

# Photoelectrics Background Suppression Type PD112CNB25BP..

CARLO GAVAZZI



- Range: 2500 mm
- Accurate & stable distance adjustment
- Modulated, infrared light 850 nm
- Supply voltage: 10 to 30 VDC
- Output: 200 mA, NPN or PNP preset
- Make or break switching function selectable
- Adjustable ON- / OFF delay, 1 – 16 sec.
- LED indication for output and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Excellent EMC performance
- Remote test feature (mute)

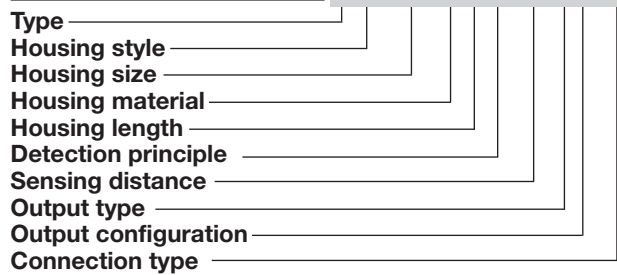


## Product Description

The PD112CNB25 sensor comes in a 112 x 45 x 25 mm strong polycarbonate (PC) housing. The sensors are useful in applications where long range and high accuracy detection is required. Robust housing, a sophisticated mechanical design and high power LED for excellent performance in harsh environments. The sensor has a test input, for door mode, designed to

remotely disable (mute) the emitter and thereby evaluate the sensor function from a door controller or e.g. a PLC. The output type is preset (NPN and PNP) with selectable switching function NO/NC. 2 selectable modes are built in: "Industrial" for general automation and "Door" specifically for control of doors & gates.

## Ordering Key **PD112CNB25BPM1**



## Type Selection

Housing W x H x D	Range S <sub>n</sub>	Connection	Ordering no. NPN and PNP Make or break switching
25 x 107.5 x 45 mm	500 - 2500 mm	Cable	<b>PD 112 CNB 25 BP</b>
25 x 107.5 x 45 mm	500 - 2500 mm	Plug	<b>PD 112 CNB 25 BPM1</b>

## Specifications

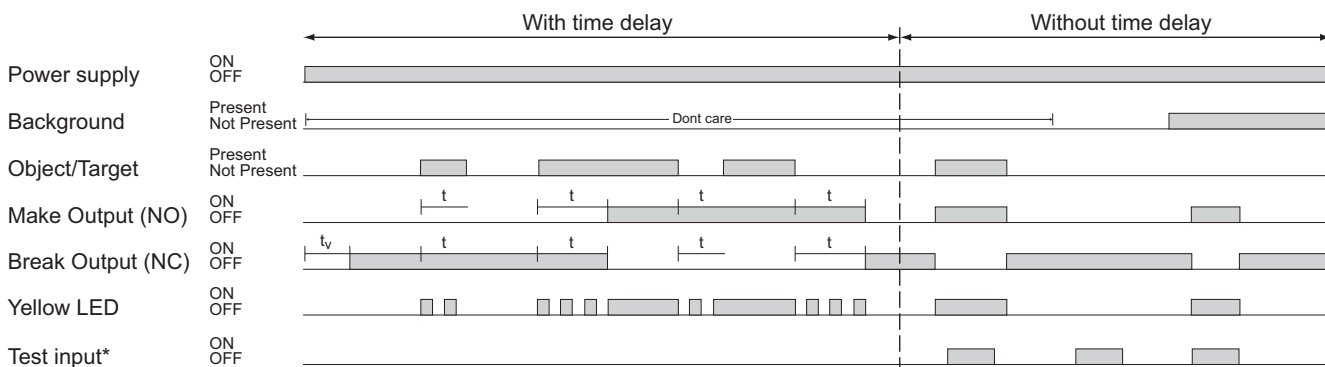
<b>Rated operating distance (S<sub>n</sub>)</b>	50 to 2500 mm, reference target Kodak test card R27, white, 90% reflective, 200 x 200 mm	<b>Light type</b>	Infrared, modulated
<b>Background adjustment</b>	500 to 2500 mm (28 turns calibration screw)	<b>Sensing angle</b>	Industry ± 1.9° Door ± 2.6°
<b>Blind zone</b>	50 mm	<b>Ambient light</b>	10,000 lux
<b>Temperature drift</b>	≤ 0.2%/°C	<b>Light spot</b>	60 mm @ 1.5 m
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Operating frequency</b>	Industry 250 Hz Door 16.7 Hz
<b>Ripple (U<sub>ripple</sub>)</b>	≤ 10%	<b>Response time</b>	OFF-ON (t <sub>ON</sub> ) Industry ≤ 2 ms ON-OFF (t <sub>OFF</sub> ) Industry ≤ 2 ms OFF-ON (t <sub>ON</sub> ) Door ≤ 30 ms ON-OFF (t <sub>OFF</sub> ) Door ≤ 30 ms
<b>Output current</b>	≤ 200 mA (max. load capacity 100 nF)	<b>Power ON delay (t<sub>v</sub>)</b>	≤ 50 ms
<b>Continuous (I<sub>a</sub>)</b>	≤ 200 mA (max. load capacity 100 nF)	<b>Output delay</b>	ON-delay 1-16 s OFF-delay 1-16 s
<b>No load supply current (I<sub>o</sub>)</b>	≤ 40 mA @ 24 VDC	<b>Output function</b>	NPN and PNP Preset NO/NC switching function Selectable by DIP switch
<b>Minimum operational current (I<sub>m</sub>)</b>	0.5 mA		
<b>OFF-state current (I<sub>r</sub>)</b>	≤ 100 μA		
<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.5VDC @ 200 mA		
<b>Protection</b>	Short-circuit, reverse polarity and transients		
<b>Light source</b>	GaAlAs, LED, 850 nm		



## Specifications (cont.)

<b>Test input</b>		<b>Vibration</b>	10 to 150 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)
Door mode		<b>Shock</b>	2 x 1 m, 100 x 500 mm (IEC 60068-2-32)
Emitter off (voltagelevel)	< 1 VDC, NPN (No pull-up resistor) or > 9 VDC PNP (No pull-down resistor)	<b>Rated insulation voltage</b>	2 kV (rms)
Input current	< 3 mA DC	<b>Housing material</b>	
Industrial mode	Not available	Body	PC (polycarbonate), black
<b>Indication</b>		Cover	PC (polycarbonate), clear
Output ON	LED, yellow	<b>Connection</b>	
Power ON	LED, green	Cable	PVC, black, 2 m 5 x 0.34 mm <sup>2</sup> , Ø = 5.2 mm M12, 5-pin (CONM15-series)
<b>Environment</b>		Plug	
Installation category	III (IEC 60664/60664A; 60947-1)	<b>Weight</b>	With cable: 160 g With plug: 80 g
Pollution degree	3 (IEC 60664/60664A; 60947-1)	<b>CE-marking</b>	Yes
Degree of protection	IP 67 (IEC 60529; 60947-1)	<b>Approvals</b>	cULus (UL508)
<b>Ambient temperature</b>			
Operating	-25° to +55°C (-13° to +131°F)		
Storage	-25° to +80°C (-13° to +176°F)		

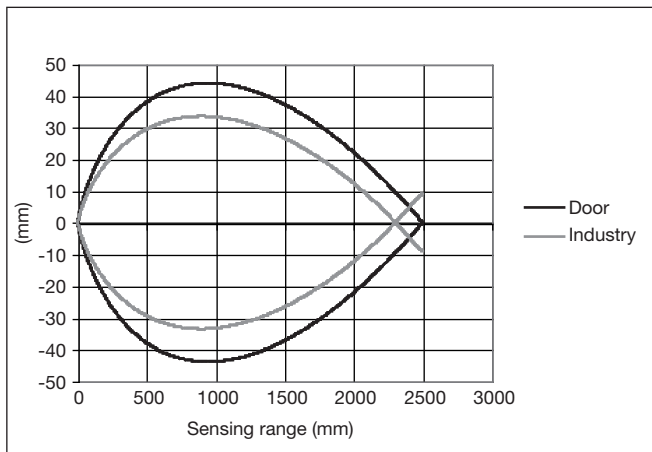
## Operation Diagram



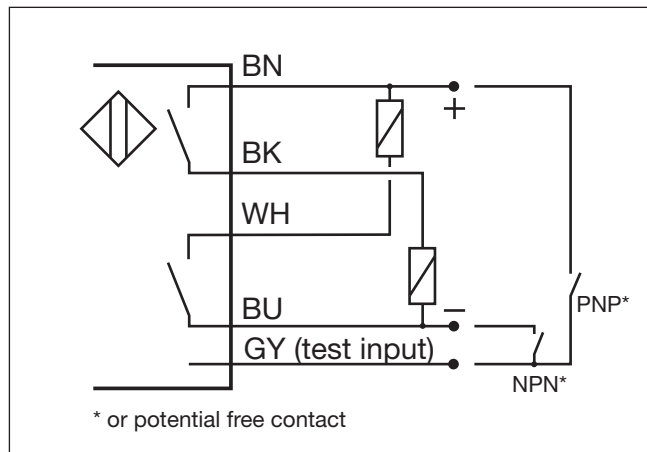
$t_v$  = Power on delay,  $t$  = Time delay (delay on operate and delay on release)

\* Only active in Door Mode

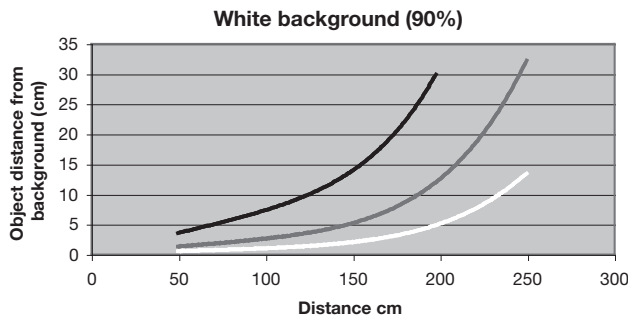
## Detection Diagram



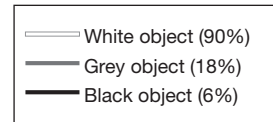
## Wiring Diagrams



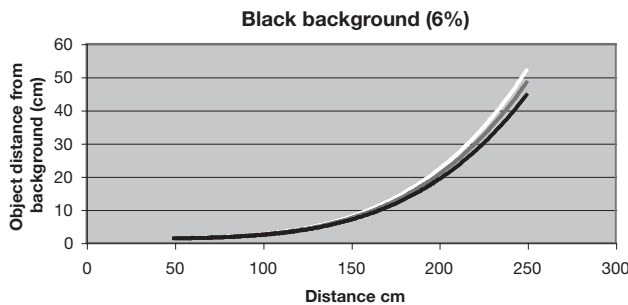
## Sensing Conditions "Industrial" mode



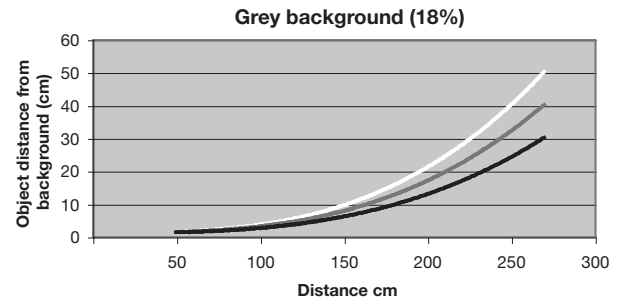
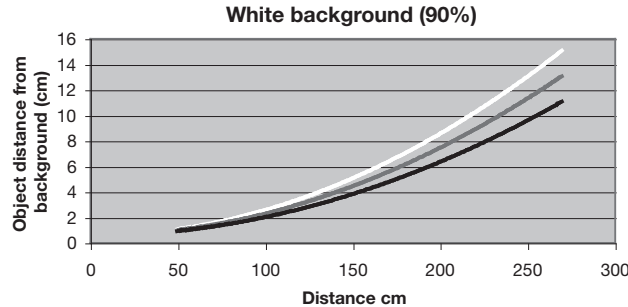
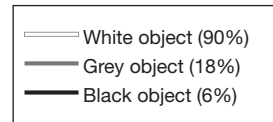
In this mode the maximum operating frequency is set to 250 Hz and detection is optimized for objects close to the background for top performance in general industry automation applications such as pallet wrapping machines, airport baggage conveyors, wood planks handling/stacking.



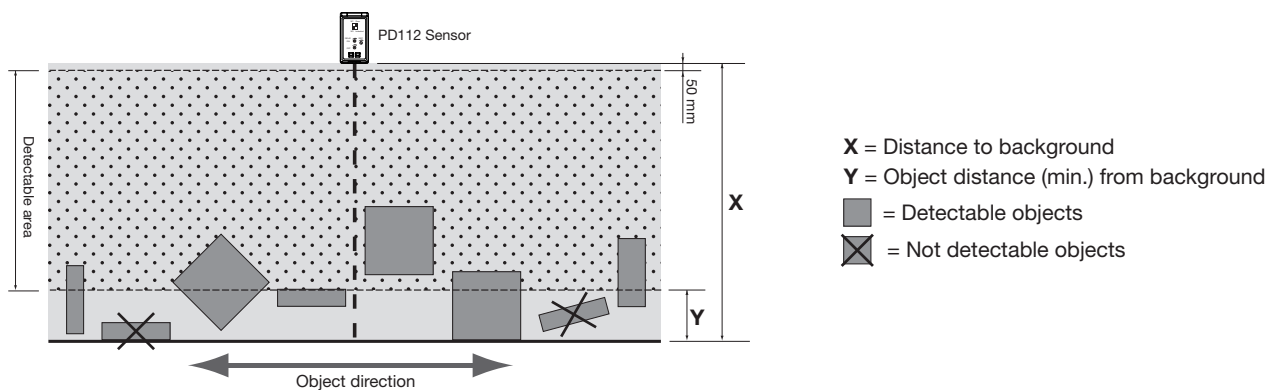
## Sensing Conditions "Door" mode



In this mode various parameters are optimized for monitoring and control of doors, from a position above the door/in the ceiling. Maximum operating frequency is set to 16.7 Hz, adapting to moving persons, and the test input – for evaluation of the sensor functioning through muting of the emitter – is enabled for use by a door controller or e.g. a PLC.



## Detection Principle



## Adjustment

### Background suppression adjustment\*

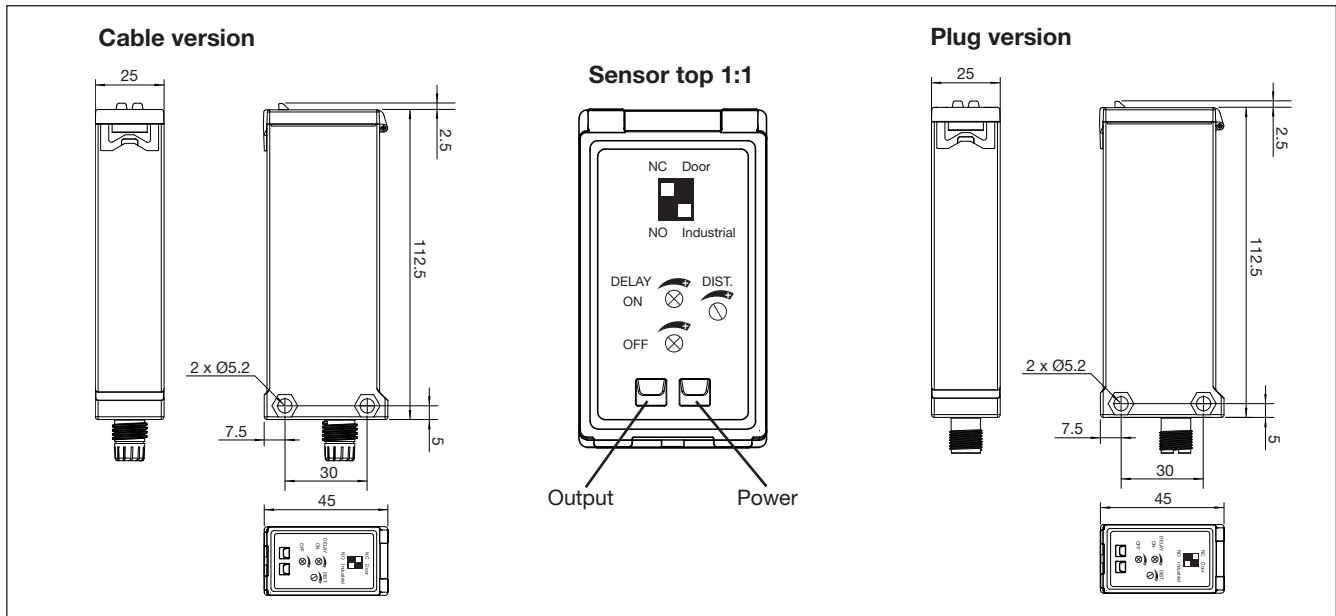
1. Align the sensor at the background
2. Turn distance calibration screw (28 turns) clockwise until yellow led is ON
3. Turn distance calibration screw (28 turns) counter clockwise until yellow led turns OFF
4. Background is now neglected

### Object detection adjustment

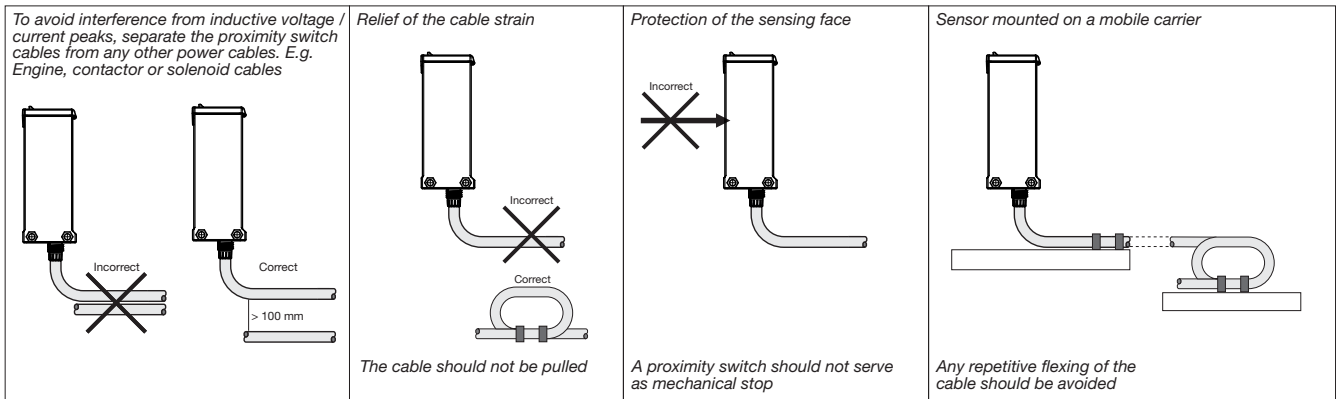
1. Align the sensor at the background
2. Turn distance calibration screw (28 turns) counter clockwise until yellow led turns OFF
3. Turn distance calibration screw (28 turns) clockwise until yellow led turns ON
4. The object can now be detected

\*If no background exists a white cardboard can be used as background.

## Dimensions (mm)



## Installation Hints



## Delivery Contents

- Photoelectric switch: PD 112 CNB 25 BP..
- Screwdriver for adjustment: 77-005
- Installation instruction
- **Packaging:** Cardboard box

## Accessories

- Connector type CONM15NF... series

For further information refer to "Accessories"

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