

# Photoelectrics Diffuse-reflective, Background Suppression, IR Type PD30CNB20....IS

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- Miniature sensor range
- Range: 200 mm
- Sensitivity adjustment by Potentiometer
- Modulated, infrared light 850 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
- Cable and plug versions
- Excellent EMC performance
- Excellent colour matching



## Product Description

The PD30CNB20 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

PD30CNB20NAM5IS

|                                     |       |
|-------------------------------------|-------|
| Type                                | _____ |
| Housing style                       | _____ |
| Housing size                        | _____ |
| Housing material                    | _____ |
| Housing length                      | _____ |
| Detection principle                 | _____ |
| Sensing distance                    | _____ |
| Output type                         | _____ |
| Output configuration                | _____ |
| Connection type                     | _____ |
| Sensitivity adjustment and IR light | _____ |

## 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 CNB 20 NAIS                               | PD 30 CNB 20 PAIS                               |
| 10 x 30 x 20 mm      | 200 mm                  | Plug       | PD 30 CNB 20 NAM5IS                             | PD 30 CNB 20 PAM5IS                             |

## 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><br>White object 90% refl.<br>Grey object 18% refl.<br>Black object 6% refl. | ≤ 200 mm<br>≤ 200 mm<br>≤ 200 mm  | <b>Minimum operational current (I<sub>m</sub>)</b>                              | ≤ 0.5 mA   |
| <b>Blind zone</b>   | 10 mm   | <b>OFF-state current (I<sub>r</sub>)</b>  | ≤ 100 μA   |
| <b>Sensitivity</b><br>Electrical adjustment<br>Mechanical adjustment  | 210°<br>240°  | <b>Voltage drop (U<sub>d</sub>)</b>   | ≤ 2 VDC @ I <sub>e</sub> max                                 |
| <b>Temperature drift</b>  | ≤ 0.05%/°C  | <b>Protection</b>   | Short-circuit, reverse polarity and transients               |
| <b>Hysteresis (H)</b>   | ≤ 10%   | <b>Light source</b>   | GaALAS, LED, 850 nm  |
| <b>Rated operational volt. (U<sub>B</sub>)</b>  | 10 to 30 VDC (ripple included)  | <b>Light type</b>   | Infrared, modulated  |
| <b>Ripple (U<sub>ripple</sub>)</b>  | ≤ 10%   | <b>Emitter angle</b>  | ± 1.5° @ half sensing distance                               |
| <b>Output current</b><br>Continuous (I <sub>a</sub> )<br>Short-time (I)   | ≤ 100 mA<br>≤ 100 mA<br>(max. load capacity 100 nF)                                     | <b>Ambient light</b>  | ≤ 10,000 lux   |
|   |   | <b>Operating frequency (f)</b>  | ≤ 500 Hz   |
|   |   | <b>Response time</b><br>OFF-ON (t <sub>ON</sub> )<br>ON-OFF (t <sub>OFF</sub> ) | ≤ 1 ms<br>≤ 1 ms   |
|   |   | <b>Power ON delay (t<sub>v</sub>)</b>   | ≤ 200 ms   |
|   |   | <b>Output function</b><br>Open collector  | NPN or PNP by sensor type                                    |
|   |   | <b>Output switching function</b>  | N.O. and N.C.  |

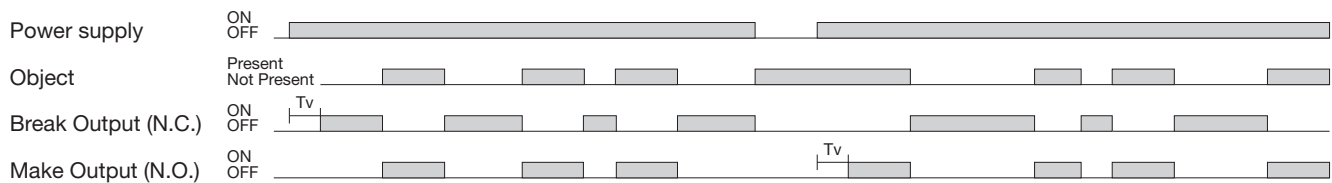


## Specifications (cont.)

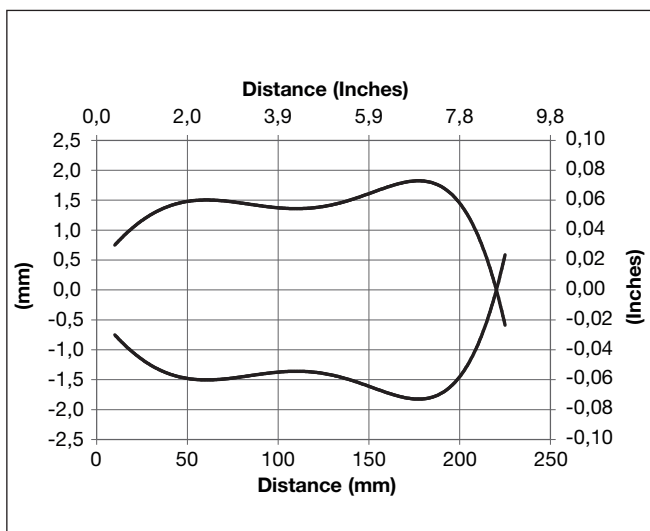
|   |  |   |  |
|---|--|---|--|
| <b>Indication</b><br>Output ON<br>Power ON  | LED, yellow<br>LED, green  | <b>Rated insulation voltage</b>                               | ≤ 500 VAC (rms)  |
| <b>Environment</b><br>Installation category<br><br>Pollution degree<br><br>Degree of protection | III (IEC 60664/60664A;<br>60947-1)<br>3 (IEC 60664/60664A;<br>60947-1)<br>IP 67 (IEC 60529; 60947-1) | <b>Housing material</b><br>Body<br>Frontglas<br>Trimmer shaft | ABS Light Grey<br>PMMA Red<br>POM Dark Grey  |
| <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>Connection</b><br>Cable<br><br>Plug                        | PVC, black, 2 m<br>4 x 0.14 mm <sup>2</sup> , Ø = 3.3 mm<br>M8, 4-pin (CON. 54-series) |
| <b>Vibration</b>  | 10 to 150 Hz, 1.0 mm/15 G<br>(IEC 60068-2-6)   | <b>Weight</b><br>Cable version<br>Plug version                | ≤ 50 g<br>≤ 20 g   |
| <b>Shock</b>  | 30 g / 11ms, 3 pos, 3 neg<br>per axis<br>(IEC 60068-2-6, 60068-2-32)                                 | <b>CE-marking</b>   | Yes  |
|   |  | <b>Approvals</b>  | cULus (UL508 + CSA)  |

## Operation Diagram

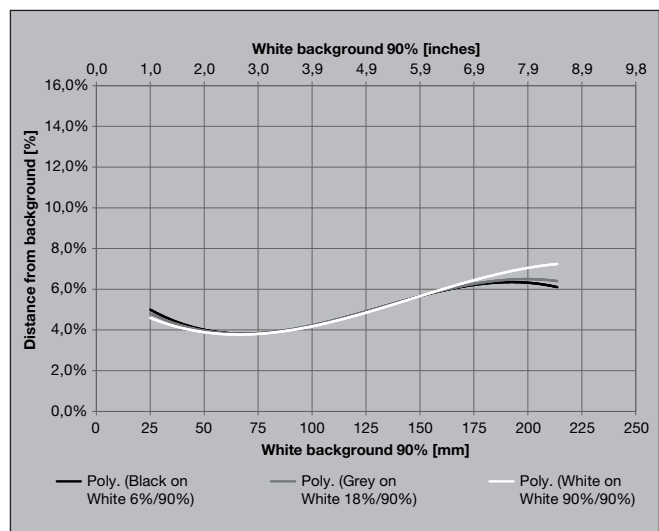
T<sub>v</sub> = Power ON delay



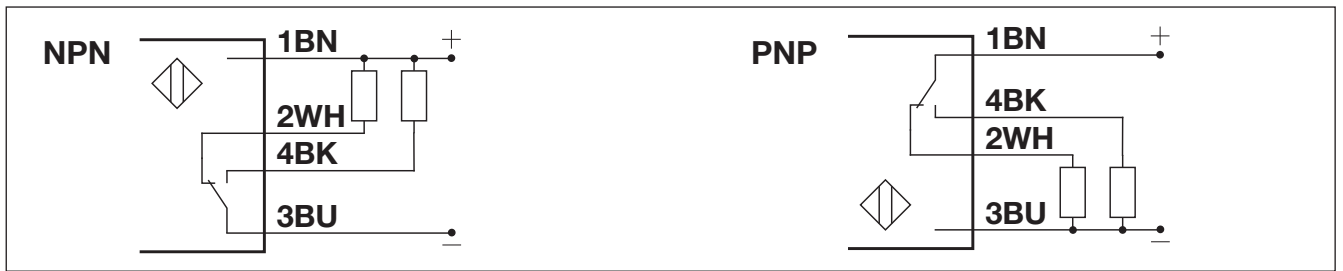
## Detection Diagram



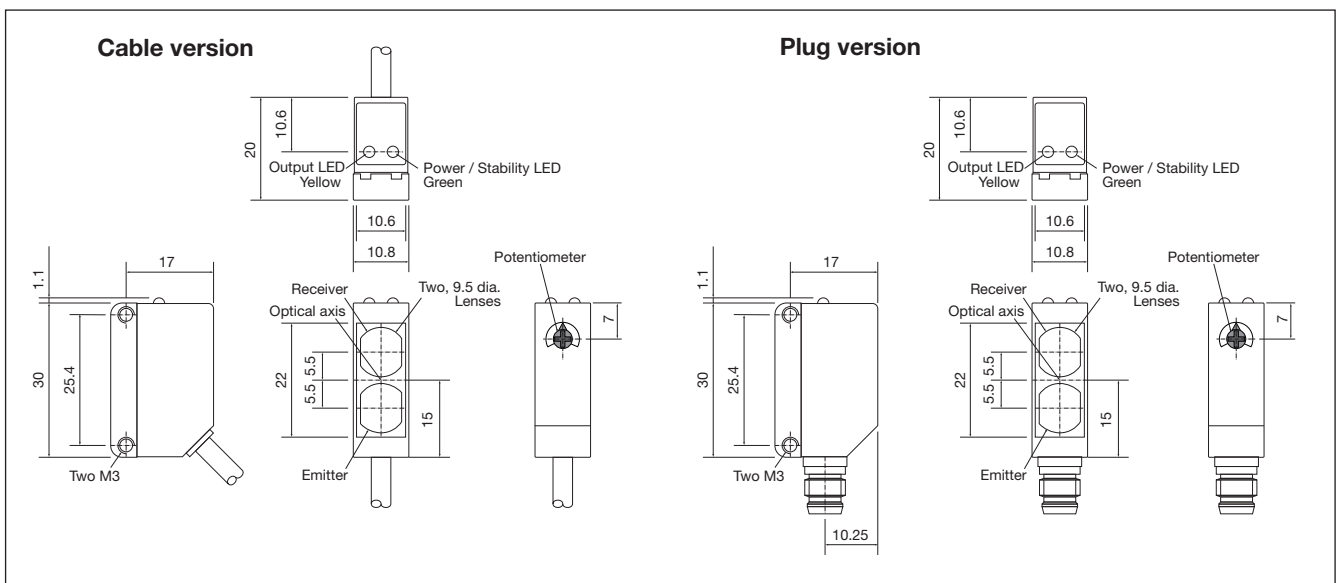
## Sensing Conditions



## Wiring Diagrams



## 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> |
|--|---|---|--|

## Accessories

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

## Delivery Contents

- Photoelectric switch: PD30CNB20 ...
- Screwdriver
- **Packaging:** Plastic bag