

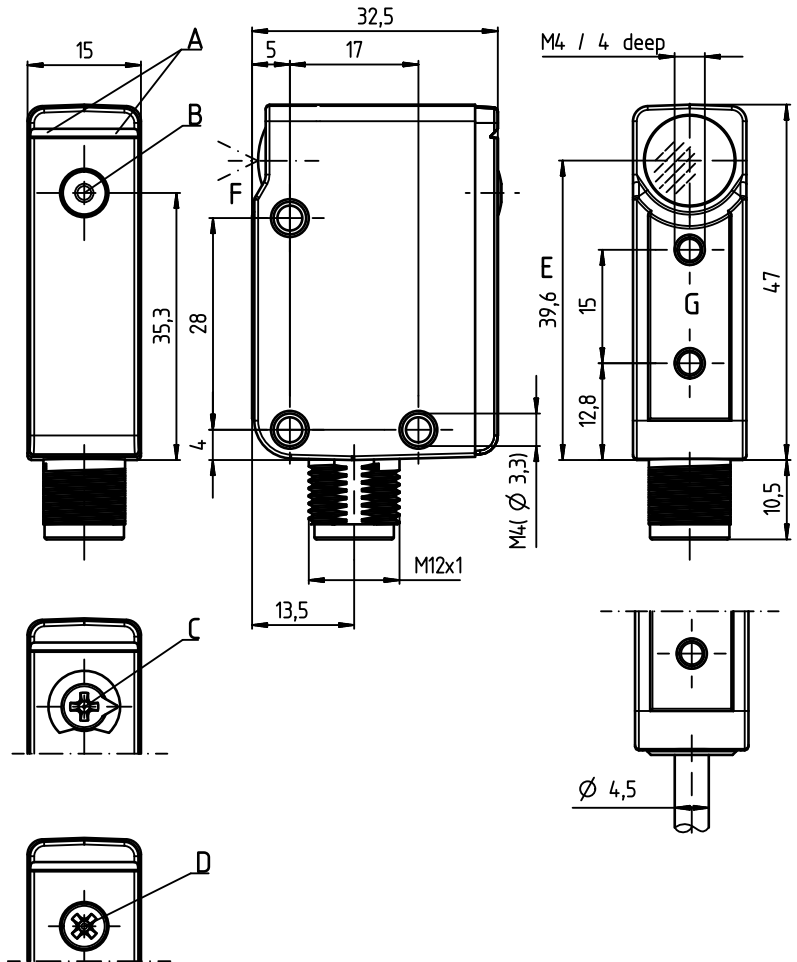
PRK18B

Tracking retro-reflective sensor for bottles and tape

en 04-2017/06 50121190-03

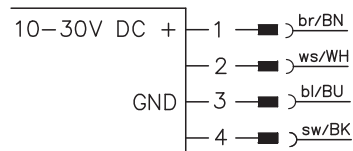


Dimensioned drawing



- A Display
- B Teach button
- C 270° potentiometer
- D 11-turn potentiometer
- E Optical axis
- F Optical accuracy
- G Reference plane for F

Electrical connection



- Retro-reflective photoelectric sensors with autocollimation optics for reliable detection of highly transparent bottles and tape
- Sensitivity adjustment via teach button
- Temperature compensation $\pm 20^{\circ}\text{C}$
- Automatic contamination compensation (tracking function) for longer intervals between cleanings

Accessories:

(available separately)

- Mounting system (BTU 200, BT 95)
- M12 connection technology (K-D M12)
- Reflectors (TK, MTK)
- Reflective tape (REF)
- Deflecting mirrors (US18B)

| | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|--------------------|-------|------------------------------------|-------|------------------------------------|
| PRK18B.TT3/4P-M12 | + | PNP dark | GND | PNP light |
| PRK18B.TT3/4P-M12 | + | PNP light | GND | PNP dark |
| PRK18B.XTT3/4P-M12 | + | PNP dark | GND | PNP light |
| PRK18B.TT3/2N-M12 | + | NPN dark | GND | NPN light |
| PRK18B.TT3/6G-M12 | + | Push-Pull (PNP dark, NPN light) | GND | Push-Pull (PNP light, NPN dark) |

We reserve the right to make changes • PAL_PRK18BTT_en_50121190_03.fm

Specifications

Optical data

| | |
|--|----------------------------------|
| Typ. op. range limit (TK(S) 100x100) ¹⁾ | 0 ... 3.6m |
| Operating ranges ²⁾ | see tables |
| Light source ³⁾ | LED (modulated light) |
| Wavelength | 620nm (visible red light) |
| Optical accuracy | type dependent (see order guide) |

Timing

| | |
|-----------------------|---------|
| Switching frequency | 1500Hz |
| Response time | 0.333ms |
| Jitter time | 110µs |
| Delay before start-up | < 300ms |

Electrical data

| | |
|------------------------------------|---|
| Operating voltage UB ⁴⁾ | 10 ... 30VDC (incl. residual ripple) |
| Residual ripple | ≤ 15% of UB |
| Open-circuit current | ≤ 18mA |
| Switching outputs/functions | /6G 2 push-pull switching outputs pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching |
| | /4P 2 PNP switching outputs, antivalent, pin 2: dark switching, pin 4: light switching |
| | /P4 2 PNP switching outputs, antivalent, pin 2: light switching, pin 4: dark switching |
| | /4X 1 PNP switching output, light switching |
| | /PX 1 PNP switching output, dark switching |
| | /2N 2 NPN switching outputs, antivalent |
| | /2X 1 NPN switching output, light switching |
| | /NX 1 NPN switching output, dark switching |
| Signal voltage high/low | ≥ (UB-2V) ≤ 2V |
| Output current | max. 100mA |
| Sensitivity | adjustable via teach button (see order guide) |

Indicators

| | |
|--|-----------------|
| Green LED | ready |
| Yellow LED | light path free |
| Yellow/green LED, flashing synchronously (9Hz) | error |

Mechanical data

| | |
|-----------------------|---|
| Housing ⁵⁾ | diecast zinc, chemically nickel-plated |
| Connector | diecast zinc, chemically nickel-plated |
| Optics | glass |
| Operation | teach button |
| Weight | with M12 connector: 60g with 6000mm cable: 240g |
| Connection type | M12 connector, 4-pin cable 6000mm, 4 x 0.20mm ² |

Environmental data

| | |
|-----------------------------------|--|
| Ambient temp. (operation/storage) | -40°C ... +60°C / -40°C ... +70°C |
| Protective circuit ⁶⁾ | 2, 3 |
| VDE safety class ⁷⁾ | III |
| Protection class | IP67, IP 69K |
| Light source | exempt group (in acc. with EN 62471) |
| Standards applied | IEC 60947-5-2 |
| Certifications | UL 508, C22.2 No.14-13 ⁴⁾ ⁸⁾ |
| Chemical resistance | tested in accordance with ECOLAB |

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) Average life expectancy 100,000h at an ambient temperature of 25°C
- 4) For UL applications: for use in class 2 circuits according to NEC only
- 5) Color changes due to cleaning agents do not adversely affect the coating
- 6) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs
- 7) Rating voltage 50V
- 8) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.24A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

Tables

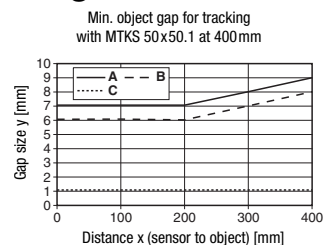
| Reflectors | Operating range |
|-----------------|-----------------|
| 1 TK(S) 100x100 | 0 ... 3.0m |
| 2 MTKS 50x50.1 | 0 ... 2.8m |
| 3 TK(S) 40x60 | 0 ... 2.5m |
| 4 TK(S) 30x50 | 0 ... 1.1m |
| 5 TK(S) 20x40 | 0 ... 1.1m |
| 6 Tape 6 50x50 | 0 ... 1.0m |

| | | | |
|---|---|-----|-----|
| 1 | 0 | 3.0 | 3.6 |
| 2 | 0 | 2.8 | 3.3 |
| 3 | 0 | 2.5 | 3.0 |
| 4 | 0 | 1.1 | 1.3 |
| 5 | 0 | 1.1 | 1.3 |
| 6 | 0 | 1.0 | 1.2 |

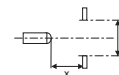
□ Operating range [m]
 ▒ Typ. operating range limit [m]

TK ... = adhesive
 TK(S) ... = screw type
 Tape 6 = adhesive

Diagrams



- A 11% sensor sensitivity
- B 18% sensor sensitivity
- C 100% sensor sensitivity



Remarks

Operate in accordance with 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 the intended use.

● Reflectors:

The light spot may not extend beyond the reflector. Preferably use MTK(S) reflectors or reflective tape 6.

UL REQUIREMENTS

Enclosure Type Rating: Type 1

For Use in NFPA 79 Applications only.

Adapters providing field wiring means are available from the manufacturer. Refer to manufacturers information.

CAUTION – the use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION ! Si d'autres dispositifs d'alignement que ceux préconisés ici sont utilisés ou s'il est procédé autrement qu'indiqué, cela peut entraîner une exposition à des rayonnements et un danger pour les personnes.

PRK18B

Tracking retro-reflective sensor for bottles and tape

Part number code

P R K 1 8 B . F X T T 3 / 4 P - M 1 2

Operating principle

PRK Retro-reflective photoelectric sensor for bottles
RK Retro-reflective photoelectric sensor for tape
 (Function against any reflective tapes and glass triple reflectors)

Series

18B 18B series

Timing

F High speed
free Standard

Optical accuracy

X Optical axis aligned, shift angle $< \pm 0.25^\circ$
free Standard

Detection properties

T Setting of 11% is possible
free Setting of 11% is not possible

Tracking function available

T 1) Tracking function/contamination compensation
free No tracking function

Setting

1 270° potentiometer
2 11-turn potentiometer
3 Teach button
free No setting

Pin assignment of connector pin 4 / black cable wire

2 NPN, light switching
N NPN, dark switching
4 PNP, light switching
P PNP, dark switching
6 Push-Pull (PNP light switching, NPN dark switching)
G Push-Pull (PNP dark switching, NPN light switching)
L IO-Link

Pin assignment of connector pin 2 / white cable wire

X Not assigned
2 NPN, light switching
N NPN, dark switching
4 PNP, light switching
P PNP, dark switching
6 Push-Pull (PNP light switching, NPN dark switching)
G Push-Pull (PNP dark switching, NPN light switching)
T Teach input

Connection technology

M12 M12 connector, 4-pin
6000 Cable 6 m

1) Only possible in conjunction with the detection property "T".

Order guide

The sensors listed here are preferred types; current information at www.leuze.com.

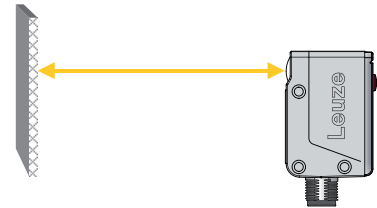
| Selection table | | Order code → | | | | |
|--|--|---|---|--|---|---|
| Equipment ↓ | | PRK18B.TT3/4P-M12 Part no. 50121229 | PRK18B.TT3/P4-M12 Part no. 50126940 | PRK18B.XTT3/4P-M12 Part no. 50124943 | PRK18B.TT3/2N-M12 Part no. 50121228 | PRK18B.TT3/6G-M12 Part no. 50132521 |
| Switching output | 1 x PNP, light switching | | | | | |
| | 1 x PNP, dark switching | | | | | |
| | 2 x PNP, antivalent, pin 2: dark switching, pin 4: light switching | ● | | ● | | |
| | 2 x PNP, antivalent, pin 2: light switching, pin 4: dark switching | | ● | | | |
| | 1 x NPN, dark switching | | | | | |
| | 2 x NPN, antivalent | | | | ● | |
| | 2 x push-pull switching output | | | | | ● |
| | 1 x IO-Link, 1 x PNP, dark switching | | | | | |
| | 1 x IO-Link, 1 x NPN, dark switching | | | | | |
| Optical accuracy | calibrated $\leq \pm 0.25^\circ$ | | | ● | | |
| Switching frequency/response time/jitter | 500Hz/1 ms/320µs | | | | | |
| | 1500Hz/333µs/110µs | ● | ● | ● | ● | ● |
| | 5000Hz/100µs/32µs | | | | | |
| Detection properties | highly transparent bottles and glasses | ● | ● | ● | ● | ● |
| | highly transparent tape < 20µm thick | | | | | |
| | transparent containers | ● | ● | ● | ● | ● |
| Tracking function | exists | ● | ● | ● | ● | ● |
| Setting | 270° potentiometer | | | | | |
| | 11-turn potentiometer | | | | | |
| | teach button | ● | ● | ● | ● | ● |
| Connection technology | M12 connector | ● | ● | ● | ● | ● |
| | cable, 6000mm | | | | | |

Sensor setting via teach button



- **The sensor is factory-adjusted for maximum operating range.**
Recommendation: teach only if the desired objects are not reliably detected.

- **Prior to teaching:**
Clear the light path to the reflector!
The device setting is stored in a fail-safe way. A reconfiguration following voltage interruption or switch-off is thus not required.

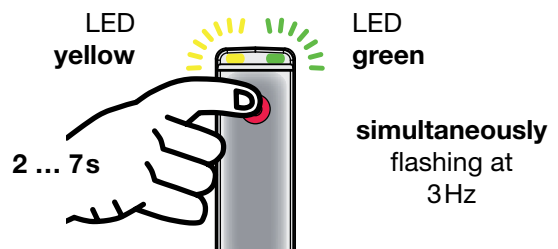


Teaching for 11% sensor sensitivity (full single bottles or tape)

- Press teach button until both LEDs flash **simultaneously**.
- Release teach button.
- Ready.



After the teaching, the sensor switches when about 11% of the light beam are covered by the object.



Teaching for 18% sensor sensitivity (empty single bottles)

- Press teach button until both LEDs flash **alternatingly**.
- Release teach button.
- Ready.

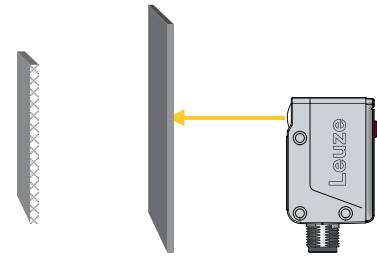


After the teaching, the sensor switches when about 18% of the light beam are covered by the object.

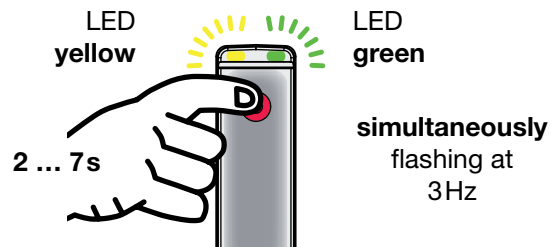


Teaching for maximum operating range (factory setting at delivery)

- Prior to teaching:
Interrupt the light path to the reflector!



- Press teach button until both LEDs flash **simultaneously**.
- Release teach button.
- Ready.



Activating/deactivating the tracking function

- Press teach button until only the green LED flashes
- Release the teach button. The yellow LED displays the tracking function status for 2s:
 - Yellow LED ON = tracking activated (factory settings)
 - Yellow LED OFF = tracking deactivated
- After 2s: ready

