

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) | ≤ 100 μA |
| Blind zone | 100 mm | Voltage drop (U_d) | ≤ 2.0 VDC @ 100 mA |
| Sensitivity control | Adjustable by potentiometer 270° | Protection | Short-circuit, reverse polarity and transients |
| Adjustable distance to target | 1 - 20 m | Sensing angle | ± 2° |
| Temperature drift | ≤ 0.2%/°C | Ambient light | 30.000 lux Incandescent lamp |
| 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}) ≤ 1.0 ms ON-OFF (t _{OFF}) ≤ 1.0 ms |
| Ripple (U_{rpp}) | ≤ 10% | Power ON delay (t_v) | ≤ 300 ms |
| Output current | Continuous (I _a) ≤ 100 mA Short-time (I) ≤ 100 mA (max. load capacity 100 nF) | Output function | Type: NPN or PNP Switching function: NO and NC |
| No load supply current (I_o) | ≤ 15 mA @ 24 VDC | Indication | Output ON: LED, yellow Signal stability and power ON: LED, green |
| Minimum operational current (I_m) | 0.5 mA | | |

Specifications Emitter according to EN60947-5-2

| | |
|---|-----------------------------------|
| Rated operational volt. (U_B) | 10 to 30 VDC (ripple included) |
| Ripple (U_{rpp}) | $\leq 10\%$ |
| Supply current (I_b) | ≤ 23 mA @ 24 VDC |
| Light source | LED, 850 nm |
| Light type | Infrared, modulated |
| Sensing angle | $\pm 2^\circ$ |

| | |
|-------------------------------|---------------------------------|
| Light spot Diameter | $\varnothing 164$ mm @ 3.25 m |
| Protection | Reverse polarity and transients |
| Indication function | LED, green |
| Power supply ON | LED, green |
| Signal stability and power ON | LED, green |
| Power on delay | < 300 ms |

Specifications Common according to EN60947-5-2

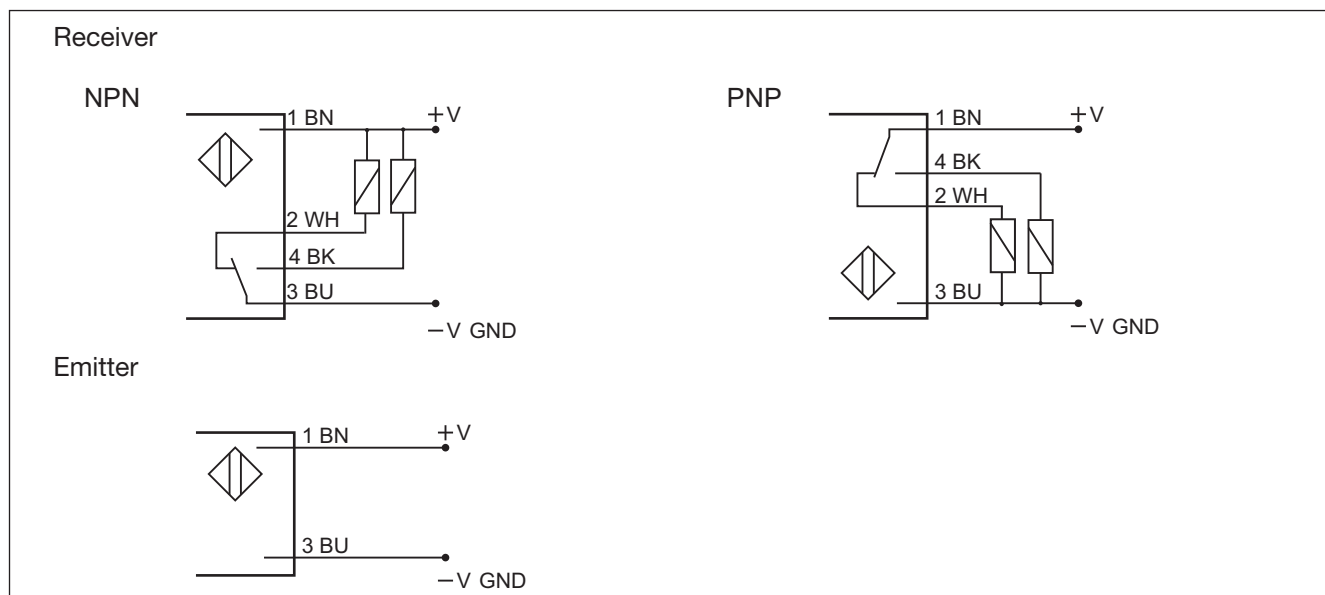
| | |
|---------------------------------|---|
| Environment | |
| Installation category | III (IEC 60664/60664A; 60947-1) |
| Pollution degree | 3 (IEC 60664/60664A; 60947-1) |
| Degree of protection | IP 67, IP 69K* |
| Ambient temperature | |
| Operating | -25° to +60°C (-13° to +140°F) |
| Storage | -40° to +70°C (-40° to +158°F) |
| Vibration | 10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6) |
| Shock | 30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32) |
| Rated insulation voltage | 500 VAC (rms) IEC protection class III  |
| Housing material | |
| Body | ABS, grey |
| Front material | PMMA, red |

| | |
|-------------------|--|
| Connection | |
| Cable | PVC, grey, 2 m |
| Receiver | 4 x 0.25 mm ² , $\varnothing = 4.5$ mm |
| Emitter | 2 x 0.25 mm ² , $\varnothing = 4.5$ mm |
| Plug | M12, 4-pin (CONM14NF-series) |
| Pigtail | PVC, grey, 30 cm 4 x 0.25 mm ² , $\varnothing = 4.5$ mm M12, 4-pin (CONM14NF-series) |
| Weight | With cable: 75 g With plug: 10 g With Pigtail: 35 g |
| 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.

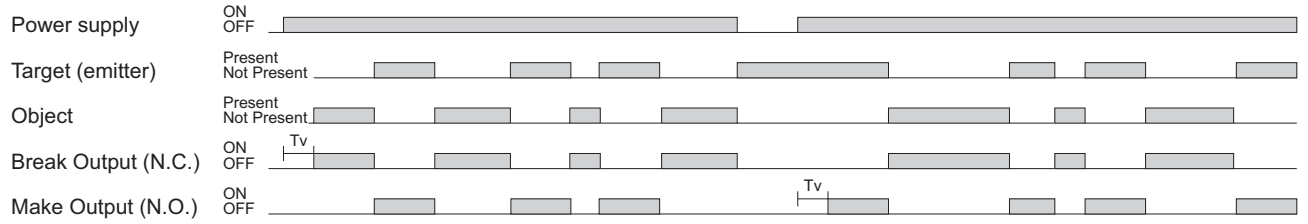


Wiring Diagrams

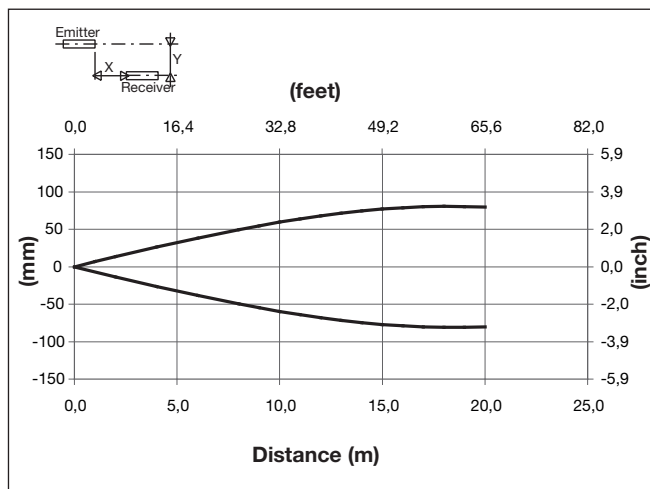


Operation Diagram

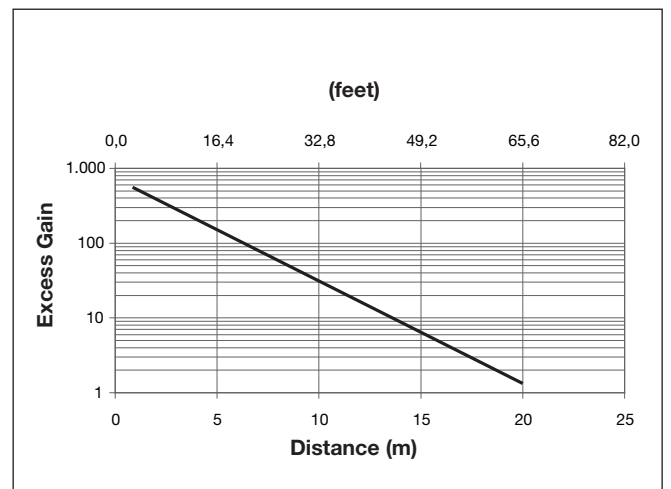
tv = Power ON delay



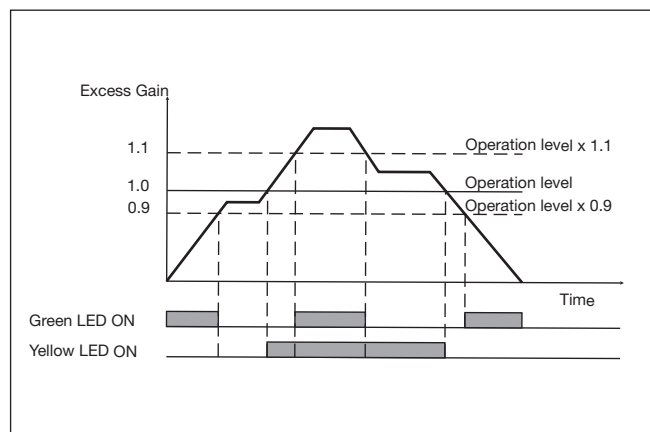
Detection Diagram



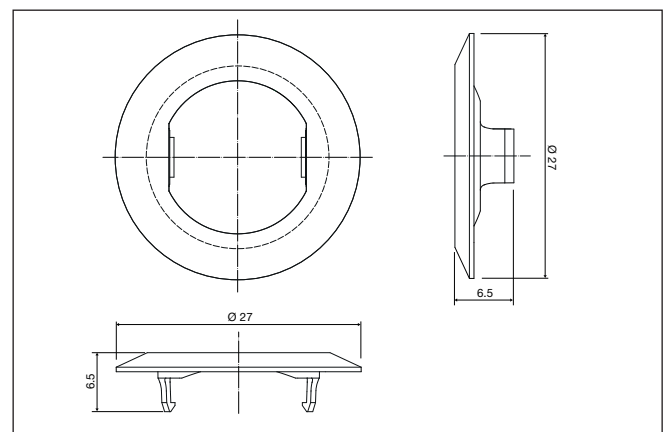
Excess Gain



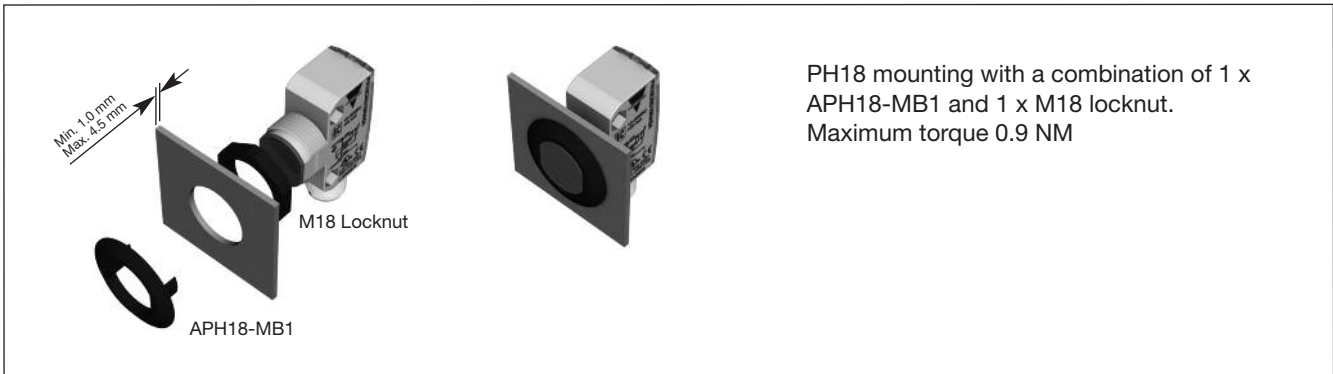
Signal Stability Indication



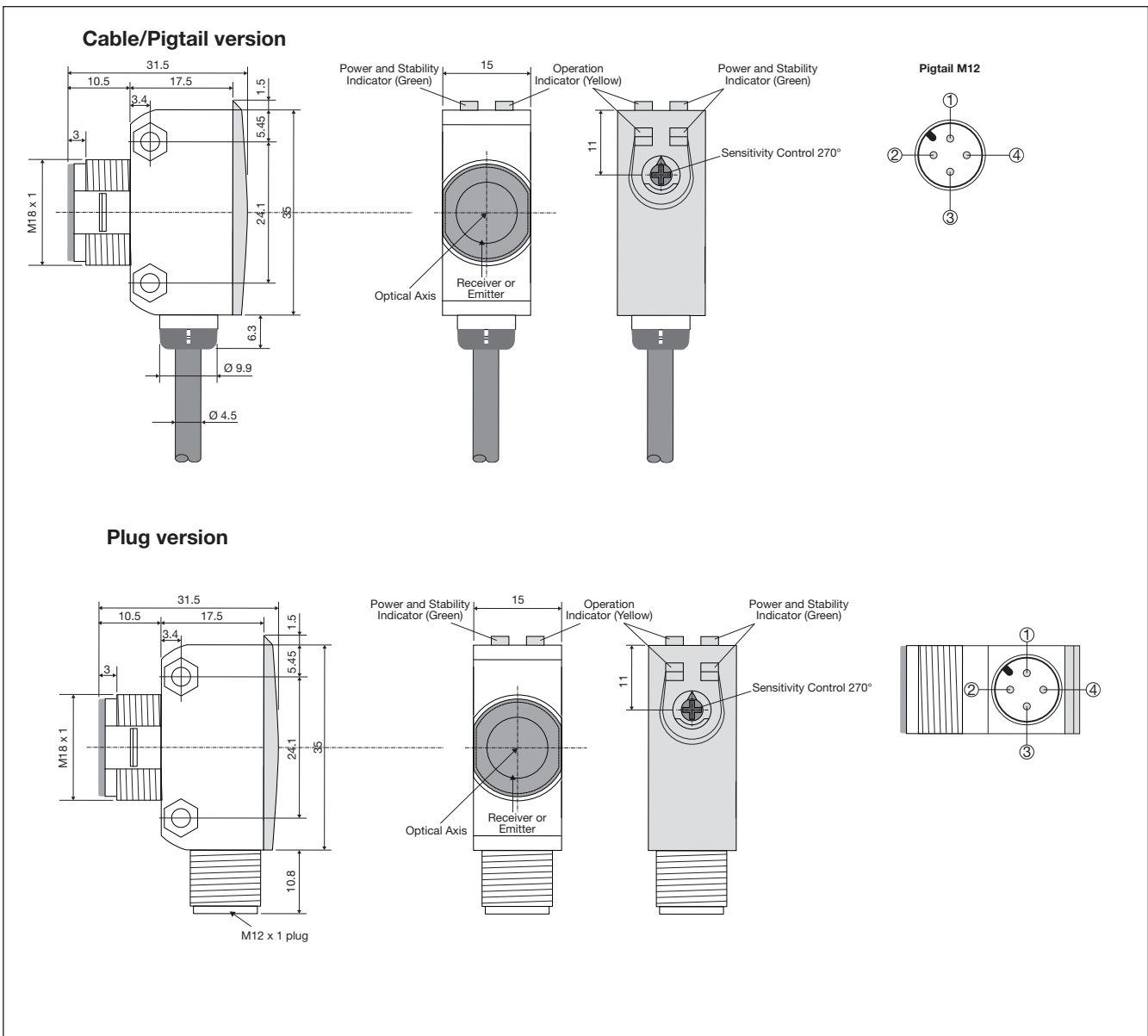
APH18-MB1



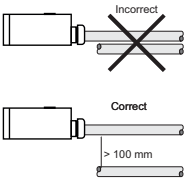
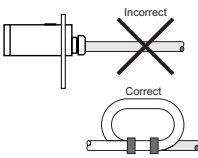
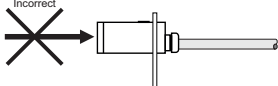
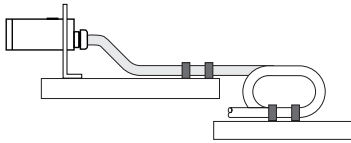
Mounting Systems



Dimensions



Installation Hints

| | | | |
|--|---|--|--|
| <p>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</p>  | <p>Relief of the cable strain</p>  <p>The cable should not be pulled</p> | <p>Protection of the sensing face</p>  <p>A proximity switch should not serve as mechanical stop</p> | <p>Sensor mounted on a mobile carrier</p>  <p>Any repetitive flexing of the cable should be avoided</p> |
|--|---|--|--|

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