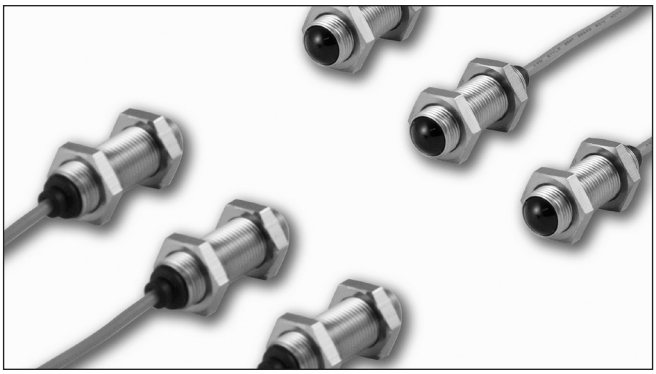
Photoelectrics
Through-beam, Transistor Output
Type PA12B.T20..



- **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**
- **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 PA12BNT. 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 mute. 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

PA12B1T20NO-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
M12 mm Code 1	20 m	NO	**PA12B1T20NO**	**PA12B1T20NC**	**PA12B1T20PO**	**PA12B1T20PC**	**PA12B1T20**
M12 mm Code 2	20 m	NO	**PA12B2T20NO**	**PA12B2T20NC**	**PA12B2T20PO**	**PA12B2T20PC**	**PA12B2T20**
M12 mm Code 3	20 m	NO	**PA12B3T20NO**	**PA12B3T20NC**	**PA12B3T20PO**	**PA12B3T20PC**	**PA12B3T20**
M12 mm Code 1	20 m	YES	**PA12B1T20NO-C2**	**PA12B1T20NC-C2**	**PA12B1T20PO-C2**	**PA12B1T20PC-C2**	**PA12B1T20-C2**
M12 mm Code 2	20 m	YES	**PA12B2T20NO-C2**	**PA12B2T20NC-C2**	**PA12B2T20PO-C2**	**PA12B2T20PC-C2**	**PA12B2T20-C2**
M12 mm Code 3	20 m	YES	**PA12B3T20NO-C2**	**PA12B3T20NC-C2**	**PA12B3T20PO-C2**	**PA12B3T20PC-C2**	**PA12B3T20-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
Power adjustment	
R_x ~ 1.5 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)	≤ 100 mA
Short-time (I)	≤ 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

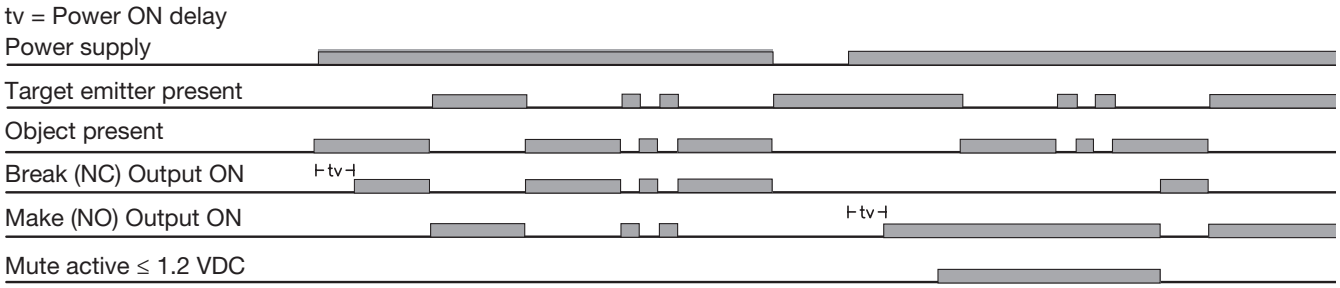
Protection		Short-circuit, reverse polarity, transients
Utility category	DC12	Control of resistive loads and solid state loads with optical insulation
	DC13	Control of electromagnets
Ambient light		> 20.000 Lux (EN60947-5-2)
Detection angle		± 2.9° @ 12 m
Operating frequency (f)		30 Hz
Response time	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)

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

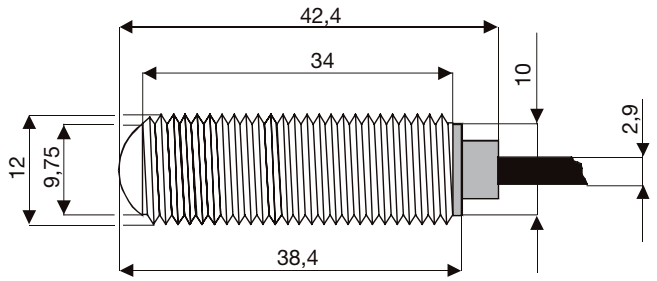
Electrical fast transients/burst (EN 61000-4-4)	± 4 kV
Surge (EN 61000-4-5)	
Power-supply	> 1 kV (with 500 Ω)
Sensor output	> 1 kV (with 500 Ω)
Wire conducted disturbances (EN 61000-4-6)	> 10 Vrms
Power-frequency magnetic fields (EN 61000-4-8)	
Continous	> 30 A/m, 38 µ tesla
Short-time	> 300 A/m, 380 µ tesla
Vibration (IEC 60068-2-6)	10 to 150 Hz, 1 mm / 15 g
Shock (IEC 60068-2-27)	30 G / 11 ms, 3 pos, 3 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	M12-Stainless Steel
Front	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

Operation Diagram

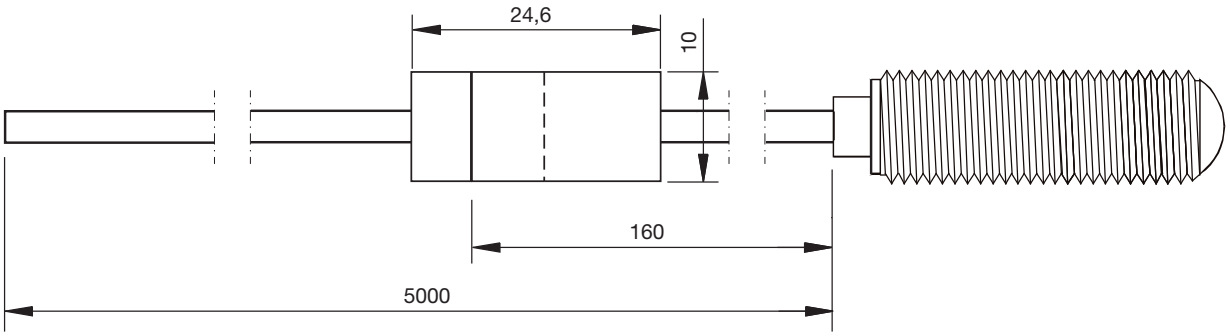


Dimensions

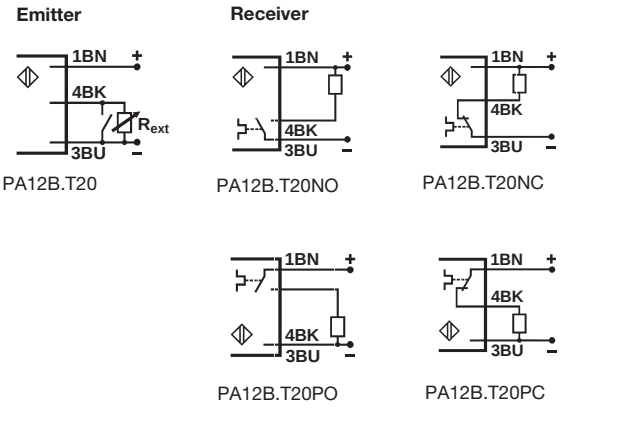
PA12.....



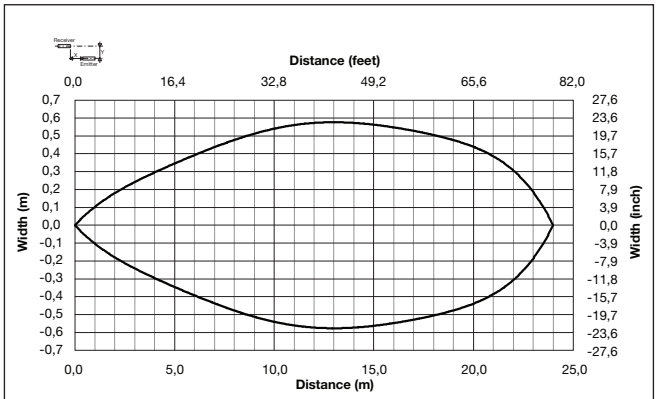
PA12.....-C2 with connector



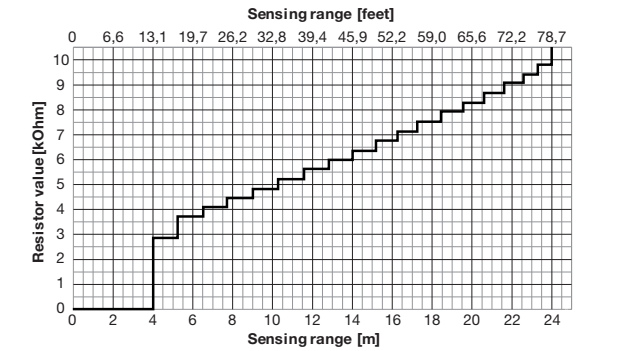
Wiring Diagram



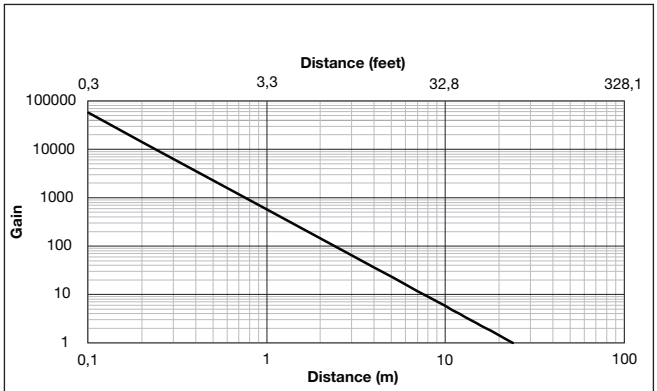
Detection Diagram



Power adjustment curve



Excess Gain



Neighbour Immunity Diagram