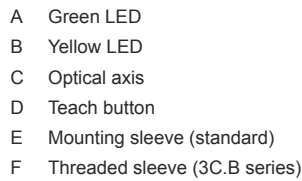
### Certifications

|                      |                 |
|----------------------|-----------------|
| Degree of protection | IP 67<br>IP 69K |
| 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 |

All dimensions in millimeters



## Connection 1

| Pin | Pin assignment |
|-----|----------------|
| 1   | 5V             |
| 2   | NC             |
| 3   | NC             |
| 4   | NC             |
| 5   | NC             |
| 6   | NC             |
| 7   | NC             |
| 8   | NC             |
| 9   | NC             |
| 10  | NC             |
| 11  | NC             |
| 12  | NC             |
| 13  | NC             |
| 14  | NC             |
| 15  | NC             |
| 16  | NC             |
| 17  | NC             |
| 18  | NC             |
| 19  | NC             |
| 20  | NC             |
| 21  | NC             |
| 22  | NC             |
| 23  | NC             |
| 24  | NC             |
| 25  | NC             |
| 26  | NC             |
| 27  | NC             |
| 28  | NC             |
| 29  | NC             |
| 30  | NC             |
| 31  | NC             |
| 32  | NC             |
| 33  | NC             |
| 34  | NC             |
| 35  | NC             |
| 36  | NC             |
| 37  | NC             |
| 38  | NC             |
| 39  | NC             |
| 40  | NC             |
| 41  | NC             |
| 42  | NC             |
| 43  | NC             |
| 44  | NC             |
| 45  | NC             |
| 46  | NC             |
| 47  | NC             |
| 48  | NC             |
| 49  | NC             |
| 50  | NC             |
| 51  | NC             |
| 52  | NC             |
| 53  | NC             |
| 54  | NC             |
| 55  | NC             |
| 56  | NC             |
| 57  | NC             |
| 58  | NC             |
| 59  | NC             |
| 60  | NC             |
| 61  | NC             |
| 62  | NC             |
| 63  | NC             |
| 64  | NC             |
| 65  | NC             |
| 66  | NC             |
| 67  | NC             |
| 68  | NC             |
| 69  | NC             |
| 70  | NC             |
| 71  | NC             |
| 72  | NC             |
| 73  | NC             |
| 74  | NC             |
| 75  | NC             |
| 76  | NC             |
| 77  | NC             |
| 78  | NC             |
| 79  | NC             |
| 80  | NC             |
| 81  | NC             |
| 82  | NC             |
| 83  | NC             |
| 84  | NC             |
| 85  | NC             |
| 86  | NC             |
| 87  | NC             |
| 88  | NC             |
| 89  | NC             |
| 90  | NC             |
| 91  | NC             |
| 92  | NC             |
| 93  | NC             |
| 94  | NC             |
| 95  | NC             |
| 96  | NC             |
| 97  | NC             |
| 98  | NC             |
| 99  | NC             |
| 100 | NC             |

A diagram showing a cross-section of a three-core cable. It consists of three concentric circles. The innermost circle is labeled '1'. The middle ring is labeled '3'. The outermost ring is labeled '4'.

## Operation and display

| LED | Display                  | Meaning                              |
|-----|--------------------------|--------------------------------------|
| 1   | Green, continuous light  | Operational readiness                |
| 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<br>limit | Description                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|----------|--------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50106209 | MTKS 14x23   | 0 ... 1.8 m<br>0 ... 2 m                    | Design: Rectangular<br>Triple reflector size: 12 mm<br>Reflective surface: 11 mm x 21 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive                                    |
|    | 50106961 | MTKS 14x23.P | 0 ... 0.8 m<br>0 ... 1 m                    | Design: Rectangular<br>Triple reflector size: 12 mm<br>Reflective surface: 11 mm x 21 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PES<br>Fastening: Through-hole mounting, Adhesive<br>Compatibility of materials: ECOLAB |
|   | 50040894 | MTKS 20x30   | 0 ... 2 m<br>0 ... 2.5 m                    | Design: Rectangular<br>Triple reflector size: 1.2 mm<br>Reflective surface: 19 mm x 29 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive                                   |
|  | 50134985 | MTKS 20x30.1 | 0 ... 0.6 m<br>0 ... 0.7 m                  | Design: Rectangular<br>Triple reflector size: 1 mm<br>Reflective surface: 18.5 mm x 28.5 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Through-hole mounting, Adhesive                                   |
|  | 50104130 | MTKS 20x40.1 | 0 ... 1 m<br>0 ... 1.5 m                    | Design: Rectangular<br>Triple reflector size: 12 mm<br>Reflective surface: 17 mm x 38 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive                                    |
|  | 50104132 | MTKS 30x50.1 | 0 ... 0.8 m<br>0 ... 1 m                    | Design: Rectangular<br>Triple reflector size: 1.2 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                                   |
|  | 50117583 | MTKS 50x50.1 | 0 ... 4 m<br>0 ... 5 m                      | Design: Rectangular<br>Triple reflector size: 1.2 mm<br>Reflective surface: 50 mm x 50 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<br>limit | Description                                                                                                                                                                              |
|----------------------------------------------------------------------------------|----------|---------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50110192 | REF 6-A-50x50 | 0 ... 1.6 m<br>0 ... 2 m                    | Design: Rectangular<br>Triple reflector size: 0.3 mm<br>Reflective surface: 50 mm x 50 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-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<br>ODT3C: Distance diffuse sensor with background suppression                                                                                                                                                                                                                                                                   |
| <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<br>PP: Power PinPoint® LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>f</b>     | <b>Preset range (optional)</b><br>n/a: operating range acc. to data sheet<br>xxxF: Preset range [mm]<br>2M: operating range of 2 meters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <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<br>HF: Suppression of HF illumination (LED)                                                                              |
| <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)



### WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT



- The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of **laser class 1** and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- ⚠ Observe the applicable statutory and local laser protection regulations.
  - ⚠ The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

## Further information

- Light source: Average life expectancy 50,000 h 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                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|----------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130832 | KD U-M8-3A-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M8, Axial, Female, 3 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC  |
|                                                                                   | 50130862 | KD U-M8-3W-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M8, Angled, Female, 3 -pin<br>Connector, LED: No<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 | 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.