PD30ETD10xxSA

Photoelectrics, Diffuse reflective

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.

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

Main functions

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

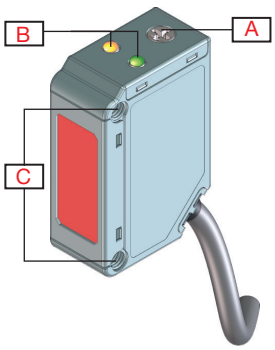


Fig. 1 *Cable*

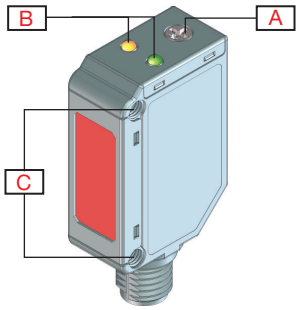


Fig. 2 *Plug*

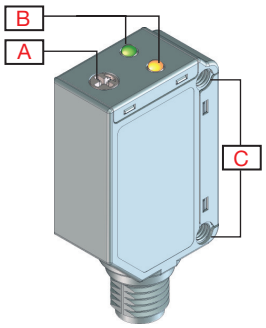


Fig. 3 *Back*

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

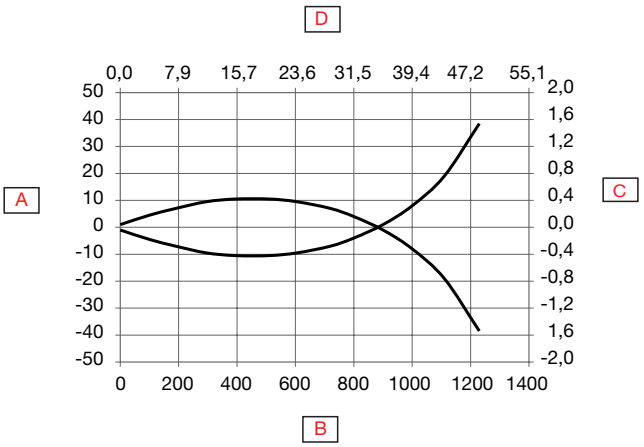
Detection

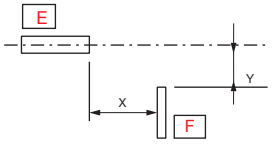
Rated operating distance (S_n)	≤ 1.0 m	Reference target, white paper with 90 % reflectivity, Size 200x200 mm
Sensitivity adjustment	0.1 m ... 1.0 m	Single-turn potentiometer
	210°	Electrical adjustment
	240°	Mechanical adjustment
Blind zone	≤ 1.0 mm @ S_n max	White object 90% reflection
Hysteresis	5% ... 20%	
Light source	617 nm	Red
Light type	Red modulated	
Detection angle	± 1.4°	@500 mm (half sensing distance)
Light spot size	46 mm	@500 mm (half sensing distance)
Emitter beam angle	± 2.6°	@500 mm (half sensing distance)

Accuracy

Temperature drift	≤ 0.2%/ºC

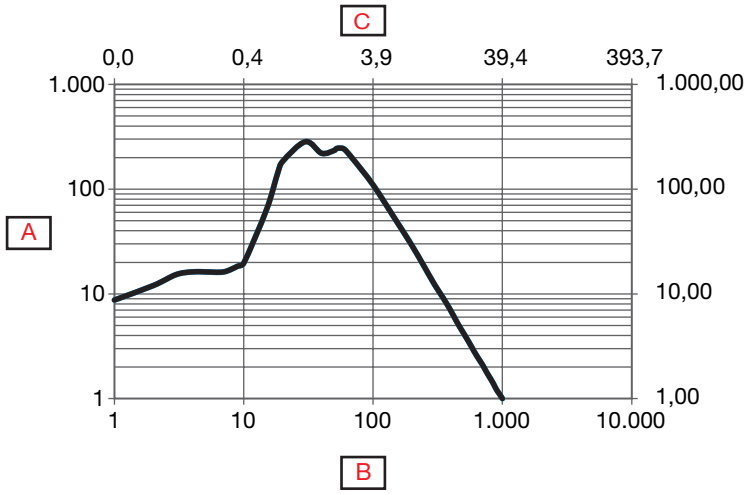
Detection diagram





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})	≤ 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 µA	
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

Tv = Power-ON delay

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

Response times

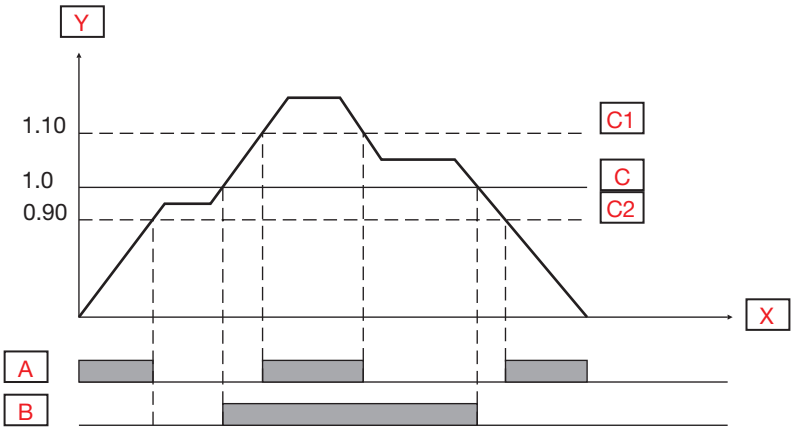
Operating frequency (f)	≤ 1000 Hz	
Response times	≤ 0.5 ms	OFF-ON (t_{ON})
	≤ 0.5 ms	ON-OFF (t_{ON})

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 mm², Ø = 3.3 mm, PVC, Black
Plug	M8, 4-pin, male

Wiring

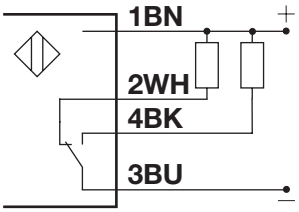


Fig. 4 *NPN*

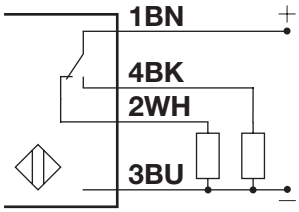


Fig. 5 *PNP*

BN	WH	BK	BU
Brown	White	Black	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

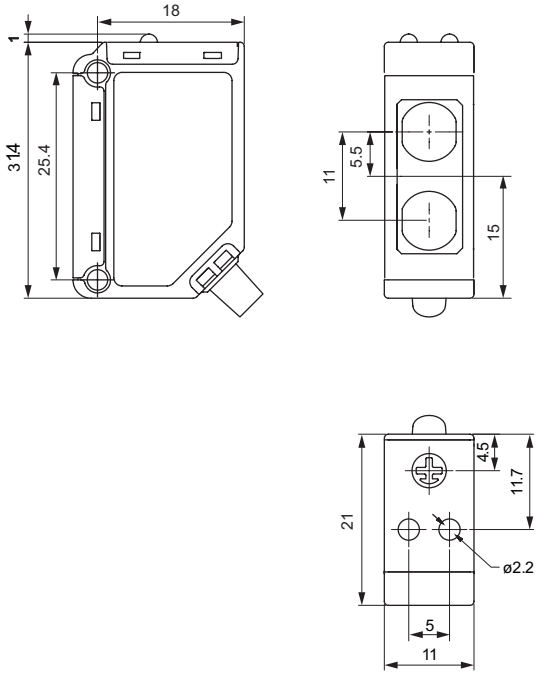


Fig. 6 *Cable*

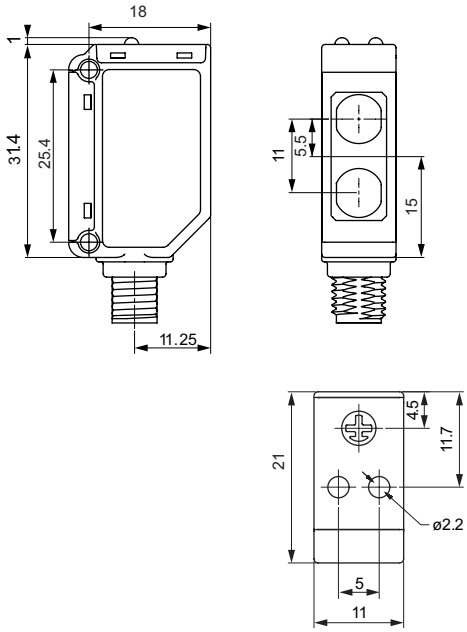


Fig. 7 *Plug*

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	CE	
Approvals	c UL us (UL508 + C22.2)	
Other Approvals	ECOLAB	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]
☐	N	NPN
	P	PNP
A	-	Output: N.O. and N.C.
☐	-	Cable, 2 m
	M5	Connector M8
SA	-	Sensitivity adjustment

Type selection

Connection	Output	Code
Cable	NPN	**PD30ETD10NASA**
	PNP	**PD30ETD10PASA**
Plug	NPN	**PD30ETD10NAM5SA**
	PNP	**PD30ETD10PAM5SA**

Delivery contents and accessories

Delivery contents

- Photoelectric switch: PD30ETD10…
- Screwdriver
- Packaging: Carton box
- Mounting bracket: APD30-MB1

Accessories

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

Further information

Information	Where to find it	QR
Mounting brackets	http://cga.pub/?6fa29a	
Connectors	http://cga.pub/?0aae3e	
ER.. Reflectors	http://cga.pub/?a7daed	