

# Photoelectrics

## Diffuse-reflective, Background Suppression

### Type PD30CTB20....SA

CARLO GAVAZZI



- Miniature sensor range
- Range: 200 mm
- Sensitivity adjustment by top potentiometer
- Modulated, red light 625 nm
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make and break switching function
- LED indication for output, stability and power ON
- Protection: reverse polarity, short circuit and transients
- Excellent EMC performance
- Excellent colour matching



## Product Description

The PD30CTB20 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 potentiometer 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 and NC output.

## Ordering Key

**PD30CTB20NASA**

Type	_____
Housing style	_____
Housing size	_____
Housing material	_____
Housing	_____
Detection principle	_____
Sensing distance	_____
Output type	_____
Output configuration	_____
Sensitivity adjustment	_____

## Type Selection

Housing W x H x D	Range S <sub>n</sub>	Connection	Ordering no. NPN Make and break switching	Ordering no. PNP Make and break switching
10 x 30 x 20 mm	200 mm	Cable	PD 30 CTB 20 NASA	PD 30 CTB 20 PASA

## Specifications

<b>Rated operating distance (S<sub>n</sub>)</b>	Up to 200 mm, reference target, Kodak test card R27, white, 90% reflective, 100 x 100 mm	<b>No load supply current (I<sub>0</sub>)</b>	≤ 20 mA @ U <sub>B</sub> max ≤ 40 mA @ U <sub>B</sub> min
<b>Maximum detecting distance @ 200 mm white background</b> White object 90% refl. Grey object 18% refl. Black object 6% refl.	≤ 200 mm ≤ 200 mm ≤ 200 mm	<b>Minimum operational current (I<sub>m</sub>)</b>	≤ 0.5 mA
<b>Blind zone</b>	10 mm	<b>OFF-state current (I<sub>r</sub>)</b>	≤ 100 μA
<b>Sensitivity</b> Electrical adjustment Mechanical adjustment	210° 240°	<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2 VDC @ I <sub>e</sub> max
<b>Temperature drift</b>	≤ 0.05%/°C	<b>Protection</b>	Short-circuit, reverse polarity and transients
<b>Hysteresis (H)</b>	≤ 10%	<b>Light source</b>	InGaAlP, LED, 625 nm
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Light type</b>	Red, modulated
<b>Ripple (U<sub>rpp</sub>)</b>	≤ 10%	<b>Emitter angle</b>	± 2.5° @ half the sensing distance
<b>Output current</b> Continuous (I <sub>e</sub> ) Short-time (I)	≤ 100 mA ≤ 100 mA (max. load capacity 100 nF)	<b>Ambient light</b>	≤ 10,000 lux
		<b>Operating frequency (f)</b>	≤ 500 Hz
		<b>Response time</b> OFF-ON (t <sub>ON</sub> ) ON-OFF (t <sub>OFF</sub> )	≤ 1 ms ≤ 1 ms
		<b>Power ON delay (t<sub>v</sub>)</b>	≤ 200 ms
		<b>Output function</b> Open collector	NPN or PNP by sensor type
		<b>Output switching function</b>	N.O. and N.C.

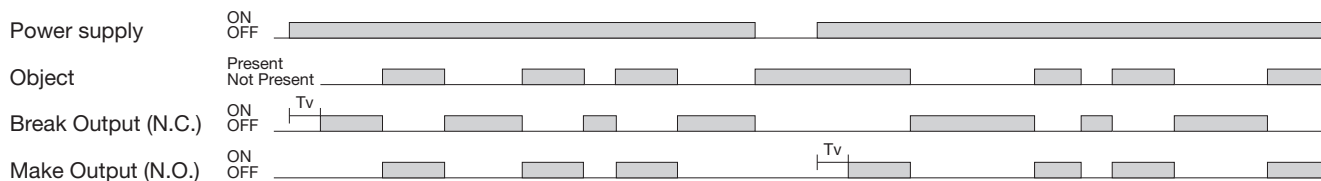


## Specifications (cont.)

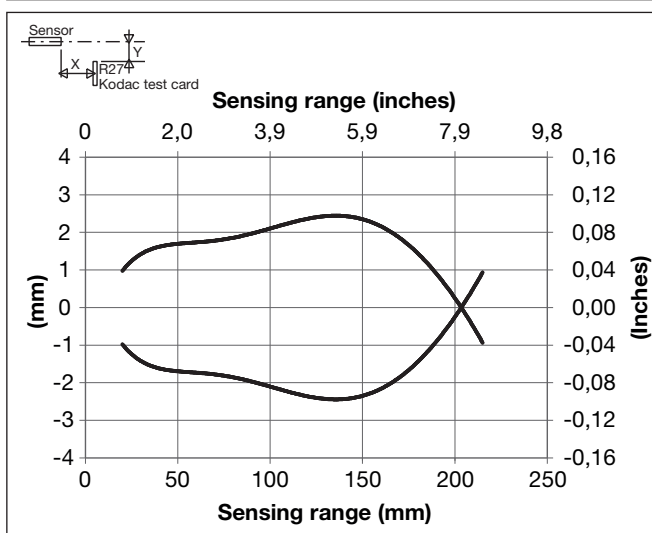
<b>Indication</b> Output ON Power ON	LED, yellow LED, green	<b>Rated insulation voltage</b>	≤ 500 VAC (rms)
<b>Environment</b> Installation category  Pollution degree  Degree of protection	III (IEC 60664/60664A; 60947-1) 3 (IEC 60664/60664A; 60947-1) IP 67 (IEC 60529; 60947-1)	<b>Housing material</b> Body Frontglas Trimmer shaft	ABS Light Grey PMMA Red POM Dark Grey
<b>Ambient temperature</b> Operating Storage	-25° to +60°C (-13° to +140°F) -40° to +70°C (-40° to +158°F)	<b>Connection</b>	PVC, black, 2 m 4 x 0.14 mm <sup>2</sup> , Ø = 3.3 mm
<b>Vibration</b>	10 to 150 Hz, 1.0 mm/15 G (IEC 60068-2-6)	<b>Weight</b>	≤ 50 g
<b>Shock</b>	30 g / 11ms, 3 pos, 3 neg per axis (IEC 60068-2-6, 60068-2-32)	<b>CE-marking</b>	Yes
		<b>Approvals</b>	cULus (UL508, CSA C22.2)

## Operation Diagram

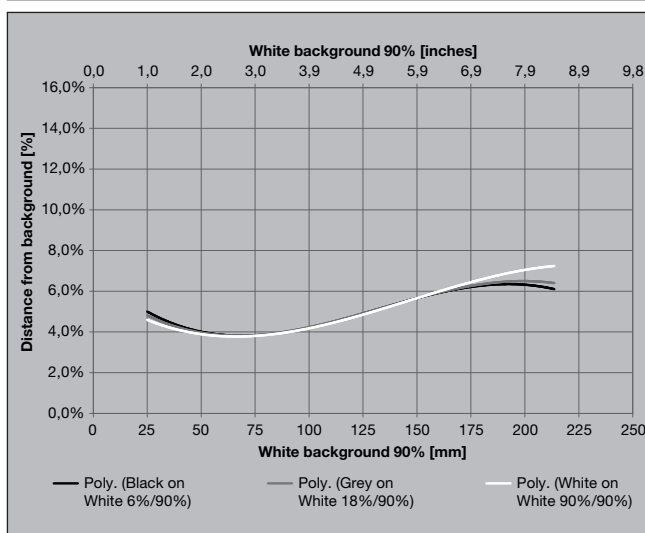
Tv = Power ON delay



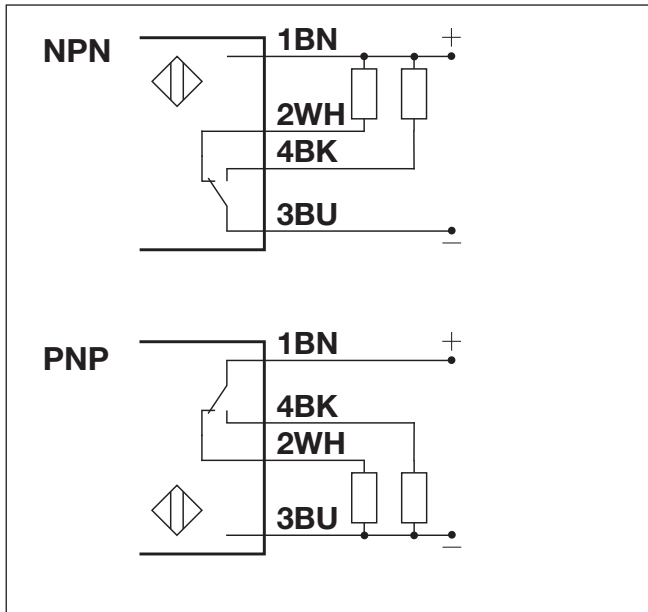
## Detection Diagram



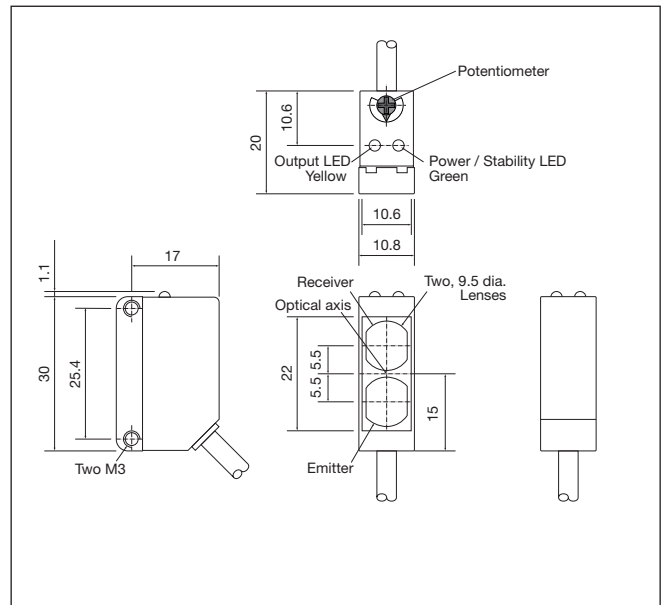
## Sensing Conditions



## Wiring Diagrams



## 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>
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## Accessories

- Mounting bracket APD30-MB1 or APD30-MB2 to be purchased separately.

## Delivery Contents

- Photoelectric switch: PD30CTB20 ...
- Screwdriver
- **Packaging:** Plastic bag