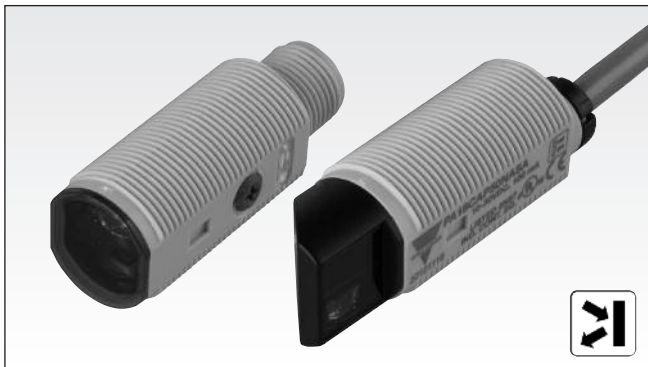


# Photoelectrics Retro-reflective Type PA18C.R..., DC

CARLO GAVAZZI



- Miniature sensor range
- Range: 6.5 m (Axial), 5 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.R... 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

PA18CAR65PAM1SA

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 <sub>n</sub>	Connection	Ordering no. NPN Make & break switching	Ordering no. PNP Make & break switching
M18 Axial type	6.5 m	Cable	PA 18 CAR 65 NASA	PA 18 CAR 65 PASA
M18 Axial type	6.5 m	Plug	PA 18 CAR 65 NAM1SA	PA 18 CAR 65 PAM1SA
M18 Radial type	5.0 m	Cable	PA 18 CRR 50 NASA	PA 18 CRR 50 PASA
M18 Radial type	5.0 m	Plug	PA 18 CRR 50 NAM1SA	PA 18 CRR 50 PAM1SA

## Specifications according to EN60947-5-2

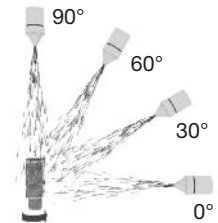
<b>Rated operating distance (S<sub>n</sub>)</b> Axial type (A) Radial type (R)	Up to 6.5 m, Up to 5.0 m reference target ER4 reflector ø 80 mm	<b>OFF-state current (I<sub>r</sub>)</b>	≤ 100 µA
<b>Blind zone</b>	100 mm	<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.0 VDC @ 100 mA
<b>Sensitivity control</b>  Adjustable distance to target Axial types Radial types	Adjustable by potentiometer 270°  50-650 cm 50-500 cm	<b>Protection</b>	Short-circuit, reverse polarity and transients
<b>Temperature drift</b>	≤ 0.2%/°C	<b>Light source</b>	LED, 850 nm
<b>Hysteresis (H)</b> (differential travel)	≤ 20%	<b>Light type</b>	Infrared, modulated
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Sensing angle</b>	± 2°
<b>Ripple (U<sub>rpp</sub>)</b>	≤ 10%	<b>Ambient light</b>	30.000 lux Incandescent lamp
<b>Output current</b> Continuous (I <sub>a</sub> ) Short-time (I)	≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	<b>Light spot Diameter</b>	Ø 164 mm @ 3.25 m
<b>No load supply current (I<sub>o</sub>)</b>	≤ 20 mA @ 24 VDC	<b>Operating frequency</b>	500 Hz
<b>Minimum operational current (I<sub>m</sub>)</b>	0.5 mA	<b>Response time</b> OFF-ON (t <sub>ON</sub> ) ON-OFF (t <sub>OFF</sub> )	≤ 1.0 ms ≤ 1.0 ms
		<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 (cont.)

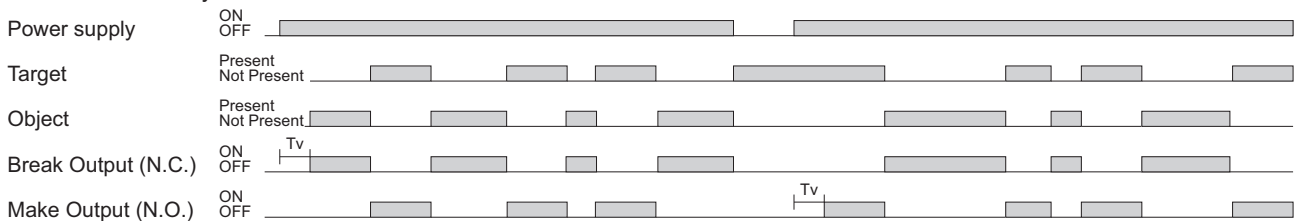
<b>Environment</b>		<b>Housing material</b>	
Installation category	III (IEC 60664/60664A; 60947-1)	Body	ABS, grey
Pollution degree	3 (IEC 60664/60664A; 60947-1)	Front material	PMMA, red
Degree of protection	IP 67, IP 69K*	Locknuts	PBTB, black
<b>Ambient temperature</b>		Mounting bracket	PPA, black
Operating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

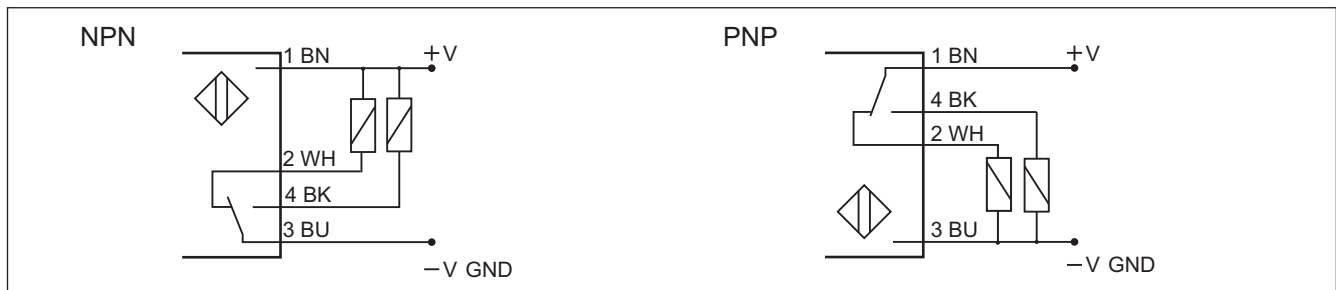


## Operation Diagram

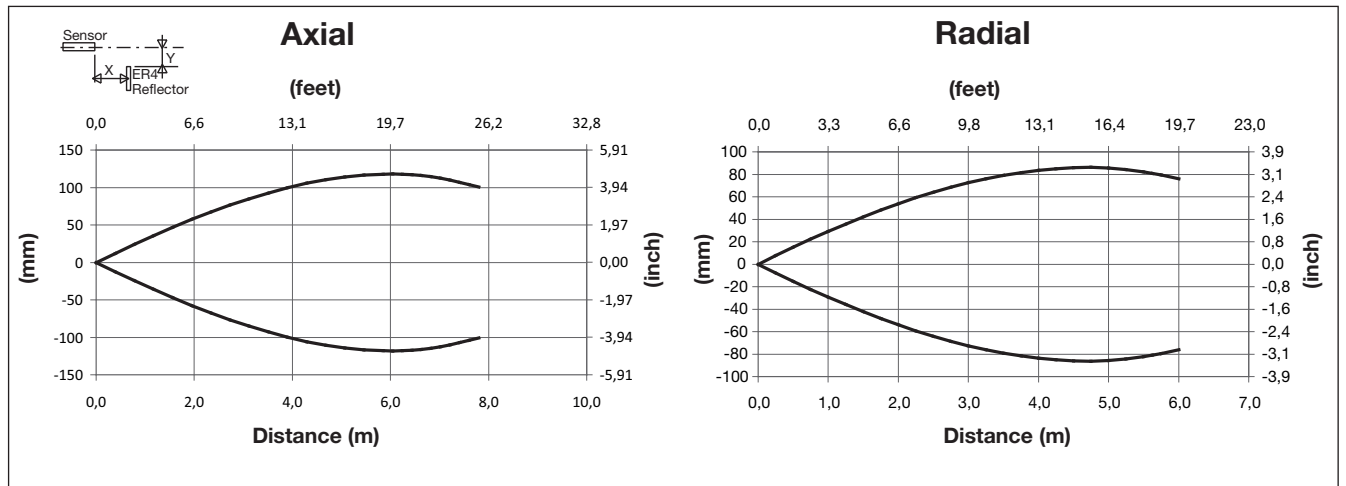
tv = Power ON delay



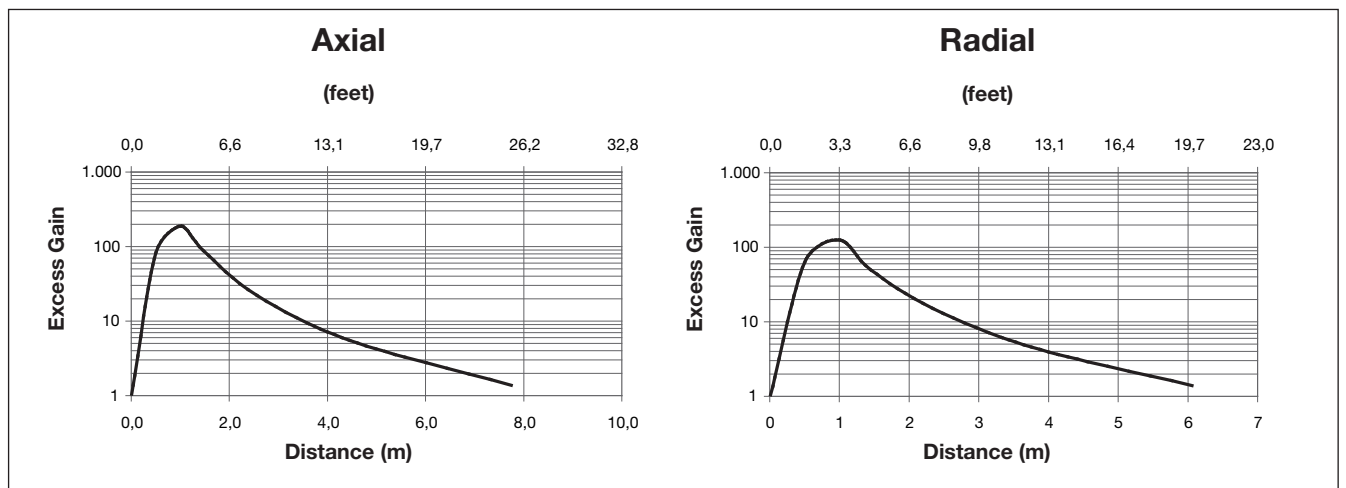
## Wiring Diagrams



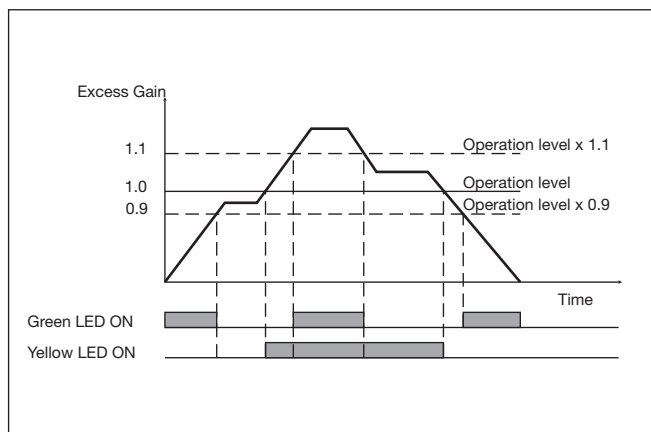
### Detection Diagram



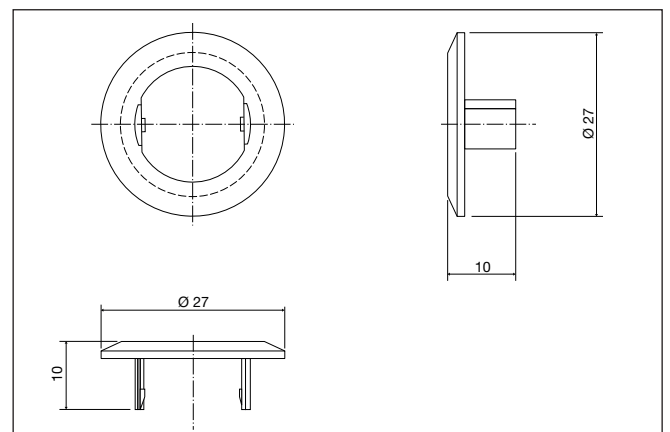
### Excess Gain



### Signal Stability Indication

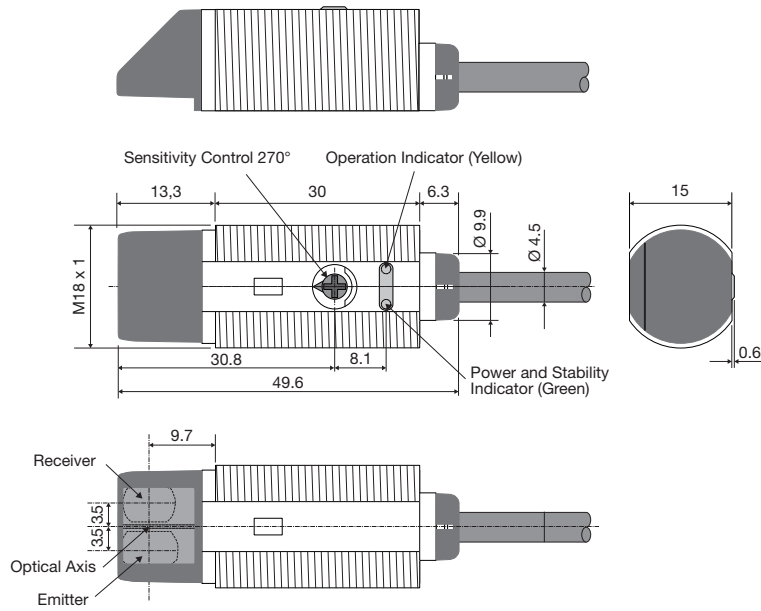


### APA 18-MB1

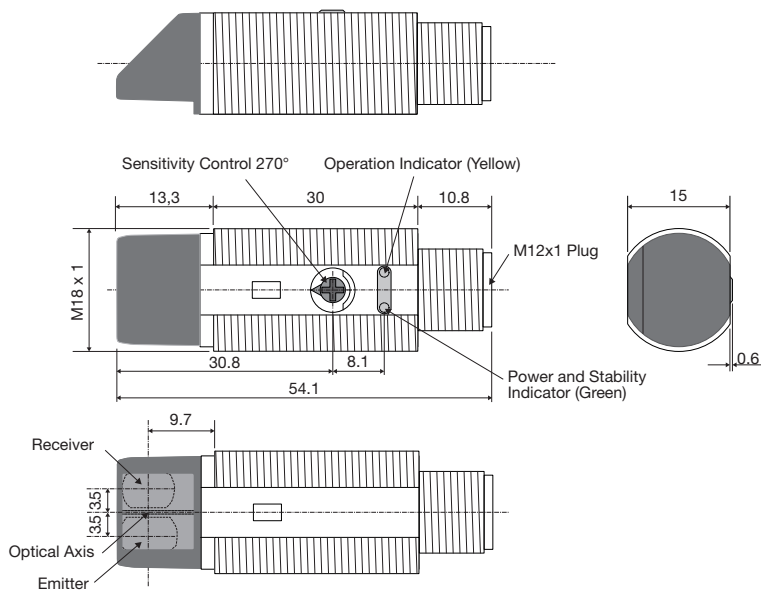


## Dimensions Radial version

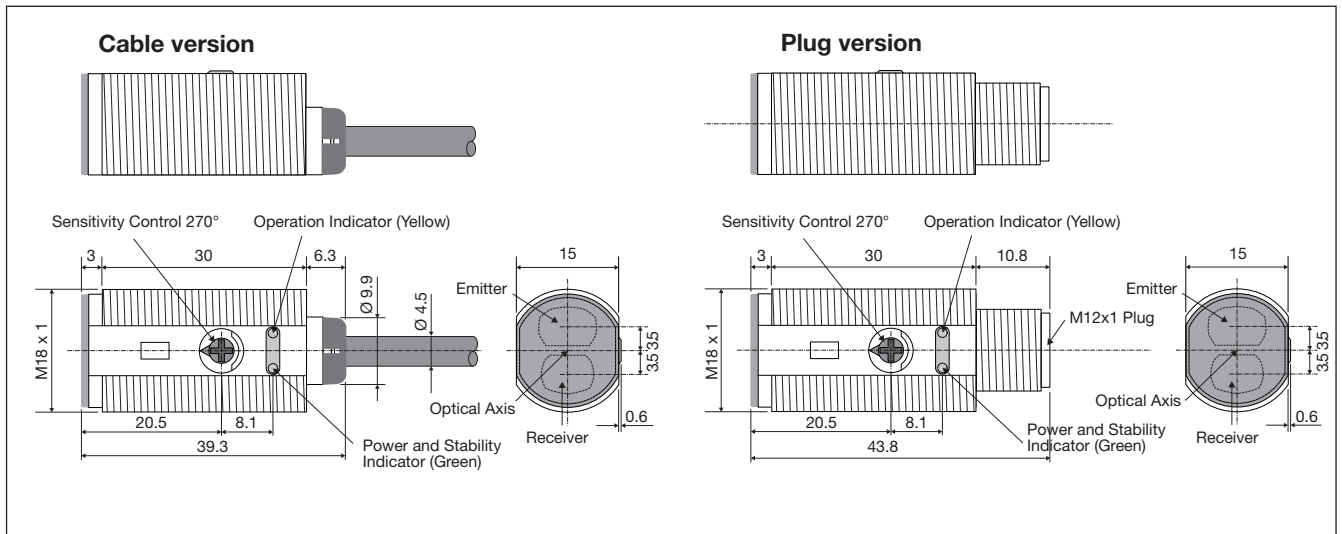
### Cable version



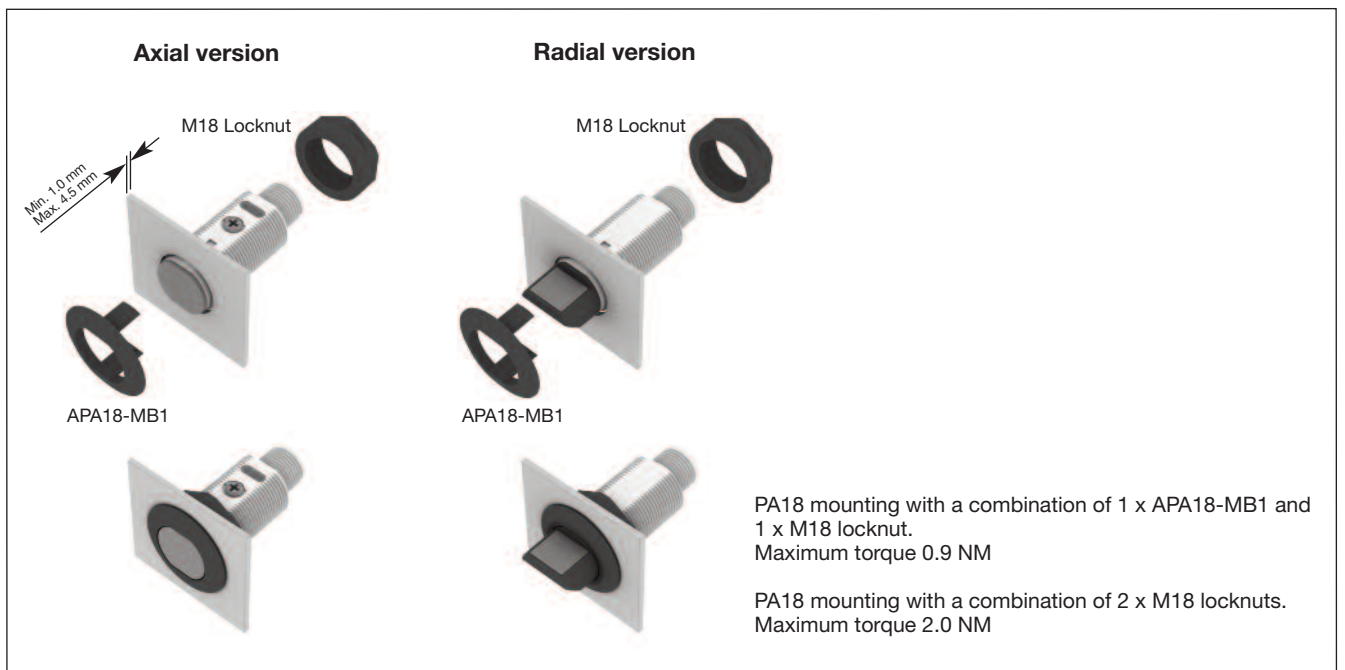
### Plug version



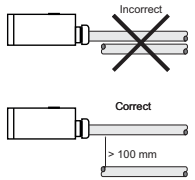
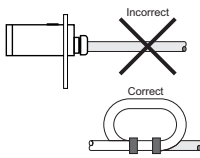
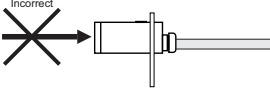
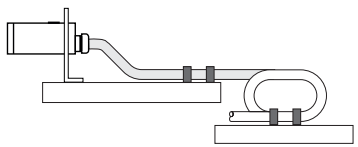
## Dimensions Axial version



## Mounting Systems



## Installation Hints

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

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

## Accessories

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