

# 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

<b>Rated operating distance (<math>S_n</math>)</b>	Up to 20 m	<b>OFF-state current (<math>I_r</math>)</b>	$\leq 100 \mu A$
<b>Blind zone</b>	0 mm	<b>Voltage drop (<math>U_d</math>)</b>	$\leq 2.0 VDC @ 100 mA$
<b>Sensitivity control</b>	Adjustable by potentiometer	<b>Protection</b>	Short-circuit, reverse polarity and transients
Electrical adjustment	210°	<b>Sensing angle</b>	$\pm 4^\circ$
Mechanical adjustment	240°	<b>Ambient light</b>	30.000 lux Incandescent lamp
Adjustable distance to target	1 - 20 m	<b>Operating frequency</b>	500 Hz
<b>Temperature drift</b>	$\leq 0.2\%/^{\circ}C$	<b>Response time</b>	
<b>Hysteresis (H)</b> (differential travel)	$\leq 20\%$	OFF-ON ( $t_{ON}$ )	$\leq 1.0 ms$
<b>Rated operational volt. (<math>U_B</math>)</b>	10 to 30 VDC (ripple included)	ON-OFF ( $t_{OFF}$ )	$\leq 1.0 ms$
<b>Ripple (<math>U_{rpp}</math>)</b>	$\leq 10\%$	<b>Power ON delay (<math>t_v</math>)</b>	$\leq 200 ms$
<b>Output current</b>		<b>Output function</b>	
Continuous ( $I_a$ )	$\leq 100 mA$	Type	NPN or PNP
Short-time ( $I$ )	$\leq 100 mA$ (max. load capacity 100 nF)	Switching function	NO and NC
<b>No load supply current (<math>I_o</math>)</b>	$\leq 15 mA @ 24 VDC$	<b>Indication</b>	
<b>Minimum operational current (<math>I_m</math>)</b>	0.5 mA	Output ON	LED, yellow
		Signal stability and power ON	LED, green



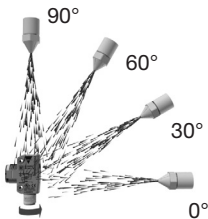
Specifications Emitter according to EN60947-5-2

Rated operational volt. (U <sub>B</sub> )	10 to 30 VDC (ripple included)	Light spot Diameter	Ø 1500 mm @ 10 m
Ripple (U <sub>rpp</sub> )	≤ 10%	Protection	Reverse polarity and transients
Supply current (I <sub>o</sub> )	≤ 25 mA @ 24 VDC	Indication function	LED, green
Light source	LED, 850 nm	Power supply ON	LED, green
Light type	Infrared, modulated	Signal stability and power ON	LED, green
Sensing angle	± 4°	Power on delay	< 200 ms

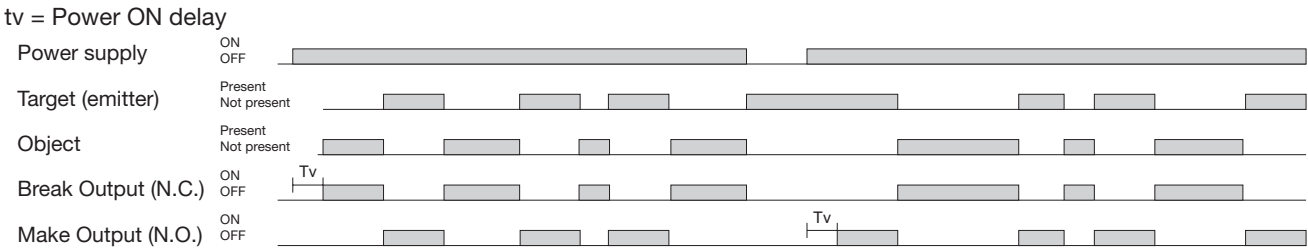
Specifications Common according to EN60947-5-2

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

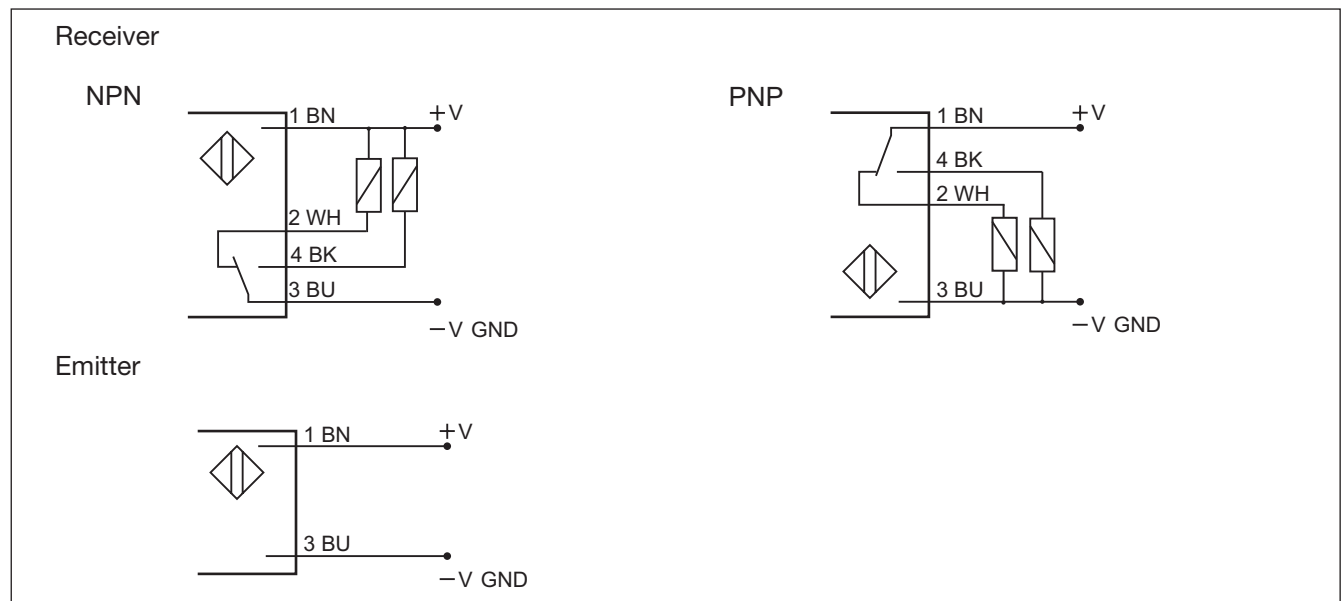
\* The IP69K test according to DIN 40050-9 for high-pressure, high-temperature wash-down applications. The sensor must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning. The sensor is exposed to high pressure water from a spray nozzle that is fed with 80°C water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



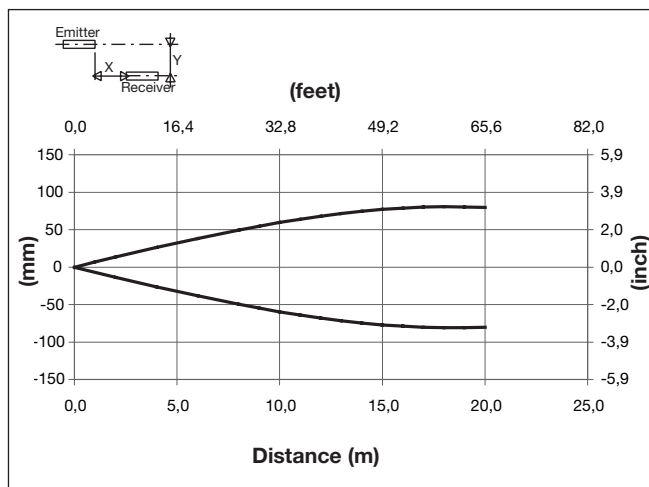
Operation Diagram



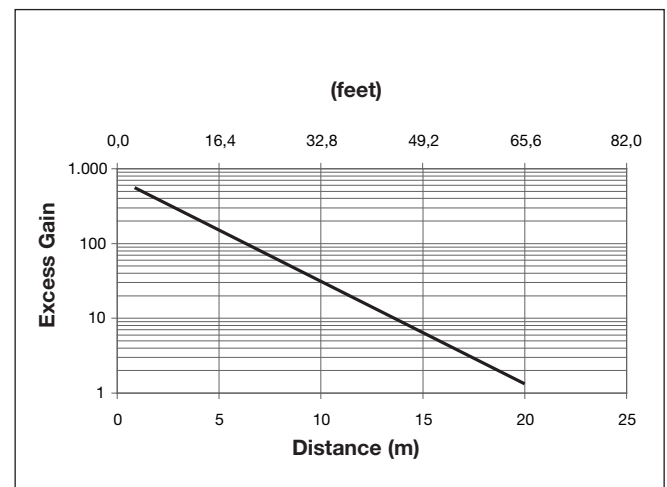
## Wiring Diagrams



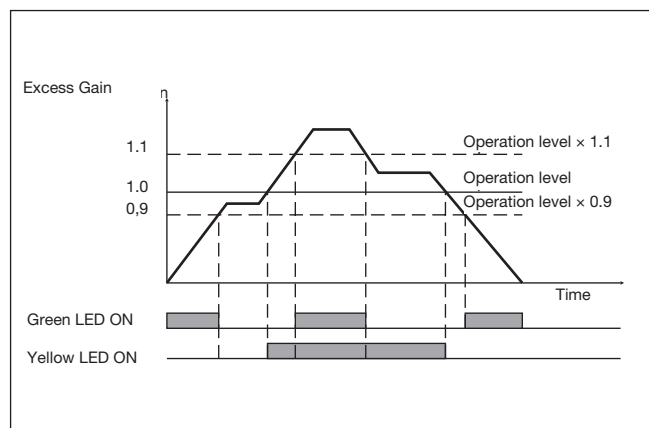
## Detection Diagram



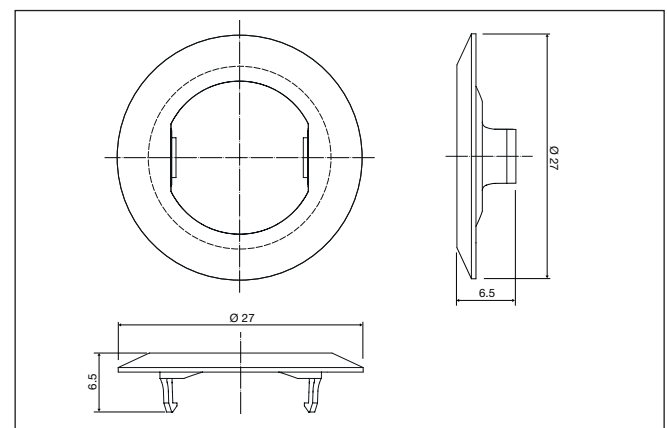
## Excess Gain



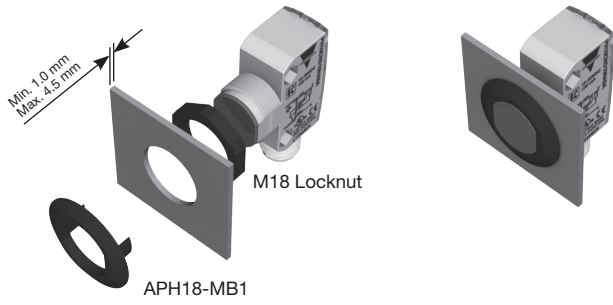
## Signal Stability Indication



## APH18-MB1



Mounting Systems



Min. 1.0 mm  
Max. 4.5 mm

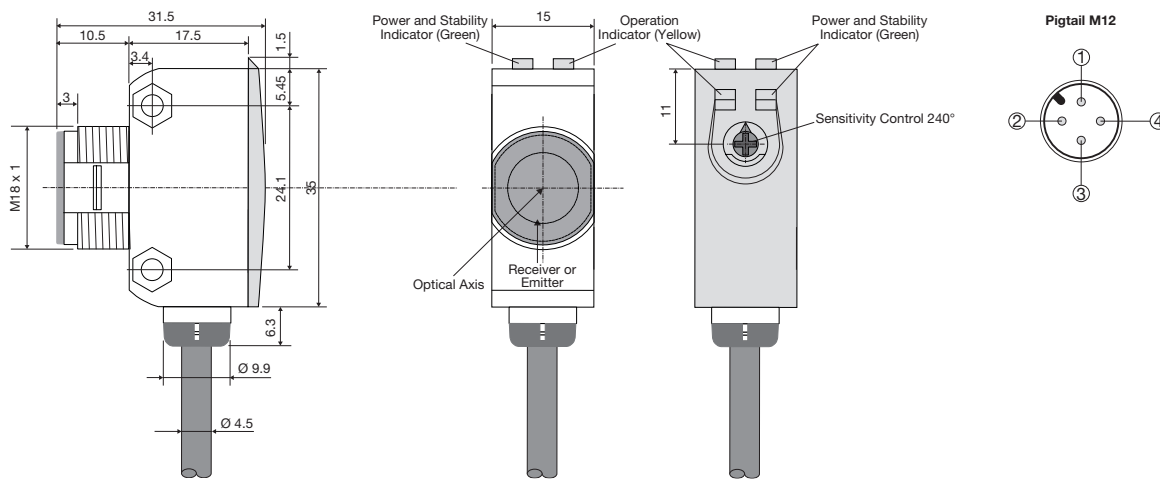
M18 Locknut

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)

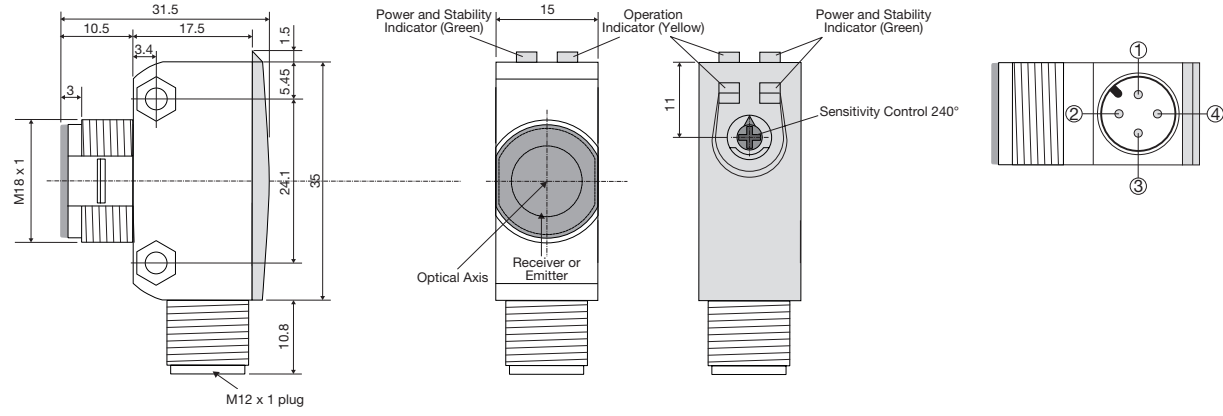
Sensitivity Control 240°

Receiver or Emitter

Optical Axis

Pigtail M12

**Plug version**



10.5 31.5 17.5 1.5 3.4 5.45 24.1 35 10.8 M12 x 1 plug

Power and Stability Indicator (Green)

Operation Indicator (Yellow)

Power and Stability Indicator (Green)

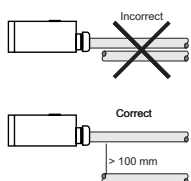
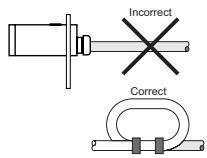
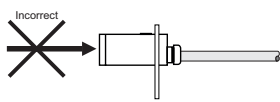
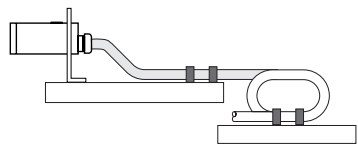
Sensitivity Control 240°

Receiver or Emitter

Optical Axis

Pigtail M12

## Installation Hints

<p><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></p>  <p>Incorrect</p> <p>Correct</p> <p>&gt; 100 mm</p>	<p><i>Relief of the cable strain</i></p>  <p>Incorrect</p> <p>Correct</p> <p><i>The cable should not be pulled</i></p>	<p><i>Protection of the sensing face</i></p>  <p>Incorrect</p> <p><i>A proximity switch should not serve as mechanical stop</i></p>	<p><i>Sensor mounted on a mobile carrier</i></p>  <p><i>Any repetitive flexing of the cable should be avoided</i></p>
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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.. / CONB14NF.. series

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

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