

Photoelectrics Through-beam Type PH18CNT..., DC

CARLO GAVAZZI



- Miniature sensor range
- Range: 20 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 PH18CNT... is part of a family of inexpensive general purpose through-beam 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

PH18CNT20PAM1SA

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 type	Range S_n	Connec- tion	Ordering no. Emitter	Ordering no. Receiver NPN Make or break switching	Ordering no. Receiver PNP Make or break switching
M18 Square type	20 m	Cable	PH 18 CNT 20	PH 18 CNT 20 NASA	PH 18 CNT 20 PASA
M18 Square type	20 m	Plug	PH 18 CNT 20M1	PH 18 CNT 20 NAM1SA	PH 18 CNT 20 PAM1SA
M18 Square type	20 m	Pigtail M12	PH 18 CNT 20T1	PH 18 CNT 20 NAT1SA	PH 18 CNT 20 PAT1SA

Specifications Receiver according to EN60947-5-2

Rated operating distance (S_n)	Up to 20 m	OFF-state current (I_r)	$\leq 100 \mu A$
Blind zone	100 mm	Voltage drop (U_d)	$\leq 2.0 \text{ VDC @ } 100 \text{ mA}$
Sensitivity control	Adjustable by potentiometer 270°	Protection	Short-circuit, reverse polarity and transients
Adjustable distance to target	1 - 20 m	Sensing angle	$\pm 2^\circ$
Temperature drift	$\leq 0.2\%/^\circ C$	Ambient light	30.000 lux Incandescent lamp
Hysteresis (H) (differential travel)	$\leq 20\%$	Operating frequency	500 Hz
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Response time	
Ripple (U_{rpp})	$\leq 10\%$	OFF-ON (t_{ON})	$\leq 1.0 \text{ ms}$
Output current		ON-OFF (t_{OFF})	$\leq 1.0 \text{ ms}$
Continuous (I_a)	$\leq 100 \text{ mA}$	Power ON delay (t_v)	$\leq 300 \text{ ms}$
Short-time (I)	$\leq 100 \text{ mA}$ (max. load capacity 100 nF)	Output function	
No load supply current (I_o)	$\leq 15 \text{ mA @ } 24 \text{ VDC}$	Type	NPN or PNP
Minimum operational current (I_m)	0.5 mA	Switching function	NO and NC
		Indication	
		Output ON	LED, yellow
		Signal stability and power ON	LED, green



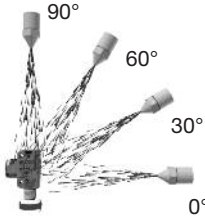
Specifications Emitter according to EN60947-5-2

Rated operational volt. (U _B)	10 to 30 VDC (ripple included)	Light spot Diameter	Ø 164 mm @ 3.25 m
Ripple (U _{ripple})	≤ 10%	Protection	Reverse polarity and transients
Supply current (I _o)	≤ 23 mA @ 24 VDC	Indication function	Power supply ON Signal stability and power ON
Light source	LED, 850 nm		LED, green LED, green
Light type	Infrared, modulated	Power on delay	< 300 ms
Sensing angle	± 2°		

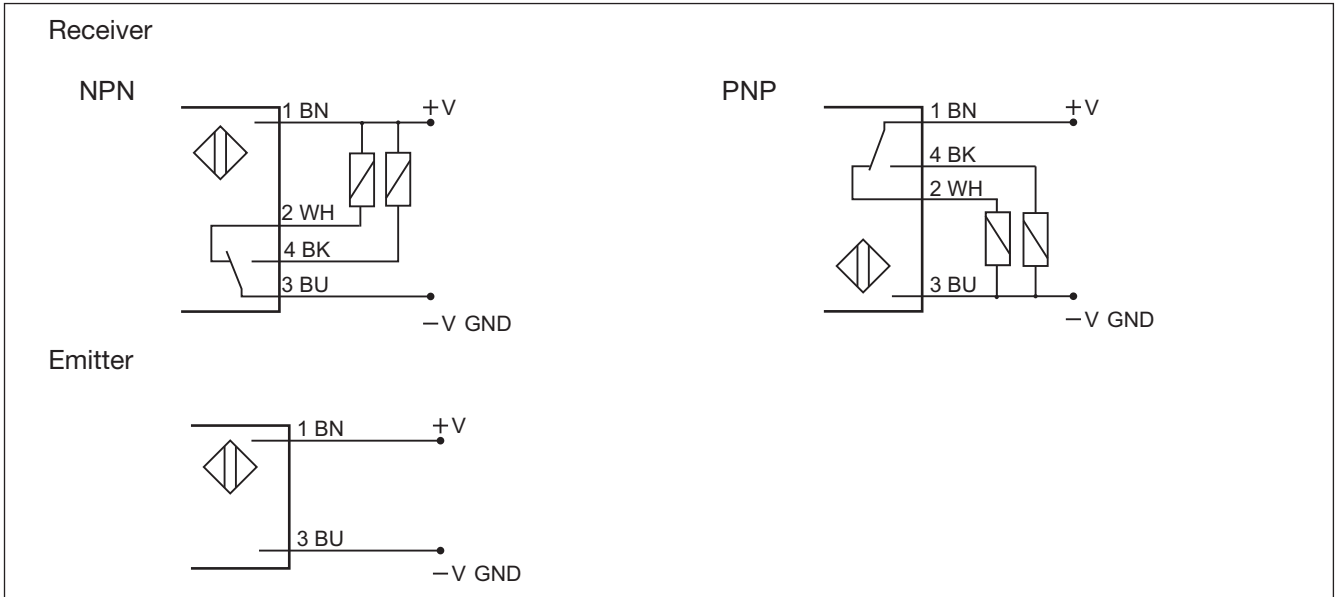
Specifications Common according to EN60947-5-2

Environment		Connection	
Installation category	III (IEC 60664/60664A; 60947-1)	Cable	PVC, grey, 2 m 4 x 0.25 mm ² , Ø = 4.5 mm
Pollution degree	3 (IEC 60664/60664A; 60947-1)	Receiver	2 x 0.25 mm ² , Ø = 4.5 mm
Degree of protection	IP 67, IP 69K*	Emitter	M12, 4-pin (CONM14NF-series)
Ambient temperature		Plug	PUR, grey, 30 cm 4 x 0.25 mm ² , Ø = 4.5 mm
Operating	-25° to +60°C (-13° to +140°F)	Pigtail	M12, 4-pin (CONM14NF-series)
Storage	-40° to +70°C (-40° to +158°F)	Weight	With cable: 75 g With plug: 10 g With Pigtail: 35 g
Vibration	10 to 55 Hz, 0.5 mm/7.5 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		
Housing material			
Body	ABS, grey		
Front material	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.



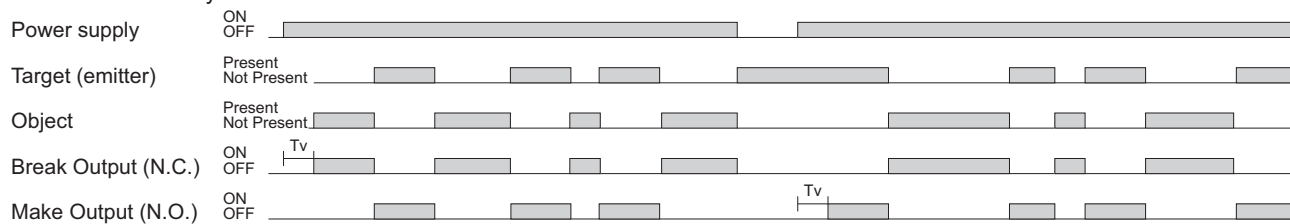
Wiring Diagrams



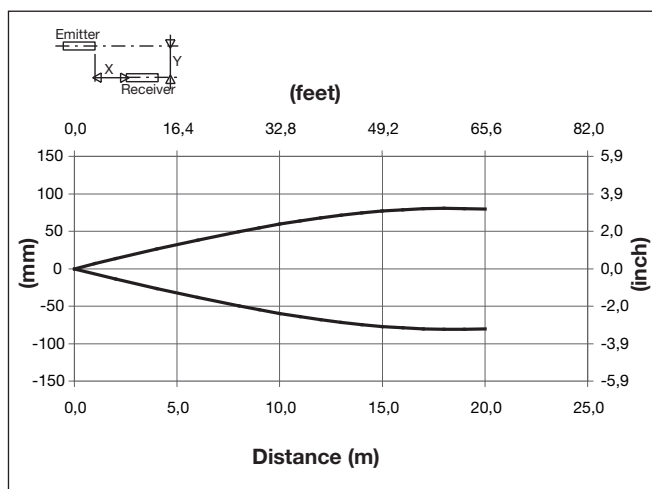
PNP

Operation Diagram

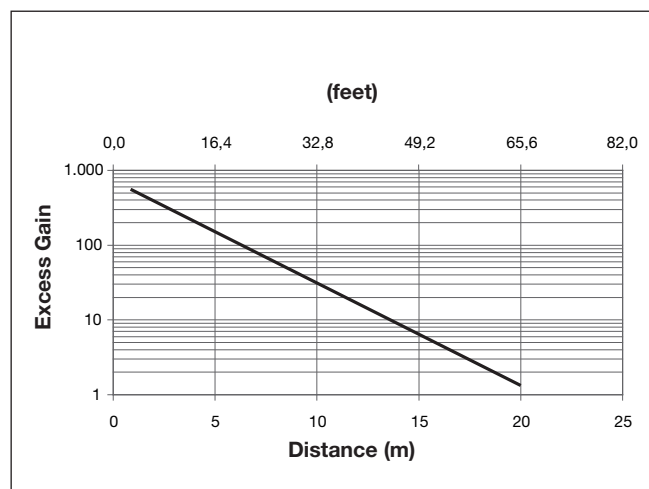
tv = Power ON delay



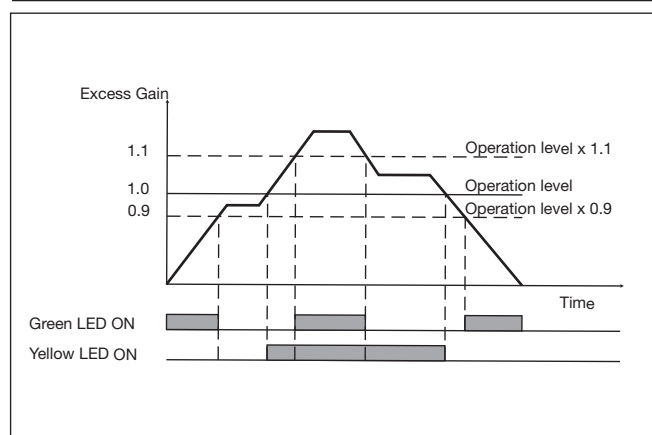
Detection Diagram



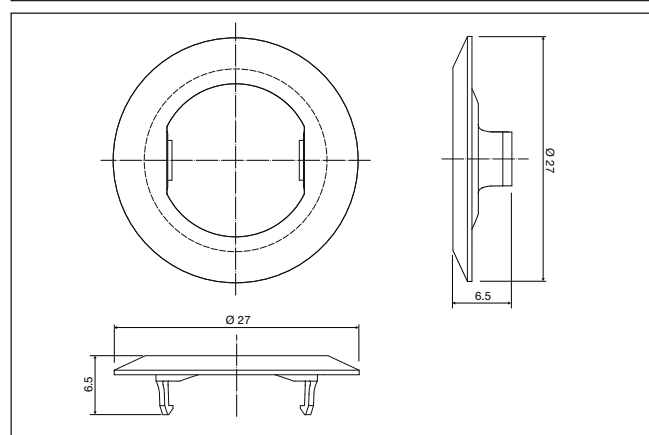
Excess Gain



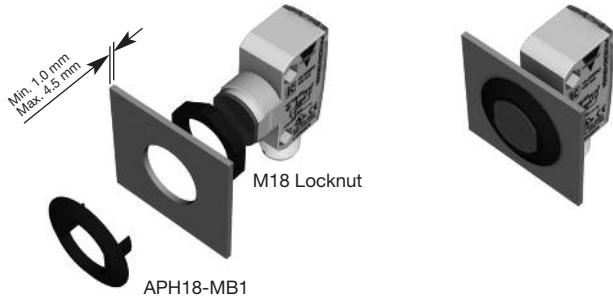
Signal Stability Indication



APH18-MB1



Mounting Systems



Min. 1.0 mm
Max. 4.5 mm

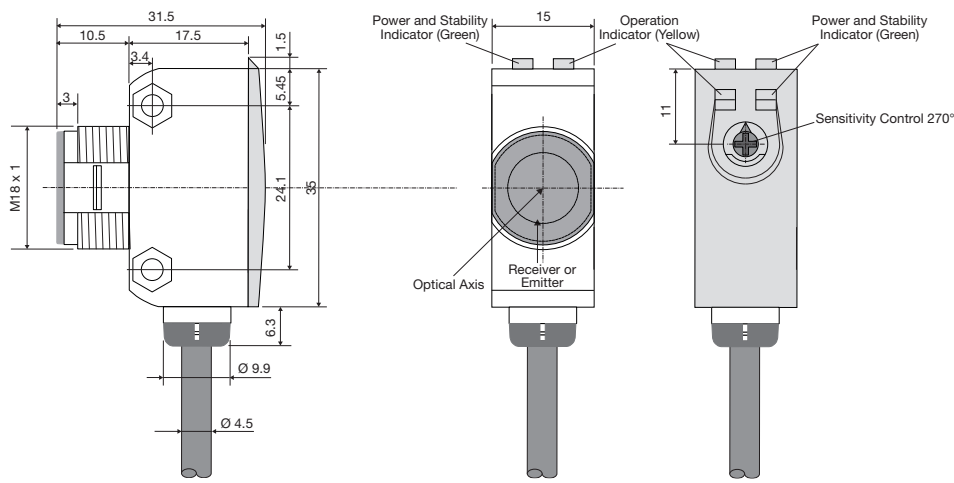
M18 Locknut

APH18-MB1

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

Dimensions

Cable/Pigtail version



10.5 31.5 17.5 1.5 3.4 5.45 24.1 35 6.3 Ø 9.9 Ø 4.5

M18 x 1

Power and Stability Indicator (Green)

Operation Indicator (Yellow)

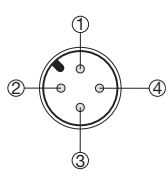
Power and Stability Indicator (Green)

Sensitivity Control 270°

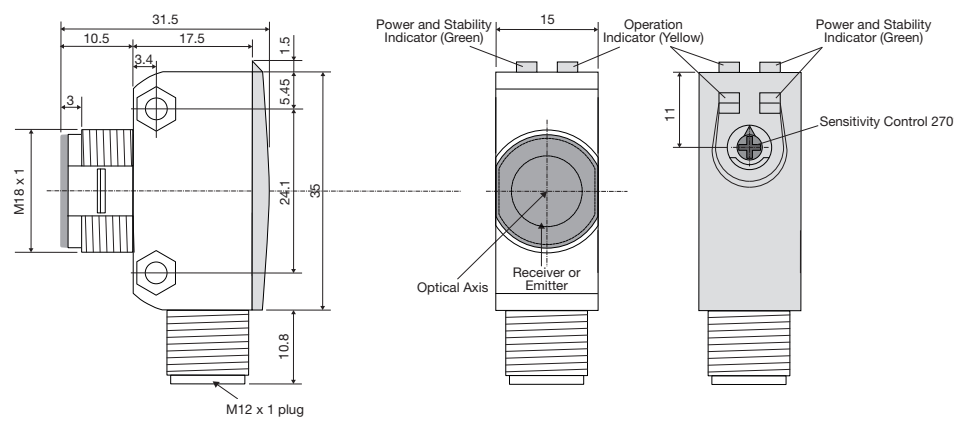
Optical Axis

Receiver or Emitter

Pigtail M12



Plug version



10.5 31.5 17.5 1.5 3.4 5.45 24.1 35 10.8

M18 x 1

M12 x 1 plug

Power and Stability Indicator (Green)

Operation Indicator (Yellow)

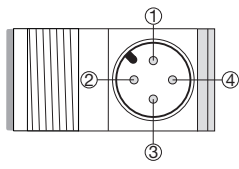
Power and Stability Indicator (Green)

Sensitivity Control 270°

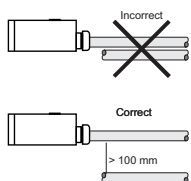
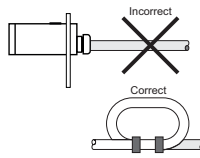
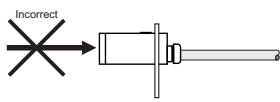
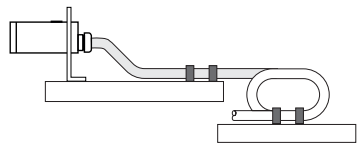
Optical Axis

Receiver or Emitter

Pigtail M12



Installation Hints

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

- Photoelectric switch: PH 18 CNT...
- Installation instruction on plastic bag
- Screwdriver
- Mounting bracket APH18-MB1
- 1 M18 locknuts
- **Packaging:** Plastic bag
- Emitter and receiver is packed separately

Accessories

- Connector type CONG1A.. / CONM14NF.. series