Photoelectrics
Retro-reflective, Polarized
Type PD32CNP25

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- Miniature sensor range
- Range: 2.5 m, with reflector
- Sensitivity adjustment by Teach-In programming
- Modulated, red light 660 nm, polarized
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make and break switching function programmable
- LED for output indication and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Compact housing
- Excellent EMC performance

Product Description

The PD32CNP25 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

PD32CNP25PPM5T

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	2.5 m	PD 32 CNP 25 NPT PD 32 CNP 25 PPT	PD 32 CNP 25 NPM5T PD 32 CNP 25 PPM5T

Specifications

Rated operating distance (S_n)	Up to 2.5 m, with reflector 51 x 51 mm (ER5060)	Light source	GaAlAs, LED, 660 nm
		Light type	Red, modulated
		Sensing angle	± 2°
Blind zone	5 mm	Ambient light	5,000 lux
Sensitivity	Adjustable by Teach-In (push button or wire)	Light spot	75 x 75 mm @ 1.5 m
		Operating frequency	1000 Hz
Temperature drift	≤ 1%/°C	Response time	
Hysteresis (H) (differential travel)	≤ 10%	OFF-ON (t_{ON})	≤ 0.5 ms
		ON-OFF (t_{OFF})	≤ 0.5 ms
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)	Power ON delay (t_v)	≤ 300 ms
		Output function	
Ripple (U_{rpp})	≤ 10%	NPN and PNP	Preset
Output current		NO/NC switching function	Set up by button
Continuous (I_e)	≤ 100 mA	External Teach	
Short-time (I)	≤ 100 mA (max. load capacity 100 nF)	Same function as button	10 to 30 VDC
		Locked (disable teach button)	0 to 2.5 VDC
No load supply current (I_o)	≤ 25 mA @ 24 VDC	Operating mode	Not connected
Minimum operational current (I_m)	0.5 mA	Indication	
OFF-state current (I_r)	≤ 100 µA	Output ON	LED, yellow
Voltage drop (U_d)	≤ 2.4 VDC @ 100 mA	Signal stability ON and power ON	LED, green
Protection	Short-circuit, reverse polarity and transients	Environment	
		Installation category	II (IEC 60664/60664A; 60947-1)

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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			
Operating	-20° to +60°C (-4° to +140°F)	**Connection**	
Storage	-20° to +80°C (-4° to +176°F)	Cable	PUR, black, 2 m
Vibration	10 to 55 Hz, 0.5 mm/7.5 g (IEC 60068-2-6)		4 x 0.14 mm², Ø = 3.6 mm
		Plug	M8, 4-pin
Shock	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)	**Weight**	With cable: 40 g 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 · Ø3.5 · 2.6 · 10.7 · 20.1

Plug version

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

Specifications are subject to change without notice (25.10.02)

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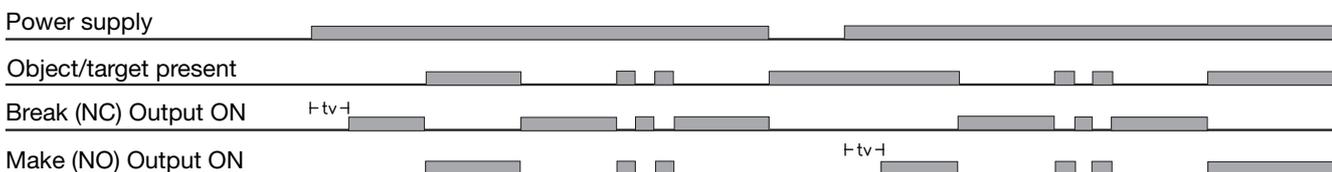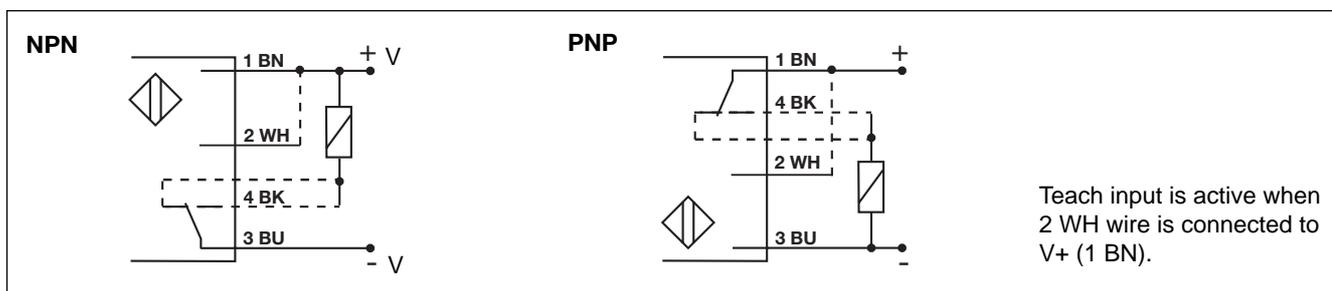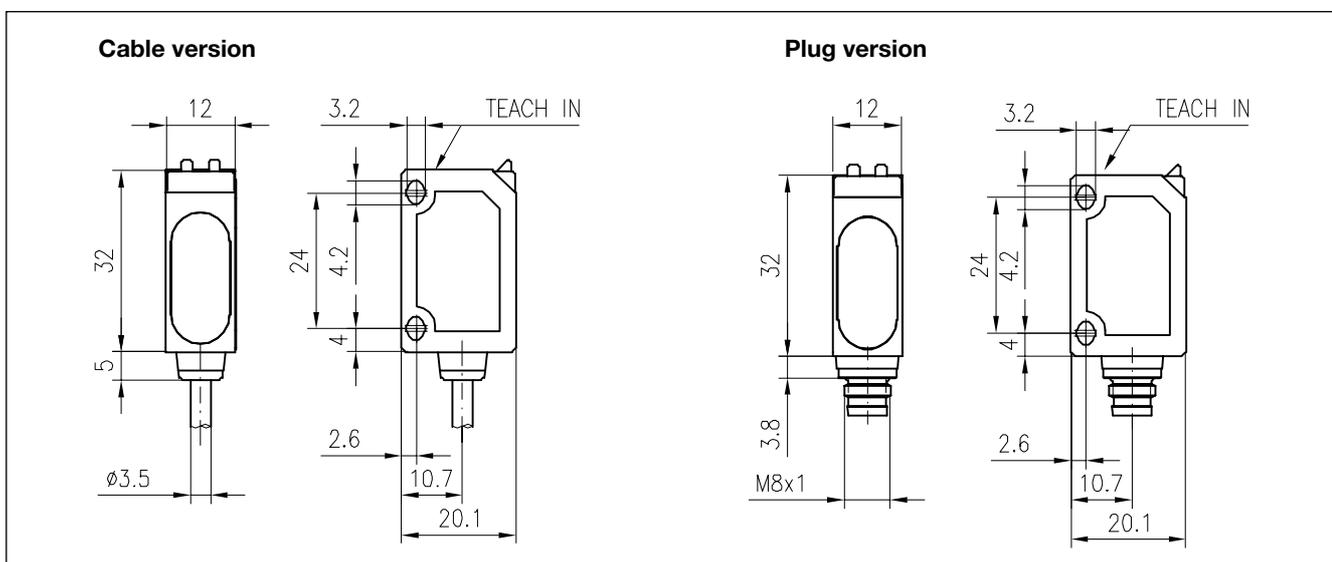
Signal Stability Indication

Signal level

150%
100%
70%

Time

Green LED ON
Yellow LED ON

Accessories

Mounting bracket APD32-MB1
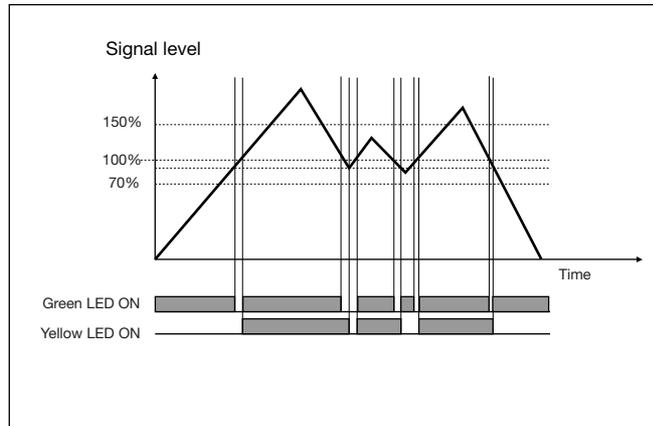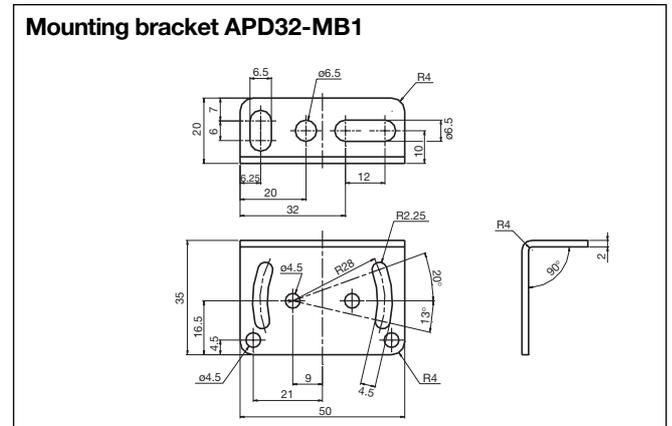
For further information refer to "Accessories"

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 CNP 25 ...
• 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**
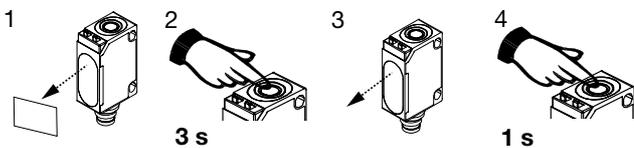
Sensitivity adjustment, with only one object
1. Line up the sensor with the object. Yellow LED and green LED are ON.
2. Press the button for 3 s until both LED's flash simultaneously (the first switching point is stored).
3. Leave the object in the detection area, press the button for 1 s. The green 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.