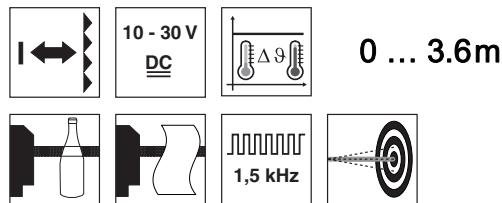


**PRK18B**
**Tracking retro-reflective photoelectric sensors for bottles and films**

en 2019/06/05 50121190-04

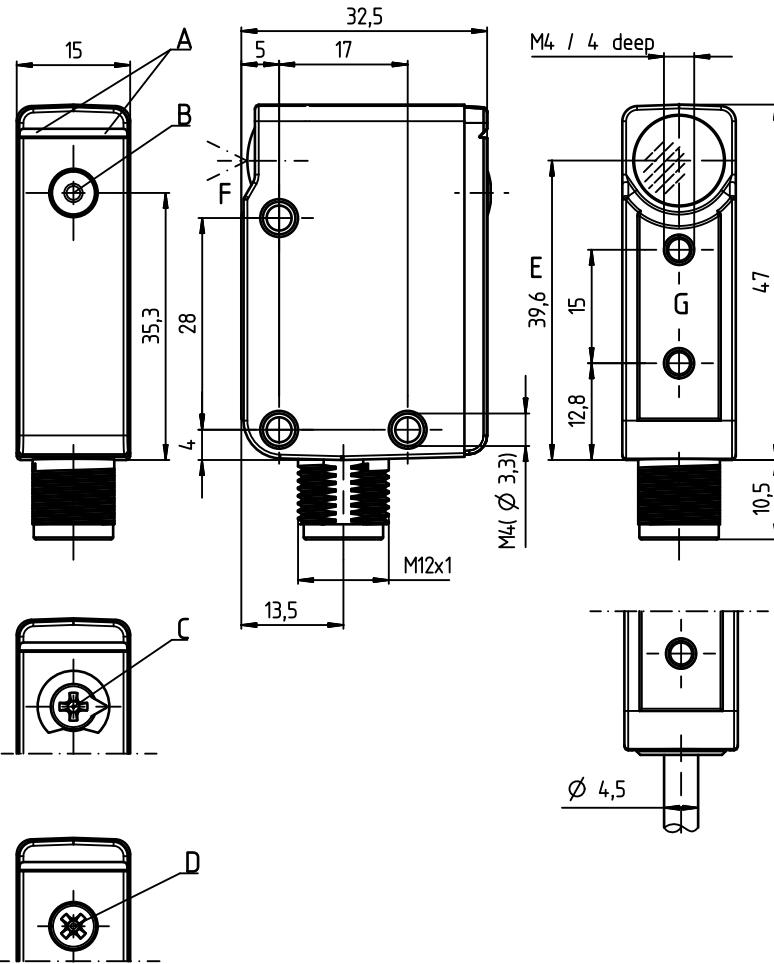


- Retro-reflective photoelectric sensors with autocollimation optics for reliable detection of highly-transparent bottles and films
- Sensitivity adjustment via teach button
- Temperature compensation  $\pm 20^\circ\text{C}$
- Automatic contamination compensation (tracking function) for longer intervals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

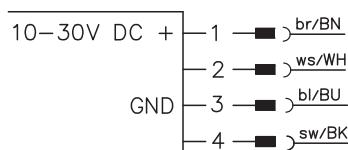

**Accessories:**

(available separately)

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

**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**


	Pin 1	Pin 2	Pin 3	Pin 4
PRK18B.TT3/4P-M12	+	PNP dark	GND	PNP light
PRK18B.TT3/P4-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)

## Technical data

### Optical data

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

### Time behavior

Switching frequency	1500 Hz
Response time	0.333ms
Jitter time	110µs
Readiness delay	< 300ms

### Electrical data

Operating voltage UB <sup>4)</sup>	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	Adjustment 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 <sup>5)</sup>	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 M12 connector, 4-pin Cable 6000mm, 4 x 0.20mm <sup>2</sup>
Connection type	

### Environmental data

Ambient temp. (operation/storage)	-40°C ... +60°C/-40°C ... +70°C
Protective circuit <sup>6)</sup>	2, 3
VDE protection class <sup>7)</sup>	III
Degree of protection	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 <sup>4)</sup> <sup>8)</sup>
Chemical resistance	Tested in accordance with ECOLAB

- 1) Typ. operating range limit: max. attainable range without function reserve
- 2) Operating range: recommended range with function reserve
- 3) Average life expectancy 100,000h at an ambient temperature of 25°C
- 4) For UL applications: use is permitted exclusively in Class 2 circuits according to NEC
- 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

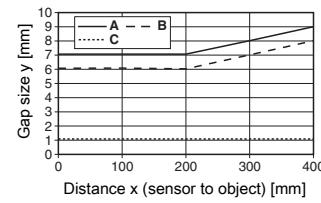
Reflectors	Operating range
1 TK(S) 100x100	0 ... 3.0m
2 MTKS 50x50.1	0 ... 2.8m
3 TK(S) 40x60	0 ... 2.5m
4 TK(S) 30x50	0 ... 1.1m
5 TK(S) 20x40	0 ... 1.1m
6 Film 6 50x50	0 ... 1.0m
1 0	3.0   3.6
2 0	2.8   3.3
3 0	2.5   3.0
4 0	1.1   1.3
5 0	1.1   1.3
6 0	1.0   1.2

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

TK ... = adhesive  
TKS ... = screw type  
Film 6 = adhesive

## Diagrams

Min. object gap for tracking  
With MTKS 50x50.1 at 400mm



## 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.

### ● Reflectors:

The light spot may not exceed 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 photoelectric sensors for bottles and films**

## 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 films  
 (Function against any reflective tapes and glass triple reflectors)

### Series

**18B** 18B series

### Time behavior

**F** High Speed  
**Free** Standard

### Optical accuracy

**X** Optical axis aligned, error 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, 6m

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

## Order guide

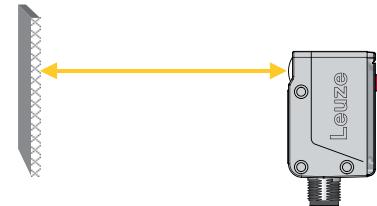
The sensors listed here are preferred types; current information at [www.leuze.com](http://www.leuze.com).

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	1x PNP, light switching					
	1x PNP, dark switching					
	2x PNP antivalent, pin 2: dark switching, pin 4: light switching	●		●		
	2x PNP antivalent, pin 2: light switching, pin 4: dark switching		●			
	1x NPN, dark switching					
	2x NPN, antivalent				●	
	2x 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/1ms/320μs					
	1500Hz/333μs/110μs	●	●	●	●	●
	5000Hz/100μs/32μs					
Detection properties	Highly transparent bottles and glasses	●	●	●	●	●
	Highly transparent film $< 20\mu\text{m}$ 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 power failure or switch-off is thus not required.

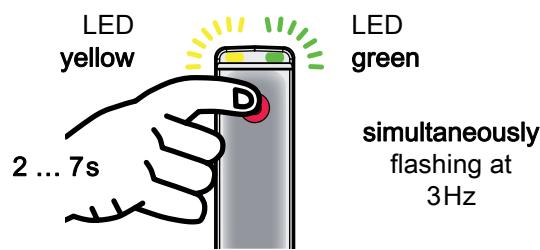


### Teaching for 11% sensor sensitivity (full single bottles or film)

- 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 alternately.
- Release teach button.
- Ready.

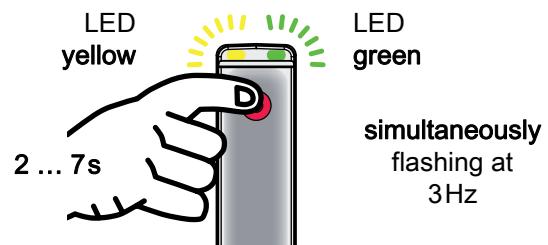
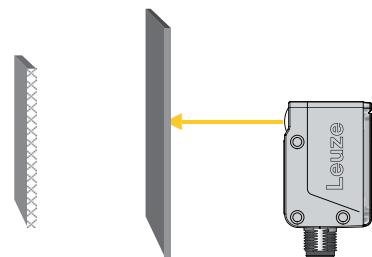


After the teaching, the sensor switches when about 18% of the light beam are covered by the object.



Teaching for maximum operating range (factory setting at delivery)

- Teach to maximum operating range only works with deactivated tracking function (see chapter Activating/deactivating the tracking function)
- 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 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

