

# Photoelectrics Retro-reflective, Polarized Type PB3P

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- Range: 3 m
- Polarized modulated, visible red light
- For transparent glass detection
- Adjustable sensitivity
- Rated operational voltage: 10 to 30 VDC
- Output: 200 mA, NPN or PNP
- Make and break switching funct., with LED indication
- Protection: Reverse polarity, short circuit, overload
- Operating frequency: 1 kHz
- High immunity to ambient light
- 18 x 75 x 36 mm ABS housing, IP 67

## Product Description

Polarized, retro-reflective photoelectric switch. Range 3 m. Reliable detection of shiny and transparent objects. Visible beam allows easy alignment. Precise detection through narrow beam. Rugged, glass-reinforced ABS housing, totally sealed. IP 67. 2 m PVC cable connection or standard M12 plug.

## Ordering Key

**PB3P NPA-1**

Type \_\_\_\_\_  
Function \_\_\_\_\_  
Output type \_\_\_\_\_  
Connection type \_\_\_\_\_

## Type Selection

Housing W x H x D Rated operating dist. (S <sub>n</sub> )	Ordering no. NPN/cable Make & break swit.	Ordering no. NPN/plug Make & break swit.	Ordering no. PNP/cable Make & break swit.	Ordering no. PNP/plug Make & break swit.
18 x 75 x 36 3 m	PB 3P NPA	PB 3P NPA-1	PB 3P PPA	PB 3P PPA-1

**Note:** Plugs and reflectors to be ordered separately.

## Specifications

<b>Rated operating dist. (S<sub>n</sub>)</b>	3 m, with reflector type ER 22, ref. target	<b>Light spot size</b>	65 mm at 2 m
<b>Temperature drift</b>	0.4%/K	<b>Ambient light</b>	Max. 10,000 lux
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 40 VDC (ripple incl.)	<b>Operating frequency (f)</b>	1000 Hz, light/dark ratio 1:2
<b>Ripple (U<sub>rip</sub>)</b>	10%	<b>Response time</b>	
<b>Output current</b> Continuous (I <sub>a</sub> ) Short-time (I)	≤ 200 mA 200 mA, Max. load capacity 100 nF	OFF-ON (t <sub>ON</sub> )	≤ 660 μs
		ON-OFF (t <sub>OFF</sub> )	≤ 330 μs
<b>No load supply current (I<sub>o</sub>)</b>	≤ 40 mA	<b>Power ON delay (t<sub>v</sub>)</b>	Typ. 100 ms
<b>OFF-state current (I<sub>i</sub>)</b>	Max. 100 μA	<b>Indication</b>	
<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.5 VDC	Output ON	LED, yellow
<b>Protection</b>	Reverse polarity, overload short-circuit, transients	<b>Environment</b>	
<b>Transient voltage</b>	≤ 1 kV/0.5 J	Overvoltage category	III (IEC 60664/60664A; 60947-1)
<b>Sensitivity</b>	Adjustable, 20 turn pot	Pollution degree	3 (IEC 60664/60664A; 60947-1)
<b>Light source</b>	GaAlAs LED 660nm	Degree of protection	IP 67 (IEC 60529; 60947-1)
<b>Light type</b>	Visible red polarized, modulated	<b>Temperature</b>	
<b>Optical angle</b>	± 1°	Operating	-20° to +60°C (-4° to 140°F)
		Storage	-30° to +70°C (-22° to 158°F)



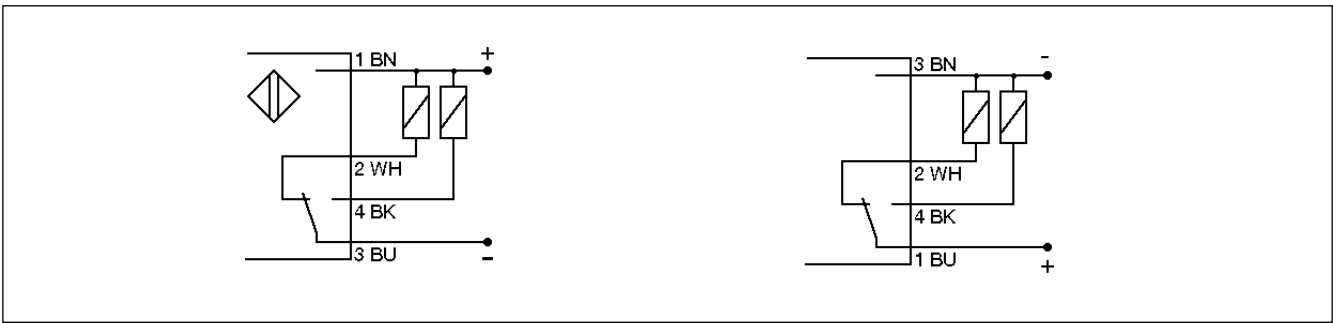
Specifications (cont.)

Vibration	10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)
Shock	2 x 1 m & 100 x 0.5 m (IEC 60068-2-32)
Dielectric voltage	500 VAC (rms)
Housing material	
Body	ABS, glass-reinforced, grey
Front	ABS, glass-reinforced, black
Lenses	Acrylic
Mounting bracket ABP-1	Iron, black
Connection	
Cable	Black, 2 m, oilproof PVC, 4 x 0.35 mm <sup>2</sup> , <b>Note:</b> Other lengths on request CONH1A-..
Plug	
Weight	197 g cable version 105 g plug version
CE-marking	Yes (only PB3PP..)

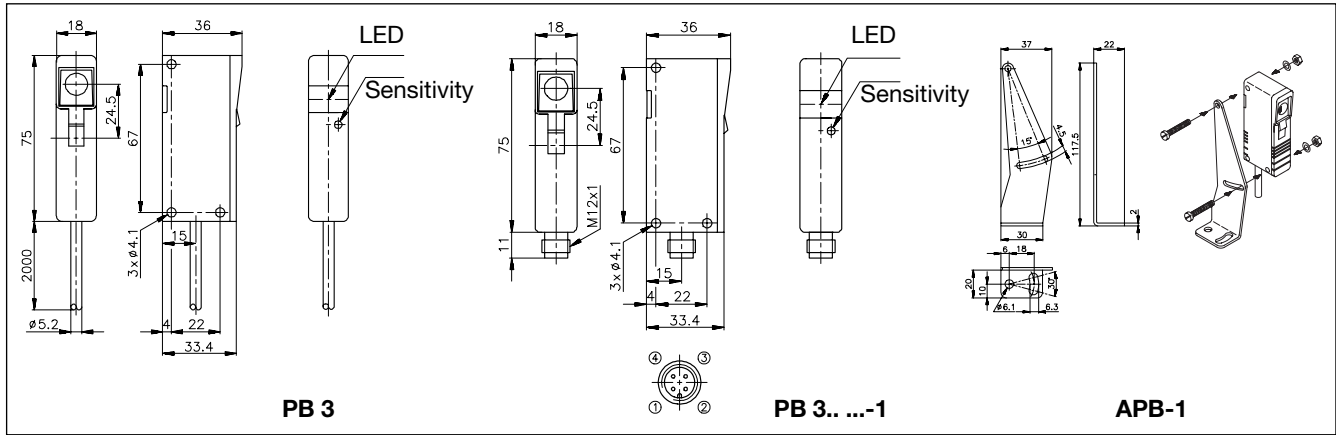
Truth Table

	Make switching		Break switching	
	Yes	No	Yes	No
Object present	Yes	No	Yes	No
LED	OFF	ON	OFF	ON
Load	Non-active	Active	Active	Non-active
Output NPN	High	Low	Low	High
Output PNP	Low	High	High	Low

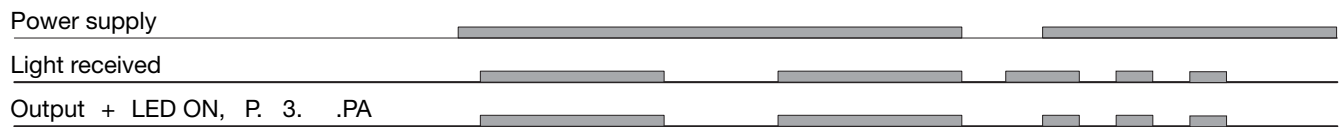
Wiring Diagrams



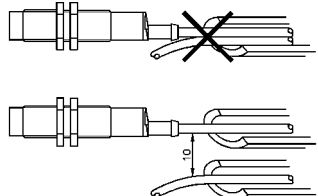
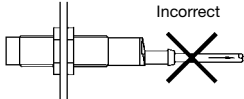

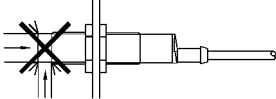
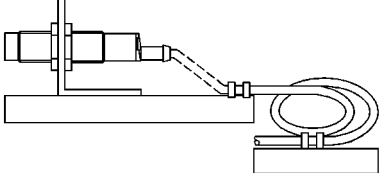
Dimensions



## Operation Diagram (Make switching (NO))



## Installation Hints

<p><i>To avoid interference from inductive voltage/current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables</i></p> 	<p><i>Relief of cable strain</i></p> <p>Incorrect</p>  <p>Correct</p>  <p>The cable should not be pulled</p>	<p><i>Protection of the sensing face</i></p>  <p>A proximity switch should not serve as mechanical stop</p>	<p><i>Switch mounted on mobile carrier</i></p>  <p>Any repetitive flexing of the cable should be avoided</p>
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## Accessories

- Reflectors: ER series.
- Connector type CONH1A-.. serie.

## Delivery Contents

- Photoelectric switch: PB3P.
- Adjustable mounting bracket APB-1
- Screwdriver for adjustments, 77-000
- Installation instruction
- Two M4 x 25 mm screws, washers and M 4 nuts
- **Packaging:** Carton box