

Specifications

Optical data

Typ. op. range limit (TK(S) 100x100) ¹⁾	0 ... 5m
Operating range ²⁾	see tables
Light source ³⁾	LED (modulated light)
Wavelength	620nm (visible red light, polarized)

Timing

Switching frequency	1,000Hz
Response time	0.5ms
Delay before start-up	≤ 300ms

Electrical data

Operating voltage U_B ⁴⁾	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 18mA
Switching output ⁵⁾	.../6.22 1 push-pull switching output pin 4: PNP light switching, NPN dark switching pin 2: teach input
	.../6D.22 1 push-pull switching output pin 4: PNP dark switching, NPN light switching pin 2: teach input
	.../6.22...-S8.3 1 push-pull switching output pin 4: PNP light switching, NPN dark switching pin 2: teach input
	.../4D.22 1 PNP switching output, dark switching, pin 2: teach input light/dark reversible
Function characteristics	≥ ($U_B - 2V$)/≤ 2V
Signal voltage high/low	max. 100mA
Output current	setting via teach-in
Operating range	

Indicators

Green LED	ready
Yellow LED	light path free
Yellow LED, flashing	light path free, no performance reserve ⁶⁾

Mechanical data

Housing	plastic (PC-ABS); 1 attachment sleeve, nickel-plated steel
Optics cover	plastic (PMMA)
Weight	with connector: 10g with 200mm cable and connector: 20g with 2m cable: 50g
	2m cable (cross section 4x0.20mm ²), connector M8 metal, 0.2m cable with connector M8 or M12
Connection type	

Environmental data

Ambient temp. (operation/storage)	-30°C ... +55°C/-30°C ... +70°C
Protective circuit ⁷⁾	2, 3
VDE safety class	III
Protection class	IP 67
Light source	free group (in accordance with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 ⁴⁾ ⁸⁾

Options

Teach-in input/activation input

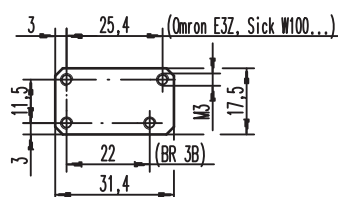
Transmitter active/not active	≥ 8V/≤ 2V
Activation/disable delay	≤ 1 ms
Input resistance	30kΩ

- 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) The push-pull switching outputs must not be connected in parallel
- 6) Display "no performance reserve" as yellow flashing LED is only available in standard teach setting
- 7) 2=polarity reversal protection, 3=short-circuit protection for all transistor outputs
- 8) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

Remarks

Adapter plate:

BT 3.2 (part no. 50103844) for alternate mounting on 25.4mm hole spacing (Omron E3Z, Sick W100...)



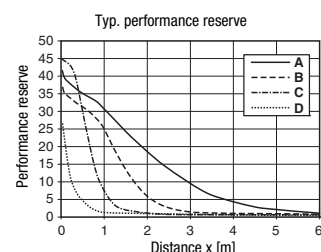
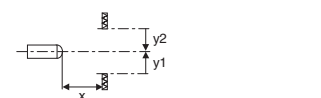
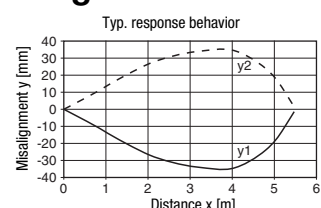
Tables

Reflectors			Operating range	
1	TK(S)	100x100	0 ... 4.0m	
2	TK	40x60	0 ... 2.6m	
3	TK	20x40	0 ... 1.3m	
4	Tape 4	50x50	0 ... 0.7m	

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

TK ... = adhesive
TKS ... = screw type

Diagrams



- A TK 100x100
- B TKS 40x60
- C TKS 20x40
- D Tape 4: 50x50

Remarks

Mounting system:



- ① = BT 3 (part no. 50060511)
- ②+③ = BT 3.1 ¹⁾ (part no. 50105585)
- ①+②+③ = BT 3B (part no. 50105546)

1) Packaging unit: PU = 10 pcs.

PRK 3B

Retro-reflective photoelectric sensors with polarization filter

Order guide

Selection table					Order code →									
Equipment ↓					PRK 3B/6.22 Part No. 50104699	PRK 3B/6.22-S8 Part No. 50104700	PRK 3B/6.22, 200-S8 Part No. 50104701	PRK 3B/6.22, 200-S12 Part No. 50105762	PRK 3B/6D.22-S8 Part No. 50106418	PRK 3B/6.2-S8.3 Part No. 50109385	PRK 3B/6.2,200-S8.3 Part No. 50114099	PRK 3B/6D.22.03, 200-S12 Part No. 50109488	PRK 3B/4D.22, 200-S8 Part No. 50110775	PRK 3B/4D.22Z, 200-S8 Part No. 50108373
Output 1 (OUT 1)	push-pull switching output, configurable		light switching		● ¹⁾	● ¹⁾	● ¹⁾	● ¹⁾	●	● ¹⁾	● ¹⁾	●		
			dark switching		●	●	●	●	● ¹⁾	●	●	● ¹⁾		
	PNP transistor output		light switching										● ¹⁾	● ¹⁾
			dark switching											
	start-up delay (special function)													
Input (IN)	teach input				●	●	●	●	●			●	●	●
	activation input													
Connection	cable 2,000mm		4-wire		●									
	M8 connector, metal		3-pin							●				
	M8 connector, metal		4-pin			●			●					
	200mm cable with M8 connector		3-pin								●			
	200mm cable with M8 connector		4-pin				●						●	●
	200mm cable with M12 connector		4-pin					●				● ³⁾		
Configuration	teach-in via button (lockable) and teach input				●	●	●	●	●			●	●	●
	teach-in via button									●	●			

1) Presetting, light/dark switching, adjustable

2) Start-up delay (special function)

The sensor output does not switch until an object has interrupted the light beam for at least 4 seconds. The output switches off without a time delay.

3) Connector without Ultra-Lock™ fast locking

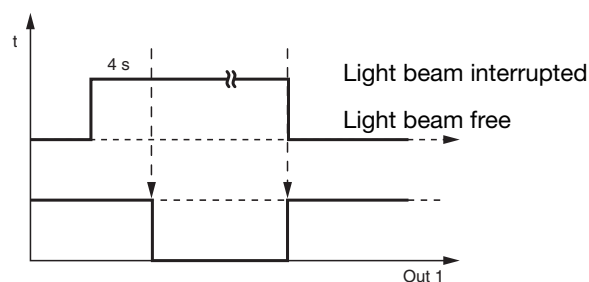
Operate in accordance with intended use!

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.

● Special function: start-up delay, only for PRK 3B/4D.22Z, 200-S8



Sensor adjustment (teach) via teach button



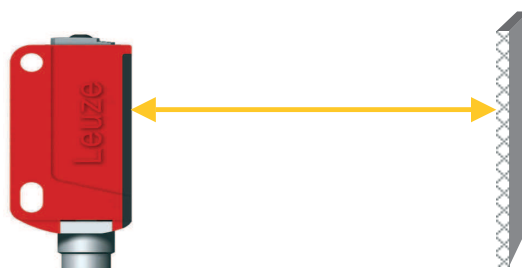
- The sensor is factory-adjusted for maximum operating range.

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.

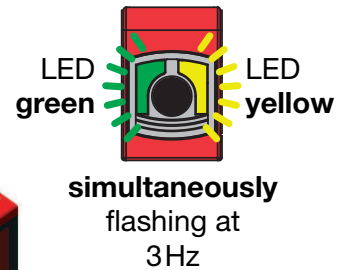
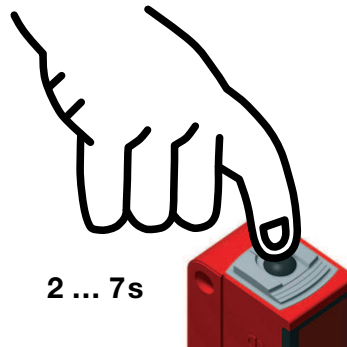


Standard teaching for average sensor sensitivity

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



After the standard teaching, the sensor switches when half of the light beam is covered by the object.

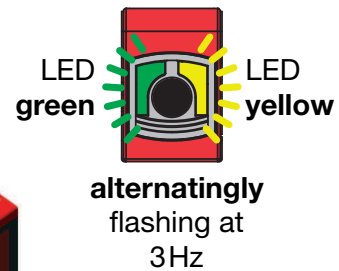
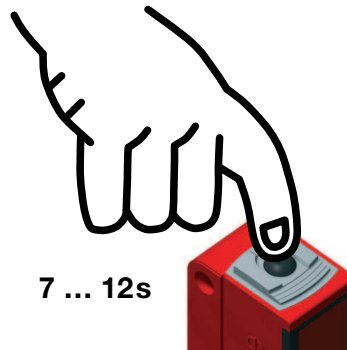


Teaching for increased sensor sensitivity

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

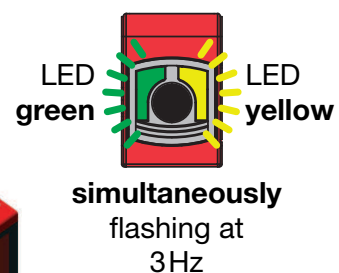
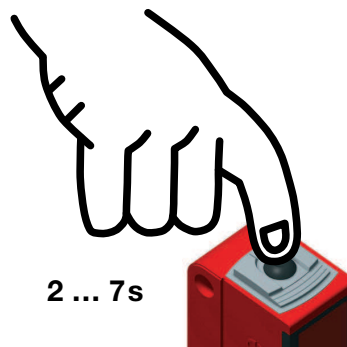
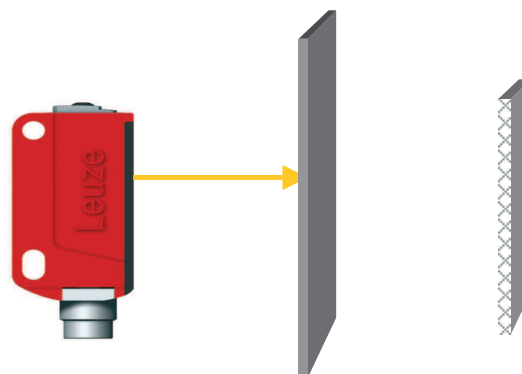


After the teaching for increased sensor sensitivity, the sensor switches when about 18 % of the light beam are covered by the object.



Teaching for maximum operating range (factory setting at delivery)

- Prior to teaching:
Cover the light path to the reflector!
- Procedure as for standard teaching.

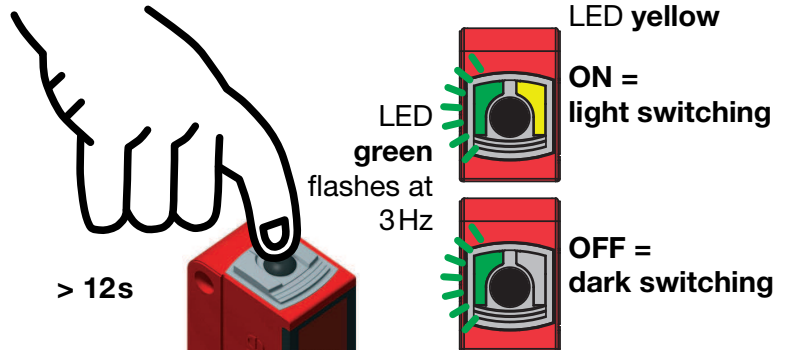


PRK 3B

Retro-reflective photoelectric sensors with polarization filter

Adjusting the switching behavior of the switching output – light/dark switching

- Press teach button until the green LED flashes. The yellow LED displays the current setting of the switching output:
ON = output switches on light
OFF = output switches on dark
- Continue to press the teach button in order to change the switching behavior.
- Release teach button.
- Ready.

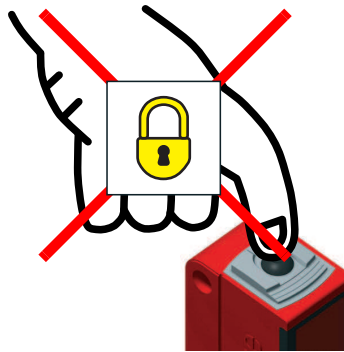


Locking the teach button via the teach input



A **static high signal** ($\geq 4\text{ms}$) at the teach input locks the teach button on the device if required, such that no manual operation is possible (e.g., protection from erroneous operation or manipulation).

If the teach input is not connected or if there is a static low signal, the button is unlocked and can be operated freely.



Sensor adjustment (teach) via teach input



The following description applies to PNP switching logic!

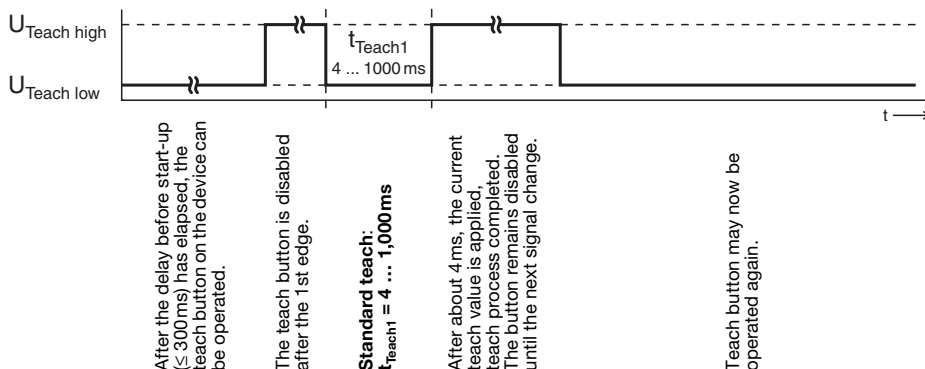
$U_{\text{Teach low}} \leq 2\text{V}$

$U_{\text{Teach high}} \geq (U_B - 2\text{V})$

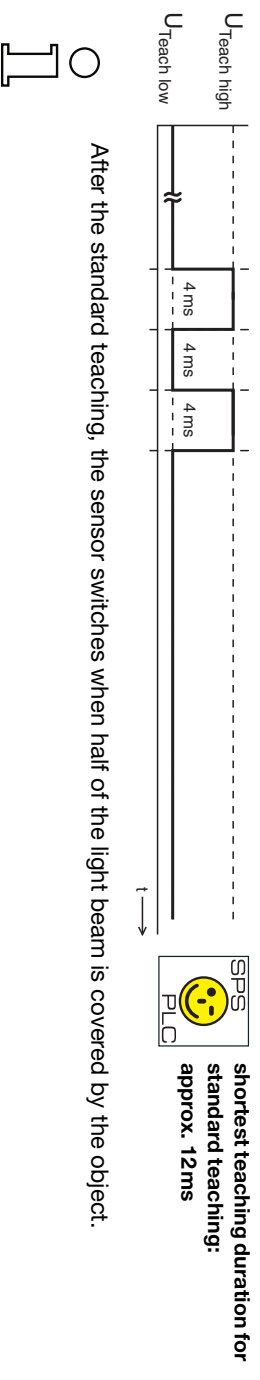
Prior to teaching: Clear the light path to the reflector!

The device setting is stored in a fail-safe way. A reconfiguration following voltage interruption or switch-off is thus not required.

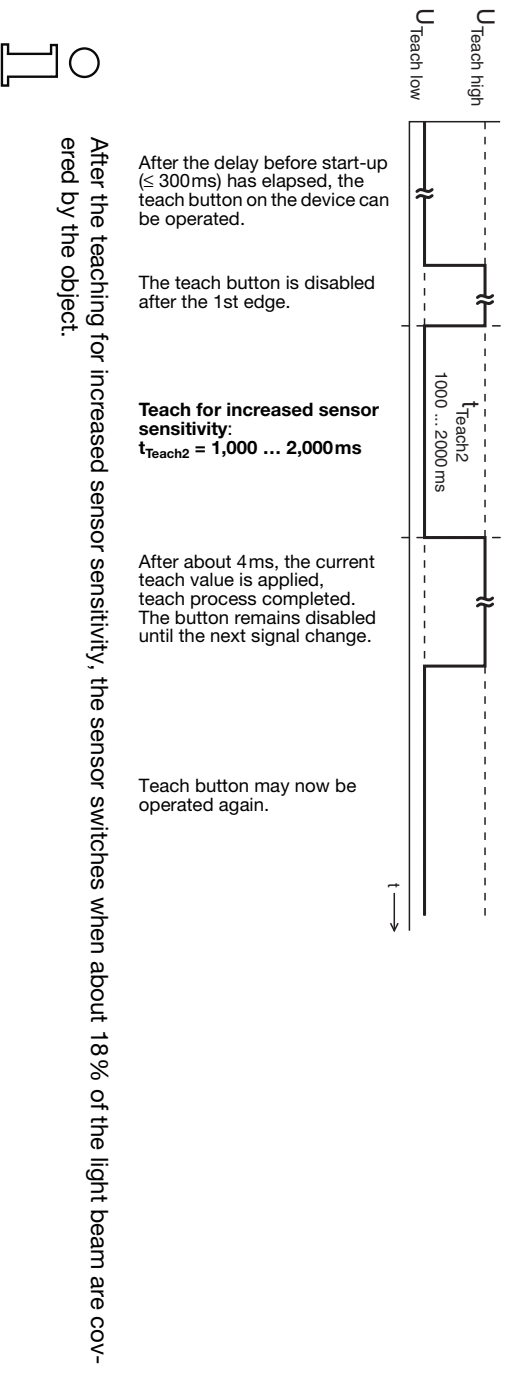
Standard teaching for average sensor sensitivity



Quick standard teach



Teaching for increased sensor sensitivity



Adjusting the switching behavior of the switching output – light/dark switching

