

Photoelectrics

Retro-reflective, Industrial Door Market

Type PD86.AP12, Polarized, Relay Output, Mute Input

CARLO GAVAZZI



- Range: 12 m @ ER 4 (15 m @ ER100)
- Adjustable lenses $\pm 4.5^\circ$
- Modulated, visible light, polarized
- Switching function, selectable by DIP-switch
- Active high or active low mute function (switch selectable)
- LED-indication for target detected and power
- Multi supply voltage: 12-24 VDC/VAC, 50/60 Hz
- 86 x 44 x 39 mm PC or ZAMAK 5 housing, IP 66
- SPST relay output
- High EMC and ambient light immunity
- CE, UL325 and UL508 approved



Product Description

The PD86 is a powerful polarized retro reflective sensor. The sensor is designed to meet the harsh requirements in industrial door and gate environments. With a sensing distance of 12 m, the sensor is useful in applications where dust and weather con-

ditions will influence on the sensing distance. The sensor is made of a strong glass reinforced PC housing or ZAMAK 5 housing.

With its mute input, the sensor fulfils European and North American regulations for industrial doors.

Ordering Key

PD86HAP12QPTF-01C

Type _____
Housing style _____
Housing size _____
Housing material _____
Not used _____
Detection principle _____
Sensing distance _____
Supply voltage _____
Output Function _____
Terminals, fixed or detachable _____
Housing colour for HAP version _____

Type Selection

Housing W x H x D	Housing material Outer cover	Range (S _n)	Terminals	Ordering no.
86 x 44 x 39 mm	PC	12 m	Fixed	PD86CAP12QPTF
86 x 44 x 39 mm	PC	12 m	Detachable	PD86CAP12QPTD
86 x 44 x 39 mm	ZAMAK 5	12 m	Fixed	PD86HAP12QPTF-01C
86 x 44 x 39 mm	ZAMAK 5	12 m	Detachable	PD86HAP12QPTD-01C

Specifications

Rated operating dist. (S _n)	12 m @ ER4 ref. target (0 to 5,000 lux)	Electrical life (typical)	> 100,000 AC11 or DC11 1,800 operations per hour
Blind zone	≤ 0.15 m	Minimum load power	1 mW
Sensitivity	Fixed	Dielectric voltage	1,000 VAC (rms) (cont./supply)
Temperature drift	≤ 0.6 %/°C	Light source	GaAlAs, LED, 620 nm
Differential travel (H) Hysteresis	3 to 20%	Light type	Visible, modulated
Rated operational volt. (U _B) AC: 45 to 65 Hz	12-24 VDC, - 15% +20% 12-24 VAC, - 15% +20%	Optical angle	± 1.5°
Rated operational power (Relay ON)	12 VAC 648 mW 24 VAC 1680 mW 12 VDC 324 mW 24 VDC 840 mW	Alignment Horizontal Vertical	±4.5° ±4.5°
Output Contact ratings (Ag alloy)	μ (micro gap)	Light spot size	280 mm at 4 m
Resistive loads	AC 1 0.5 A/30 VAC DC 1 1 A/30 VDC	Ambient light	Max. 10,000 lux
Small inductive loads	AC 15 0.5 A/48 VAC DC 13 1 A/30 VDC	Operating frequency	20 Hz
Mechanical life (typical)	≥ 1,000 000 cycles	Response time (object related) OFF-ON (t _{ON}) ON-OFF (t _{OFF})	≤ 20 ms ≤ 30 ms
		Power ON delay (t _r)	≤ 300 ms (typ. 100 ms)

Specifications (cont.)

DIP-switch Selectable functions Mute input Relay output	Active high or active low NO (make) or NC (break)	Rated insulation voltage	250 VAC (rms)
Mute function Active high Response time Hold time Active low Response time Hold time	≥ 12 VDC/VAC < 45 ms < 70 ms < 6 VDC/VAC < 70 ms < 45 ms	Housing material Outer cover CAP version HAP version -01C Inner cover Backpart Cable outlet	PC, grey ZAMAK 5, basalt grey PMMA, red ABS, black Kraiburg TC5MLZ or TP5VCZ
Max current	35 mA @ 24 VDC 70 mA @ 24 VAC	Connection Screw terminal (TF version) Screw terminal (TD version) One entry Cable through the back	6 x 1.5 mm ² terminal block 6 x 1.5 mm ² terminal block for cable 3 to 6.5 mm Max. 7.5 mm
Indication Target detected Power Signal	LED, yellow LED, green LED, green	Weight CAP version HAP version	110 g 120 g
Environment Overvoltage category Pollution degree Degree of protection Ambient light Incandescent light @ 3000 ... 3200 °K Incandescent light 3200 °K Fluorescent light Stroboscopic light Flashing beacon light	III (IEC 60664/EN 60947-1) 3 (IEC 60664/EN 60947-1) IP 66 (IEC 60529; 60947-1) $\geq 50\,000$ lux (EN 60947-5-2) $\geq 10\,000$ lux* (EN 61496-2) $\geq 3\,000$ lux* (EN 61496-2) 0.05 J @ 200 Hz to 0.5 J @ 5 Hz* (EN 61496-2) 3 to 5 J @ 0.5 to 2 Hz* (EN 61496-2)	UL-Approval CE-marking General reference MTTF _d related to product life time ESPE category Performance level (PL) PFHd Mission Time	UL325, UL508 Yes EN 12453, EN 12445, EN 12978, EN 61496-1, Type 2 ESPE Sensor designed according to EN 60947-5-2 243 years @ 40°C (+104°F) (EN ISO 13849-1 (Parts count method, annex D.1), SN 29500) 2 (EN 61496-2) C (EN 12453) 4.7 x 10 ⁻⁷ Errors per hour (EN ISO 13849-1) 20 years (EN ISO 13849-1)
Temperature Operating Storage	-25° to +60°C (-76° to +140°F) -35° to +80°C (-31° to +176°F)		
Vibration	10 to 150 Hz, 0.5 mm/7.5 g (EN 60068-2-6)		
Drop test	2 x 1 m & 100 x 0.5 m (IEC 60068-2-31)		

* Failure to danger (worst case alignment)

Operation Diagram

t_v = Power ON delay

Power supply

Target present

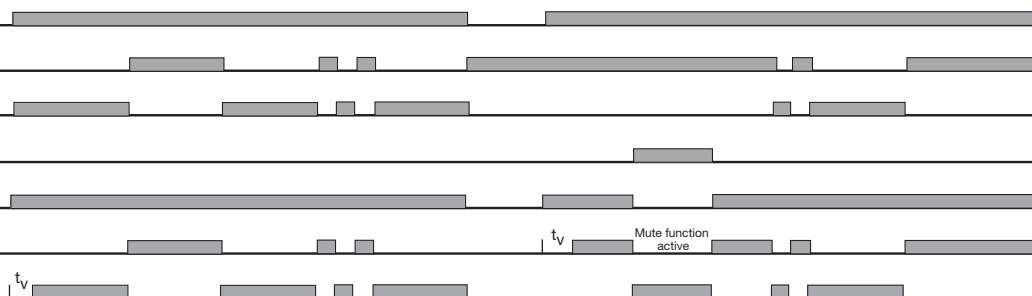
Object present

Mute (Active high)

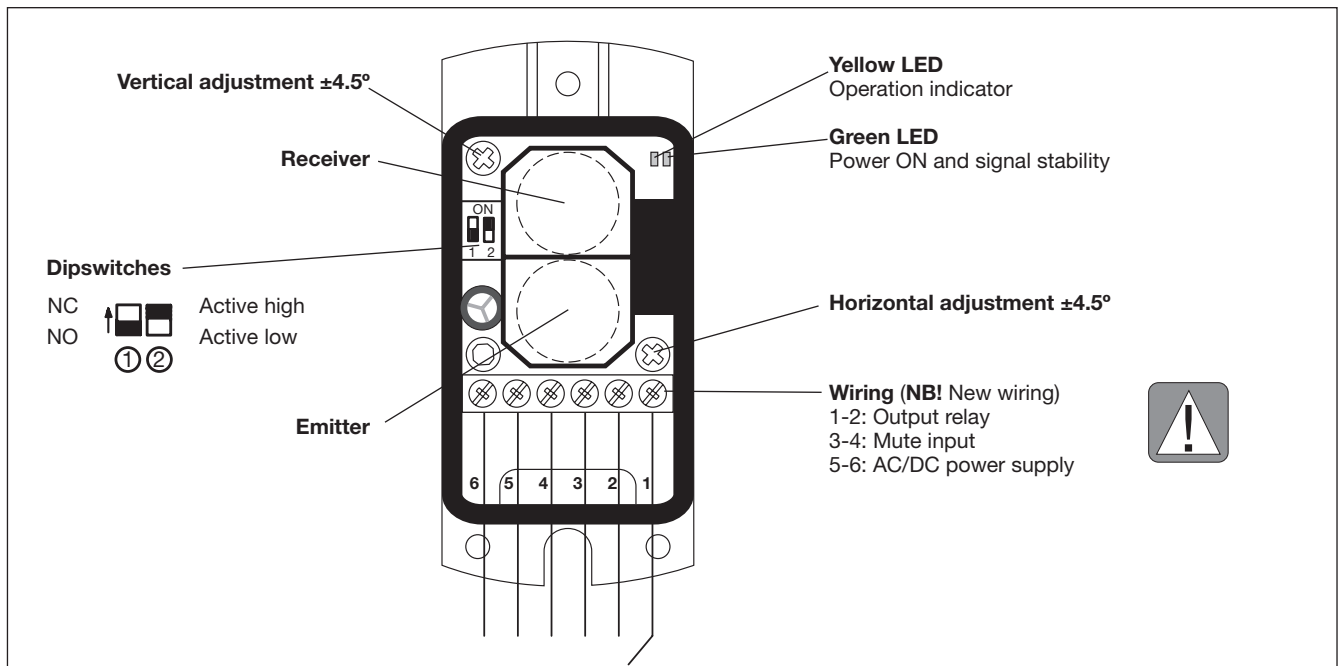
Mute (Active low)

Output NO

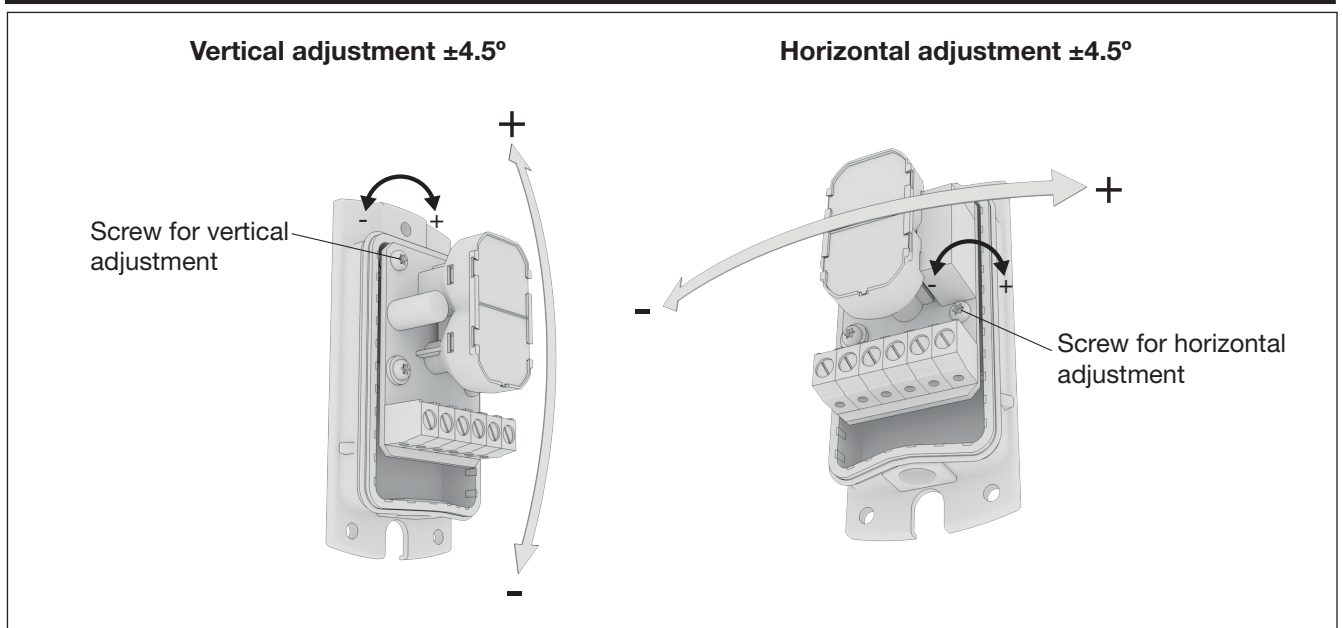
Output NC



Wiring Diagram

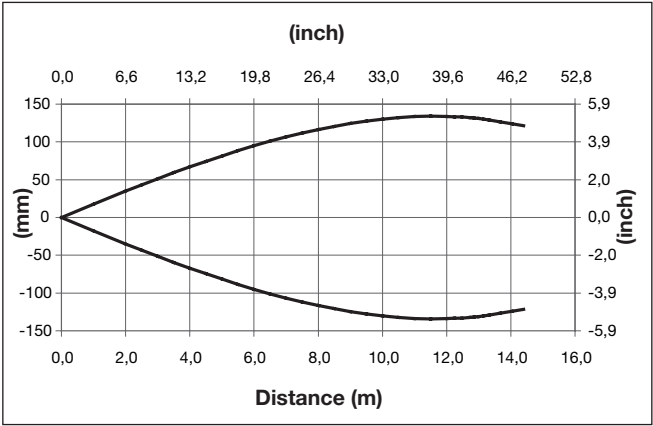


Vertical and Horizontal Adjustment

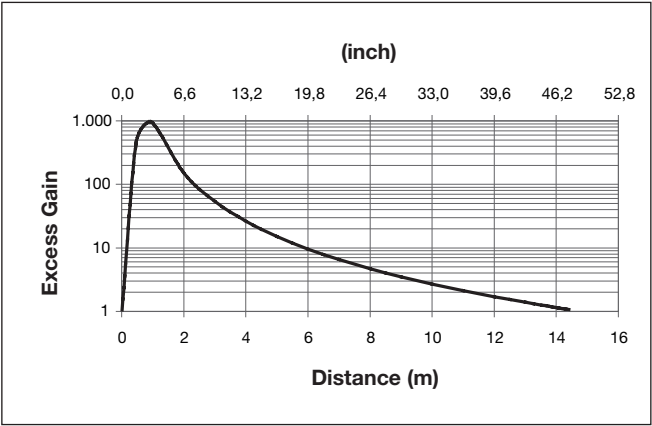




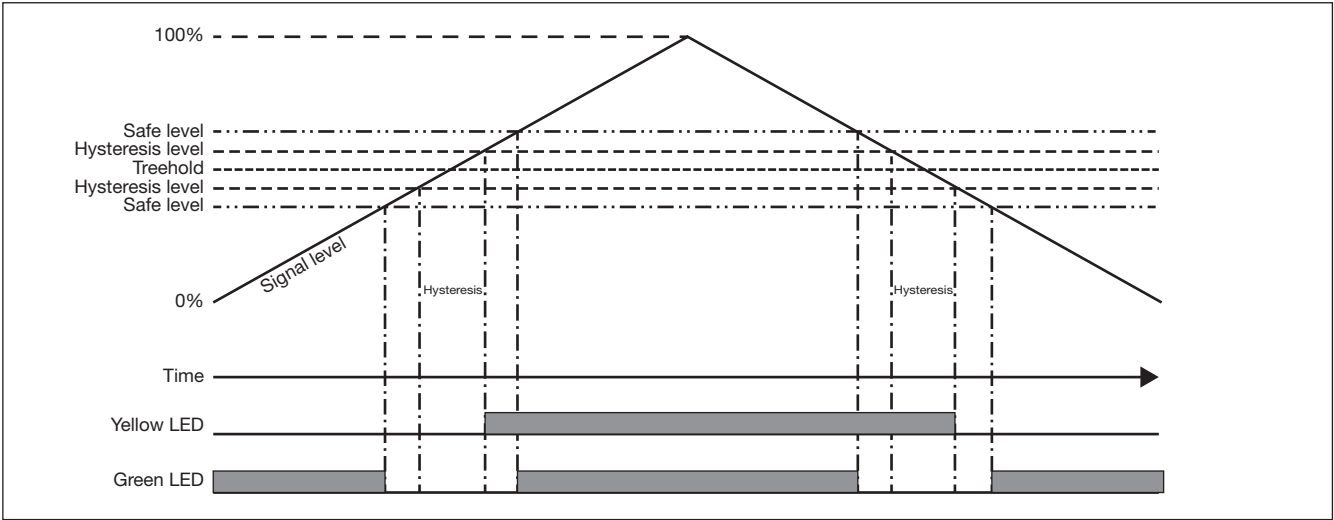
Detection Diagram



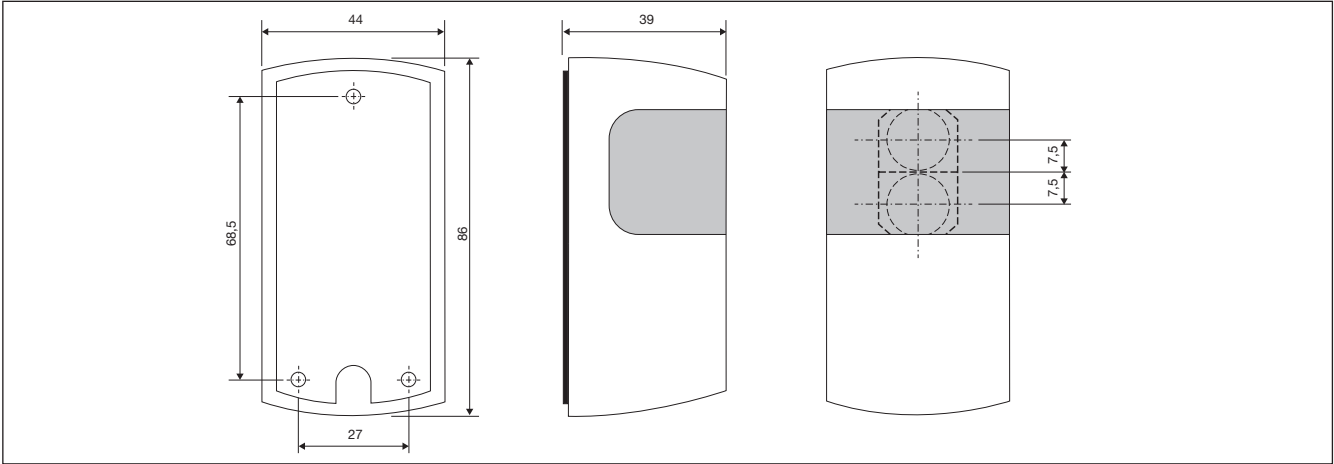
Excess Gain



LED



Dimensions



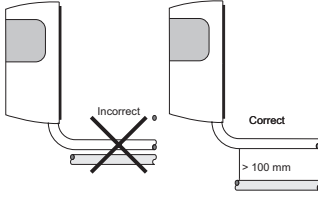
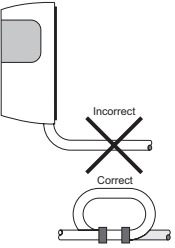
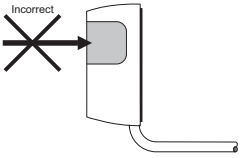
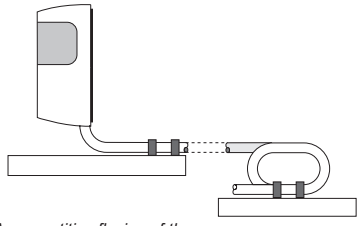
Delivery Contents

- Photoelectric switch: PD86.AP12QP...
- Screws and rawlplugs
- Installation instruction
- Packaging: Cardboard box

Accessories

- Reflectors: ER series

Installation Hints

<i>To avoid interference from inductive voltage / current peaks, separate the proximity switch cables from any other power cables. E.g. Engine, contactor or solenoid cables</i> 	<i>Relief of the cable strain</i>  <i>The cable should not be pulled</i>	<i>Protection of the sensing face</i>  <i>A proximity switch should not serve as mechanical stop</i>	<i>Sensor mounted on a mobile carrier</i>  <i>Any repetitive flexing of the cable should be avoided</i>
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