

## Technical data sheet

### Polarized retro-reflective photoelectric sensor

Part no.: 50148198

PRK55CL1.T3/LG-M8



For illustration purposes only

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## Technical data

### Basic data

|                     |                                                                           |
|---------------------|---------------------------------------------------------------------------|
| Series              | 55C                                                                       |
| Operating principle | Reflection principle                                                      |
| Application         | Detection of highly transparent bottles<br>Detection of transparent films |

### Special version

|                 |                                     |
|-----------------|-------------------------------------|
| Special version | Autocollimation<br>Wash-Down design |
|-----------------|-------------------------------------|

### Optical data

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Operating range                      | 0 ... 0.4 m (guaranteed operating range) |
| Operating range limit                | 0 ... 0.5 m (typical operating range)    |
| Beam path                            | Collimated                               |
| Light source                         | Laser, Red                               |
| Wavelength                           | 650 nm                                   |
| Laser class                          | 1, IEC/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<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 | 2 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, Push-pull                                |
| Switching principle | IO-Link / 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) |

### Time behavior

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

### Interface

|                  |                      |
|------------------|----------------------|
| Type             | IO-Link              |
| IO-Link          |                      |
| COM mode         | COM2                 |
| Profile          | Smart sensor profile |
| Min. cycle time  | COM2 = 2.3 ms        |
| Frame type       | 2.5                  |
| Specification    | V1.1                 |
| Device ID        | 6027                 |
| SIO-mode support | Yes                  |

### Connection

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

### Connection 1

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

### Mechanical data

|                                 |                                                                          |
|---------------------------------|--------------------------------------------------------------------------|
| Dimension (W x H x L)           | 14 mm x 35.4 mm x 25 mm                                                  |
| Housing material                | Stainless steel                                                          |
| Material of operational control | Plastic (POM Hostaform C9021, copoly-ester Tritan TX1001), non-diffusive |
| Housing roughness               | $R_a \leq 0,8$ , Typical value for the stainless steel housing           |
| Stainless steel housing         | AISI 316L, DIN X2CrNiMo17132, W. No1.4404                                |
| Lens cover material             | Plastic (PMMA+) with scratch-resistant Indium protective coating         |
| Net weight                      | 42 g                                                                     |
| Housing color                   | Silver                                                                   |
| Type of fastening               | Through-hole mounting<br>Via optional mounting device                    |
| Compatibility of materials      | CleanProof+<br>ECOLAB<br>Johnson Diversey                                |

### Operation and display

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| Type of display                     | LED                                            |
| Number of LEDs                      | 2 Piece(s)                                     |
| Operational controls                | Teach button                                   |
| Function of the operational control | Light/dark switching<br>Sensitivity adjustment |

### Environmental data

|                                |                               |
|--------------------------------|-------------------------------|
| Ambient temperature, operation | -40 ... 60 °C, (70 °C ≤15min) |
| Ambient temperature, storage   | -40 ... 70 °C                 |

## Technical data

### Certifications

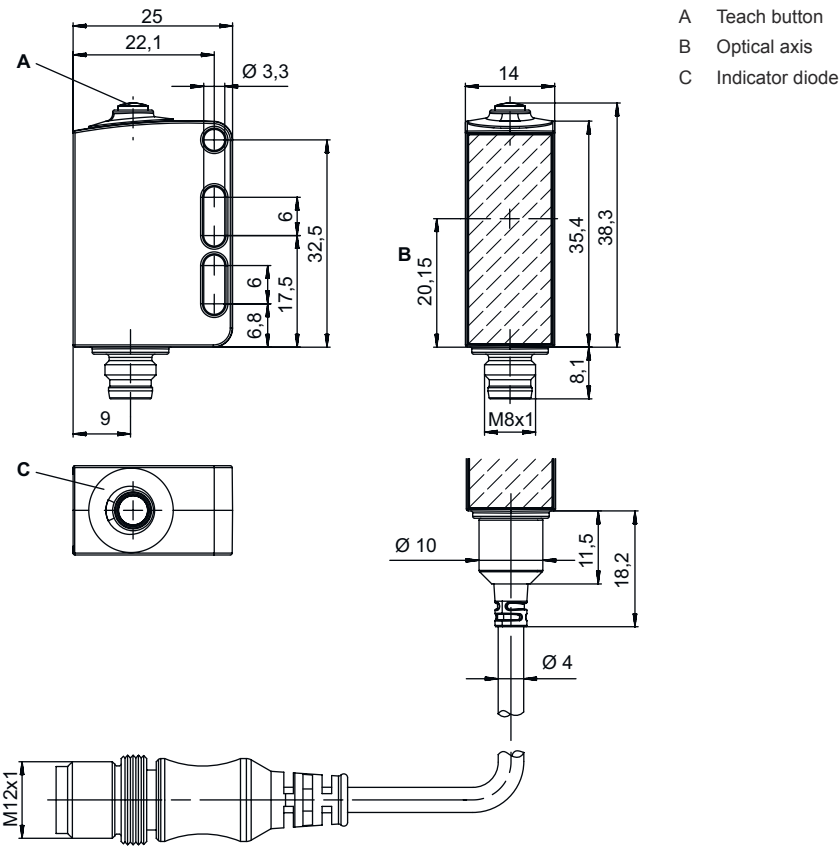
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
|                      | IP 68         |
|                      | IP 69K        |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | 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

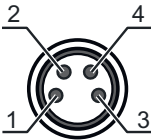


Electrical connection

Connection 1

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

| Pin | Pin assignment  |
|-----|-----------------|
| 1   | V+              |
| 2   | OUT 2           |
| 3   | GND             |
| 4   | IO-Link / 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<br>Operating range<br>limit | Description                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------|---------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50136824 | MTKS 12x20M.5 | 0 ... 0.3 m<br>0 ... 0.4 m                  | Design: Rectangular<br>Triple reflector size: 0.3 mm<br>Reflective surface: 12 mm x 20 mm<br>Material: Plastic<br>Base material: Stainless steel<br>Fastening: Through-hole mounting<br>Compatibility of materials: Alcohol, CleanProof+, ECOLAB, H2O2 |
|    | 50136823 | MTKS 7x7M.5   | 0 ... 0.2 m<br>0 ... 0.3 m                  | Design: Rectangular<br>Triple reflector size: 0.3 mm<br>Reflective surface: 7 mm x 7 mm<br>Material: Plastic<br>Base material: Stainless steel<br>Fastening: Through-hole mounting<br>Compatibility of materials: Alcohol, CleanProof+, ECOLAB, H2O2   |
|     | 50110191 | REF 6-A-25x25 | 0 ... 0.4 m<br>0 ... 0.5 m                  | Design: Rectangular<br>Triple reflector size: 0.3 mm<br>Reflective surface: 25 mm x 25 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-adhesive                                                               |
|   | 50114185 | REF 6-S-20x40 | 0 ... 0.4 m<br>0 ... 0.5 m                  | Design: Rectangular<br>Triple reflector size: 0.3 mm<br>Reflective surface: 16 mm x 38 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Screw type                                      |
|  | 50112142 | TK BR 53      | 0 ... 0.4 m<br>0 ... 0.5 m                  | Design: Rectangular<br>Triple reflector size: 0.3 mm<br>Reflective surface: 29 mm x 10 mm<br>Material: Plastic<br>Base material: Stainless steel<br>Chemical designation of the material: Stainless steel<br>Fastening: Housing fit                    |

## Part number code

Part designation: **AAA55C d EE-f.GGGG H/i J-K**

|               |                                                                                                                                                                                                                                                                                                                                                               |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA55C</b> | <b>Operating principle / construction</b><br>HT55C: Diffuse reflection sensor with background suppression<br>LS55C: Throughbeam photoelectric sensor transmitter<br>LE55C: Throughbeam photoelectric sensor receiver<br>PRK55C: Retro-reflective photoelectric sensor with polarization filter<br>ODT55C: 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                                                                                                                                                                                                                                                                                     |
| <b>f</b>      | <b>Preset range (optional)</b><br>n/a: operating range acc. to data sheet<br>xxxF: Preset range [mm]                                                                                                                                                                                                                                                          |

## Part number code

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GGGG</b> | <b>Equipment</b><br>n/a: standard<br>A: Autocollimation principle (single lens) for positioning tasks<br>F: Permanently set range<br>H2O: Detection of aqueous liquids<br>Fill-level monitoring<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                                                                                                                                                                                                      |
| <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                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <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)<br>7: Input for sensitivity adjustment |
| <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>T: teach-in via cable<br>X: pin not used<br>8: activation input (activation with high signal)<br>9: deactivation input (deactivation with high signal)<br>7: Input for sensitivity adjustment                                                      |
| <b>K</b>    | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 4-wire<br>5000: cable, standard length 5000 mm, 4-wire<br>M8: M8 connector, 4-pin (plug)<br>M8.3: M8 connector, 3-pin (plug)<br>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.

Notes

**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)



**ATTENTION! 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
- Permissible operating temperature range during IO-Link operation: -10 °C to +60 °C
- Ambient temperature, operation: +70 °C permissible only briefly (≤ 15min)
- For REF 6-A- reflective tape, the sensor's side edge must be aligned parallel to the side edge of the reflective tape.
- The light spot may not exceed the reflector.
- IP 69K only in combination with connector
- Use of micro-triad-type reflectors beginning with MTK(S) or REF 6-A- reflective tape is preferred.

Accessories

Connection technology - Connection unit

|                                                                                    | Part no. | Designation           | Article        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------|----------|-----------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50144900 | MD 798i-11-82/L5-2222 | IO-Link master | Type: IO-Link master<br>Current consumption, max.: 11,000 mA<br>Switching outputs for each sensor connection: 1 Piece(s)<br>Switching output: Transistor, PNP<br>Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET<br>Connections: 12 Piece(s)<br>Sensor connections: 8 Piece(s)<br>Connections for voltage supply: 2 Piece(s)<br>Interface connections: 2 Piece(s)<br>Degree of protection: IP 67, IP 65, IP 69K |

## Accessories

### Connection technology - Connection cables

|                                                                                   | Part no. | Designation              | Article          | Description                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|----------|--------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130856 | KD U-M8-4A-P1-050        | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PUR          |
|                                                                                   | 50148347 | KD U-M8-4A-T0-050<br>F+B | Connection cable | Connection 1: Connector, M8, Axial, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: TPE |

### Mounting technology - Mounting brackets

|                                                                                    | Part no. | Designation | Article          | Description                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------|----------|-------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50118542 | BT 200M.5   | Mounting bracket | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type, Suited for M3 screws<br>Type of mounting device: Adjustable<br>Material: Stainless steel |
|                                                                                    | 50040269 | BT 25       | 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 |
|                                                                                     | 50120426 | BTU 200M.5-D12 | Mounting system | Design of mounting device: Mounting system<br>Fastening, at system: For 12 mm rod<br>Mounting bracket, at device: Screw type, Suited for M3 screws<br>Type of mounting device: Turning, 360°, Adjustable, Clampable<br>Material: Stainless steel             |

Accessories

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