# PD30CTBx20BPxxIO - IO-Link

## Photoelectric Background Suppression sensors with IO-Link communication




## Description

The PD30CTBx20BPxxIO are a part of the latest generation of high performance photoelectric sensors designed to solve most detection tasks due to the new IO-Link features.
The sensors are implemented in the compact 10 x 20 x 30 mm ABS housing that are acknoledged world wide.
New implemented functions with weight on functionality, reliability, Predictive maintenance make these sensors ideal for Industry 4.0.

## Benefits

- **Red or infrared Background suppression** sensor with IO-Link with a adjustable distance of 25 to 200 mm, either by trimmer or via IO-Link.
- **Application functions:** Pattern Recognition, Speed & Length, Divider function and Object & Gap Monitoring.
- **Neighbour Immunity**, selectable up to 3 sensors
- **Easy customization** to specific OEM requests by use of the build in IO-Link functionalities.
- **The output can be operated** either as a standard switching output or in IO-Link mode.
- **Fully configurable via output IO-Link v 1.1.** Electrical outputs can be configured as PNP / NPN / Push-Pull / External input, normally open or normally closed.
- **Timer functions** can be set, such as ON-delay, Off-delay, and one shots.
- **Logging functions:** Temperatures, detecting counter, power cycles and operating hours.
- **Detection modes** Background suppression (BGS), single point, two point, windows and foreground suppression (FGS) mode.
- **Logic functions:** AND, OR, XOR and Gated SR-FF.
- **Analogue output:** In IO-Link mode the sensor will generate 16 bit analogue process data output representing various selectable process data such as received signal level.
- IO-Link

## Applications

**Pattern Recognition**: An easy way to verify that a product is manufactured to the specification e.g. Furniture production where tabs or holes has to be with a defined pattern.
**Speed and Length**: Monitor the speed and length of an object on a conveyour for e.g. sorting on size.
**Divider function**: A de-central counting function that gives a signal when a preset count level is reached e.g. when a certain items are packed in a carton box it ask for a new box.
**Object and Gap Monitoring**: Function that can sort out good objects and gaps between them so e.g. a packaging machine only reveive objects with the correct size and gaps.

## Main functions

- Detects presence or absence of objects that cut off the light from the emitter
- The detection distance is very independent of the colour of the object to detect.
- The sensor can be operated in IO-Link mode once connected to an IO-Link master or in standard I/O mode.
- Measured sensing distance as process data.



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- Neighbour interference protection.
- Sensing distance by potentiometer, teach by wire or by IO-link parameter.
- Quality of Run and Quality of Teach result.
- Temperature data for preventive maintenance.
- Front-end check for preventive maintenance.

**Adjustable parameters via IO-Link interface:**

- Sensing distance and hysteresis.
- Sensing modes: single point or two point or window mode.
- Timer functions, e.g.: On-delay, Off delay, One shot leading edge or trailing edge.
- Logic functions such as: AND, OR, X-OR and SR-FF.
- External input.
- Logging functions: Maximum temperatures, minimum temperatures, operating hours, operating cycles, power cycles, minutes above maximum temperature, minutes below minimum temperature, etc.
- Auto hysteresis
- Special functions: Pattern Recognition, Speed & Length, Divider function and Object & Gap Monitoring.

# References

## Product selection key

**PD30CTB ☐ 20BP ☐ IO**

Enter the code option instead of ☐

| Code | Option | Description |
|---|---|---|
| P | - | Sensing principle: Photoelectric sensor |
| D | - | Rectangular housing |
| 30 | - | Length of housing |
| C | - | Plastic housing |
| T | - | Top trimmer |
| B | - | Background suppression |
| ☐ | I | infrared light |
| | R | Red light |
| 20 | - | Sensing distance: 200 mm |
| B | - | **Selectable functions:** NPN, PNP, Push-Pull, External Input (only pin 2) or External teach input (only pin 2) |
| P | - | **Selectable:** N.O. or N.C. |
| ☐ | A2 | Cable, 2 m |
| | M5 | Connector M8 |
| IO | - | IO-Link version |



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## Type selection

| Connec-tion | Housing | Light type | Code |
|---|---|---|---|
| Cable | Plastic housing | Infrared | **PD30CTBI20BPA2IO** |
| Plug | Plastic housing | Infrared | **PD30CTBI20BPM5IO** |
| Cable | Plastic housing | Red | **PD30CTBR20BPA2IO** |
| Plug | Plastic housing | Red | **PD30CTBR20BPM5IO** |



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# Structure

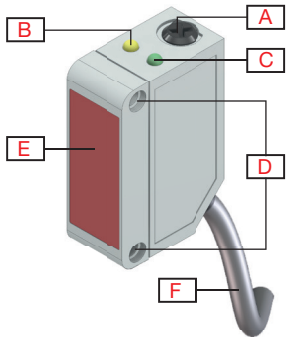



**Fig. 1** *Cable*

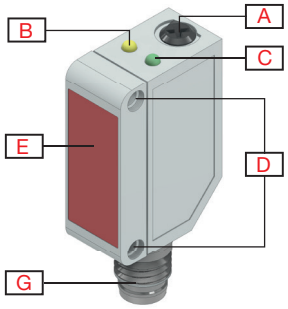



**Fig. 2** *Plug*

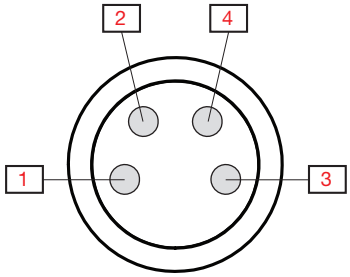



**Fig. 3** *"M8-plug" Pin numbers*

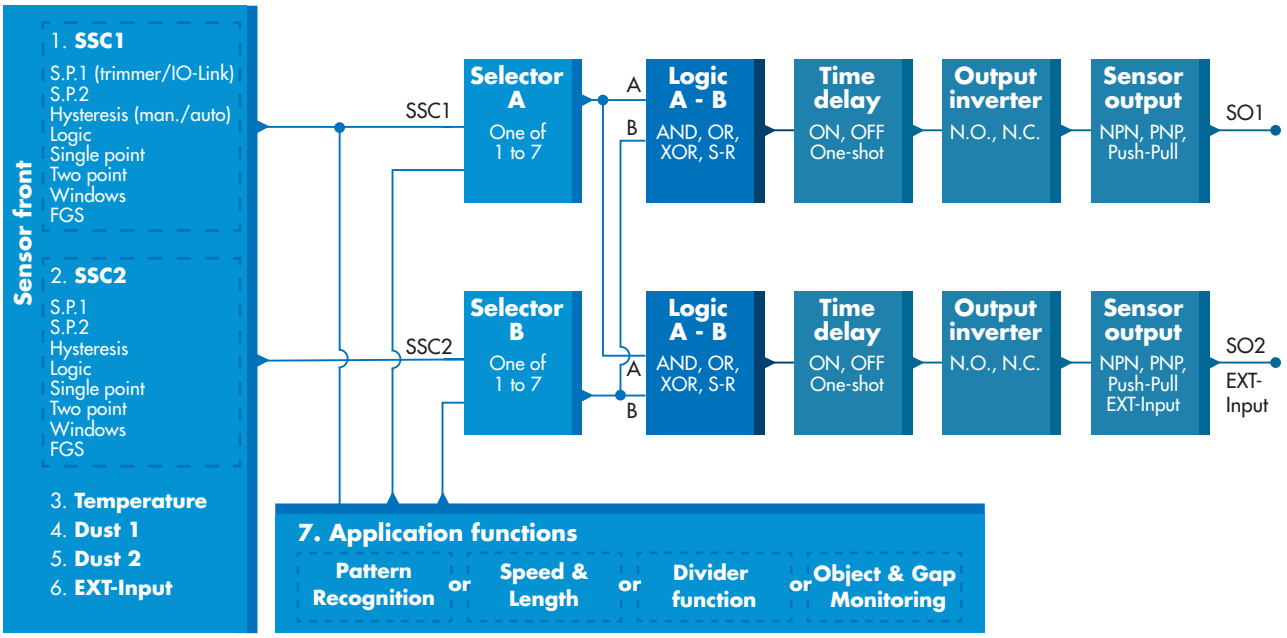
| | | | |
|---|---|---|---|
| **A** | Sensitivity adjustment (Top trimmer) | **G** | M8, 4-pin male connector |
| **B** | Yellow LED | **1** | Brown |
| **C** | Green LED | **2** | White |
| **D** | M3 Fixing holes for sensor mounting | **3** | Blue |
| **E** | Sensing window | **4** | Black |
| **F** | 2 m, 4 wire PVC Ø 3.3 mm cable | | |



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# Sensing

## Detection






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| | | |
|---|---|---|
| **Sensor switching channel SSC1 and SSC2** | **SSC1**<br>• Enabled<br>• Disabled<br>***Factory settings:*** *Enabled* | **SSC2**<br>• Enabled<br>• Disabled<br>***Factory settings:*** *Enabled* |
| **Set Point 1 (SP1)** | • 20 ... 225<br>***Factory settings:*** *200 (Approx. 200 mm @ Reference target 90% reflection)* | |
| **Set Point 2 (SP2)** | • 20 ... 225<br>***Factory settings:*** *20 (Approx. 20 mm @ Reference target 90% reflection)* | |
| **Switching logic** | • High active<br>• Low active<br>***Factory settings:*** *High active* | |
| **Switching mode** | **SSC1**<br>• Deactivated<br>• Single point mode<br>• Two point mode<br>• Windows mode<br>• FGS mode<br>***Factory settings:*** *Single point mode* | **SSC2**<br>• Deactivated<br>• Single point mode<br>• Two point mode<br>• Windows mode<br>• FGS mode<br>***Factory settings:*** *Single point mode* |
| **Rated operating distance ($S_n$)** | ≤ 200 mm | Reference target, white paper with 90 % reflectivity, Size 200x200 mm |
| **Maximum detection distance** | ≤ 200 mm | White object 90% reflection |
| | ≤ 200 mm | Grey object 18% reflection |
| | ≤ 200 mm | Black object 6% reflection |
| **Cutoff distance** | 20...250 mm<br>***Factory settings:*** *250 mm*<br>Measured distance beyond Cutoff distance, will be truncated to Cutoff distance.<br>Cutoff distance value will also be used when an object cannot be detected. | |
| **Sensitivity control ( selectable between)** | • IO-Link Adjustment (SSC1)<br>• Trimmer Input (SSC1)<br>• Teach by wire (SSC1)<br>***Factory settings:*** *Trimmer Input* | |
| **Sensitivity adjustment** | 23 mm ... 210 mm | Single-turn potentiometer |
| **Blind zone** | ≤ 10 mm | White object 90% reflection |
| | ≤ 12 mm | Grey object 18% reflection |
| | ≤ 14 mm | Black object 6% reflection |
| **Light source / Light type** | 620 nm / Red modulated | PD30CTBR20BPxxIO |
| | 850 nm / Infrared modulated | PD30CTBI20BPxxIO |
| **Detection angle** | ± 1.2° @ half sensing distance | @ 100 mm |
| **Light spot size** | Ø 6.8 mm | @ 100 mm |
| **Emitter beam angle** | ± 2.0° | @ 100 mm |
| **Adjustable distance** | 20 ... 225 mm<br>***Factory settings:*** *SP1 200 and SP2 20* | White object 90% reflection |
| | 20 ... 225 mm<br>***Factory settings:*** *SP1 200 and SP2 20* | Grey object 18% reflection |
| | 20 ... 225 mm<br>***Factory settings:*** *SP1 200 and SP2 20* | Black object 6% reflection |
| **Hysteresis (H)**<br>**Manual**<br>**Automatic** | Adjustable by IO-Link<br>• 2 mm ... 225 mm<br>***Factory settings:*** 14 mm | |
| **Detection filter** | This function can increase the immunity towards unstable targets and electromagnetic disturbances: Value can be set from 1 to 255.<br>***Factory settings:*** *1*<br>(1 is max. operating frequency and 255 is min. operating frequency) | |



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| | | |
|---|---|---|
| **Mutual Inteference Protection** | • MIP Off<br>• One channel<br>• 2 channels - CH A<br>• 2 channels - CH B<br>• 3 channels - CH A<br>• 3 channels - CH B<br>• 3 channels - CH C | ***Factory settings:*** *MIP Off* |

## Application functions

| | | |
|---|---|---|
| **Selectable dedicated applications** | • No application<br>• Pattern Recognition<br>• Speed and Length<br>• Divider function<br>• Object and Gap Monitoring | ***Factory settings:*** No application |

### Pattern Recognition

| | |
|---|---|
| **Function description** | The Pattern recognition function detects a pattern (e.g. a row of holes or pins) and compare the order with a pre-teached reference pattern. |
| **Conditions** | Two sensors (Main sensor and Trigger sensor) are needed for this function. |
| **Settings** | • The Trigger sensor has to detect the full length of the body that contains the pattern.<br>• The Main sensor has to be aimed at the e.g. holes or pins that constitute the pattern. |

### Speed and Length

| | | |
|---|---|---|
| **Function description** | This function is designed to monitor the length of an object as well as the speed of a conveyour belt. The actual value if the length in [mm] and the speed in [mm/s] are directly available on the IO-Link master. | |
| **Conditions** | Two sensors (Main sensor and Trigger sensor) are needed for this function. | |
| **Settings** | Distance between sensors. | 25 ... 150 mm<br>***Factory settings:*** 100 mm |

### Divider function

| | | |
|---|---|---|
| **Function description** | This function can be used to e.g. monitor how many items that are packed into a carton box. Once the preset number is reached the sensor gives an output so the full box can be replaced. | |
| **Conditions** | Only one sensor is needed for this function. | |
| **Settings** | A counter value must be set in the sensor. | |
| | Counter limit. | 1...60 000<br>***Factory settings:*** 5 |



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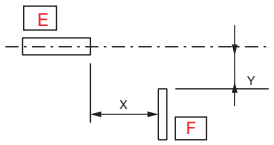
## Object and Gap Monitoring

| | | |
|---|---|---|
| **Function description** | This function is designed to monitor, that the length of an object and the gap between the following object on a conveyer belt, are witin certain limits. | |
| **Conditions** | Only one sensor is needed for this function. | |
| **Settings** | An acceptable minimum and maximum time [ms] mus be set for both the object size a gap size between two objects represented by the time it takes to pass the sensor. | |
| | Object minimum time. | 10...60 000 ms<br>***Factory settings:*** 500 ms |
| | Object maximum time. | 10...60 000 ms<br>***Factory settings:*** 10 000 ms |
| | Gap minimum time. | 10...60 000 ms<br>***Factory settings:*** 500 ms |
| | Gap maximum time. | 10...60 000 ms<br>***Factory settings:*** 10 000 ms |
| **Outputs** | Output 1 is active when an object is outside the set limits.<br>Output 2 is active when the gap between two objects is outside the set limits. | |

## Alarm settings

| | | |
|---|---|---|
| **Safe limits** | **SSC1**<br>• 0 ... 100 % of actual SP<br>***Factory settings:*** *5%* | **SSC2**<br>• 0 ... 100 % of actual SP<br>***Factory settings:*** *5%* |
| **Dust alarm** | Safe limits are used for dust alarm level. | |
| **Temperature alarm** | • High threshold -30 ... +70 °C<br>• Low threshold -30 ... +70 °C<br>***Factory settings:***<br>*High value 70 °C*<br>*Low value -30 °C* | |

## Detection diagram






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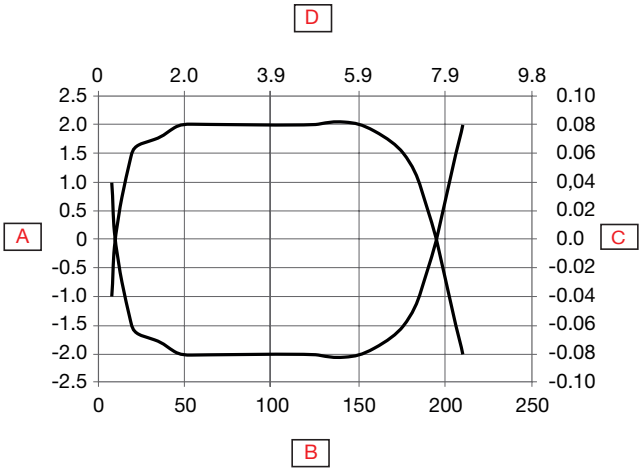



**Fig. 4** *PD30CTBR20BPxxIO*

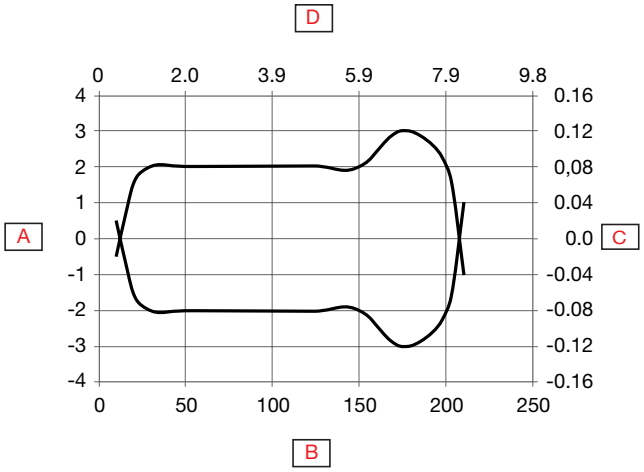



**Fig. 5** *PD30CTBI20BPxxIO*

| | | | |
|---|---|---|---|
| **A** | Detection width (mm) | **D** | Sensing range (inches) |
| **B** | Sensing range (mm) | **E** | Sensor |
| **C** | Detection width (inches) | **F** | Object 25 x 25 mm, White 90% |

## Accuracy

| | |
|---|---|
| **Temperature drift** | ≤ 0.2%/ºC |

## Sensing conditions

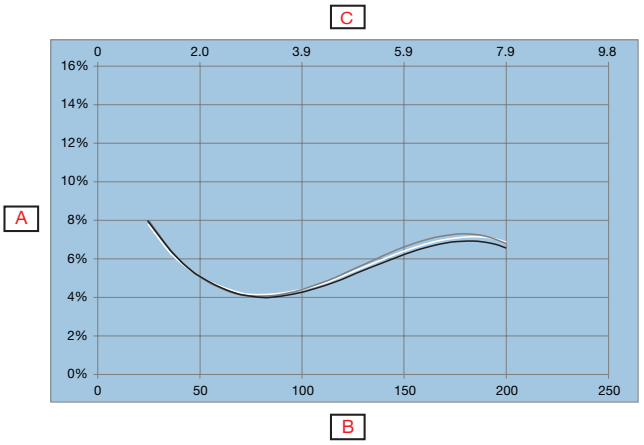



**Fig. 6** *PD30CTBR20BPxxIO*

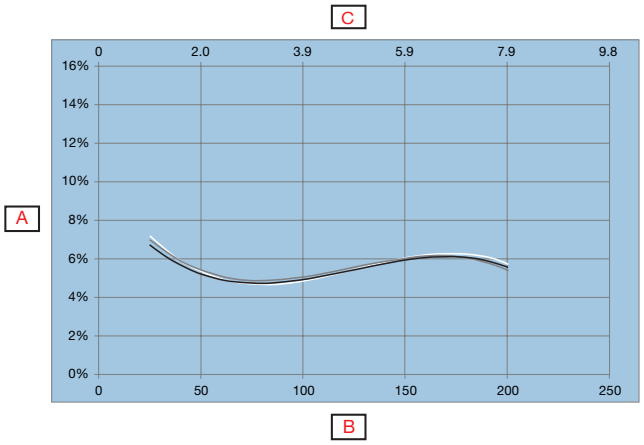



**Fig. 7** *PD30CTBI20BPxxIO*

| | | | |
|---|---|---|---|
| **A** | Distance from background (%) | | (Black on white 6%/90%) |
| **B** | White background 90% (mm) | | (Grey on white 18%/90%) |
| **C** | White background 90% (inches) | | (White on white 90%/90%) |



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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 ($I_o$)** | ≤ 35 mA @ $U_B$ min. |
| | ≤ 15 mA @ $U_B$ max. |
| **Power-ON delay ($t_v$)** | ≤ 150 ms |

## Input selector

| | | |
|---|---|---|
| **Input selector** | **Channel A**<br>• Deactivated<br>• SSC1<br>• SSC2<br>• Dust alarm 1<br>• Dust alarm 2<br>• Temperature alarm<br>• External input<br>• Application functions<br>***Factory settings:*** *SSC1* | **Channel B**<br>• Deactivated<br>• SSC1<br>• SSC2<br>• Dust alarm 1<br>• Dust alarm 2<br>• Temperature alarm<br>• External input<br>• Application functions<br>***Factory settings:*** *SSC1* |

## Logic functions

| | | |
|---|---|---|
| **Logic functions** | **Channel A + B for SO1**<br>• Direct<br>• AND<br>• OR<br>• X-OR<br>• SR-FF<br>***Factory settings:*** *Direct* | **Channel A + B for SO2**<br>• Direct<br>• AND<br>• OR<br>• X-OR<br>• SR-FF<br>***Factory settings:*** *Direct* |



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## Time delays

| | | |
|---|---|---|
| **Timer mode** | **For SO1**<br>• Disabled<br>• ON delay<br>• OFF delay<br>• ON delay and OFF delay<br>• One-shot leading edge<br>• One-shot trailing edge<br>***Factory settings:*** *Disabled* | **For SO2**<br>• Disabled<br>• ON delay<br>• OFF delay<br>• ON delay and OFF delay<br>• One-shot leading edge<br>• One-shot trailing edge<br>***Factory settings:*** *Disabled* |
| **Timer scale** | **For SO1**<br>• [ms]<br>• [s]<br>• [min]<br>***Factory settings:*** *ms* | **For SO2**<br>• [ms]<br>• [s]<br>• [min]<br>***Factory settings:*** *ms* |
| **Timer value** | **For SO1**<br>• 0 ... 32 767<br>***Factory settings:*** *0* | **For SO2**<br>• 0 ... 32 767<br>***Factory settings:*** *0* |

## Outputs

| | | |
|---|---|---|
| **Sensor output** | **For SO1 Pin 4 Black wire**<br>• Disabled output<br>• NPN<br>• PNP<br>• Push-Pull<br>***Factory settings:*** PNP | **For SO2 Pin 2 White wire**<br>• Disabled output<br>• NPN<br>• PNP<br>• Push-Pull<br>• External input, active high<br>• External input, active low<br>• External teach<br>• Mute input<br>***Factory settings:*** *PNP* |
| **Output Inverter** | **For SO1 Pin 4 Black wire**<br>• N.O.<br>• N.C.<br>***Factory settings:*** *N.O.* | **For SO2 Pin 2 White wire**<br>• N.O.<br>• N.C.<br>***Factory settings:*** *N.C.* |
| **Rated operational current ($I_e$)** | ≤ 100mA (continuous) pr. output<br>100 mA @ 100 nF Load (Short-time) pr. output | |
| **OFF-state current ($I_r$)** | ≤ 50 µA | |
| **Minimum operational current ($I_m$)** | > 0,5 mA | |
| **Voltage drop ($U_d$)** | ≤ 1.0 VDC @ 100 mA | |
| **Protection** | Short circuit, reverse polarity, transients | |
| **Utilization category** | DC-12 | Control of resistive loads and solid-state loads with optical isolation |
| | DC-13 | Control of electromagnets |
| **Capacitive load** | 100 nF @ 100 mA, 24 VDC | |

## Operation diagram

### For default factory sensor

Tv = Power-ON delay



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

## Response times

| | | |
|---|---|---|
| **Operating frequency (f)** | ≤ 500 Hz | |
| **Response times** | ≤ 1 ms | OFF-ON ($t_{ON}$) |
| | ≤ 1 ms | ON-OFF ($t_{OFF}$) |

## Indication

| Green LED | Yellow LED | Power | Function |
|---|---|---|---|
| **SIO and IO-Link mode** | | | |
| ON | ON | ON | ON (stable)* SSC1 |
| ON | OFF | ON | OFF (stable)* SSC1 |
| OFF | OFF | OFF | OFF (Not stable) SSC1 |
| Flashing 1 Hz (10% or 90% dutycycle ) | - | ON | Connected via IO-Link |
| - | Flashing 10 Hz 50% dutycycle | ON | Output short-circuit |
| - | Flashing 0.5…20 Hz 50% dutycycle | ON | Timer triggered indication |
| **SIO mode only** | | | |
| - | Flashing 1 HZ ON 100 ms OFF 900 ms | ON | External teach by wire. Only for single point mode. |
| - | Flashing 1 HZ ON 900 ms OFF 100 ms | ON | Teach time window (3 - 6 sec). |
| - | Flashing 10 HZ ON 50 ms OFF 50 ms Flashing for 2 sec | ON | Teach time out (12 sec). |
| - | Flashing 2 HZ ON 250 ms OFF 250 ms Flashing for 2 sec | ON | Teach successful. |
| **IO-Link mode only** | | | |
| Flashing 1 HZ ON 900 ms OFF 100 ms | - | ON | Sensor is in IO-Link mode. |
| Flashing 2 Hz 50% dutycycle | | ON | Find my sensor |

**See operation diagram*



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## LED indication

| | |
|---|---|
| **LED indication selection** | • LED indication inactive<br>• LED indication active<br>• Find my sensor<br>***Factory settings:*** *LED indication active* |

## Environmental

| | | |
|---|---|---|
| **Ambient temperature** | -25°... +60°C (-13°... +140°F) | Operating [1] |
| | -40° ... +85°C (-40° ... +185°F) | Storage [1] |
| **Ambient humidity range** | 35% ... 95% | Operating [2] |
| | 35% ... 95% | Storage [2] |
| **Ambient light** | ≤ 65 000 lux | @ 3000 … 3200 °K |
| **Vibration** | 10 ...150 Hz, 1.0 mm/15 g | EN 60068-2-6 |
| **Shock** | 30 $g_n$ / 11 ms, 3 pos, 3 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 (with 500 Ω) | 1.2/50 µs |
| **Pollution degree** | 3 | IEC60664, 60664A; EN60947-1 |
| **Overvoltage category** | III | IEC60664; EN60947-1 |
| **Degree of protection** | IP67 | IEC60539; EN60947-1 |
| **NEMA Enclosure Types** | 1 | NEMA 250 |

[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; EN60947-1 |
| **Electromagnetic field immunity** | 10 V/m | IEC 61000-4-3; EN60947-1 |
| **Fast transient immunity** | ±2 kV / 5 kHz | IEC 61000-4-4; EN60947-1 |
| **Wire-conducted noise** | 10 Vrms | IEC 61000-4-3; EN60947-1 |
| **Power frequency magnetic field immunity test** | Continuous: >30 A/m, 28 µ tesla<br>Short-time: >300 A/m, 280 µ tesla | IEC 61000-4-8; EN60947-1 |


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## Diagnostic parameters

| Function | Unit | Range |
|---|---|---|
| **Sensor Diagnostics** | | |
| **Frontend Failure** | 0 | 0 or 1 |
| **Memory Failure** | 0 | 0 or 1 |
| **Temperature Diagnostics** | | |
| **Current temperature** | [°C] | -50 ... +150 |
| **Maximum temperature - All time high** | [°C] | -50 ... +150 |
| **Minimum temperature - All time low** | [°C] | -50 ... +150 |
| **Maximum temperature - Since last power-up** | [°C] | -50 ... +150 |
| **Minimum temperature - Since last power-up** | [°C] | -50 ... +150 |
| **Minutes above Maximum Temperature** | [min] | 0 … 2 147 483 647 |
| **Minutes below Minimum Temperature** | [min] | 0 … 2 147 483 647 |
| **Operating Diagnostic** | | |
| **Operating Hours** | [h] | 0 … 2 147 483 647 |
| **Number of Power Cycles** | [cycles] | 0 … 2 147 483 647 |
| **Detection counter SSC1** | [cycles] | 0 … 2 147 483 647 |
| **Maintenaince event counter** | [cycles] | 0 … 2 147 483 647 |
| **Download counter** | [counts] | 0 …65 536 |
| **Quality of Teach** | - | 0 ... 255% |
| **Quality of Run** | - | 0 ... 255% |
| **Excess gain** | | 0.00 ... 1 000.00 |
| **Error Count** | [counts] | 0 …65 536 |
| **Device Status** | 0 = Device is operating properly<br>1 = Maintenance required<br>2 = Out-of-specification<br>3 = Functional-Check<br>4 = Failure<br>***Factory settings:*** *0* | |

## Events Configuration

| Events | Factory default setting |
|---|---|
| **Maintenaince Event** | Inactive |
| **Temperature fault event** | Inactive |
| **Temperature over-run** | Inactive |
| **Temperature under-run** | Inactive |
| **Short circuit** | Inactive |



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## Observation menu

| Process Data | Factory default setting |
|---|---|
| **Analogue value** | Analogue value Inactive |
| | Analogue value normal ***Factory settings*** |
| | Analogue value as Object Length |
| | Analogue value as Object Speed |
| | Analogue value as Counter value |
| **Excess gain** | Inactive |
| **SO1, Switching output 1** | Active |
| **SO2, Switching output 2** | Active |
| **SSC1, Sensor switching channel 1** | Inactive |
| **SSC2, Sensor switching channel 2** | Inactive |
| **DA1, Dust alarm SSC1** | Inactive |
| **DA2, Dust alarm SSC2** | Inactive |
| **TA, Temperature alarm** | Inactive |
| **SC, Short circuit** | Inactive |
| **AFO1, Application functions output 1** | Inactive |

## Process data structure

4 Bytes, Analogue value 16 ... 31 (16 bit)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Byte 0** | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 |
| | **MSB** | - | - | - | - | - | - | - |
| **Byte 1** | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 |
| | - | - | - | - | - | - | - | **LSB** |
| **Byte 2** | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
| | - | - | **SC** | **TA** | **DA2** | **DA1** | **SSC2** | **SSC1** |
| **Byte 3** | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| | **AFO1** | - | - | - | - | - | **SO2** | **SO1** |



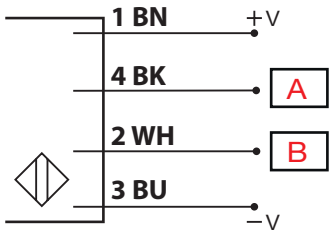
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# Mechanics/electronics

## Connection

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

## Wiring




| BN | BK | WH | BU | A | B |
|---|---|---|---|---|---|
| Brown | Black | White | Blue | OUT/IO-Link | IN/OUT |

## Housing

| | | |
|---|---|---|
| **Body** | ABS | |
| **Front glass** | PMMA, Red | |
| **Trimmer shaft** | POM, Grey | |
| **Indication** | TPU, Transparent | |
| **Sealing** | NBR70 | |
| **Dimensions** | 10 x 30 x 20 mm | |
| **Weight** | ≤ 50 g | Cable version |
| | ≤ 20 g | Plug version |



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## Dimensions

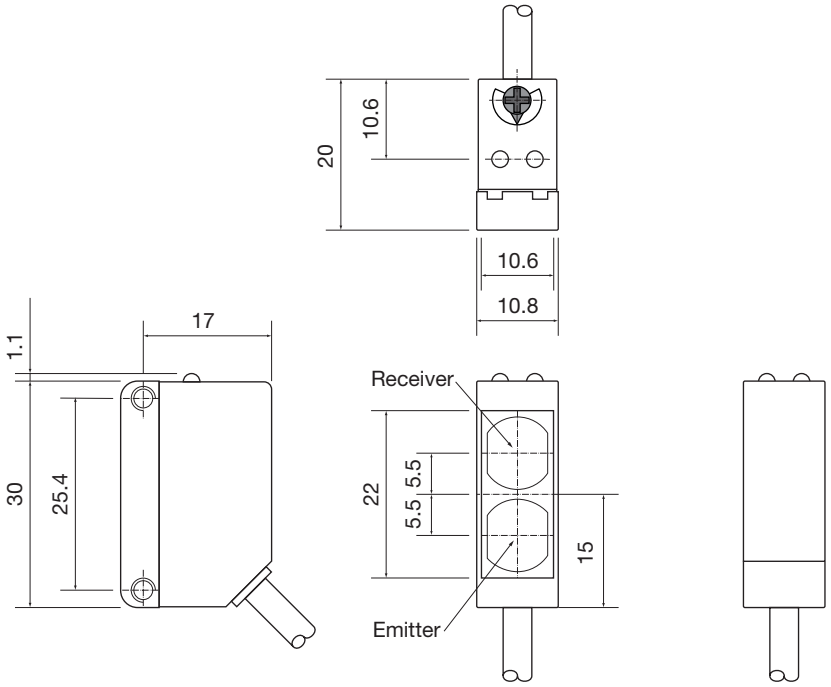



**Fig. 8** *Cable*

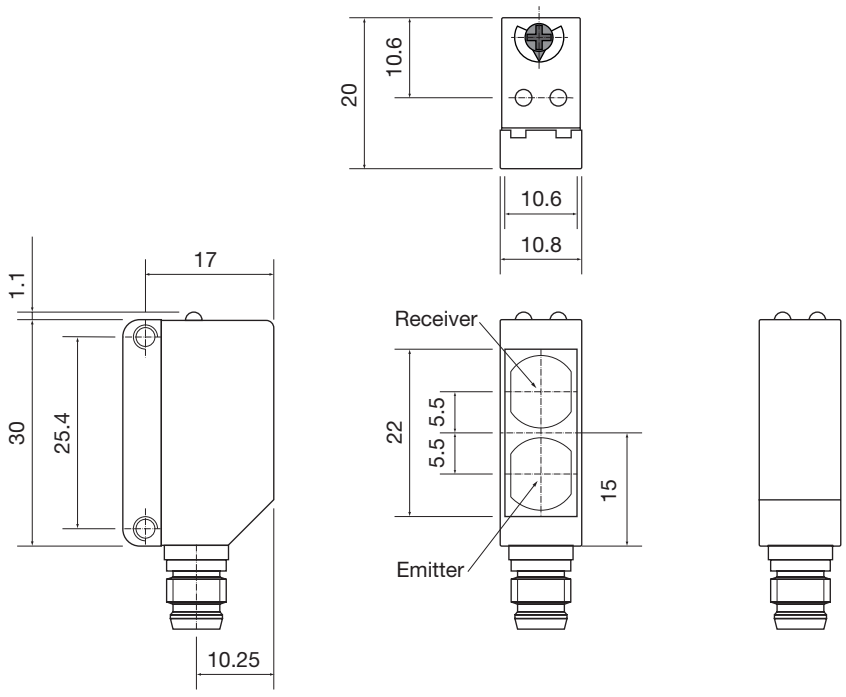



**Fig. 9** *Plug*



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# Compatibility and conformity

## Approvals and markings

| | | |
|---|---|---|
| **General reference** | Sensor designed according to EN60947-5-2 | |
| **MTTF$_d$** | 138.5 years | EN ISO 13849-1, SN 29500 |
| **CE-marking** | CE | |
| **Approvals** | c UL us (UL508) | |

## IO-Link

| | |
|---|---|
| **IO-Link revision** | 1.1 |
| **Transmission rate** | COM2 (38.4 kbaud) |
| **SDCI-Norm** | IEC 61131-9 |
| **Profile** | Smart sensor profile 2nd edition, common profile |
| **Min. cycle time** | 5 ms |
| **SIO mode** | Yes |
| **Min. master port class** | A (4-pin) |
| **Process data length** | 32 bit |



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# Delivery contents and accessories

## Delivery contents

- Photoelectric switch: PD30CTBx20BPxxIO
- Screwdriver
- Packaging: Plastic bag

## Accessories

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

## Further information

| Information | Where to find it | QR |
|---|---|---|
| IO-Link manual | http://cga.pub/?93ec5c | |
| Mounting brackets | http://cga.pub/?6fa29a | |
| Connectors | http://cga.pub/?ed457b | |

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