

Photoelectrics Retro-reflective, Polarized Type PH18CNP..., DC

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- Miniature sensor range
- Range: 5 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 PH18CNP... is part of a family of inexpensive general purpose retro-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

PH18CNP50PAM1SA

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	5.0 m	Cable	PH 18 CNP 50 NASA	PH 18 CNP 50 PASA
M18 Square type	5.0 m	Plug	PH 18 CNP 50 NAM1SA	PH 18 CNP 50 PAM1SA
M18 Square type	5.0 m	Pigtail M12	PH 18 CNP 50 NAT1SA	PH 18 CNP 50 PAT1SA

Specifications according to EN60947-5-2

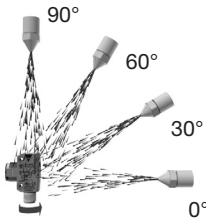
Rated operating distance (S_n)	Up to 5.0 m, Reference target: ER4 reflector ø 80 mm	Voltage drop (U_d)	≤ 2.0 VDC @ 100 mA
Blind zone	50 mm @ S _n max.	Protection	Short-circuit, reverse polarity and transients
Sensitivity control	Adjustable by potentiometer	Light source	InGaAlP, LED, 625 nm
Electrical adjustment	210°	Light type	Red, modulated
Mechanical adjustment	240°	Sensing angle	± 2°
Adjustable distance to target	50-500 cm	Ambient light	30.000 lux Incandescent lamp
Temperature drift	≤ 0.2%/°C	Light spot Diameter	Ø 150 mm @ 2.5 m
Hysteresis (H) (differential travel)	≤ 20%	Operating frequency	500 Hz
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Response time	
Ripple (U_{rip})	≤ 10%	OFF-ON (t _{ON})	≤ 1.0 ms
Output current		ON-OFF (t _{OFF})	≤ 1.0 ms
Continuous (I _a)	≤ 100 mA	Power ON delay (t_v)	≤ 100 ms
Short-time (I)	≤ 100 mA (max. load capacity 100 nF)	Output function	
No load supply current (I_o)	≤ 25 mA @ 24 VDC	Type	NPN or PNP
Minimum operational current (I_m)	0.5 mA	Switching function	NO and NC
OFF-state current (I_r)	≤ 100 µA	Indication	
		Output ON	LED, yellow
		Signal stability and power ON	LED, green



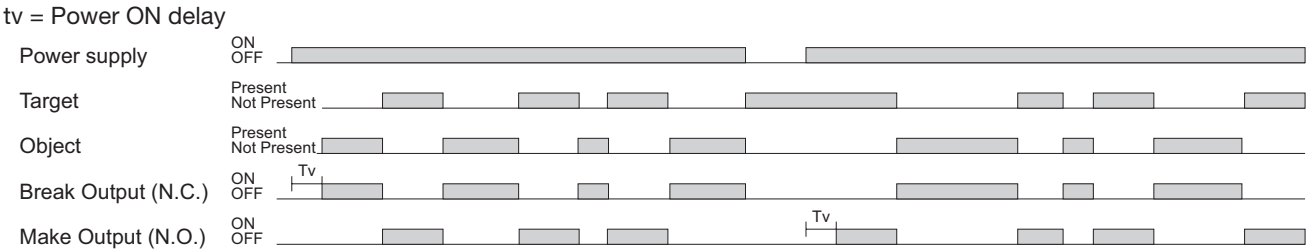
Specifications (cont.)

Environment		Connection	
Installation category	III (IEC 60664/60664A; 60947-1)	Cable gland	POM, Black
Pollution degree	3 (IEC 60664/60664A; 60947-1)	Trimmer shaft	POM, Dark Grey
Degree of protection	IP 67, IP 69K*	Locknuts	PP, black
Ambient temperature		Mounting bracket	PPA, black
Operating	-25° to +60°C (-13° to +140°F)	Cable	
Storage	-40° to +70°C (-40° to +158°F)	PVC, grey, 2 m	
Vibration		4 x 0.25 mm², Ø = 4.5 mm	
10 to 150 Hz, 1.0 mm/15 g		M12, 4-pin	
(IEC 60068-2-6)		(CONB14NF-series)	
Shock		PUR, grey, 30 cm	
30 g / 11ms, 3 pos, 3 neg		4 x 0.25 mm², Ø = 4.5 mm	
(IEC 60068-2-6, 60068-2-32)		M12, 4-pin	
Rated insulation voltage		(CONB14NF-series)	
500 VAC (rms)		Weight	
IEC protection class III		With cable: 85 g	
Housing material		With pigtail: 40 g	
Body	ABS, grey	With plug: 25 g	
Backpart	PC-Transparent	CE-marking	
Front material	PMMA, red	Yes	
		Approvals	
		cULus (UL508)	
		supply class 2	

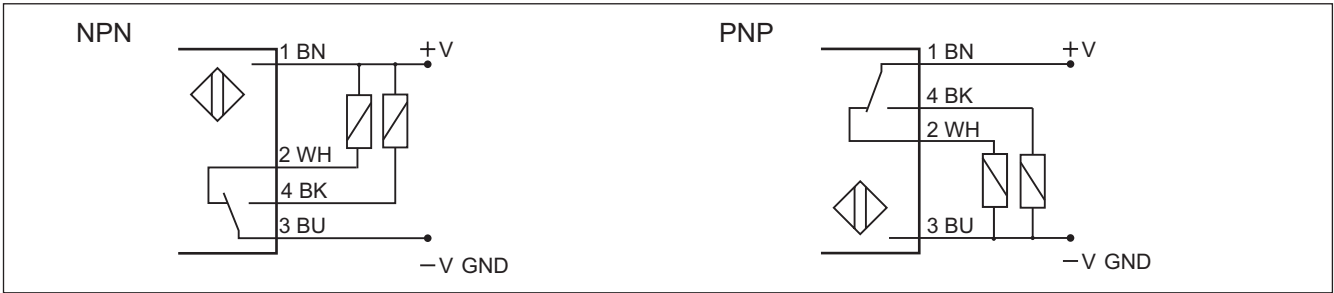
* The IP69K test according to DIN 40050-9 for high-pressure, high-temperature wash-down applications. The sensor must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning. The sensor is exposed to high pressure water from a spray nozzle that is fed with 80°C water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



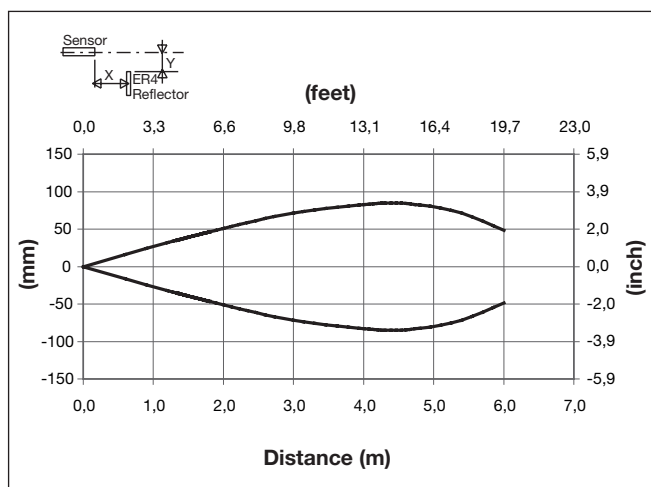
Operation Diagram



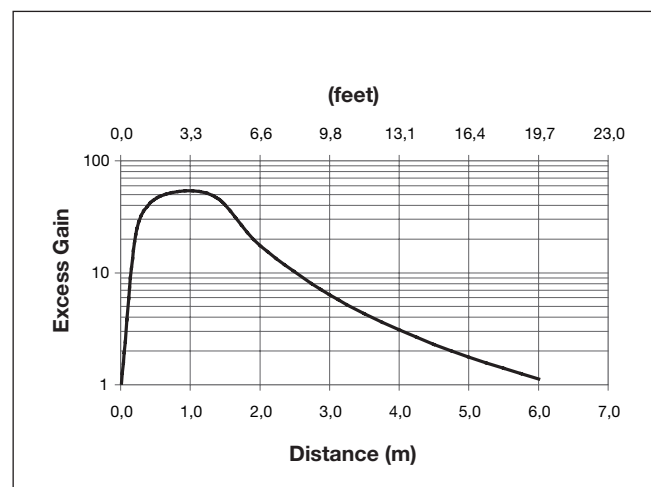
Wiring Diagrams



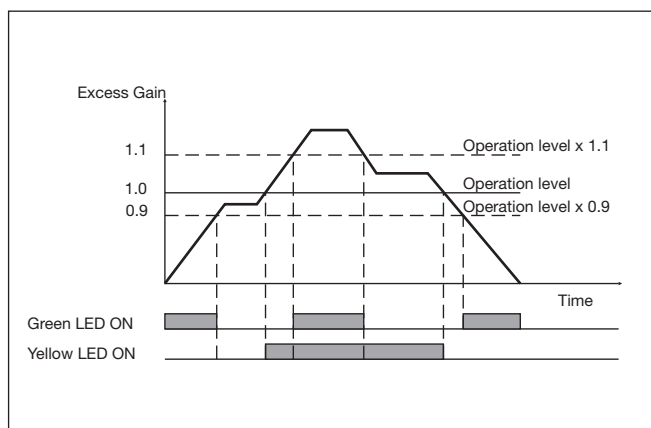
Detection Diagram



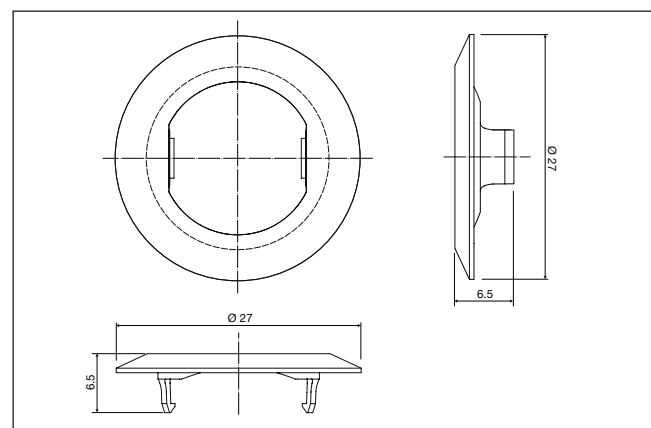
Excess Gain



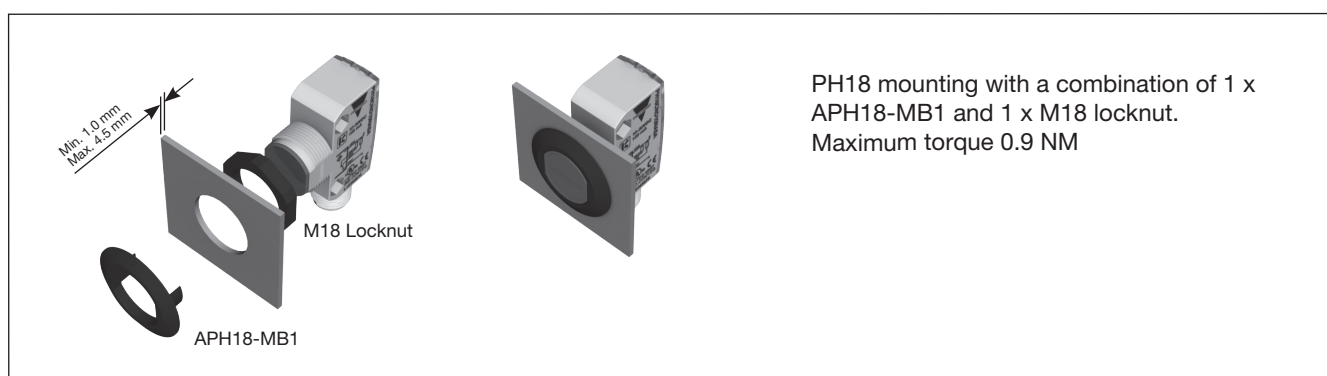
Signal Stability Indication



APH18-MB1

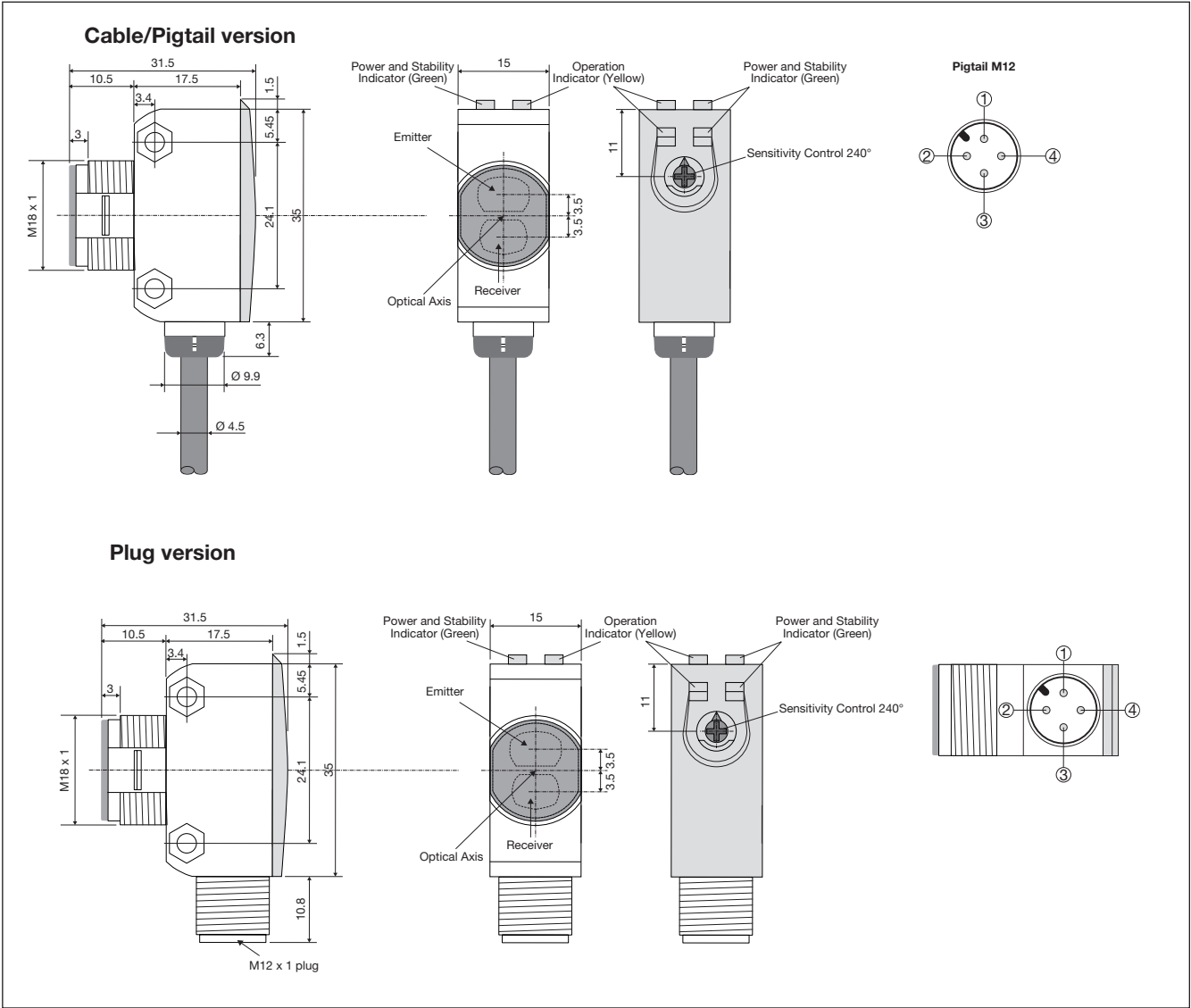


Mounting Systems

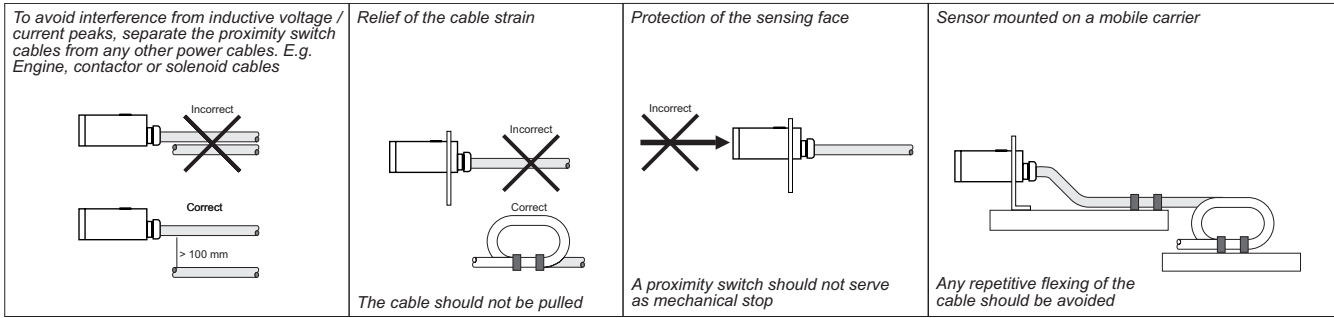


PH18 mounting with a combination of 1 x APH18-MB1 and 1 x M18 locknut.
Maximum torque 0.9 NM

Dimensions



Installation Hints



Delivery Contents

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

Accessories

- Connector type CONG1A.. / CONB14NF.. series
- Reflector type ER.. - to be purchased separately