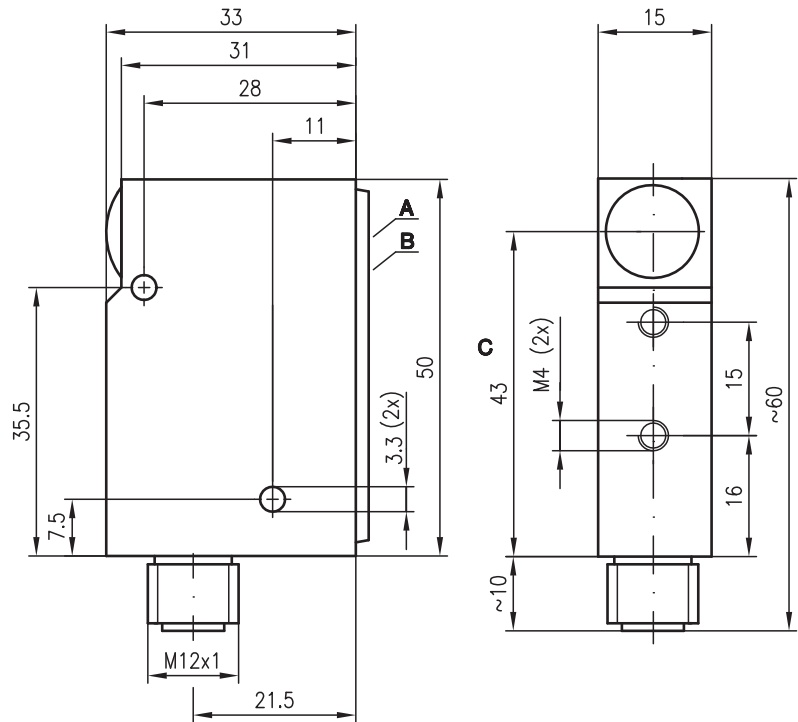


(I)PRK 18

Retro-reflective photoelectric sensors with polarisation filter

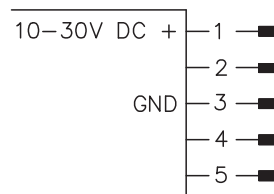


Dimensioned drawing



- A** Step switch for object adjustment
- B** Indicator diodes
- C** Optical axis

Electrical connection

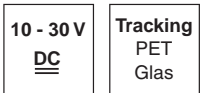


	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5
PRK 18/24 DL.46	+	NPN	GND	PNP	L/D
PRK 18/24 DL.42	+	NPN	GND	PNP	Teach
PRK 18/44 L.43	+	PNP	GND	PNP	Teach
IPRK 18/4 DL.41	+	Warn	GND	PNP	L/D
IPRK 18/2 DL.41	+	Warn	GND	NPN	L/D
IPRK 18/4 DL.43	+	Warn	GND	PNP	Teach

en 06-2011/02 50109446-01



0 ... 4m



- Intelligent sensor for detection of transparent objects (e.g. clear glass, PE, foil)
- Automatic contamination compensation (tracking function) for longer intervals between cleanings
- Adjustment via teach-in

We reserve the right to make changes • DS_IPRK18_DL.4_en.fm



Accessories:

(available separately)

- Mounting system (BT 95)
- M12 connectors (KD ...)
- Reflectors

Specifications

Optical data

Typ. operating range limit (TK(S) 100x100) ¹⁾	0 ... 4m
Operating range ²⁾	see tables
Recommended reflector	MTK(S) 50x50
Light source	LED (modulated light)
Wavelength	660nm (visible red light, polarised)

Timing

Switching frequency	1 kHz
Response time	0.5ms
Delay before start-up	≤ 300ms

Electrical data

Operating voltage U_B	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 35mA
Switching output	see section 6. Preferred types
Warning output	see section 6. Preferred types
Function characteristics	see section 6. Preferred types
Signal voltage high/low ³⁾	$\geq (U_B - 2V) \leq 2V$
Output current	max. 2x100mA
Sensitivity	see section 6. Preferred types

Switch positions

Position teach-in	activation of the teach procedure
Position 1 (PE bottle)	operating point PE bottle
Position 2 (clear glass bottle)	operating point clear glass bottle
Position 3 (coloured glass bottle)	operating point coloured glass bottle
Position Auto	Tracking ON/OFF

Indicators

Green LED, continuous light	ready
Green LED, flashing	teach mode active with performance reserve
Red LED, continuous light	operation without performance reserve
Red LED, flashing	teaching without performance reserve
LED green/red flashing	device defective, no performance reserve
LED 1 yellow	light path free
LED 2 yellow	tracking ON

Mechanical data

Housing	diecast zinc
Optics cover	glass
Weight	150g
Connection type	M12 connector, 5-pin, stainless steel

Environmental data

Ambient temp. (operation/storage)	-25°C ... +55°C / -40°C ... +70°C
Protective circuit ⁴⁾	2, 3
VDE safety class	III
Protection class	IP 67, IP 69K ⁵⁾
LED class	1 (acc. to EN 62471)
Standards applied	IEC 60947-5-2

Options

Teach input	see section 6. Preferred types
Active/not active	edge from 0V to $U_B/0V$ or not connected
Teach delay	< 500ms
L/D input	see section 6. Preferred types
Dark/light switching	$U_B/0V$ or not connected
L/D delay	< 500ms
Warning output warn	see section 6. Preferred types
Signal voltage high/low	$\geq (U_B - 2V) \leq 2V$
Output current	max. 100mA

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) Functional extra-low voltage with reliable disconnection or protective extra-low voltage (VDE 0100/T 410)
- 4) 2=polarity reversal protection, 3=short-circuit protection for all outputs
- 5) IP 69K test acc. to DIN 40050 part 9 simulated, high pressure cleaning conditions without the use of additives, acids and bases are not part of the test

Approved purpose:

The diffuse reflection light scanners are retro-reflective photoelectric sensors for optical, contactless detection of objects.

Order guide

See section 6. Preferred types

Tables

Reflectors			Operating range	
1	TK(S)	100x100	0 ...	3.0m
2	MTK(S)	50x50	0 ...	2.4m
3	TK(S)	30x50	0 ...	1.6m
4	TK(S)	20x40	0 ...	1.4m
5	Tape 6	50x50	0 ...	2.0m

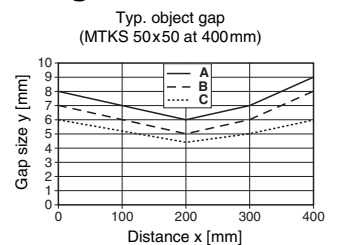
1	0		3.0	4.0
2	0		2.4	3.0
3	0	1.6	2.0	
4	0	1.4	1.8	
5	0	2.0	2.2	

- Operating range [m] *)
- Typ. operating range limit [m] *)

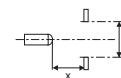
*) for sensitivity setting at switch position 3

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

Diagrams



- A Switch position 1
- B Switch position 2
- C Switch position 3



Remarks

Objects	Switch position
Multilayer foil, PE bottles, transparent glass pane	1
Clear glass bottle	2
Coloured glass bottle	3

- The light spot may not exceed the reflector.
- Teaching may only be performed with free light path.
- A change of the operating point is always possible and does not require a new teach-in.
- The red LED signals an insecure operating state. The warning output is set.
- For activation of the single functions you have to remain in the respective switch position for approx. 2ms.
- In switch positions "Teach" and "Auto" the switching outputs are active.
- Warning output: static signal for control limit reached.
- Preferably use MTK(S) 50x50 or tape 6.
- For foil 6 the sensor's side edge must be aligned parallel to the side edge of the reflective foil.

(I)PRK 18

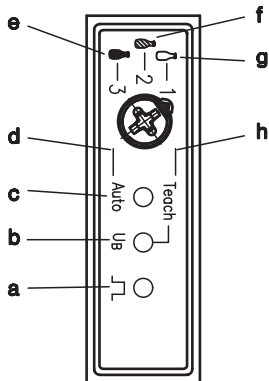
1. Operating principle of contamination compensation (tracking function)

This transparency sensor (clear-glass sensor) is a device which automatically compensates system contamination at the reflector and sensor by means of continuous measurement of the receiving level. The control rate depends on the number of gaps in the process. This tracking function increases the interval between cleaning sessions considerably.

The control limit is indicated by a warning output. The sensor does not need to be recalibrated after the system has been cleaned. In typical applications, cleaning can be performed during system operation. This means higher system efficiency.

The system is calibrated ("teach-in") once only at initial setup. The appropriate object is then selected (PE, clear glass or coloured glass). The "teach-in" process does not have to be performed again if a different object is selected.

2. Controls and indicators

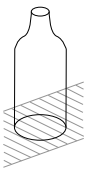
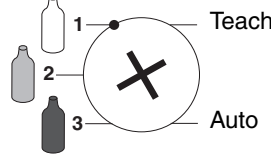
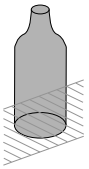
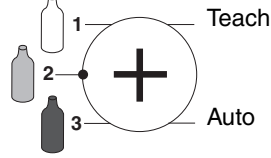
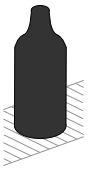
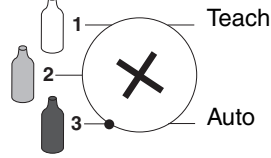


- a Light path free (LED 1 yellow)
- b Operation and teach indicator (LED green/red)
- c Tracking ON (LED 2 yellow)
- d Switch position tracking
- e Switch position 3 (coloured-glass bottle)
- f Switch position 2 (clear-glass bottle)
- g Switch position 1 (PE bottle, glass pane, foil)
- h Switch position Teach

3. Adjustment procedure (teach-in) via step switch

	Correct adjustment procedure:	Important to note:
	<p>1. There must be no objects in the beam path between the retro-reflective photoelectric sensor and the reflector during the adjustment procedure.</p>	The teach-in procedure must be conducted without any objects!
	<p>2. Align the sensor with the reflector so that the beam is visible in the middle of the reflector</p>	The beam must not fall outside the reflector area. The mounted reflector should always be larger than the visible beam!
	<p>3. Turn the step switch to the "Teach" position for about 2s.</p> <p>4. Turn the step switch back to positions 1, 2 or 3.</p>	The adjustment procedure must be conducted without objects!
	<p>5. To turn the tracking function on/off, turn the step switch to "Auto" for about 2s.</p> <p>6. Turn the step switch back to positions 1, 2 or 3.</p>	The step switch must be turned to positions 1, 2 or 3 during operation!

4. Setting operating mode

Object to be identified	Material, e.g.:	Switch position	Correct adjustment procedure:
① Transparent objects 	<ul style="list-style-type: none"> ● PE bottle ● PEN bottle ● Clear plate glass ● Foil 		<ol style="list-style-type: none"> 1. Turn the step switch to the "Teach" position for about 2s. 2. Turn the step switch back to position 1 Tracking can be turned on or off by switching to "Auto"
≍ Less transparent objects 	<ul style="list-style-type: none"> ● Clear glass bottle ● Coloured plate glass 		<ol style="list-style-type: none"> 1. Turn the step switch to the "Teach" position for about 2s. 2. Turn the step switch back to position 2 Tracking can be turned on or off by switching to "Auto"
≍ Opaque objects 	<ul style="list-style-type: none"> ● Coloured glass bottle ● Opaque objects 		<ol style="list-style-type: none"> 1. Turn the step switch to the "Teach" position for about 2s. 2. Turn the step switch back to position 3 Tracking can be turned on or off by switching to "Auto"

5. Calibration procedure (teach-in) by wire

1. Set step switch to desired operating mode (PE, clear-glass or coloured-glass bottle).
2. Activate teach-in wire (pin 5) (high active). Teach-in procedure takes max. 1s.
3. Deactivate teach-in wire (pin 5).

6. Preferred types

Selection table		PRK 18/24 DL.46 Art.-Nr. 50032798	PRK 18/24 DL.42 Art.-Nr. 50033554	PRK 18/44 L.43 Art.-Nr. 50115193	IPRK 18/4/DL.41 Art.-Nr. 50033552	IPRK 18/2 DL.41 Art.-Nr. 50033553	IPRK 18/4 DL.43 Art.-Nr. 50109415	
Equipment ↓		Order code →						
Application	PE	●	●	●	●	●	●	
	clear glass	●	●	●	●	●	●	
	coloured glass	●	●	●	●	●	●	
Switching outputs	2 PNP transistors			●	●		●	
	2 NPN transistors					●		
	1 NPN + 1 PNP transistor	●	●					
Function characteristics	complementary			●				
	light switching	●			●	●		
	dark switching	●	●		●	●	●	
Adjustment	step switch	●	●	●	●	●	●	
Options	contamination compensation (step tracking)	●	●	●	●	●	●	
	cleaning compensation (peak tracking)	●	●	●	●	●	●	
	tracking ON/OFF	●	●	●	●	●	●	
	warning output				●	●	●	
	teach-in via step-switch	●	●	●	●	●	●	
	teach-in via control line		●	●			●	
	light/dark switching via control line	●			●	●		
UL	●	●		●	●	●		