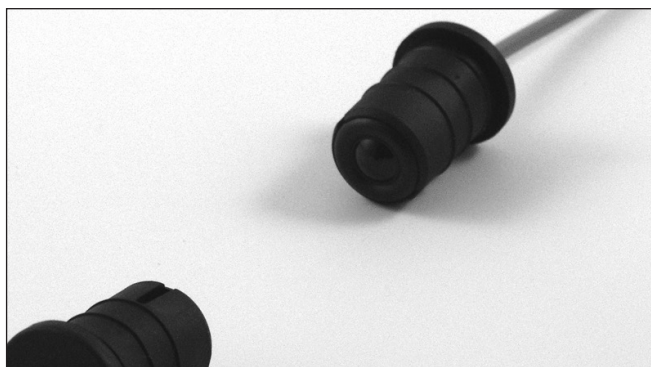


# Photoelectrics Through-beam, Transistor Output Type PB18CNT15..

CARLO GAVAZZI



- Safety Edge sensor for doors
- Range 15 m
- ESPE, PSPE type 2, PL C
- Modulated, infrared light
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP type
- Make or break switching
- Protection: reverse polarity, short circuit, transients
- Emitter mute and power adjustment
- CE, UL325 and UL508 approved



## Product Description

The PB18CNT. is a through beam sensor set specific designed for safety edge sensing in industrial automatic doors. The housing is designed to fit a  $\varnothing 18$  mm rubber profile and has integrated sealing

lips to prevent water from entering the profile. The emitter has a mute input to turn it off for evaluation of the sensor function. Available in 10-30 VDC version.

## Ordering Key

**PB18CNT15NO**

Type	_____
Housing style	_____
Housing size	_____
Housing material	_____
Sensor code	_____
Detection principle	_____
Sensing distance	_____
Output type	_____
Output configuration	_____

## Type Selection

Housing diameter	Range $S_n$	Con-nec-tor	Ordering no. Receiver NPN, NO	Ordering no. Receiver NPN, NC	Ordering no. Receiver PNP, NO	Ordering no. Receiver PNP, NC	Ordering no. Emitter
$\varnothing 18$ mm	15 m	NO	PB18CNT15NO	PB18CNT15NC	PB18CNT15PO	PB18CNT15PC	PB18CNT15

Note: Please order emitter and receiver separately

## Specifications Emitter

Rated operational volt. ( $U_B$ )	10 to 30 VDC	Light type	Infrared, modulated
Ripple ( $U_{rp}$ )	$\leq 10\%$	Light spot	940 mm @ 9 m
Supply current	$\leq 20$ mA	Emitter angle	$\pm 3^\circ$ @ 9 m
Protection	Reverse polarity, transients	Power adjustment	$R_x \sim 3$ k $\Omega$ -10 k $\Omega$
Power ON delay ( $t_v$ )	$\leq 100$ ms		3 m ... 18 m in 19 step
Control input			
Normal operation	$> 1.5$ VDC		
Mute	$< 1.2$ VDC		
Light source	LED, 890 nm		

## Specifications Receiver

<b>Rated operating dist. (S<sub>n</sub>)</b>	15 m	<b>Utility category</b>	DC12	Control of resistive loads and solid state loads with optical isolation
<b>Blind zone</b>	None		DC13	
<b>Temperature drift</b>	≤ 0.4 %/°C	<b>Ambient light</b>	3,000 ... 3,200 K	> 80,000 LUX (EN60947-5-2)
<b>Hysteresis (H)</b>	3 - 20 %	<b>Detection angle</b>		± 2.5° @ 9 m
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Operating frequency (f)</b>		100 Hz
<b>Ripple (U<sub>rp</sub>)</b>	≤ 10 %	<b>Response time</b>	OFF-ON (t <sub>ON</sub> )	≈ 6.5 ms
<b>No load supply current (I<sub>o</sub>)</b>	≤ 16 mA		ON-OFF (t <sub>OFF</sub> )	≈ 3.5 ms
<b>Output current</b>		<b>Power ON delay (t<sub>v</sub>)</b>		≤ 100 ms
Continuous (I <sub>e</sub> )	≤ 100 mA	<b>Output function</b>	NPN or PNP	Make or break (NO or NC)
Short-time (I)	≤ 100 mA, (max. load capacity 100 nF)			
<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>	≤ 1.6 VDC @ 100 mA			
<b>Protection</b>	Short-circuit, reverse polarity, transients			

## General Specifications

<b>Environment</b>		<b>Surge (EN 61000-4-5)</b>	
Overvoltage category	III (IEC 60664/60664A, 60947-1)	Power-supply	> 1 kV (with 500 Ω)
Pollution degree	3 (IEC 60664/60664A, 60947-1)	Sensor output	> 1 kV (with 500 Ω)
Degree of protection	IP67 (IEC 60529; EN60947-1) 1, 2, 12 (NEMA types)	<b>Wire conducted disturbances (EN 61000-4-6)</b>	> 10 Vrms
<b>Temperature</b>		<b>Power-frequency magnetic fields (EN 61000-4-8)</b>	
Operating	-20° to +50°C (-4° to +122°F)	Continuous	> 30 A/m, 38 μ tesla
Storage	-25° to +80°C (-13° to +176°F)	Short-time	> 300 A/m, 380 μ tesla
<b>Rated insulation voltage</b>	75 VDC	<b>Vibration (IEC 60068-2-6)</b>	10 to 150 Hz, 1 mm / 15 g
<b>Dielectric test voltage</b>	500 Vac rms (EN60947-1)	<b>Shock (IEC 60068-2-27)</b>	30 g / 11 ms, 6 pos, 6 neg per axis
<b>Rated impulse withstand test</b>	800 V (1.2 / 50 μs) (EN60947-1)	<b>Free fall (IEC 60068-2-31)</b>	2 times from 1 m, 100 times from 0.5 m
<b>ESPE, PSPE</b>	Type 2	<b>Housing material</b>	
<b>PFH<sub>d</sub></b>	6 x 10 <sup>-8</sup> failure per hour (worst case SRP for CS)	Body	PTE, black
<b>Diagnostic coverage</b>	99 % (EN13849-1: 2008)	Front glass	PC, black
<b>Performance level</b>	C (EN13849-1: 2008)	<b>Connection</b>	
<b>MTTF<sub>d</sub> (worst case full sensor)</b>	298 Years (worst case full receiver) EN ISO 13849-1, SN 29500 368 Years (worst case full emitter) EN ISO 13849-1, SN 29500	Cable	PVC, Emitter: grey / Receiver: black, 5 m, 3 x 0.14 mm <sup>2</sup> , Ø 2.9 mm
<b>Electrostatic discharge (EN61000-4-2)</b>		<b>Weight</b>	
Contact discharge	> 12 kV	Emitter	80 g
Air discharge	> 8 kV	Receiver	80 g
<b>Radiated RF electromagnetic fields (EN 61000-4-3)</b>	> 10 V/m	<b>CE-marking</b>	EN12445, EN12453, EN12978, EN 60947-5-2
<b>Electrical fast transients/burst (EN 61000-4-4)</b>	± 4 kV	<b>UL-Approval</b>	cURus UL325 cULus UL508, CSA-C22.2 No.247

## Operation Diagram

tv = Power ON delay

Power supply

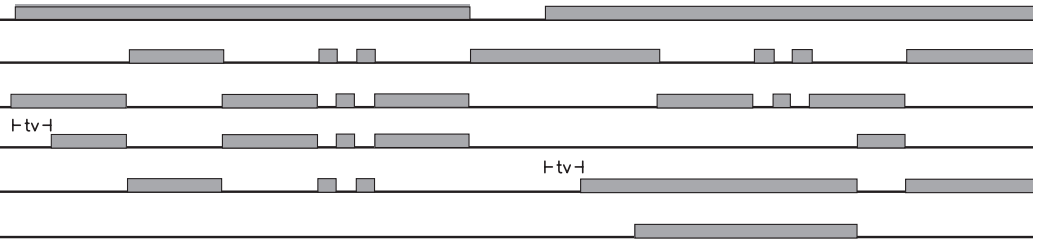
Target emitter present

Object present

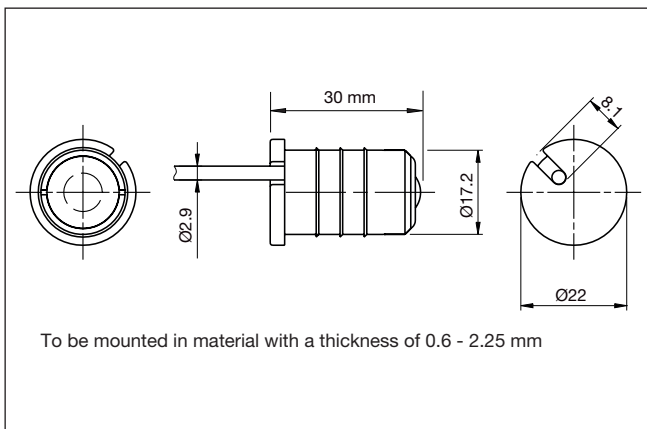
Break (NC) Output ON

Make (NO) Output ON

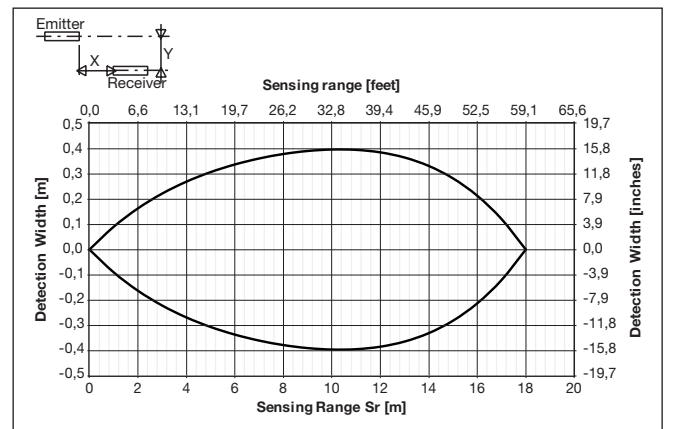
Mute active  $\leq 1.2$  VDC



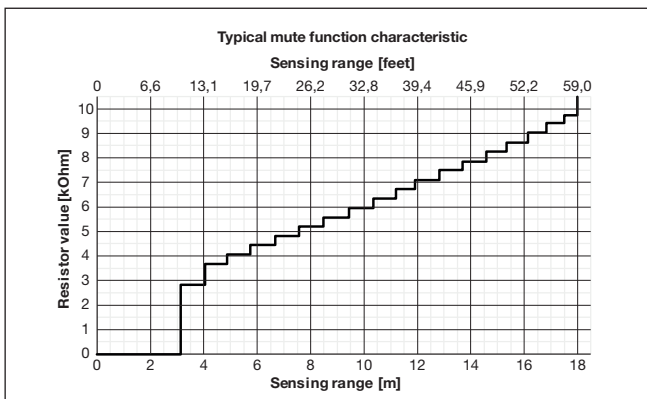
## Dimensions



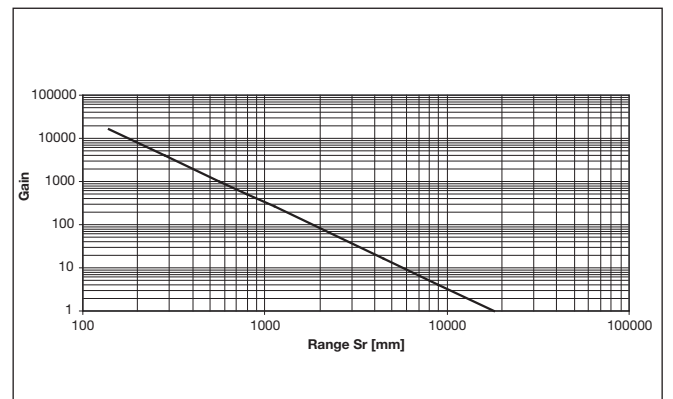
## Detection Diagram



## Power adjustment curve



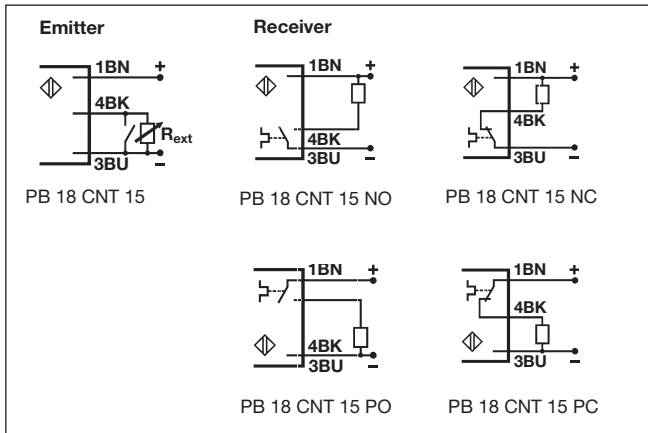
## Excess Gain



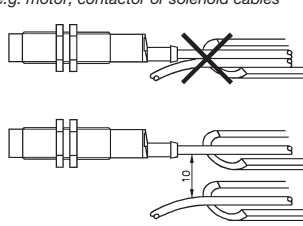
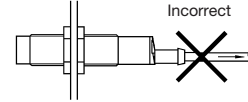

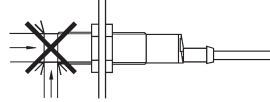
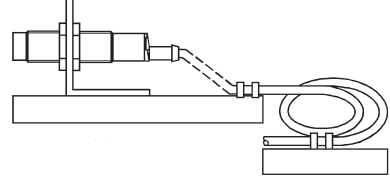
## Wiring Diagram

## Delivery Contents

- PB18
- Packaging: plastic bag



## Installation Hints

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