

# PD30CNB25xxPS



## Photoelectrics, Background suppression reflective - PointSpot



### Main features

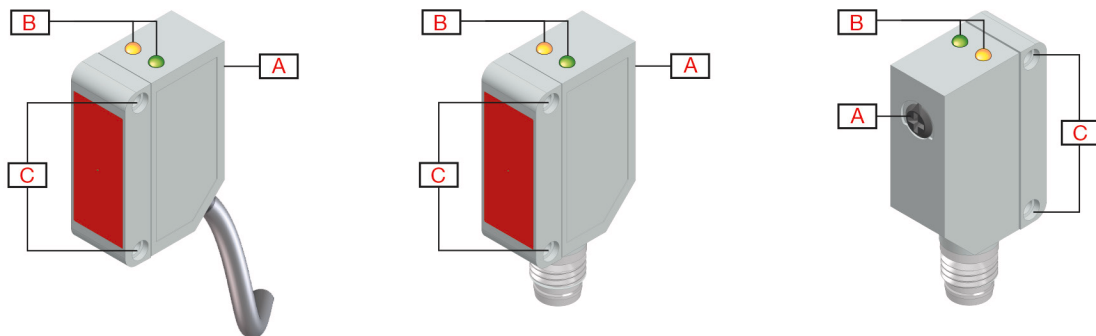
- Miniature sensor range
- The visible red PointSpot light makes alignment very easy
- Range: 250 mm
- Sensitivity adjustment by potentiometer
- Modulated, red light 617 nm
- Supply voltage: 10 to 30 VDC
- Output: 100 mA, NPN or PNP preset
- Make and break switching function
- LED indication for output, stability and power ON
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- Excellent EMC performance
- Power supply necessary only on one side of the application

### Description

The PD30CNB25... sensor family comes in a compact 10 x 30 x 20 mm ABS housing. They are designed for use in applications where a compact lightbeam without "halo" light is required to assure a high sensing performance. The potentiometer function for adjustment of the sensitivity makes the sensors highly flexible. The output types NPN or PNP feature both N.O. and N.C. output.

### Main functions

- Detects presence or absence of objects by cutting off the background information.
- The detection distance is very independent of the colour of the object to detect.
- The PointSpot light source removes halo light and increases detection reliability.



Element	Component	Function
A	Potentiometer	Adjustment
B	2 LEDs	Green LED: Power ON / Signal stability. Yellow LED: Output
C	2 M3	Fixing holes for sensor mounting



## References

### Product selection key



PD30CNB25  A  PS

Enter the code option instead of

Code	Option	Description
P	-	Photoelectric sensor
D	-	Rectangular housing
30	-	Length of housing
C	-	Plastic housing
N	-	Normal trimmer (back trimmer)
B	-	Diffuse reflective, Background suppression
25	-	Distance [cm]
<input type="checkbox"/>	N	NPN
	P	PNP
A	-	Output: N.O. and N.C.
<input type="checkbox"/>	-	Cable, 2 m
	M5	Connector M8
PS	-	PointSpot emitter

### Type selection

Conne- ction	Output	Code
Cable	NPN	PD30CNB25NAPS
	PNP	PD30CNB25PAPS
Plug	NPN	PD30CNB25NAM5PS
	PNP	PD30CNB25PAM5PS

# Sensing

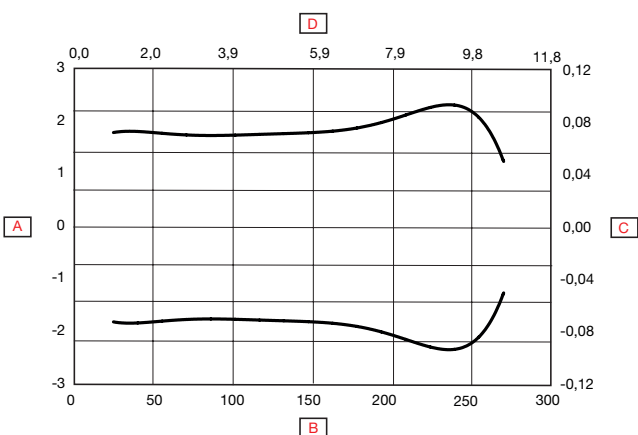
## Detection

<b>Rated operating distance (S<sub>n</sub>)</b>	≤ 250 mm	Reference target, white paper with 90 % reflectivity, Size 100x100 mm
<b>Maximum detection distance</b>	< 250 mm	White object 90% reflection
	< 250 mm	Grey object 18% reflection
	< 250 mm	Black object 6% reflection
<b>Sensitivity adjustment</b>	25 mm ... 250 mm	Single-turn potentiometer
	210°	Electrical adjustment
	240°	Mechanical adjustment
<b>Blind zone</b>	≤ 15 mm	White object 90% reflection
	≤ 17 mm	Grey object 18% reflection
	≤ 19 mm	Black object 6% reflection
<b>Hysteresis</b>	≤ 10%	
<b>Light source</b>	621 nm	Red - PointSpot
<b>Light type</b>	Red modulated	
<b>Detection angle</b>	± 1.0°	@ 125 mm
<b>Light spot size</b>	5.5 mm	@ 125 mm
<b>Emitter beam angle</b>	± 1.6°	@ 125 mm

## Accuracy

<b>Temperature drift</b>	≤ 0.1%/°C
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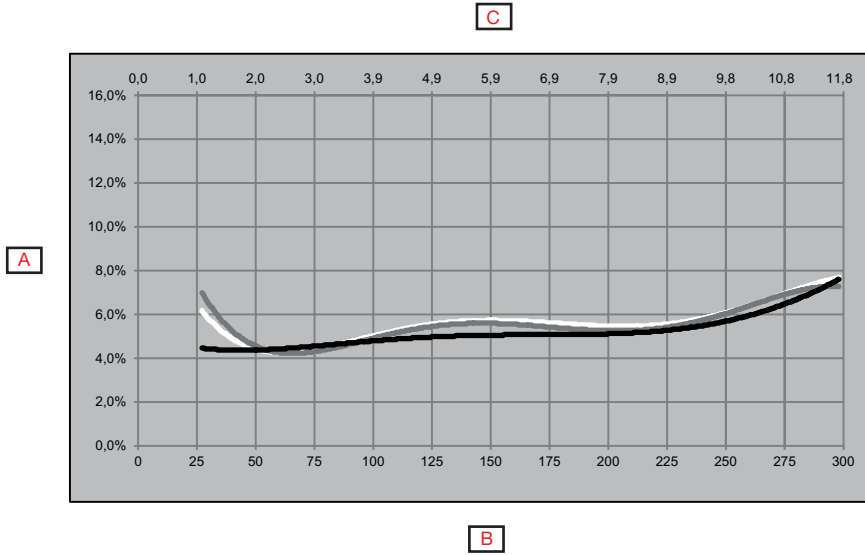
## Detection diagram



<b>A</b>	Detection width (mm)	<b>E</b>	Sensor
<b>B</b>	Sensing range (mm)	<b>F</b>	Object
<b>C</b>	Detection width (inches)		
<b>D</b>	Sensing range (inches)		



**Sensing conditions**



<b>A</b>	Distance from background (%)		Poly. (Black on white 6%/90%)
<b>B</b>	White background 90% (mm)		Poly. (Grey on white 18%/90%)
<b>C</b>	White background 90% (inches)		Poly. (White on white 90%/90%)



# Features

## Power Supply

Rated operational voltage ( $U_B$ )	10 ... 30 VDC (ripple included)
Ripple ( $U_{rpp}$ )	$\leq 10\%$
No load supply current ( $I_o$ )	$\leq 50$ mA @ $U_B$ min. $\leq 20$ mA @ $U_B$ Max.
Power-ON delay ( $t_v$ )	$\leq 200$ ms

## Outputs

Output functions	NPN or PNP by sensor type	Open collector
Output switching function	N.O. and N.C.	
Output current	$< 100$ mA	Continuous( $I_o$ )
	$\leq 100$ mA @ 100 nF load	Short-time (I)
Minimum operational current ( $I_m$ )	0.5 mA	
OFF-state current( $I_r$ )	100 $\mu$ A	
Voltage drop ( $U_d$ )	2 VDC @ ( $I_o$ ) max.	
Protection	Short circuit, reverse polarity and transients	
Utilization category	DC-12	Control of resistive loads and solid-state loads with optical isolation
	DC-13	Control of electromagnets

## Operation diagram

$T_v$  = Power-ON delay



## Response times

Operating frequency (f)	$\leq 500$ Hz	
Response times	$\leq 1.0$ ms	OFF-ON ( $t_{ON}$ )
	$\leq 1.0$ ms	ON-OFF ( $t_{ON}$ )

## Indication

Green LED	Yellow LED	Power	Output
ON	OFF	ON	OFF
OFF	OFF	OFF	-
ON	ON	ON	ON

## Environmental

Ambient temperature	-25° ... +60°C (-13° ... +140°F)	Operating <sup>1)</sup>
	-40° ... +70°C (-40° ... +158°F)	Storage <sup>1)</sup>
Ambient light	≤ 45 000 lux	@ 3000 ... 3200 °K
Vibration	10 ... 150 Hz, 1.0 mm/15 g	EN 60068-2-6
Shock	30 g <sub>n</sub> / 11ms, 6 pos, 6 neg per axis	EN60068-2-27
Drop test	2 x 1 m and 100 x 0.5 m	EN 60068-2-31
Rated insulation voltage (U <sub>i</sub> )	50 VDC	
Dielectric insulation voltage	≥ 500 VAC rms	50/60 Hz for 1 min.
Rated impulse withstand voltage	≥ 2 kV	1.2/50 μs
Pollution degree	3	EN60947-1
Overvoltage category	III	IEC60664; EN60947-1
Degree of protection	IP67	IEC60539; EN60947-1
NEMA Enclosure Types	1	NEMA 250
Ambient humidity range	35% ... 95%	Operating <sup>2)</sup>
	35% ... 95%	Storage <sup>2)</sup>

<sup>1)</sup> Do not bend the cable in temperatures below -10°C

<sup>2)</sup> With no icing or condensation

## EMC

Electrostatic discharge immunity test	± 8 kV @ air discharge or ± 4 kV @ contact discharge	IEC 61000-4-2
Radiated radio-frequency electromagnetic field immunity test (80 MHz ... 1 GHz and 1..4 GHz ... 2 GHz)	10 V/m	IEC 61000-4-3
Electrical fast transient/Burst immunity test	2 kV / 5 kHz using the capacitive coupling clamp	IEC 61000-4-4
Conducted disturbances induced by radio-frequency fields immunity test (150 kHz ... 80 MHz)	10 Vrms	IEC 61000-4-6
Power frequency magnetic field immunity test	30 A/m 38 μT	IEC 61000-4-8

## Mechanics/electronics

### ▶ Connection

<b>Cable</b>	2 m, 4-wire 4 x 0.14 mm <sup>2</sup> , Ø = 3.3 mm, PVC, Black
<b>Plug</b>	M8, 4-pin, male

### ▶ Wiring

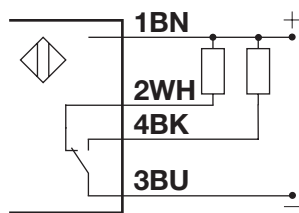


Fig. 1 NPN

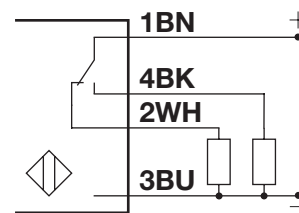


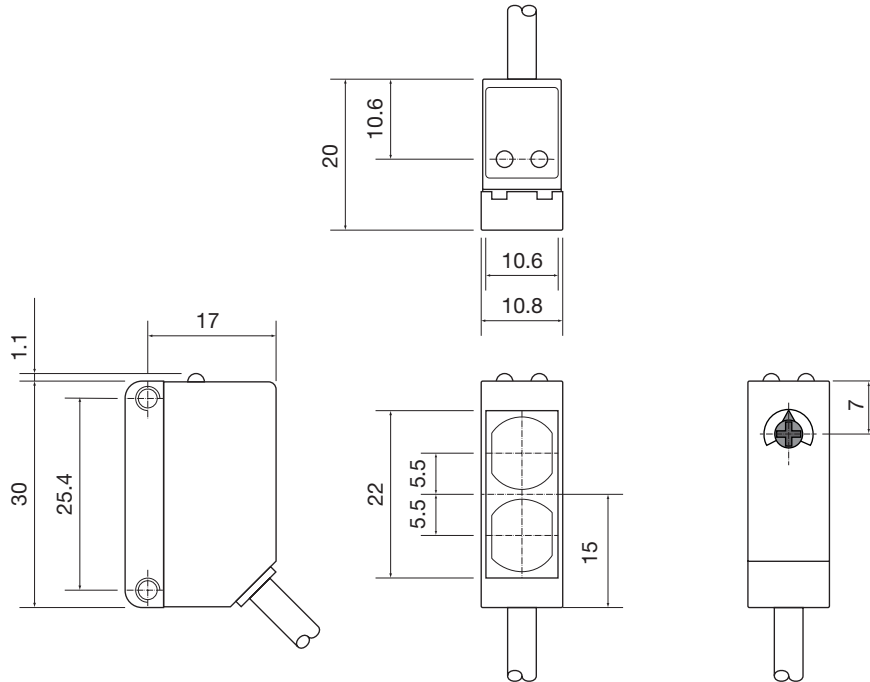
Fig. 2 PNP

BN	WH	BK	BU
Brown	White	Black	Blue

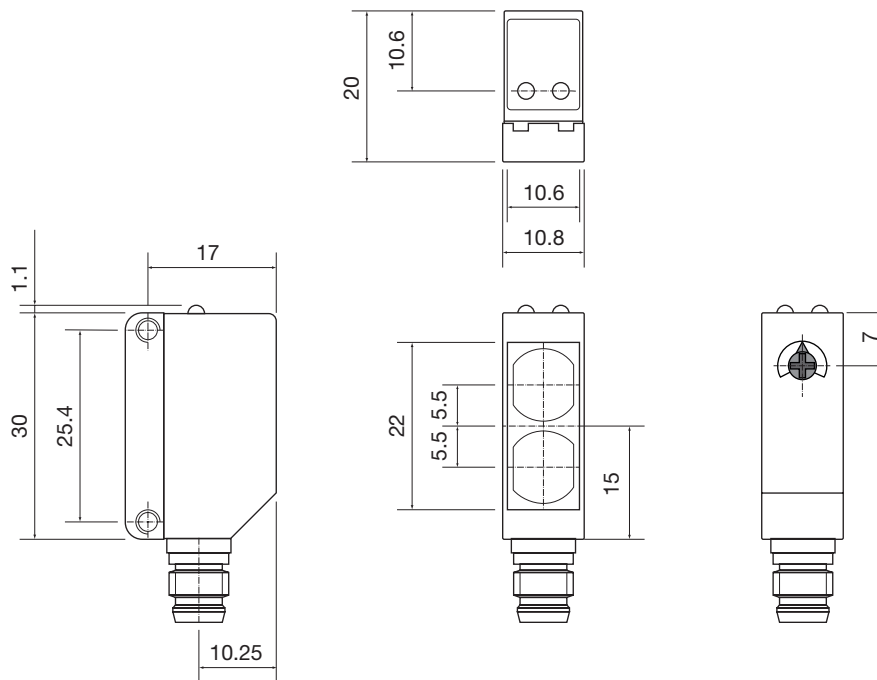
### ▶ Housing

<b>Body</b>	ABS	
<b>Front glass</b>	PMMA, Red	
<b>Trimmer shaft</b>	POM, Grey	
<b>Indication</b>	TPU, Transparent	
<b>Sealing</b>	NBR70	
<b>Dimensions</b>	10.8 x 30 x 20 mm	
<b>Weight</b>	≤ 50 g	Cable version
	≤ 20 g	Plug version

**Dimensions**



**Fig. 3 Cable**





**Fig. 4 Plug**



## Compatibility and conformity

### ▶ Approvals and markings

<b>General reference</b>	Sensor designed according to EN60947-5-2	
<b>MTTF<sub>d</sub></b>	165 years @ 40°C (+104°F)	EN ISO 13849-1, SN 29500
<b>CE-marking</b>		
<b>Approvals</b>	 (UL508 + C22.2)	



## Delivery contents and accessories


### Delivery contents

- Photoelectric switch: PD30CNB25...
- Screwdriver
- Packaging: Plastic bag

### Accessories

- Mounting bracket: APD30-MB1 or APD30-MB2 to be purchased separately
- Connector type: CO..54NF... series to be purchased separately

### Further information

Information	Where to find it	QR
Mounting brackets	<a href="http://cga.pub/?6fa29a">http://cga.pub/?6fa29a</a>	
Connectors	<a href="http://cga.pub/?0aae3e">http://cga.pub/?0aae3e</a>	



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