

# Photoelectrics Retro-reflective, Polarized Type PD30CNP06....RT

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- Miniature sensor range
- Range: 6 m, with reflector
- Sensitivity adjustment by Teach-In programming
- Modulated, red light 660 nm, polarized
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make and break switching function programmable
- LED indication for output, stability and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Excellent EMC performance
- Remote teach features



## Product Description

The PD30CNP06 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 Teach-In 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 programmable (NO or NC). A remote teach feature allow the sensor to be set up from e.g. a PLC.

## Ordering Key

**PD30CNP06PPM5RT**

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

## Type Selection

| Housing<br>W x H x D | Range<br>S <sub>n</sub> | Connection | Ordering no.<br>NPN<br>Make or break switching | Ordering no.<br>PNP<br>Make or break switching |
|----------------------|-------------------------|------------|------------------------------------------------|------------------------------------------------|
| 10 x 30 x 20 mm      | 6 m                     | Cable      | PD 30 CNP 06 NPRT                              | PD 30 CNP 06 PPRT                              |
| 10 x 30 x 20 mm      | 6 m                     | Plug       | PD 30 CNP 06 NPM5RT                            | PD 30 CNP 06 PPM5RT                            |

**Note:** Reflectors to be ordered separately

## Specifications

|                                                    |                                                                       |                                       |                                                                                  |
|----------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| <b>Rated operating distance (S<sub>n</sub>)</b>    | Up to 6 m, with reflector<br>Ø 80 mm (ER4)<br>4 m on ER4060 reflector | <b>Light type</b>                     | Red, modulated                                                                   |
| <b>Blind zone</b>                                  | 100 mm                                                                | <b>Sensing angle</b>                  | ± 2°                                                                             |
| <b>Sensitivity</b>                                 | Adjustable by Teach-In                                                | <b>Ambient light</b>                  | 10,000 lux                                                                       |
| <b>Temperature drift</b>                           | ≤ 0.1%/°C                                                             | <b>Light spot</b>                     | 110 mm @ 1.5 m                                                                   |
| <b>Hysteresis (H)<br/>(differential travel)</b>    | ≤ 10%                                                                 | <b>Operating frequency</b>            | 1000 Hz                                                                          |
| <b>Rated operational volt. (U<sub>B</sub>)</b>     | 10 to 30 VDC<br>(ripple included)                                     | <b>Response time</b>                  |                                                                                  |
| <b>Ripple (U<sub>ripple</sub>)</b>                 | ≤ 10%                                                                 | OFF-ON (t <sub>ON</sub> )             | ≤ 0.5 ms                                                                         |
| <b>Output current</b>                              |                                                                       | ON-OFF (t <sub>OFF</sub> )            | ≤ 0.5 ms                                                                         |
| Continuous (I <sub>a</sub> )                       | ≤ 100 mA                                                              | <b>Power ON delay (t<sub>v</sub>)</b> | ≤ 300 ms                                                                         |
| Short-time (I)                                     | ≤ 100 mA<br>(max. load capacity 100 nF)                               | <b>Output function</b>                |                                                                                  |
| <b>No load supply current (I<sub>o</sub>)</b>      | ≤ 30 mA @ 24 VDC                                                      | NPN and PNP                           | Preset                                                                           |
| <b>Minimum operational current (I<sub>m</sub>)</b> | 0.5 mA                                                                | NO/NC switching function              | Set up by button                                                                 |
| <b>OFF-state current (I<sub>r</sub>)</b>           | ≤ 100 µA                                                              | <b>Remote teach function</b>          |                                                                                  |
| <b>Voltage drop (U<sub>d</sub>)</b>                | ≤ 2.4 VDC @ 100 mA                                                    | Teach on (push button active)         | 0 to 2.5 VDC (NPN)<br>5 to 30 VDC (PNP)                                          |
| <b>Protection</b>                                  | Short-circuit, reverse polarity<br>and transients                     | Tamper proof                          | When activated more than<br>20 sec. the sensor goes into<br>a Tamper proof mode. |
| <b>Light source</b>                                | GaAlAs, LED, 660 nm                                                   | <b>Indication</b>                     |                                                                                  |
|                                                    |                                                                       | Output ON                             | LED, yellow                                                                      |
|                                                    |                                                                       | Signal stability ON and power ON      | LED, green                                                                       |
|                                                    |                                                                       | <b>Environment</b>                    |                                                                                  |
|                                                    |                                                                       | Installation category                 | III (IEC 60664/60664A;<br>60947-1)                                               |

Specifications are subject to change without notice (09.12.2008)

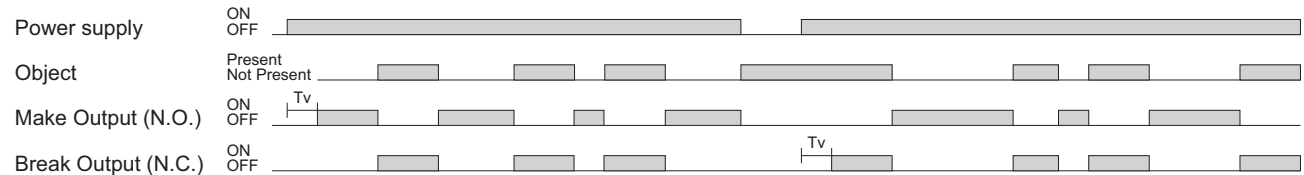


Specifications (cont.)

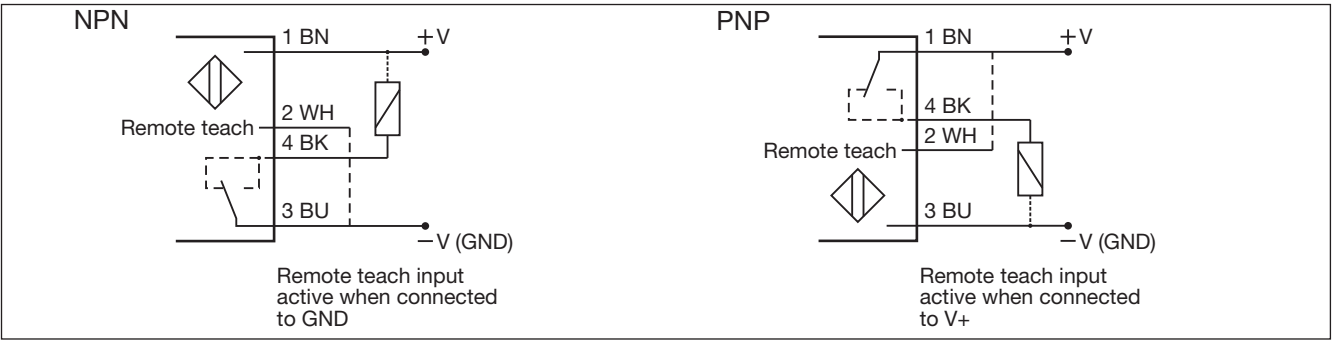
|                          |                                                                |                  |                                                                           |
|--------------------------|----------------------------------------------------------------|------------------|---------------------------------------------------------------------------|
| Pollution degree         | 3 (IEC 60664/60664A; 60947-1)                                  | Housing material | ABS                                                                       |
| Degree of protection     | IP 67 (IEC 60529; 60947-1)                                     | Body             | PMMA, red                                                                 |
| Ambient temperature      |                                                                | Front material   |                                                                           |
| Operating                | -25° to +55°C (-13° to +131°F)                                 | Connection       |                                                                           |
| Storage                  | -40° to +70°C (-40° to +158°F)                                 | Cable            | PVC, black, 2 m<br>4 x 0.14 mm², Ø = 3.3 mm<br>M8, 4-pin (CON, 54-series) |
| Vibration                | 10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)                      | Plug             | With cable: 40 g<br>With plug: 10 g                                       |
| Shock                    | 30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32) | Weight           |                                                                           |
| Rated insulation voltage | 500 VAC (rms)                                                  | CE-marking       | Yes                                                                       |
|                          |                                                                | Approvals        | cULus (UL508)                                                             |

Operation Diagram

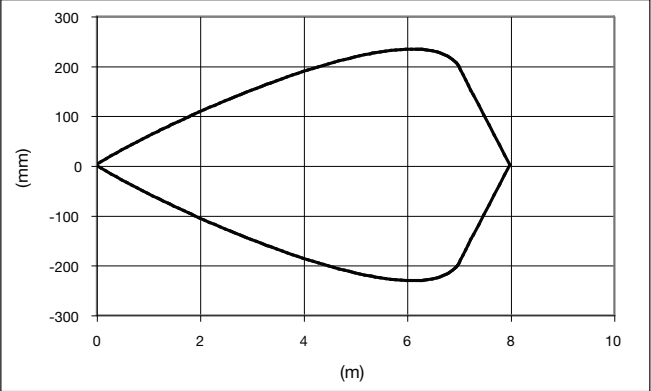
tv = Power ON delay



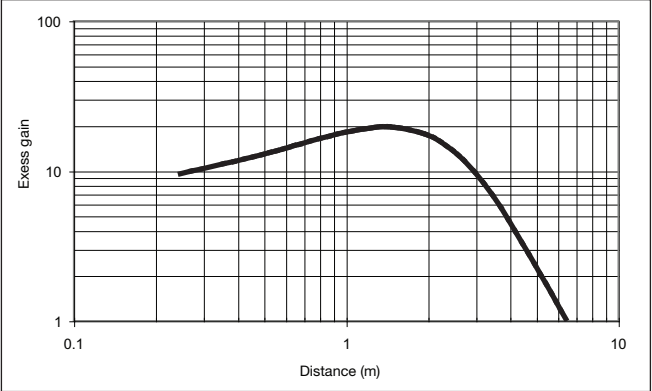
Wiring Diagrams



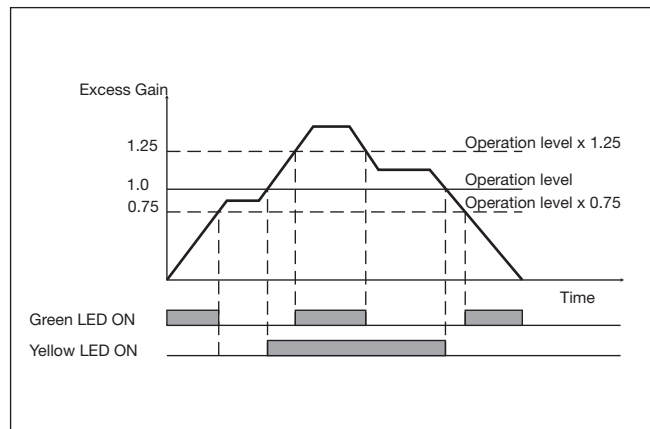
Detection Diagram



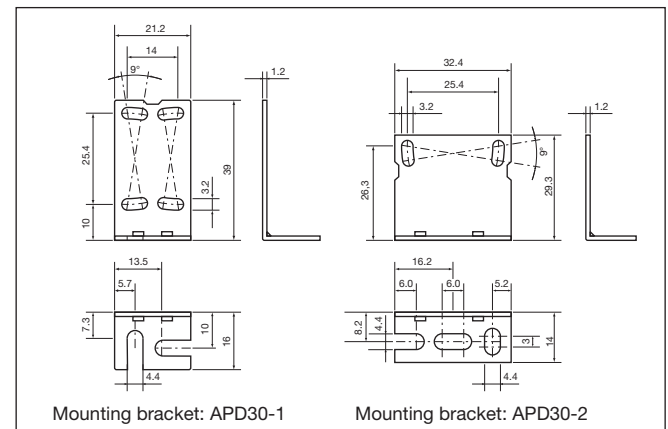
Excess Gain



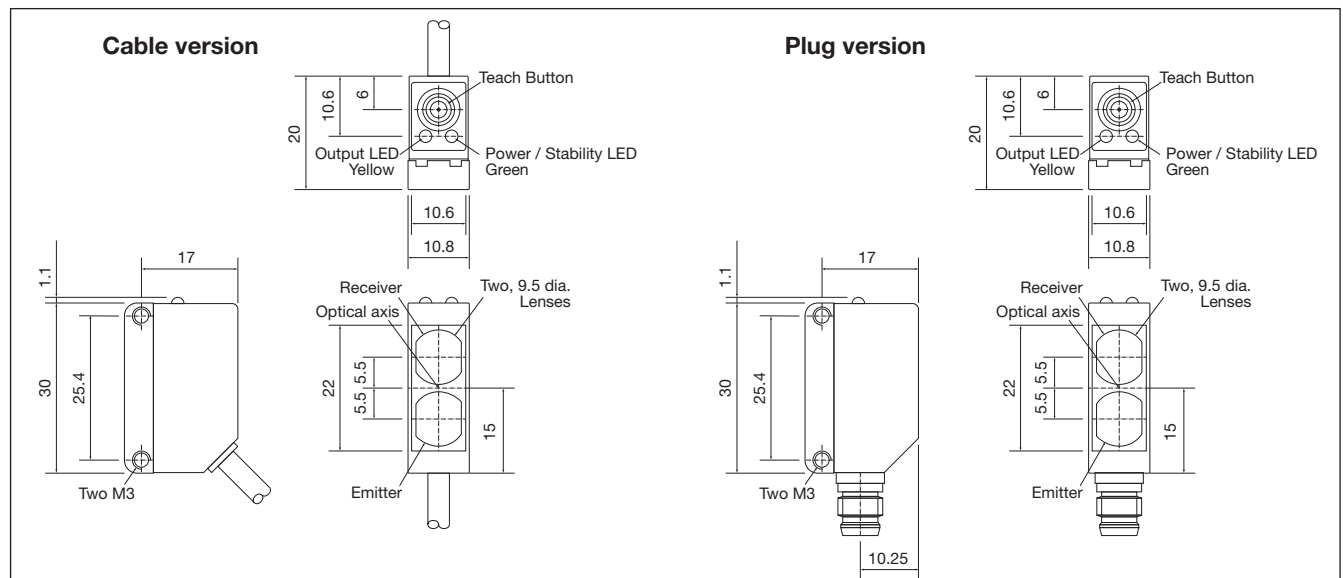
## Signal Stability Indication



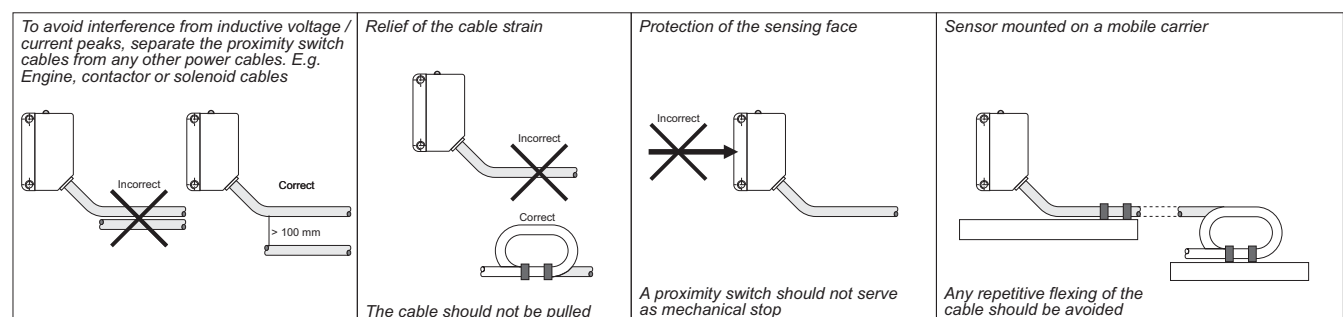
## Accessories



## Dimensions



## Installation Hints



## Delivery Contents

- Photoelectric switch: PD 30 CNP 06 ...
- Installation instruction
- Mounting bracket APD30-MB1
- **Packaging:** Cardboard box

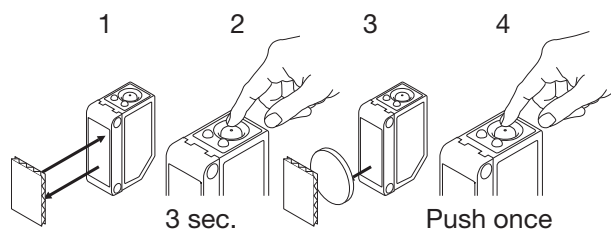
## Accessories

- Reflector is to be purchased separately
- Mounting bracket APD30-MB2 to be purchased separately

## Teach functions

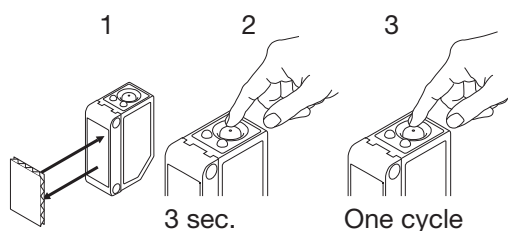
### Normal operation, optimized switching point.

1. Line up the sensor with the reflector. Yellow LED and Green LED are ON.
2. Press the button for 3 seconds until both LEDs flashes simultaneously.  
(The first switch point is stored)
3. Place the object between the sensor and reflector in the detection zone.
4. Press the button once and the sensor is ready to operate (Green LED ON, Yellow LED ON)  
(The second switch point is stored)



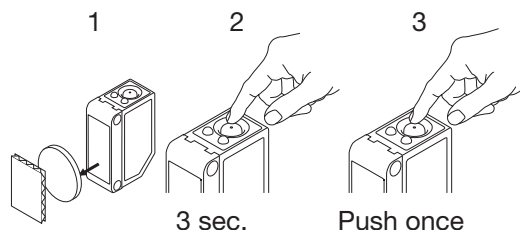
### For dynamic set-up (running process)

1. Line up the sensor with the reflector. Green LED is ON, status on the yellow LED is not important.
2. Press the button for 3 second until both LEDs flashes simultaneously.
3. Press the button a second time for at least one second, both LED's flashes fast simultaneously and keep the button pressed for at least one process cycle, release the button and the sensor is ready to operate (The second switch point is stored)



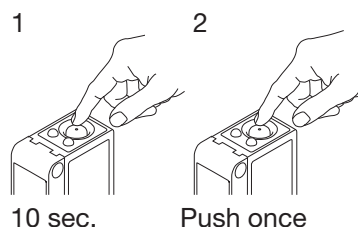
### For maximum sensing distance (default setting)

1. Line up the sensor with the reflector, place the object between the sensor and reflector in the detection zone. Yellow LED is OFF and Green LED is ON.
2. Press the button for 3 seconds until both LEDs flashes simultaneously.  
(The first switch point is stored)
3. Press the button a second time and the sensor is ready to operate (Green LED ON, Yellow LED ON)  
(The second switch point is stored)



### For make or break set-up (N.O. or N.C.)

1. Press the button for 10 seconds, until the green LEDs flashes.
2. While the green LED flashes, the output is inverted each time the button is pressed. Yellow LED indicates N.O. function selected.  
If the button is not pressed within the next 10 seconds, the current output is stored.



### For minimum detection overhead.

1. Line up the sensor with the reflector. Yellow LED and Green LED are ON.
2. Press the button for 3 seconds until both LEDs flashes simultaneously.  
(The first switch point is stored)
3. Press the button a second time and the sensor is ready to operate (Green LED ON, Yellow LED ON)  
(The second switch point is stored)

