

Photoelectrics

Diffuse-reflective, Background Suppression

Type PB 15I

CARLO GAVAZZI



- Range: 0 to 150 mm
- Adjustable background suppression 50 to 150 mm
- Infrared modulated light
- Voltage supply 10 to 30 VDC
- Output NPN or PNP, light and dark switching
- Operating frequency: 1000 Hz
- Protection: Reverse polarity, short-circuit, transients
- ABS housing
- LED output indication



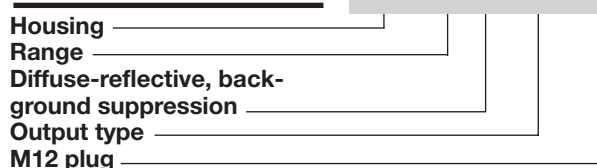
Product Description

Diffuse-reflective photoelectric switch with high accuracy background suppression down to 0.1 mm. Application range

0 to 150 mm. 1 kHz operating frequency. DC supply voltage. Cable and plug versions. ABS housing.

Ordering Key

PB 15 I NPA-1



Type Selection

Housing size	Housing material	Ordering no. NPN/cable Make & break switching	Ordering no. NPN/plug Make & break switching	Ordering no. PNP/cable Make & break switching	Ordering no. PNP/plug Make & break switching
36 x 18 x 75	ABS	PB 15I NPA	PB 15I NPA-1	PB 15I PPA	PB 15I PPA-1

Specifications

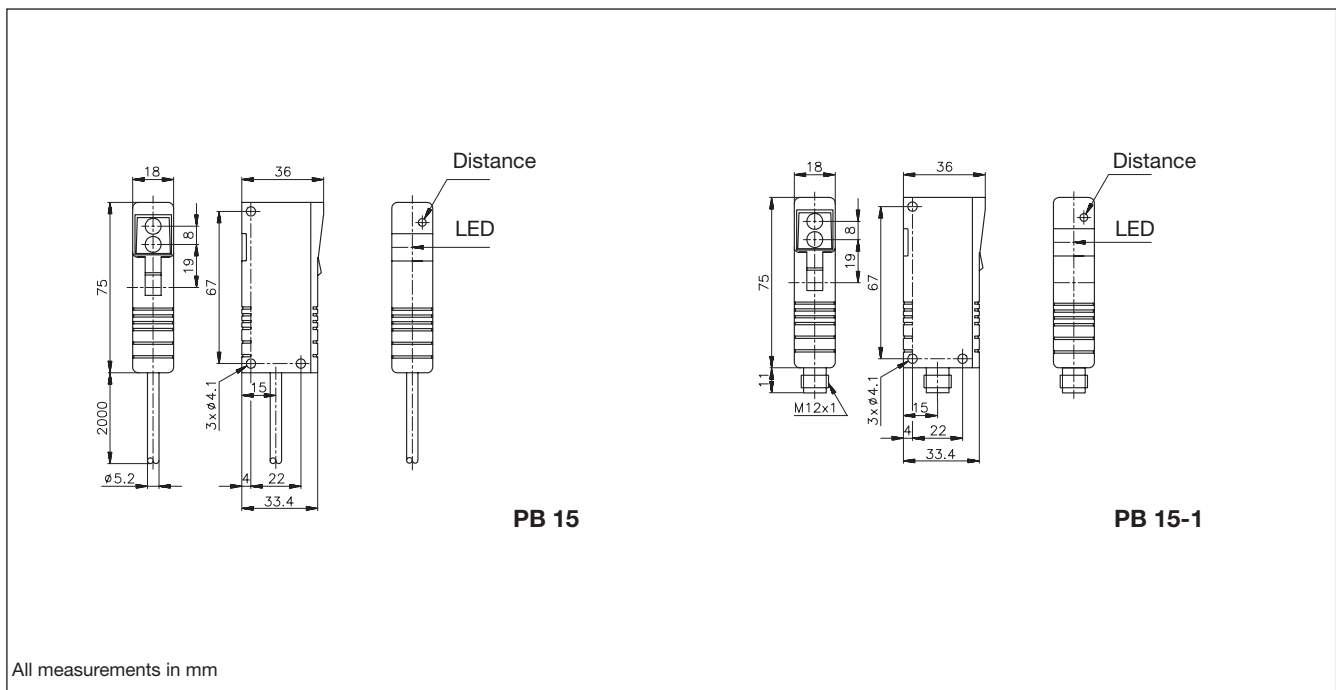
Rated operating dist. (S_n)	0 to 150 mm Reference: Kodak test card R27, white 100 x 100 mm, 90% reflectance	Light source Light type Light spot size Optical angle Ambient light	GaAlAs LED, 880 nm Infrared, modulated 7 mm at 150 mm $\pm 0.85^\circ$ Max. 10,000 lux
Background suppression	Adjustable between 50 - 150 mm	Operating frequency (f) Response time	Max. 1000 Hz OFF - ON ON - OFF
Accuracy	See chart	Power ON delay (t_d)	330 μ s 660 μ s
Temperature drift	- 0.1%/°C	Output function	≤ 130 ms 4-wire device Make and break switching
Differential travel (H) (Hysteresis)	$\leq 3.3\%$ of sensing distance	Indication Target detected	LED, yellow
Rated operational volt. (U_B)	10 to 30 VDC (ripple incl.)	Environment	Overvoltage category Pollution degree Degree of protection
Ripple (U_{rpp})	$\leq 20\%$		III (IEC 60664/60664A; 60947-1) 3 (IEC 60664/60664A; 60947-1) IP 67 (IEC 60529; 60947-1)
Output current Continuous (I_a) Short-time (I)	≤ 200 mA 200 mA max. load capacity 100 nF	Temperature	Operating Storage
No load supply current (I_o)	≤ 40 mA		-20° to +60°C (-4° to 140°F) -20° to +60°C (-4° to 140°F)
OFF-state current	≤ 100 μ A	Vibration	10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)
Voltage drop (U_d)	≤ 2.5 V	Shock	2 x 1 m & 100 x 0.5 m (IEC 60068-2-32)
Protection	Reverse polarity, short-circuit, transients		
Transient voltage	1 kV/0.5 J		
Sensitivity	Fixed		



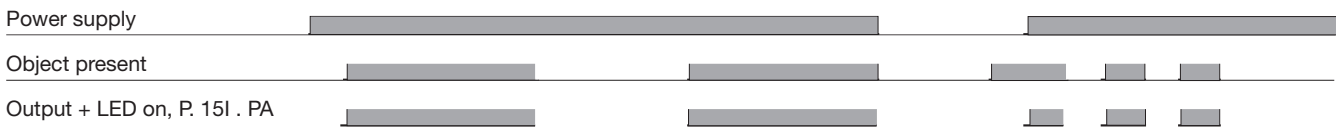
Specifications (cont.)

Dielectric voltage	500 VAC (rms)	Connection	Black, 2 m, oilproof PVC, 4 x 0.34 mm ² , Ø 5.2 mm CONH1A-..
Housing material	Glass-filled ABS	Cable	
Body	Glass-filled ABS	Plug	PB: 125 g, cable not incl.
Front	Glass-filled ABS	Weight	
Optics	Acrylic lenses		

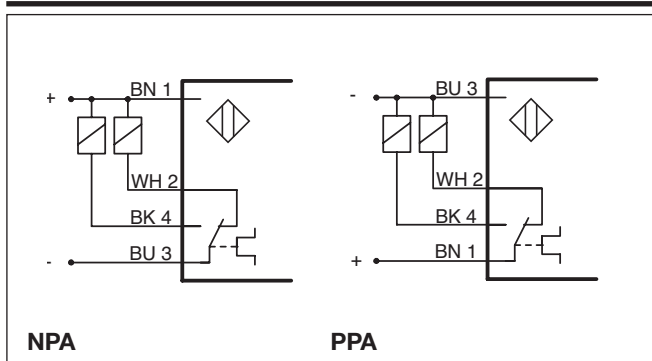
Dimensions



Operation Diagram (Make switching function only)



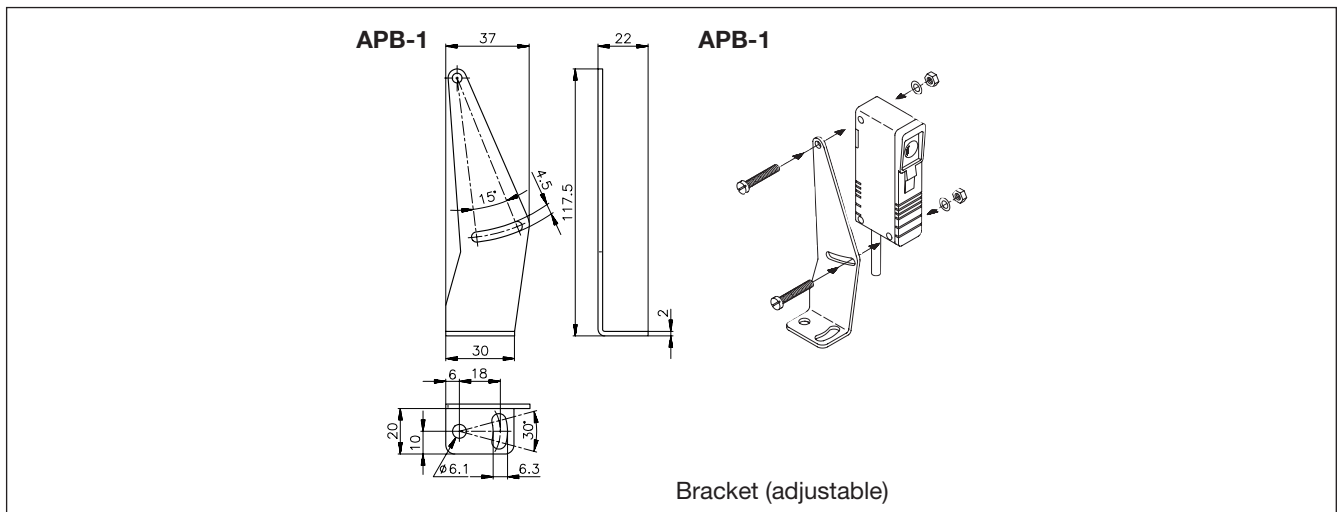
Wiring Diagrams



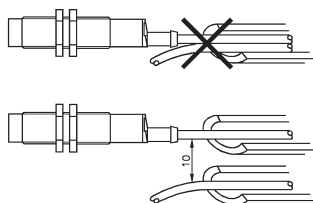
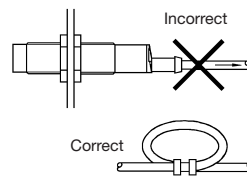
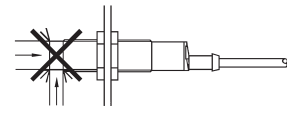
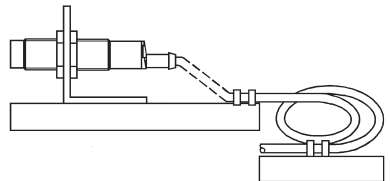
Truth Table

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

Mounting



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 style="text-align: center;">The cable should not be pulled</p>	<p><i>Protection of the sensing face</i></p>  <p style="text-align: center;">A proximity switch should not serve as mechanical stop</p>	<p><i>Switch mounted on mobile carrier</i></p>  <p style="text-align: center;">Any repetitive flexing of the cable should be avoided</p>
--	--	---	---

Background Suppression Accuracy

Reflectance		Distance of object from sensor		
Object	Background	50 mm	100 mm	150 mm
90%	90%	0.1 mm	0.25 mm	0.6 mm
18 %	18%	0.3 mm	0.4 mm	1.2 mm
18%	90%	1.4 mm	2.0 mm	5.0 mm

Accessories

- Connector type CON.1A..

Delivery Contents

- Photoelectric switch: PB 15
- Mounting bracket:
PB 15: APB-1
- 2 bolts, 2 nuts and 2 washers (with PB 15)
- Screw driver (77-000)
- Installation instruction
- **Packaging:** Cardboard box