

## Technical data sheet

### Polarized retro-reflective photoelectric

Part no.: 50140142

PRK412B/4X-M12

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Figure can vary



## Technical data

### Basic data

|                     |                      |
|---------------------|----------------------|
| Series              | 412B                 |
| Operating principle | Reflection principle |

### Optical data

|                          |                                                 |
|--------------------------|-------------------------------------------------|
| Operating range          | Guaranteed operating range                      |
| Operating range          | 0.02 ... 1.8 m, With reflector TK(S)<br>100x100 |
| Operating range limit    | Typical operating range                         |
| Operating range limit    | 0.02 ... 2.3 m, With reflector TK(S)<br>100x100 |
| Light source             | LED, Red                                        |
| LED light wavelength     | 660 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 $U_B$ | 10 ... 36 V, DC, Incl. residual ripple |
| Residual ripple      | 0 ... 20 %, From $U_B$                 |
| Open-circuit current | 0 ... 15 mA                            |

### Outputs

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

### Switching outputs

|                         |        |
|-------------------------|--------|
| Voltage type            | DC     |
| Switching current, max. | 200 mA |

### Switching output 1

|                     |                 |
|---------------------|-----------------|
| Switching element   | Transistor, PNP |
| Switching principle | Light switching |

### Timing

|                     |          |
|---------------------|----------|
| Switching frequency | 1,000 Hz |
| Response time       | 0.5 ms   |
| Readiness delay     | 20 ms    |

### Connection 1

|                    |                              |
|--------------------|------------------------------|
| Function           | Signal OUT<br>Voltage supply |
| Type of connection | Connector                    |
| Thread size        | M12                          |
| Type               | Male                         |
| Material           | Metal                        |
| No. of pins        | 4 -pin                       |
| Encoding           | A-coded                      |

### Mechanical data

|                     |                      |
|---------------------|----------------------|
| Thread size         | M12 x 1 mm           |
| Dimension (Ø x L)   | 12 mm x 60 mm        |
| Housing material    | Metal, Chromed brass |
| Lens cover material | Glass                |
| Net weight          | 20 g                 |
| Housing color       | Silver               |

### Operation and display

|                 |            |
|-----------------|------------|
| Type of display | LED        |
| Number of LEDs  | 2 Piece(s) |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -25 ... 55 °C |
|--------------------------------|---------------|

### Certifications

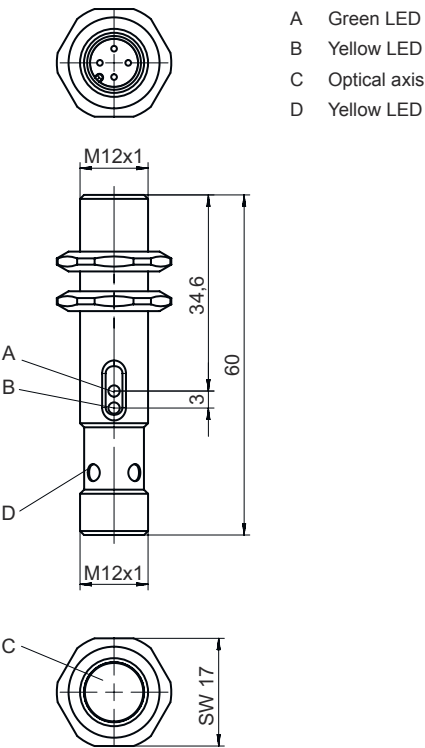
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Certifications       | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27270902 |
| eCl@ss 9.0            | 27270902 |
| ETIM 5.0              | EC002717 |
| ETIM 6.0              | EC002717 |

Dimensioned drawings

All dimensions in millimeters

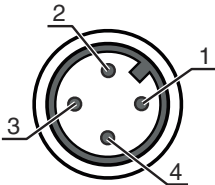


Electrical connection

Connection 1

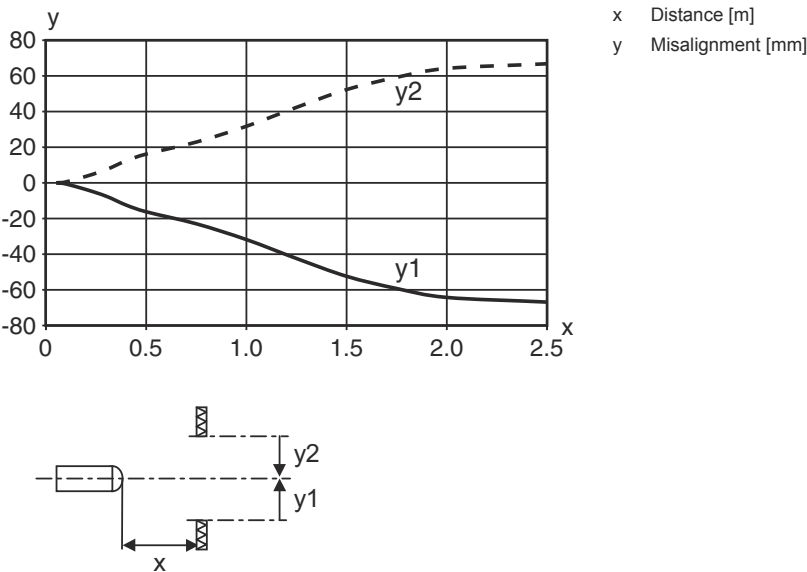
|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M12            |
| Type               | Male           |
| Material           | Metal          |
| No. of pins        | 4 -pin         |
| Encoding           | A-coded        |

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | OUT 1          |
| 3   | GND            |
| 4   | n.c.           |

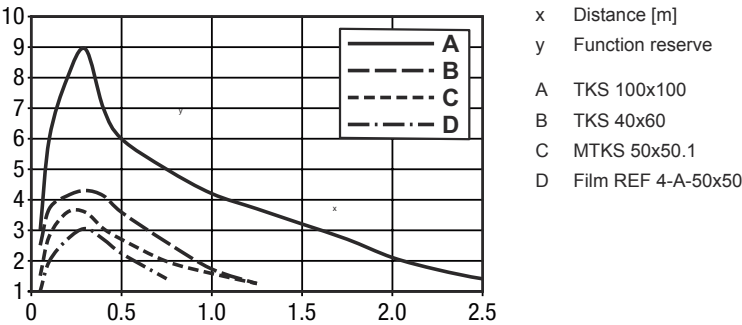


Diagrams

Typ. response behavior



Typ. function reserve



Operation and display

| LED | Display                  | Meaning                                 |
|-----|--------------------------|-----------------------------------------|
| 1   | Green, continuous light  | Function reserve                        |
| 2   | Yellow, continuous light | Switching output/switching state active |

Reflectors & reflective tapes

| Part no. | Designation  | Operating range<br>Operating range | Description                                                                                                                                                                                                                            |
|----------|--------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50117583 | MTKS 50x50.1 | 0.015 ... 1 m<br>0.015 ... 1.3 m   | Design: Rectangular<br>Reflective surface: 50 mm x 50 mm<br>Triple reflector size: 1.2 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |

## Reflectors & reflective tapes

|                                                                                     | Part no. | Designation   | Operating range<br>Operating range | Description                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------|---------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 50108300 | REF 4-A-50x50 | 0.08 ... 0.6 m<br>0.08 ... 0.8 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                                                                                |
|    | 50024127 | TK 82.2       | 0.05 ... 1.6 m<br>0.05 ... 2 m     | Design: Round<br>Triple reflector size: 4 mm<br>Reflection surface diameter: 79 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive        |
|    | 50022816 | TKS 100X100   | 0.02 ... 1.8 m<br>0.02 ... 2.3 m   | Design: Rectangular<br>Reflective surface: 96 mm x 96 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |
|   | 50081283 | TKS 20X40     | 0.02 ... 0.5 m<br>0.02 ... 0.65 m  | Design: Rectangular<br>Reflective surface: 16 mm x 38 mm<br>Triple reflector size: 2.3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |
|  | 50023525 | TKS 30X50     | 0.02 ... 0.65 m<br>0.02 ... 0.85 m | Design: Rectangular<br>Reflective surface: 27 mm x 44 mm<br>Triple reflector size: 3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |
|  | 50040820 | TKS 40X60     | 0.02 ... 1 m<br>0.02 ... 1.3 m     | Design: Rectangular<br>Reflective surface: 37 mm x 56 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |

## Part number code

Part designation: AAA412BGG.H/ii-K

|                |                                                                                                                                                                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AAA412B</b> | <b>Operating principle / construction</b><br>LS412B: throughbeam photoelectric sensor transmitter<br>LE412B: throughbeam photoelectric sensor receiver<br>ET412B: energetic diffuse reflection sensor<br>PRK412B: retro-reflective photoelectric sensor with polarization filter |
| <b>GG</b>      | <b>Light source</b><br>n/a: LED<br>L2: laser class 2                                                                                                                                                                                                                             |
| <b>H</b>       | <b>Operating range adjustment</b><br>1: 270° potentiometer                                                                                                                                                                                                                       |

## Part number code

|    |                                                                                                                                                                                                                                                                                                                                         |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ii | <b>Switching output / function / OUT1OUT2 (OUT1 = pin 2, OUT2 = pin 4)</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>D: deactivation input (deactivation with low signal)<br>X: pin not used |
| K  | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm, 3-wire<br>M12: M12 connector, 4-pin (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.

## Accessories

### Connection technology - Connection cables

|  | Part no. | Designation        | Article          | Description                                                                                                                                                  |
|--|----------|--------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130652 | KD U-M12-4A-V1-050 | Connection cable | Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC  |
|  | 50130690 | KD U-M12-4W-V1-050 | Connection cable | Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |

### Mounting technology - Mounting brackets

|  | Part no. | Designation | Article          | Description                                                                                                                                                                                                                  |
|--|----------|-------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50113549 | BT D12M.5   | Mounting bracket | Diameter, inner: 12 mm<br>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: Stainless steel |

## Accessories

### Standard reflectors

|                                                                                   | Part no. | Designation | Article   | Description                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|----------|-------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50081283 | TKS 20X40   | Reflector | Design: Rectangular<br>Reflective surface: 16 mm x 38 mm<br>Triple reflector size: 2.3 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |
|  | 50040820 | TKS 40X60   | Reflector | Design: Rectangular<br>Reflective surface: 37 mm x 56 mm<br>Triple reflector size: 4 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive   |

### Reflective tapes for standard applications

|                                                                                    | Part no. | Designation   | Article         | Description                                                                                                                                             |
|------------------------------------------------------------------------------------|----------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50108300 | REF 4-A-50x50 | Reflective tape | Design: Rectangular<br>Reflective surface: 50 mm x 50 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-adhesive |

#### Note



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