

## Technical data sheet

## Polarized retro-reflective photoelectric sensor

Part no.: 50148187

PRK55C/LG-200-M12

### Contents

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



For illustration purposes only



Technical data

Basic data

|                     |                      |
|---------------------|----------------------|
| Series              | 55C                  |
| Operating principle | Reflection principle |

Special version

|                 |                  |
|-----------------|------------------|
| Special version | Wash-Down design |
|-----------------|------------------|

Optical data

|                          |                                               |
|--------------------------|-----------------------------------------------|
| Operating range          | 0.02 ... 5 m, With reflector TK(S)<br>100x100 |
| Operating range          | Guaranteed operating range                    |
| Operating range limit    | 0.02 ... 6 m, With reflector TK(S)<br>100x100 |
| Operating range limit    | Typical operating range                       |
| Light source             | LED, Red                                      |
| Wavelength               | 645 nm                                        |
| Transmitted-signal shape | Pulsed                                        |
| LED group                | Exempt group (in acc. with EN 62471)          |

Electrical data

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

Performance data

|                               |                                        |
|-------------------------------|----------------------------------------|
| Supply voltage U <sub>B</sub> | 10 ... 30 V, DC, Incl. residual ripple |
| Residual ripple               | 0 ... 15 %, From U <sub>B</sub>        |
| 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: ≥(U <sub>B</sub> -2V)<br>low: ≤ 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 | 1,500 Hz |
| Response time       | 0.33 ms  |
| Readiness delay     | 300 ms   |
| Response jitter     | 110 µs   |

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        | 6021                 |
| SIO-mode support | Yes                  |

Connection

Connection 1

|                      |                                           |
|----------------------|-------------------------------------------|
| Function             | Signal IN<br>Signal OUT<br>Voltage supply |
| Type of connection   | Cable with connector                      |
| Cable length         | 200 mm                                    |
| Sheathing material   | PVC                                       |
| Cable color          | Black                                     |
| Number of conductors | 4 -wire                                   |
| Wire cross section   | 0.2 mm²                                   |
| Thread size          | M12                                       |
| Type                 | Male                                      |
| Material             | Stainless steel                           |
| No. of pins          | 4 -pin                                    |
| Encoding             | A-coded                                   |

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-<br>ester Tritan TX1001), non-diffusive |
| Housing roughness               | Ra ≤ 0,8, Typical value for the stainless<br>steel housing                   |
| Stainless steel housing         | AISI 316L, DIN X2CrNiMo17132, W.<br>No1.4404                                 |
| Lens cover material             | Plastic (PMMA+) with scratch-resistant<br>Indium protective coating          |
| Net weight                      | 59 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) |

Environmental data

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

Certifications

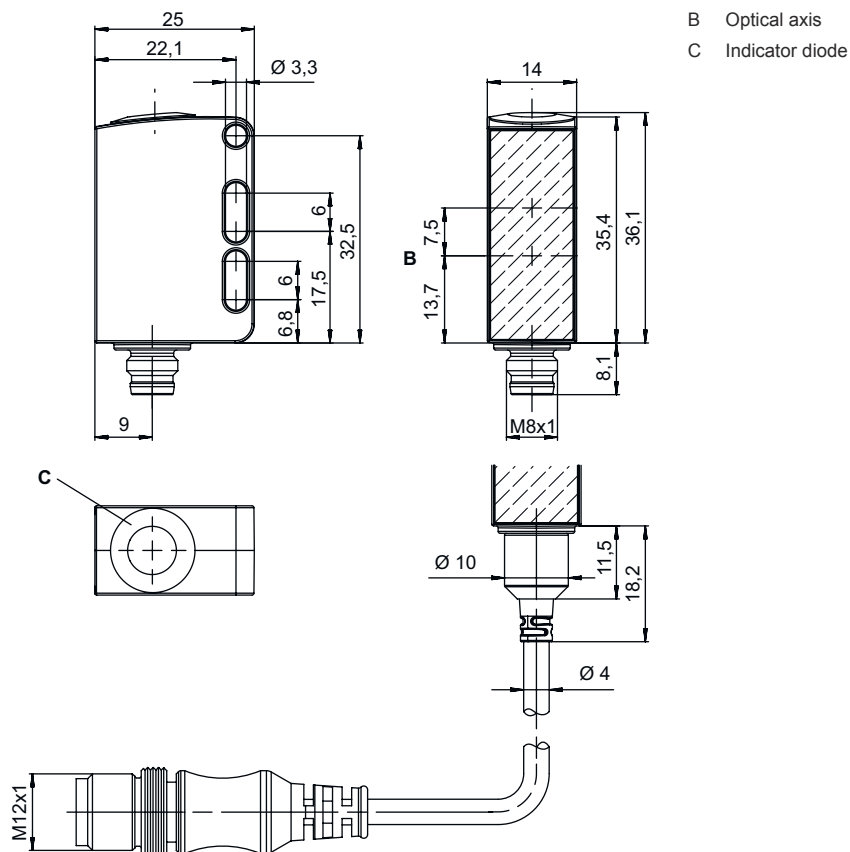
|                      |                          |
|----------------------|--------------------------|
| Degree of protection | IP 67<br>IP 68<br>IP 69K |
| Protection class     | III                      |
| Approvals            | c UL US                  |
| Standards applied    | IEC 60947-5-2            |

## Technical data

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

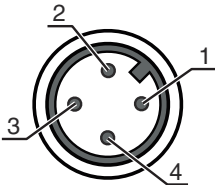


Electrical connection

Connection 1

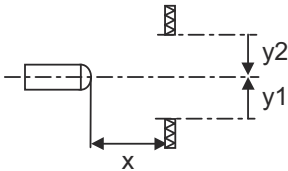
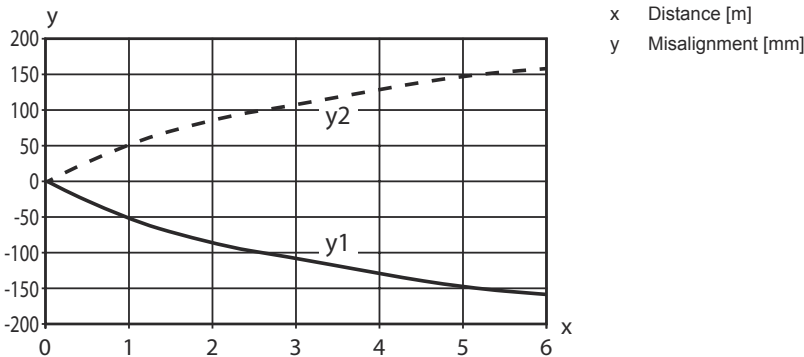
|                      |                      |
|----------------------|----------------------|
| Function             | Signal IN            |
|                      | Signal OUT           |
|                      | Voltage supply       |
| Type of connection   | Cable with connector |
| Cable length         | 200 mm               |
| Sheathing material   | PVC                  |
| Cable color          | Black                |
| Number of conductors | 4 -wire              |
| Wire cross section   | 0.2 mm²              |
| Thread size          | M12                  |
| Type                 | Male                 |
| Material             | Stainless steel      |
| No. of pins          | 4 -pin               |
| Encoding             | A-coded              |

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



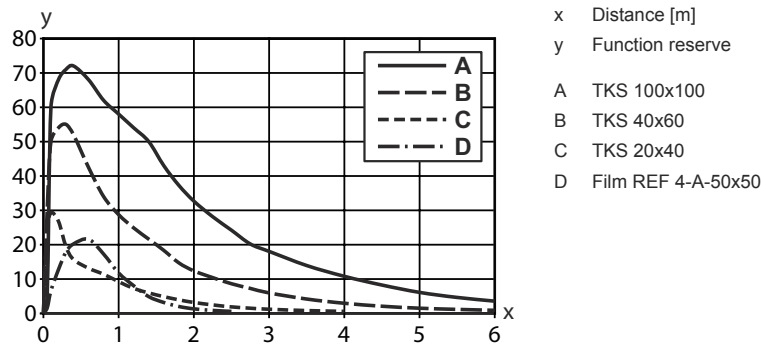
Diagrams

Typ. response behavior



Diagrams

Typ. function reserve



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                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|----------|---------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50136824 | MTKS 12x20M.5 | 0.03 ... 1 m<br>0.03 ... 1.2 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                   |
|  | 50106961 | MTKS 14x23.P  | 0.02 ... 0.7 m<br>0.02 ... 0.8 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 |
|  | 50136823 | MTKS 7x7M.5   | 0.03 ... 0.3 m<br>0.03 ... 0.4 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                     |
|  | 50108300 | REF 4-A-50x50 | 0.03 ... 1.2 m<br>0.03 ... 1.6 m            | Design: Rectangular<br>Reflective surface: 50 mm x 50 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-adhesive                                                                                                                  |

## Reflectors & reflective tapes

|                                                                                     | Part no. | Designation    | Operating range<br>Operating range<br>limit | Description                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|----------|----------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50116939 | TK 10.P        | 0.02 ... 0.4 m<br>0.02 ... 0.5 m            | Design: Round<br>Triple reflector size: 1.5 mm<br>Reflective surface, diameter: 8.5 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PES<br>Fastening: Rear side can be glued<br>Compatibility of materials: ECOLAB               |
|    | 50003192 | TK 100x100     | 0.02 ... 5 m<br>0.02 ... 6 m                | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 96 mm x 96 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Rear side can be glued                                                 |
|    | 50022816 | TKS 100X100    | 0.02 ... 5 m<br>0.02 ... 6 m                | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 96 mm x 96 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive                                        |
|   | 50106958 | TKS 20.P       | 0.02 ... 1.1 m<br>0.02 ... 1.3 m            | Design: Round<br>Triple reflector size: 2.3 mm<br>Reflective surface, diameter: 17 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PES<br>Fastening: M4 threaded pin<br>Compatibility of materials: ECOLAB                       |
|  | 50081283 | TKS 20X40      | 0.02 ... 1.5 m<br>0.02 ... 2 m              | Design: Rectangular<br>Triple reflector size: 2.3 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: Through-hole mounting, Adhesive                                      |
|  | 50106960 | TKS 20x40.P    | 0.02 ... 1.6 m<br>0.02 ... 2 m              | Design: Rectangular<br>Triple reflector size: 2.3 mm<br>Reflective surface: 16 mm x 38 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   |
|  | 50040820 | TKS 40X60      | 0.02 ... 3 m<br>0.02 ... 3.6 m              | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 37 mm x 56 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive                                        |
|  | 50120538 | TKS 40x60.1.AF | 0.02 ... 3 m<br>0.02 ... 3.6 m              | Special version: Anti-fog coating<br>Design: Rectangular<br>Triple reflector size: 2.3 mm<br>Reflective surface: 37 mm x 56 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                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | 50136383 | TKS 40x60.Chem | 0.02 ... 2.4 m<br>0.02 ... 3 m              | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 37 mm x 56 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PET<br>Fastening: Through-hole mounting, Adhesive<br>Compatibility of materials: Alcohol, ECOLAB, H2O2 |
|                                                                                                                                                                        | 50106957 | TKS 40x60.P    | 0.02 ... 2.4 m<br>0.02 ... 2.8 m            | Design: Rectangular<br>Triple reflector size: 4 mm<br>Reflective surface: 37 mm x 56 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                |

## 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>l: 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>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 |

## Part number code

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J | <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 |
| K | <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.

### 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 100,000 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
- IP 69K only in combination with connector
- Ambient temperature, operation: +70 °C permissible only briefly (≤ 15min)

## 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 |
|                                                                                  |          |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### Connection technology - Connection cables

|                                                                                   | Part no. | Designation            | Article          | Description                                                                                                                                                                       |
|-----------------------------------------------------------------------------------|----------|------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130657 | KD U-M12-4A-P1-050     | Connection cable | Connection 1: Connector, M12, 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: PUR |
|                                                                                   | 50148350 | KD U-M12-4A-T0-050 F+B | Connection cable | Connection 1: Connector, M12, 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                                      |

## Accessories

## 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             |

## Note



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