

# Photoelectrics

## Diffuse-reflective, Background Suppression

### Type PD30CTB20....SA

CARLO GAVAZZI



- Miniature sensor range
- Range: 200 mm
- Sensitivity adjustment by top potentiometer
- Modulated, red light 625 nm
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make and break switching function
- LED indication for output, stability and power ON
- Protection: reverse polarity, short circuit and transients
- Excellent EMC performance
- Excellent colour matching



## Product Description

The PD30CTB20 sensor family comes in a compact 10 x 30 x 20 mm reinforced PMMA/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 function for adjustment of the sensitivity makes the sensors highly flexible. The output type is preset (NPN or PNP), and the output switching function is NO and NC output.

## Ordering Key

**PD30CTB20NASA**

Type \_\_\_\_\_  
Housing style \_\_\_\_\_  
Housing size \_\_\_\_\_  
Housing material \_\_\_\_\_  
Housing \_\_\_\_\_  
Detection principle \_\_\_\_\_  
Sensing distance \_\_\_\_\_  
Output type \_\_\_\_\_  
Output configuration \_\_\_\_\_  
Sensitivity adjustment \_\_\_\_\_

## Type Selection

| Housing<br>W x H x D | Range<br>S <sub>n</sub> | Connection | Ordering no.<br>NPN<br>Make and break switching | Ordering no.<br>PNP<br>Make and break switching |
|----------------------|-------------------------|------------|-------------------------------------------------|-------------------------------------------------|
| 10 x 30 x 20 mm      | 200 mm                  | Cable      | PD 30 CTB 20 NASA                               | PD 30 CTB 20 PASA                               |

## Specifications EN 60947-5-2

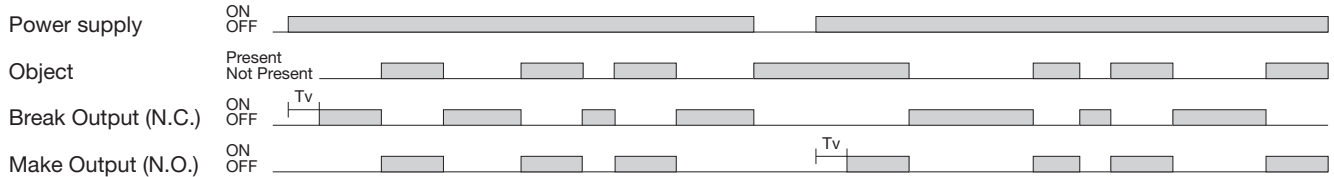
|                                                             |                                                                                          |                                                    |                                                              |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------------------------------|
| <b>Rated operating distance (S<sub>n</sub>)</b>             | Up to 200 mm, reference target, Kodak test card R27, white, 90% reflective, 100 x 100 mm | <b>No load supply current (I<sub>0</sub>)</b>      | ≤ 20 mA @ U <sub>B</sub> max<br>≤ 40 mA @ U <sub>B</sub> min |
| <b>Maximum detecting distance @ 200 mm white background</b> |                                                                                          | <b>Minimum operational current (I<sub>m</sub>)</b> | ≤ 0.5 mA                                                     |
| White object 90% refl.                                      | ≤ 200 mm                                                                                 | <b>OFF-state current (I<sub>r</sub>)</b>           | ≤ 100 µA                                                     |
| Grey object 18% refl.                                       | ≤ 200 mm                                                                                 | <b>Voltage drop (U<sub>d</sub>)</b>                | ≤ 2 VDC @ I <sub>e</sub> max                                 |
| Black object 6% refl.                                       | ≤ 200 mm                                                                                 | <b>Protection</b>                                  | Short-circuit, reverse polarity and transients               |
| <b>Blind zone</b>                                           | 10 mm                                                                                    | <b>Light source</b>                                | InGaAlP, LED, 625 nm                                         |
| <b>Sensitivity</b>                                          |                                                                                          | <b>Light type</b>                                  | Red, modulated                                               |
| Electrical adjustment                                       | 210°                                                                                     | <b>Emitter angle</b>                               | ± 2.5° @ half the sensing distance                           |
| Mechanical adjustment                                       | 240°                                                                                     | <b>Ambient light</b>                               | ≤ 10,000 lux                                                 |
| <b>Temperature drift</b>                                    | ≤ 0.05%/°C                                                                               | <b>Operating frequency (f)</b>                     | ≤ 500 Hz                                                     |
| <b>Hysteresis (H)</b>                                       | ≤ 10%                                                                                    | <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>              | ≤ 200 ms                                                     |
| Continuous (I <sub>e</sub> )                                | ≤ 100 mA                                                                                 | <b>Output function</b>                             | NPN or PNP by sensor type                                    |
| Short-time (I)                                              | ≤ 100 mA (max. load capacity 100 nF)                                                     | <b>Output switching function</b>                   | N.O. and N.C.                                                |

Specifications (cont.) EN 60947-5-2

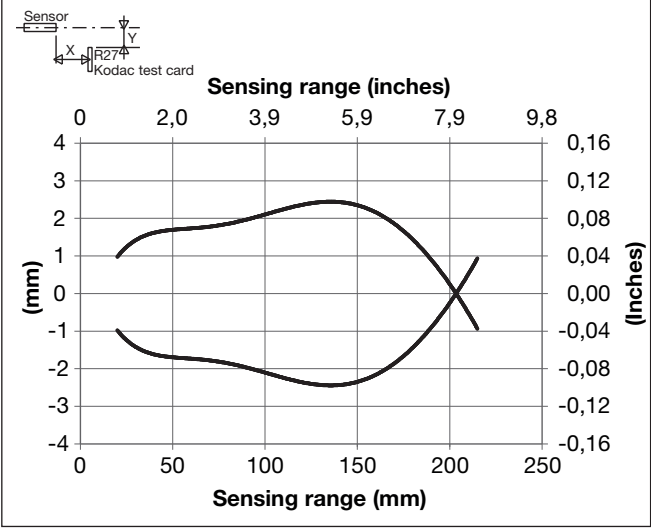
|                                                    |                                                                      |                                                               |                                             |
|----------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------|
| <b>Indication</b><br>Output ON<br>Power ON         | LED, yellow<br>LED, green                                            | <b>Rated insulation voltage</b>                               | ≤ 500 VAC (rms)                             |
| <b>Environment</b><br>Installation category        | III (IEC 60664/60664A;<br>60947-1)                                   | <b>Housing material</b><br>Body<br>Frontglas<br>Trimmer shaft | ABS Light Grey<br>PMMA Red<br>POM Dark Grey |
| Pollution degree                                   | 3 (IEC 60664/60664A;<br>60947-1)                                     | <b>Connection</b>                                             | PVC, black, 2 m<br>4 x 0.14 mm², Ø = 3.3 mm |
| Degree of protection                               | IP 67 (IEC 60529; 60947-1)                                           | <b>Weight</b>                                                 | ≤ 50 g                                      |
| <b>Ambient temperature</b><br>Operating<br>Storage | -25° to +60°C (-13° to +140°F)<br>-40° to +70°C (-40° to +158°F)     | <b>CE-marking</b>                                             | Yes                                         |
| <b>Vibration</b>                                   | 10 to 150 Hz, 1.0 mm/15 G<br>(IEC 60068-2-6)                         | <b>Approvals</b>                                              | cULus (UL508, CSA C22.2)                    |
| <b>Shock</b>                                       | 30 g / 11ms, 3 pos, 3 neg<br>per axis<br>(IEC 60068-2-6, 60068-2-32) |                                                               |                                             |

Operation Diagram

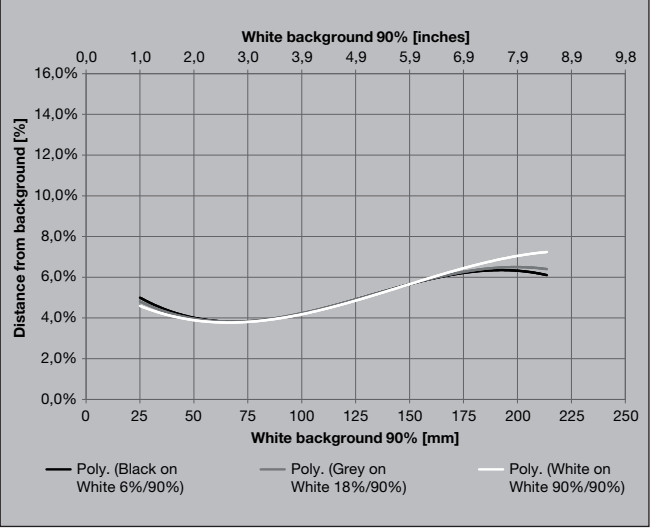
Tv = Power ON delay



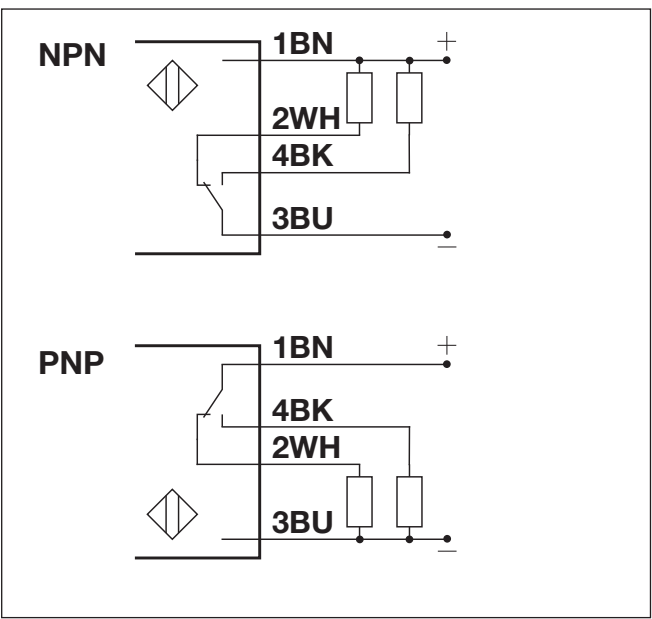
Detection Diagram



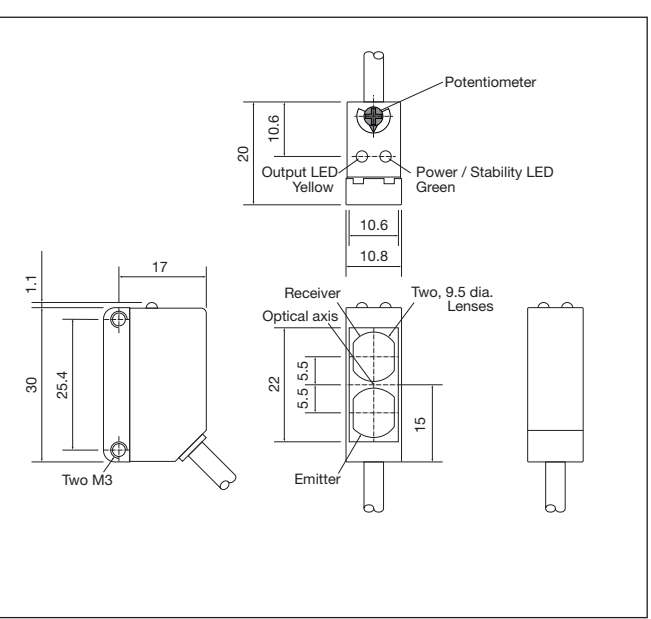
Sensing Conditions



Wiring Diagrams



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

Relief of the cable strain

Protection of the sensing face

Sensor mounted on a mobile carrier

Accessories

- Mounting bracket APD30-MB1 or APD30-MB2 to be purchased separately.

Delivery Contents

- Photoelectric switch: PD30CTB20 ...
- Screwdriver
- **Packaging:** Plastic bag

# Mouser Electronics

Authorized Distributor

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

[Carlo Gavazzi:](#)

[PD30CTB20PASA](#) [PD30CTB20NASA](#)