

Photoelectrics

Retro-reflective, Polarized

Type PH18CNP..., DC



- 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



ECOLAB

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

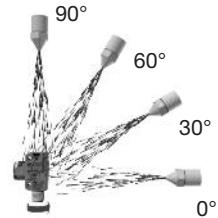
according to EN60947-5-2

Rated operating distance (S_n)	Up to 5.0 m, Reference target: ER4 reflector \varnothing 80 mm	Voltage drop (U_d)	\leq 2.0 VDC @ 100 mA
Blind zone	100 mm	Protection	Short-circuit, reverse polarity and transients
Sensitivity control	Adjustable by potentiometer 270° 50-500 cm	Light source	InGaAlP, LED, 625 nm
Adjustable distance to target		Light type	Red, modulated
Temperature drift	\leq 0.2%/ $^{\circ}$ C	Sensing angle	\pm 2°
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 150 mm @ 2.5 m
Ripple (U_{rpp})	\leq 10%	Operating frequency	500 Hz
Output current		Response time	
Continuous (I_o)	\leq 100 mA	OFF-ON (t_{ON})	\leq 1.0 ms
Short-time (I_l)	\leq 100 mA (max. load capacity 100 nF)	ON-OFF (t_{OFF})	\leq 1.0 ms
No load supply current (I_o)	\leq 20 mA @ 24 VDC	Power ON delay (t_v)	\leq 300 ms
Minimum operational current (I_m)	0.5 mA	Output function	
OFF-state current (I_r)	\leq 100 μ A	Type	NPN or PNP
		Switching function	NO and NC
		Indication	
		Output ON	LED, yellow
		Signal stability and power ON	LED, green

Specifications (cont.)

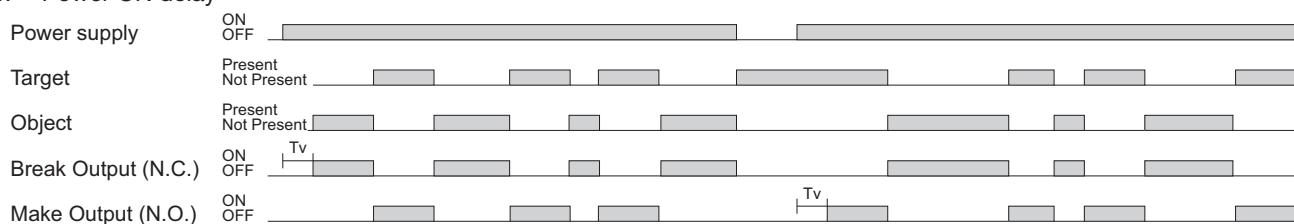
Environment	Connection	
Installation category	Cable	PVC, grey, 2 m 4 x 0.25 mm ² , Ø = 4.5 mm
Pollution degree	Plug	M12, 4-pin (CONM14NF-series)
Degree of protection	Pigtail	PUR, grey, 30 cm 4 x 0.25 mm ² , Ø = 4.5 mm
Ambient temperature		M12, 4-pin (CONM14NF-series)
Operating		With cable: 75 g
Storage		With plug: 10 g
		With pigtail: 35 g
Vibration	Weight	
		CE-marking
		Approvals
Shock		Yes
		cULus (UL508) supply class 2
Rated insulation voltage		
Housing material		
Body		
Front material	ABS, grey	
	PMMA, red	

* 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.

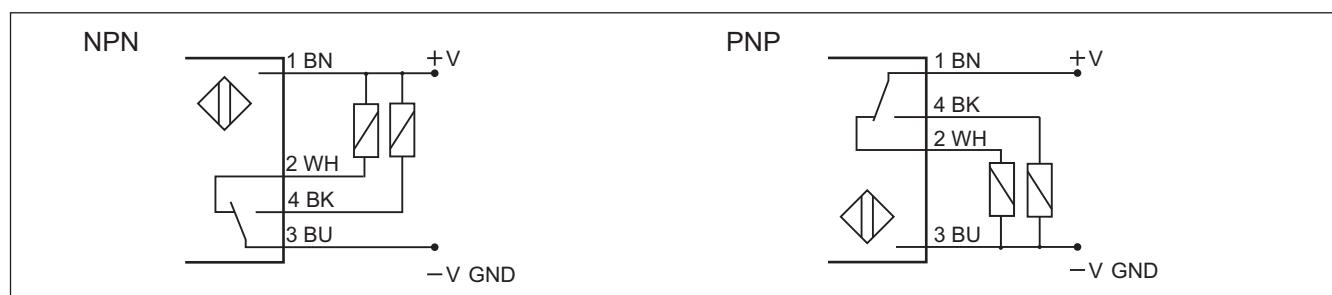


Operation Diagram

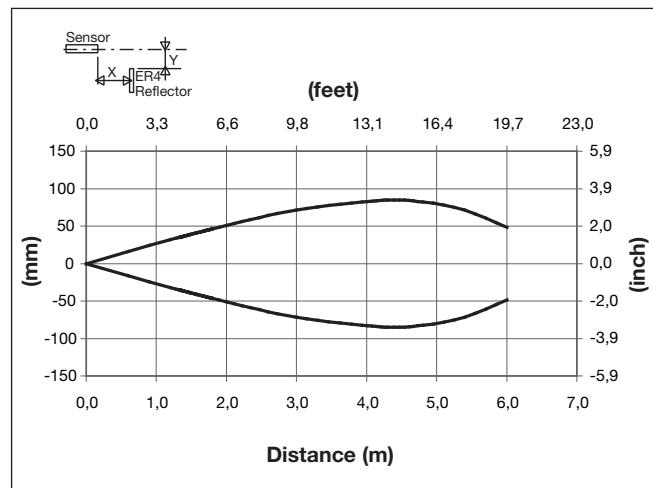
tv = Power ON delay



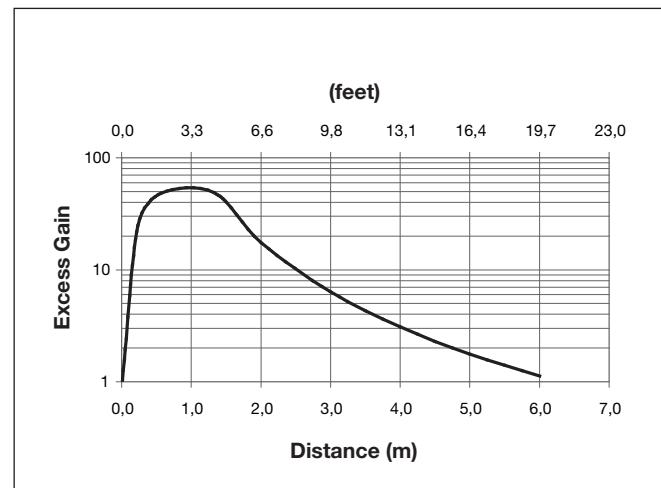
Wiring Diagrams



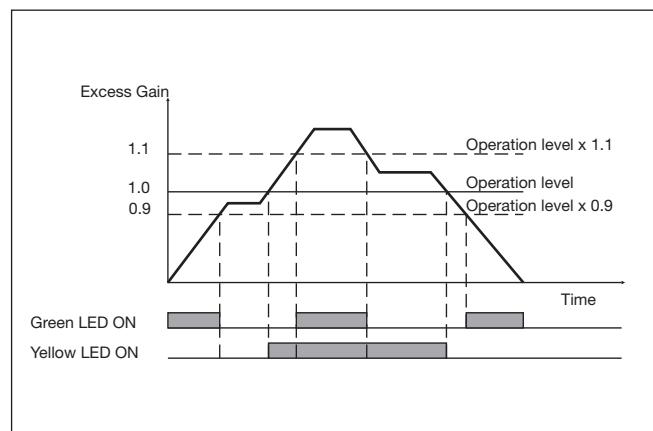
Detection Diagram



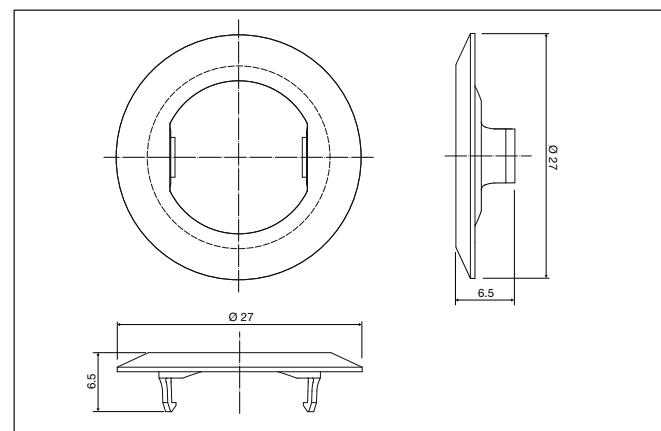
Excess Gain



Signal Stability Indication



APH18-MB1

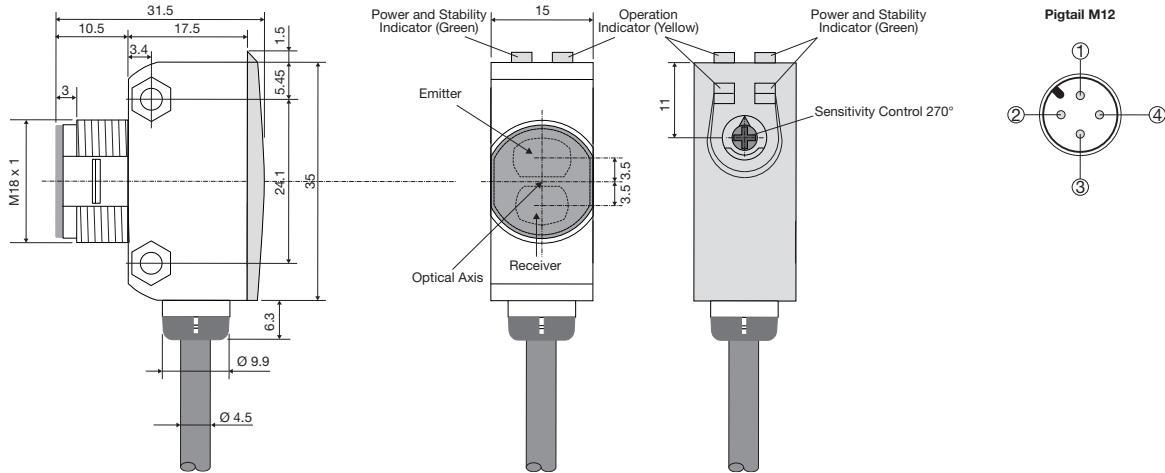


Mounting Systems

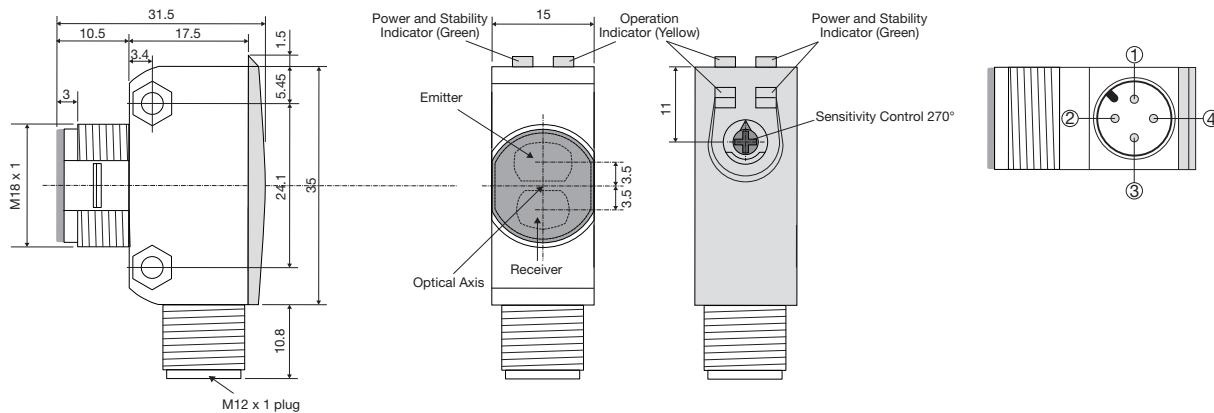


Dimensions

Cable/Pigtail version

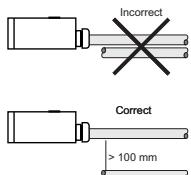


Plug version

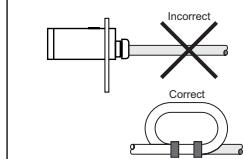


Installation Hints

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

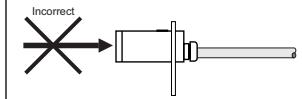


Relief of the cable strain



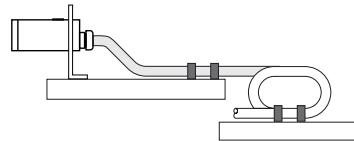
The cable should not be pulled

Protection of the sensing face



A proximity switch should not serve as mechanical stop

Sensor mounted on a mobile carrier



Any repetitive flexing of the cable should be avoided

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.. / CONM14NF.. series
- Reflector type ER.. - to be purchased separately