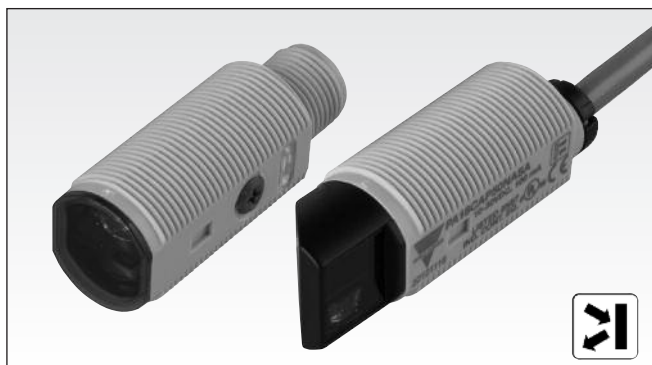


Photoelectrics Retro-reflective, Polarized Type PA18C.P..., DC

CARLO GAVAZZI



- Miniature sensor range
- Range: 5 m (axial), 4 m (radial)
- Sensitivity adjustment by potentiometer
- Modulated, red light 625 nm
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP, N.O & N.C.
- Degree of protection: IP67, IP69K
- LED indication for output, stability and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Excellent EMC performance



Product Description

The PA18C.P is part of a family of inexpensive general purpose retro-reflective sensors in industrial standard 18 mm cylindrical ABS housing. The sensors are useful in applications where high-accuracy detection as well as small size is required.

Compact housing and high power LED for excellent performance-size ratio. The potentiometer used for adjustment of the sensitivity makes the sensors highly flexible. The output type is NPN or PNP and the output switching function is NO and NC.

Ordering Key

PA18CAP50PAM1SA

Type	_____
Housing style	_____
Housing size	_____
Housing material	_____
Housing type axial	_____
Detection principle	_____
Sensing distance	_____
Output type	_____
Output configuration	_____
Connection type	_____
Sensitive adjustment	_____

Type Selection

Housing style	Range S _n	Connection	Ordering no. NPN Make & break switching	Ordering no. PNP Make & break switching
M18 Axial type	5.0 m	Cable	PA 18 CAP 50 NASA	PA 18 CAP 50 PASA
M18 Axial type	5.0 m	Plug	PA 18 CAP 50 NAM1SA	PA 18 CAP 50 PAM1SA
M18 Radial type	4.0 m	Cable	PA 18 CRP 40 NASA	PA 18 CRP 40 PASA
M18 Radial type	4.0 m	Plug	PA 18 CRP 40 NAM1SA	PA 18 CRP 40 PAM1SA

Specifications according to EN60947-5-2

Rated operating distance (S_n) Axial type (A) Radial type (R)	Up to 5.0 m, Up to 4.0 m Reference target: ER4 reflector ø 80 mm	OFF-state current (I_r)	≤ 100 µA
Blind zone	100 mm	Voltage drop (U_d)	≤ 2.0 VDC @ 100 mA
Sensitivity control Adjustable distance to target Axial types Radial types	Adjustable by potentiometer 270° 50-500 cm 50-400 cm	Protection	Short-circuit, reverse polarity and transients
Temperature drift	≤ 0.2%/°C	Light source	InGaAlP, LED, 625 nm
Hysteresis (H) (differential travel)	≤ 20%	Light type	Red, modulated
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Sensing angle	± 2°
Ripple (U_{rpp})	≤ 10%	Ambient light	30.000 lux Incandescent lamp
Output current Continuous (I _a) Short-time (I)	≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	Light spot Diameter	Ø 150 mm @ 2.5 m
No load supply current (I_o)	≤ 20 mA @ 24 VDC	Operating frequency	500 Hz
Minimum operational current (I_m)	0.5 mA	Response time OFF-ON (t _{ON}) ON-OFF (t _{OFF})	≤ 1.0 ms ≤ 1.0 ms
		Power ON delay (t_v)	≤ 300 ms
		Output function Type Switching function	NPN or PNP NO and NC
		Indication Output ON Signal stability and power ON	LED, yellow LED, green

Environment		Housing material	
Installation category	III (IEC 60664/60664A; 60947-1)	Body	ABS, grey
Pollution degree	3 (IEC 60664/60664A; 60947-1)	Front material	PMMA, red
Degree of protection	IP 67, IP 69K*	Locknuts	PBTB, black
Ambient temperature		Mounting bracket	PPA, black
Operating	-25° to +60°C (-13° to +140°F)	Connection	
Storage	-40° to +70°C (-40° to +158°F)	Cable	PVC, grey, 2 m 4 x 0.25 mm², Ø = 4.5 mm
Vibration	10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)	Plug	M12, 4-pin (CONM14NF-series)
Shock	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)	Weight	With cable: 40 g With plug: 10 g
Rated insulation voltage	500 VAC (rms) IEC protection class III	CE-marking	Yes
		Approvals	cULus (UL508) supply class 2

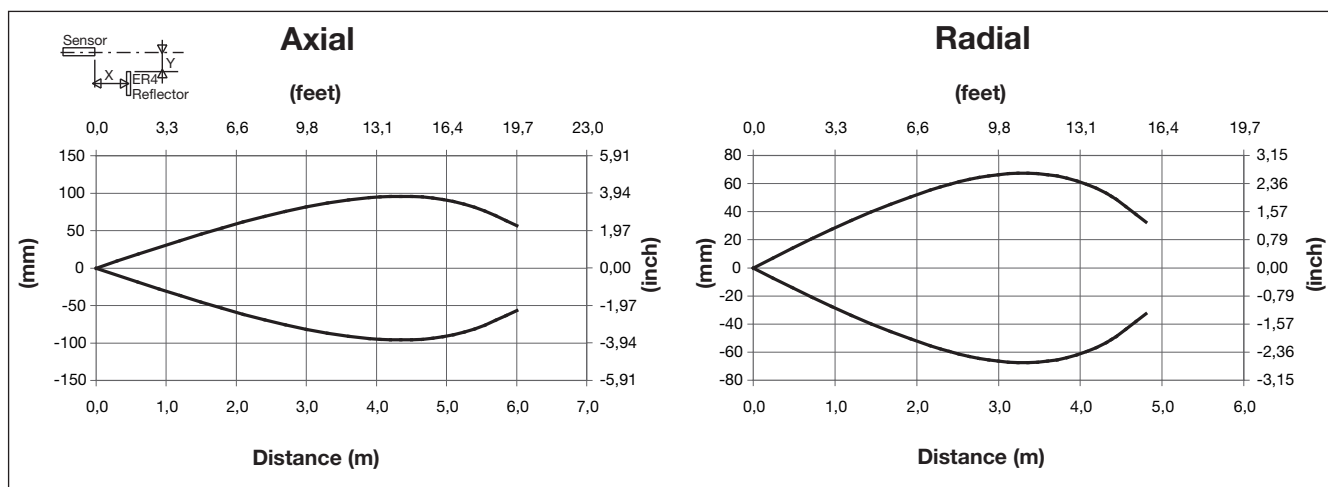
tv = Power ON delay

The diagram shows the following signals and their timing:

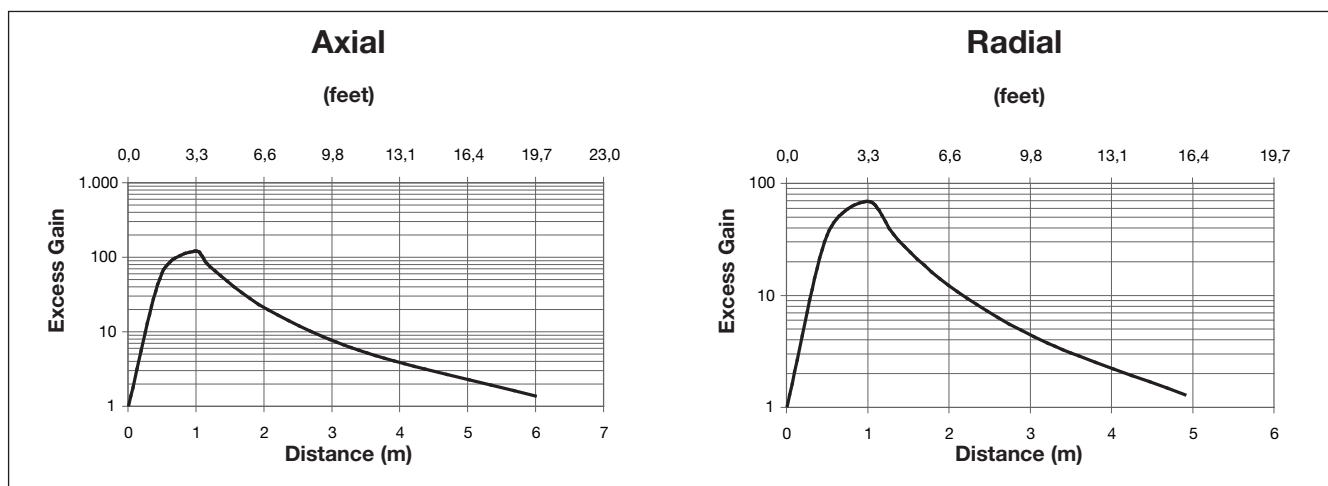
- Power supply:** ON (high) and OFF (low). The delay t_v is indicated from the rising edge of the Power supply to the rising edge of the Break Output.
- Target:** A series of pulses representing the target being present or absent.
- Object:** A series of pulses representing the object being present or absent.
- Break Output (N.C.):** A series of pulses representing the break output. The delay t_v is indicated from the rising edge of the Power supply to the rising edge of the Break Output.
- Make Output (N.O.):** A series of pulses representing the make output. The delay t_v is indicated from the rising edge of the Power supply to the rising edge of the Make Output.

The image shows two schematic diagrams for transistor configurations. The left diagram is for an NPN transistor, with the emitter connected to -V GND and the base connected to +V. The collector is connected to a load resistor (1 BN) and a variable resistor (2 WH). The base is connected to a variable resistor (4 BK) and a variable resistor (3 BU). The right diagram is for a PNP transistor, with the emitter connected to +V and the base connected to -V GND. The collector is connected to a load resistor (1 BN) and a variable resistor (2 WH). The base is connected to a variable resistor (4 BK) and a variable resistor (3 BU).

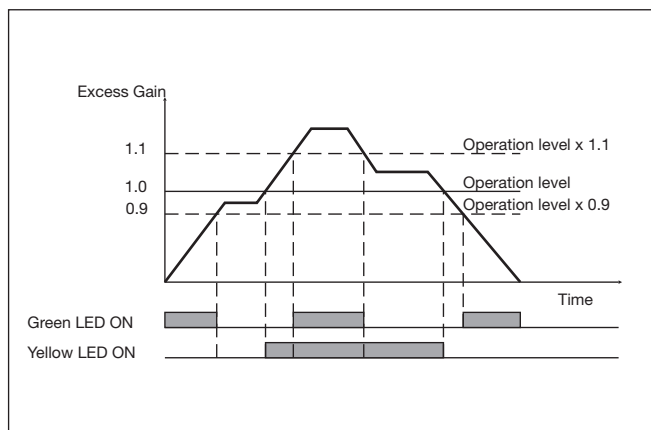
Detection Diagram



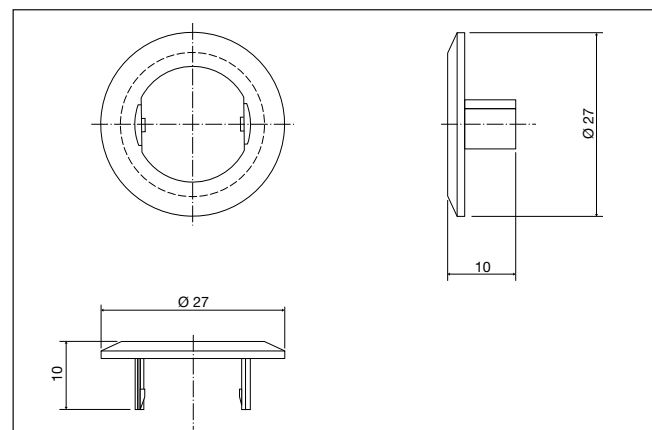
Excess Gain



Signal Stability Indication

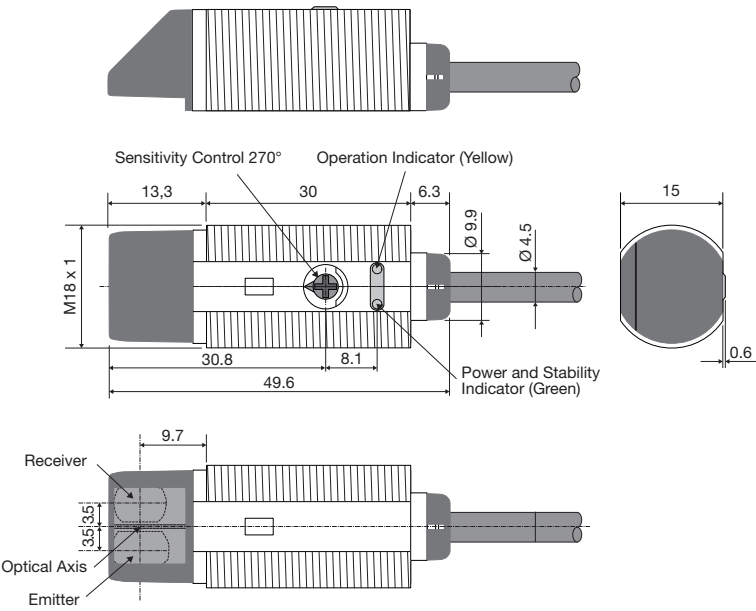


APA18-MB1

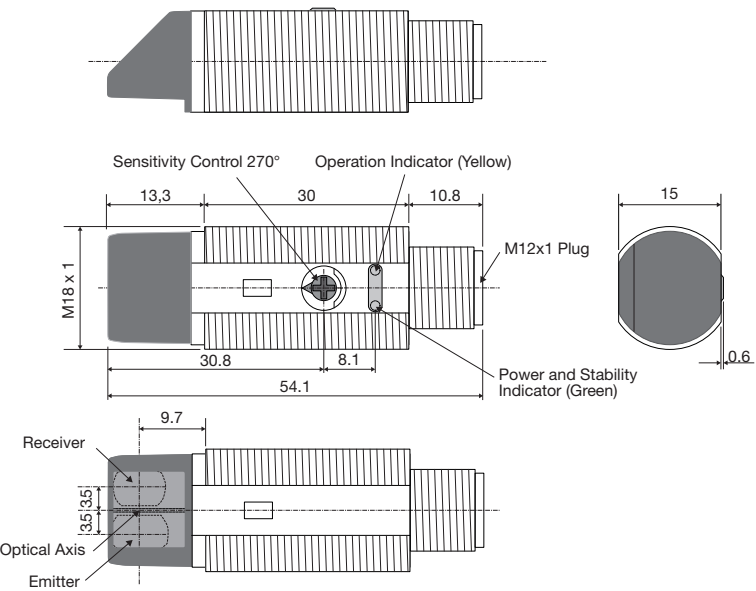


Dimensions Radial version

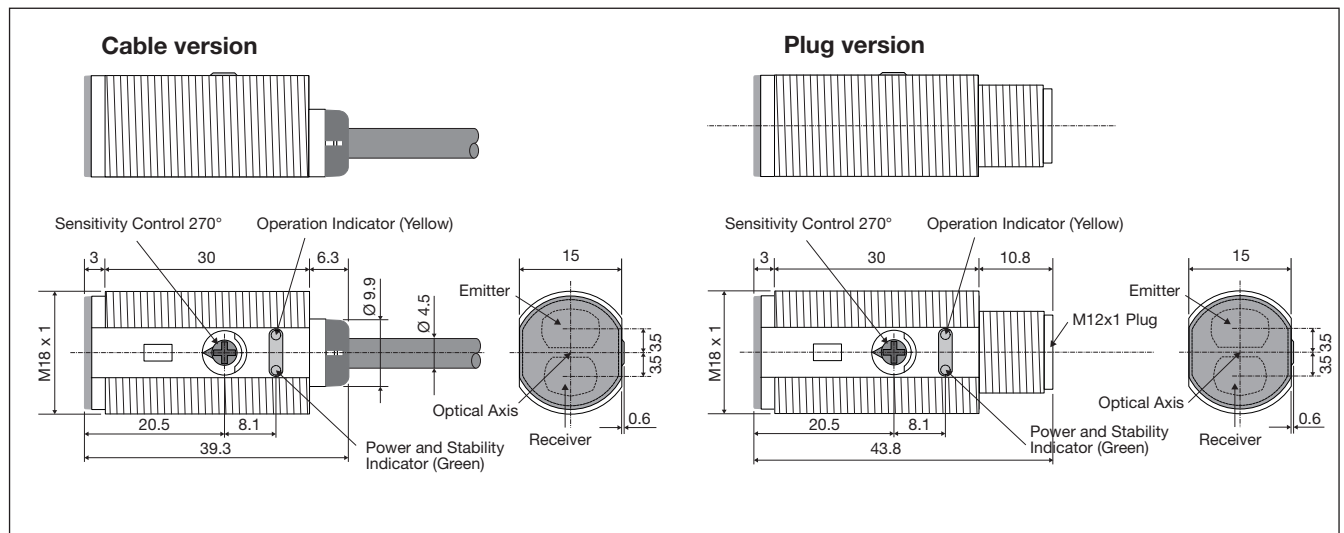
Cable version



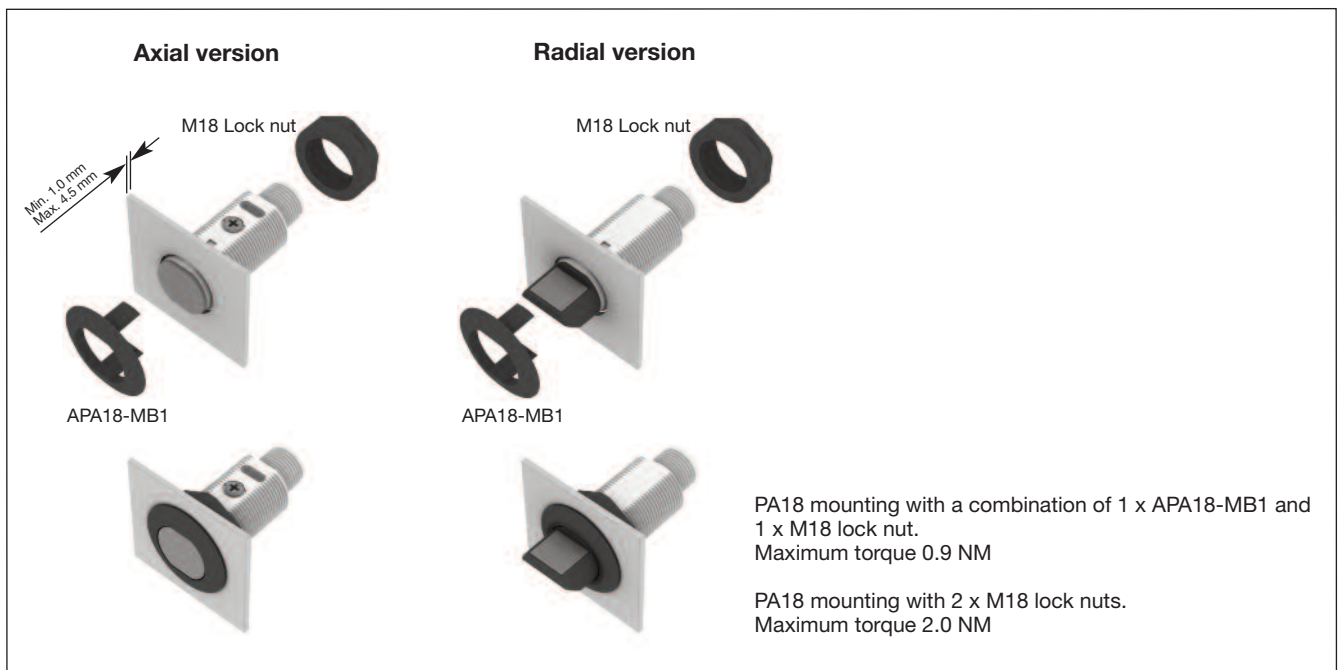
Plug version



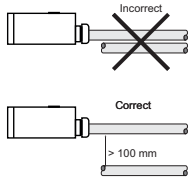
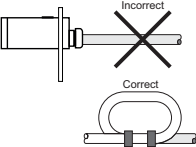
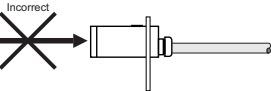
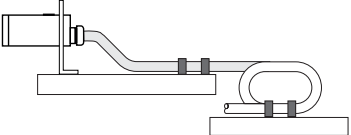
Dimensions Axial version



Mounting Systems



Installation Hints

<i>To avoid interference from inductive voltage / current peaks, separate the proximity switch cables from any other power cables. E.g. Engine, contactor or solenoid cables</i>  Incorrect Correct > 100 mm	<i>Relief of the cable strain</i>  Incorrect Correct <i>The cable should not be pulled</i>	<i>Protection of the sensing face</i>  Incorrect <i>A proximity switch should not serve as mechanical stop</i>	<i>Sensor mounted on a mobile carrier</i>  <i>Any repetitive flexing of the cable should be avoided</i>
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Delivery Contents

- Photoelectric switch: PA 18 C.P..
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APA18-MB1
- 2 M18 lock nuts
- **Packaging:** Plastic bag

Accessories

- Connector type CONG1A.. / CONM14NF.. series
- Reflector type ER.. - to be purchased separately