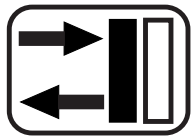


# PTB-YC200 series

## Background Suppression Sensors



- Background Suppression function; ignore objects located beyond the sensing field cutoff.
- Two-turn, logarithmic adjustment of sensing field sensitive range from 30 to 200cm.
- Rotating pointer indicates relative cutoff point setting.
- Easy push-button or remote programming of NO/NC operation and output timing, continues display sensing status.
- Output ON/OFF time delay function, adjustable from 8ms to 16s.
- Powerful infrared sensing beams.
- Sturdy PC/ABS housing, conform to IEC IP67.
- 10-30VDC power supply, bipolar output (one NPN and one PNP).
- Cable and rotating M12 connector quick disconnect fitting optional.

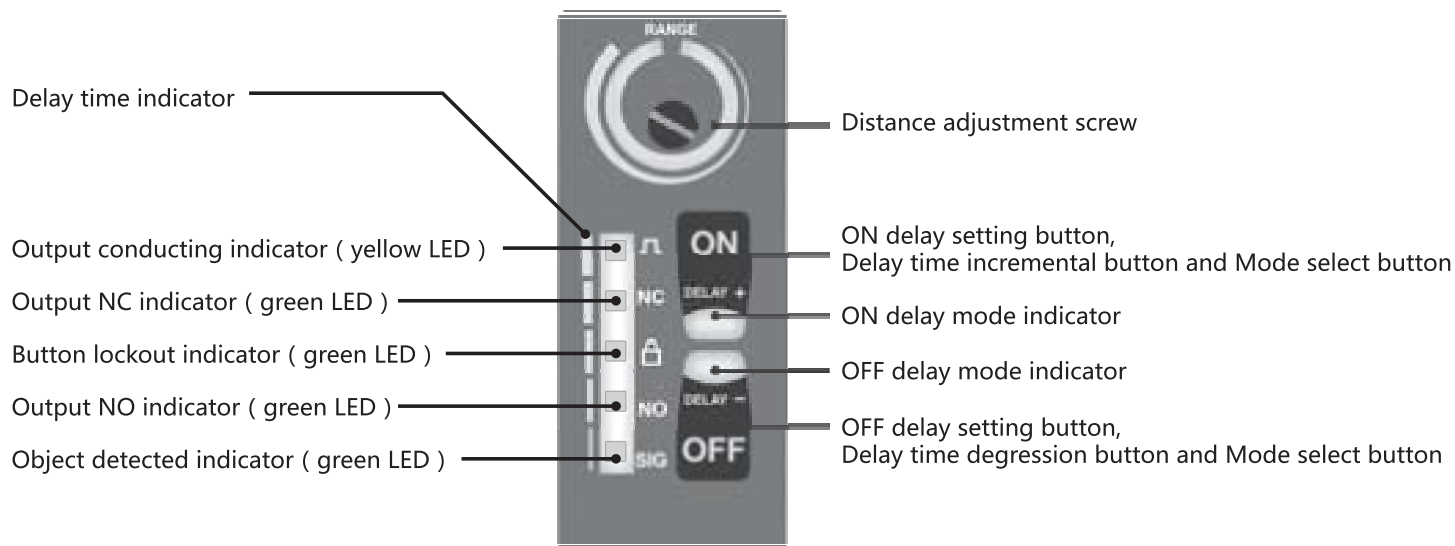
## Model

Item Code	PTB-YC200DFBT3	PTB-YC200DFBT3-E5
Minimum Range	5~12.5cm ( Based on different cutoff point setting )	
Sensitive range	Adjustable: 30~200cm	
Connection	5-wire 2m	5-pin M12 connector
Output	NPN+PNP NO/NC optional	

# Parameter

<b>Supply voltage</b>	10~30V DC
<b>Consumption current</b>	< 50mA No-load
<b>Circuit protection</b>	Reverse polarity and Transient over-voltage protection
<b>Output feature</b>	150 mA Maximum each output @ 25°C Off-state leakage current: < 5μA @ 30V DC Saturation: <2.5V
<b>Output protection circuitry</b>	Protected against continuous overload or short circuit of outputs Protected against continuous false pulse on power-up
<b>Response time</b>	2ms ON and OFF 150ms delay on power-up; output do not conduct during this period
<b>Light source</b>	Infrared LED ( 880nm )
<b>Standard target</b>	Reflective rate :90% for white color card, 10% for black color card
<b>Black/white aberration</b>	≤10%
<b>Indicators</b> Outputs are active during ON/OFF timing selection mode	<b>ON Delay</b> Steady green:Run mode, ON delay is active Flashing green: ON delay
	<b>OFF Delay</b> Steady green:Run mode, OFF delay is active Flashing green: OFF delay
	5-segment light bar : indicates relative delay time during ON or OFF
	<b>Output</b> Steady yellow: Outputs are conducting Steady green: During ON/OFF delay selection modes
	<b>NC output</b> Steady green: NC output is selected
	<b>Lockout</b> Steady green: Button are locked out
	<b>NO output</b> Steady green: Light operate is selected
	<b>Signal</b> Steady green: Sensor is receiving signal.
<b>Adjustments</b>	2 push button: ON Delay(+) and OFF Delay(-) (Remote program wire) ON Delay: 8ms ~ 16s OFF Delay: 8ms ~ 16s NO/NC output selection modes Push button lockout for security 2-turn potentiometer, cutoff point adjustable (mechanical stops on both ends of travel )
<b>Construction</b>	Housing: PC/ABS, Cover: Optical PMMA
<b>Protection degree</b>	IEC IP67
<b>Voltage resistance</b>	2000V/AC 50/60Hz 60s
<b>Connection</b>	2m cable, 5-pin M12 connector
<b>Operation conditions</b>	Temperature: -20°C ~ +55°C , Maximum Relative Humidity: 90% @ 50°C (non-condensing)

# Sensor setup



LED indicator and mode adjustment

## Setting the cutoff distance

The cutoff distance for PTB-YC200 sensors may be adjusted between 30cm and 200cm. To maximize contrast, position the lightest possible background to be used (Figure 1), at the closest position it will come to the sensor during use. Using a small screwdriver in the adjustment screw, adjust the cutoff distance until the threshold is reached and the green Light Sensed indicator changes state. (If the indicator never comes ON, the background is beyond the maximum sensing cutoff and will be ignored.) Note the position of the rotating cutoff position indicator at this position. Then repeat the procedure, using the darkest target, placed in its most distant position for sensing. Adjust the cutoff so that the indicator is midway between the two positions (Figure 2).

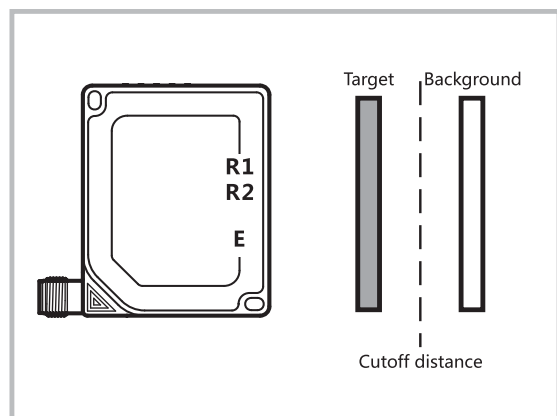


Figure 1. Setting the cutoff position between the farthest object and the closest background

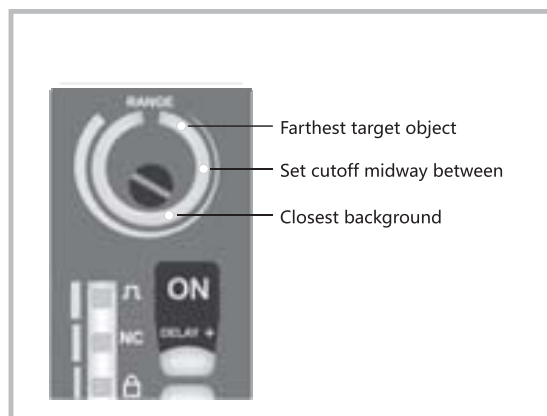


Figure 2. Setting the cutoff distance

## Sensing reliability

For highest sensitivity, the sensor-to-object distance should be such that the object will be sensed at or near the point of maximum excess gain.

## Strong reflectivity background and placement

Avoid mirror-like backgrounds that produce specular reflections. False sensor response will occur if a background surface reflects the sensor's light more strongly to the near detector (R1) than to the far detector (R2) (Figure 3). Use of a diffusely-reflective (matte) background will cure this problem. Other possible solutions are to angle either the sensor or the background in any plane so that the background does not reflect back to the sensor (Figure 4).

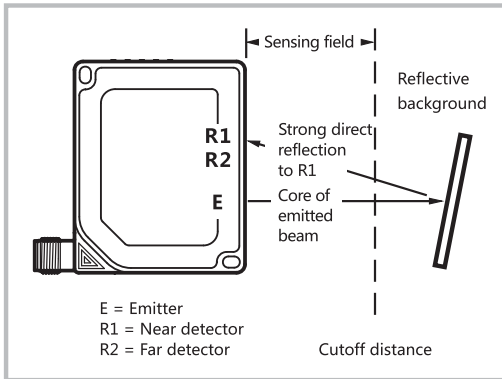


Figure 3. Reflective background problem

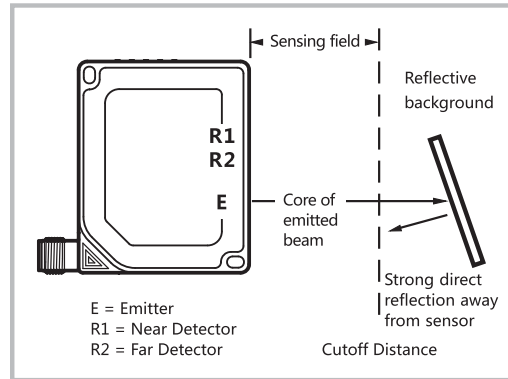


Figure 4. Reflective background solution

An object beyond the cutoff distance, either moving or stationary (and when positioned as shown in Figure 5), can cause unwanted triggering of the sensor because it reflects more light to the near detector than to the far detector. The problem is easily remedied by rotating the sensor 90° (Figure 5) to align the sensing axis horizontally. The object then reflects the R1 and R2 fields equally, resulting in no false triggering. (Figure 6)

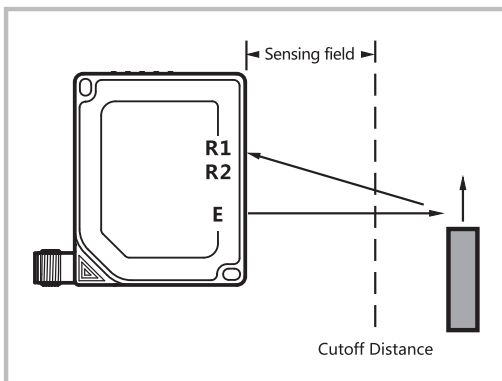


Figure 5. Object beyond cutoff distance

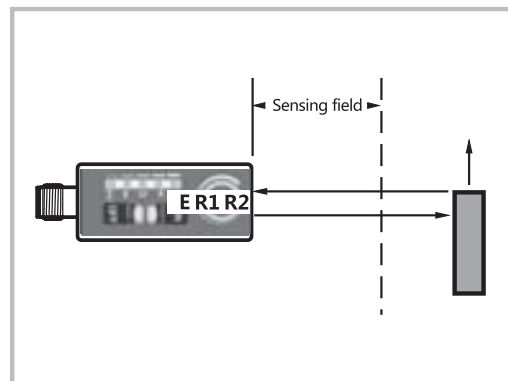


Figure 6. Object beyond cutoff distance —solution

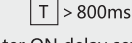

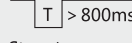
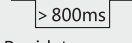
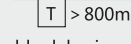
## Set up output

The output of PTB may be delayed between 0.008 and 16 seconds, in any of 72 increments. Delay is indicated on the 5-segment LED bar, are shown as below.

Step	Delay time	LED Status
0	NO Delay	
8	0.062s	
24	0.250s	
40	1.00s	
56	4.0s	
72	16s	


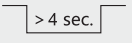
To set a delay, single-click the appropriate button or pulse the remote wire to enable the process. Then use the + or - button or the appropriate remote wire pulse procedure to increase or decrease the delay (single-click adjusts the delay by one step at a time, and holding the button in provides a rapid increase/decrease).

**T = 40 800 ms, Press and Hold > 800 ms**

Increase ON delay – 4-second time-out			
<b>Push button</b>	Single-click  Enter ON delay setup	Single-click  Step increment	Press and hold  Rapid increment
<b>Remote control</b>	 Enter ON delay setup	 Enable delay increment	  Step increment    Rapid increment
Decrease ON delay – 4-second time-out			
<b>Push button</b>	Single-click  Enter ON Delay Setup	Single-click  Step decrement	Press and hold  Rapid decrement
<b>Remote control</b>	 Enter ON Delay Setup	 Enable delay decrement	  Step decrement    Rapid decrement
Increase OFF delay – 4-second time-out			
<b>Push button</b>	Single-click  Enter OFF delay setup	Single-click  Step increment	Press and hold  Rapid increment
<b>Remote control</b>	 Enter OFF delay setup	 Enable delay increment	  Step increment    Rapid increment
Decrease OFF delay – 4-second time-out			
<b>Push button</b>	Single-click  Enter OFF delay setup	Single-click  Step decrement	Press and hold  Rapid decrement
<b>Remote control</b>	 Enter OFF delay setup	 Enable delay decrement	  Step decrement    Rapid decrement



### NO/NC Operate select

NO operate or NC operate mode may be selected using the two push buttons or a 4-second pulse of the remote line to toggle between the selections.

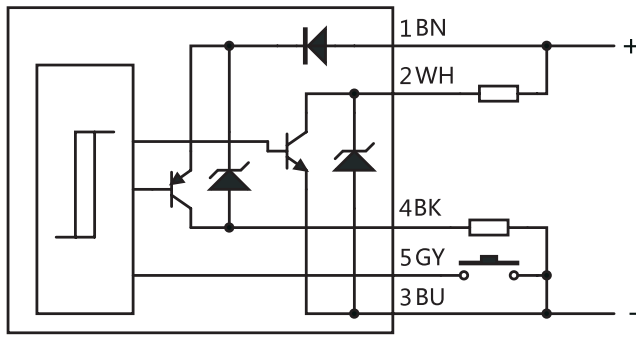
NO/NC toggle	
<b>Push button</b>	Four-Second Press and Hold 
<b>Remote control</b>	

### Push button lockout

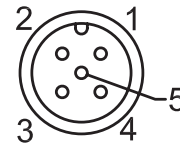
For security, the push buttons may be locked out using either the remote line or the push buttons themselves.

Push button lockout toggle	
<b>Push button</b>	Concurrent quad-click 
<b>Remote control</b>	

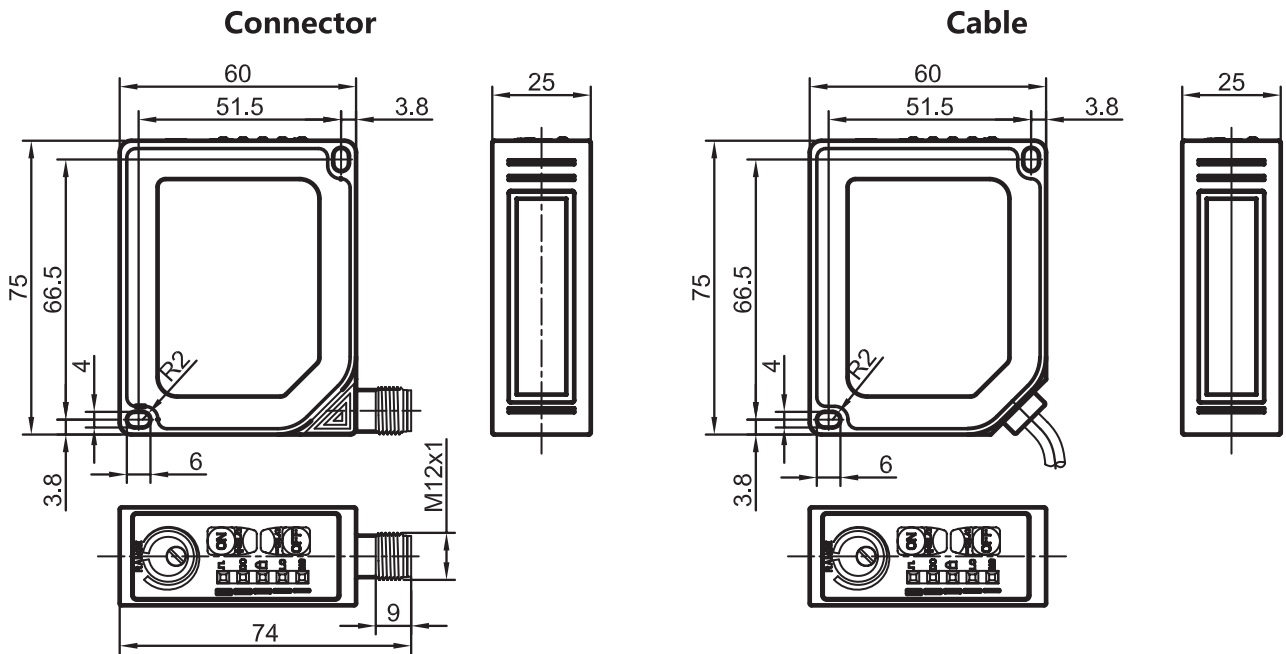
# Wiring diagram



## 5-Pin M12 connector



# Dimensions



# Mounting rack

