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

CARLO GAVAZZI

- 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
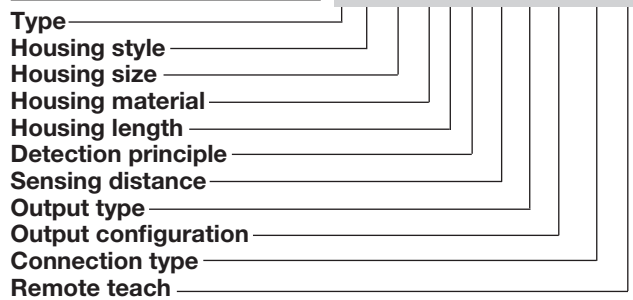- Remote teach features

CE c(UL)us

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)	Light source	inGaAIP, LED, 617 nm
Detection reliability	20% attenuation	Light type, not polarized	Red, modulated
Blind zone	10 mm	Sensing angle	± 2°
Sensitivity	Adjustable by Teach-In	Ambient light	10,000 lux
Temperature drift	≤ 0.1%/°C Teach settings are valid for teach temperature ± 20°C	Light spot	110 mm @ 1.5 m
		Operating frequency	1000 Hz
Hysteresis (H) (differential travel)	≤ 10%	Response time OFF-ON (t_{ON}) ON-OFF (t_{OFF})	≤ 0.5 ms ≤ 0.5 ms
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Power ON delay (t_v)	≤ 300 ms
Ripple (U_{rpp})	≤ 10%	Output function NPN and PNP NO/NC switching function	Preset Set up by button
Output current Continuous (I_e) Short-time (I)	≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	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.
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	Indication Output ON Signal stability ON and power ON	LED, yellow LED, green
Voltage drop (U_d)	≤ 2.4 VDC @ 100 mA		
Protection	Short-circuit, reverse polarity and transients		

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	1	0 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)

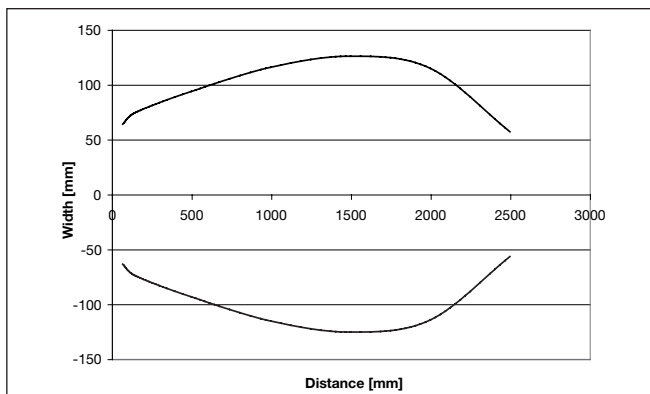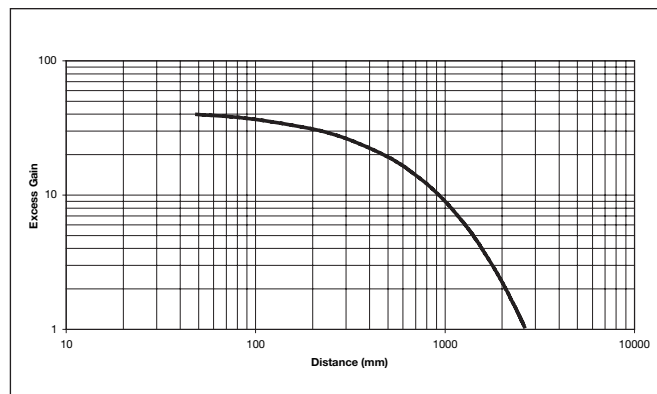| Rated insulation voltage	500 VAC (rms)
Housing material	
Body	ABS
Front material	PMMA, red
Connection	
Cable	PVC, black, 2 m
	4×0.14 mm^2, Ø = 3.3 mm
Plug	M8, 4-pin (CON, 54-series)
Weight	With cable: 40 g
	With plug: 10 g
CE-marking	Yes
Approvals	cULus (UL508)

Operation Diagram

tv = Power ON delay
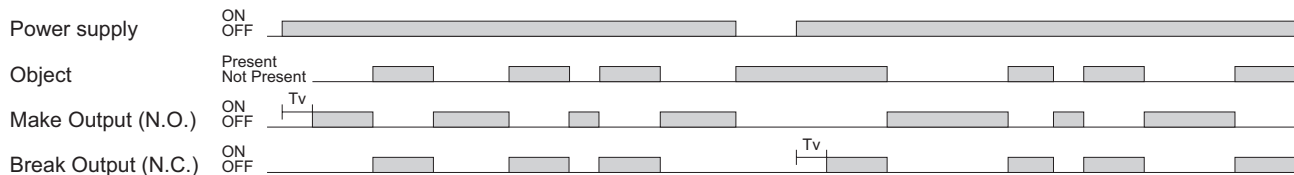
Wiring Diagrams
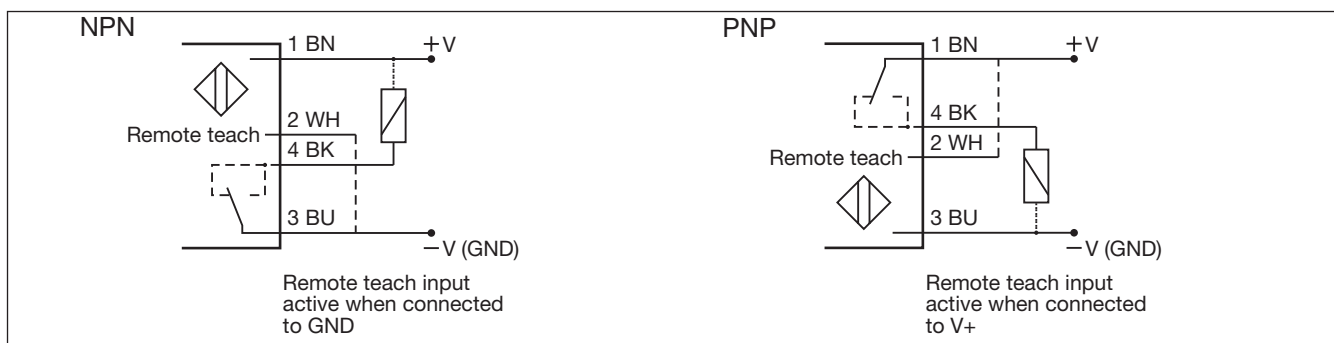
Detection Diagram

Excess Gain

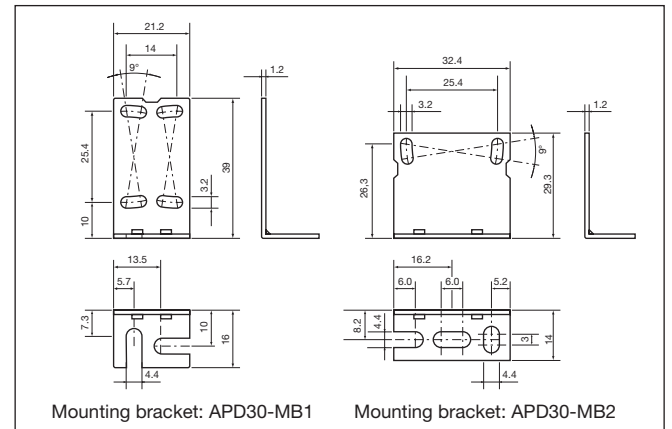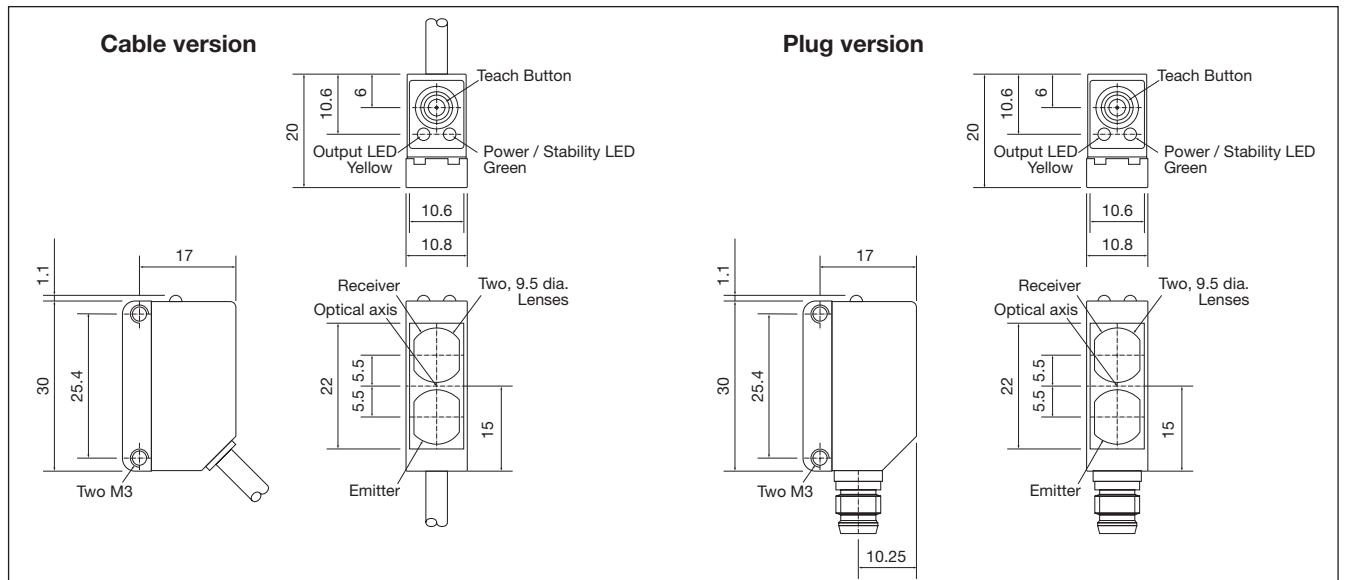Specifications are subject to change without notice (11.07.2016)

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Signal Stability Indication

Excess Gain

1.05 — Operation level x 1.05
1.0 — Operation level
0.95 — Operation level x 0.95

Time

Green LED ON

Yellow LED ON

Accessories

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

Dimensions

Cable version

Teach Button

Output LED Yellow   Power / Stability LED Green

Receiver   Two, 9.5 dia. Lenses
Optical axis

Two M3   Emitter

Plug version

Teach Button

Output LED Yellow   Power / Stability LED Green

Receiver   Two, 9.5 dia. Lenses
Optical axis

Two M3   Emitter

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

Incorrect   Correct   > 100 mm

Relief of the cable strain

Incorrect   Correct

The cable should not be pulled

Protection of the sensing face

Incorrect

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
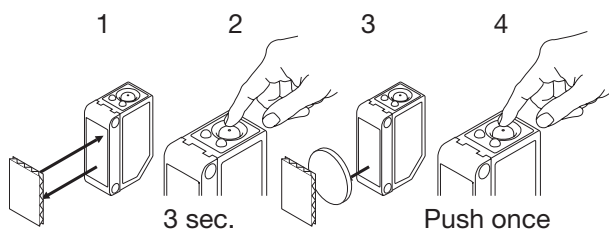• Mountingbracket APD30-MB1
• **Packaging:** Cardboard box

Accessories

• Reflector is to be purchased separately
• Mounting bracket APD30-MB2 to be purchased separately
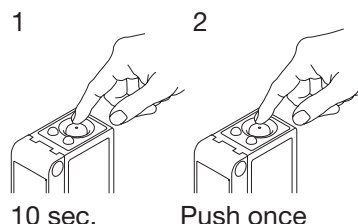
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Teach functions

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)
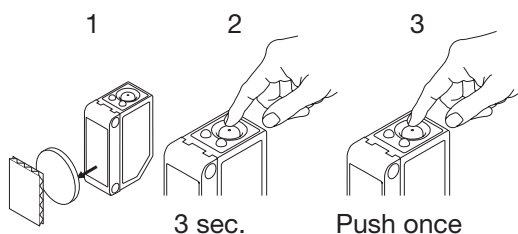   (The second switch point is stored)

1	2	3	4

3 sec.   Push once

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)

1	2	3

3 sec.   Push once

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)

1	2	3

3 sec.   Push once

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.
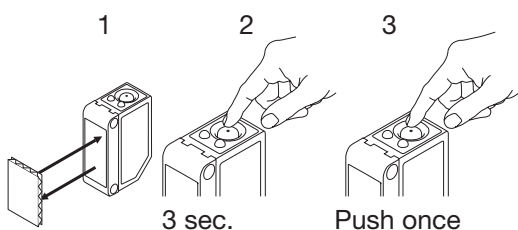   If the button is not pressed within the next 10 seconds, the current output is stored.

1	2

10 sec.   Push once

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