# PD30ETT15xxSA

## Photoelectrics, Through-beam




### 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

### 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 sensor housing has the IP69K rating as well as approval by ECOLAB for cleaning and disinfection agents.
The compact sensor design is ideally suited to confined spaces.

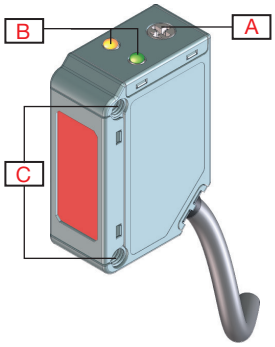



**Fig. 1** *Cable*

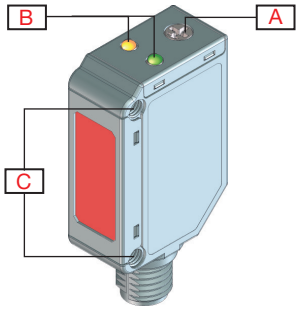



**Fig. 2** *Plug*

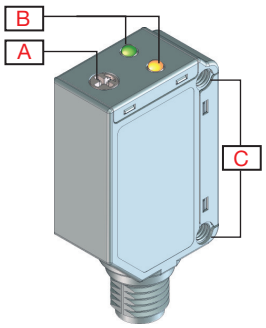



**Fig. 3** *Back*



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| 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 |



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# Sensing

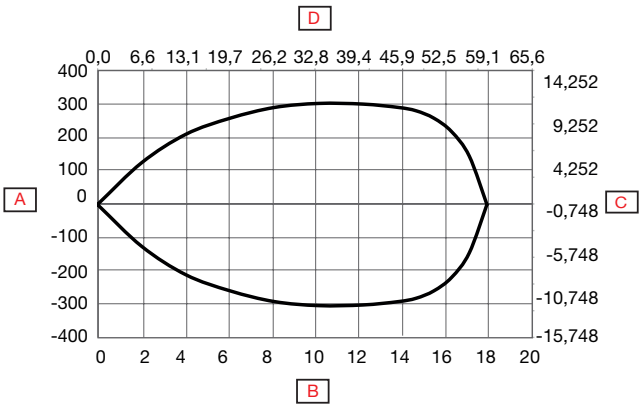
## Detection

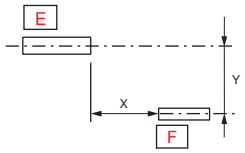
| | | |
|---|---|---|
| **Rated operating distance ($S_n$)** | ≤ 15 m | @ Reference target, Emitter PD30ETT15 |
| **Sensitivity adjustment** | 3 ... 15 m | Single-turn potentiometer on receiver |
| | 210° | Electrical adjustment |
| | 240° | Mechanical adjustment |
| **Blind zone** | None | |
| **Hysteresis** | 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 |

## Detection diagram



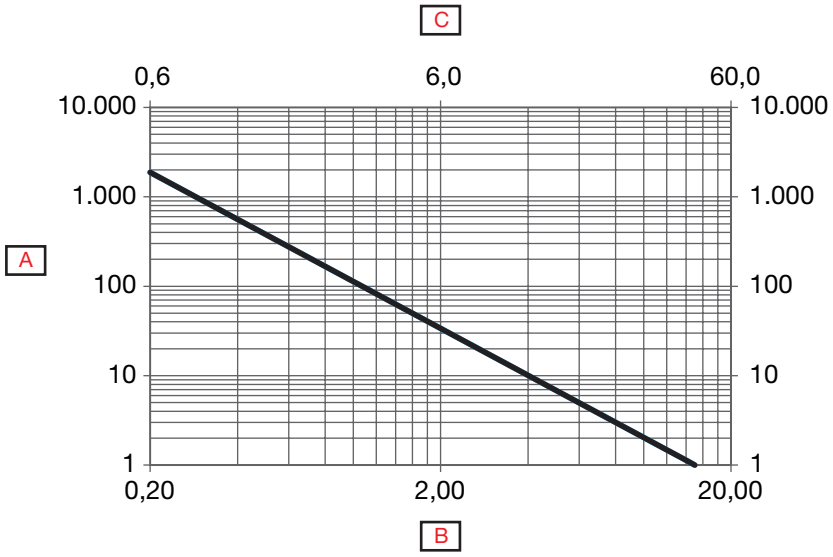




| | | | |
|---|---|---|---|
| **A** | Detection width (mm) | **E** | Receiver |
| **B** | Sensing range (m) | **F** | Emitter |
| **C** | Detection width (inches) | | |
| **D** | Sensing range (feet) | | |



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## Excess gain




| | | | |
|---|---|---|---|
| **A** | Excess gain | **C** | Distance (feet) |
| **B** | Distance (m) | | |



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# Features

## Power Supply

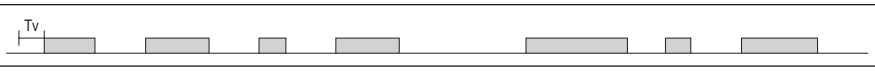
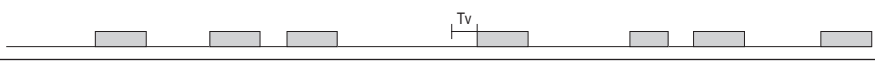
| | | |
|---|---|---|
| **Rated operational voltage ($U_B$)** | 10 ... 30 VDC (ripple included) | |
| **Ripple ($U_{rpp}$)** | ≤ 10% | |
| **No load supply current ($I_o$)** | ≤ 25 mA @ $U_B$ max | Emitter |
| | ≤ 20 mA @ $U_B$ max | Receiver |
| **Power-ON delay ($t_v$)** | ≤ 30 ms | Emitter |
| | ≤ 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($I_e$) |
| | ≤ 100 mA @ 100 nF load | Short-time (I) |
| **Minimum operational current ($I_m$)** | ≥ 0.5 mA | |
| **OFF-state current($I_r$)** | ≤ 100 µA | |
| **Voltage drop ($U_d$)** | ≤ 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

Tv = 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 ($t_{ON}$) |
| | ≤ 1.0 ms | ON-OFF ($t_{OFF}$) |



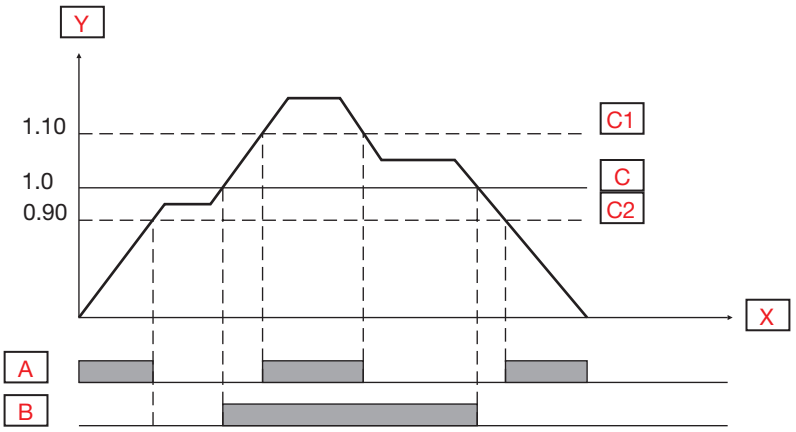
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## Indication

| 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




| | | | |
|---|---|---|---|
| **A** | Green LED ON | **C1** | Operation level x 1.25 |
| **B** | Yellow LED ON | **C** | Operation level |
| **X** | Time | **C2** | Operation level x 0.75 |
| **Y** | Excess gain | | |



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## Environmental

| | | |
|---|---|---|
| **Ambient temperature** | -25°... +60°C (-13°... +140°F) | Operating, Cable version [1] |
| | -40° ... +60°C (-40° ... +140°F) | Operating Plug version [1] |
| | -40° ... +70°C (-40° ... +158°F) | Storage [1] |
| **Ambient light** | ≤ 65 000 lux | @ 3000 … 3200 °K |
| **Vibration** | 10 ...150 Hz, 1.0 mm/15 g | EN 60068-2-6 |
| **Shock** | 30 $g_n$ / 11ms, 6 pos, 6 neg per axis | EN 60068-2-27 |
| **Drop test** | 2 x 1 m and 100 x 0.5 m | EN 60068-2-31 |
| **Rated insulation voltage ($U_i$)** | 50 VDC | |
| **Dielectric insulation voltage** | ≥ 500 VAC rms | 50/60 Hz for 1 min. |
| **Rated impulse withstand voltage** | ≥1 kV | 1.2/50 µs |
| **Pollution degree** | 3 | EN 60947-1 |
| **Overvoltage category** | III | IEC 60664; EN 60947-1 |
| **Degree of protection** | IP68 @ 2 m and 20 h | IEC 60539; EN 60947-1 |
| | IP69K | DIN 40050-9 |
| **NEMA Enclosure Types** | 1, 2, 4, 4X, 5, 6, 6P | NEMA 250 |
| **Ambient humidity range** | 35% ... 95% | Operating [2] |
| | 35% ... 95% | Storage [2] |

[1] *Do not bend the cable in temperatures below* -10°C
[2] *With no icing or condensation*

## EMC

| | | |
|---|---|---|
| **Electrostatic discharge immunity test** | ± 8 kV @ air discharge or<br>± 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<br>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 |



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# Mechanics/electronics

## Connection

| | |
|---|---|
| **Cable** | 2 m, 4-wire 4 x 0.14 mm², Ø = 3.3 mm, PVC, Black |
| **Plug** | M8, 4-pin, male |

## Wiring

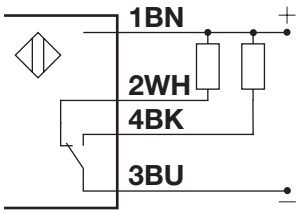



**Fig. 4** *NPN*

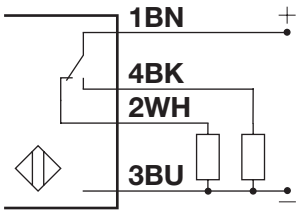



**Fig. 5** *PNP*

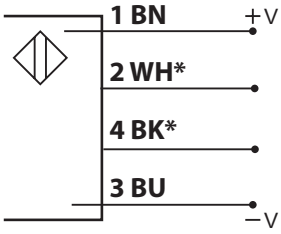



**Fig. 6** *Emitter*

*Not connected

| BN | WH | BK | BU |
|---|---|---|---|
| Brown | White | Black | 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 |



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## Dimensions

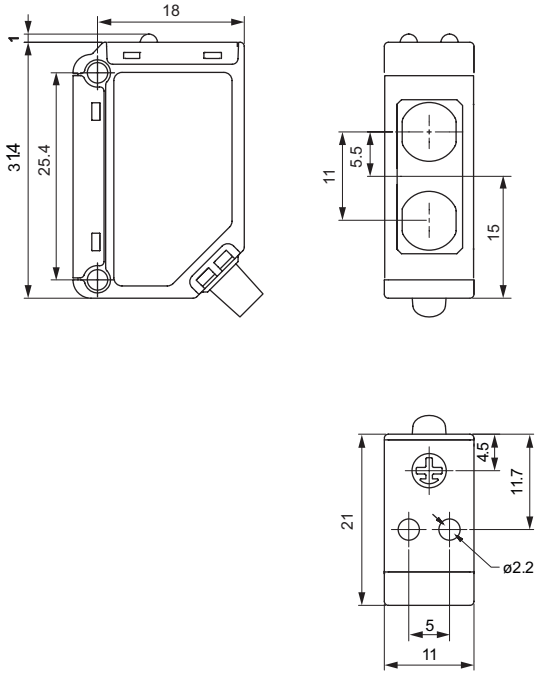



**Fig. 7** *Cable*

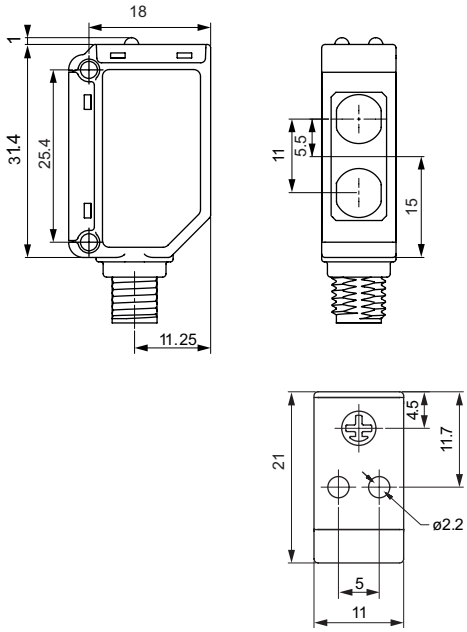



**Fig. 8** *Plug*



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# Compatibility and conformity

## Approvals and markings

| | | |
|---|---|---|
| **General reference** | Sensor designed according to EN60947-5-2 | |
| **$MTTF_d$** | Emitter: 496.2 years @ 40°C (+104°F)<br>Receiver; 171.9 years @ 40°C (+104°F) | ISO 13849-1, SN 29500 |
| **CE-marking** | CE | |
| **Approvals** | c UL us (UL508 + C22.2) | |
| **Other Approvals** | ECOLAB | Topax 56, Topaz AC1, Topaz MD3, Topaz CL1, Topactiv OKTO, P3-hypochloran |



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# References

## Product selection key

**PD30ETT15 □□□□**

Enter the code option instead of □

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

## Type selection

| Connec-tion | Output | Code |
|---|---|---|
| Cable | NPN | **PD30ETT15NASA** |
| | PNP | **PD30ETT15PASA** |
| | Emitter | **PD30ETT15** |
| Plug | NPN | **PD30ETT15NAM5SA** |
| | PNP | **PD30ETT15PAM5SA** |
| | Emitter | **PD30ETT15M5** |



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# Delivery contents and accessories

## Delivery contents

- Photoelectric switch: PD30ETT15…
- Screwdriver: Receiver only
- Packaging: Carton box
- Mounting bracket: APD30-MB1
- Emitter and receiver to be purchased separately

## Accessories

- Mounting bracket: APD30-MB2 to be purchased separately
- Connector type: CON.54NF..W series to be purchased separately

## Further information

| Information | Where to find it | QR |
|---|---|---|
| Mounting brackets | http://cga.pub/?6fa29a | |
| Connectors | http://cga.pub/?3abadc | |

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