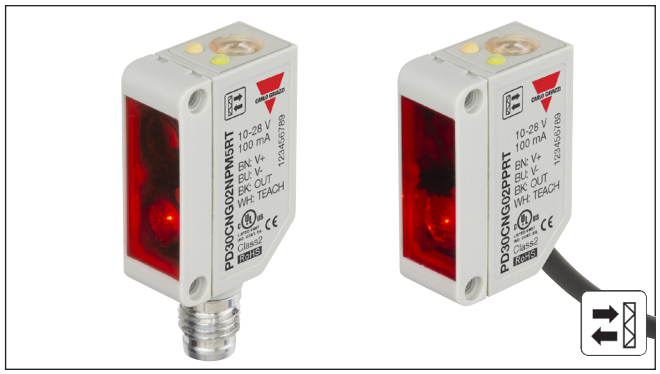
# Photoelectrics
# Retro-reflective for Transparent Objects
# Type PD30CNG02....RT



- Miniature sensor range
- Range: 2 m, with reflector
- Sensitivity adjustment by Teach-In programming
- Modulated, red light 617 nm
- 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 PD30CNG02 sensor family comes in a compact 10 x 30 x 20 mm reinforced PMMA/ABS housing.
The sensors are useful in applications where detection of transparent objects are needed.
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

**PD30CNG02PPM5RT**

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

## Type Selection

| Housing W x H x D | Range $S_n$ | Connection | Ordering no. NPN Make or break switching | Ordering no. PNP Make or break switching |
|---|---|---|---|---|
| 10 x 30 x 20 mm | 2 m | Cable | **PD 30 CNG 02 NPRT** | **PD 30 CNG 02 PPRT** |
| 10 x 30 x 20 mm | 2 m | Plug | **PD 30 CNG 02 NPM5RT** | **PD 30 CNG 02 PPM5RT** |

**Note:** Reflectors to be ordered separately

## Specifications EN 60947-5-2

| | |
|---|---|
| **Rated operating distance** ($S_n$) | Up to 2 m, with reflector Ø 80 mm (ER4) |
| **Detection reliability** | 20% attenuation |
| **Blind zone** | 10 mm |
| **Sensitivity** | Adjustable by Teach-In |
| **Temperature drift** | ≤ 0.1%/°C<br>Teach settings are valid for teach temperature ± 20°C |
| **Hysteresis** (H)<br>(differential travel) | ≤ 10% |
| **Rated operational volt.** ($U_B$) | 10 to 30 VDC<br>(ripple included) |
| **Ripple** ($U_{rpp}$) | ≤ 10% |
| **Output current**<br>Continuous ($I_e$)<br>Short-time (I) | <br>≤ 100 mA<br>≤ 100 mA<br>(max. load capacity 100 nF) |
| **No load supply current** ($I_o$) | ≤ 30 mA @ 24 VDC |
| **Minimum operational current** ($I_m$) | 0.5 mA |
| **OFF-state current** ($I_r$) | ≤ 100 µA |
| **Voltage drop** ($U_d$) | ≤ 2.4 VDC @ 100 mA |
| **Protection** | Short-circuit, reverse polarity and transients |

| | |
|---|---|
| **Light source** | inGaAlP, LED, 617 nm |
| **Light type, not polarized** | Red, modulated |
| **Sensing angle** | ± 2° |
| **Ambient light** | 10,000 lux |
| **Light spot** | 110 mm @ 1.5 m |
| **Operating frequency** | 1000 Hz |
| **Response time**<br>OFF-ON ($t_{ON}$)<br>ON-OFF ($t_{OFF}$) | <br>≤ 0.5 ms<br>≤ 0.5 ms |
| **Power ON delay** ($t_v$) | ≤ 300 ms |
| **Output function**<br>NPN and PNP<br>NO/NC switching function | <br>Preset<br>Set up by button |
| **Remote teach function**<br>Teach on (push button active)<br>Tamper proof | <br>0 to 2.5 VDC (NPN)<br>5 to 30 VDC (PNP)<br>When activated more than 20 sec. the sensor goes into a Tamper proof mode. |
| **Indication**<br>Output ON<br>Signal stability ON and power ON | <br>LED, yellow<br>LED, green |



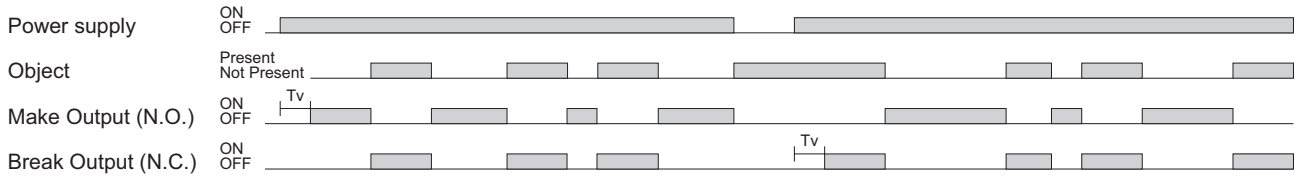
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## Specifications (cont.) EN 60947-5-2

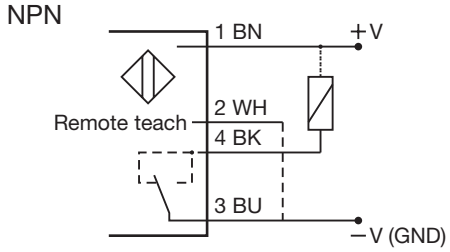
| | |
|---|---|
| **Environment** | |
| Installation category | III (IEC 60664/60664A; 60947-1) |
| Pollution degree | 3 (IEC 60664/60664A; 60947-1) |
| Degree of protection | IP 67 (IEC 60529; 60947-1) |
| **Ambient temperature** | |
| Operating | -25° to +55°C (-13° to +131°F) |
| Storage | -40° to +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) |
| **Housing material** | |
| Body | ABS |
| Front material | PMMA, red |
| **Connection** | |
| Cable | PVC, black, 2 m 4 x 0.14 mm², Ø = 3.3 mm |
| Plug | M8, 4-pin (CON.54NF.. series) |
| **Weight** | With cable: 40 g With plug: 10 g |
| **CE-marking** | Yes |
| **Approvals** | cULus (UL508) |

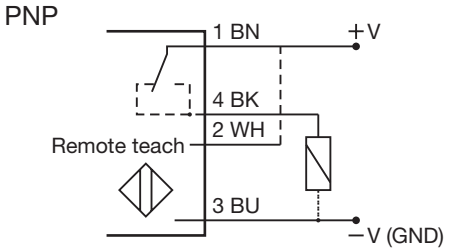
## Operation Diagram

tv = Power ON delay

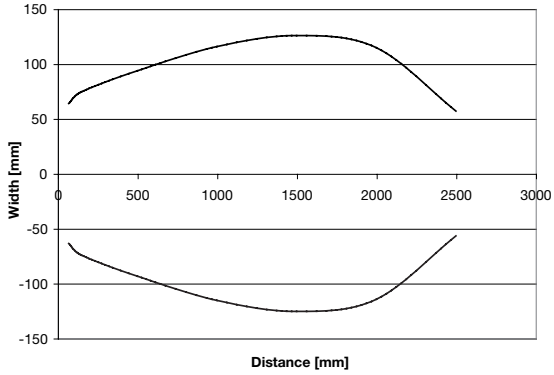



## Wiring Diagrams

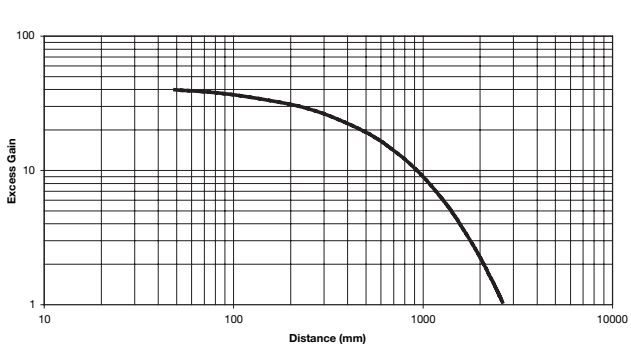



## Detection Diagram




## Excess Gain

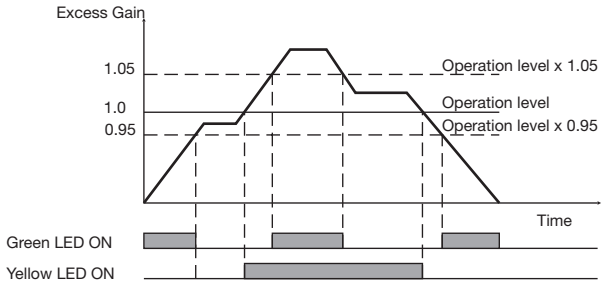




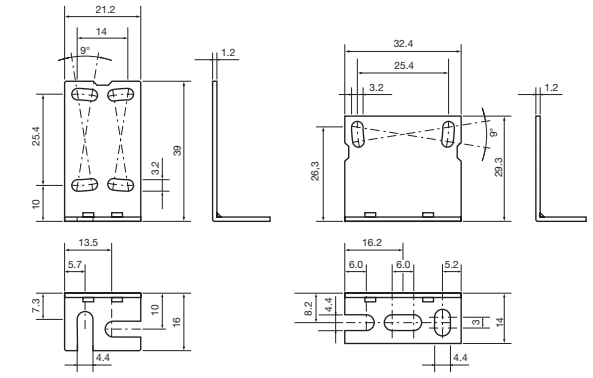

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## Signal Stability Indication



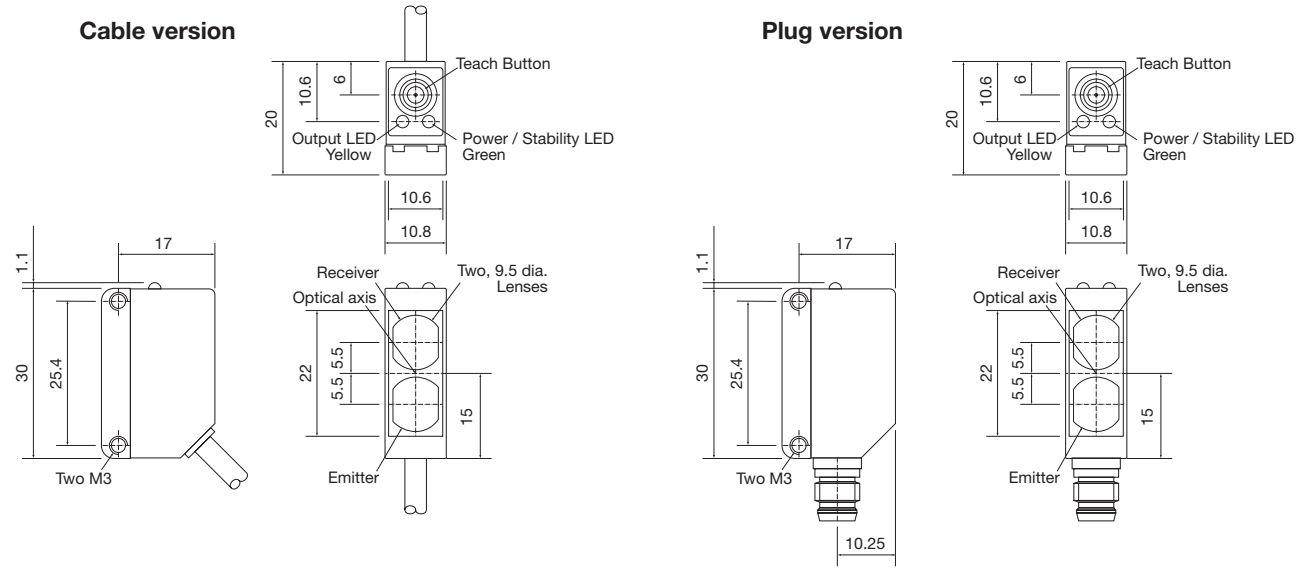

## Accessories




Mounting bracket: APD30-MB1

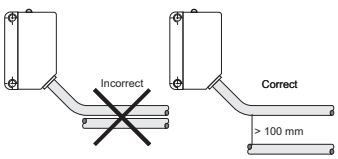
Mounting bracket: APD30-MB2

## Dimensions

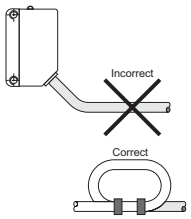



## Installation Hints

*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*

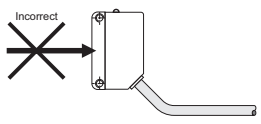



*Relief of the cable strain*



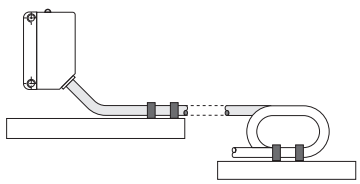

*The cable should not be pulled*

*Protection of the sensing face*




*A proximity switch should not serve as mechanical stop*

*Sensor mounted on a mobile carrier*



*Any repetitive flexing of the cable should be avoided*

## Delivery Contents

- Photoelectric switch: PD 30 CNG 02...RT
- Installation instruction
- Mountingbracket APD30-MB1
- **Packaging:** Cardboard box

## Accessories

- Reflector is to be purchased separately
- Mounting bracket APD30-MB2 to be purchased separately
- Connector type: CON.54NF.. series to be purchased separately



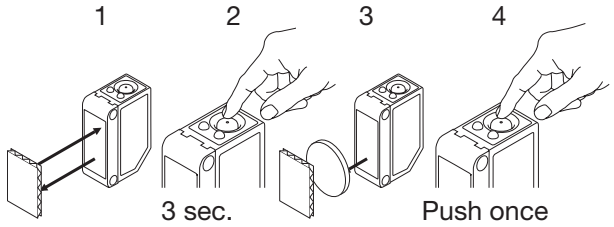
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## Teach functions

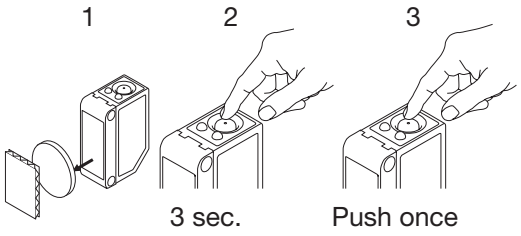
**Normal operation, optimized switching point.**

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)



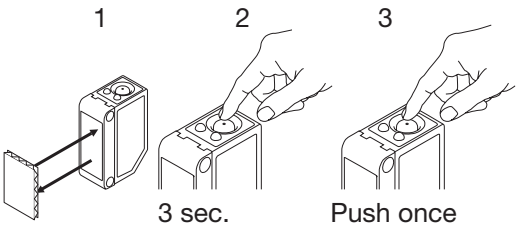

**For maximum sensing distance (default setting)**

1. Line up the sensor with the reflector, place a new transparant 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)



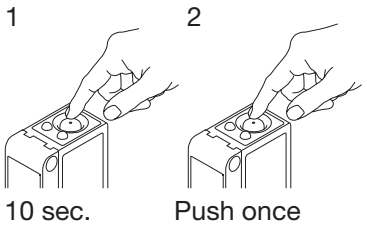

**For the most transparent objects**

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)




**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.






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