

Technical data sheet

Polarized retro-reflective photoelectric sensor

Part no.: 50133697

PRK3CL1.T3/4P-M8



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 |
| Application | Detection of highly transparent bottles Detection of transparent films |

Special version

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

Optical data

| | |
|--------------------------------------|--|
| Operating range | 0 ... 0.4 m |
| Operating range | Guaranteed operating range |
| Operating range limit | 0 ... 0.5 m |
| Operating range limit | Typical operating range |
| 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] | 1 mm [500 mm] |
| Type of light spot geometry | Round |
| Shift angle | Typ. ± 2° |

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 |

Outputs

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

Switching outputs

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

Switching output 1

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

Switching output 2

| | |
|---------------------|---------------------|
| Assignment | Connection 1, pin 2 |
| Switching element | Transistor, PNP |
| Switching principle | Dark switching |

Time behavior

| | |
|---------------------|----------|
| Switching frequency | 3,000 Hz |
| Response time | 0.17 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 |
| Plastic housing | PC-ABS |
| Lens cover material | Plastic / PMMA |
| Net weight | 10 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 ... 55 °C |
| Ambient temperature, storage | -40 ... 70 °C |

Certifications

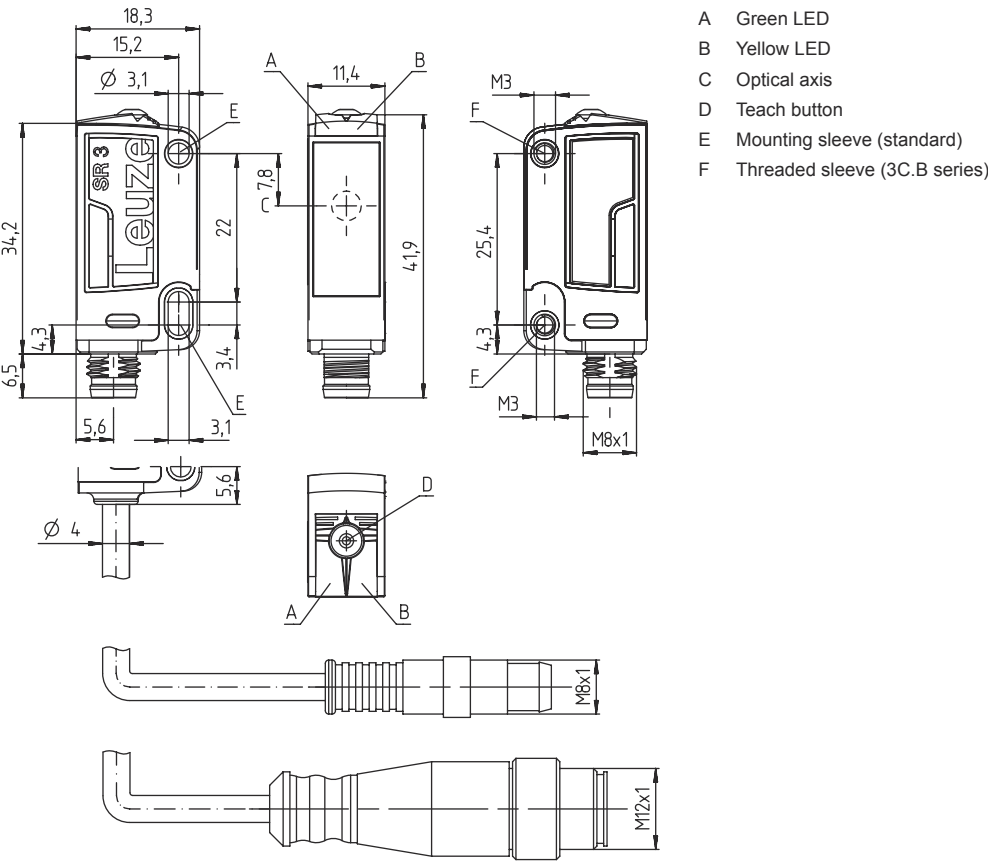
| | |
|----------------------|-----------------|
| Degree of protection | IP 67 IP 69K |
| Protection class | III |
| Approvals | c UL US |
| Standards applied | IEC 60947-5-2 |

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 |

Dimensioned drawings

All dimensions in millimeters

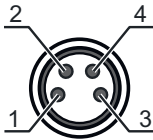


Electrical connection

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 |



Operation and display

| LED | Display | Meaning |
|-----|--------------------------|-----------------------|
| 1 | Green, continuous light | Operational readiness |
| 2 | Yellow, continuous light | Light path free |

Reflectors & reflective tapes

| | Part no. | Designation | Operating range Operating range limit | Description |
|--|----------|---------------|---|---|
|  | 50110191 | REF 6-A-25x25 | 0 ... 0.4 m 0 ... 0.5 m | Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 25 mm x 25 mm Material: Plastic Chemical designation of the material: PMMA Fastening: Self-adhesive |
| | 50114185 | REF 6-S-20x40 | 0 ... 0.4 m 0 ... 0.5 m | Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 16 mm x 38 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Screw type |
| | 50112142 | TK BR 53 | 0 ... 0.4 m 0 ... 0.5 m | Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 29 mm x 10 mm Material: Plastic Base material: Stainless steel Chemical designation of the material: Stainless steel Fastening: Housing fit |

Part number code

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

| | |
|--------------|---|
| AAA3C | Operating principle / construction HT3C: Diffuse reflection sensor with background suppression LS3C: Throughbeam photoelectric sensor transmitter LE3C: Throughbeam photoelectric sensor receiver PRK3C: Retro-reflective photoelectric sensor with polarization filter ODT3C: Distance diffuse sensor with background suppression |
| d | Light type n/a: red light I: infrared light |
| EE | Light source n/a: LED L1: laser class 1 L2: laser class 2 PP: Power PinPoint LED |
| f | Preset range (optional) n/a: operating range acc. to data sheet xxxF: Preset range [mm] 2M: operating range of 2 meters |
| GG | Equipment n/a: standard A: Autocollimation principle (single lens) for positioning tasks B: Housing model with two M3 threaded sleeves, brass F: Permanently set range L: Long light spot S: small light spot T: autocollimation principle (single lens) for highly transparent bottles without tracking TT: autocollimation principle (single lens) for highly transparent bottles with tracking V: V-optics XL: Extra long light spot X: extended model HF: Suppression of HF illumination (LED) |
| H | Operating range adjustment n/a with HT: range adjustable via 8-turn potentiometer n/a with retro-reflective photoelectric sensors (PRK): operating range not adjustable 1: 270° potentiometer 3: teach-in via button 6: auto-teach |


| | |
|---|--|
| i | Switching output/function OUT 1/IN: Pin 4 or black conductor 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching 6: push-pull switching output, PNP light switching, NPN dark switching G: Push-pull switching output, PNP dark switching, NPN light switching L: IO-Link interface (SIO mode: PNP light switching, NPN dark switching) 8: activation input (activation with high signal) X: pin not used 1: IO-Link / light switching (NPN) / dark switching (PNP) |
| J | Switching output / function OUT 2/IN: pin 2 or white conductor 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching 6: push-pull switching output, PNP light switching, NPN dark switching G: Push-pull switching output, PNP dark switching, NPN light switching W: warning output X: pin not used 8: activation input (activation with high signal) 9: deactivation input (deactivation with high signal) T: teach-in via cable |
| K | Electrical connection 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.

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)

Notes



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
- For REF 6-A- reflective tape, the sensor's side edge must be aligned parallel to the side edge of the reflective tape.
- The devices may only be operated with the reflectors listed above.

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 Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC |
|  | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC |

Mounting technology - Mounting brackets


| | Part no. | Designation | Article | Description |
|---|----------|-------------|-----------------|--|
|  | 50060511 | BT 3 | Mounting device | Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal |

Accessories


Mounting technology - Rod mounts

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

Micro-triad-type reflectors

| | Part no. | Designation | Article | Description |
|---|----------|---------------|-----------|---|
|  | 50114185 | REF 6-S-20x40 | Reflector | Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 16 mm x 38 mm Material: Plastic Base material: Plastic Chemical designation of the material: PMMA8N Fastening: Screw type |
| | | | | |

Reflective tapes for laser and clear-glass applications

| | Part no. | Designation | Article | Description |
|--|----------|---------------|-----------------|--|
|  | 50110191 | REF 6-A-25x25 | Reflective tape | Design: Rectangular Triple reflector size: 0.3 mm Reflective surface: 25 mm x 25 mm Material: Plastic Chemical designation of the material: PMMA 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.