

Photoelectrics

Diffuse-reflective

Type PA18CAD04...WS, DC

CARLO GAVAZZI



- 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 _n	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

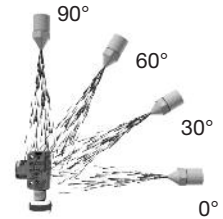
Rated operating distance (S_n)	Up to 0.4 m, reference target Kodak test card R27, white, 90% reflective, 100 x 100 mm	Protection	Short-circuit, reverse polarity and transients
Blind zone	0 mm @ S _n max.	Light source	InGaAlP, LED, 625 nm
Sensitivity control	Adjustable by potentiometer	Light type	Red,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



Specifications (cont.)

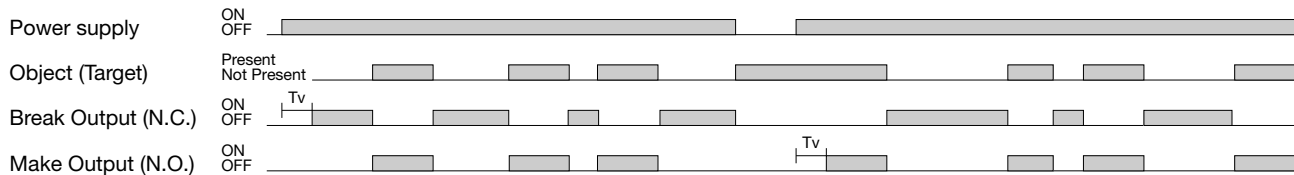
Environment		Housing material	
Installation category	III (IEC 60664/60664A; 60947-1)	Body	ABS, grey
Degree of pollution	3 (IEC 60664/60664A; 60947-1)	Front material	PMMA, red
Degree of protection	IP 67, IP 69K*	Cable gland	POM, Black
Ambient temperature		Trimmer shaft	POM, Dark Grey
Operating	-25° to +60°C (-13° to +140°F)	Locknuts	PBTP, black
Storage	-40° to +70°C (-40° to +158°F)	Mounting bracket	PPA, black
Vibration		Connection	
10 to 150 Hz, 1 mm/15 G (IEC 60068-2-6)		Cable	PVC, grey, 2 m 4 x 0.25 mm ² , Ø = 4.5 mm
Shock		Plug	M12, 4-pin (CONM14NF-series)
30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)		Weight	
Rated insulation voltage		With cable: 85 g With plug: 25 g	
500 VAC (rms) 		CE-marking	
IEC protection class III		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.

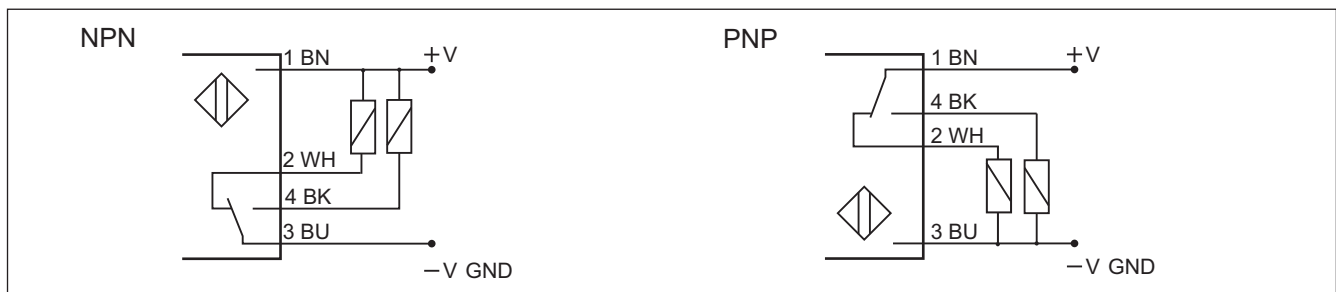


Operation Diagram

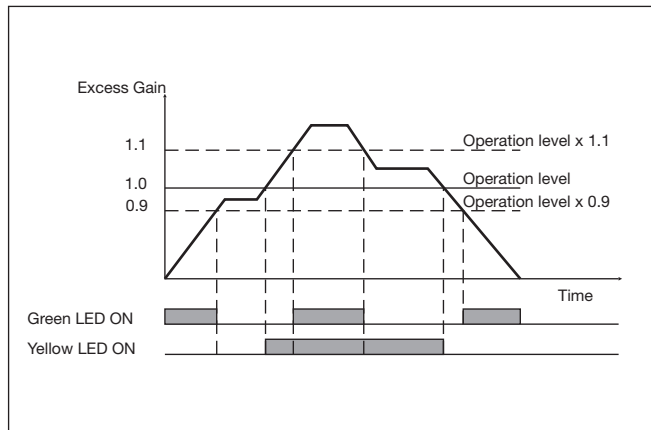
tv = Power ON delay



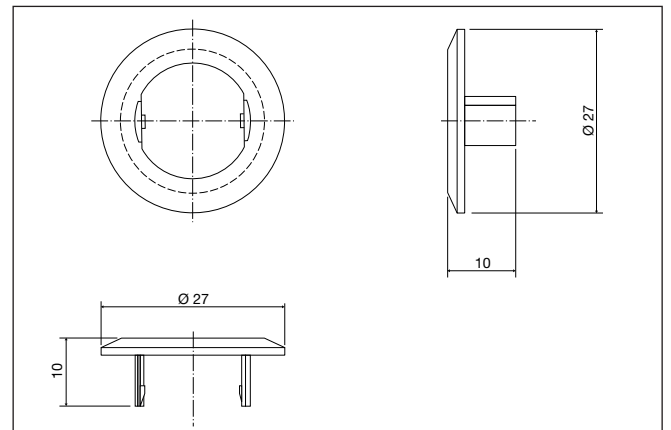
Wiring Diagrams



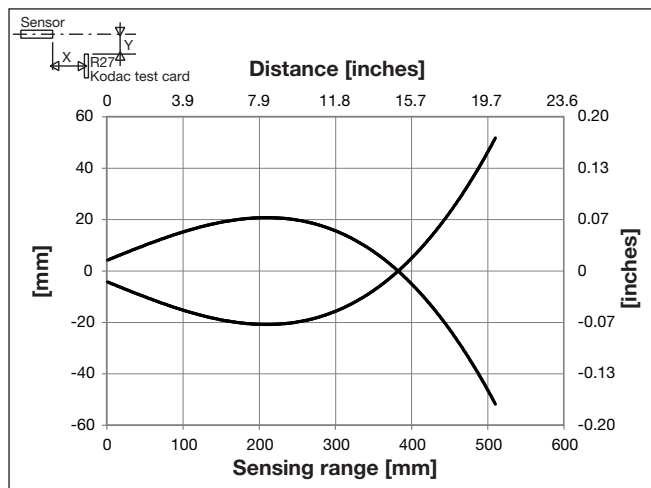
Signal Stability Indication



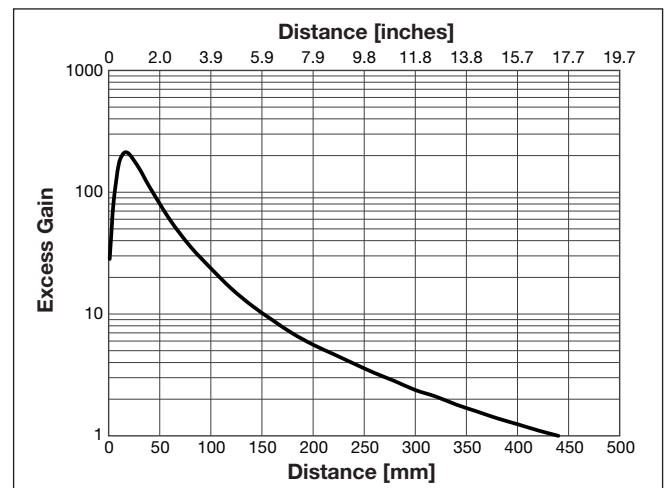
APA 18-MB1



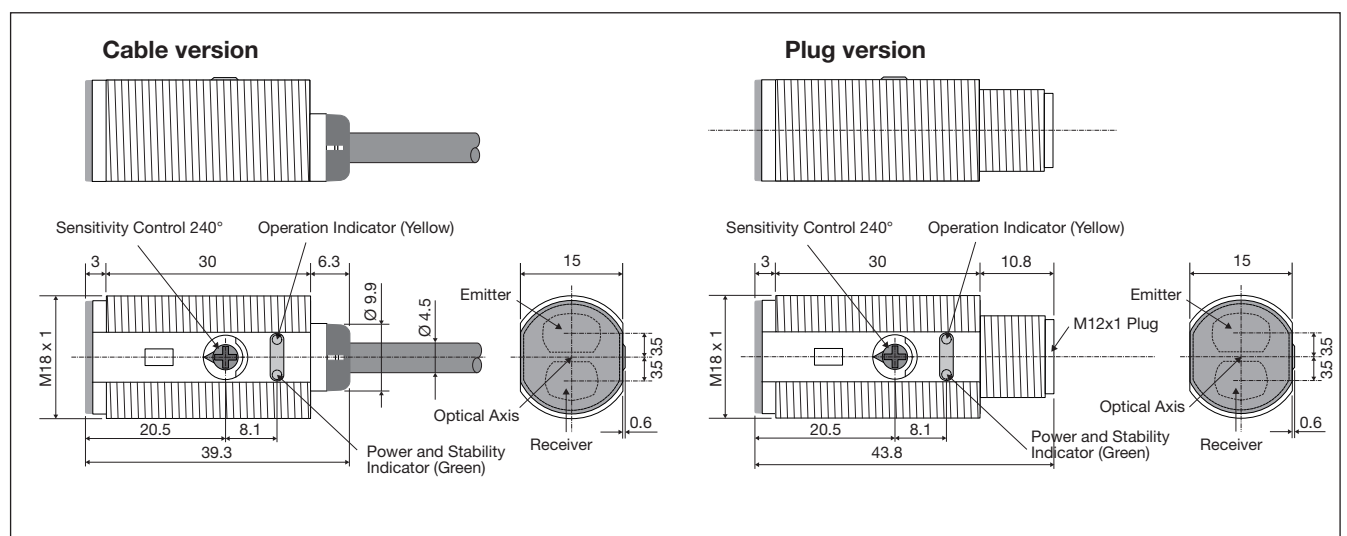
Detection Diagram



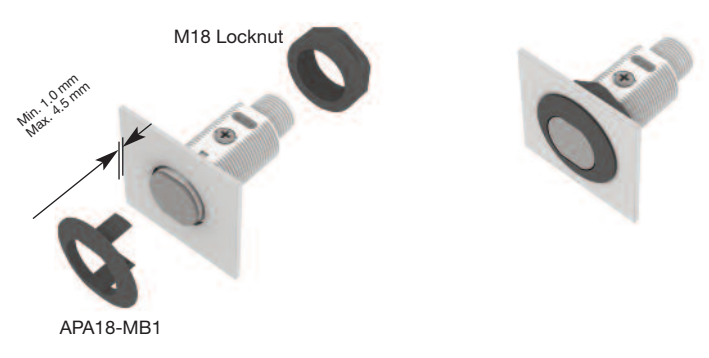
Excess Gain



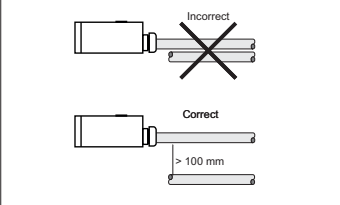
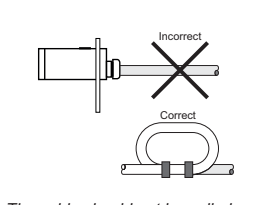
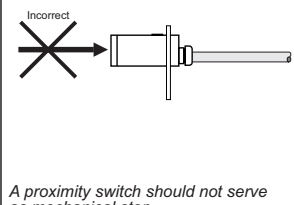
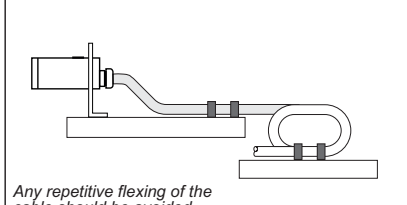
Dimensions



Mounting Systems

 <p>Min. 1.0 mm Max. 4.5 mm</p> <p>M18 Locknut</p> <p>APA18-MB1</p>	<p>PA18 mounting with a combination of 1 x APA18-MB1 and 1 x M18 locknut. Maximum torque 0.9 NM</p> <p>PA18 mounting with a combination of 2 x M18 locknuts. Maximum torque 2.0 NM</p>
---	--

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>Incorrect</p> <p>Correct</p> <p>> 100 mm</p>	<p><i>Relief of the cable strain</i></p>  <p>Incorrect</p> <p>Correct</p> <p><i>The cable should not be pulled</i></p>	<p><i>Protection of the sensing face</i></p>  <p>Incorrect</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>
--	--	--	---

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 CONG1A.. / CONM14NF.. series