# Technical data sheet
# Polarized retro-reflective photoelectric sensor
Part no.: 50140149
PRK412B/N

For Illustration purposes only

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# Technical data

## Basic data

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

## Optical data

| | |
|---|---|
| **Operating range** | 0.02 ... 1.8 m (guaranteed operating range), With reflector TK(S) 100x100 |
| **Operating range limit** | 0.02 ... 2.3 m (typical operating range), With reflector TK(S) 100x100 |
| **Light source** | LED, Red |
| **Wavelength** | 660 nm |
| **Transmitted-signal shape** | Pulsed |
| **LED group** | Exempt group (in acc. with EN 62471) |

## Electrical data

| | |
|---|---|
| **Protective circuit** | Polarity reversal protection |
| | 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

| | |
|---|---|
| **Type** | Digital switching output |
| **Voltage type** | DC |
| **Switching current, max.** | 200 mA |

##### Switching output 1

| | |
|---|---|
| **Switching element** | Transistor, NPN |
| **Switching principle** | Dark switching |

## Time behavior

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

## Connection

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

### Connection 1

| | |
|---|---|
| **Function** | Signal OUT |
| | Voltage supply |
| **Type of connection** | Cable |
| **Cable length** | 2,000 mm |
| **Sheathing material** | PVC |
| **Cable color** | Black |
| **Number of conductors** | 3 -wire |
| **Wire cross section** | 0.34 mm² |

## Mechanical data

| | |
|---|---|
| **Dimension (Ø x L)** | 12 mm x 51 mm |
| **Thread size** | M12 x 1 mm |
| **Housing material** | Metal |
| **Metal housing** | Chromed brass |
| **Lens cover material** | Glass |
| **Net weight** | 100 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

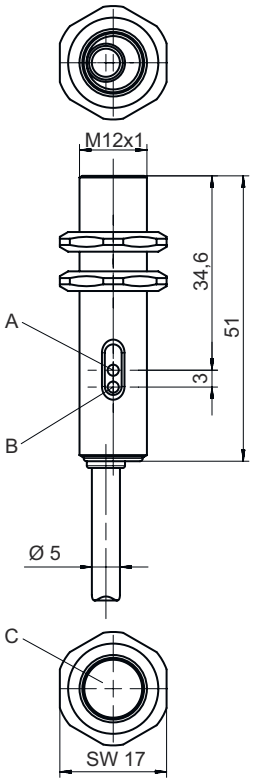
| | |
|---|---|
| **Degree of protection** | IP 67 |
| **Protection class** | III |
| **Approvals** | c UL US |
| **Standards applied** | IEC 60947-5-2 |

## 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




A Green LED
B Yellow LED
C Optical axis

# Electrical connection

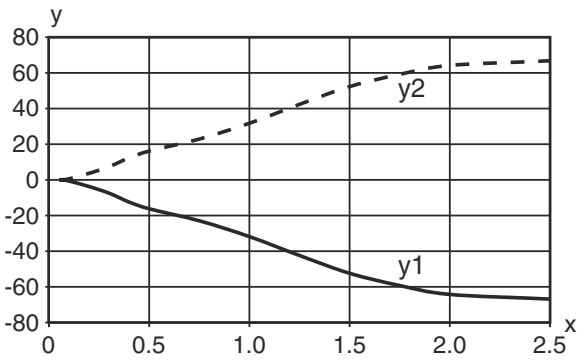
## Connection 1

| | |
|---|---|
| **Function** | Signal OUT |
| | Voltage supply |
| **Type of connection** | Cable |
| **Cable length** | 2,000 mm |
| **Sheathing material** | PVC |
| **Cable color** | Black |
| **Number of conductors** | 3 -wire |
| **Wire cross section** | 0.34 mm² |

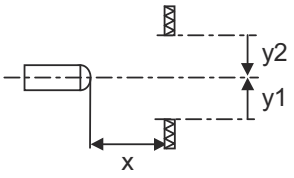
| Conductor color | Conductor assignment |
|---|---|
| **Brown** | V+ |
| **Black** | OUT 1 |
| **Blue** | GND |

# Diagrams

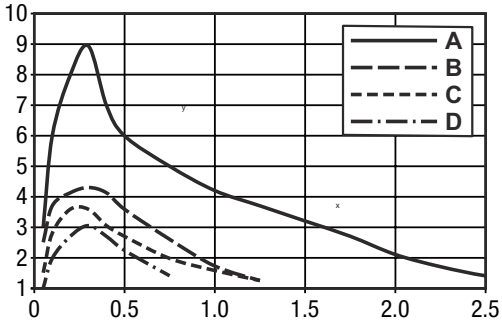
## Typ. response behavior




x Distance [m]
y Misalignment [mm]




## Typ. function reserve




x Distance [m]
y Function reserve

A TKS 100x100
B TKS 40x60
C MTKS 50x50.1
D Film REF 4-A-50x50

# 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 limit | Description |
|---|---|---|---|---|
| | 50117583 | MTKS 50x50.1 | 0.015 ... 1 m<br>0.015 ... 1.3 m | Design: Rectangular<br>Triple reflector size: 1.2 mm<br>Reflective surface: 50 mm x 50 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |

# Reflectors & reflective tapes

| | Part no. | Designation | Operating range<br>Operating range limit | 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>Reflective surface, diameter: 79 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Rear side can be glued |
| | 50022816 | TKS 100X100 | 0.02 ... 1.8 m<br>0.02 ... 2.3 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 |
| | 50081283 | TKS 20X40 | 0.02 ... 0.5 m<br>0.02 ... 0.65 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 |
| | 50023525 | TKS 30X50 | 0.02 ... 0.65 m<br>0.02 ... 0.85 m | Design: Rectangular<br>Triple reflector size: 3 mm<br>Reflective surface: 27 mm x 44 mm<br>Material: Plastic<br>Base material: Plastic<br>Chemical designation of the material: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |
| | 50040820 | TKS 40X60 | 0.02 ... 1 m<br>0.02 ... 1.3 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: PMMA8N<br>Fastening: Through-hole mounting, Adhesive |

# Part number code

Part designation: **AAA412BGG.H/ii-K**

| | |
|---|---|
| **AAA412B** | **Operating principle / construction**<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 |
| **GG** | **Light source**<br>n/a: LED<br>L2: laser class 2 |
| **H** | **Operating range adjustment**<br>1: 270° potentiometer |

# Part number code

| | |
|---|---|
| **ii** | **Switching output / function / OUT1OUT2 (OUT1 = pin 4, OUT2 = pin 2)**<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** | **Electrical connection**<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.

# 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

## 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 |

**Note**

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