

# Photoelectrics Diffuse-reflective Type PD30CND10....RT

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- Miniature sensor range
- Range: 1 m
- Sensitivity adjustment by Teach-In programming
- Modulated, red light 660 nm
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make or 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



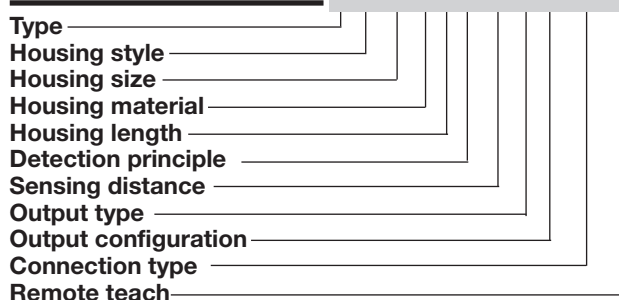
## Product Description

The PD30CND10 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 NO or NC output. A remote teach feature allow the sensor to be set up from e.g. a PLC.

## Ordering Key

**PD30CND10PPM5RT**



## Type Selection

Housing W x H x D	Range S <sub>n</sub>	Connection	Ordering no. NPN Make or break switching	Ordering no. PNP Make or break switching
10 x 30 x 20 mm	1 m	Cable	PD 30 CND 10 NPRT	PD 30 CND 10 PPRT
10 x 30 x 20 mm	1 m	Plug	PD 30 CND 10 NPM5RT	PD 30 CND 10 PPM5RT

## Specifications

<b>Rated operating distance (S<sub>n</sub>)</b>	Up to 1 m, reference target Kodak test card R27, white, 90% reflective, 200 x 200 mm	<b>Light type</b>	Red, modulated
<b>Blind zone</b>	20 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) (differential travel)</b>	≤ 10%	<b>Operating frequency</b>	1000 Hz
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Response time</b>	
<b>Ripple (U<sub>ripp</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 (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	0 to 2.5 VDC (NPN) 5 to 30 VDC (PNP)
<b>Protection</b>	Short-circuit, reverse polarity and transients	Tamper proof	When activated more than 20 sec. the sensor goes into 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; 60947-1)

Specifications are subject to change without notice (09.12.2008)

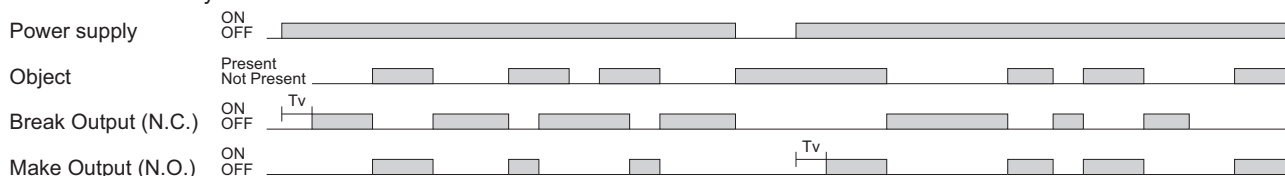


## Specifications (cont.)

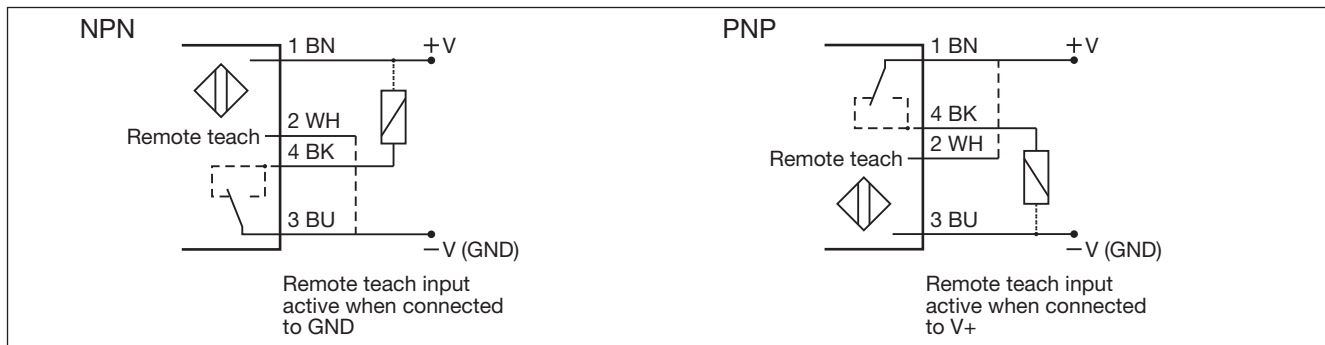
Pollution degree	3 (IEC 60664/60664A; 60947-1)	<b>Housing material</b>	ABS
Degree of protection	IP 67 (IEC 60529; 60947-1)	Body	PMMA, red
<b>Ambient temperature</b>		Front material	
Operating	-25° to +55°C (-13° to +131°F)	<b>Connection</b>	
Storage	-40° to +70°C (-40° to +158°F)	Cable	PVC, black, 2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

## Operation Diagram

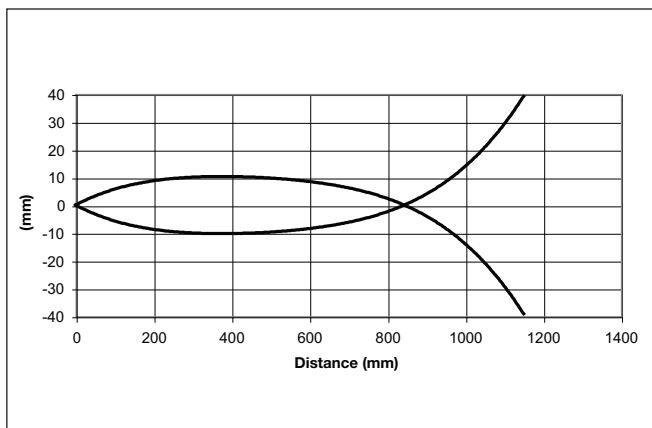
tv = Power ON delay



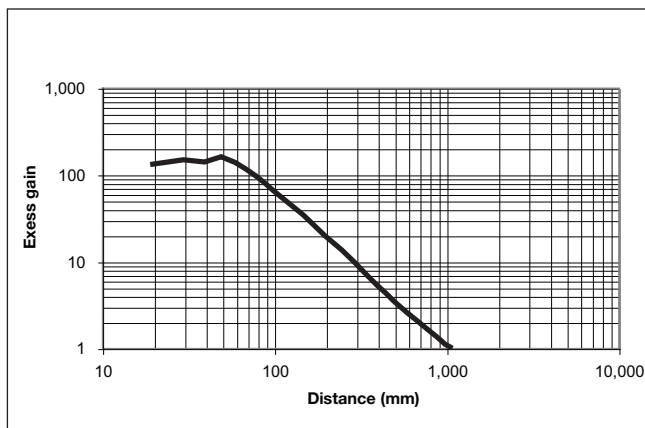
## Wiring Diagrams



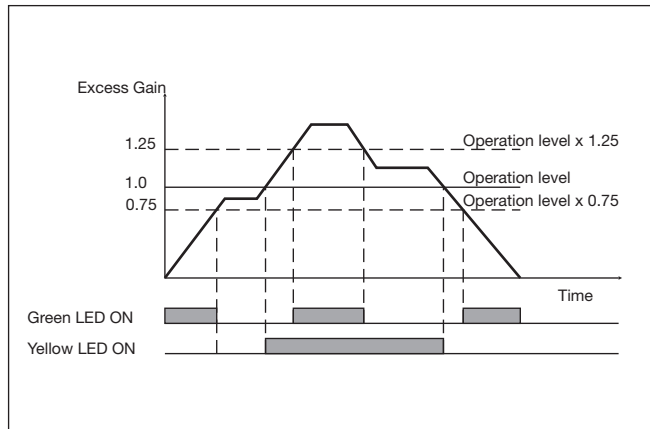
## Detection Diagram



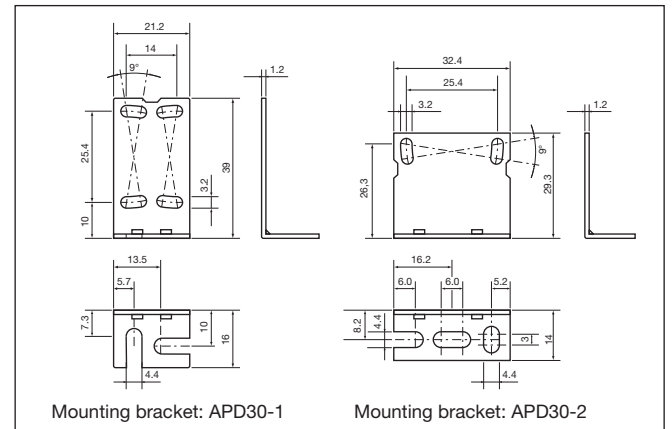
## Excess Gain



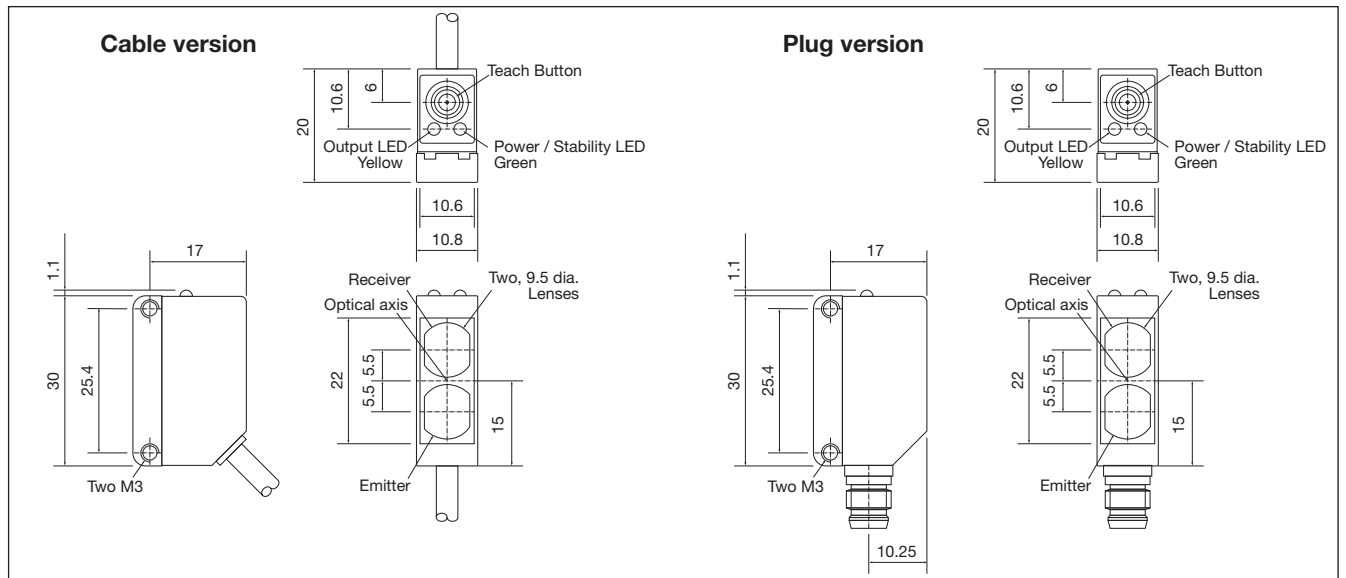
## Signal Stability Indication



## Accessories



## 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>Incorrect      Correct</p> <p>&gt; 100 mm</p>	<p>Relief of the cable strain</p> <p>Incorrect      Correct</p> <p>The cable should not be pulled</p>	<p>Protection of the sensing face</p> <p>Incorrect</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>
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## Delivery Contents

- Photoelectric switch: PD 30 CND 10 ...
- Installation instruction
- Mountingbracket APD30-MB1
- **Packaging:** Cardboard box

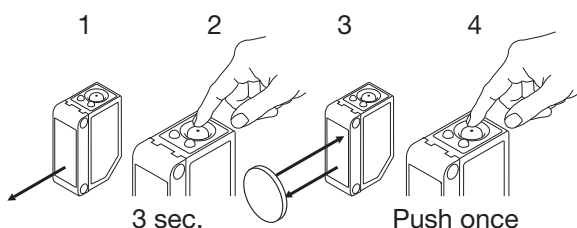
## Accessories

- Mounting bracket APD30-MB2 to be purchased separately

## Teach functions

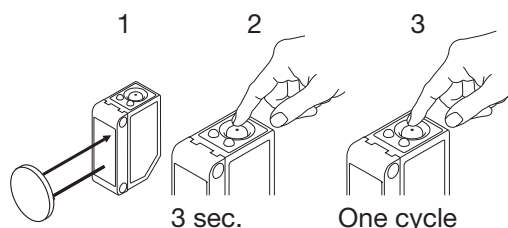
### Normal operation, optimized switching point.

1. Line up the sensor at the background. 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. Place the object 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)



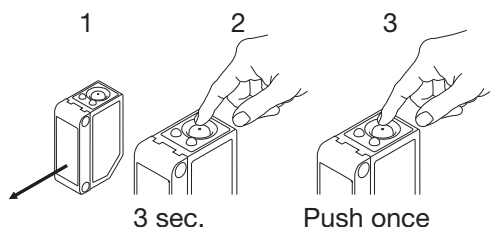
### For dynamic set-up (running process)

1. Line up the sensor at the object. 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 siultainiously 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)



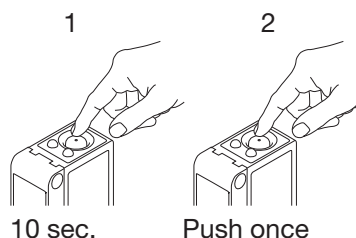
### For maximum sensing distance (default setting)

1. Line up the sensor at the background. 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 at the object. Yellow LED is ON 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)

