

Photoelectrics Diffuse-reflective Type PH18CND..., DC

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- Miniature sensor range
- Range: 1 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, plug and pigtail versions
- Excellent EMC performance



Product Description

The PH18CND10... is part of a family of inexpensive general purpose diffuse reflective sensors in industrial standard 18 mm cylindrical and square 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

PH18CND10PAM1SA

Type	_____
Housing style square	_____
Housing size	_____
Housing material	_____
Housing type neutral	_____
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 Square type	1 m	Cable	PH 18 CND 10 NASA	PH 18 CND 10 PASA
M18 Square type	1 m	Plug	PH 18 CND 10 NAM1SA	PH 18 CND 10 PAM1SA
M18 Square type	1 m	Pigtail M12	PH 18 CND 10 NAT1SA	PH 18 CND 10 PAT1SA

Specifications according to EN60947-5-2

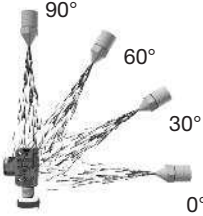
Rated operating distance (S_n)	Up to 1 m, reference target Kodak test card R27, white, 90% reflective, 200 x 200 mm	Voltage drop (U_d)	≤ 2.0 VDC @ 100 mA
Blind zone	20 mm	Protection	Short-circuit, reverse polarity and transients
Sensitivity control	Adjustable by potentiometer 270°	Light source	InGaAlP, LED, 625 nm
Adjustable distance	50-1000 mm	Light type	Red, modulated
Temperature drift	$\leq 0.2\%/^{\circ}\text{C}$	Sensing angle	$\pm 2^{\circ}$
Hysteresis (H) (differential travel)	$\leq 20\%$	Ambient light	30.000 lux Incandescent lamp
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Light spot Diameter	$\varnothing 52$ mm @ 0.5 m
Ripple (U_{rp})	$\leq 10\%$	Operating frequency	500 Hz
Output current		Response time	
Continuous (I_a)	≤ 100 mA	OFF-ON (t_{ON})	≤ 1.0 ms
Short-time (I)	≤ 100 mA (max. load capacity 100 nF)	ON-OFF (t_{OFF})	≤ 1.0 ms
No load supply current (I_o)	≤ 20 mA @ 24 VDC	Power ON delay (t_v)	≤ 300 ms
Minimum operational current (I_m)	0.5 mA	Output function	
OFF-state current (I_r)	≤ 100 μA	Type	NPN or PNP
		Switching function	NO and NC
		Indication	
		Output ON	LED, yellow
		Signal stability and power ON	LED, green



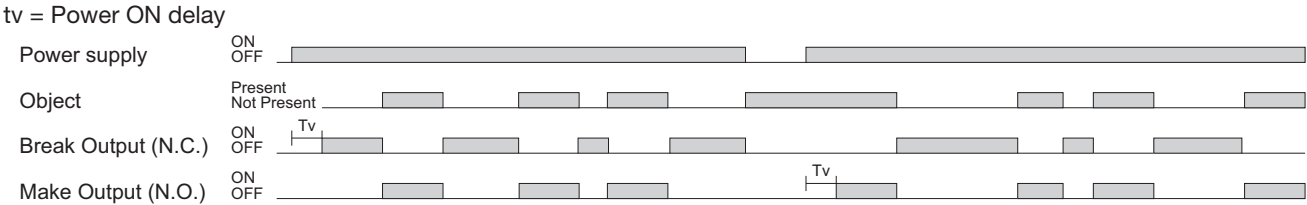
Specifications (cont.)

Environment		Housing material	
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*	Connection	
Ambient temperature		Cable	PVC, grey, 2 m 4 x 0.25 mm ² , Ø = 4.5 mm M12, 4-pin (CONM14NF-series)
Operating	-25° to +60°C (-13° to +140°F)	Plug	PUR, grey, 30 cm 4 x 0.25 mm ² , Ø = 4.5 mm M12, 4-pin (CONM14NF-series)
Storage	-40° to +70°C (-40° to +158°F)	Pigtail	
Vibration		Weight	
	10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)		With cable: 75 g With plug: 10 g With pigtail: 35 g
Shock		CE-marking	
	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)		Yes
Rated insulation voltage		Approvals	
	500 VAC (rms) IEC protection class III		cULus (UL508) supply class 2

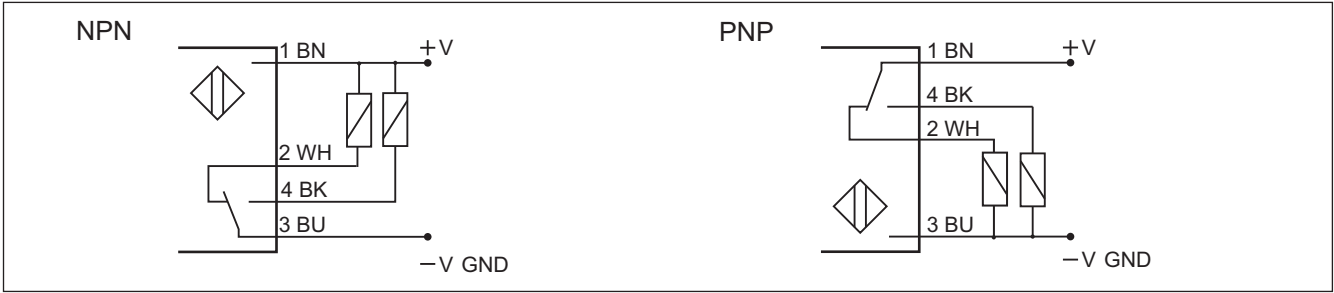
* The IP69K test according to DIN 40050-9 for high-pressure, high-temperature wash-down applications. The sensor must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning. The sensor is exposed to high pressure water from a spray nozzle that is fed with 80°C water 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.



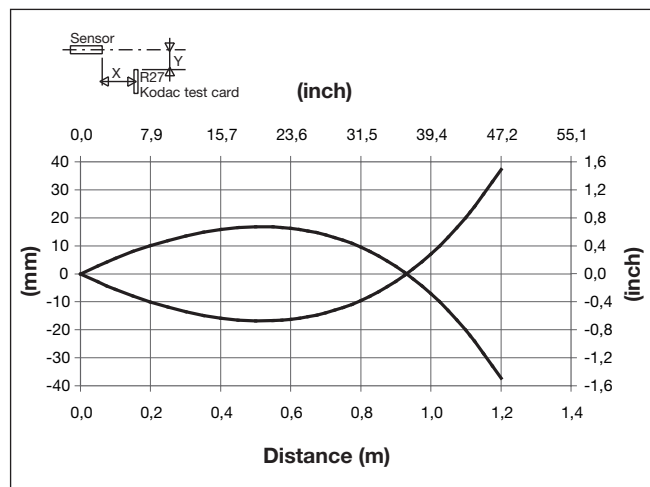
Operation Diagram



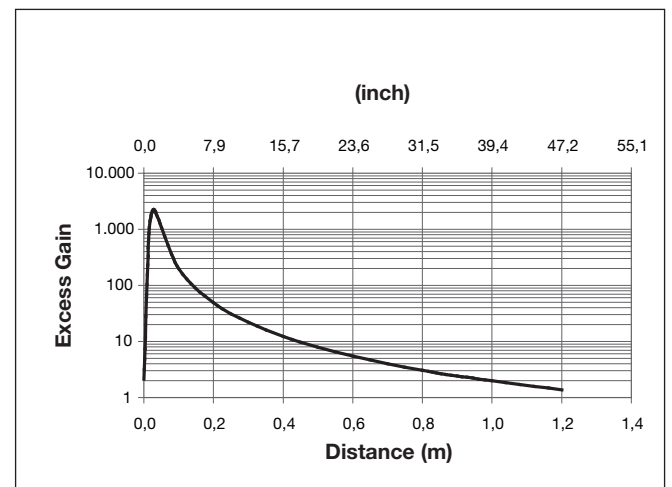
Wiring Diagrams



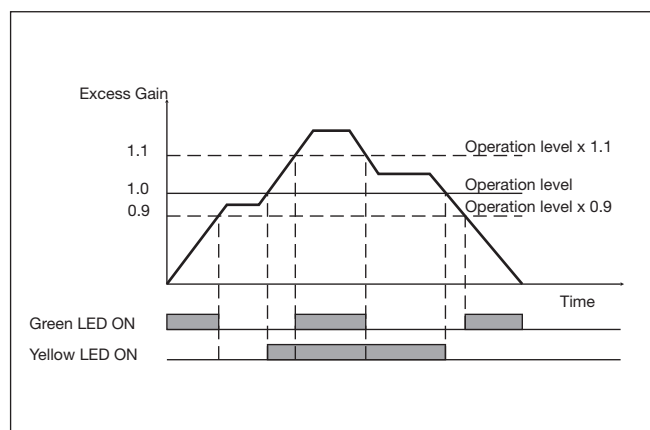
Detection Diagram



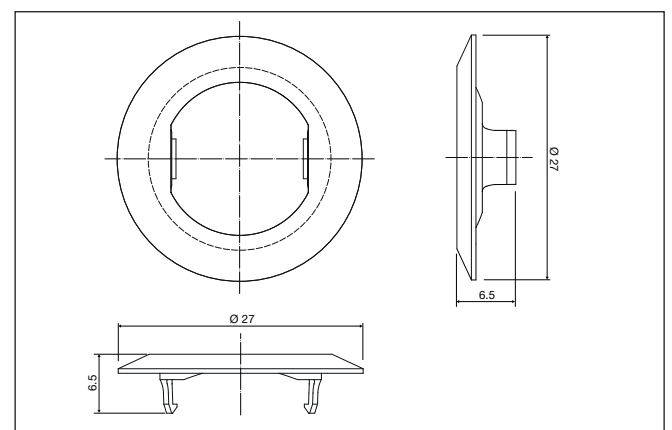
Excess Gain



Signal Stability Indication



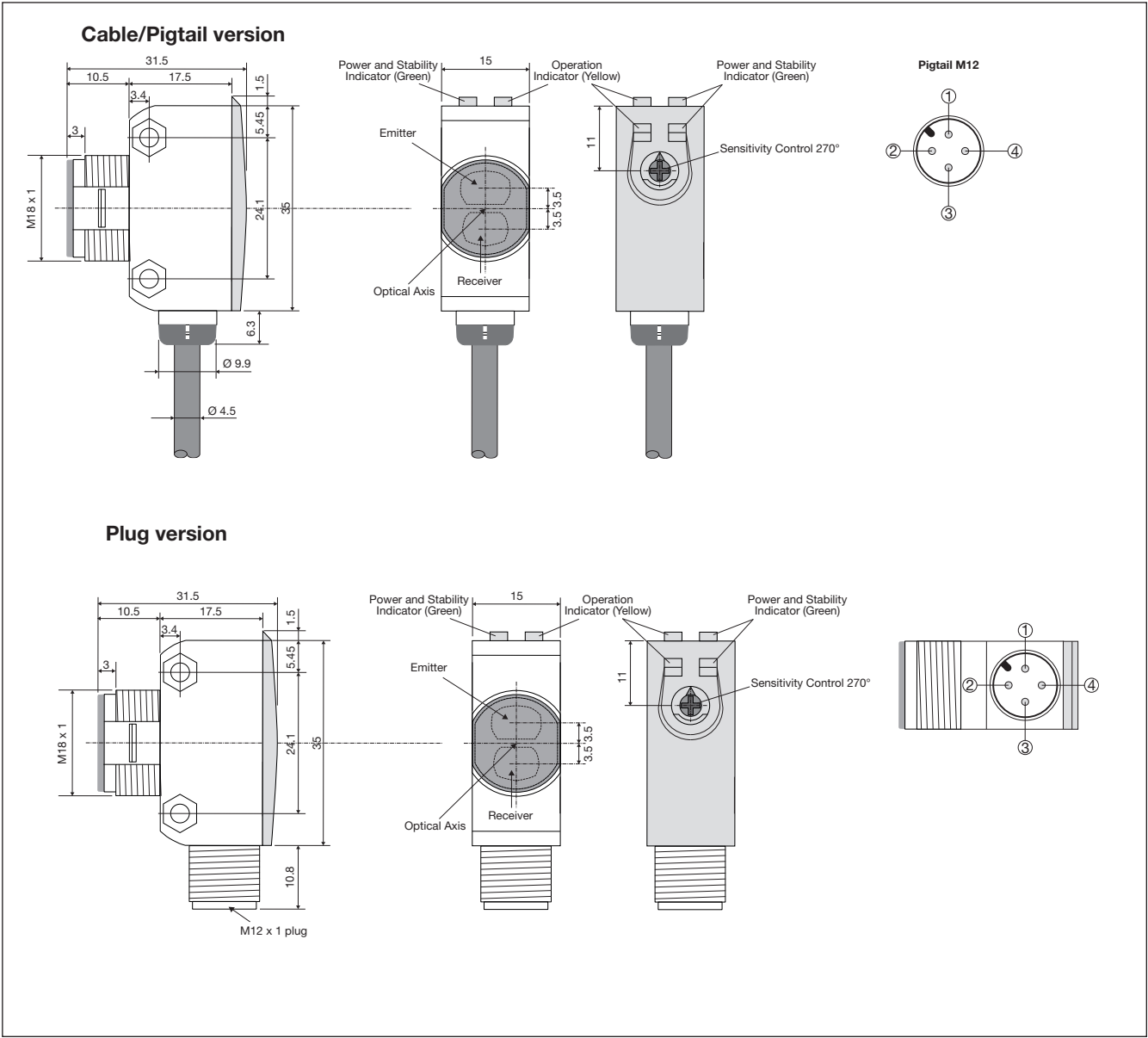
APH18-MB1



Mounting Systems



Dimensions



Installation Hints

<p>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</p>	<p>Relief of the cable strain</p> <p>The cable should not be pulled</p>	<p>Protection of the sensing face</p> <p>A proximity switch should not serve as mechanical stop</p>	<p>Sensor mounted on a mobile carrier</p> <p>Any repetitive flexing of the cable should be avoided</p>
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Delivery Contents

- Photoelectric switch: PH 18 CND...
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APH18-MB1
- 1 M18 locknuts
- **Packaging:** Plastic bag

Accessories

- Connector type CONG1A.. / CONM14NF.. series