

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, reference target Kodak test card R27, white, 90% reflective, 200 x 200 mm	Light source	GaAIs, LED, 660 nm
Blind zone	30 mm	Light type	Red, modulated
Sensitivity	Adjustable by Teach-In	Sensing angle	± 2°
Temperature drift	≤ 0.2%/°C	Ambient light	10,000 lux
Hysteresis (H)		Light spot	110 mm @ 1.5 m
90% White	< 10%	Operating frequency	1000 Hz
18% Grey	< 15%	Response time	
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	OFF-ON (t _{ON})	≤ 0.5 ms
Ripple (U_{rip})	≤ 10%	ON-OFF (t _{OFF})	≤ 0.5 ms
Output current		Power ON delay (t_v)	≤ 400 ms
Continuous (I _a)	≤ 100 mA	Output function	
Short-time (I)	≤ 100 mA (max. load capacity 100 nF)	NPN and PNP	Preset
No load supply current (I₀)	≤ 32 mA @ 24 VDC	NO/NC switching function	Set up by button
Minimum operational current (I_m)	0.5 mA	Remote teach function	
OFF-state current (I_r)	≤ 100 μA	Teach on	0 to 2.5 VDC (NPN)
Voltage drop (U_d)	≤ 2.4 VDC @ 100 mA	Tamper proof	5 to 30 VDC (PNP)
Protection	Short-circuit, reverse polarity and transients		When activated more than 20 sec. the sensor goes into a Tamper proof mode.
		Indication	
		Output ON	LED, yellow
		Signal stability ON and power ON	LED, green

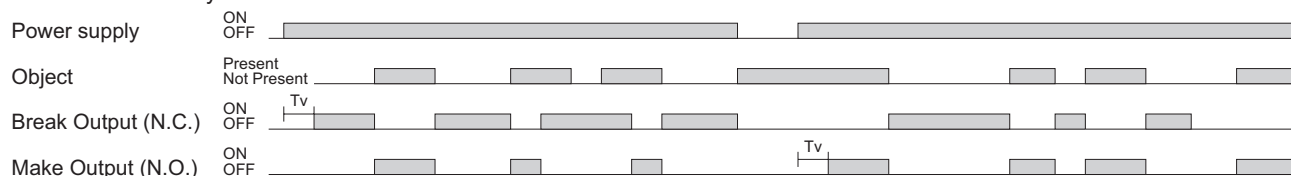
Specifications are subject to change without notice (14.06.2016)

Specifications (cont.)

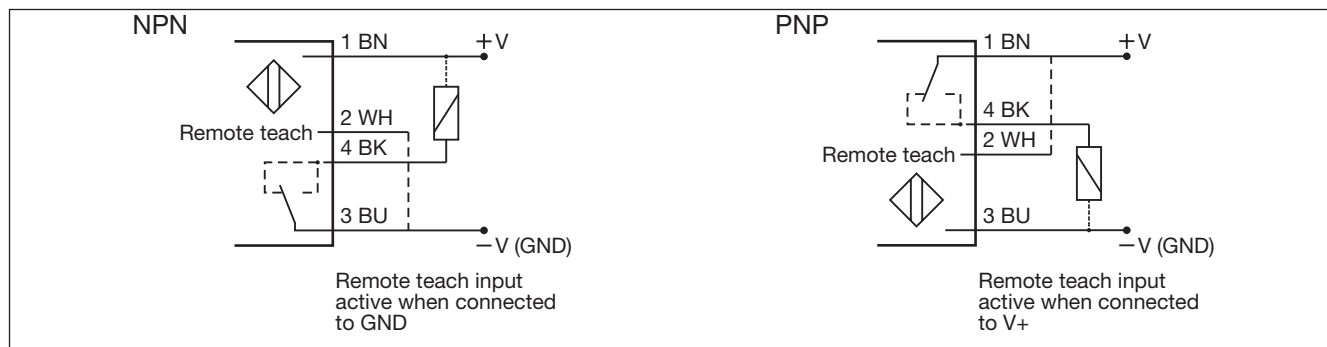
Environment		Rated insulation voltage	500 VAC (rms)
Installation category	III (IEC 60664/60664A; 60947-1)	Housing material	
Pollution degree	3 (IEC 60664/60664A; 60947-1)	Body	ABS
Degree of protection	IP 67 (IEC 60529; 60947-1)	Front material	PMMA, red
Ambient temperature		Connection	
Operating	-25°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

Operation Diagram

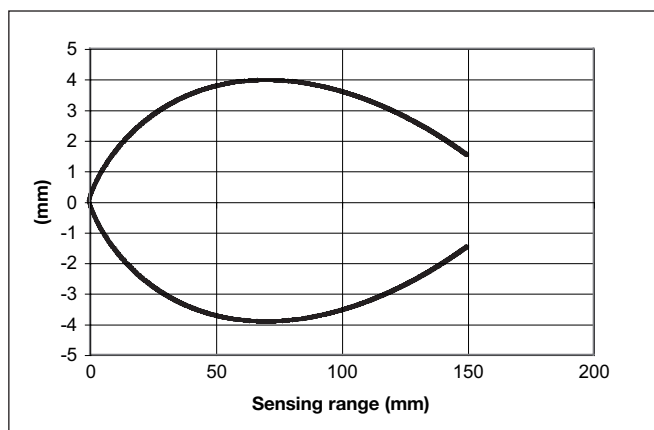
tv = Power ON delay



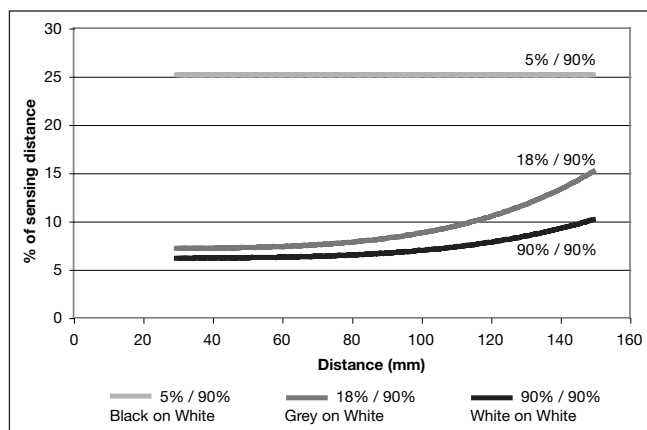
Wiring Diagrams



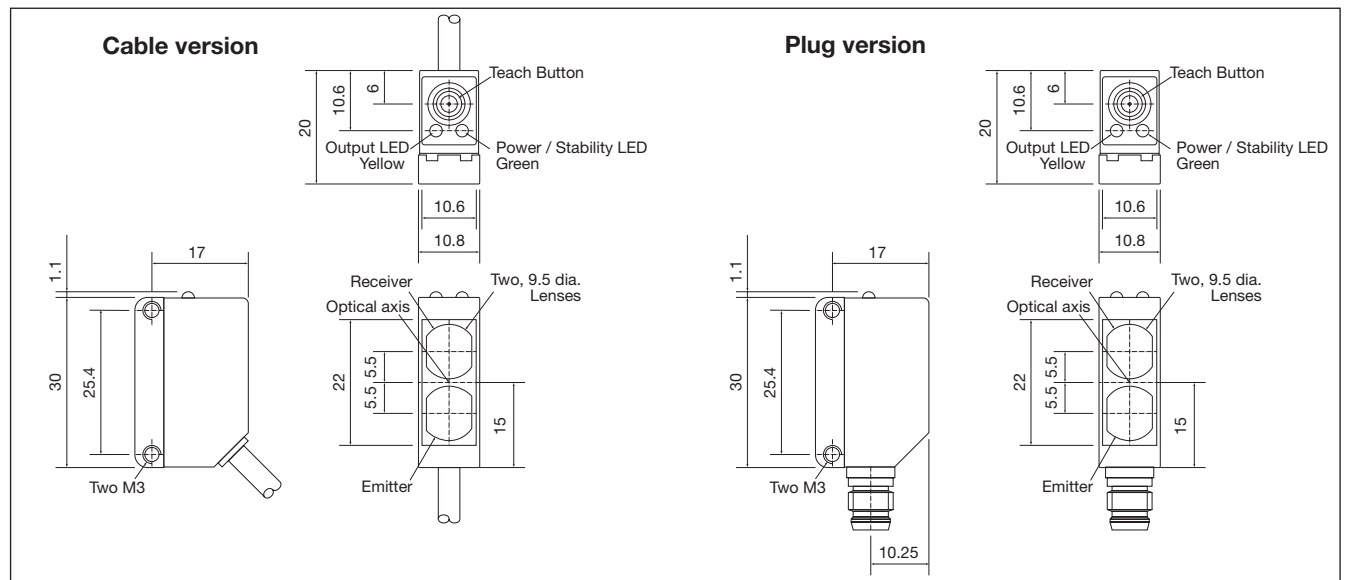
Detection Diagram



Sensing Conditions

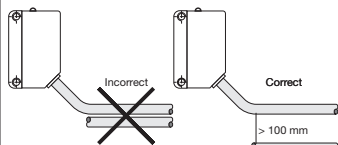


Dimensions

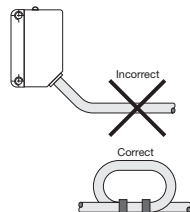


Installation Hints

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

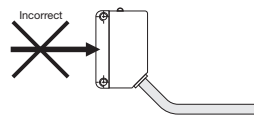


Relief of the cable strain



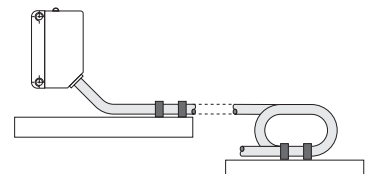
The cable should not be pulled

Protection of the sensing face



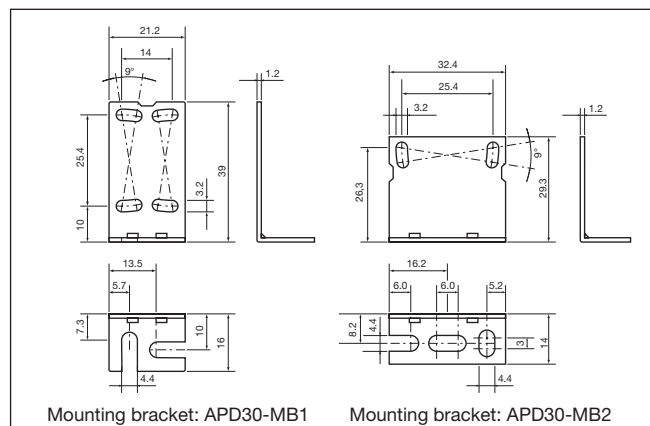
A proximity switch should not serve as mechanical stop

Sensor mounted on a mobile carrier



Any repetitive flexing of the cable should be avoided

Accessories



Mounting bracket: APD30-MB1

Mounting bracket: APD30-MB2

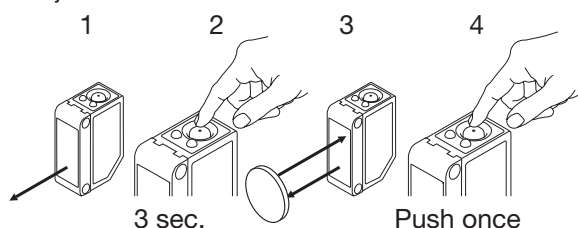
Delivery Contents

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

Teach functions

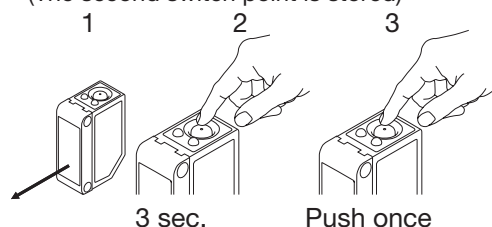
Normal operation, optimized switching point.

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 too close to the background the sensor will teach both background and object as object.



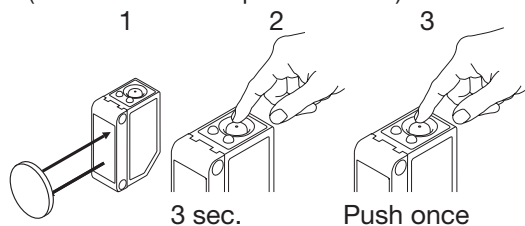
For maximum sensing distance (default setting)

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)



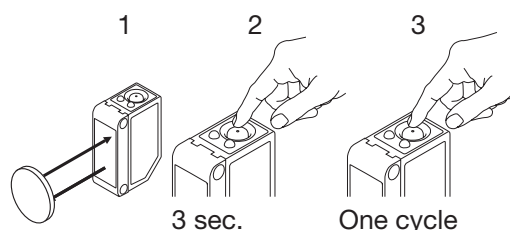
For minimum sensing distance

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)



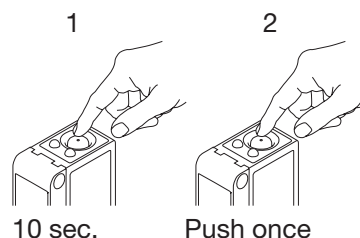
For dynamic set-up (running process)

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 seconds until both LEDs flashes simultaneously.
3. Press the button a second time for at least one second, both LEDs flash 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 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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