

# Photoelectrics, Fibre Optic Sensor Plastic Fibres Type PD 60 CNX 20 BP .. T

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- Range: Fibre dependent
  - Diffuse Reflective typ. 80 mm
  - Through Beam typ. 200 mm
- Teach-In (keyboard or remote setup)
- Keyboard set-up and multifunction LED
- Keyboard lock
- Microprocessor controlled and EEPROM parameter storage
- Operational voltage 10 - 30 V DC
- Output 100 mA, NPN and PNP
- Light or dark switching selectable
- Cable or M8 standard plug
- IP65 protection
- Timer: ON-delay or OFF-delay
- cUL and CE approved

## Product Description

The PD60CNX20BP.. T is a fibre optic amplifier made specific for plastic fibres. The sensor is microprocessor based and has a buildin programmable functions such as Teach-In function for fast sensing distance optimising, NO or NC output, Time delay Onor OFF. The sensor output is build as a Push-pull output that performs both a NPN and PNP output which are fully protected against short-cir-

cuit, transients and wrong polarity. The sensor is build in a strong 13 x 30 x 60 mm polycarbonate housing for DIN-rail mounting. The sensors are suitable for applications that require little space and high accuracy such as: Small part detection, tight locations, checking parts, counting, precise part positioning, material handling and assembly and robotics

## Ordering Key

**PD 60 CNX 20 BP M5 T**

Type	_____
Housing style	_____
Housing size	_____
Housing material	_____
Not Used	_____
Plastic fibres	_____
Sensing distance cm	_____
Output type	_____
Output configuration	_____
Connection type	_____
Teach-In mode	_____

## Type Selection

Housing W x H x D	Range S <sub>n</sub> (Fibre dependent)	Ordering no. NPN and PNP cable Make or break switching	Ordering no. NPN and PNP plug Make or break switching
13 x 30 x 60 mm	80 mm diffuse mode 200 mm through beam mode	<b>PD 60 CNX 20 BP T</b>	<b>PD 60 CNX 20 BP M5 T</b>

## Specifications

<b>Rated operating distance (S<sub>n</sub>)</b> Diffuse mode Through beam mode	See optical fibre table Up to 80 mm Up to 200 mm	<b>No load supply current (I<sub>o</sub>)</b>	≤ 40 mA
<b>Sensitivity</b> Teach-In Manual fine tune	Automatic threshold set-up Sensitivity increase or sen sitivity decrease	<b>Voltage drop (U<sub>d</sub>)</b> I <sub>L</sub> = 100 mA I <sub>L</sub> = 10 mA	≤ 2 VDC ≤ 1 VDC
<b>Temperature drift</b>	< 0,4%/C°	<b>Remote input</b> ON OFF	≤ 1.4 VDC ≥ 3.0 VDC
<b>Hysteresis (H)</b> Differential travel	≤ 5%	<b>Timer</b> Range programmable First step Following step	0 to 5 sec. in 11 steps 40 mS 500 mS
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 30 VDC (ripple included)	<b>Protection</b>	Short-circuit, reverse pola- rity, transients
<b>Ripple (U<sub>rp</sub>)</b>	≤ 10%	<b>Light source</b> <b>Light type</b> <b>Ambient light</b> Incandescent light	GaAIAs, LED 660 nm Red modulated 10'000 Lux
<b>Output current</b> Continuous (I <sub>a</sub> ) Short-time (I)	100 mA 100 mA		



## Specifications (cont.)

Sunlight	20'000 Lux	<b>Temperature</b>	
<b>Operating frequency</b>	1 KHz	Operating	0° to +60°C (32° to +140°F)
<b>Response time</b>		Storage	-20° to +80°C (-4° to +176°F)
OFF-ON ( $t_{ON}$ )	$\leq 500 \mu S$	<b>Vibration</b>	10 to 150 Hz, 0.5 mm/7.5 g (IEC60068-2-6)
ON-OFF ( $t_{OFF}$ )	$\leq 500 \mu S$	<b>Shock</b>	2 x 1 m & 100 x 0.5 m (IEC 60068-2-6, 60068-2-32)
<b>Power ON delay (<math>t_v</math>)</b>	$\leq 300 mS$	<b>Rated insulation voltage</b>	50 VAC (rms)
<b>Output function</b>		<b>Housing material</b>	
NPN and PNP	Available (Push-pull output)	Body	Polycarbonate
Make or break	Programming by keyboard	<b>Connection</b>	
<b>Indication function</b>	Target detected, timer ON, sensitivity, alignment, low signal, keyboard lock, short circuit	Cable	PVC, grey, 2 m, 4 x 0,25 mm <sup>2</sup>
<b>Environment</b>		Plug	NPB, M8 x 1
Installation category	I (IEC 60664/60664A;60947-1)	Cables for plug (M5)	CONG5A-series
Pollution degree	3 (IEC 60664/60664A;60947-1)	<b>Weight</b>	24 g
Degree of protection	IP 65 (IEC 60529; 60947-1)	<b>Approvals</b>	cUL
		<b>CE-marking</b>	Yes

## Operation Diagram

$t_v$  = Power ON delay

Power supply

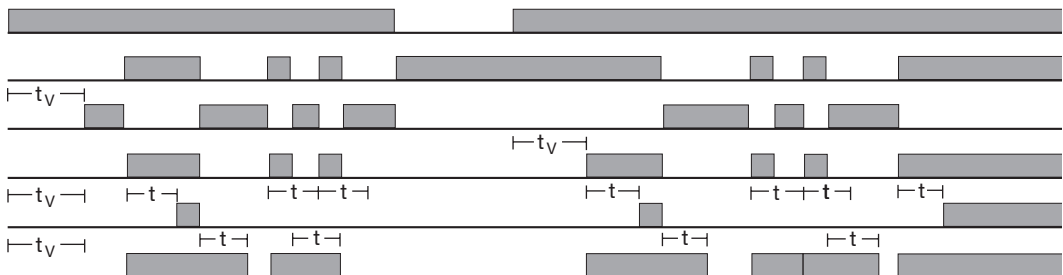
Target present

Break (NC) Output ON

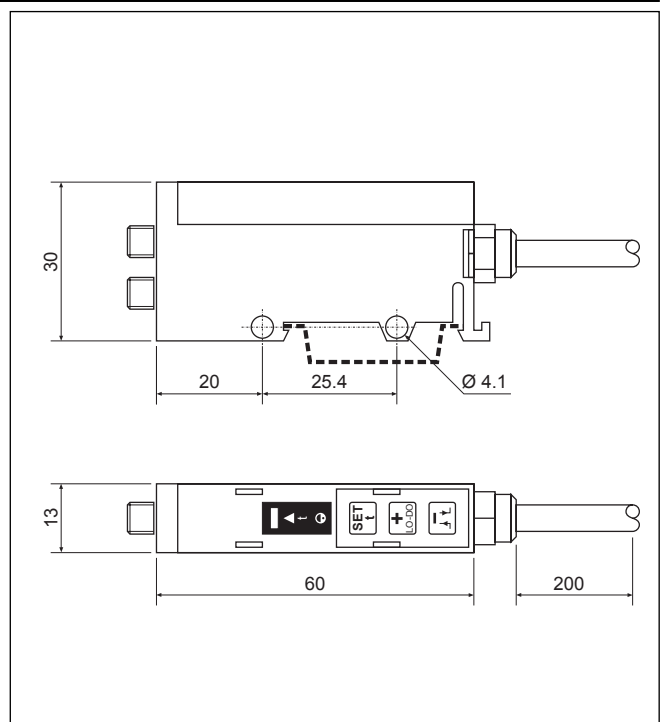
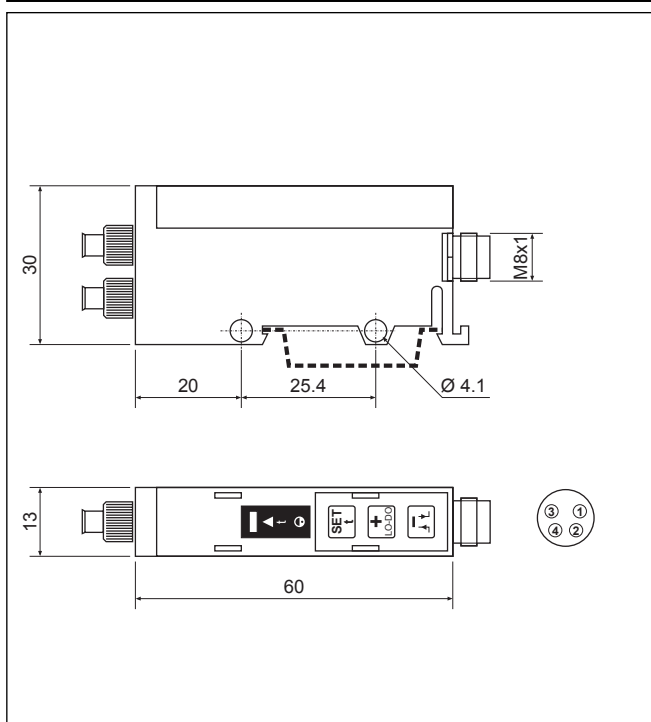
Make (NO) Output ON

ON Delay (NO-output)

OFF Delay (NO-output)



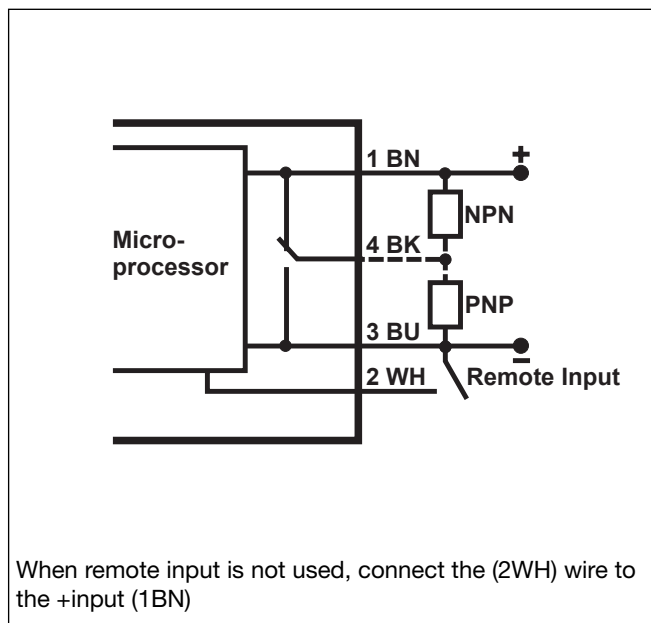
## Dimensions



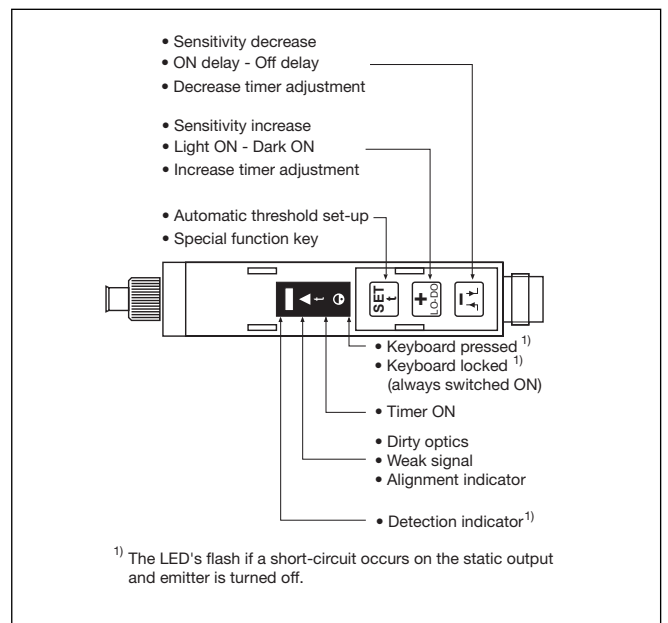
## Programming Functions

<b>Keyboard</b>		<b>Timing functions</b>	
Unlock	Press  &  for 4 sec. and the indicator turn OFF	ON delay	Press  for 4 sec.
Lock	Press  &  for 4 sec. and the indicator turn ON	Set timer (timer ON)	Until the  flashes
<b>Self-Teach operation</b>		Increase time (500 mS/step)	Press  N times
Coarse set-up mode	Press  one time	Decrease time (500mS/step)	Press  N times
Fine set-up mode (Similar to Remote Input)	Press  two times	ON or OFF delay (toggle)	Press  for 4 sec.
<b>Sensitivity adjustment</b>		Reset timer (timer OFF)	Press
To increase	Press  N time	Exit timer setting	Press  for 4 sec.
To decrease	Press  N times	<b>Alignment help</b>	Press  for 4 sec.
<b>Light or dark operation</b>		Enter alignment help	Until the  flashes Three frequencies proportional to the signal strength
Change the output function	Press  for 4 sec.	Exit alignment help	Press  for 4 sec.

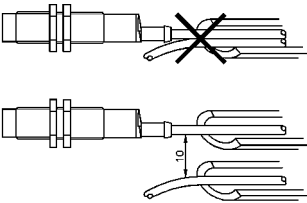
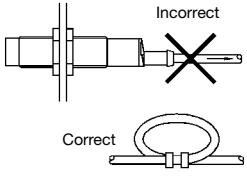
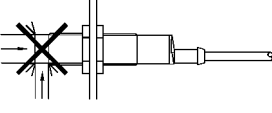
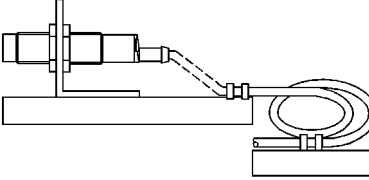
## Wiring Diagram



## Keyboard and LED



## Installation Hints

<p><i>To avoid interference from inductive voltage/current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables</i></p> 	<p><i>Relief of cable strain</i></p>  <p>The cable should not be pulled</p>	<p><i>Protection of the sensing face</i></p>  <p>A proximity switch should not serve as mechanical stop</p>	<p><i>Switch mounted on mobile carrier</i></p>  <p>Any repetitive flexing of the cable should be avoided</p>
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## Delivery Contents

- Photoelectric switch: PD60CNX20BP..T
- Installation instruction
- **Packaging:** Cardboard box

## Accessories

- Plastic fibres type FPD.., FPT..
- Connector type: CONG5A..

For further information refer to “Accessories”