Photoelectrics
Diffuse-reflective
Type PD32CND50

CARLO GAVAZZI

- Miniature sensor range
- Range: 500 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 and break switching function programmable
- LED for output indication, signal stability and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Compact housing
- Excellent EMC performance

Product Description

The PD32CND50 sensor family comes in a compact 12 x 32 x 20 mm reinforced PMMA/ABS-housing.
The sensors are useful in applications where high-accuracy detection as well as small size is required.

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).

Ordering Key

PD32CND50PPM5T

Type	
Housing style	
Housing size	
Housing material	
Housing length	
Detection principle	
Sensing distance	
Output type	
Output configuration	
Connection type	
Teach-In	

Type Selection

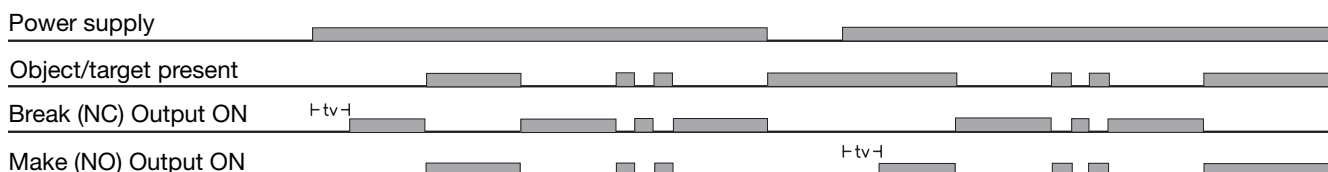| Housing W x H x D	Range S_n	Ordering no. NPN & PNP cable Make & break switching	Ordering no. NPN & PNP plug Make & break switching
12 x 32 x 20 mm	500 mm	PD 32 CND 50 NPT PD 32 CND 50 PPT	PD 32 CND 50 NPM5T PD 32 CND 50 PPM5T

Specifications

Rated operating distance (S_n)	Up to 500 mm, reference target Kodak test card R 27, white, 90% reflectivity, 100 x 100 mm	Light source Light type Sensing angle Ambient light Light spot	GaAlAs, LED, 660 nm red, modulated ± 2° 5,000 lux 12 x 12 mm @ 160 mm
Blind zone	None	Operating frequency	1000 Hz
Sensitivity	Adjustable by Teach-In (push button or wire)	Response time 　OFF-ON (t_{ON}) 　ON-OFF (t_{OFF})	 ≤ 0.5 ms ≤ 0.5 ms
Temperature drift	≤ 1%/°C	Power ON delay (t_v)	≤ 300 ms
Hysteresis (H) 　(differential travel)	 ≤ 10%	Output function 　NPN and PNP 　NO/NC switching function	 Preset Set up by button
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	External Teach 　Same function as button 　Locked (disable teach button) 　Operating mode	 10 to 30 VDC 0 to 2.5 VDC Not connected
Ripple (U_{rpp})	≤ 10%		
Output current 　Continuous (I_e) 　Short-time (I)	 ≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	Indication 　Output ON 　Signal stability ON and power ON	 LED, yellow LED, green
No load supply current (I_o)	≤ 25 mA @ 24 VDC	Environment 　Installation category	 II (IEC 60664/60664A; 60947-1)
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		

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Specifications (cont.)

Pollution degree	3 (IEC 60664/60664A; 60947-1)		Housing material	
Degree of protection	IP 67 (IEC 60529; 60947-1)		Body	ABS, black
			Front material	PMMA, red
Ambient temperature			**Connection**	
Operating	-20° to +60°C (-4° to +140°F)		Cable	PUR, black, 2 m
Storage	-20° to +80°C (-4° to +176°F)			4 x 0.14 mm², Ø = 3.6 mm
Vibration	10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)		Plug	M8, 4-pin
			Weight	With cable: 40 g
Shock	30 g / 11 ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)			With plug: 10 g
			CE-marking	Yes
Rated insulation voltage	500 VAC (rms)		**Approval**	cUL

Operation Diagram

tv = Power ON delay

Power supply	
Object/target present	
Break (NC) Output ON	⊢ tv ⊣
Make (NO) Output ON	⊢ tv ⊣

Wiring Diagrams

NPN

1 BN · + V
2 WH
4 BK
3 BU · - V

PNP

1 BN · +
4 BK
2 WH
3 BU · -

Teach input is active when 2 WH wire is connected to V+ (1 BN).

Dimensions

Cable version

12
3.2
TEACH IN
32
24
4.2
4
5
2.6
Ø3.5
10.7
20.1

Plug version

12
3.2
TEACH IN
32
24
4.2
4
3.8
2.6
M8x1
10.7
20.1

Specifications are subject to change without notice (15.01.03)

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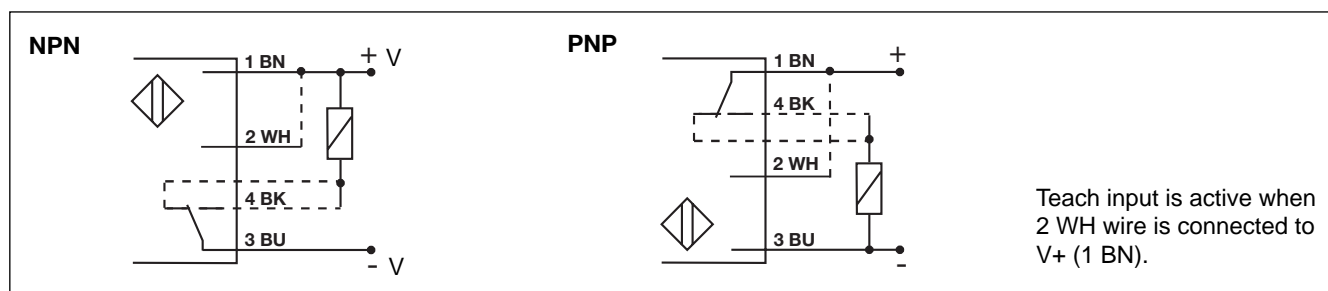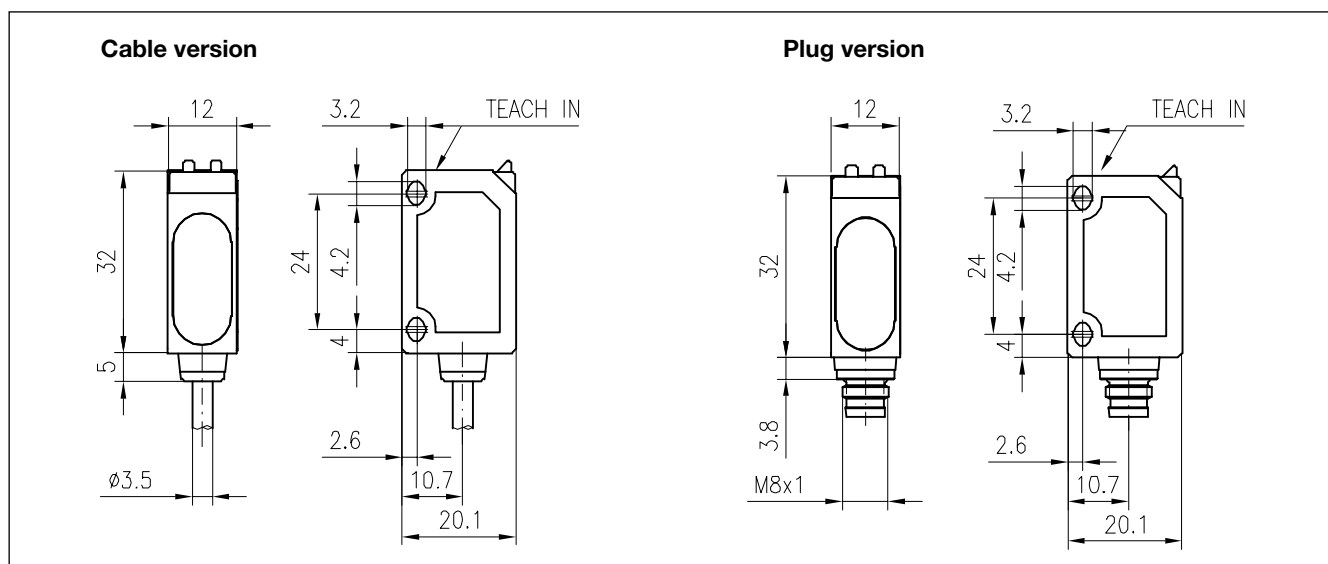
Signal Stability Indication

Signal level

150%
100%
70%

Time

Green LED ON
Yellow LED ON

Accessories

Mounting bracket APD32-MB3
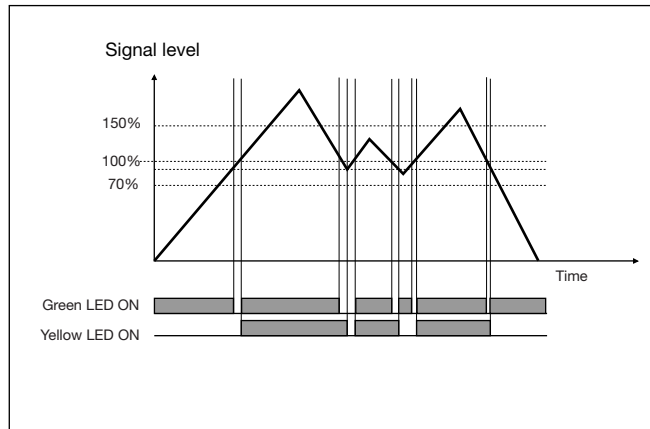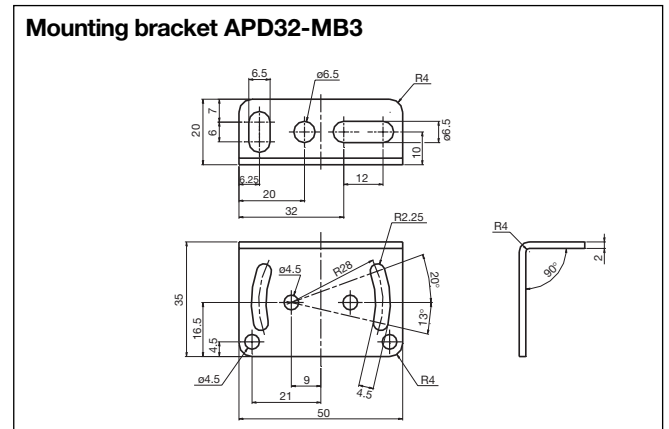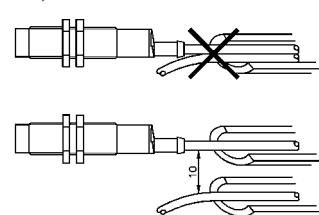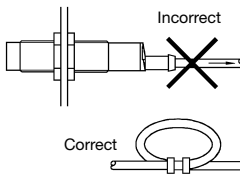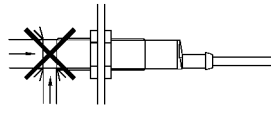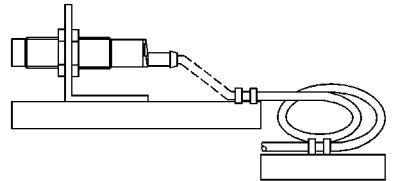
For further information refer to "Accessories"

Installation Hints

| To avoid interference from inductive voltage/ current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables	Relief of cable strain	Protection of the sensing face	Switch mounted on mobile carrier
	Incorrect / Correct — The cable should not be pulled	A proximity switch should not serve as mechanical stop	Any repetitive flexing of the cable should be avoided

Delivery Contents

• Photoelectric switch: PD 32 CND 50 ...
• Installation instruction
• **Packaging:** Cardboard box

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Adjustment

Sensitivity adjustment, with static object
1. Line up the sensor with the object. Yellow LED and green LED are ON.
2. Press the button for 3 s until both LED's flash simultaneously (the first switching point is stored).
3. Place the object outside the detection area.
4. Press the button for 1 s.
   a) The green LED flashes and stays ON: the second switching point is stored, and the sensor is ready to operate.
   b) Both LED's flash simultaneously: the sensor cannot detect the object, no switching points are stored.

1	2	3	4
	3 s		**1 s**
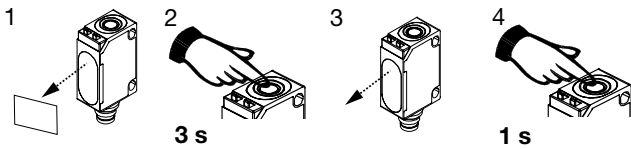
Sensitivity adjustment, with only one object
1. Line up the sensor with the object. Yellow LED and green LED are ON.
2. Press the button for 3 s until both LED's flash simultaneously (the first switching point is stored).
3. Leave the object in the detection area, press the button for 1 s. The green LED flashes and stays on: the second switching point is stored, and the sensor is ready to operate.

Sensitivity adjustment, with a running process
1. Line up the sensor with the object. Green LED is ON. At this stage the status of the yellow LED can be ignored.
2. The running process must be the only "object" within the detection area. Press the button for 3 s until both LED's flash simultaneously.

   3 s

3. Press the button for at least the duration of one process cycle.

   1 cycle

   a) The green LED flashes and stays ON: both switching points have been stored, and the sensor is ready to operate.
   b) Both LED's flash simultaneously: the sensor cannot detect the object, no switching points are stored.

Programming of make and break switching function
1. Press the button for 13 s. **13 s** Both LED's flash alternately.
2. Release the button: the green LED flashes.
3. While the green LED flashes, the output is inverted each time the button is pressed. This is indicated by the yellow LED.
   When the button is not pressed for 10 s, the current output function is stored.
   The sensor is now ready for operation.

Default setting
1. No object in the detection area: Press the button for 3 s, until both LED's flash simultaneously. **3 s**
2. No object in the detection area: Press the button for 1 s. **1 s**
   The sensor is set to maximum sensitivity.

NB! The Teach Input (2 WH) will work similarly to the push button, active High.

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