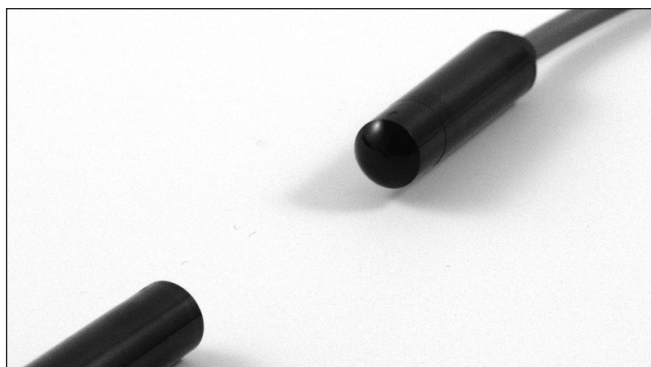


Photoelectrics Through-beam, Transistor Output Type PB10CNT20..

CARLO GAVAZZI



- Elevators, Escalators and Entrance control
- Range 20 m
- ESPE-Type 2, PL C.
- Modulated, infrared light
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP type
- Make or break switching
- LED for output indication or power supply
- Protection: reverse polarity, short circuit, transients
- Cable versions with or without connector
- Emitter mute and power adjustment
- CE, UL325 and UL508 approved



Product Description

The PB10CNT. is a through beam sensor set specially designed for Elevators, Escalators, Entrance control to meet the requirements in the door market. The housing is very robust and is

known for its high long term reliability. The emitter has a mute input to turn it off for evaluation of the sensor function. Available in 10-30 VDC version.

Ordering Key

PB10CNT20NO-C2

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

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
Ø 10 mm	20 m	NO	PB10CNT20NO	PB10CNT20NC	PB10CNT20PO	PB10CNT20PC	PB10CNT20
Ø 10 mm	20 m	YES	PB10CNT20NO-C2	PB10CNT20NC-C2	PB10CNT20PO-C2	PB10CNT20PC-C2	PB10CNT20-C2

Note: Please order emitter and receiver separately

Specifications Emitter

Rated operational volt. (U_B)	10 to 30 VDC
Ripple (U_{rrp})	≤ 10%
Supply current	≤ 20 mA
Protection	Reverse polarity, transients
Power ON delay (t_v)	≤ 100 ms
Control input	
Normal oper.	> 1.5 VDC
Mute	< 1.2 VDC
Light source	LED, 860 nm

Light type	Infrared, modulated
Light spot	1580 mm @ 12 m
Emitter angle	± 3.8° @ 12 m
Indication function	
Power supply ON	LED, green
Mute input ON	LED, green flashing, 3.5 Hz
Power adjustment	
R _x ~ 3 kΩ -10 kΩ	4...24 m in 19 steps

Specifications Receiver

Rated operating dist. (S_n)	20 m
Blind zone	None
Temperature drift	$\leq 0.4\%/^{\circ}\text{C}$
Hysteresis (H)	3 - 20%
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)
Ripple (U_{rp})	$\leq 10\%$
No load supply current (I_o)	$\leq 16\text{ mA}$
Output current Continuous (I_a) Short-time (I)	$\leq 100\text{ mA}$ $\leq 100\text{ mA}$, (max. load capacity 100 nF)
Minimum operational current (I_m)	0.5 mA
OFF-state current (I_r)	$\leq 100\text{ }\mu\text{A}$
Voltage drop (U_d)	$\leq 1.6\text{ VDC @ }100\text{ mA}$
Protection	Short-circuit, reverse polarity, transients

Utility category	DC12	Control of resistive loads and solid state loads with optical insulation
	DC13	Control of electromagnets
Ambient light		$> 80.000\text{ Lux (EN60947-5-2)}$
Detection angle		$\pm 2.9^{\circ} @ 12\text{ m}$
Operating frequency (f)		100 Hz
Response time	OFF-ON (t_{ON}) ON-OFF (t_{OFF})	$\approx 6.5\text{ ms}$ $\approx 3.5\text{ ms}$
Power ON delay (t_v)		$\leq 100\text{ ms}$
Output function NPN or PNP		Make or break (NO or NC)
Indication function Output ON		LED, yellow

General Specifications

Environment	
Overvoltage category	III (IEC 60664/60664A, 60947-1)
Pollution degree	3 (IEC 60664/60664A, 60947-1)
Degree of protection	IP67 (IEC 60529; EN60947-1) 1, 2, 3, 4, 6, 12, 13 (NEMA types)
Temperature	
Operating	-20°C to $+50^{\circ}\text{C}$ (-4° to $+122^{\circ}\text{F}$)
Storage	-25° to $+80^{\circ}\text{C}$ (-13° to $+176^{\circ}\text{F}$)
Rated insulation voltage	75 VDC
Dielectric test voltage	500 Vac rms (EN60947-1)
Rated impulse withstand test	800 V (1.2 / 50 μs) (EN60947-1)
ESPE	Type 2
PFH_d	6×10^{-8} failure per hour (worst case SRP for CS)
Diagnostic coverage	99 % (EN13849-1: 2008)
Performance level	C (EN13849-1: 2008)
MTTF_d (worst case full sensor)	345 Years (worst case full receiver) EN ISO 13849-1, SN 29500 412 Years (worst case full emitter) EN ISO 13849-1, SN 29500
Electrostatic discharge (EN61000-4-2)	
Contact discharge	$> 12\text{ kV}$
Air discharge	$> 8\text{ kV}$
Radiated RF electromagnetic fields (EN 61000-4-3)	$> 10\text{ V/m}$
Electrical fast transients/burst (EN 61000-4-4)	$\pm 4\text{ kV}$

Surge (EN 61000-4-5)	
Power-supply	$> 1\text{ kV}$ (with 500 Ω)
Sensor output	$> 1\text{ kV}$ (with 500 Ω)
Wire conducted disturbances (EN 61000-4-6)	$> 10\text{ Vrms}$
Power-frequency magnetic fields (EN 61000-4-8)	
Continuous	$> 30\text{ A/m}$, 38 $\mu\text{ tesla}$
Short-time	$> 300\text{ A/m}$, 380 $\mu\text{ tesla}$
Vibration (IEC 60068-2-6)	10 to 150 Hz, 1 mm / 15 g
Shock (IEC 60068-2-27)	30 G / 11 ms, 6 pos, 6 neg per axis
Free fall (IEC 60068-2-31)	2 times from 1 m 100 times from 0.5 m
Pig-tail connector (-C2)	3-pol micro MATE-N-LOK Series, AMP/TE
Housing material	
Body	PC black
Connection	
Cable	PVC, Emitter: grey / Receiver: black, 5 m, 3 x 0.14 mm ² , $\varnothing 2.9\text{ mm}$
Weight	
Emitter	80 g
Receiver	80 g
CE-marking	EN12445, EN12453, EN12978, EN 60947-5-2
UL-Approval	 UL325 UL508, CSA-C22.2 No.247

Operation Diagram

tv = Power ON delay

Power supply

Target emitter present

Object present

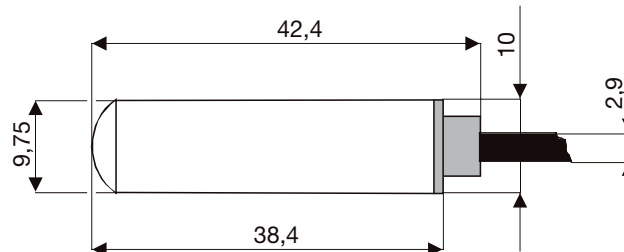
Break (NC) Output ON

Make (NO) Output ON

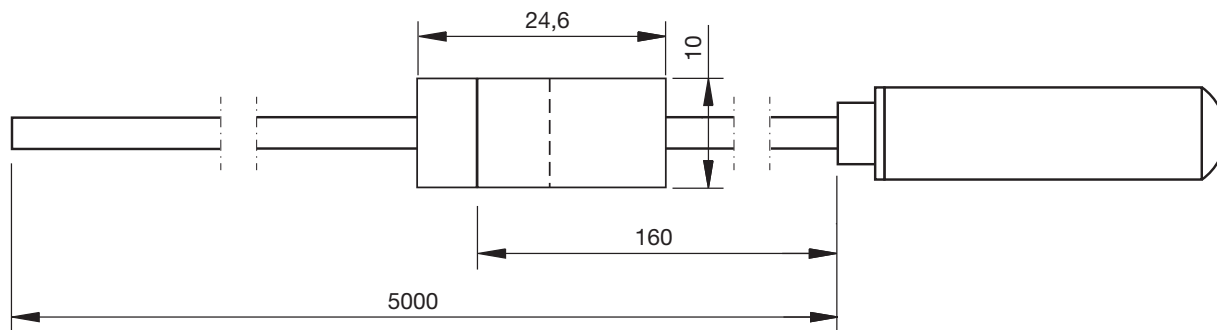
Mute active ≤ 1.2 VDC

Dimensions

PB10.....

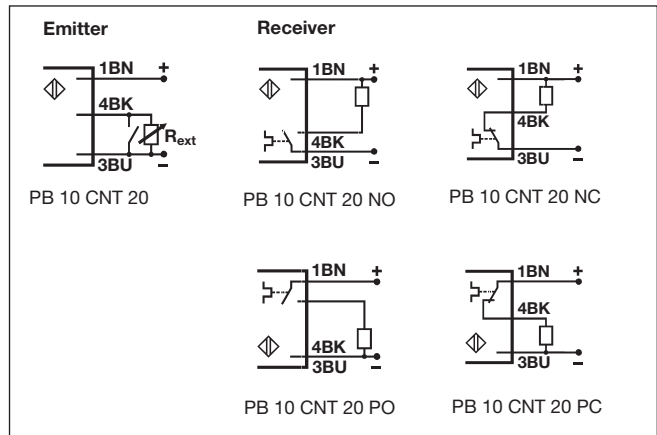


PB10.....-C2 with connector

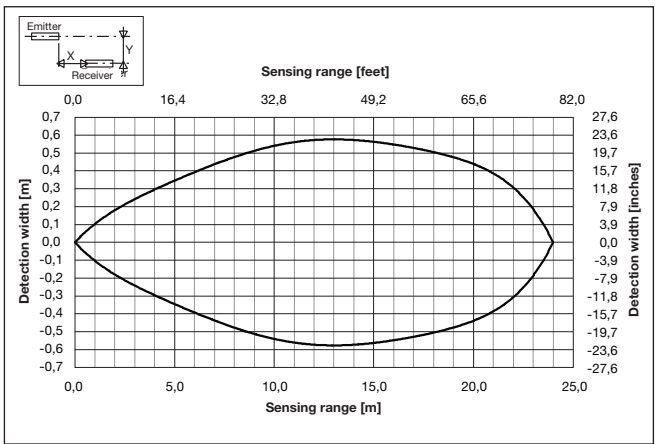




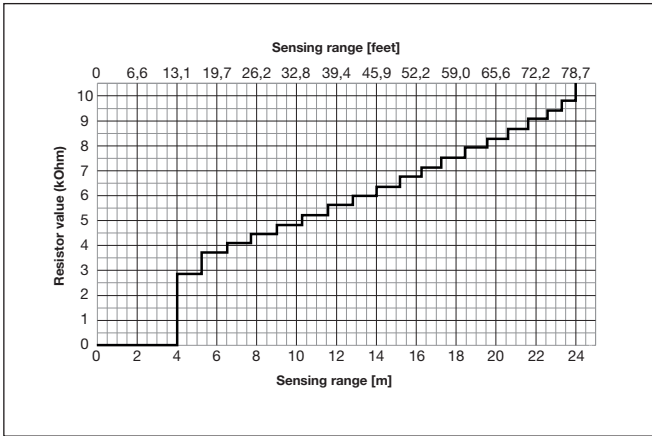
Wiring Diagram



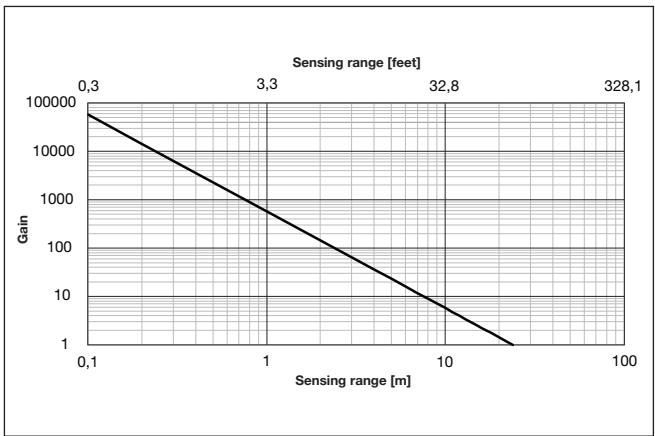
Detection Diagram



Power adjustment curve



Excess Gain



Installation Hints

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

Relief of cable strain

The cable should not be pulled

Protection of the sensing face

A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier

Any repetitive flexing of the cable should be avoided

Delivery Contents

- PB10
- Packaging: plastic bag