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Photoelectrics
Diffuse-reflective, Background Suppression
Type PD30CNB15....RT

CARLO GAVAZZI

- **Miniature sensor range**
- **Range: 150 mm**
- **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 PD30CNB15 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

PD30CNB15PPM5RT

- **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	150 m m	Cable	**PD 30 CNB 15 NPRT**	**PD 30 CNB 15 PPRT**
10 x 30 x 20 mm	150 m m	Plug	**PD 30 CNB 15 NPM5RT**	**PD 30 CNB 15 PPM5RT**

Specifications EN 60947-5-2

Rated operating distance (S_n)	Up to 150 mm, referece target Kodak test card R27, white, 90% reflective, 200 x 200 mm
Blind zone	30 mm
Sensitivity	Adjustable by Teach-In
Temperature drift	≤ 0.2%/°C
Hysteresis (H) 90% White 18% Grey	 < 10% < 15%
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)
Ripple (U_{rpp})	≤ 10%
Output current Continuous (I_e) Short-time (I)	 ≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)
No load supply current (I_o)	≤ 32 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	GaAlAs, LED, 660 nm
Light type	Red, modulated
Sensing angle	± 2°
Ambient light	10,000 lux
Light spot	110 mm @ 1.5 m
Operating frequency	1000 Hz
Response time OFF-ON (t_{ON}) ON-OFF (t_{OFF})	 ≤ 0.5 ms ≤ 0.5 ms
Power ON delay (t_v)	≤ 400 ms
Output function NPN and PNP NO/NC switching function	 Preset Set up by button
Remote teach function Teach on Tamper proof	 0 to 2.5 VDC (NPN) 5 to 30 VDC (PNP) When activated more than 20 sec. the sensor goes into a Tamper proof mode.
Indication Output ON Signal stability ON and power ON	 LED, yellow LED, green

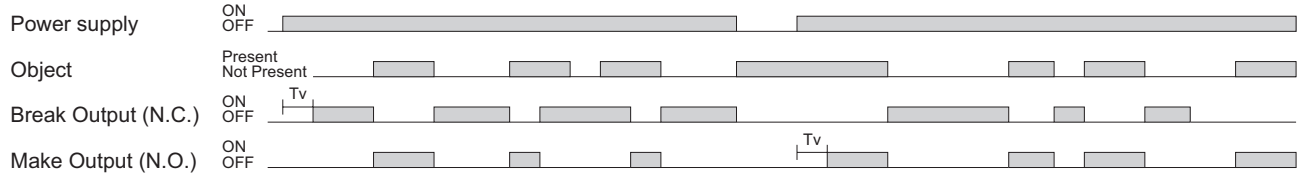
Specifications (cont.)

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)

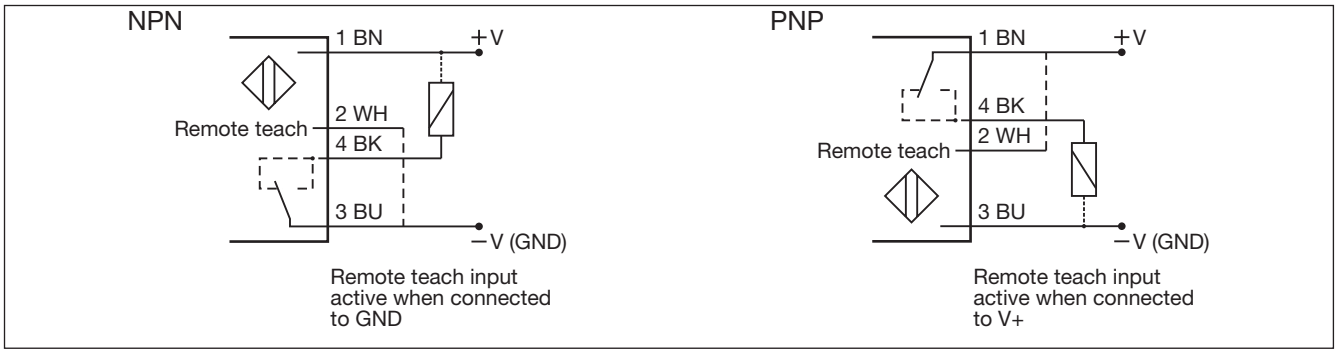
Rated insulation voltage	500 VAC (rms)
Housing material	
Body	ABS
Front material	PMMA, red
Connection	
Cable	PVC, black, 2 m 4 x 0.14 mm^2, Ø = 3.3 mm
Plug	M8, 4-pin (CON. 54-series)
Weight	With cable: 40 g With plug: 10 g
CE-marking	Yes
Approvals	cULus (UL508)

Operation Diagram

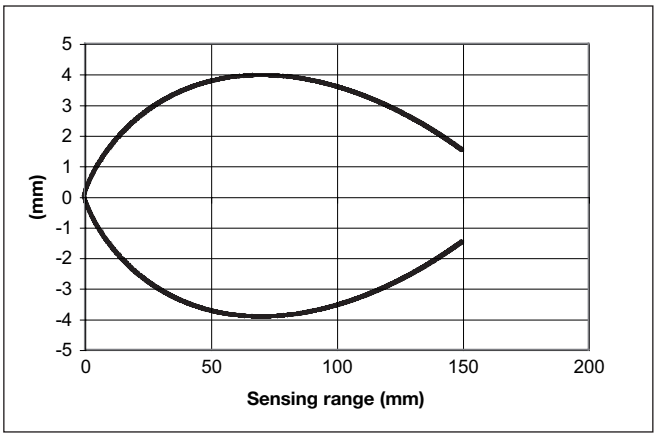
tv = Power ON delay



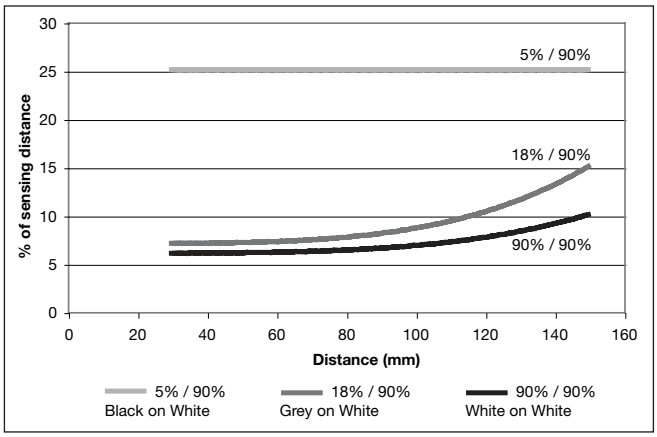
Wiring Diagrams



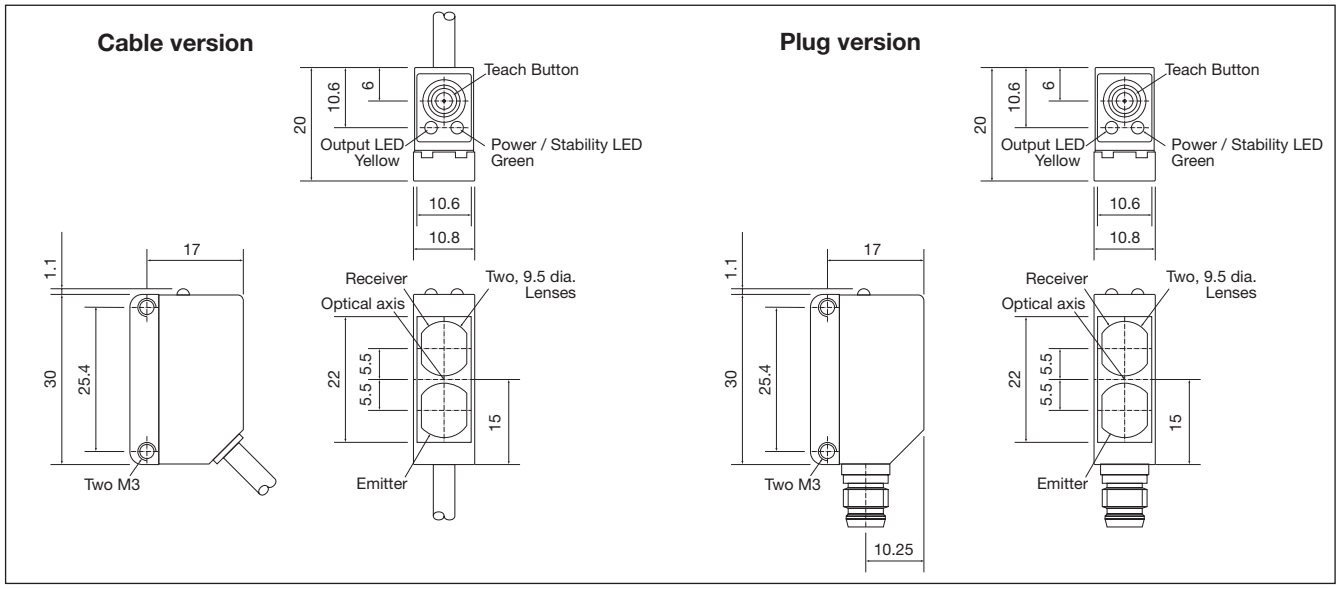
Detection Diagram



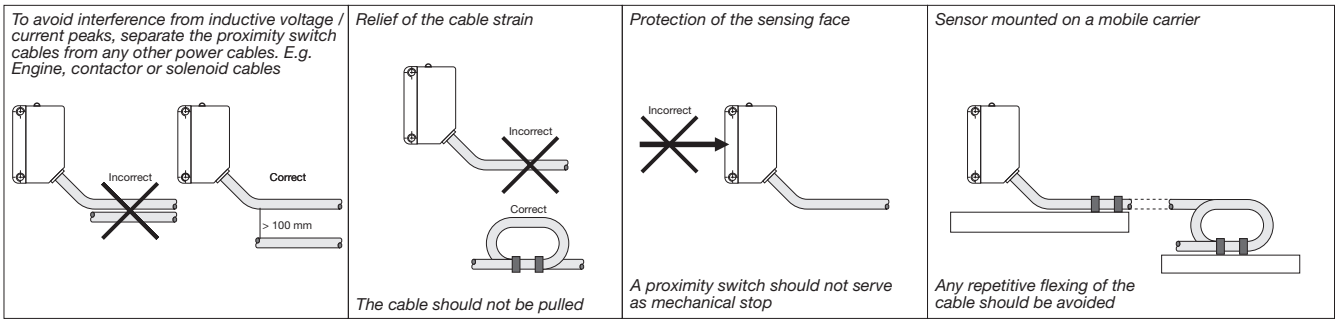
Sensing Conditions



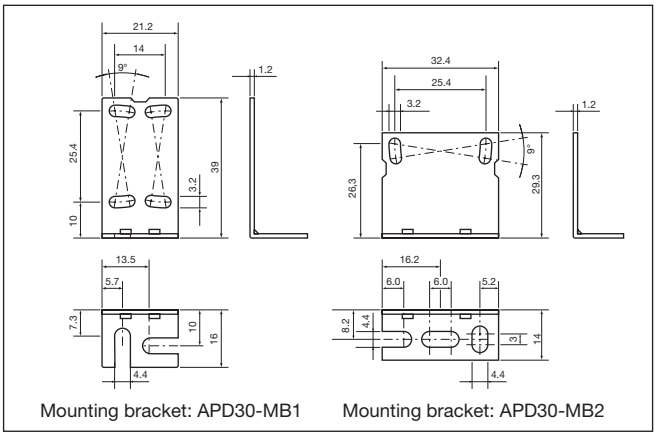
Dimensions



Installation Hints



Accessories



Mounting bracket: APD30-MB1 Mounting bracket: APD30-MB2

- Mounting bracket APD30-MB2 to be purchased seperately
- Connector type CONG 5A../CON. 54NF.. series.

Delivery Contents

- Photoelectric switch: PD 30 CNB 15 ...
- Installation instruction
- Mountingbracket APD30-MB1
- **Packaging:** Cardboard box

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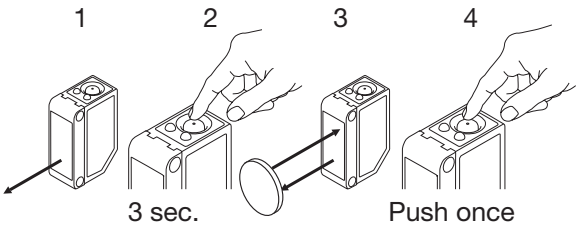
Teach functions

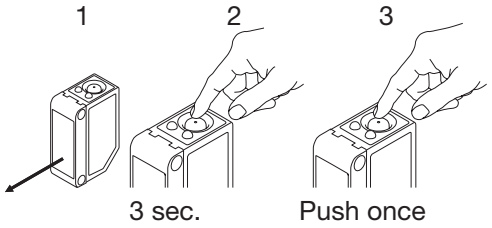
Normal operation, optimized switching point.

1. Line up the sensor at the background. Yellow LED is not important 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)
   a) if the object is to close to the background the sensor will teach both background and object as object.



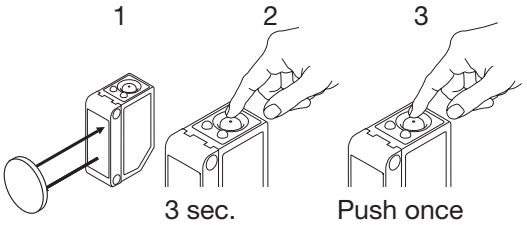
For maximum sensing distance (default setting)

1. Line up the sensor without a background. Yellow LED is not important 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)



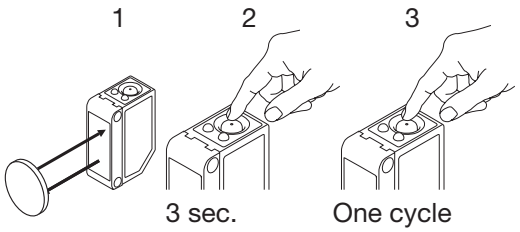
For minimum sensing distance

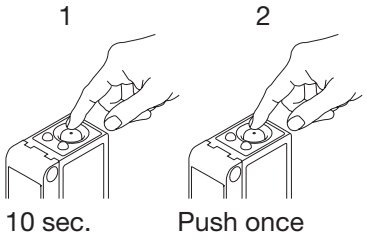
1. Line up the sensor at the object. Yellow LED is not important and Green LED is ON.
2. Press the button for 3 seconds until both LEDs flashes simultaneously.
   (The first switch point is stored)
3. Press the button a second time and the sensor is ready to operate(Green LED ON, Yellow LED ON)
   (The second switch point is stored)



For 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 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.