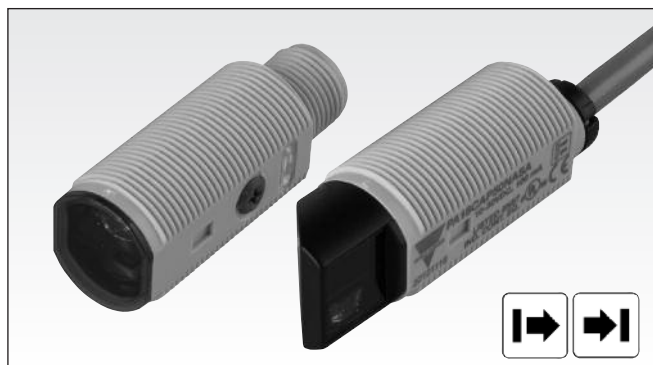


# Photoelectrics Through-beam Type PA18C.T..., DC

CARLO GAVAZZI



- Miniature sensor range
- Range: 20 m (Axial), 16 m (Radial)
- Sensitivity adjustment by potentiometer
- Modulated, infrared light 850 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.T... is part of a family of inexpensive general purpose through-beam 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

**PA18CAT20PAM1SA**

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 type	Range S <sub>n</sub>	Connec- tion	Ordering no. Emitter	Ordering no. Receiver NPN Make or break switching	Ordering no. Receiver PNP Make or break switching
M18 Axial type	20 m	Cable	PA 18 CAT 20	PA 18 CAT 20 NASA	PA 18 CAT 20 PASA
M18 Axial type	20 m	Plug	PA 18 CAT 20M1	PA 18 CAT 20 NAM1SA	PA 18 CAT 20 PAM1SA
M18 Radial type	16 m	Cable	PA 18 CRT 16	PA 18 CRT 16 NASA	PA 18 CRT 16 PASA
M18 Radial type	16 m	Plug	PA 18 CRT 16M1	PA 18 CRT 16 NAM1SA	PA 18 CRT 16 PAM1SA

## Specifications Receiver according to EN60947-5-2

<b>Rated operating distance (S<sub>n</sub>)</b> Axial type (A) Radial type (R)	Up to 20 m, Up to 16 m	<b>Minimum operational current (I<sub>m</sub>)</b>	0.5 mA
<b>Blind zone</b>	100 mm	<b>OFF-state current (I<sub>r</sub>)</b>	≤ 100 µA
<b>Sensitivity control</b>  Adjustable distance to target Axial types Radial types	Adjustable by potentiometer 270°  1 - 20 m 1 - 16 m	<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.0 VDC @ 100 mA
<b>Temperature drift</b>	≤ 0.2%/°C	<b>Protection</b>	Short-circuit, reverse polarity and transients
<b>Hysteresis (H)</b> (differential travel)	≤ 20%	<b>Sensing angle</b>	± 2°
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Ambient light</b>	30.000 lux Incandescent lamp
<b>Ripple (U<sub>rip</sub>)</b>	≤ 10%	<b>Operating frequency</b>	500 Hz
<b>Output current</b> Continuous (I <sub>a</sub> ) Short-time (I)	≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	<b>Response time</b> OFF-ON (t <sub>ON</sub> ) ON-OFF (t <sub>OFF</sub> )	≤ 1.0 ms ≤ 1.0 ms
<b>No load supply current (I<sub>o</sub>)</b>	≤ 20 mA @ 24 VDC	<b>Power ON delay (t<sub>v</sub>)</b>	≤ 300 ms
		<b>Output function</b> Type Switching function	NPN or PNP NO and NC
		<b>Indication</b> Output ON Signal stability and power ON	LED, yellow LED, green



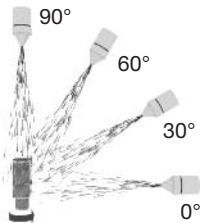
Specifications Emitter according to EN60947-5-2

Rated operational volt. (U <sub>B</sub> )	10 to 30 VDC (ripple included)	Light spot Diameter	Ø 164 mm @ 3.25 m
Ripple (U <sub>rpp</sub> )	≤ 10%	Protection	Reverse polarity and transients
Supply current (I <sub>o</sub> )	≤ 16 mA	Indication function	LED, green
Light source	LED, 850 nm	Power supply ON	LED, green
Light type	Infrared, modulated	Signal stability and power ON	LED, green
Sensing angle	± 2°	Power on delay	< 300 ms

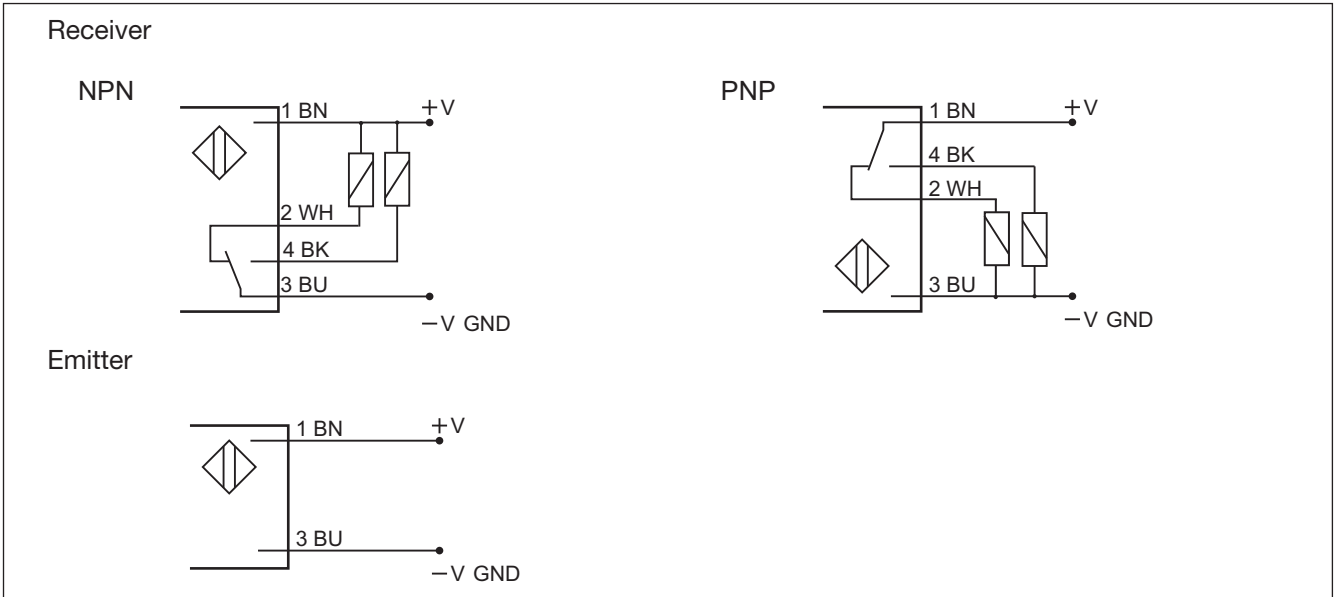
Specifications Common according to EN60947-5-2

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*	Connection	
Ambient temperature		Cable	PVC, grey, 2 m
Operating	-25° to +60°C (-13° to +140°F)	Receiver	4 x 0.25 mm <sup>2</sup> , Ø = 4.5 mm
Storage	-40° to +70°C (-40° to +158°F)	Emitter	2 x 0.25 mm <sup>2</sup> , Ø = 4.5 mm
Vibration	10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)	Plug	M12, 4-pin (CON. 54-series)
Shock	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)	Weight	With cable: 40 g
Rated insulation voltage	500 VAC (rms) IEC protection class III	CE-marking	Yes
		Approvals	cULus (UL508) supply class 2

\* The IP69K test according to DIN 40050-9 for high-pressure, high-temperature wash-down applications. The sensor must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning. The sensor is exposed to high pressure water from a spray nozzle that is fed with 80°C water at 8'000-10'000 KPa (80-100bar) and a flow rate of 14-6L/min. The nozzle is held 100 -150 mm from the sensor at angles of 0°, 30°, 60° and 90° for 30s each. The test device sits on a turntable that rotates with a speed of 5 times per minute. The sensor must not suffer any damaging effects from the high pressure water in appearance and function.



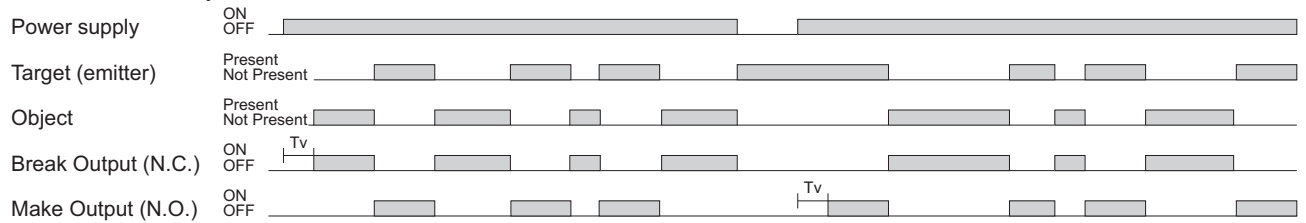
Wiring Diagrams



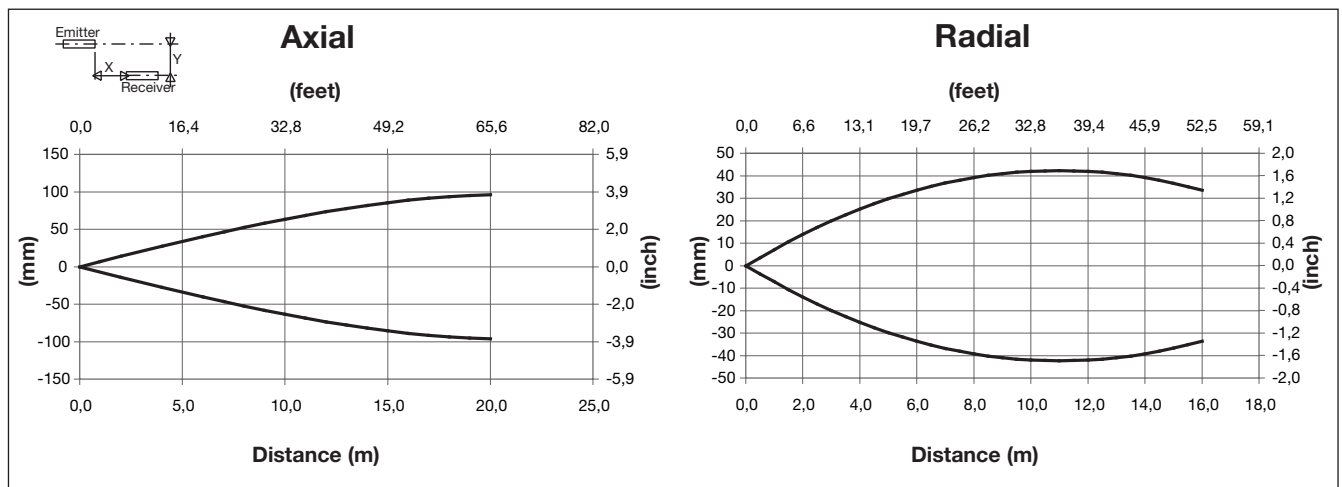
Emitter

## Operation Diagram

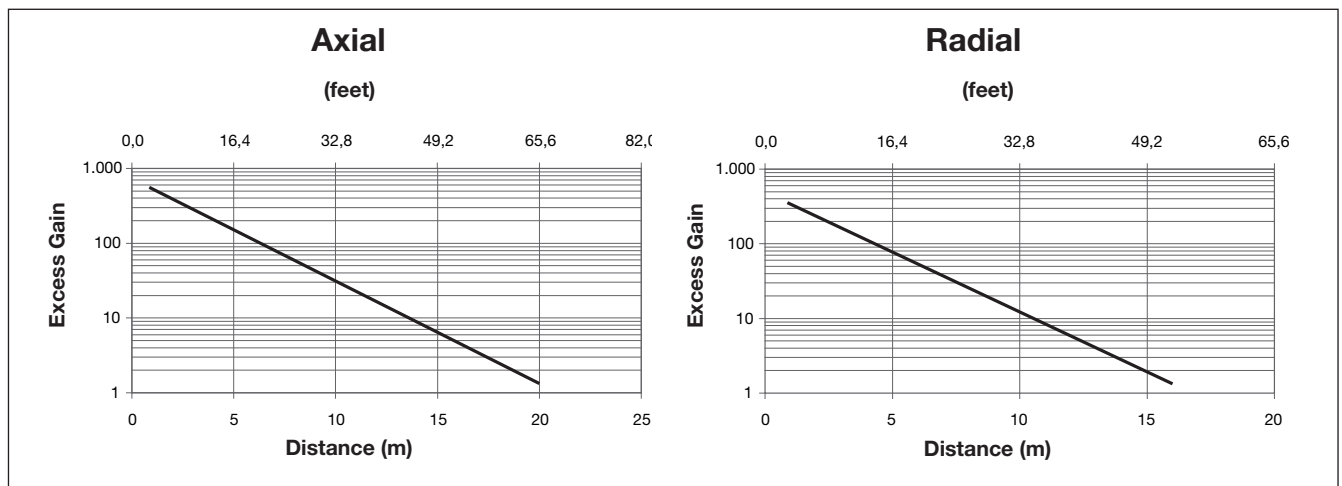
tv = Power ON delay



## Detection Diagram

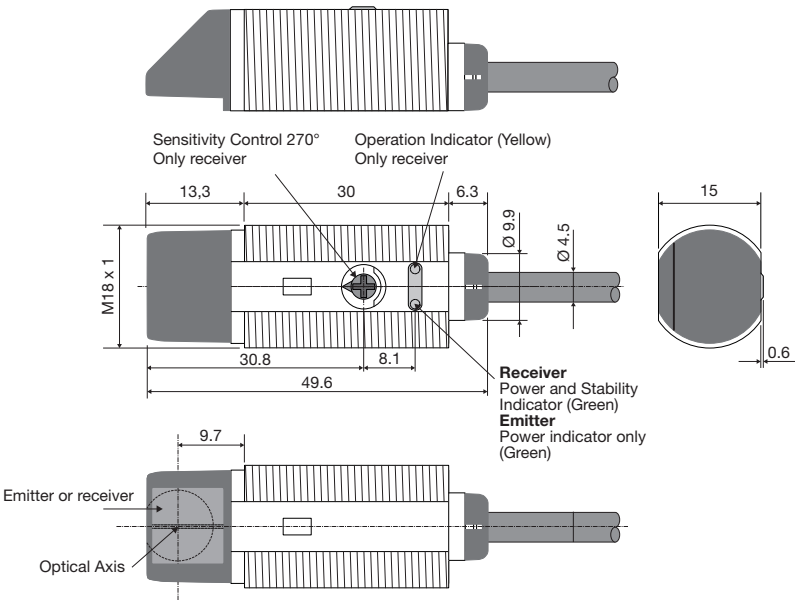


## Excess Gain

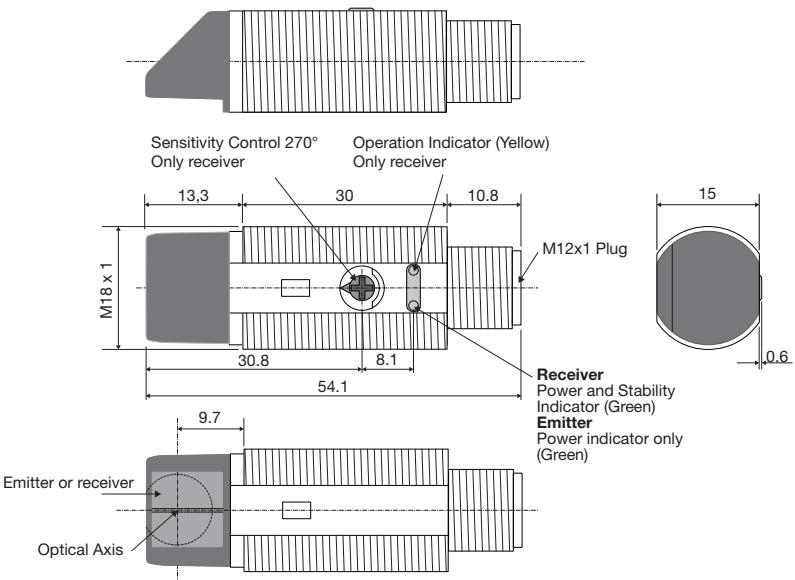


Dimensions Radial version

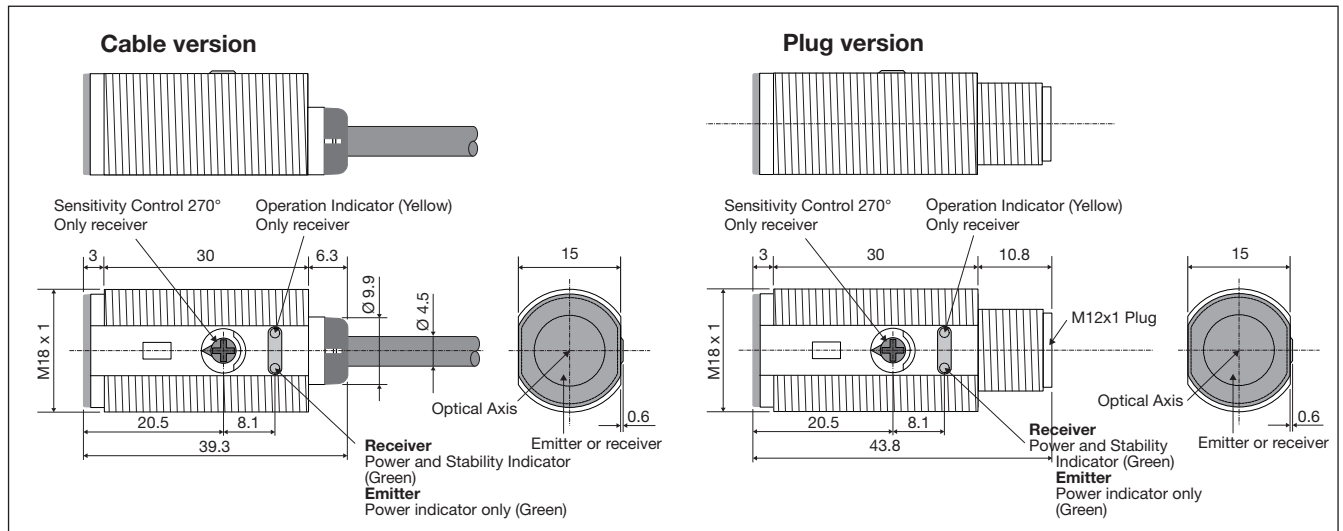
Cable version



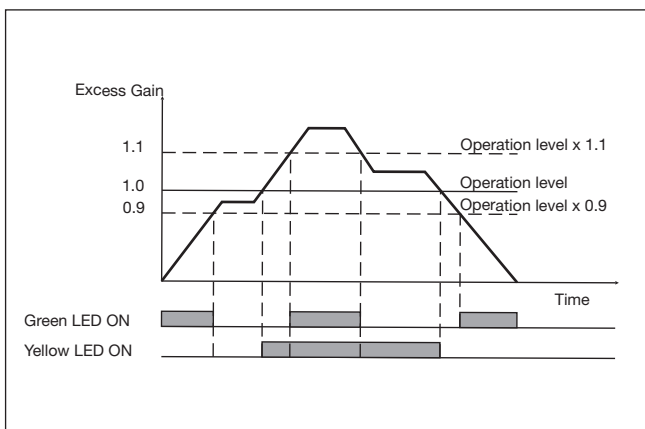
Plug version



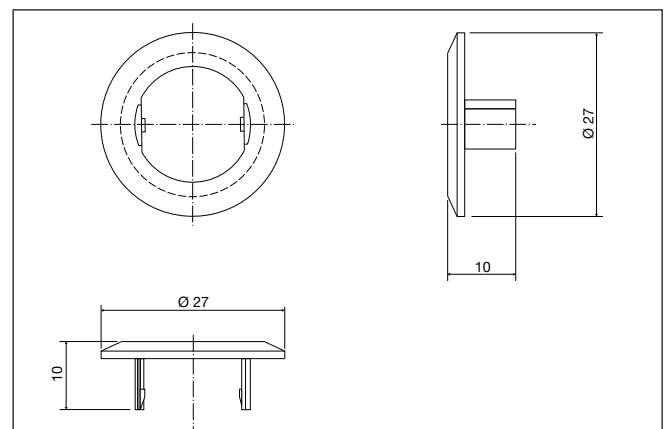
## Dimensions Axial version



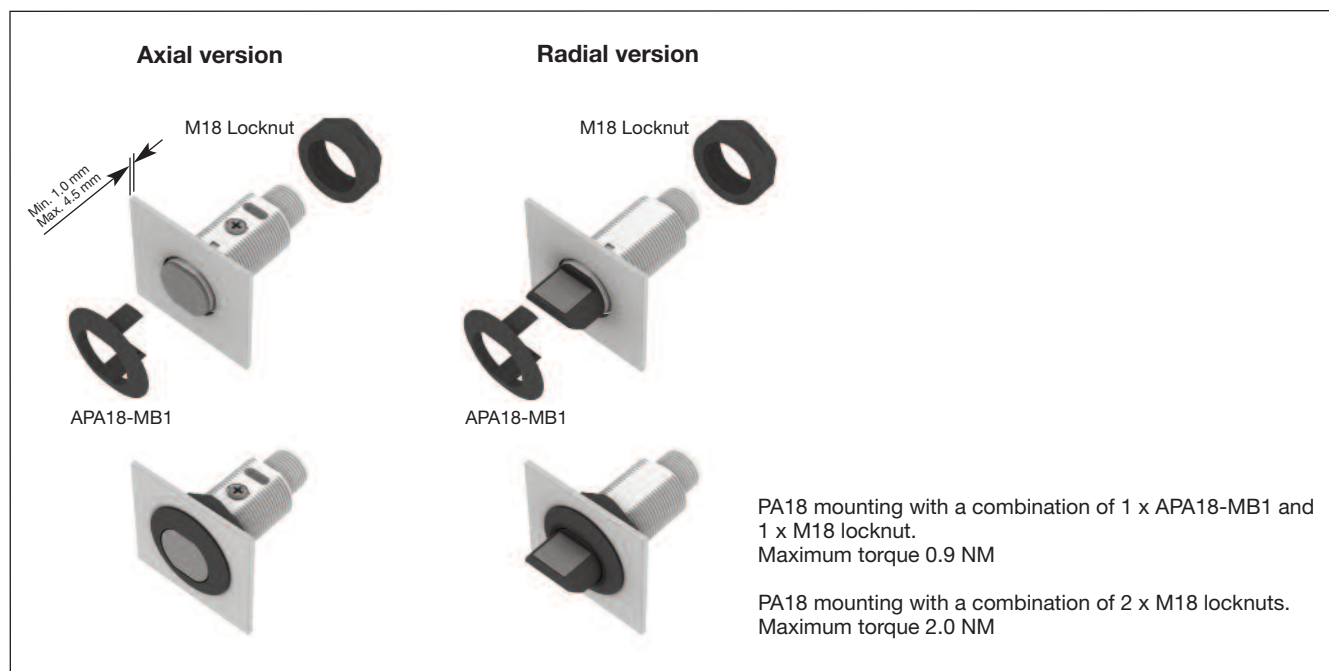
## Signal Stability Indication



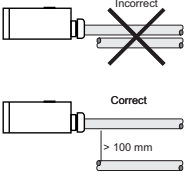
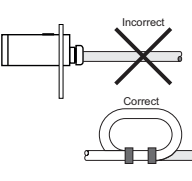
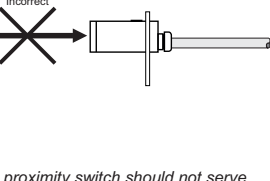
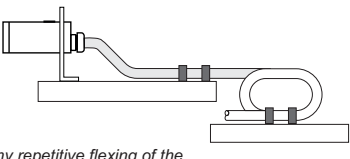
## APA 18-MB 1



## Mounting Systems



## Installation Hints

<p>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</p>  <p>Incorrect</p> <p>Correct</p> <p>&gt; 100 mm</p>	<p>Relief of the cable strain</p>  <p>Incorrect</p> <p>Correct</p> <p>The cable should not be pulled</p>	<p>Protection of the sensing face</p>  <p>Incorrect</p> <p>A proximity switch should not serve as mechanical stop</p>	<p>Sensor mounted on a mobile carrier</p>  <p>Any repetitive flexing of the cable should be avoided</p>
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## Delivery Contents

- Photoelectric switch: PA 18 C.T...
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APA18-MB1
- 2 M18 locknuts
- **Packaging:** Plastic bag
- Emitter and receiver is packed separately

## Accessories

- Connector type CON. 1A / COM. 14NF series