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

CARLO GAVAZZI

- **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 proctection**
- **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-circuit, 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_n (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	**PD 60 CNX 20 BP T**	**PD 60 CNX 20 BP M5 T**

Specifications

Rated operating distance (S_n)	See optical fibre table
Diffuse mode	Up to 80 mm
Through beam mode	Up to 200 mm
Sensitivity	
Teach-In	Automatic threshold set-up
Manual fine tune	Sensitivity increase or sensitivity decrease
Temperature drift	< 0,4%/C°
Hysteresis (H)	
Differential travel	≤ 5%
Rated operational volt. (U_B)	10 to 30 VDC (ripple included)
Ripple (U_{rpp})	≤ 10%
Output current	
Continuous (I_e)	100 mA
Short-time (I)	100 mA

No load supply current (I_o)	≤ 40 mA
Voltage drop (U_d)	
I_L = 100 mA	≤ 2 VDC
I_L = 10 mA	≤ 1 VDC
Remote input	
ON	≤ 1.4 VDC
OFF	≥ 3.0 VDC
Timer	
Range programmable	0 to 5 s in 11 steps
First step	40 ms
Following step	500 ms
Protection	Short-circuit, reverse polarity, transients
Light source	GaAlAs, LED 660 nm
Light type	Red modulated
Ambient light	
Incandescent light	10'000 Lux
Sunlight	20'000 Lux

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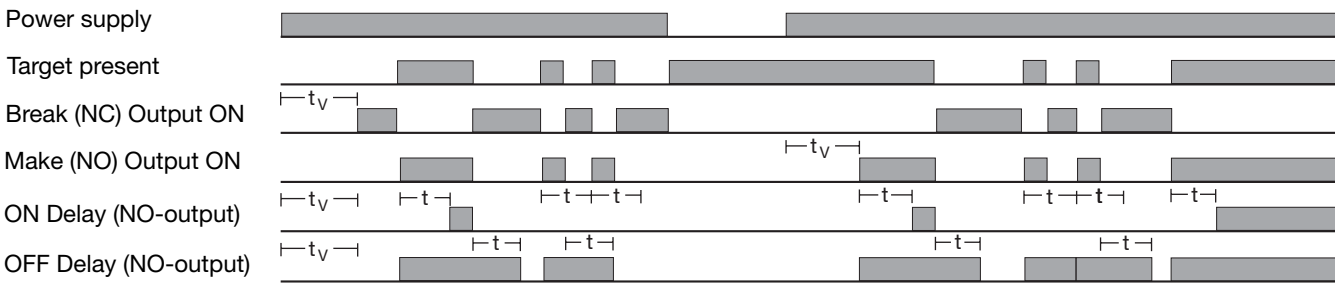
Specifications (cont.)

Operating frequency	1 KHz
Response time	
OFF-ON (t_{ON})	≤ 500 µs
ON-OFF (t_{OFF})	≤ 500 µs
Power ON delay (t_v)	≤ 300 ms
Output function	
NPN and PNP	Available (Push-pull output)
Make or break	Programming by keyboard
Indication function	Target detected, timer ON, sensitivity, alignment, low signal, keyboard lock, short circuit
Environment	
Installation category	I (IEC 60664/60664A;60947-1)
Pollution degree	3 (IEC 60664/60664A;60947-1)
Degree of protection	IP 65 (IEC 60529; 60947-1)

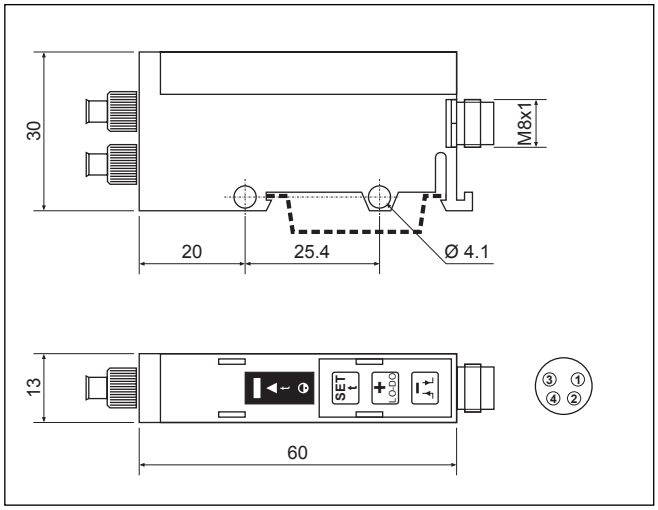
Temperature	
Operating	0° to +60°C (32° to +140°F)
Storage	-20° to +80°C (-4° to +176°F)
Vibration	10 to 150 Hz, 0.5 mm/7.5 g (IEC60068-2-6)
Shock	2 x 1 m & 100 x 0.5 m (IEC 60068-2-6, 60068-2-32)
Rated insulation voltage	50 VAC (rms)
Housing material	
Body	Polycarbonate
Connection	
Cable	PVC, grey, 2 m, 4 x 0,25 mm²
Plug	NPB, M8 x 1
Cables for plug (M5)	CONG5A-series
Weight	24 g
Approvals	cUL
CE-marking	Yes

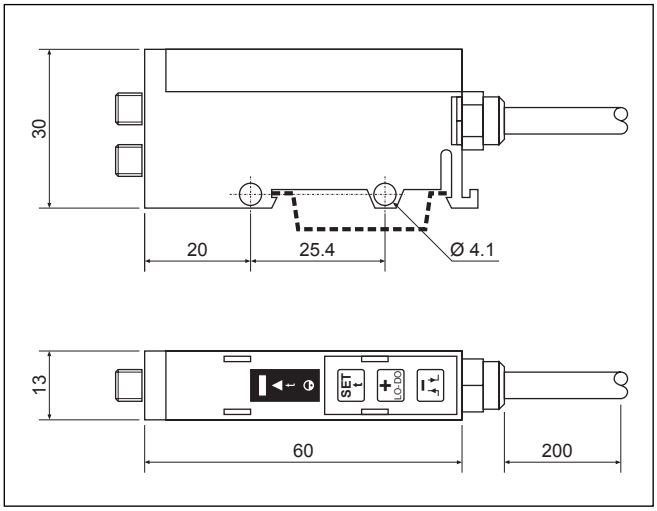
Operation Diagram

tv = Power ON delay



Dimensions





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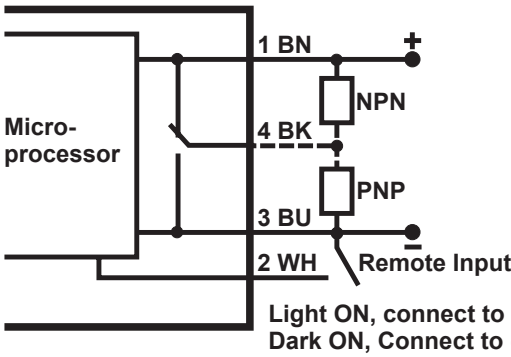
Programming Functions

Keyboard	
Unlock	Press [+ LO-DO] & [−] for 4 sec. and the indicator turns OFF
Lock	Press [+ LO-DO] & [−] for 4 sec. and the indicator turns ON
Self-Teach operation	
Coarse set-up mode	Press [SET t] one time
Fine set-up mode (Similar to Remote Input)	Press [SET t] two times
Sensitivity adjustment	
To increase	Press [+ LO-DO] N time
To decrease	Press [−] N times
Light or dark operation	
Change the output function	Press [+ LO-DO] for 4 sec.

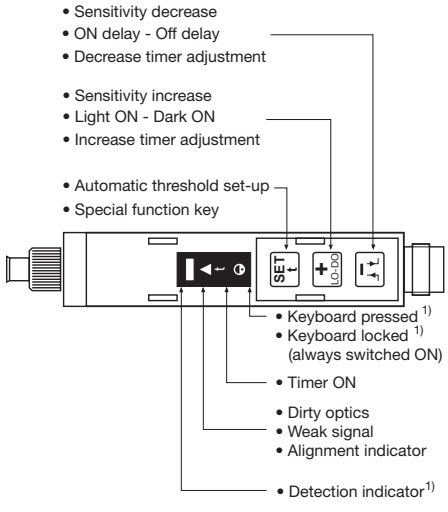
Timing functions	
ON delay	Press [SET t] for 4 sec.
Set timer (timer ON)	Until the △ flashes
Increase time (500 mS/step)	Press [+ LO-DO] N times
Decrease time (500 mS/step)	Press [−] N times
ON or OFF delay (toggle)	Press [−] for 4 sec.
Reset timer (timer OFF)	Press [SET t] once
Exit timer setting	Press [SET t] for 4 sec.
Alignment help	
Enter alignment help	Press [SET t] for 4 sec.
	Until the △ flashes Three frequencies proportional to the signal strength
Exit alignment help	Press [SET t] for 4 sec.

Wiring Diagram



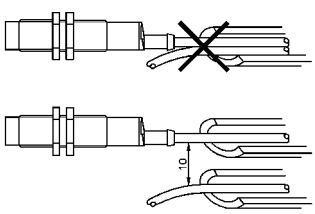
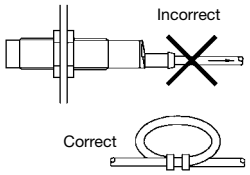
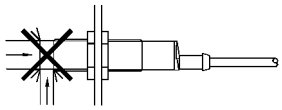
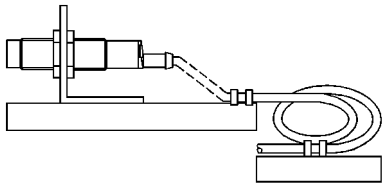
When remote input is not used, connect the (2WH) wire to the +input (1BN)

Keyboard and LED



1) The LED's flash if a short-circuit occurs on the static output and emitter is turned off.

Installation Hints

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	*Relief of cable strain*	*Protection of the sensing face*	*Switch mounted on mobile carrier*
	 The cable should not be pulled	 A proximity switch should not serve as mechanical stop	 Any repetitive flexing of the cable should be avoided

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”