

Photoelectrics Retro-reflective Type PH18CNR..., DC

CARLO GAVAZZI



- Miniature sensor range
- Range: 6.5 m
- Sensitivity adjustment by potentiometer
- Modulated, infrared light 850 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 PH18CNR... 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

PH18CNR65PAM1SA

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	6.5 m	Cable	PH 18 CNR 65 NASA	PH 18 CNR 65 PASA
M18 Square type	6.5 m	Plug	PH 18 CNR 65 NAM1SA	PH 18 CNR 65 PAM1SA
M18 Square type	6.5 m	Pigtail M12	PH 18 CNR 65 NAT1SA	PH 18 CNR 65 PAT1SA

Specifications according to EN60947-5-2

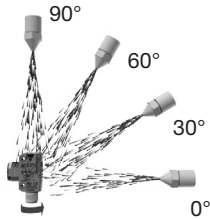
Rated operating distance (S_n)	Up to 6.5 m, reference target ER4 reflector ø 80 mm	Voltage drop (U_d)	≤ 2.0 VDC @ 100 mA
Blind zone	50 mm @ S _n max.	Protection	Short-circuit, reverse polarity and transients
Sensitivity control	Adjustable by potentiometer	Light source	LED, 850 nm
Electrical adjustment	210°	Light type	Infrared, modulated
Mechanical adjustment	240°	Sensing angle	± 2°
Adjustable distance to target	50-650 cm	Ambient light	30.000 lux Incandescent lamp
Temperature drift	≤ 0.2%/°C	Light spot Diameter	Ø 164 mm @ 3.25 m
Hysteresis (H) (differential travel)	≤ 20%	Operating frequency	500 Hz
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Response time	OFF-ON (t _{ON}) ON-OFF (t _{OFF})
Ripple (U_{rip})	≤ 10%		≤ 1.0 ms ≤ 1.0 ms
Output current		Power ON delay (t_v)	≤ 100 ms
Continuous (I _a)	≤ 100 mA	Output function	
Short-time (I)	≤ 100 mA	Type	NPN or PNP
(max. load capacity 100 nF)		Switching function	NO and NC
No load supply current (I_o)	≤ 25 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



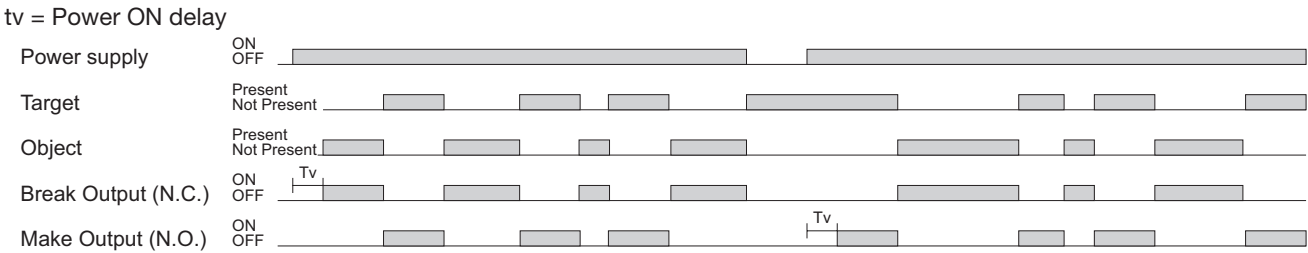
Specifications (cont.)

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 (IEC 60068-2-6)		M12, 4-pin (CONB14NF-series)	
Shock		PUR, grey, 30 cm	
30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)		4 x 0.25 mm², Ø = 4.5 mm	
Rated insulation voltage		M12, 4-pin (CONB14NF-series)	
500 VAC (rms) IEC protection class III		Weight	
Housing material		With cable: 85 g	
Body	ABS, grey	With pigtail: 40 g	
Backpart	PC-Transparent	With plug: 25 g	
Front material	PMMA, red	CE-marking	
		Yes	
		Approvals	
		cULus (UL508) supply class 2	

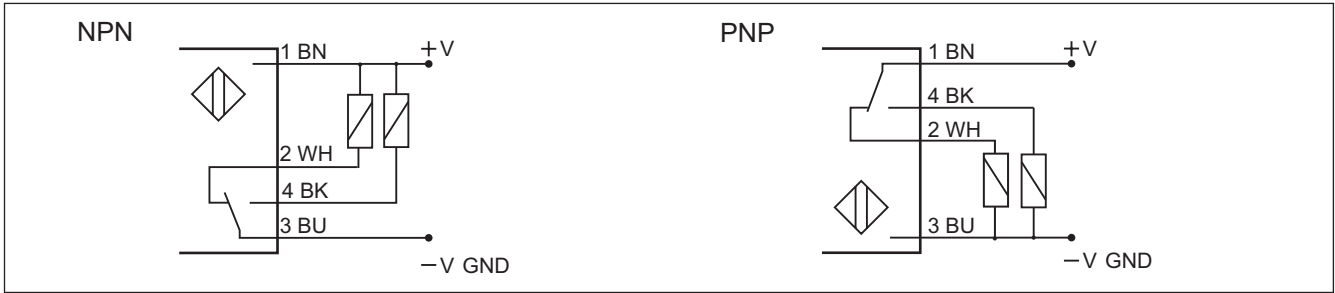
* The IP69K test according to DIN 40050-9 for high-pressure, high-temperature wash-down applications. The sensor must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning. The sensor is exposed to high pressure water from a spray nozzle that is fed with 80°C water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



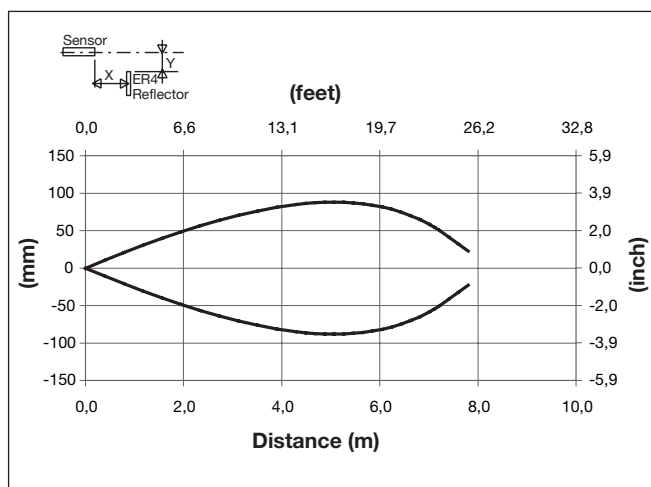
Operation Diagram



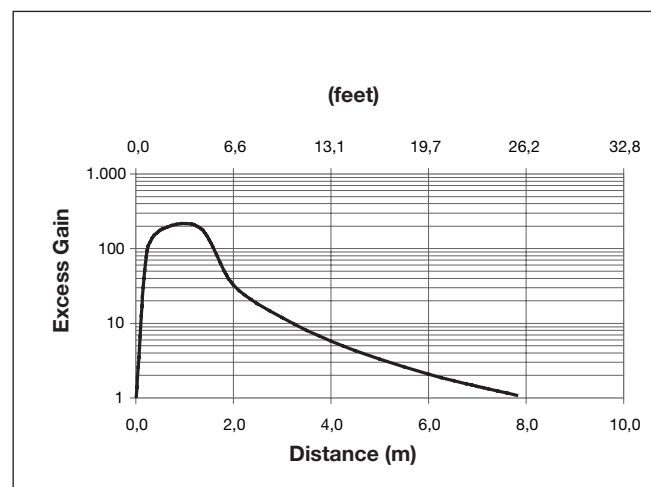
Wiring Diagrams



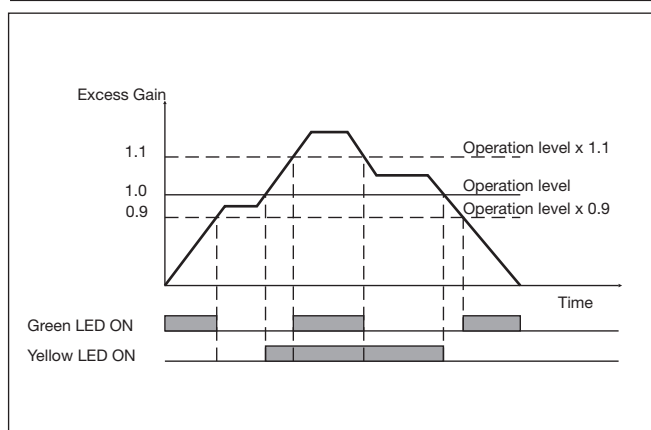
Detection Diagram



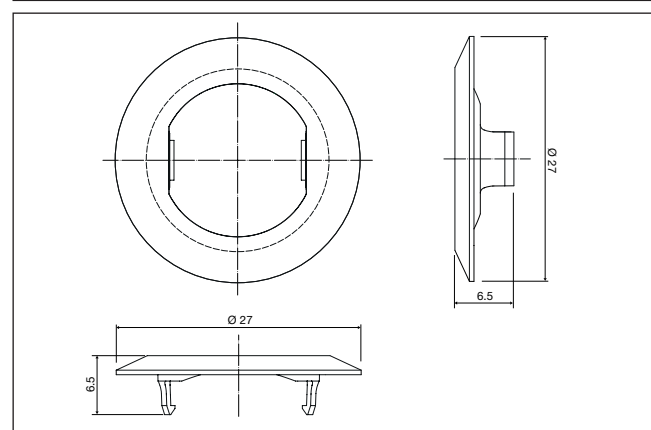
Excess Gain



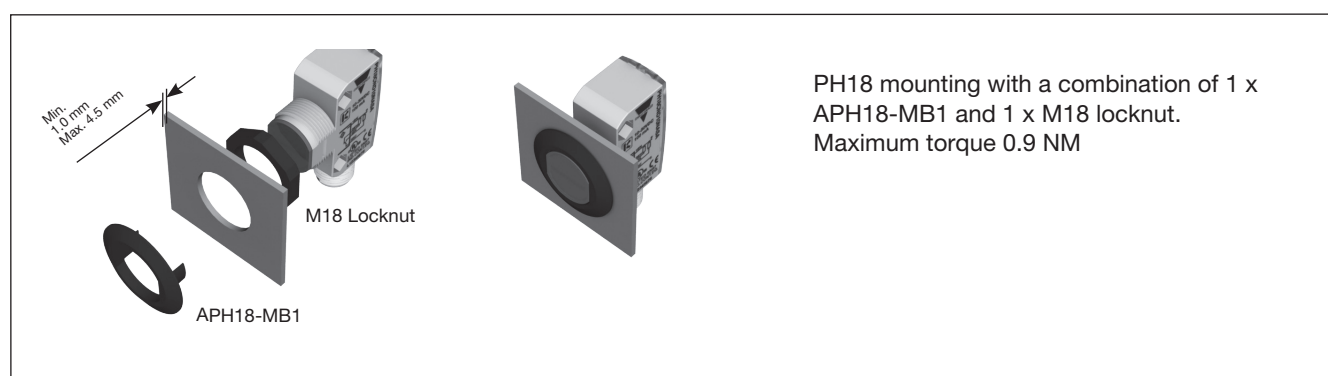
Signal Stability Indication



APH18-MB1

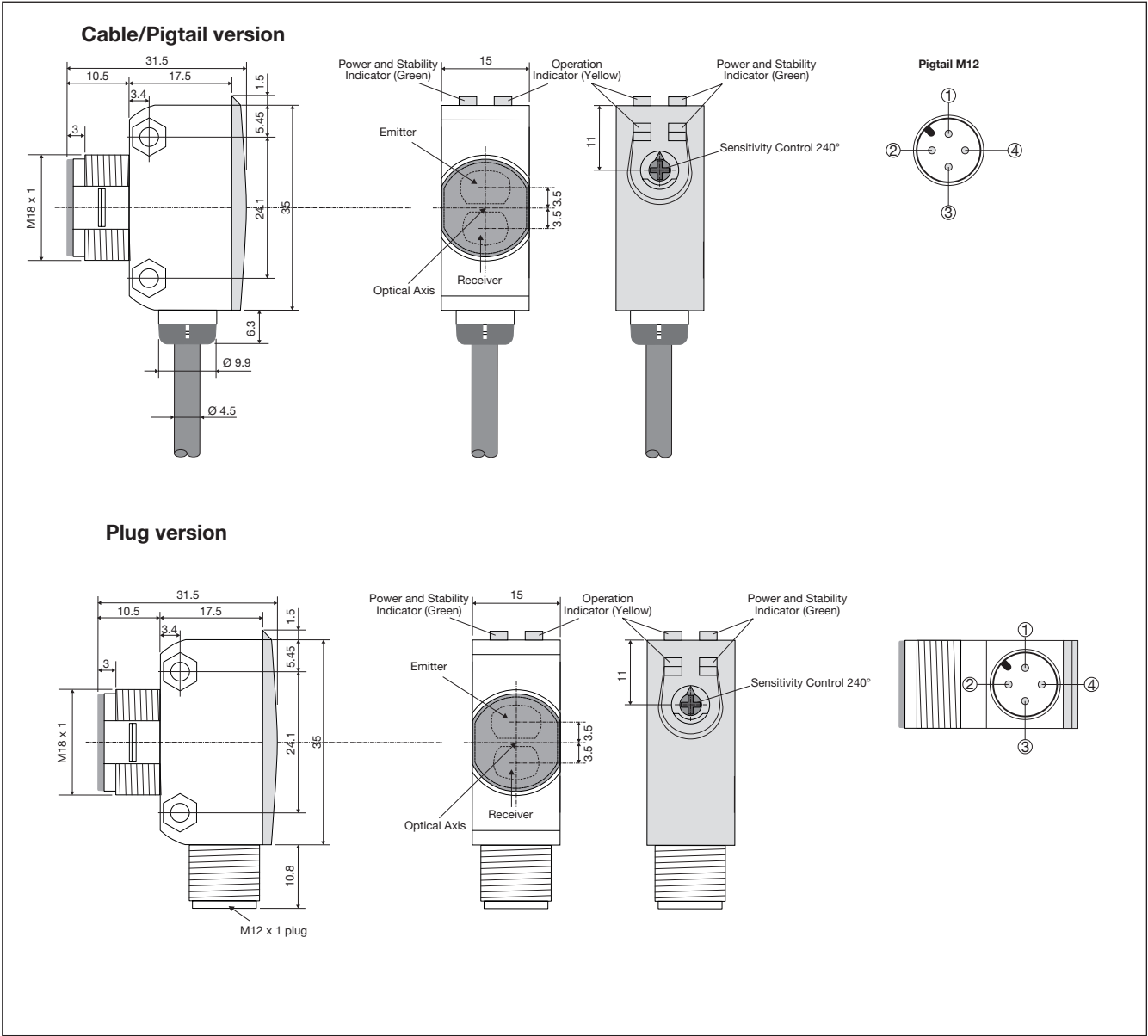


Mounting Systems





Dimensions



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 Incorrect Correct > 100 mm	Relief of the cable strain Incorrect Correct The cable should not be pulled	Protection of the sensing face Incorrect A proximity switch should not serve as mechanical stop	Sensor mounted on a mobile carrier Any repetitive flexing of the cable should be avoided
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Delivery Contents

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

Accessories

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