

Photoelectrics Diffuse-reflective, Background Suppression Type PA18CAB20...

CARLO GAVAZZI



- Miniature sensor range
- Range: 200 mm
- Sensitivity adjustment by potentiometer
- Modulated, red light 625 nm
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make and break switching function
- LED indication for output and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Excellent EMC performance
- Excellent colour matching



Product Description

The PA18CAB20... is part of a family of inexpensive general purpose diffuse reflective sensors with background suppression 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 **PA18CAB20NAM1SA**

Type	_____
Housing style	_____
Housing size	_____
Housing material	_____
Housing length	_____
Detection principle	_____
Sensing distance	_____
Output type	_____
Output configuration	_____
Connection type	_____
Sensitivity adjustment	_____

Type Selection

Housing style	Range S_n	Connection	Ordering no. NPN Make and break switching	Ordering no. PNP Make and break switching
M18 Axial type	200 mm	Cable	PA 18 CAB 20 NASA	PA 18 CAB 20 PASA
M18 Axial type	200 mm	Plug	PA 18 CAB 20 NAM1SA	PA 18 CAB 20 PAM1SA

Specifications

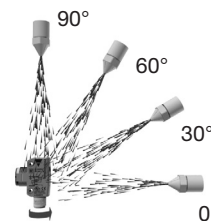
Rated operating distance (S_n)	Up to 200 mm, reference target: Kodak test card R27, white, 90% reflective, 100 x 100 mm	No load supply current (I_o)	≤ 20 mA @ U_B max ≤ 40 mA @ U_B min
Maximum detecting distance White object 90% refl. Grey object 18% refl. Black object 6% refl.	≤ 200 mm ≤ 200 mm ≤ 150 mm	Minimum operational current (I_m)	≤ 0.5 mA
Blind zone	10 mm	OFF-state current (I_r)	≤ 100 μ A
Sensitivity control Electrical adjustment Mechanical adjustment	Adjustable by potentiometer 210° 240°	Voltage drop (U_d)	≤ 2 VDC @ I_e max
Temperature drift	$\leq 0.2\%$ /°C	Protection	Short-circuit, reverse polarity and transients
Hysteresis (H)	$\leq 10\%$	Light source	InGaAlP, LED, 625 nm
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Light type	Red, modulated
Ripple (U_{rpp})	$\leq 10\%$	Emitter angle	$\pm 3.0^\circ$ @ half sensing distance
Output current Continuous (I_e) Short-time (I)	≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	Ambient light	$\leq 30,000$ lux, incandescent lamp
		Operating frequency (f)	≤ 500 Hz
		Response time OFF-ON (t_{ON}) ON-OFF (t_{OFF})	≤ 1 ms ≤ 1 ms
		Power ON delay (t_v)	≤ 100 ms
		Output function Open collector	NPN or PNP
		Output switching function	N.O. and N.C.



Specifications (cont.)

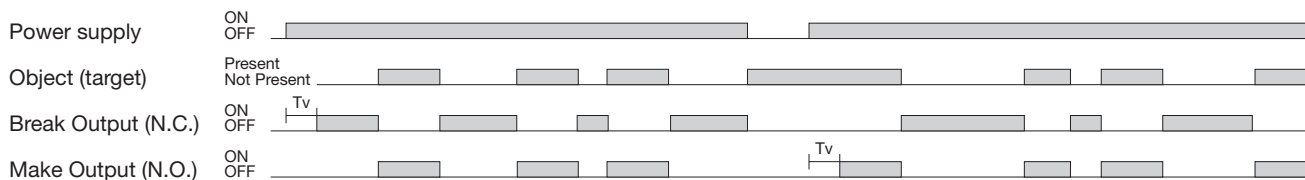
Indication Output ON Power ON	LED, yellow LED, green	Housing material Body Front material Cable gland Trimmer shaft Locknuts Mounting bracket	ABS, grey PMMA, red POM, Black POM, Dark Grey PBTP, black PPA, black
Environment Installation category Pollution degree Degree of protection	III (IEC 60664/60664A; 60947-1) 3 (IEC 60664/60664A; 60947-1) IP 67, IP 69K* (IEC 60529; 60947-1)	Connection Cable Plug	PVC, grey, 2 m 4 x 0.25 mm ² , Ø = 4.5 mm M12, 4-pin (CON.14NF..W series)
Ambient temperature Operating Storage	-25° to +60°C (-13° to +140°F) -40° to +70°C (-40° to +158°F)	Weight Cable version Plug version	≤ 85 g ≤ 25 g
Vibration	10 to 150 Hz, 1.0 mm/15 G (IEC 60068-2-6)	CE-marking	Yes
Shock	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)	Approvals	cULus (UL508) supply class 2
Rated insulation voltage	≤ 500 VAC (rms) 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.

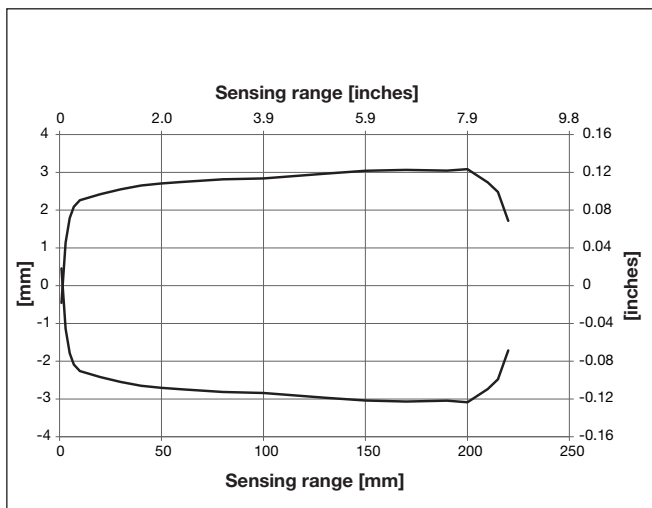


Operation Diagram

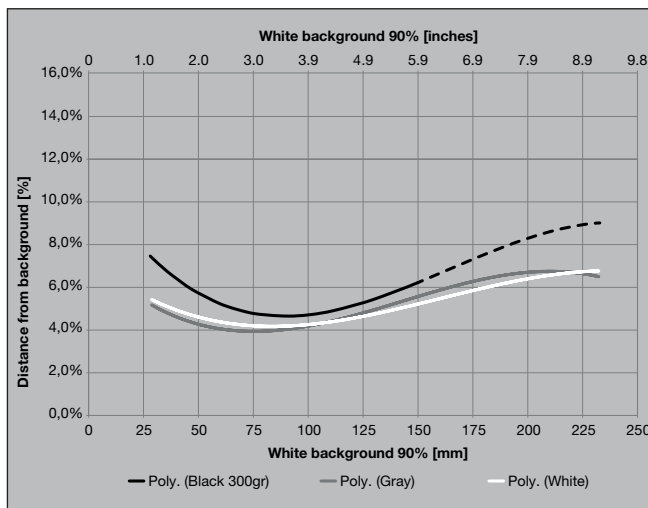
Tv = Power ON delay



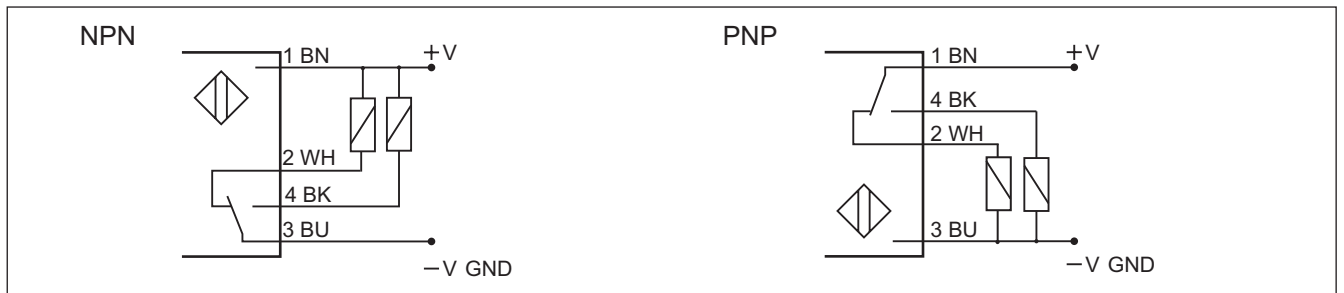
Detection Diagram



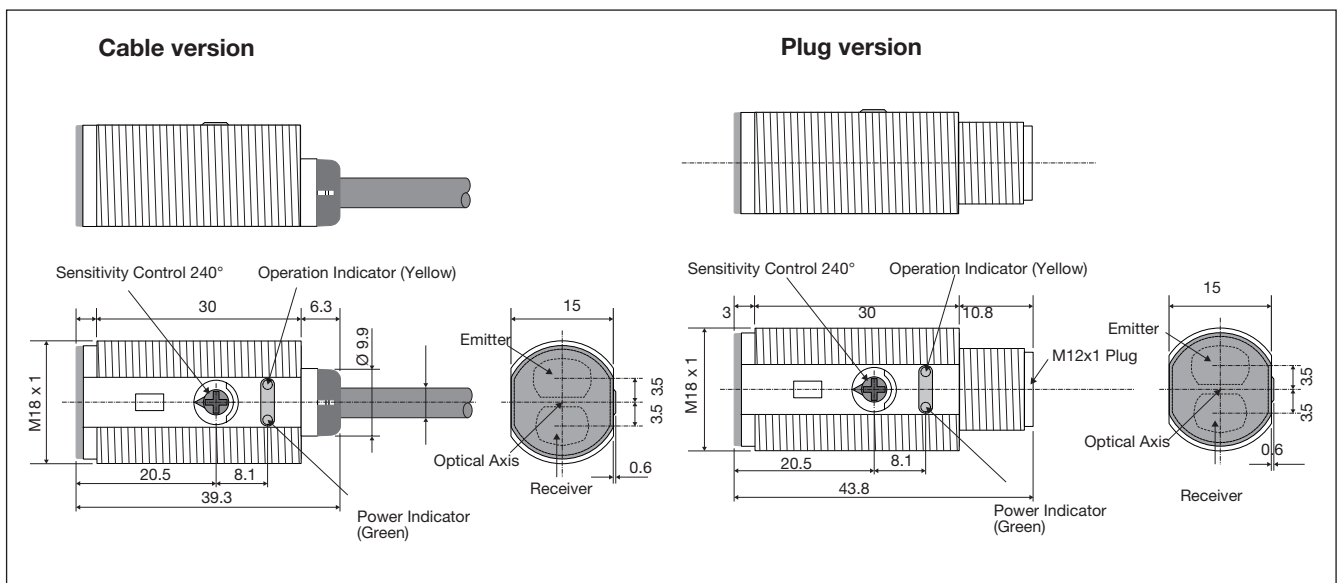
Sensing Conditions



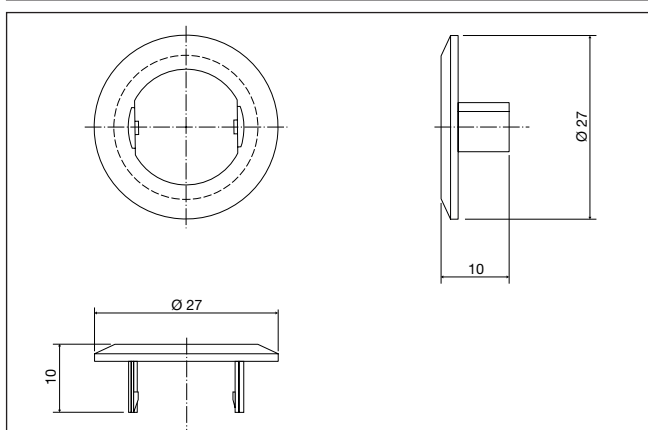
Wiring Diagrams



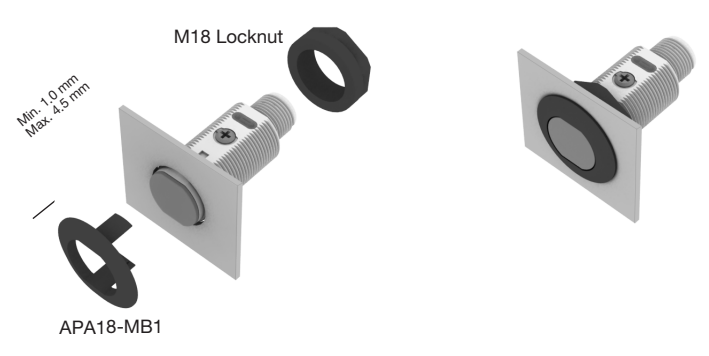
Dimensions



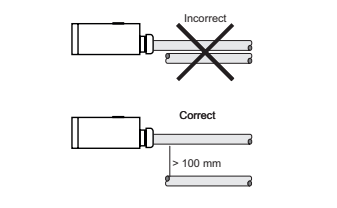
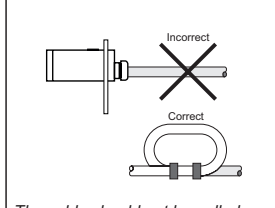
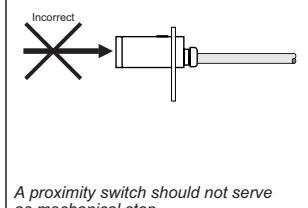
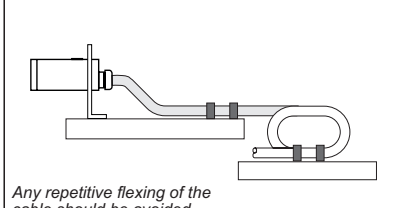
APA18-MB1



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>
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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>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>
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Delivery Contents

- Photoelectric switch: PA18CAB20 ...
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APA18-MB1
- 2 M18 locknuts
- **Packaging:** Plastic bag

Accessories

- Connector type CON.14NF..W series