Photoelectrics
Through-beam, Transistor Output
Type PE12C.T15..

CARLO GAVAZZI



- **Elevators, Escalators and Entrance control**
- **Range 15 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 PE12CNT. is a family of general purpose Photoelectric sensors.
They are specially designed for Elevators, Escalators, Entrance control to meet the requirements in the door market. The “snap-on” housing can be mounted with a wall thickness from 0.6 mm to 2.25 mm. 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

PE12C1T15NOC2

- **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
Ø 12 mm Code 1	15 m	NO	**PE12C1T15NO**	**PE12C1T15NC**	**PE12C1T15PO**	**PE12C1T15PC**	**PE12C1T15**
Ø 12 mm Code 2	15 m	NO	**PE12C2T15NO**	**PE12C2T15NC**	**PE12C2T15PO**	**PE12C2T15PC**	**PE12C2T15**
Ø 12 mm Code 3	15 m	NO	**PE12C3T15NO**	**PE12C3T15NC**	**PE12C3T15PO**	**PE12C3T15PC**	**PE12C3T15**
Ø 12 mm Code 1	15 m	YES	**PE12C1T15NOC2**	**PE12C1T15NCC2**	**PE12C1T15POC2**	**PE12C1T15NCC2**	**PE12C1T15C2**
Ø 12 mm Code 2	15 m	YES	**PE12C2T15NOC2**	**PE12C2T15NCC2**	**PE12C2T15POC2**	**PE12C2T15NCC2**	**PE12C2T15C2**
Ø 12 mm Code 3	15 m	YES	**PE12C3T15NOC2**	**PE12C3T15NCC2**	**PE12C3T15POC2**	**PE12C3T15NCC2**	**PE12C3T15C2**

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	940 mm @ 9 m
Emitter angle	± 3° @ 9 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	3 ... 18 m in 19 step

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Specifications Receiver

Rated operating dist. (S_n)	15 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)	≤ 16 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 isolation
	DC13	Control of electromagnets
Ambient light 3,000 ... 3,200 K		> 20,000 LUX (EN60947-5-2)
Detection angle		± 2.5° @ 9 m
Operating frequency (f)		100 Hz
Response time	OFF-ON (t_{ON})	≈ 3.5 ms
	ON-OFF (t_{OFF})	≈ 6.5 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, 12 (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)	298 Years (worst case full receiver) EN ISO 13849-1, SN 29500 368 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

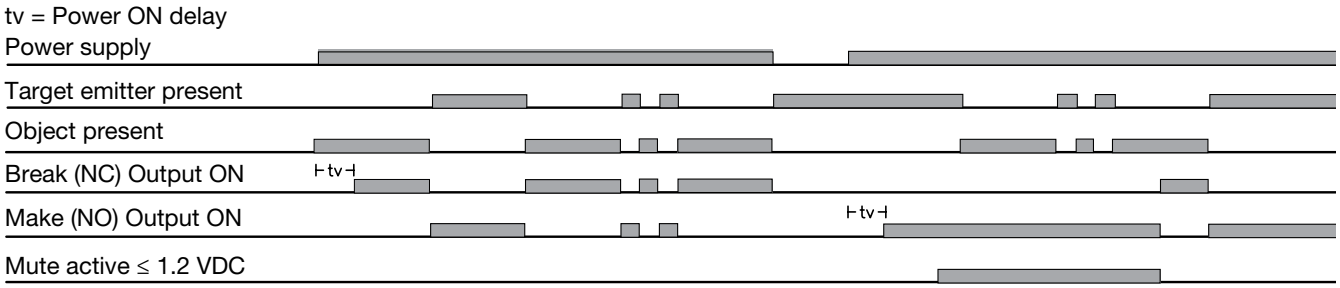
Surge (EN 61000-4-5)	
Power-supply	> 1 kV (with 500 Ω)
Sensor output	> 1 kV (with 500 Ω)
Wire conducted disturbances (EN 61000-4-6)	> 10 Vrms
Power-frequency magnetic fields (EN 61000-4-8)	
Continous	> 30 A/m, 38 µ tesla
Short-time	> 300 A/m, 380 µ tesla
Vibration (IEC 60068-2-6)	10 to 150 Hz, 1 mm / 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 PE12	PC black
Front glass	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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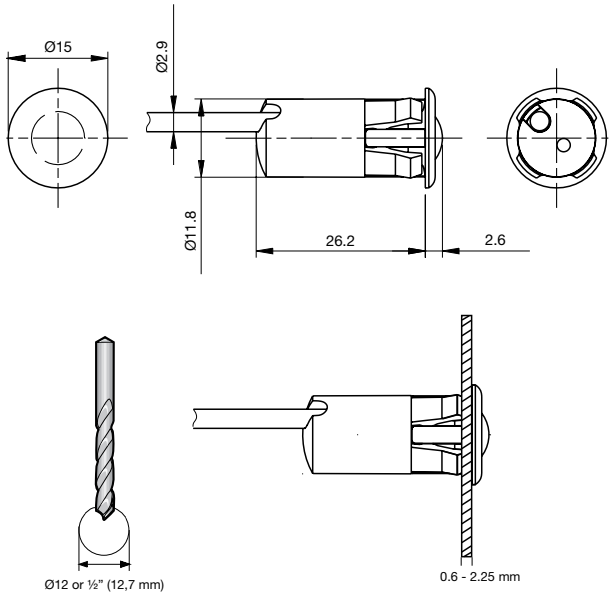
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Operation Diagram

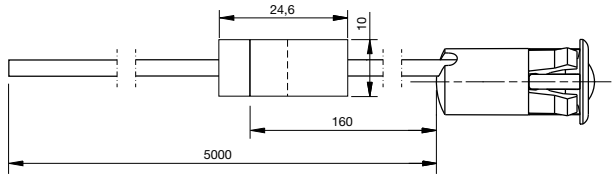


Dimensions (mm)

PE12.....

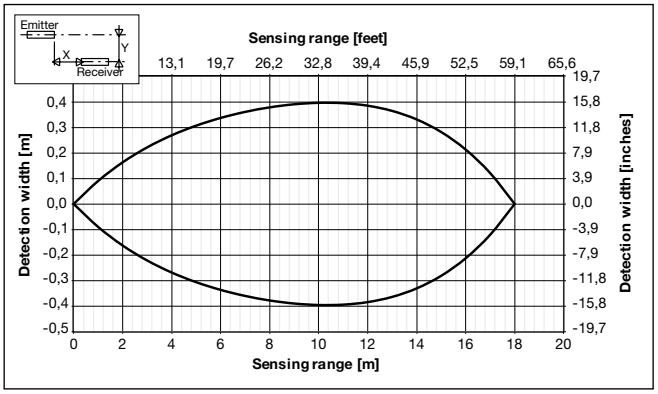


PE12.....-C2 with connector

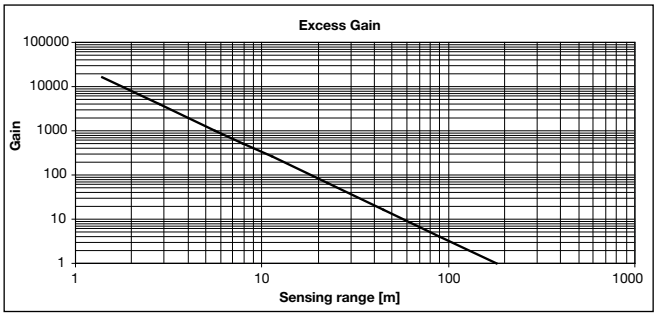


To be mounted in material with a thickness of 0.6 - 2.25 mm

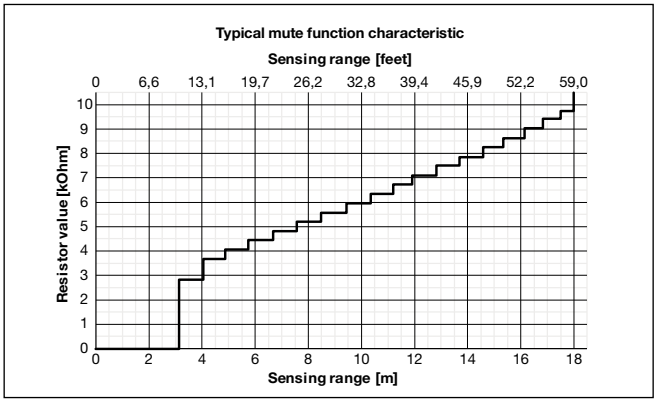
Detection Diagram



Excess Gain

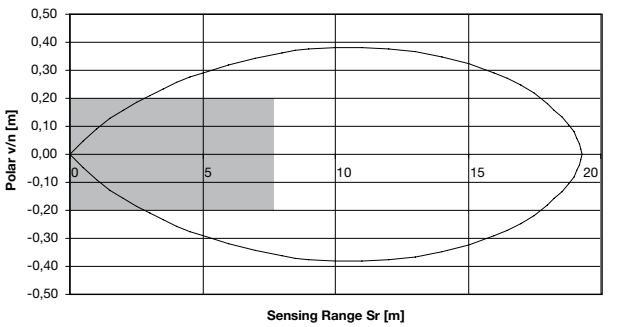


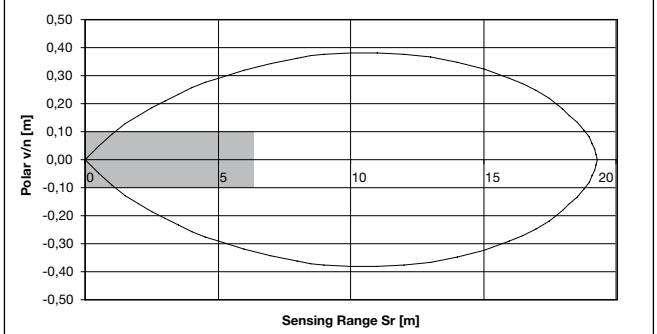
Power adjustment curve



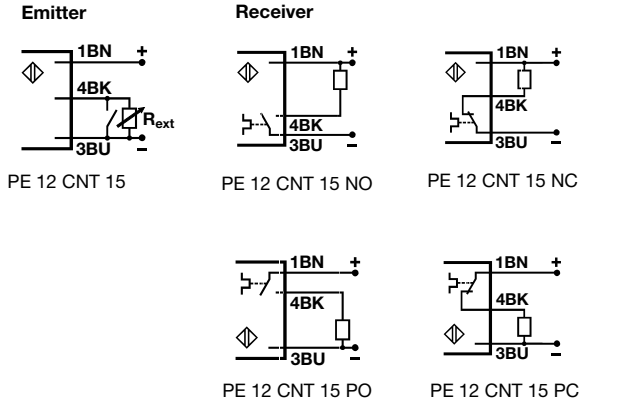
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Neighbour Immunity Diagram





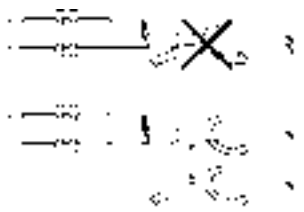
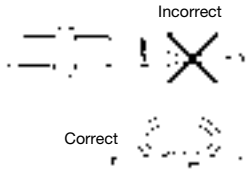
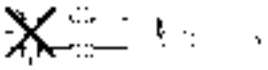
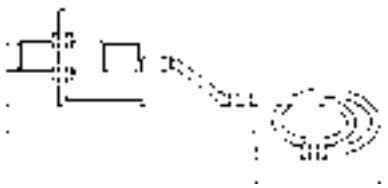
Wiring Diagram



Delivery Contents

- PE12...
- **Packaging:** plastic bag

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

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