

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 | GaAlAs, 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) 90% White 18% Grey | < 10% < 15% | Light spot | 110 mm @ 1.5 m |
| Rated operational volt. (U_B) | 10 to 30 VDC (ripple included) | Operating frequency | 1000 Hz |
| Ripple (U_{rpp}) | ≤ 10% | Response time OFF-ON (t _{ON}) ON-OFF (t _{OFF}) | ≤ 0.5 ms ≤ 0.5 ms |
| Output current Continuous (I _a) Short-time (I) | ≤ 100 mA ≤ 100 mA (max. load capacity 100 nF) | Power ON delay (t_v) | ≤ 400 ms |
| No load supply current (I₀) | ≤ 32 mA @ 24 VDC | Output function NPN and PNP NO/NC switching function | Preset Set up by button |
| Minimum operational current (I_m) | 0.5 mA | Remote teach function Teach on | 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. |
| OFF-state current (I_r) | ≤ 100 μA | Tamper proof | |
| Voltage drop (U_d) | ≤ 2.4 VDC @ 100 mA | Indication Output ON Signal stability ON and power ON | LED, yellow LED, green |
| Protection | Short-circuit, reverse polarity and transients | | |

Specifications are subject to change without notice (14.06.2016)

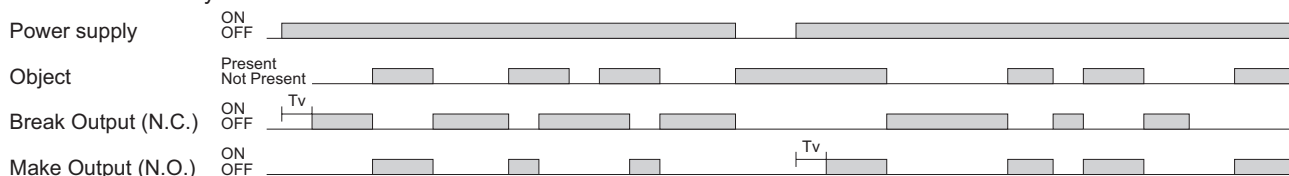


Specifications (cont.)

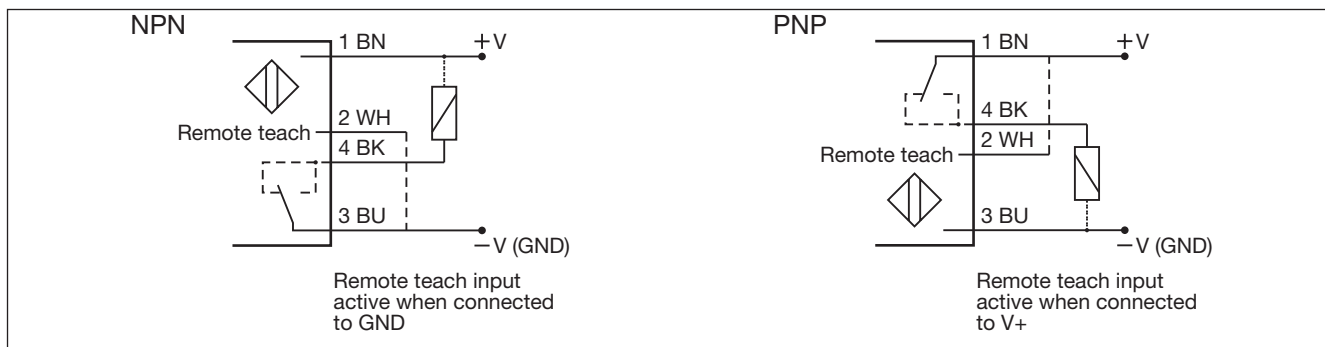
| | | | |
|----------------------------|--|---------------------------------|--|
| Environment | | Rated insulation voltage | 500 VAC (rms) |
| Installation category | III (IEC 60664/60664A; 60947-1) | Housing material | |
| Pollution degree | 3 (IEC 60664/60664A; 60947-1) | Body | ABS |
| Degree of 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 |
| Storage | -40° to +70°C (-40° to +158°F) | Plug | M8, 4-pin (CON. 54-series) |
| 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

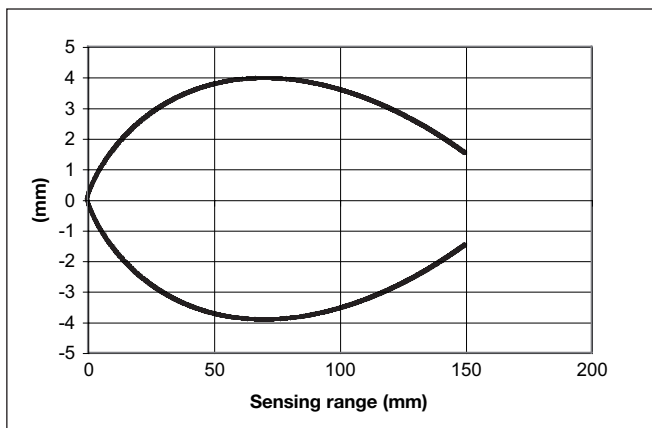
tv = Power ON delay



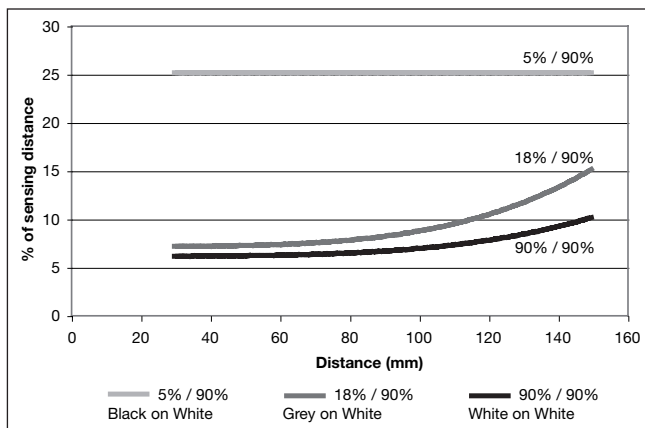
Wiring Diagrams



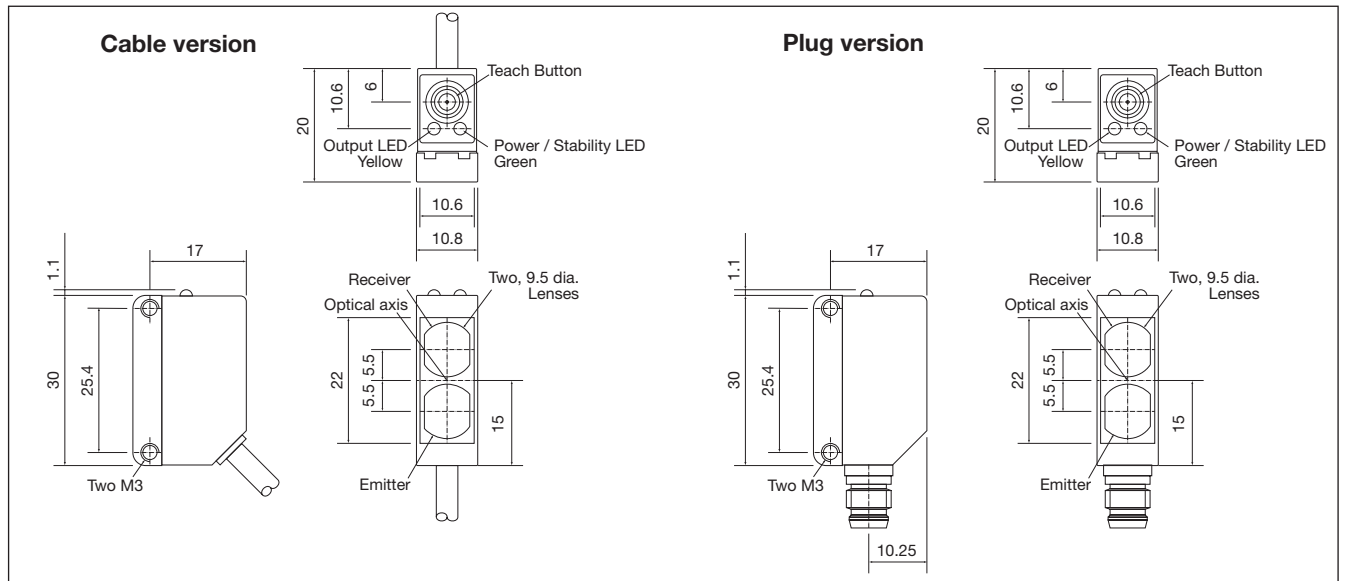
Detection Diagram



Sensing Conditions



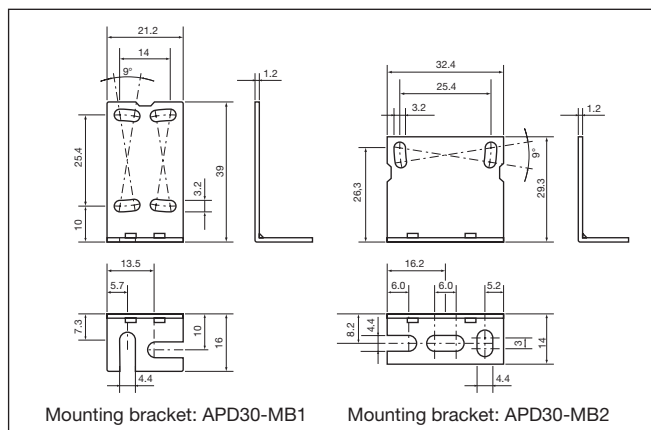
Dimensions



Installation Hints

| | | | |
|---|---|---|--|
| <p><i>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</i></p> | <p><i>Relief of the cable strain</i></p> <p><i>The cable should not be pulled</i></p> | <p><i>Protection of the sensing face</i></p> <p><i>A proximity switch should not serve as mechanical stop</i></p> | <p><i>Sensor mounted on a mobile carrier</i></p> <p><i>Any repetitive flexing of the cable should be avoided</i></p> |
|---|---|---|--|

Accessories



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

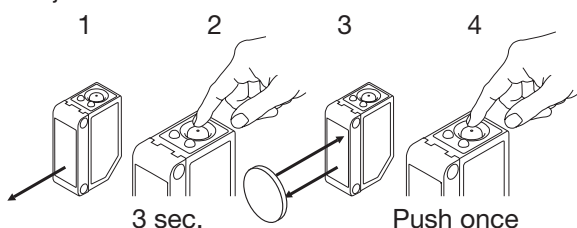
Delivery Contents

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

Teach functions

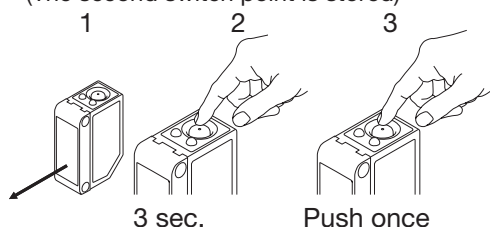
Normal operation, optimized switching point.

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



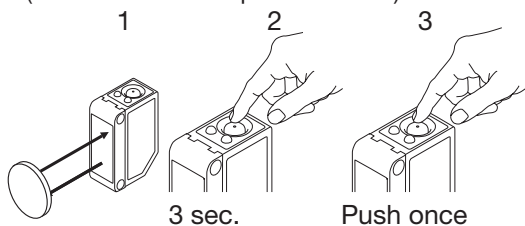
For maximum sensing distance (default setting)

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)



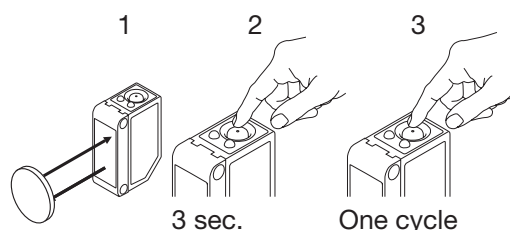
For minimum sensing distance

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.

