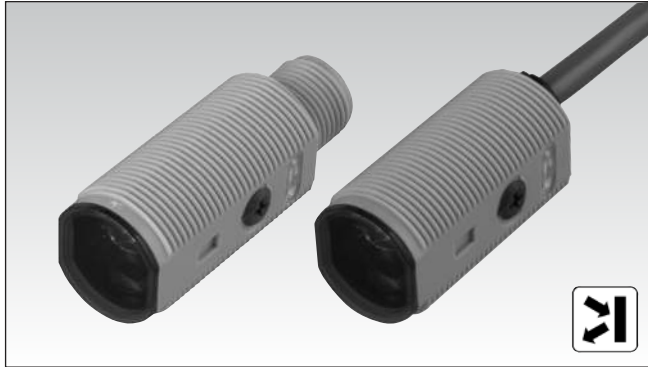


Photoelectrics Diffuse-reflective Type PA18CAD04...WS, DC

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	PA18CAD04PAM1WS
Housing style	PA18CAD04PAM1WS
Housing size	PA18CAD04PAM1WS
Housing material	PA18CAD04PAM1WS
Housing type	PA18CAD04PAM1WS
Detection principle	PA18CAD04PAM1WS
Sensing distance	PA18CAD04PAM1WS
Output type	PA18CAD04PAM1WS
Output configuration	PA18CAD04PAM1WS
Connection type	PA18CAD04PAM1WS
Sensitive adjustment	PA18CAD04PAM1WS

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

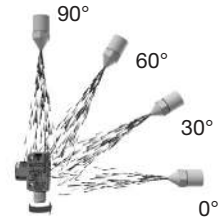
Rated operating distance (S_n)	Up to 0.4 m, reference target Kodak test card R27, white, 90% reflective, 100 x 100 mm	Protection	Short-circuit, reverse polarity and transients
Blind zone	0 mm @ S _n max.	Light source	InGaAlP, LED, 625 nm
Sensitivity control	Adjustable by potentiometer	Light type	Red, 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	OFF-ON (t _{ON}) ON-OFF (t _{OFF})
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)		≤ 1.0 ms ≤ 1.0 ms
Ripple (U_{rip})	≤ 10%	Power ON delay (t_v)	≤ 100 ms
Output current		Output function	
Continuous (I _a)	≤ 100 mA	Type	NPN or PNP
Short-time (I)	≤ 100 mA (max. load capacity 100 nF)	Switching function	NO and NC
No load supply current (I_o)	≤ 15 mA @ 24 VDC	Indication	
Minimum operational current (I_m)	0.5 mA	Output ON	LED, yellow
OFF-state current (I_r)	≤ 100 μA	Signal stability and power ON	LED, green (see curve for condition of stability)
Voltage drop (U_d)	≤ 2.0 VDC @ 100 mA		



Specifications (cont.)

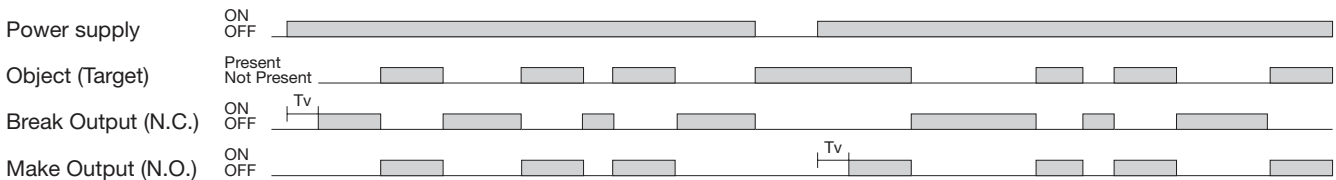
Environment		Housing material	
Installation category	III (IEC 60664/60664A; 60947-1)	Body	ABS, grey
Degree of pollution	3 (IEC 60664/60664A; 60947-1)	Front material	PMMA, red
Degree of protection	IP 67, IP 69K*	Cable gland	POM, Black
Ambient temperature		Trimmer shaft	POM, Dark Grey
Operating	-25° to +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 (CONB14NF-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.

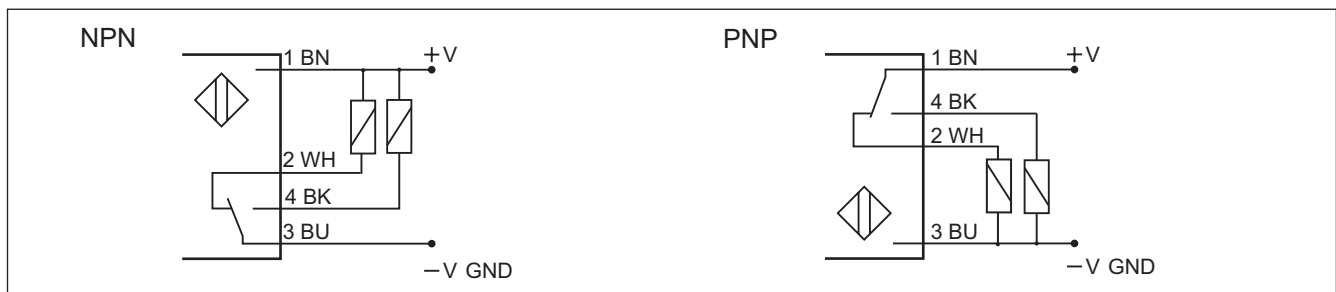


Operation Diagram

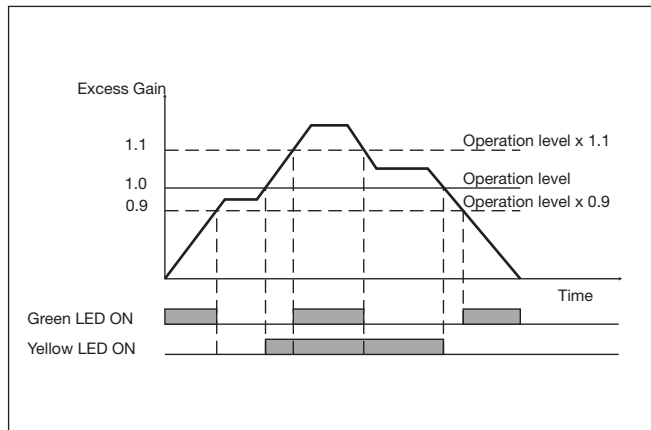
tv = Power ON delay



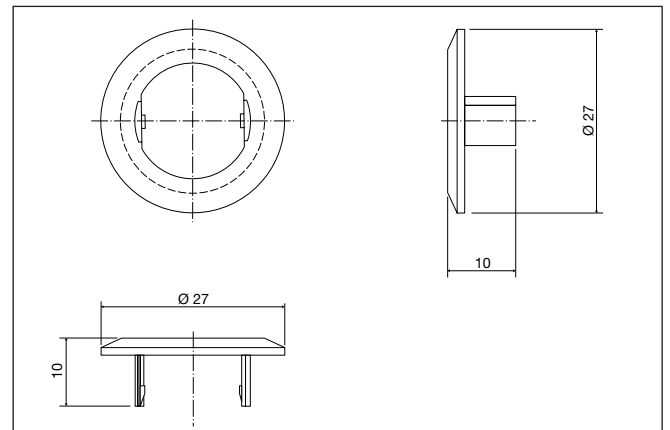
Wiring Diagrams



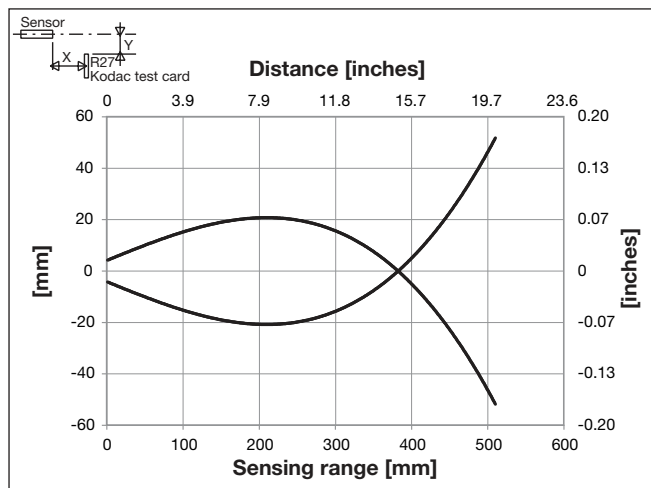
Signal Stability Indication



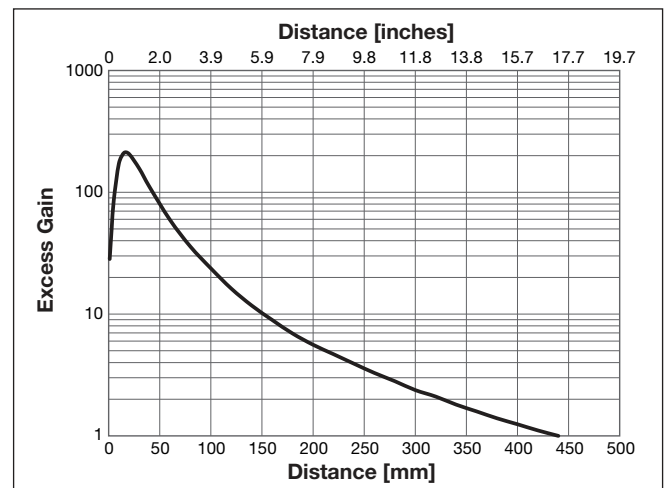
APA18-MB1



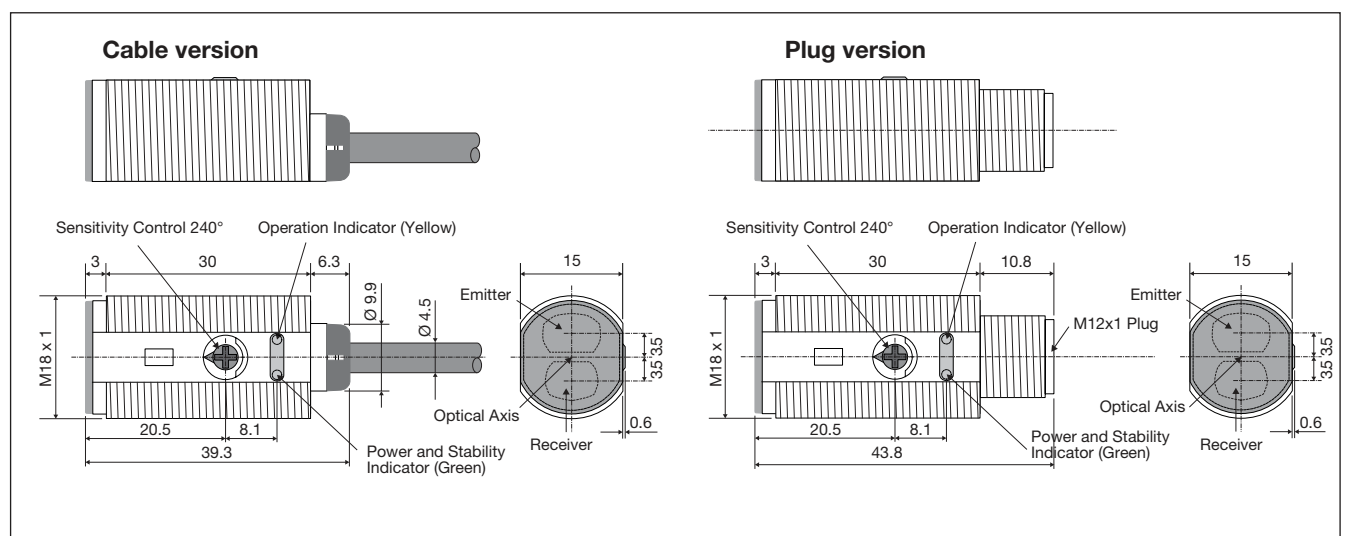
Detection Diagram



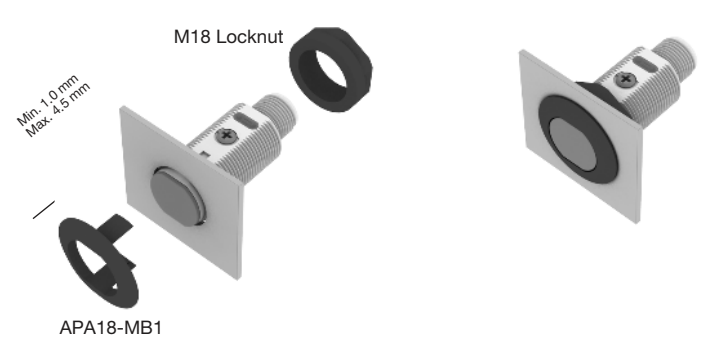
Excess Gain



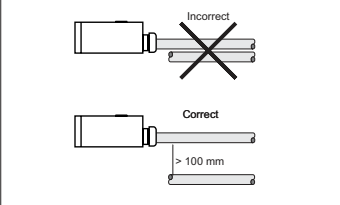
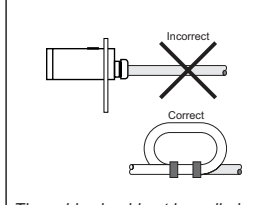
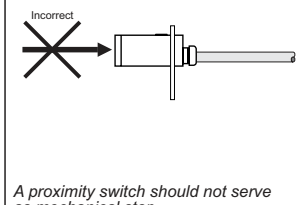
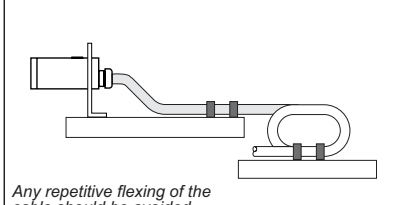
Dimensions



Mounting Systems

	<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>
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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><i>Relief of the cable strain</i></p>  <p><i>The cable should not be pulled</i></p>	<p><i>Protection of the sensing face</i></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 CAD04...WS
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APA18-MB1
- 2 M18 locknuts
- **Packaging:** Plastic bag

Accessories

- Connector type CONG1A.. / CONB14NF.. series