

# Photoelectrics Diffuse-reflective Type PA18CAD04...WS, DC

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- Miniature sensor range
- Range: 0.4 m
- 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
- Wide detection angle - short blind zone



## Product Description

The PA18CAD04...WS is part of a family of inexpensive general purpose diffuse 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.

The sensor is characterized by a wide detection angle as well as a short blind zone.

## Ordering Key

PA18CAD04PAM1WS

Type	_____
Housing style	_____
Housing size	_____
Housing material	_____
Housing type	_____
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	0.4 m	Cable	PA 18 CAD 04 NAWS	PA 18 CAD 04 PAWS
M18	0.4 m	Plug	PA 18 CAD 04 NAM1WS	PA 18 CAD 04 PAM1WS

## Specifications according to EN60947-5-2

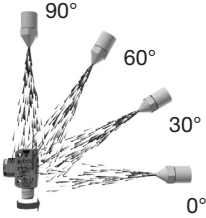
<b>Rated operating distance (S<sub>n</sub>)</b>	Up to 0.4 m, reference target Kodak test card R27, white, 90% reflective, 100 x 100 mm	<b>Protection</b>	Short-circuit, reverse polarity and transients
<b>Blind zone</b>	0 mm @ S <sub>n</sub> max.	<b>Light source</b>	InGaAlP, LED, 625 nm
<b>Sensitivity control</b>	Adjustable by potentiometer	<b>Light type</b>	Red, modulated
Electrical adjustment	210°	<b>Emitter angle</b>	±16° @ half sensing distance
Mechanical adjustment	240°	<b>Light spot</b>	120 x 160 mm @ 200 mm
Adjustable distance	30-400 mm	<b>Ambient light</b>	30.000 lux incandescent lamp
<b>Temperature drift</b>	≤ 0.2%/°C	<b>Operating frequency</b>	500 Hz
<b>Hysteresis (H)</b> (differential travel)	≤ 20%	<b>Response time</b>	OFF-ON (t <sub>ON</sub> ) ≤ 1.0 ms ON-OFF (t <sub>OFF</sub> ) ≤ 1.0 ms
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Power ON delay (t<sub>v</sub>)</b>	≤ 100 ms
<b>Ripple (U<sub>pp</sub>)</b>	≤ 10%	<b>Output function</b>	Type: NPN or PNP Switching function: NO and NC
<b>Output current</b>		<b>Indication</b>	Output ON: LED, yellow Signal stability and power ON: LED, green (see curve for condition of stability)
Continuous (I <sub>a</sub> )	≤ 100 mA		
Short-time (I)	≤ 100 mA (max. load capacity 100 nF)		
<b>No load supply current (I<sub>o</sub>)</b>	≤ 15 mA @ 24 VDC		
<b>Minimum operational current (I<sub>m</sub>)</b>	0.5 mA		
<b>OFF-state current (I<sub>r</sub>)</b>	≤ 100 μA		
<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.0 VDC @ 100 mA		



Specifications (cont.)

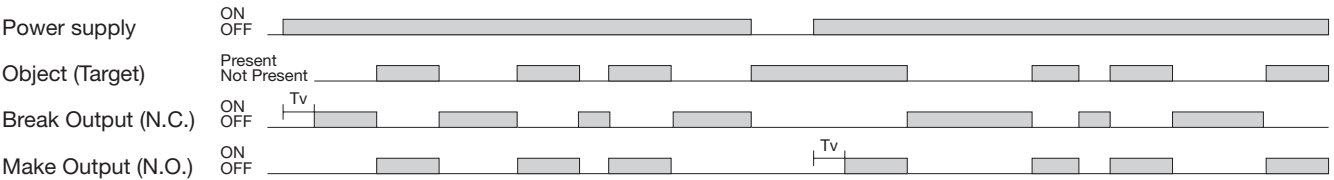
<b>Environment</b>		<b>Housing material</b>	
Installation category	III (IEC 60664/60664A; 60947-1)	Body	ABS, grey
Degree of pollution	3 (IEC 60664/60664A; 60947-1)	Front material	PMMA, red
Degree of protection	IP 67, IP 69K*	Cable gland	POM, Black
<b>Ambient temperature</b>		Trimmer shaft	POM, Dark Grey
Operating	-25° to +60°C (-13° to +140°F)	Locknuts	PBTP, black
Storage	-40° to +70°C (-40° to +158°F)	Mounting bracket	PPA, black
<b>Vibration</b>		<b>Connection</b>	
	10 to 150 Hz, 1 mm/15 G (IEC 60068-2-6)	Cable	PVC, grey, 2 m 4 x 0.25 mm², Ø = 4.5 mm M12, 4-pin (CON.14NF..W series)
<b>Shock</b>		Plug	
	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)	<b>Weight</b>	With cable: 85 g With plug: 25 g
<b>Rated insulation voltage</b>		<b>CE-marking</b>	Yes
	500 VAC (rms) 	<b>Approvals</b>	cULus (UL508) supply class 2
	IEC protection class III		

\* 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.

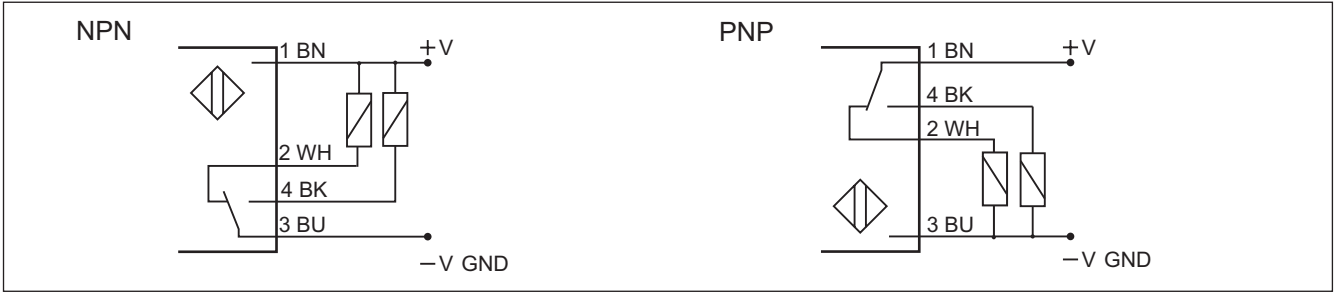


Operation Diagram

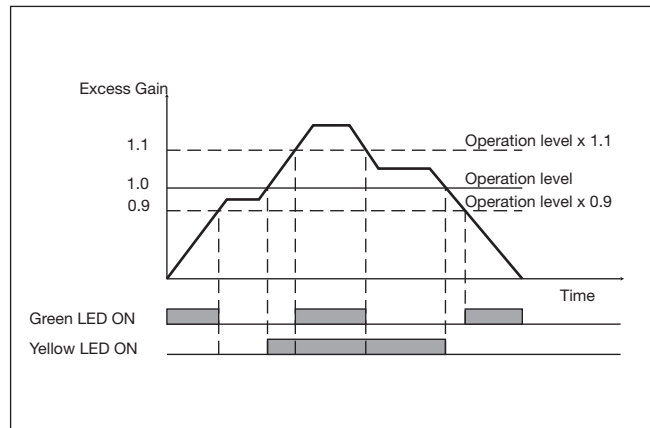
tv = Power ON delay



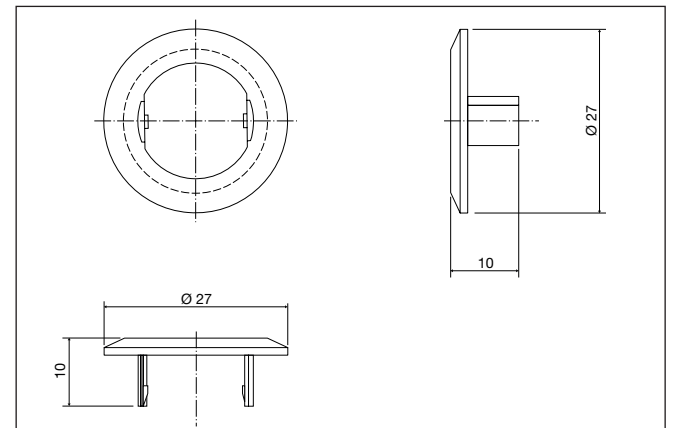
Wiring Diagrams



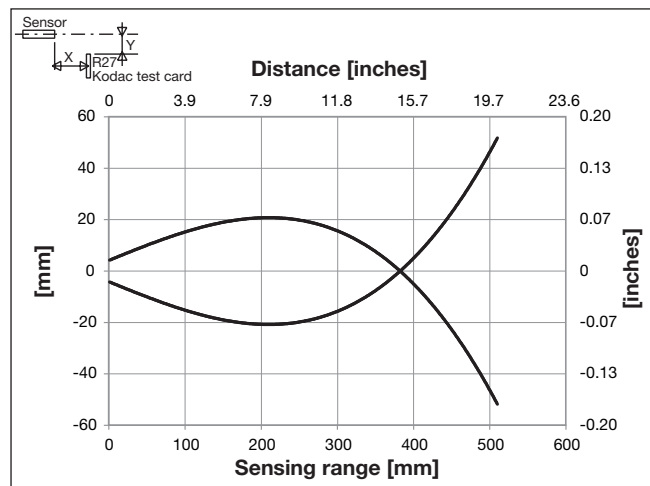
## Signal Stability Indication



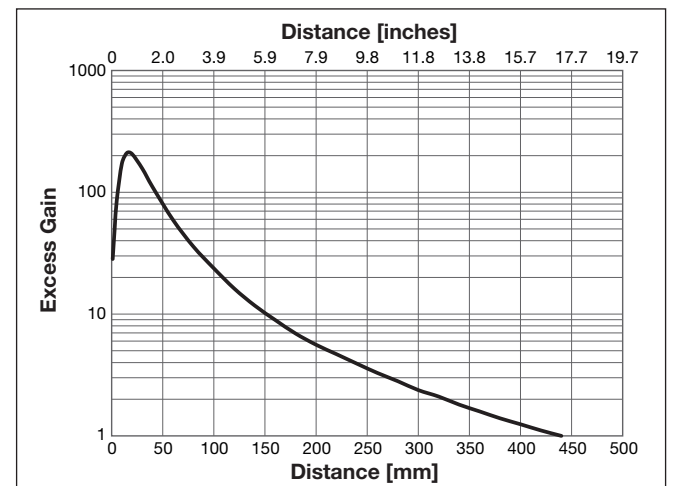
## APA18-MB1



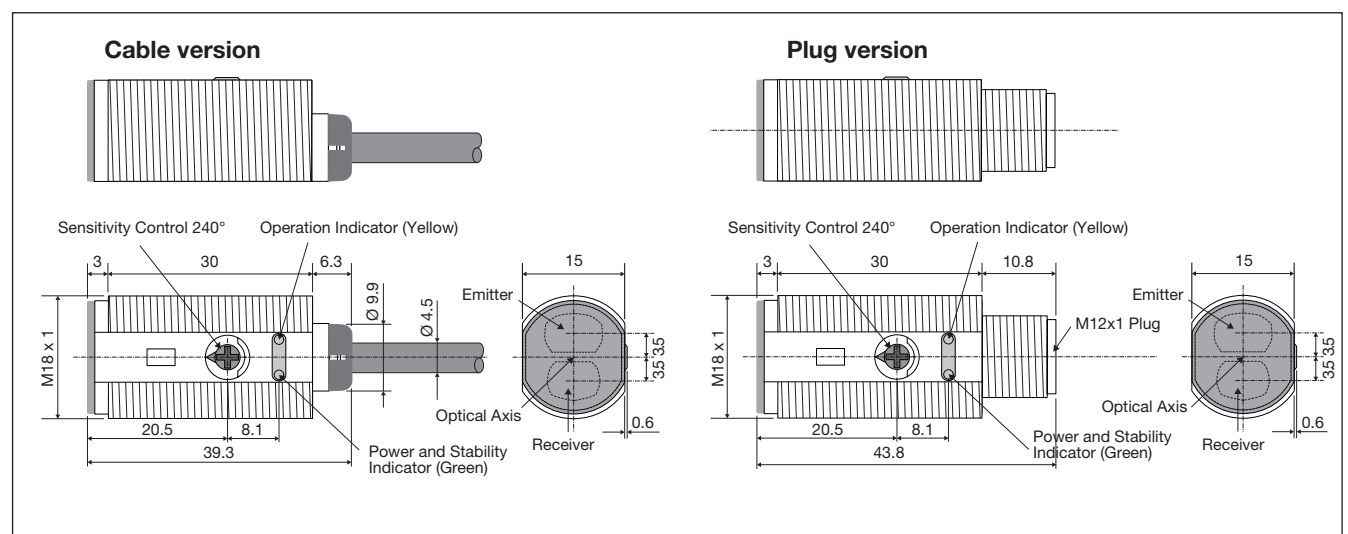
## Detection Diagram



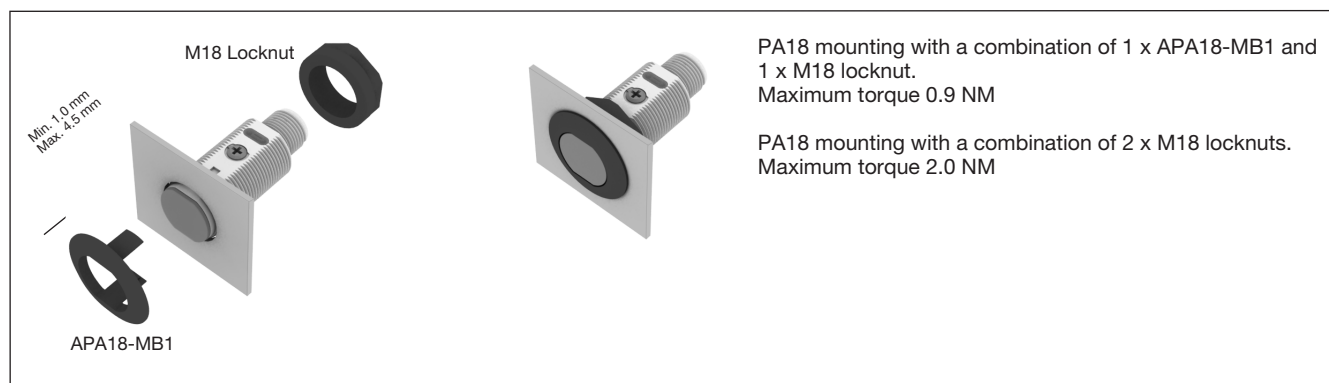
## Excess Gain



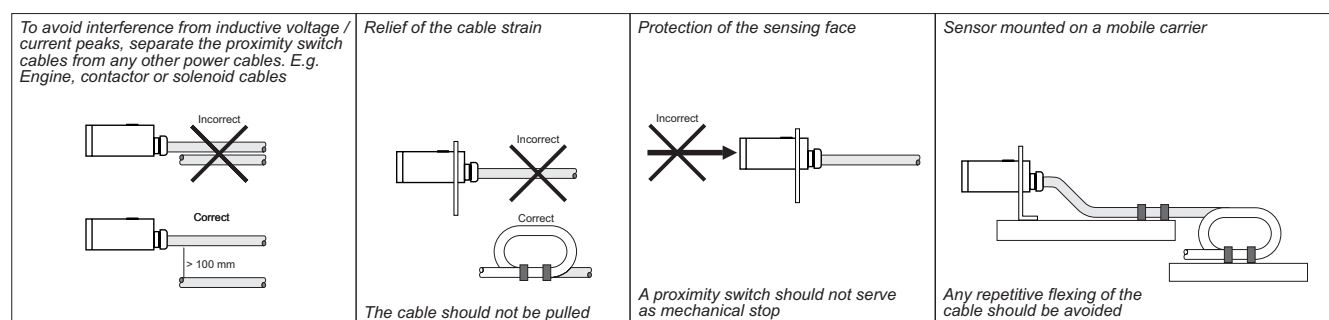
## Dimensions



## Mounting Systems



## Installation Hints



## Delivery Contents

- Photoelectric switch: PA 18 CAD04...WS
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APA18-MB1
- 2 M18 locknuts
- **Packaging:** Plastic bag

## Accessories

- Connector type CON.14NF..W series

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

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