

PRK18B / RK18B

Retro-reflective sensors

en 04-2015/07 50121194



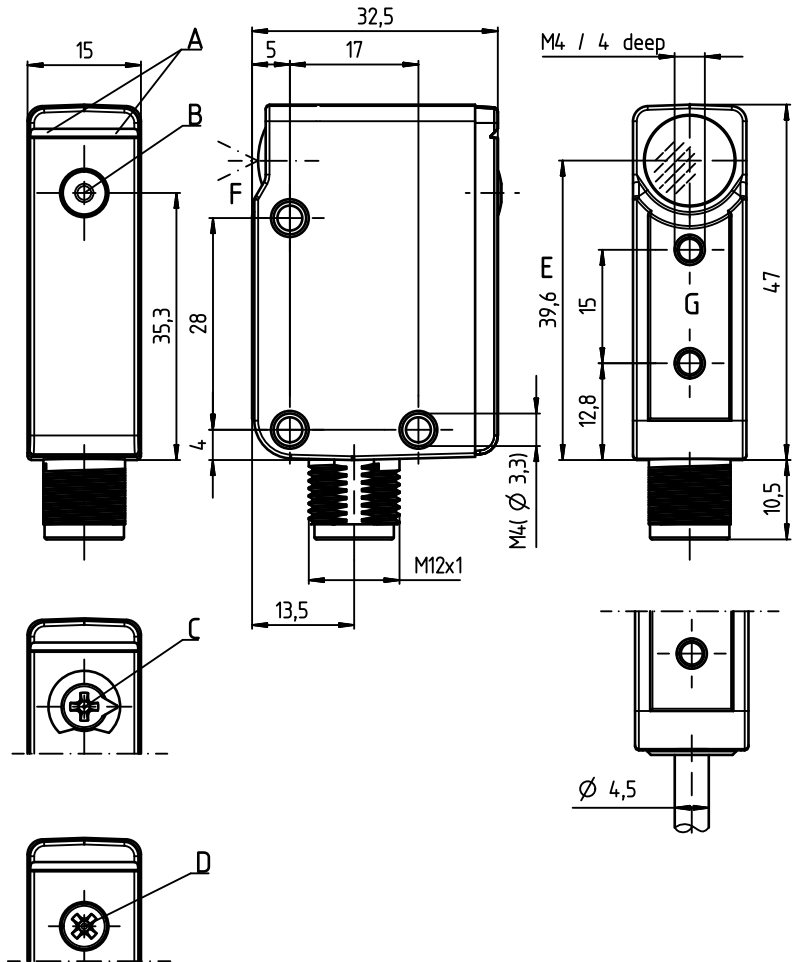
10 - 30 V  
DC

0 ... 7.2m



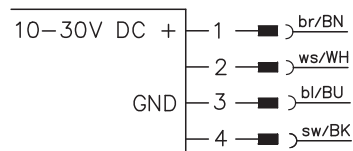
- Retro-reflective photoelectric sensors with autocollimation optics for reliable detection of containers
- Retro-reflective photoelectric sensors with autocollimation optics for operating with glass triple reflectors and any desired reflective tapes
- Adaptation to the application by means of 270° potentiometer

Dimensioned drawing

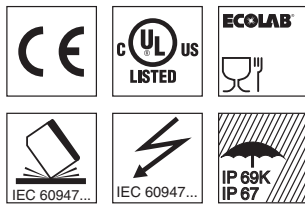


- A Display
- B Teach button
- C 270° potentiometer
- D 11-turn potentiometer
- E Optical axis
- F Optical accuracy
- G Reference plane for F

Electrical connection



	Pin 1	Pin 2	Pin 3	Pin 4
PRK18B.1/4P-M12	+	PNP dark	GND	PNP light
PRK18B.1/2N-M12	+	NPN dark	GND	NPN light
RK18B.1/4P-M12	+	PNP dark	GND	PNP light
RK18B.1/4P-M12P2	+	PNP dark	GND	PNP light
RK18B.1/2N-M12	+	NPN dark	GND	NPN light
PRK18B.1/4P-6000	+	PNP dark	GND	PNP light
PRK18B.1/2N-6000	+	NPN dark	GND	NPN light
RK18B.1/4P-6000	+	PNP dark	GND	PNP light
RK18B.1/2N-6000	+	NPN dark	GND	NPN light



Accessories:

(available separately)

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

We reserve the right to make changes • DS\_PRK18B1RK18B1\_en\_50121194.fm

## Specifications

### Optical data

Typ. op. range limit (TK(S) 100x100) <sup>1)</sup>	0 ... 7.2m
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)

### Timing

Switching frequency	500Hz
Response time	1 ms
Delay before start-up	< 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	/4P 2 PNP switching outputs, antivalent /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 with 270° potentiometer (see order guide)

### Indicators

Green LED	ready
Yellow LED	light path free
Yellow LED, flashing	light path free, minimum performance reserve

### Mechanical data

Housing <sup>5)</sup>	diecast zinc, chemically nickel-plated
Connector	diecast zinc, chemically nickel-plated
Optics	glass
Operation	270° potentiometer
Weight	with M12 connector: 60g with 6000mm cable: 240g
Connection type	M 12 connector, 4-pin cable 6000mm, 4 x 0.20mm <sup>2</sup>

### Environmental data

Ambient temp. (operation/storage)	-40°C ... +60°C/-40°C ... +70°C
Protective circuit <sup>6)</sup>	2, 3
VDE safety class <sup>7)</sup>	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 <sup>4)</sup> 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)

## 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.

### 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.

### ● RK18B models:

Suitable in combination with glass triple reflectors. Glossy and reflective objects can lead to switching errors.

## Tables

### Plastic reflectors:

Reflectors	Operating range
1 TK(S) 100x100	0 ... 6.0m
2 MTKS 50x50.1	0 ... 4.5m
3 TK(S) 40x60	0 ... 3.5m
4 TK(S) 30x50	0 ... 2.0m
5 TK(S) 20x40	0 ... 2.0m
6 Tape 6 50x50	0 ... 2.0m

1 0	6.0	7.2
2 0	4.5	5.5
3 0	3.5	4.2
4 0	2.0	2.4
5 0	2.0	2.4
6 0	2.0	2.4

### Glass reflectors (RK18B only):

Reflectors	Operating range
1 TG29 Ø 29mm	0 ... 1.3m
2 TG6 Ø 7mm	0 ... 0.6m

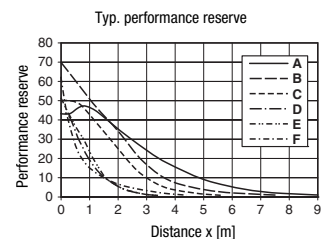
1 0	1.3	1.5
2 0	0.6	0.7

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

- TK ... = adhesive
- TKS ... = screw type
- Tape 6 = adhesive
- TG6 = adhesive, pressable
- TG29 = with M3 threaded pin

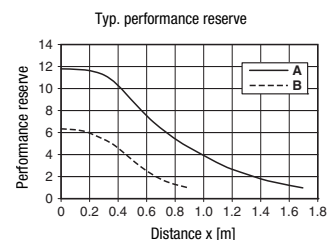
## Diagrams

### Plastic reflectors:



- A TK(S) 100x100
- B MTKS 50x50.1
- C TK(S) 40x60
- D TK(S) 30x50
- E TK(S) 20x40
- F Tape 6 50x50

### Glass reflectors (RK18B only):



- A TG29
- B TG6

## PRK18B / RK18B

## Retro-reflective sensors

### Part number code

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

**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

**T** Teach input

#### Connection technology

**M12** M12 connector, 4-pin

**6000** Cable 6 m

#### Special devices

**Px** Special device version  $x = 1 \dots 9$

**free** Standard device

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.1/4P-M12 Part no. 50117359	PRK18B.1/2N-M12 Part no. 50117357	RK18B.1/4P-M12 Part no. 50117375	RK18B.1/4P-M12P2 Part no. 50129247	RK18B.1/2N-M12 Part no. 50117373	PRK18B.1/4P-6000 Part no. 50117358	PRK18B.1/2N-6000 Part no. 50117356	RK18B.1/4P-6000 Part no. 50117374	RK18B.1/2N-6000 Part no. 50117372
Switching output	1 x PNP, light switching									
	1 x PNP, dark switching									
	2 x PNP, antivalent	●		●	●		●		●	
	1 x NPN, dark switching									
	2 x NPN, antivalent		●			●		●		●
	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 / glass triple reflectors	●	●	●		●	●	●	●	●
	for test bottle detection				●					
Tracking function	exists									
Setting	270° potentiometer	●	●	●	●	●	●	●	●	●
	11-turn potentiometer									
	teach button									
Connection technology	M12 connector	●	●	●	●	●				
	cable, 6000mm						●	●	●	●
Special features	larger light spot				●					

## Sensor adjustment by means of 270° potentiometer

The sensor is factory-adjusted for maximum operating range (potentiometer position **max.**).

	Operating range	
	small operating range	large operating range
<b>Sensor sensitivity</b>	minimum	maximum
<b>Setting</b>	