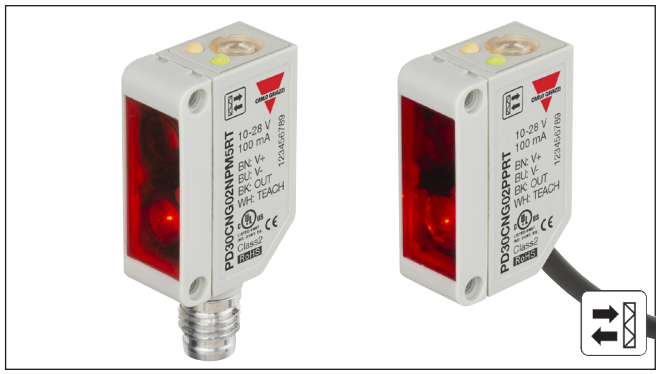
Photoelectrics
Retro-reflective for Transparent Objects
Type PD30CNG02....RT



- 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 Teach settings are valid for teach temperature ± 20°C
Hysteresis (H) (differential travel)	≤ 10%
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)	≤ 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

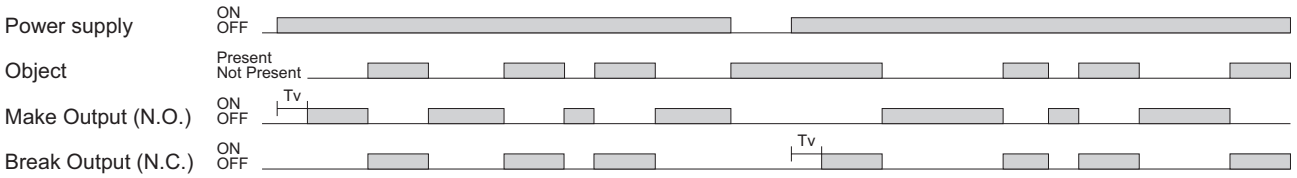
Light source	inGaAlP, LED, 617 nm
Light type, not polarized	Red, modulated
Sensing angle	± 2°
Ambient light	10,000 lux
Light spot	110 mm @ 1.5 m
Operating frequency	1000 Hz
Response time OFF-ON (t_{ON}) ON-OFF (t_{OFF})	 ≤ 0.5 ms ≤ 0.5 ms
Power ON delay (t_v)	≤ 300 ms
Output function NPN and PNP NO/NC switching function	 Preset Set up by button
Remote teach function Teach on (push button active) 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.) EN 60947-5-2

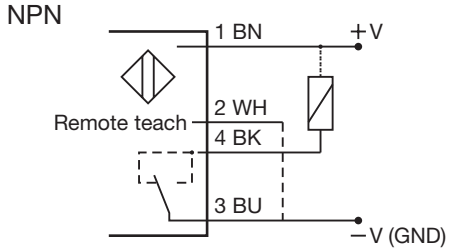
Environment	
Installation category	III (IEC 60664/60664A; 60947-1)
Pollution degree	3 (IEC 60664/60664A; 60947-1)
Degree of protection	IP 67 (IEC 60529; 60947-1)
Ambient temperature	
Operating	-25° to +55°C (-13° to +131°F)
Storage	-40° to +70°C (-40° to +158°F)
Vibration	10 to 55 Hz, 0.5 mm/7.5 g (IEC 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)

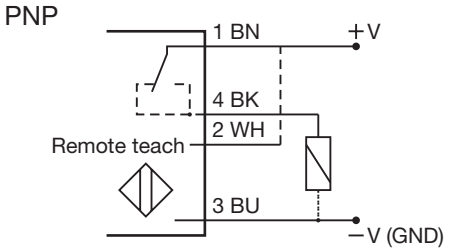
Operation Diagram

tv = Power ON delay

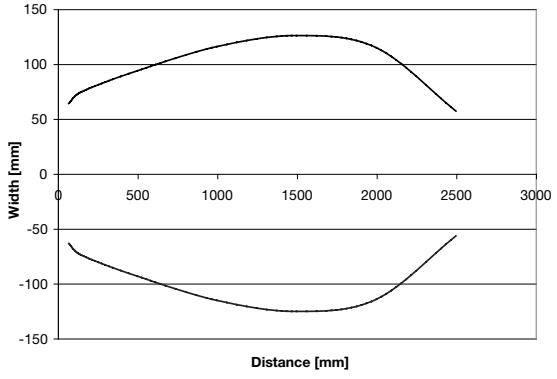


Wiring Diagrams

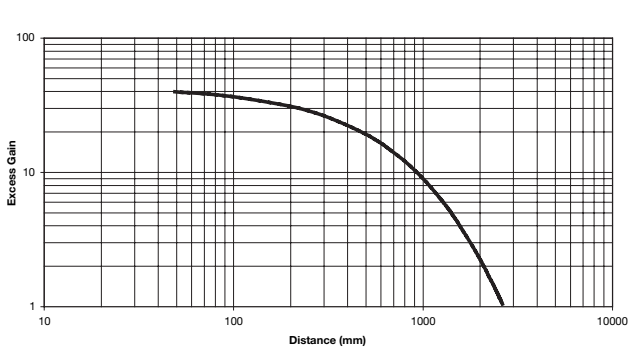




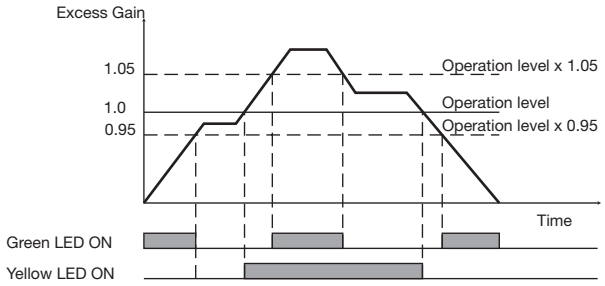
Detection Diagram



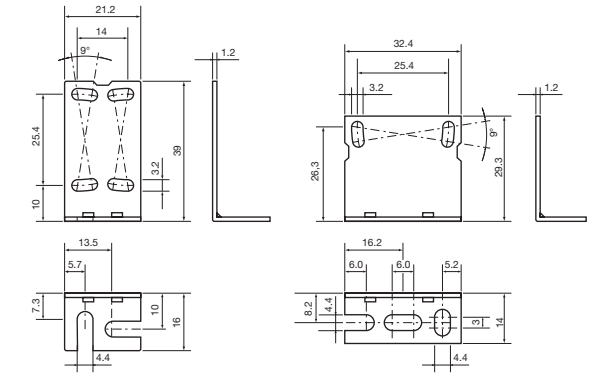
Excess Gain



Signal Stability Indication



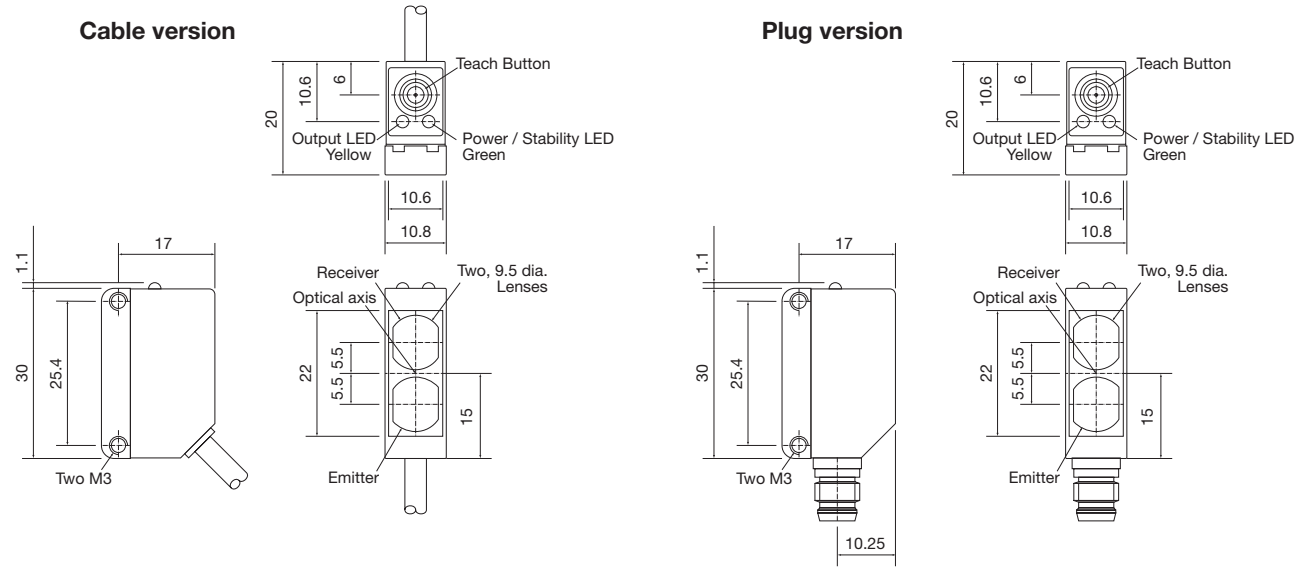
Accessories



Mounting bracket: APD30-MB1

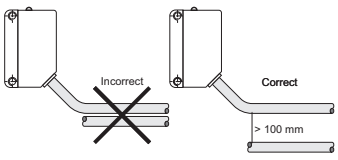
Mounting bracket: APD30-MB2

Dimensions

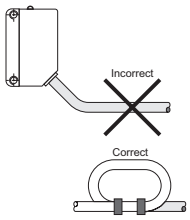


Installation Hints

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

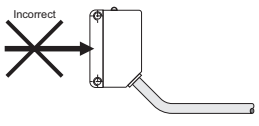


Relief of the cable strain



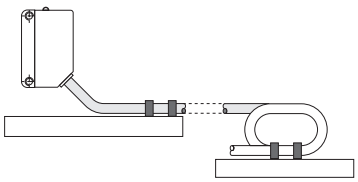
The cable should not be pulled

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

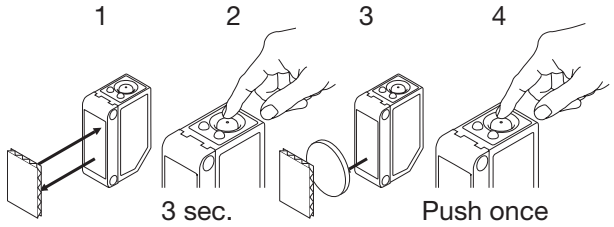
Accessories

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

Teach functions

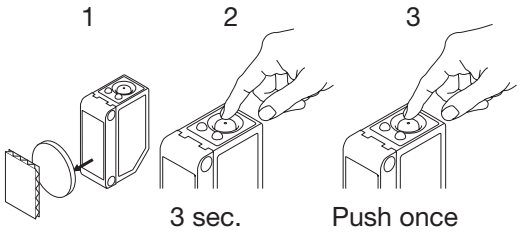
Normal operation, optimized switching point.

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)



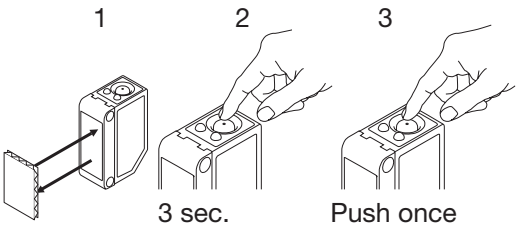
For maximum sensing distance (default setting)

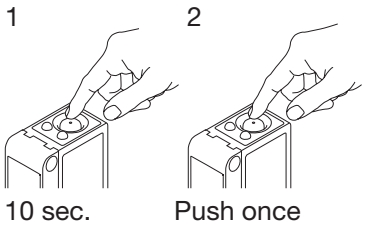
1. Line up the sensor with the reflector, place a new transparant object between the sensor and reflector in the detection zone. Yellow LED is OFF and Green LED is ON.
2. Press the button for 3 seconds until both LEDs flashes simultaneously.
   (The first switch point is stored)
3. Press the button a 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.