

PD30ETD10xxSA



Photoelectrics, Diffuse reflective



Main features

- Miniature sensor range
- Sensing range: 1.0 m
- 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
- The visible red light makes alignment very easy
- Power supply necessary only on one side of the application
- Ecolab

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 functions

- Detects presence or absence of objects by detecting reflected light energy from the object



Fig. 1 Cable

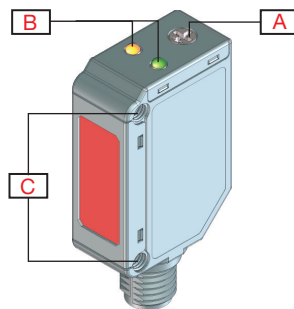


Fig. 2 Plug

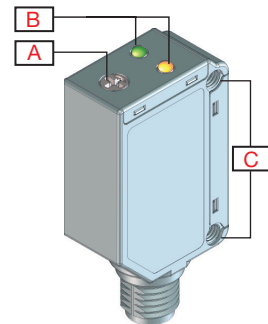


Fig. 3 Back

| 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

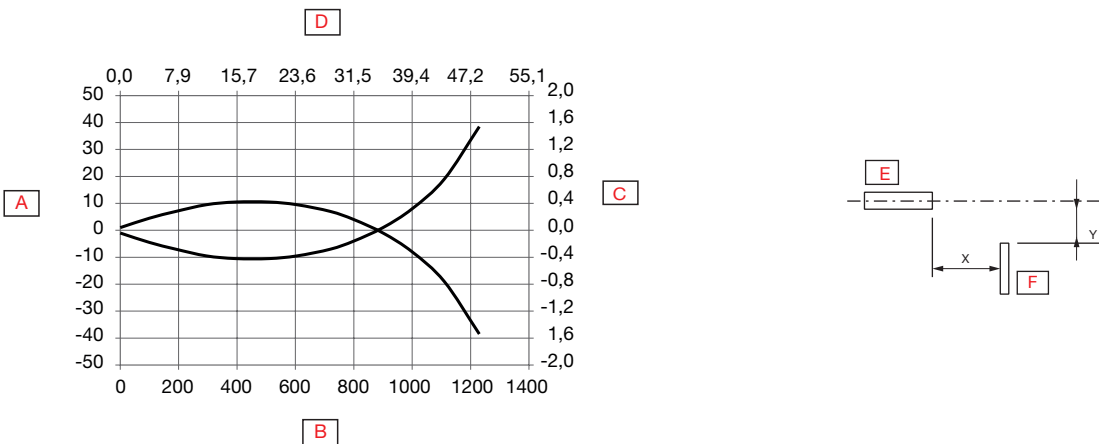
Detection

| | | |
|---|-------------------------------|---|
| Rated operating distance (S_n) | ≤ 1.0 mm | Reference target, white paper with 90 % reflectivity, Size 200x200 mm |
| Sensitivity adjustment | 0.1 m ... 1.0 m | Single-turn potentiometer |
| | 210° | Electrical adjustment |
| | 240° | Mechanical adjustment |
| Blind zone | ≤ 1.0 mm @ S _n max | White object 90% reflection |
| Hysteresis | 5% ... 20% | |
| Light source | 617 nm | Red |
| Light type | Red modulated | |
| Detection angle | ± 1.4° | @100 mm (half sensing distance) |
| Light spot size | 46 mm | @100 mm (half sensing distance) |
| Emitter beam angle | ± 2.6° | @100 mm (half sensing distance) |

Accuracy

| | |
|--------------------------|-----------|
| Temperature drift | ≤ 0.2%/°C |
|--------------------------|-----------|

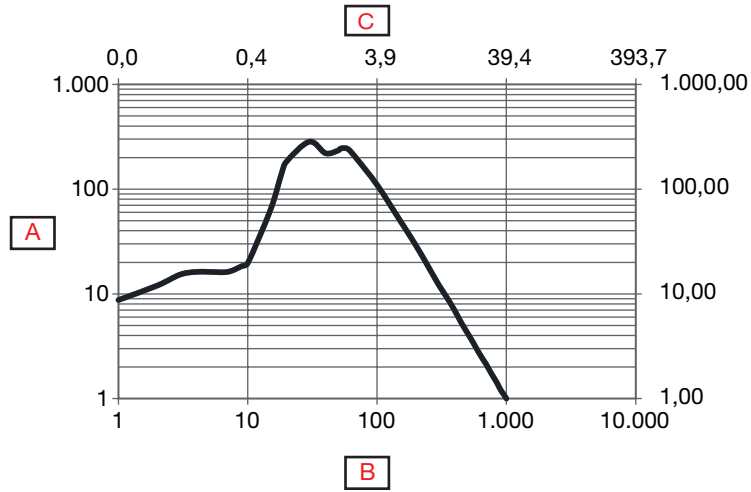
Detection diagram



| | | | |
|----------|--------------------------|----------|--------|
| A | Detection width (mm) | E | Sensor |
| B | Sensing range (mm) | F | Object |
| C | Detection width (inches) | | |
| D | Sensing range (inches) | | |



Excess gain



| | | | |
|----------|-------------------|----------|---------------|
| A | Excess gain | C | Distance (mm) |
| B | Distance (inches) | | |



Features

Power Supply

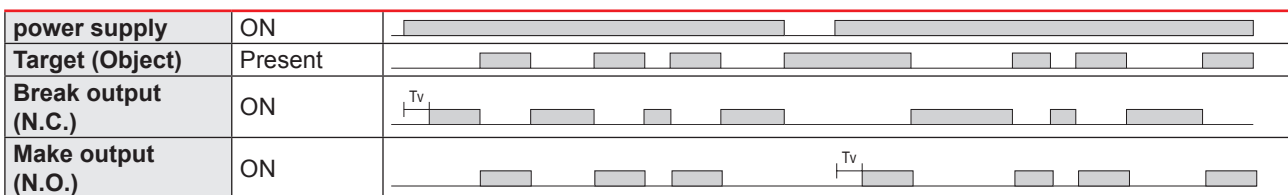
| | |
|-------------------------------------|---------------------------------|
| Rated operational voltage (U_B) | 10 ... 30 VDC (ripple included) |
| Ripple (U_{rpp}) | $\leq 10\%$ |
| No load supply current (I_o) | ≤ 25 mA @ U_B max |
| Power-ON delay (t_v) | ≤ 30 ms |

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_e) |
| | ≤ 100 mA @ 100 nF load | Short-time (I) |
| Minimum operational current (I_m) | 0.5 mA | |
| OFF-state current(I_r) | 100 μ A | |
| Voltage drop (U_d) | 2 VDC @ (I_e) 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) | ≤ 1000 Hz | |
| Response times | ≤ 0.5 ms | OFF-ON (t_{ON}) |
| | ≤ 0.5 ms | ON-OFF (t_{ON}) |

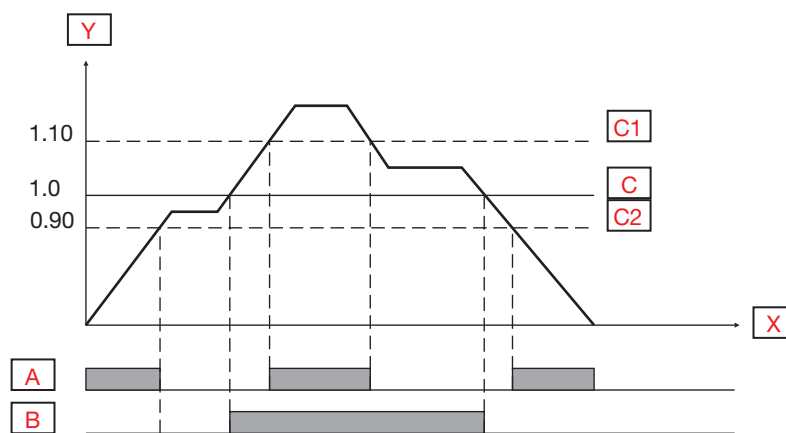


Indication

| 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)* |

*See signal stability curve

Signal stability indication



| | | | |
|----------|----------------|-----------|------------------------|
| A | Green LED ON | C1 | Operation level x 1.10 |
| B | Yellow LED OFF | C | Operation level |
| X | Time | C2 | Operation level x 0.90 |
| Y | Excess gain | | |

Environmental

| | | |
|---|---|--|
| Ambient temperature | -25° ... +60°C (-13° ... +140°F) | Operating, Cable version ¹⁾ |
| | -40° ... +60°C (-40° ... +140°F) | Storage Plug version ¹⁾ |
| | -40° ... +70°C (-40° ... +158°F) | Storage |
| Ambient light | ≤ 10 000 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 | EN60068-2-27 |
| 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 | EN60947-1 |
| Overvoltage category | III | IEC60664; EN60947-1 |
| Degree of protection | IP68 @ 2m and 20 h | IEC60539; EN60947-1 |
| | 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 ± 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

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

▶ Wiring

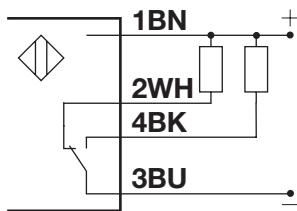


Fig. 4 NPN

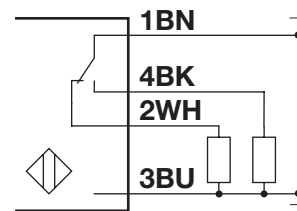


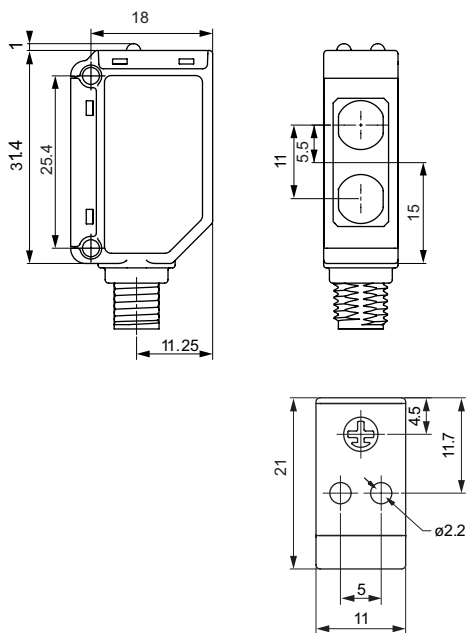
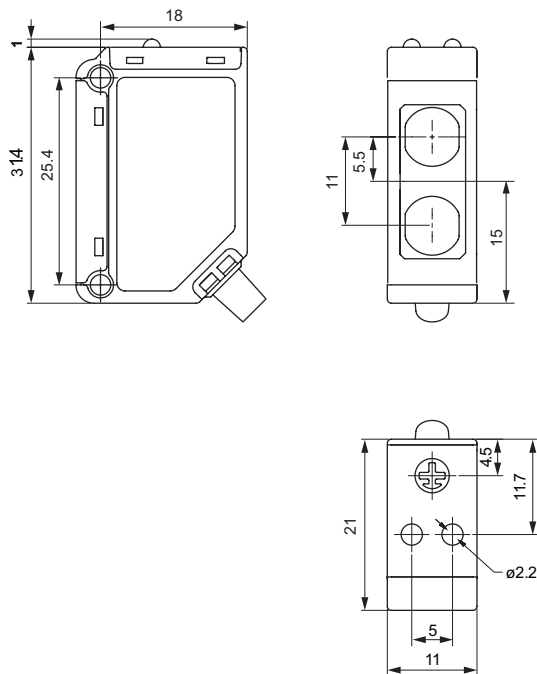
Fig. 5 PNP

| Colour code | | | | | | | |
|-------------|-------|-----------|-------|-----------|-------|-----------|------|
| BN | Brown | WH | White | BK | Black | BU | Blue |

▶ Housing

| | | |
|----------------------|---------------------------|------------------|
| Body | Stainless steel, AISI316L | |
| Front glass | PPSU, Red | |
| Trimmer shaft | PEEK, Light grey | |
| Indication | PES, Transparent | Polyethersulfone |
| Sealing | FKM | Fluoroelastomer |
| Cable gland | FKM | Fluoroelastomer |
| Dimensions | 11 x 31.5 x 21 mm | |
| Weight | ≤ 100 g | Cable version |
| | ≤ 65 g | Plug version |




Dimensions





Compatibility and conformity

▶ Approvals and markings

| | | |
|--------------------------|---|--|
| General reference | Sensor designed according to EN60947-5-2 | |
| MTTF_d | 176.2 years @ 40°C (+104°F) | ISO 13849-1, SN 29500 |
| CE-marking |  | |
| Approvals |  (UL508 + C22.2) | |
| Other Approvals |  | Topax 56, Topaz AC1, Topaz MD3, Topaz CL1, Topactiv OKTO, P3-hypochloran |



References

Product selection key

PD30ETD10 A SA

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 |
| D | - | Diffuse reflective |
| 10 | - | Distance [dm] |
| <input type="checkbox"/> | N | NPN |
| | P | PNP |
| A | - | Output: N.O. and N.C. |
| <input type="checkbox"/> | - | Cable, 2 m |
| | M5 | Connector M8 |
| SA | - | Sensitivity adjustment |

Type selection

| Conne- ction | Output | Code |
|-----------------|--------|-----------------|
| Cable | NPN | PD30ETD10NASA |
| | PNP | PD30ETD10PASA |
| Plug | NPN | PD30ETD10NAM5SA |
| | PNP | PD30ETD10PAM5SA |