

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

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

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 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

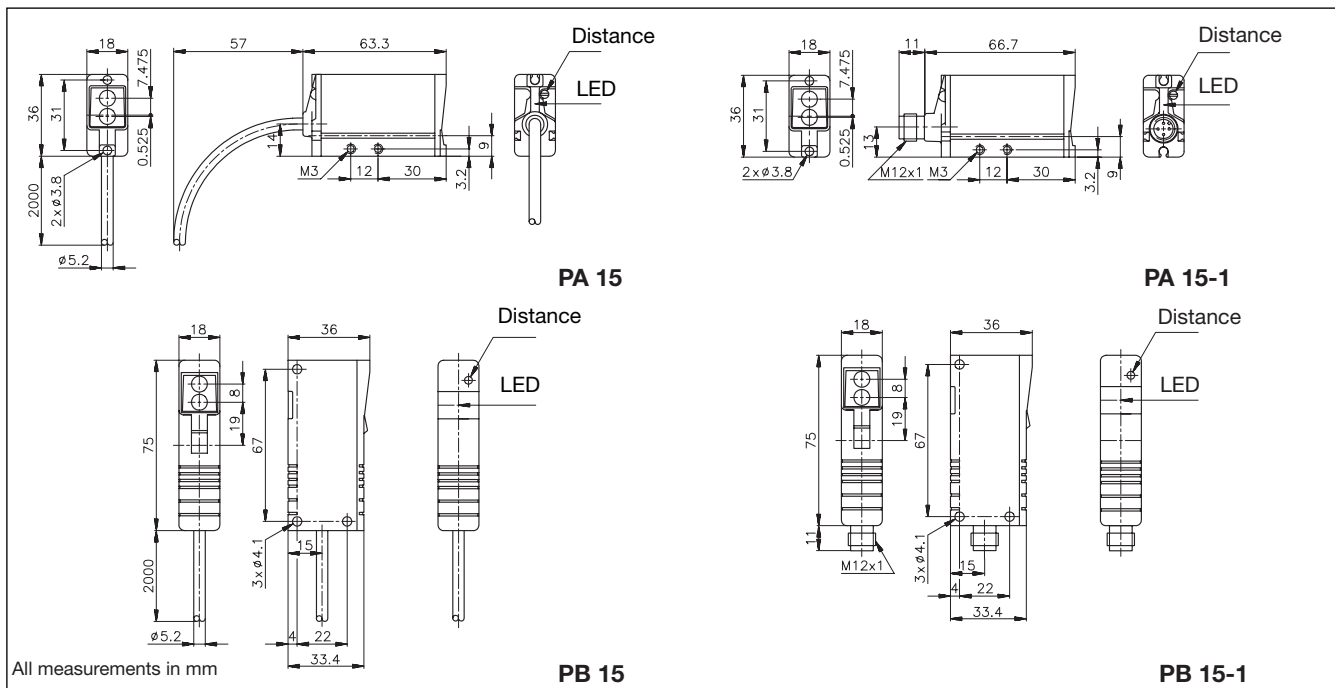
Rated operating dist. (S_n)	0 to 150 mm Reference: Kodak test card R27, white 100 x 100 mm, 90% reflectance	Light source	GaAlAs LED, 880 nm
Background suppression	Adjustable between 50 - 150 mm	Light type	Infrared, modulated
Accuracy	See chart	Light spot size	7 mm at 150 mm
Temperature drift	- 0.1%/°C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



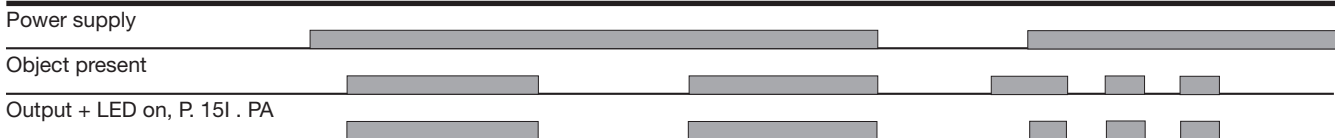
Specifications (cont.)

Dielectric voltage	500 VAC (rms)	Connection	Cable	Black, 2 m, oilproof PVC, 4 x 0.34 mm ² , Ø 5.2 mm
Housing material		Plug		CONH1A-..
Body	PA: Aluminium PB: Glass-filled ABS	Weight		PA: 85 g, cable not incl. PB: 125 g, cable not incl.
Front	PA: Glass-filled polycarbonate PB: Glass-filled ABS			
Optics	Acrylic lenses			

Dimensions



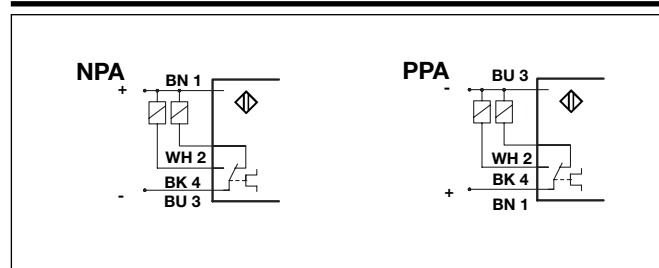
Operation Diagram (Make switching function only)



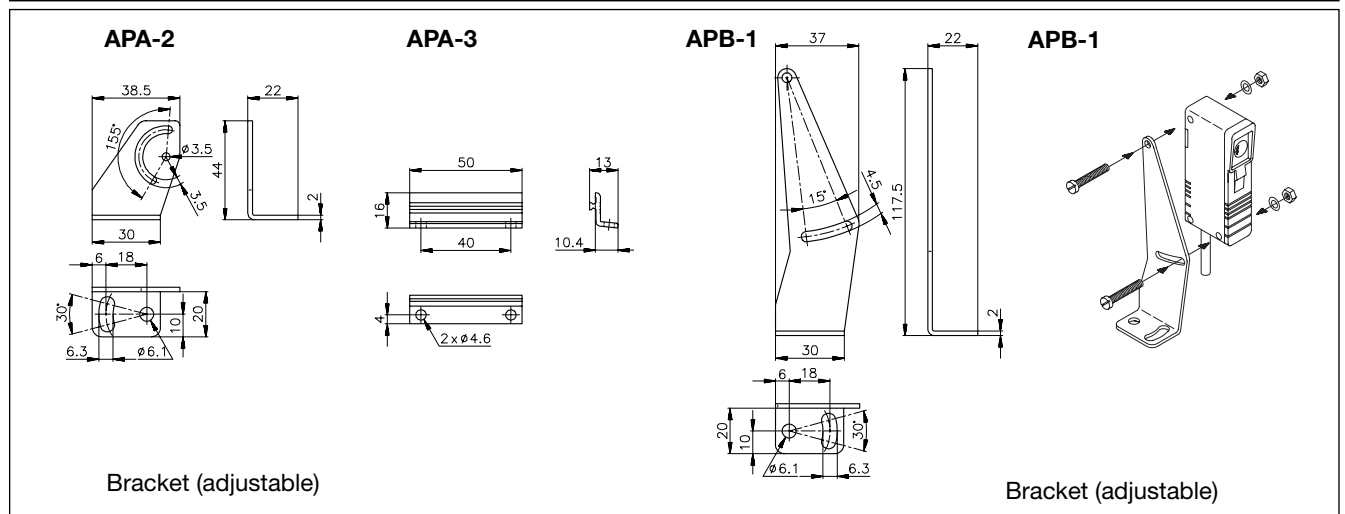
Truth Table

	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