

# PD30ETT15xxSA



## Photoelectrics, Through-beam



### Description

The PD30ET... stainless steel sensors are built with high-quality materials and designed for harsh environments.

They are designed for use in environments where high-pressure cleaning, cleaning agents and disinfectants are used on a daily basis.

The strong stainless steel (AISI316L) together with high-quality plastic materials like PEEK, PPSU, and PES sealings of FKM ensure a safe and excellent mechanical resistance.

The compact sensor design is ideally suited to confined spaces.

### Main features

- Miniature sensor range
- Sensing range: 15 m
- Sensitivity adjustment by potentiometer
- Modulated, infrared light 850 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
- Ecolab

### Main functions

- Detects presence or absence by breaking the light beam between the emitter and receiver

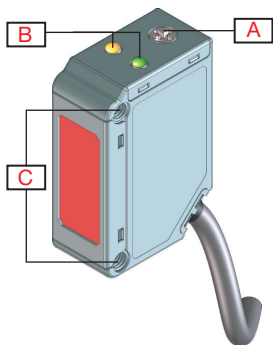


Fig. 1 Cable

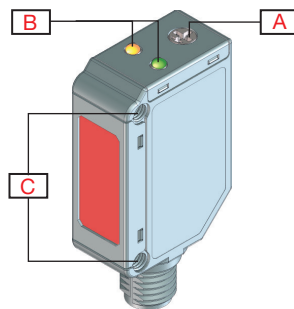


Fig. 2 Plug

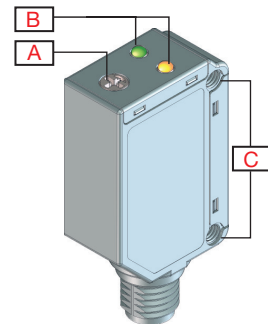


Fig. 3 Back

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



# Sensing

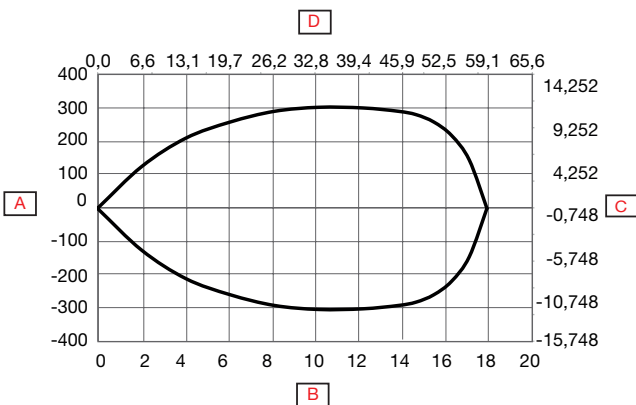
## Detection

Rated operating distance (S <sub>n</sub> )	≤ 15 m	@ Reference target, Emitter PD30ETT15
Sensitivity adjustment	3 ... 15 m	Single turn potentiometer on receiver
	210°	Electrical adjustment
	240°	Mechanical adjustment
Blind zone	None	
Hysteresis	5% ... 20%	
Light source	850 nm	Infrared
Light type	Infrared modulated	
Detection angle	± 1.7°	@ 7.5 m (half sensing distance)
Light spot size	47 cm	@ 7.5 m (half sensing distance)
Emitter beam angle	± 1.8°	@ 7.5 m (half sensing distance)

## Accuracy

Temperature drift	≤ 0.2%/°C
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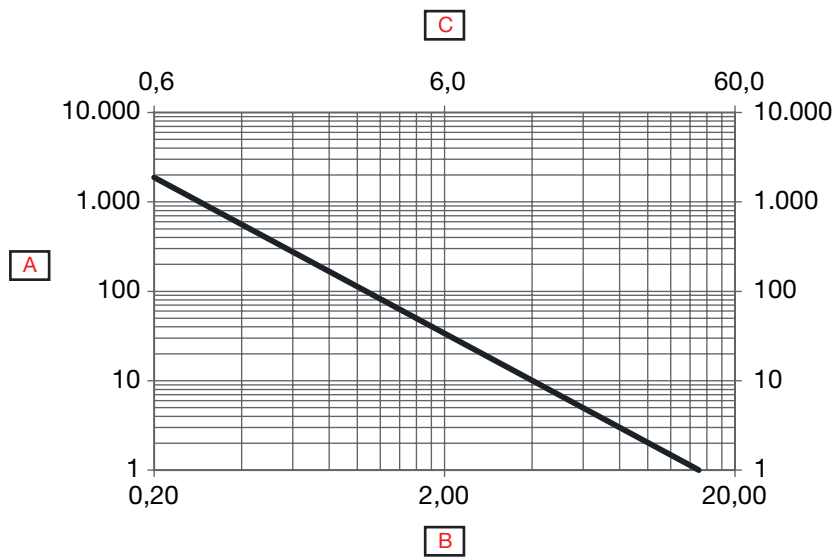
## Detection diagram





<b>A</b>	Detection width (mm)	<b>E</b>	Receiver
<b>B</b>	Sensing range (m)	<b>F</b>	Emitter
<b>C</b>	Detection width (inches)		
<b>D</b>	Sensing range (feet)		

**Excess gain**



<b>A</b>	Excess gain	<b>C</b>	Distance (feet)
<b>B</b>	Distance (m)		

## Features

### Power Supply

Rated operational voltage ( $U_B$ )	10 ... 30 VDC (ripple included)	
Ripple ( $U_{rpp}$ )	$\leq 10\%$	
No load supply current ( $I_o$ )	$\leq 25$ mA @ $U_B$ max	Emitter
	$\leq 20$ mA @ $U_B$ max	Receiver
Power ON delay ( $t_v$ )	$\leq 30$ ms	Emitter
	$\leq 200$ ms	Receiver

### Outputs

Output functions	NPN or PNP by sensor type	Open collector
Output switching function	N.O. and N.C.	
Output current	$< 100$ mA	Continuous ( $I_e$ )
	$\leq 100$ mA @ 100 nF load	Short-time (I)
Minimum operational current ( $I_m$ )	$\geq 0.5$ mA	
OFF-state current ( $I_r$ )	$\leq 100$ $\mu$ A	
Voltage drop ( $U_d$ )	$\leq 2$ VDC @ ( $I_e$ ) max.	
Protection	Reverse polarity and transients	Emitter
	Short circuit, reverse polarity and transients	Receiver
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



Power supply	ON	
Target (Receiver)	Present	
Break output (N.C.)	ON	
Make output (N.O.)	ON	

**Response times**

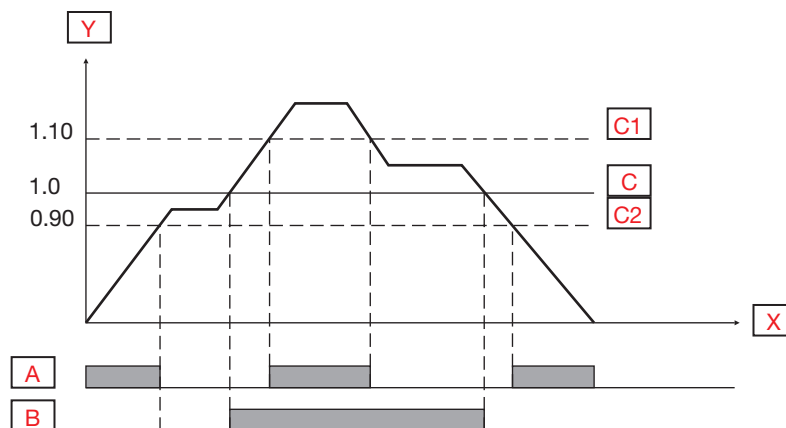
Operating frequency (f)	≥ 500 Hz	
Response times	≤ 1.0 ms	OFF-ON (t <sub>ON</sub> )
	≤ 1.0 ms	ON-OFF (t <sub>OFF</sub> )

**Indication**

Receiver			
Green LED	Yellow LED	Power	Output
ON	OFF	ON	OFF (stable)*
OFF	OFF	ON or OFF	OFF
OFF	ON	ON	ON
ON	ON	ON	ON (stable)*
Emitter			
Green LED	-	Power	
ON	-	ON	-

\*See signal stability curve

**Signal stability indication**





<b>A</b>	Green LED ON	<b>C1</b>	Operation level x 1.25
<b>B</b>	Yellow LED ON	<b>C</b>	Operation level
<b>X</b>	Time	<b>C2</b>	Operation level x 0.75
<b>Y</b>	Excess gain		

**Environmental**

<b>Ambient temperature</b>	-25° ... +60°C (-13° ... +140°F)	Operating, Cable version <sup>1)</sup>
	-40° ... +60°C (-40° ... +140°F)	Operating Plug version <sup>1)</sup>
	-40° ... +70°C (-40° ... +158°F)	Storage <sup>1)</sup>
<b>Ambient light</b>	≤ 65 000 lux	@ 3000 ... 3200 °K
<b>Vibration</b>	10 ...150 Hz, 1.0 mm/15 g	EN 60068-2-6
<b>Shock</b>	30 g <sub>n</sub> / 11ms, 6 pos, 6 neg per axis	EN 60068-2-27
<b>Drop test</b>	2 x 1 m and 100 x 0.5 m	EN 60068-2-31
<b>Rated insulation voltage (U<sub>i</sub>)</b>	50 VDC	
<b>Dielectric insulation voltage</b>	≥ 500 VAC rms	50/60 Hz for 1 min.
<b>Rated impulse withstand voltage</b>	≥1 kV	1.2/50 μs
<b>Pollution degree</b>	3	EN 60947-1
<b>Overvoltage category</b>	III	IEC 60664; EN 60947-1
<b>Degree of protection</b>	IP68 @ 2 m and 20 h	IEC 60539; EN 60947-1
	IP69K	DIN 40050-9
<b>NEMA Enclosure Types</b>	1, 2, 4, 4X, 5, 6, 6P	NEMA 250
<b>Ambient humidity range</b>	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**

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

## Mechanics/electronics

### ▶ Connection

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

### ▶ Wiring

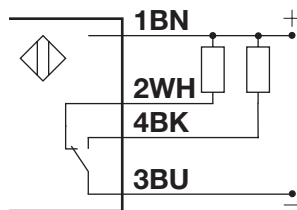


Fig. 4 NPN

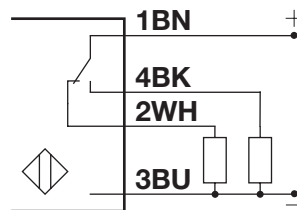


Fig. 5 PNP

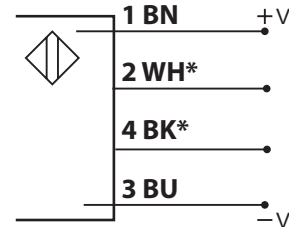


Fig. 6 Emitter

\*Not connected

Colour code							
BN	Brown	WH	White	BK	Black	BU	Blue

### ▶ Housing

Body	Stainless steel, AISI316L	
Front glass	PPSU, Red	
Trimmer shaft (Receiver)	PEEK, Light grey	
Trimmer blind cap (Emitter)	FKM	Fluoroelastomer
Indications	PES, Transparent	Polyethersulfone
Sealings	FKM	Fluoroelastomer
Cable gland	FKM	Fluoroelastomer
Dimensions	11 x 31.5 x 21 mm	
Weight	≤ 100 g	Cable version
	≤ 65 g	Plug version



Dimensions

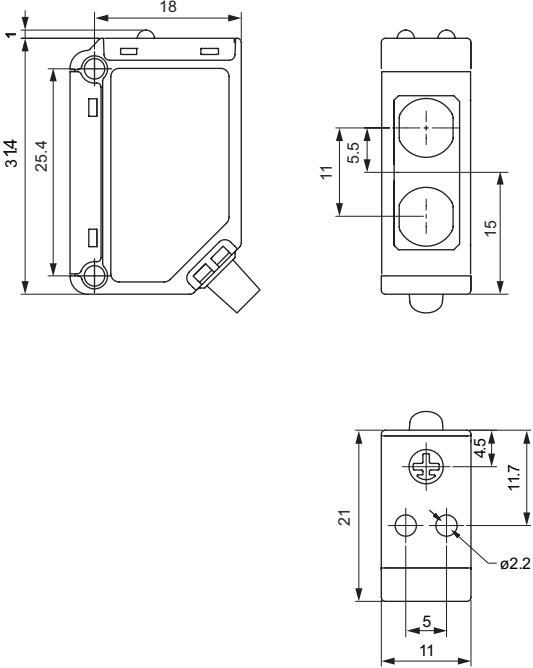


Fig. 7 Cable

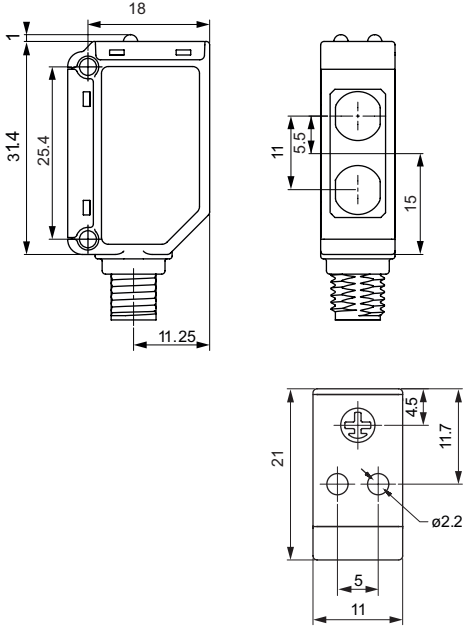


Fig. 8 Plug



## Compatibility and conformity

**Approvals and markings**

<b>General reference</b>	Sensor designed according to EN60947-5-2	
<b>MTTF<sub>d</sub></b>	Emitter: 496.2 years @ 40°C (+104°F)	ISO 13849-1, SN 29500
	Receiver; 171.9 years @ 40°C (+104°F)	
<b>CE-marking</b>		
<b>Approvals</b>		
<b>Other Approvals</b>		Topax 56, Topaz AC1, Topaz MD3, Topaz CL1, Topactiv OKTO, P3-hypochloran



## References

### Product selection key

### PD30ETT15

Enter the code entering the corresponding option instead of

Code	Option	Description
P	-	Photoelectric sensor
D	-	Rectangular
30	-	Length of housing
E	-	Stainless steel
T	-	Top trimmer
T	-	Through-beam
15	-	Distance [m]
<input type="checkbox"/>	N	NPN
	P	PNP
	-	Emitter
<input type="checkbox"/>	A	Output: N.O. and N.C.
	-	Emitter
<input type="checkbox"/>	-	Cable, 2 m
	M5	Connector M8
<input type="checkbox"/>	SA	Sensitivity adjustment
	-	Emitter

### Type selection

Conne- ction	Output	Code
Cable	NPN	PD30ETT15NASA
	PNP	PD30ETT15PASA
	Emitter	PD30ETT15
Plug	NPN	PD30ETT15NAM5SA
	PNP	PD30ETT15PAM5SA
	Emitter	PD30ETT15M5