

# Photoelectrics

## Diffuse-reflective, Transistor Output

### Type PC50CND10BA

CARLO GAVAZZI



- Range: 1 m
- Adjustable sensitivity
- Modulated, infrared light
- Supply voltage: 10 to 30 VDC
- Output: 200 mA, NPN or PNP
- Make and break switching function selectable
- LED for output indication, signal stability and power ON
- Protection: reverse polarity, short circuit, transients
- Cable and plug version
- High EMC immunity



## Product Description

The PC50CND. is a family of general purpose diffuse-reflective sensors in a compact square 17 x 50 x 50 mm reinforced PC/ABS-housing. They are useful in applications where basic sensors provide adequate sensing

performance. The long sensing range together with sensitivity adjustment gives a very flexible sensor. The DC types are with a transistor output and the configuration is fully programmable (NPN, PNP, NO and NC).

## Ordering Key

PC50CND10BAM1

|                      |  |
|----------------------|--|
| Type                 |  |
| Housing style        |  |
| Housing size         |  |
| Housing material     |  |
| Housing length       |  |
| Detection principle  |  |
| Sensing distance     |  |
| Output type          |  |
| Output configuration |  |
| Connection type      |  |

## Type Selection

| Housing<br>W x H x D | Range<br>S <sub>n</sub> | Ordering no.<br>NPN & PNP cable<br>Make & break switching | Ordering no.<br>NPN & PNP plug<br>Make & break switching |
|----------------------|-------------------------|-----------------------------------------------------------|----------------------------------------------------------|
| 17 x 50 x 50 mm      | 1 m                     | PC 50 CND 10 BA                                           | PC 50 CND 10 BAM1                                        |

## Specifications

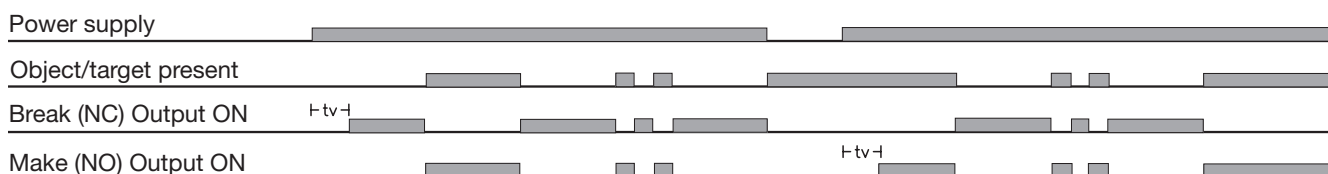
|                                                    |                                                                                         |                                       |                                |
|----------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------|--------------------------------|
| <b>Rated operating distance (S<sub>n</sub>)</b>    | Up to 1 m, reference target Kodak test card R 27, white, 90% reflectivity, 200 x 200 mm | <b>Light source</b>                   | GaAlAs, LED, 880 nm            |
| <b>Blind zone</b>                                  | Max. 10 cm                                                                              | <b>Light type</b>                     | infrared, modulated            |
| <b>Sensitivity</b>                                 | Adjustable by single-turn potentiometer                                                 | <b>Sensing angle</b>                  | ± 2° at 1/2 range              |
| <b>Temperature drift</b>                           | ≤ 0.5%/°C                                                                               | <b>Ambient light</b>                  | Max. 5'000 lux                 |
| <b>Hysteresis (H)</b>                              |                                                                                         | <b>Operating frequency</b>            | 500 Hz                         |
| Differential travel                                | 3 - 20%                                                                                 | <b>Response time</b>                  |                                |
| <b>Rated operational volt. (U<sub>B</sub>)</b>     | 10 to 30 VDC (ripple included)                                                          | OFF-ON (t <sub>ON</sub> )             | ≤ 1 ms                         |
| <b>Ripple (U<sub>rip</sub>)</b>                    | ≤ 10%                                                                                   | ON-OFF (t <sub>OFF</sub> )            | ≤ 1 ms                         |
| <b>Output current</b>                              |                                                                                         | <b>Power ON delay (t<sub>v</sub>)</b> | < 300 ms                       |
| Continuous (I <sub>a</sub> )                       | ≤ 200 mA                                                                                | <b>Output function</b>                |                                |
| Short-time (I)                                     | ≤ 200 mA (max. load capacity 100 nF)                                                    | NPN and PNP                           | Switch selectable              |
| <b>No load supply current (I<sub>o</sub>)</b>      | ≤ 40 mA                                                                                 | Complementary function                | Make and break (NO + NC)       |
| <b>Minimum operational current (I<sub>m</sub>)</b> | 0.5 mA                                                                                  | <b>Indication function</b>            |                                |
| <b>OFF-state current (I<sub>r</sub>)</b>           | ≤ 100 µA                                                                                | Output ON                             | LED, yellow                    |
| <b>Voltage drop (U<sub>d</sub>)</b>                | ≤ 2.5 VDC @ 200 mA                                                                      | Signal stability ON and power ON      | LED, green                     |
| <b>Protection</b>                                  | Short-circuit, reverse polarity, transients                                             | <b>Environment</b>                    |                                |
|                                                    |                                                                                         | Installation category                 | II (IEC 60664/60664A; 60947-1) |
|                                                    |                                                                                         | Pollution degree                      | 3 (IEC 60664/60664A; 60947-1)  |
|                                                    |                                                                                         | Degree of protection                  | IP 67 (IEC 60529; 60947-1)     |
|                                                    |                                                                                         | <b>Temperature</b>                    |                                |
|                                                    |                                                                                         | Operating                             | -20° to +60°C (-4° to +140°F)  |
|                                                    |                                                                                         | Storage                               | -25° to +80°C (-13° to +176°F) |

## Specifications (cont.)

|                                 |                                                      |                      |                                          |
|---------------------------------|------------------------------------------------------|----------------------|------------------------------------------|
| <b>Vibration</b>                | 10 to 150 Hz, 0.5 mm/7.5 g<br>(IEC 60068-2-6)        | <b>Connection</b>    |                                          |
| <b>Shock</b>                    | 2 x 1 m & 100 x 0.5 m<br>(IEC 60068-2-6, 60068-2-32) | Cable                | PVC, grey, 2 m, 4 x 0.34 mm <sup>2</sup> |
|                                 |                                                      | Plug                 | PBTP, M12 x 1                            |
|                                 |                                                      | Cables for plug (M1) | CON.1A-series                            |
| <b>Rated insulation voltage</b> | 50 VAC (rms)                                         | <b>Weight</b>        | 110 g                                    |
| <b>Housing material</b>         |                                                      | <b>Approvals</b>     | UL, CSA                                  |
| Body                            | PC/ABS, grey                                         | <b>CE-marking</b>    | Yes                                      |
| Front glass                     | PC black                                             |                      |                                          |
| Mounting bracket                | Steel, galvanized                                    |                      |                                          |

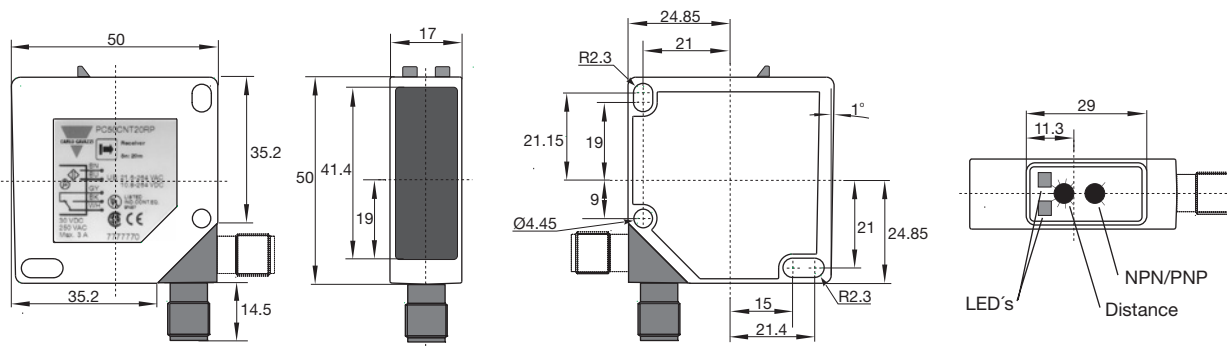
## Operation Diagram

tv = Power ON delay

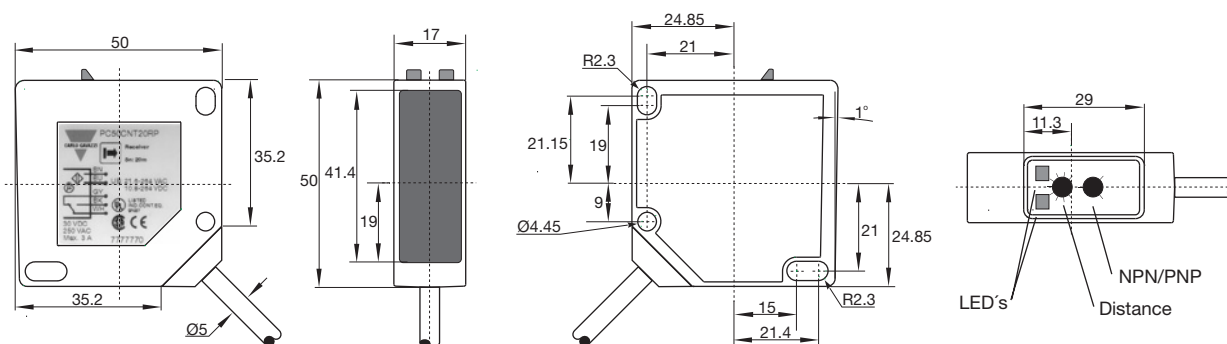


## Dimensions

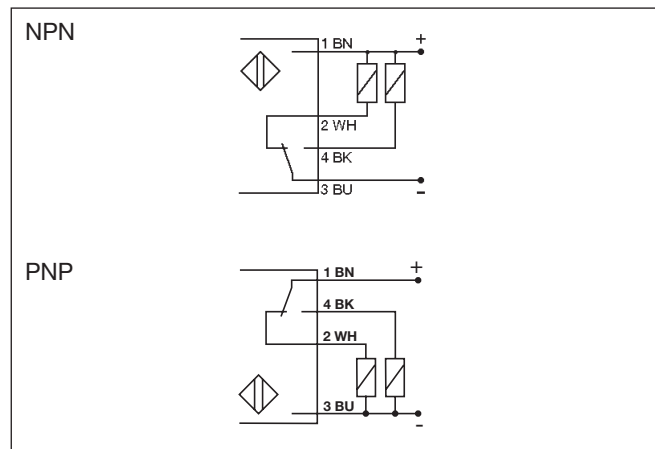
### Plug version



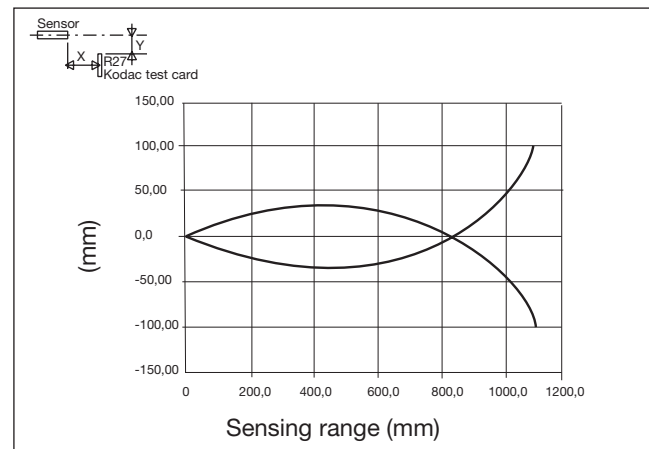
Cable version



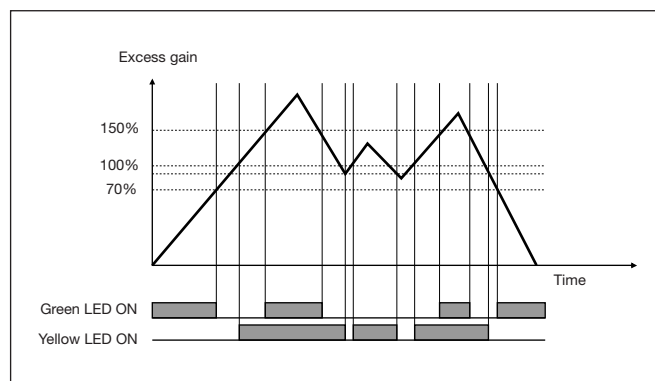
## Wiring Diagrams



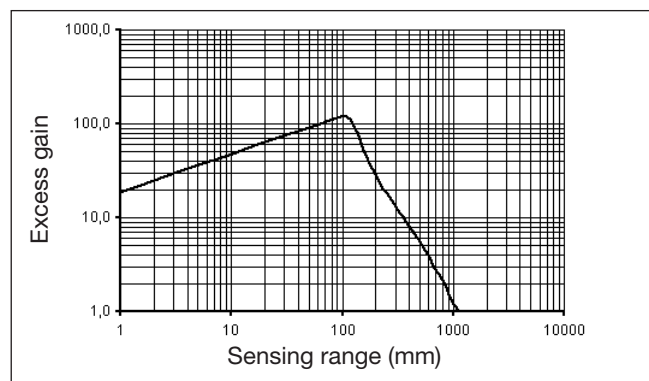
## Detection Diagram



## Signal Stability

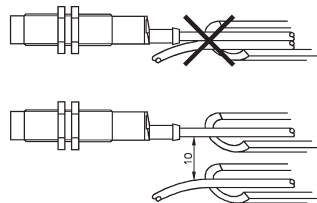


## Excess Gain

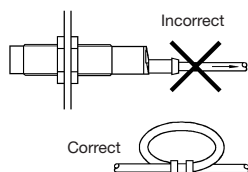


## Installation Hints

To avoid interference from inductive voltage/current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables

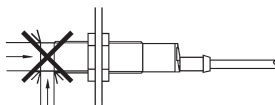


### Relief of cable strain



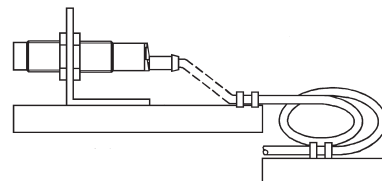
The cable should not be pulled

### Protection of the sensing face



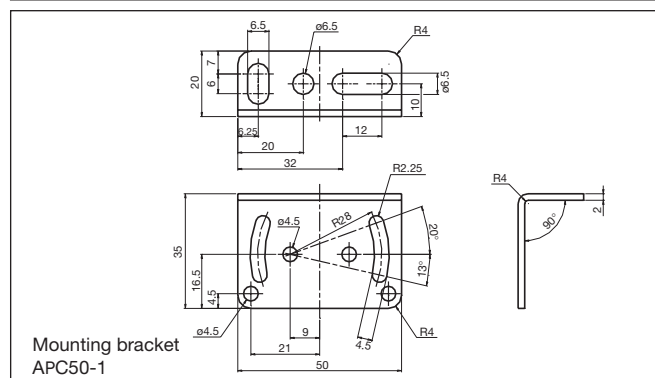
A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier



Any repetitive flexing of the cable should be avoided

## Delivery Contents



- Photoelectric switch: PC50 CND..
- Installation instruction
- Mounting bracket APC50-1
- **Packaging:** Cardboard box

## Accessories

- Screwdriver for adjustment: 77-001
- Connector type CON.1A..

For further information refer to “Accessories”