

Photoelectrics Through-beam Type PB 12

CARLO GAVAZZI



- Range: 12 m
- Adjustable sensitivity
- Alignment control and dirt accumulation indication
- 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
- 18 x 75 x 36 mm ABS housing, IP 67
- Cable or plug versions
- Timer options



Product Description

High-power through-beam photoelectric switch. Range up to 12 m. Easy alignment through LED indication. Dirt accumulation indication. Output indication feedback from receiver to emitter (wire con-

nection). Precise detection through narrow beam. Rugged glass-reinforced ABS housing, totally sealed. IP 67. 2 m PVC cable connection or standard M 12 plug.

Ordering Key

PB 12 RA NPA-1

Type _____
 Function _____
 Option: timer function _____
 Output type _____
 Connection type _____

Type Selection

Housing W x H x D	Timer function Option	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.
Receiver 18 x 75 x 36	Without timer Delay on operate Delay on release One shot	PB 12R NPA PB 12RA NPA PB 12RB NPA PB 12RT NPA	PB 12R NPA-1 PB 12RA NPA-1 PB 12RB NPA-1 PB 12RT NPA-1	PB 12R PPA PB 12RA PPA PB 12RB PPA PB 12RT PPA	PB 12R PPA-1 PB 12RA PPA-1 PB 12RB PPA-1 PB 12RT PPA-1
Emitter 18 x 75 x 36		PB 12 T N	PB 12 T N-1	PB 12 T P	PB 12 T P-1

Note: Please order emitter and receiver separately. To be able to use the output indication feedback from receiver to emitter, emitter and receiver output types have to match (NPN or PNP). Plugs to be ordered separately.

Specifications Emitter

Rated operational volt. (U_B)	10 to 30 VDC (ripple included)
Ripple (U_{rp})	$\leq 10\%$
Supply current (I_O)	≤ 40 mA
Protection	Reverse polarity, transients
Light source	GaAlAs LED, 880 nm
Light type	Infrared, modulated
Optical angle	$\pm 0.85^\circ$
Indications	
Supply ON:	LED, green
or	
Output ON:	LED, green (only with feed- back from receiver)

Specifications Receiver

Rated operational volt. (U_B)	10 to 30 VDC (ripple included)
Ripple (U_{rp})	$\leq 10\%$
No load supply current (I_O)	≤ 15 mA
OFF-state current (I_i)	≤ 100 μ A
Output current	
Continuous (I_e)	200 mA
Voltage drop (U_d)	≤ 2.5 V
Protection	Reverse polarity, short-cir- cuit, continuous overload
Transient voltage	Max. 1 kV/0,5J
Sensitivity	Adjustable, 20 turn pot
Optical angle	$\pm 0.85^\circ$
Ambient light	Max. 10,000 lux



Specifications Receiver (cont.)

Operating frequency (f)	1000 Hz, light/dark ratio 1:2
Response time	
OFF-ON (t_{ON})	$\leq 660 \mu s$
ON-OFF (t_{OFF})	$\leq 330 \mu s$
Power ON delay (t_v)	Typ. 70 ms
Indications	
Output ON	LED, yellow
Alignment	LED, yellow blinking
Dirt accumulation	LED, yellow blinking
Optional timer	
Delay on operate (function A)	0.1 to 14 s \pm 4 s
Delay on release (function B)	0.1 to 14 s \pm 4 s
One shot (function T)	0.1 to 14 s \pm 4 s

Truth Table (Receiver)

	Make switching (l)			Break switching (h)		
Object present	Yes	No	No	Yes	No	No
Dirt on lenses, misaligned or sensitivity too low		No	Yes ¹⁾		No	Yes ¹⁾
LED	OFF	ON	Blink ¹⁾	OFF	ON	Blink ¹⁾
Load	Act.	N-act.	N-act.	N-act.	Act.	Act.
Output NPN	Low	High	High	High	Low	Low
Output PNP	High	Low	Low	Low	High	High

Note: The general definition of target is not valid for this sensor. Object present causes interruption of the light-beam.

¹⁾ In normal operating conditions, the LED indication has to be on continuously.

General Specifications

Environment	
Overvoltage category	III (IEC 60664/60664A; 60947-1)
Pollution degree	3 (IEC 60664/60664A; 60947-1)
Degree of protection	IP 67 (IEC 60529; 60947-1) Note: Plug version, IP 67 with mounted plug, CONH1A-.. serie..
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)
Dielectric voltage	500 VAC (rms)
Housing material	
Body	ABS, glass-reinforced, grey
Front	ABS, glass-reinfor., black
Lenses	Acrylic
Mounting rail APB-1	Iron, black
Connection	
Cable	Black, 2 m, oilproof PVC, 4 x 0.35 mm ² Note: Other lengths on request
Plug	Standard M 12, type CONH1A-.. Note: Plug to be ordered separately
Weight	197 g cable version 105 g plug version

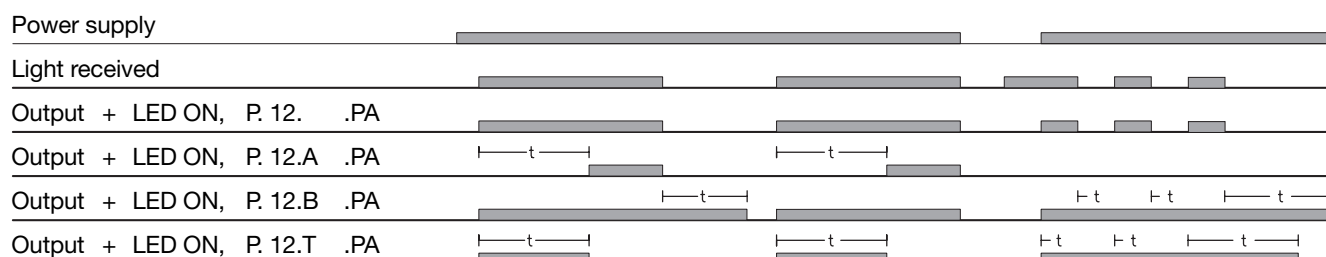
Accessories

- Plugs: CONH1A-.. serie.

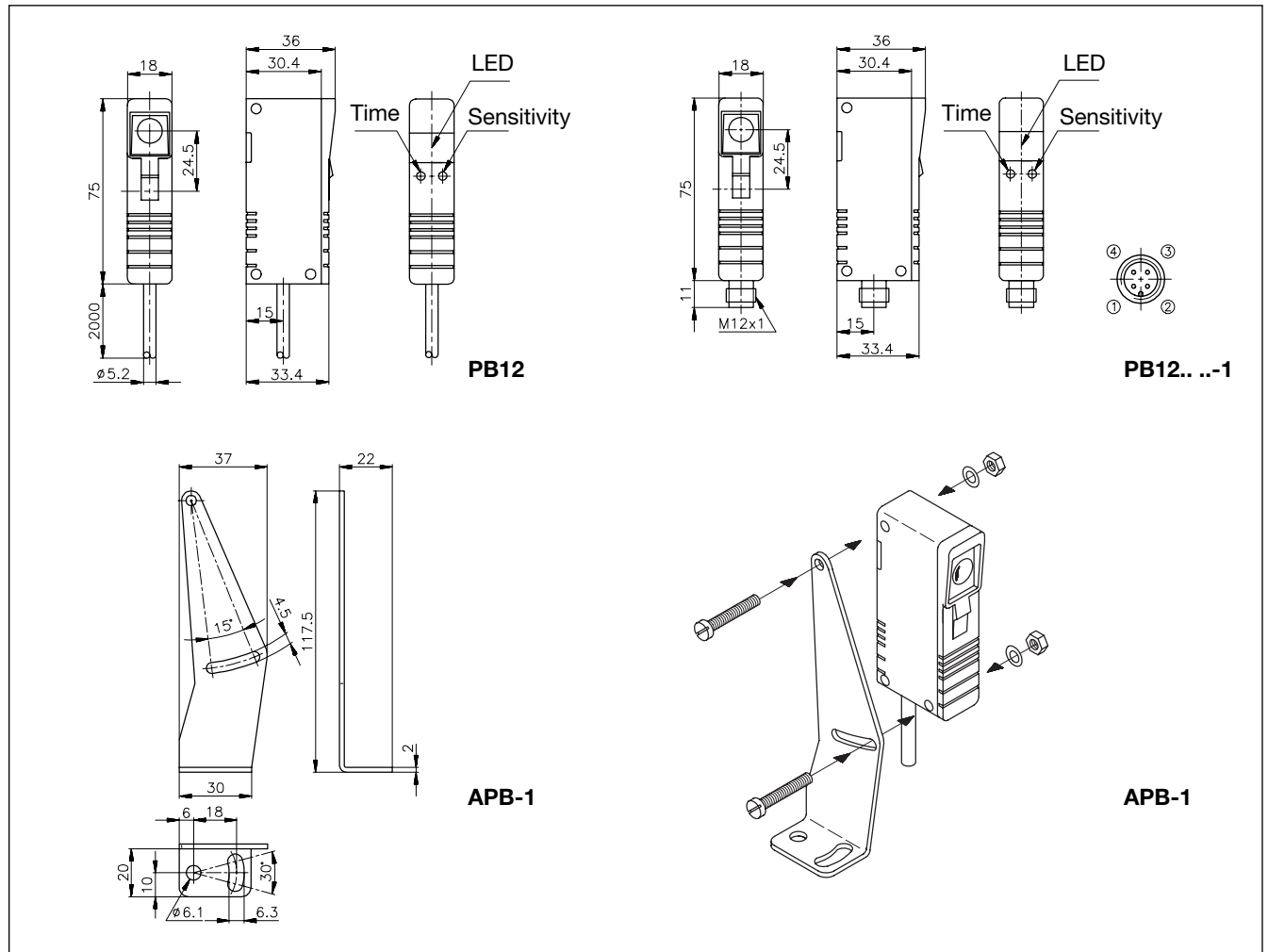
Delivery Contents

- Photoelectric switch: PB12T. or PB12R.
- Mounting bracket APB-1
- Two M 4 x 25 mm screws, washers and M 4 nuts
- Screw driver for adjustments (receiver only), 77-000
- Installation instruction (receiver only)
- Packaging:** Carton box, emitter and receiver packed separately

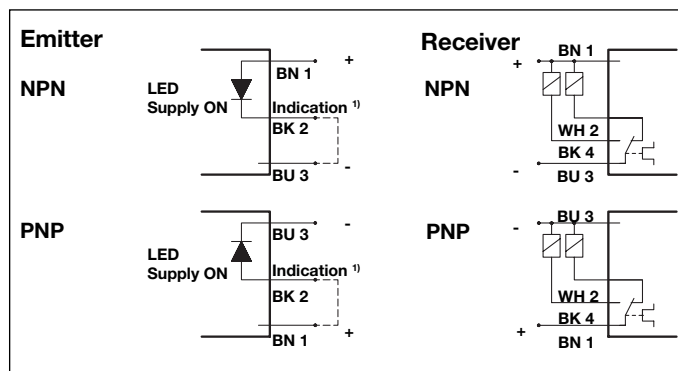
Operation Diagram (Break switching function only (NC))



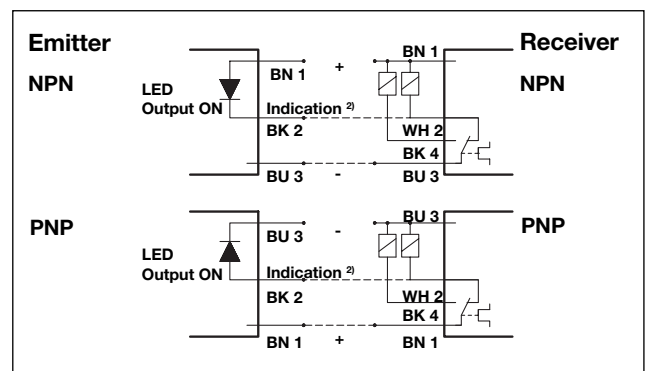
Dimensions



Wiring Diagrams



Output indication feedback from receiver to emitter



Note: ¹⁾ For "Supply ON" LED indication on emitter:
Connect BK (2) and BU (3) for NPN types (BK (2) and BN (1) for PNP types).

²⁾ For "Output ON" LED indication on emitter (output feedback):
Connect output WH (2) or BK (4) of receiver with BK (2) of emitter and
BU (3) emitter with BU (3) receiver for NPN types BN (1) emitter with BN (1) receiver for PNP types