

Photoelectrics

Diffuse-reflective, Background Suppression

Types PA 15I, 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 or aluminium 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 or aluminium housing.

Ordering Key

PB 15 I NPA-1

Housing _____
 Range _____
 Diffuse-reflective, background suppression _____
 Output type _____
 M12 plug _____

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 60	Aluminium	PA 15I NPA	PA 15I NPA-1	PA 15I PPA	PA 15I PPA-1
36 x 18 x 75	ABS	PB 15I NPA	PB 15I NPA-1	PB 15I PPA	PB 15I PPA-1

Specifications

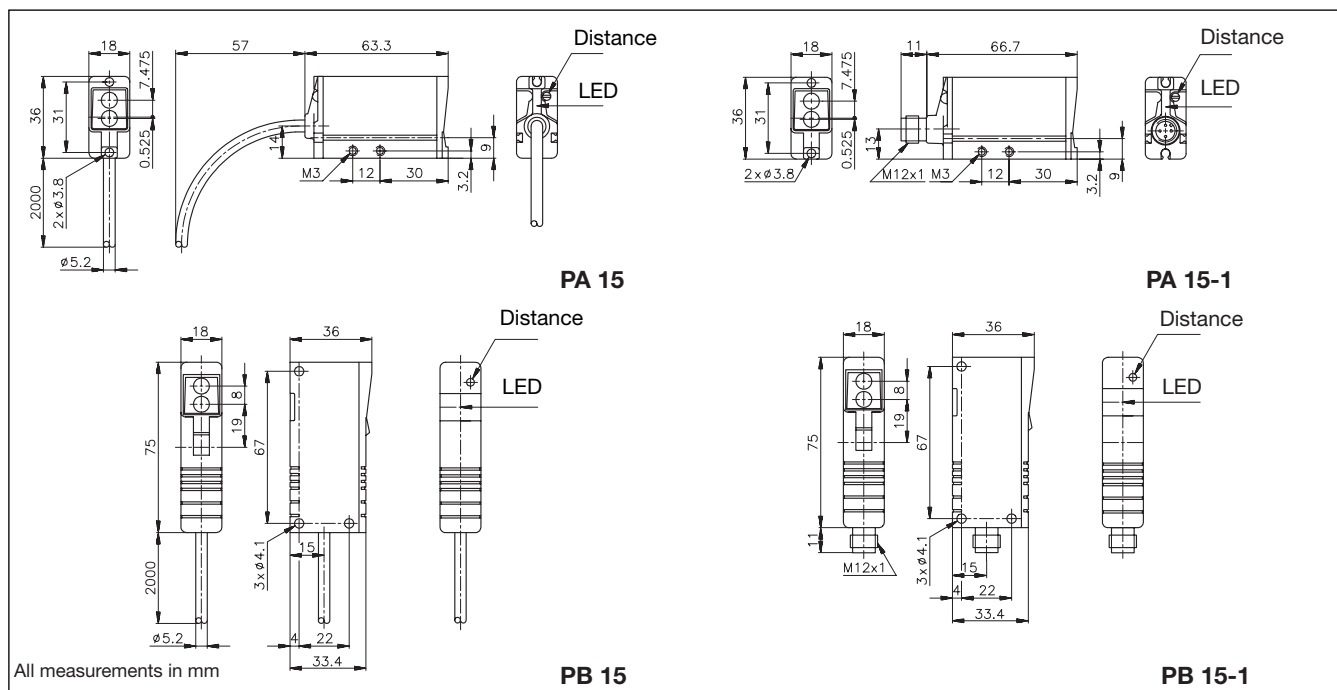
Rated operating dist. (S_n)	0 to 150 mm Reference: Kodak test card R27, white 100 x 100 mm, 90% reflectance	Light source Light type Light spot size Optical angle Ambient light	GaAlAs LED, 880 nm Infrared, modulated 7 mm at 150 mm $\pm 0.85^\circ$ Max. 10,000 lux
Background suppression	Adjustable between 50 - 150 mm	Operating frequency (f)	Max. 1000 Hz
Accuracy	See chart	Response time OFF - ON ON - OFF	330 μ s 660 μ s
Temperature drift	- 0.1%/°C	Power ON delay (t_d)	≤ 130 ms
Differential travel (H) (Hysteresis)	$\leq 3.3\%$ of sensing distance	Output function	4-wire device Make and break switching
Rated operational volt. (U_B)	10 to 30 VDC (ripple incl.)	Indication Target detected	LED, yellow
Ripple (U_{rpp})	$\leq 20\%$	Environment Overvoltage category Pollution degree Degree of protection	III (IEC 60664/60664A; 60947-1) 3 (IEC 60664/60664A; 60947-1) IP 67 (IEC 60529; 60947-1)
Output current Continuous (I_e) Short-time (I)	≤ 200 mA 200 mA max. load capacity 100 nF	Temperature Operating Storage	-20° to +60°C (-4° to 140°F) -20° to +60°C (-4° to 140°F)
No load supply current (I_o)	≤ 40 mA	Vibration	10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)
OFF-state current	≤ 100 μ A	Shock	2 x 1 m & 100 x 0.5 m (IEC 60068-2-32)
Voltage drop (U_d)	≤ 2.5 V		
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		Cable	
Body	PA: Aluminium PB: Glass-filled ABS	Plug	
Front	PA: Glass-filled polycarbonate PB: Glass-filled ABS	Weight	PA: 85 g, cable not incl. PB: 125 g, cable not incl.
Optics	Acrylic lenses		

Dimensions



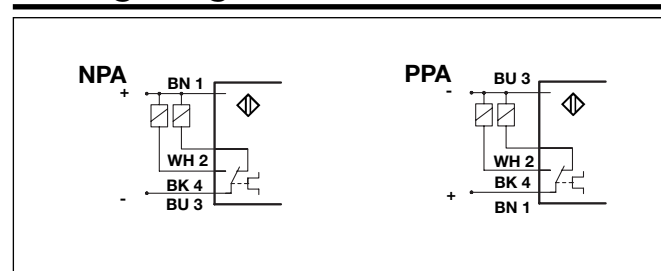
Operation Diagram (Make switching function only)



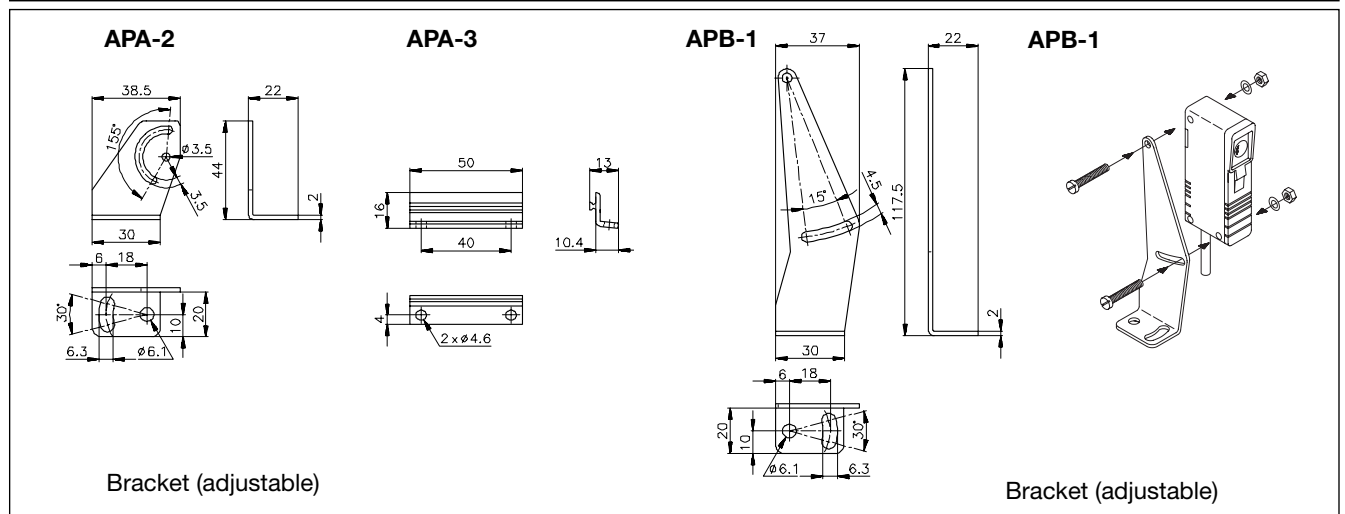
Truth Table

	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

Wiring Diagrams



Mounting



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

Plugs	90° angle	Straight
DC versions		
M 12 plug without cable	CONH1A-A	CONH1A-S
M 12 plug with 2 m cable	CONH1A-A2	CONH1A-2S
M 12 plug with 5 m cable	CONH1A-A5	CONH1A-5S
Mounting bracket		
	PA ..	APA-2

Delivery Contents

- Photoelectric switch: PA 15 or PB 15
- Mounting bracket:
PA 15: APA-3
PB 15: APB-1
- 2 bolts, 2 nuts and 2 washers (with PB 15)
- Screw driver (77-000)
- Installation instruction
- **Packaging:** Cardboard box