Retro-reflective photoelectric sensor



















- Retro-reflective photoelectric sensor with visible red laser light and autocollimation principle
- Especially for highly transparent foils glass panes
- Small and compact construction with robust plastic housing, protection class IP 67/ IP 69K for industrial application
- Push-pull output with light/dark switching via teach-in button
- High switching frequency for detection of fast events
- Easy adjustment via lockable teach button or teach input
- May also be used with glass reflectors (TG)









We reserve the right to make changes • DS_RKR3B642_en_50105367_01.fm





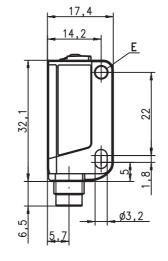


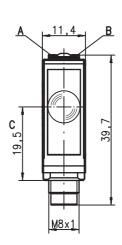
Accessories:

(available separately)

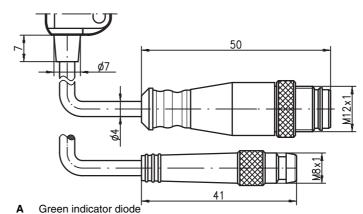
- Mounting systems (BT 3...)
- Cables with M8 or M12 connector (K-D ...)
- Reflectors
- Reflective tapes

Dimensioned drawing



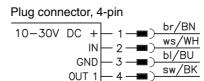


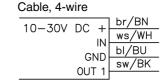




- Yellow indicator diode В
- С Optical axis
- D Teach button
- Mounting sleeve

Electrical connection





Plug connector, 3-pin br/BN 10-30V DC + Ы/BU **GND** sw/BK 0UT 1

Specifications

Optical data

Typ. op. range limit (TK(S) 100x100) 1) Operating range 2) see tables

Light source 3) LED (modulated light) Wavelength 620nm (visible red light)

Timing

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

Electrical data

10 ... 30 VDC (incl. residual ripple) \leq 15% of U_B Operating voltage U_B 4) Residual ripple

Open-circuit current ≤ 15mA

Switching output 5) .../6.42

.../4.48

1 push-pull switching output pin 4: PNP light switching, NPN dark switching pin 2: teach input

.../6.42...-S8.3

push-pull switching output pin 4: PNP light switching, NPN dark switching 1 PNP switching output, light switching

pin 2: activation input

light/dark reversible ≥ (U_B-2V)/≤ 2V max. 100mA Function characteristics Signal voltage high/low Output current Operating range setting via teach-in

Indicators

Green LED Yellow LED ready light path free

Mechanical data

plastic (PC-ABS), 1 attachment sleeve, nickel-plated steel plastic (PMMA) with connector: 10g Housing Optics cover

Weight

with 200mm cable and connector: 20g with 2m cable: 50g

2m cable (cross section 4x0.20mm²),

Connection type connector M8 metal,

0.2m cable with connector M8 or M12

Environmental data

Ambient temp. (operation/storage) Protective circuit ⁶⁾ -30°C ... +55°C/-30°C ... +70°C

2, 3 II for cable ⁷⁾, VDE safety class III for metal plug IP 67, IP 69K Protection class

Light source exempt group (in acc. with EN 62471)

Standards applied IEC 60947-5-2

UL 508, C22.2 No.14-13 4) 8) Certifications

Options

Teach-in input/activation input

≥ 8 V/≤ 2 V Transmitter active/not active Activation/disable delay $\leq 1 \, \text{ms}$ Input resistance 30k0

Typ. operating range limit: max. attainable range without performance reserve

Operating range: recommended range with performance reserve

Average life expectancy 100,000h at an ambient temperature of 25°C

For UL applications: for use in class 2 circuits according to NEC only

The push-pull switching outputs must not be connected in parallel

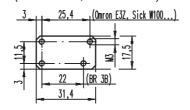
2=polarity reversal protection, 3=short circuit protection for all transistor outputs

Rating voltage 50 V

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. 501 03844) for alternate mounting on 25.4 mm hole spacing (Omron E3Z, Sick W100...)



Tables

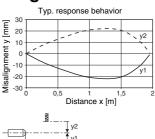
Re	eflectors				nge	ating				
1	TK(S)	100x1	00	0.	1.5m					
2	TK	40 x	60	0 1.0m						
3	MTKS	50x50	0.	0 1.0m						
4	Tape 6	50x	0 0.6m							
5	TK	20x	40	0 0.5m						
1	0			1.5		1.8				
2	0		1.2							
3	0		1.2							
4	0	0.6		0.7		31				
5	0	0.5		0.6						

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

= adhesive

TKS ... = screw type MTKS ... = micro triple, screw type

Diagrams



Remarks

Operate in accordance with intended use!

♥ This product is not a safety sensor and is not intended as personnel protection.

operation by competent persons. Only use the product in accordance with the intended use.

Mounting system:



= BT 3 (part no. 500 60511)

(2) + (3) $= BT 3.1^{-1}$

(part no. 501 05585)

①+②+③ = BT 3B

(part no. 501 05546)

1) Packaging unit: PU = 10 pcs

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Order guide

Selection table						89	S12		200-58.3	
Equipment ↓			Order code →	RKR 3B/6.42 Part No. 50104702	RKR 3B/6.42-S8 Part No. 50104703	RKR 3B/6.42, 200-S8 Part No. 50104704	RKR 3B/6.42, 200-S12 Part No. 50105763	RKR 3B/6.42-58.3 on request	RKR 3B/6.42, 200 - on request	RKR 3B/6D.42 Part No. 50107914
Output 1 (OUT 1)	push-pull switching output, configurable	\triangle	light switching	●1)	● 1)	●1)	●1)	1)	1)	•
		\leq	dark switching	•	•	•	•	•	•	●1)
	PNP transistor output	\boxtimes	light switching O							
	TVI transistor output	\vee	dark switching							
Input (IN)	teach input			•	•	•	•			•
	activation input									
Connection	cable 2,000 mm	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				•			
Configuration	Teach-in via button (lockable) and teach input			•	•	•	•			•
	Teach-in via button							•	•	
Special area of application	optimized for detection of foils < 20 µm			•	•	•	•	•	•	•
	optimized for detection of PET and glass bottles									

¹⁾ Presetting, light/dark switching, adjustable

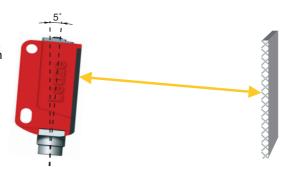
General information

- The light spot may not exceed the reflector.
- Preferably use MTK(S) or tape 6.
- For foil 6, the sensor's side edge must be aligned parallel to the side edge of the reflective tape.
- For reflecting objects, the sensor has to be mounted approx. 5° angular towards the object.

Sensor adjustment (teach) via teach button

 $\bigcap_{i=1}^{n}$

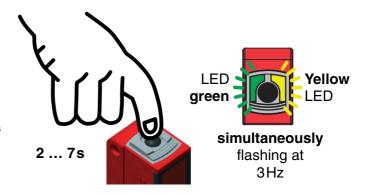
Prior to teaching:
 Clear the light path to the reflector!
 The device setting is stored in a fail-safe way.
 A reconfiguration following voltage interruption or switch-off is thus not required.



Standard teaching for average sensor sensitivity for bottle detection

- Press teach button until both LEDs flash simultaneously.
- Release teach button.
- Ready bottles can be detected.

If the receive signal from the reflector is too weak, the sensor indicates the error status by means of fast and simultaneous flashing of the green and yellow LEDs. Please check the alignment, operating range, and soiling and carry out another teaching.

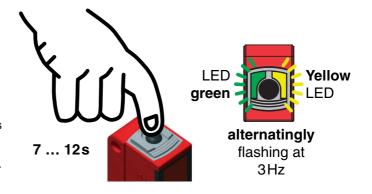


Teaching for increased sensor sensitivity for foil detection

- Press teach button until both LEDs flash alternatingly.
- Release teach button.
- Ready fails can be detected.

 $\prod_{i=1}^{n}$

If the receive signal from the reflector is too weak, the sensor indicates the error status by means of fast and simultaneous flashing of the green and yellow LEDs. Please check the alignment, operating range, and soiling and carry out another teaching.

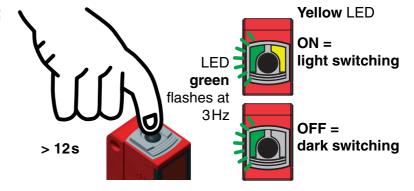


Adjusting the switching behavior of the switching output - light/dark switching

 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.



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Locking the teach button via the teach input



A **static HIGH signal** (\geq 4ms) 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!

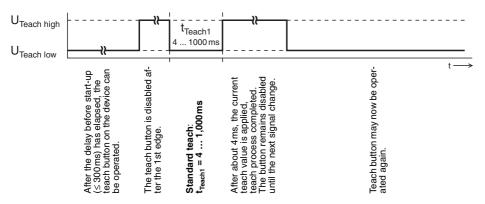
 $U_{Teach\ low} \leq 2\,V$

 $U_{\text{Teach high}} \ge (U_{\text{B}}-2V)$

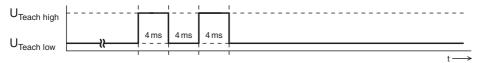
Prior to teaching: Clear the light path to the reflector!

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 for bottle detection



Quick standard teach



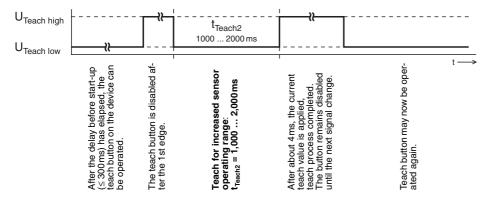


Shortest teaching duration for standard teaching: approx. 12ms



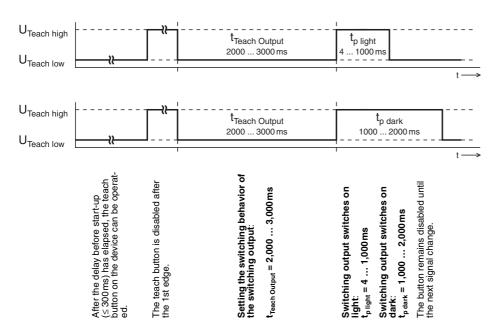
If the receive signal from the reflector is too weak, the sensor indicates the error status by means of fast and simultaneous flashing of the green and yellow LEDs. Please check the alignment, operating range, and soiling and carry out another teaching.

Teaching for increased sensor sensitivity for foil detection



If the receive signal from the reflector is too weak, the sensor indicates the error status by means of fast and simultaneous flashing of the green and yellow LEDs. Please check the alignment, operating range, and soiling and carry out another teaching.

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



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