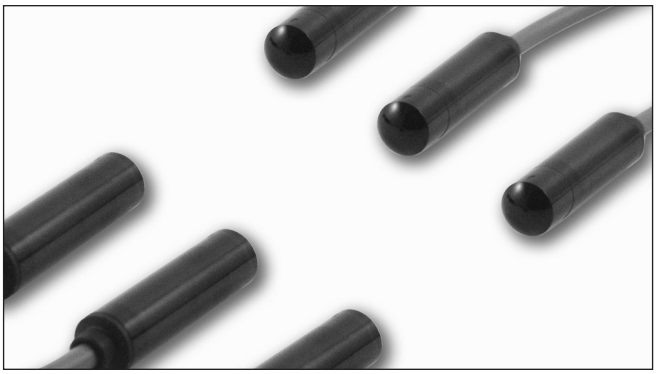
Photoelectrics
Through-beam, Transistor Output
Type PB10C.T20..

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- 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
- High neighbour immunity, 3-codes
- 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 it's high long term relaibility. The emitter has a mute input to turn it off for evaluation of the sensor function.
The emitter and receivers can be delivered in 3 different codes on order to improve neighbour immunity. Available in 10-30 VDC version.

Ordering Key

PB10C1T20NO-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	Connector	Ordering no. Receiver NPN, NO	Ordering no. Receiver NPN, NC	Ordering no. Receiver PNP, NO	Ordering no. Receiver PNP, NC	Ordering no. Emitter
Ø10 mm Code 1	20 m	NO	**PB10C1T20NO**	**PB10C1T20NC**	**PB10C1T20PO**	**PB10C1T20PC**	**PB10C1T20**
Ø10 mm Code 2	20 m	NO	**PB10C2T20NO**	**PB10C2T20NC**	**PB10C2T20PO**	**PB10C2T20PC**	**PB10C2T20**
Ø10 mm Code 3	20 m	NO	**PB10C3T20NO**	**PB10C3T20NC**	**PB10C3T20PO**	**PB10C3T20PC**	**PB10C3T20**
Ø10 mm Code 1	20 m	YES	**PB10C1T20NO-C2**	**PB10C1T20NC-C2**	**PB10C1T20PO-C2**	**PB10C1T20PC-C2**	**PB10C1T20-C2**
Ø10 mm Code 2	20 m	YES	**PB10C2T20NO-C2**	**PB10C2T20NC-C2**	**PB10C2T20PO-C2**	**PB10C2T20PC-C2**	**PB10C2T20-C2**
Ø10 mm Code 3	20 m	YES	**PB10C3T20NO-C2**	**PB10C3T20NC-C2**	**PB10C3T20PO-C2**	**PB10C3T20PC-C2**	**PB10C3T20-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, 880 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

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Specifications Receiver

Rated operating dist. (S_n)	20 m
Blind zone	None
Temperature drift	≤ 0.4%/°C
Hysteresis (H)	3 - 20%
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)
Ripple (U_{rrp})	≤ 10%
No load supply current (I_o)	≤ 13 mA
Output current Continuous (I_e) Short-time (I)	 ≤ 100 mA ≤ 100 mA, (max. load capacity 100 nF)
Minimum operational current (I_m)	0.5 mA
OFF-state current (I_r)	≤100 µA
Voltage drop (U_d)	≤ 1.6 VDC @ 100 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 Lux (EN60947-5-2)
Detection angle		± 2.9° @ 12 m
Operating frequency (f)		30 Hz
Response time	OFF-ON (t_{ON})	≈ 10 ms
	ON-OFF (t_{OFF})	≈ 20 ms
Power ON delay (t_v)		≤ 300 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° to +50°C (-4° to +122°F)
Storage	-25° to +80°C (-13° to +176°F)
Rated insulation voltage	50 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 x 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 kV
Air discharge	> 8 kV
Radiated RF electromagnetic fields (EN 61000-4-3)	> 10 V/m
Electrical fast transients/burst (EN 61000-4-4)	± 4 kV

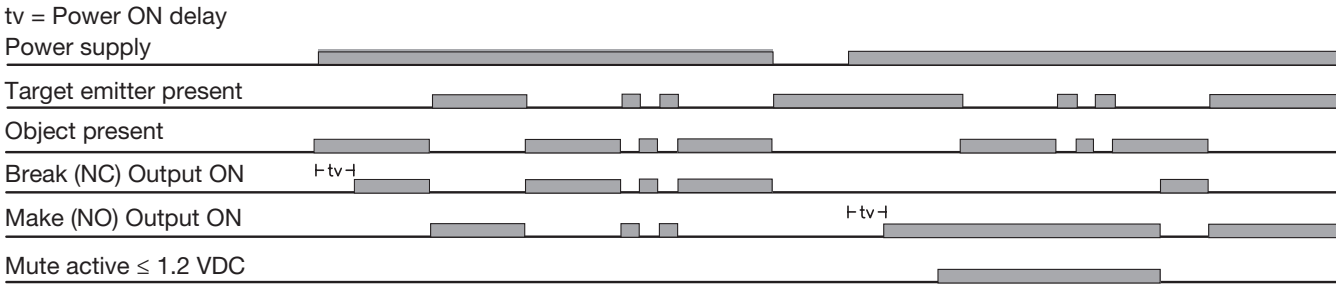
Surge (EN 61000-4-5)	
Power-supply	> 1 kV (with 500 Ω)
Sensor output	> 1 kV (with 500 Ω)
Wire conducted disturbances (EN 61000-4-6)	> 10 Vrms
Power-frequency magnetic fields (EN 61000-4-8)	
Continous	> 30 A/m, 38 µ tesla
Short-time	> 300 A/m, 380 µ tesla
Vibration (IEC 60068-2-6)	10 to 150 Hz, 1 mm / 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, Ø 2.9 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

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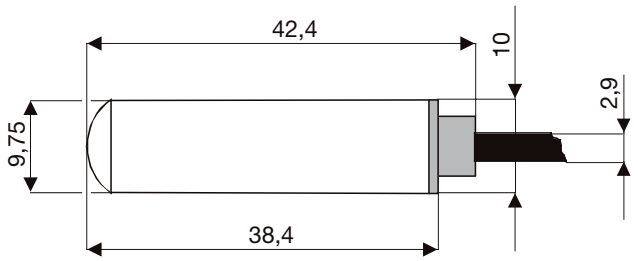
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Operation Diagram

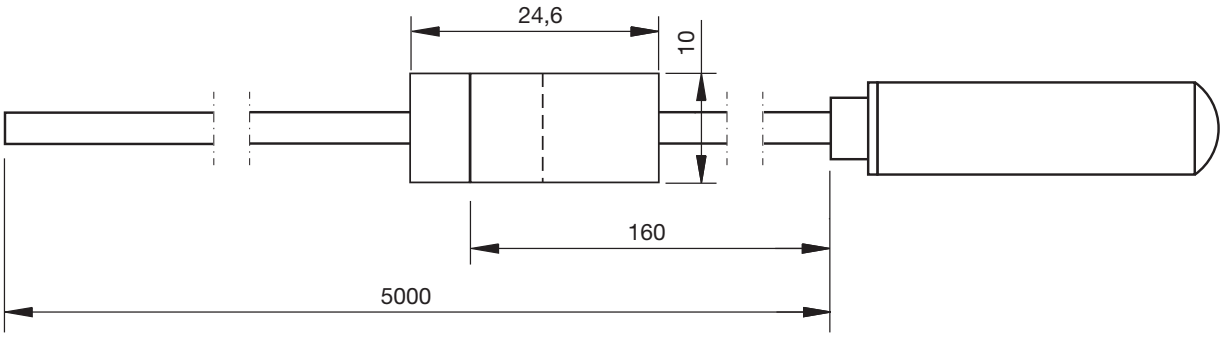


Dimensions

PB10.....

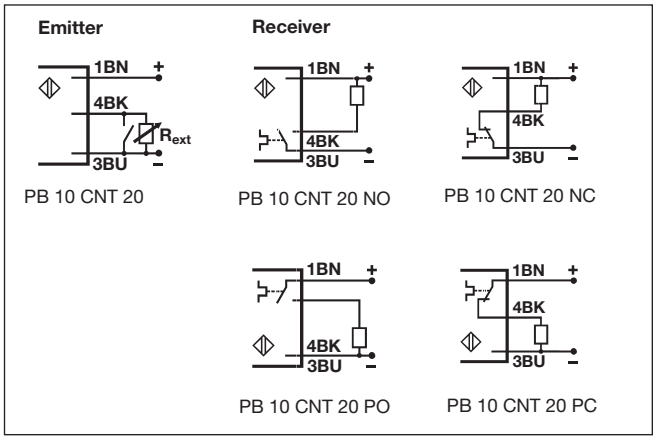


PB10.....-C2 with connector

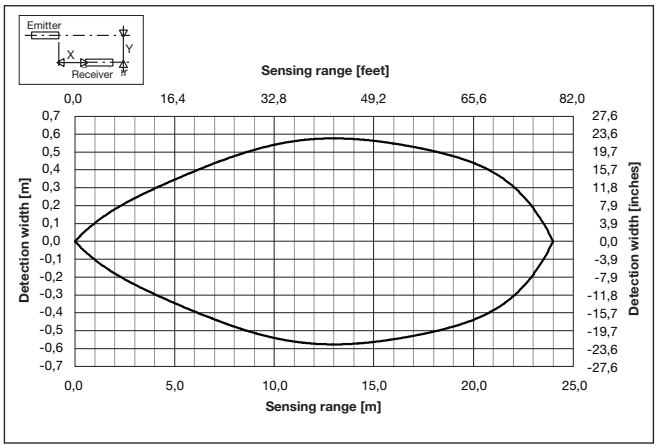


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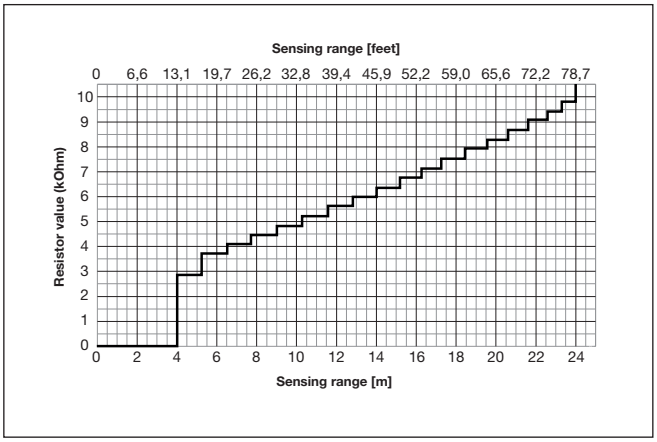
Wiring Diagram



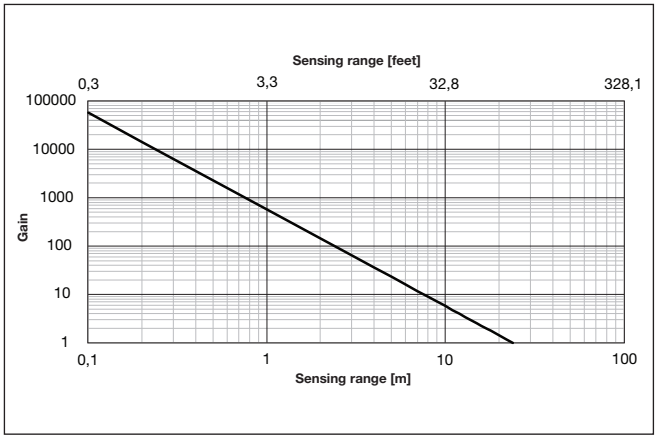
Detection Diagram



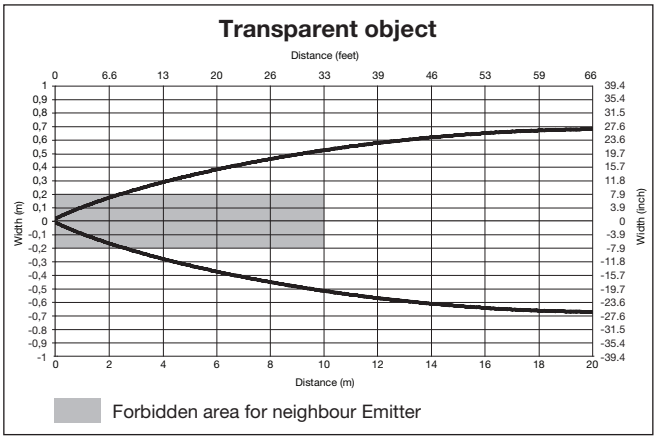
Power adjustment curve

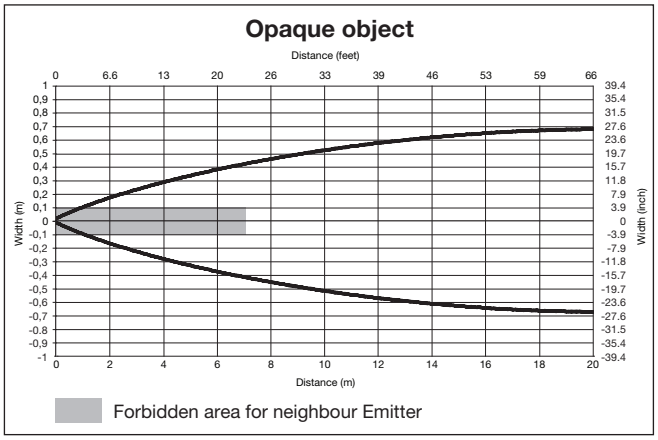


Excess Gain



Neighbour Immunity Diagram

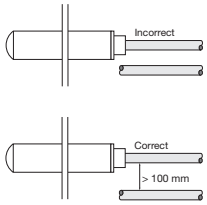
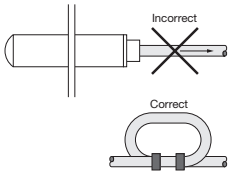
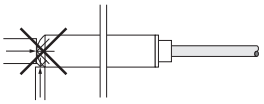
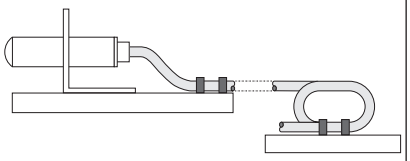




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Installation Hints

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*	*Protection of the sensing face*	*Switch mounted on mobile carrier*
	 The cable should not be pulled	 A proximity switch should not serve as mechanical stop	 Any repetitive flexing of the cable should be avoided

Delivery Contents

- PB10
- **Packaging:** plastic bag

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