

BGS Type Photoelectric Switch

PD5 SERIES

Not affected by background
Stable detection with 2.5m

- 2 kinds of sensors are lined-up, 1m & 2.5m. It is available for position detection or passing detection on the lines.
- It is less affected by colors, materials or shapes of detection objects.
- It can make the severe setting without the affection of background because 2-segment photo diode is applied.



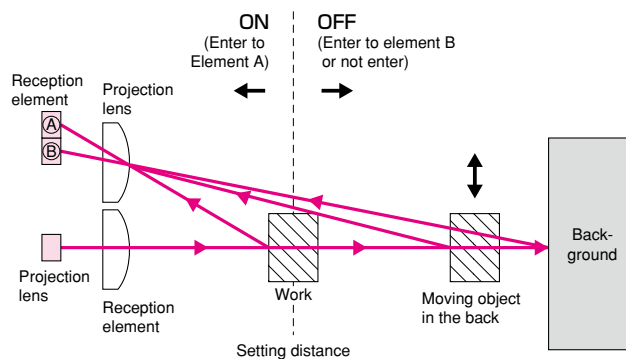
Distance setting

BGS (Background Suppression) function without background

Principle:

When object and background are separated BGS (Background suppression) function The sensor judges that an object is present when light is received at position A of the light-receiving element (2-segment element). This is useful if the object and background are far apart.

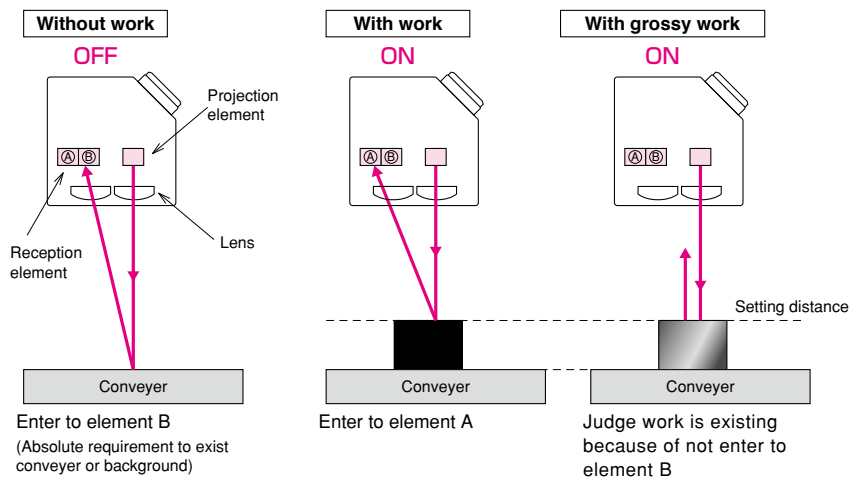
Not affected if the background color changes or someone passes behind the conveyor.



FGS (Foreground Suppression) function without background

When object and background are close together.

When the object is glossy or uneven FGS (Foreground suppression) function The sensor judges that no object is present when light is received at position B of the light receiving element (2-segment element) (The conveyor is detected). This function is useful if the object and the background are close together or if the object is glossy or uneven. However, sensing is impossible if there is no background (conveyor, etc.).



Specifications

Kinds	Free-power type		DC power type	
Model No.	PD5-1MA	PD5-2MA	PD5-1MC	PD5-2MC
Power source	24 to 240VAC (±10%, 50/60Hz) 12 to 240VDC (±10%, ripple 10% or less)		12 to 24VDC (±10%, ripple 10% or less)	
Current consumption	4VA or less: AC power, 3W or less: DC power		45mA or less	
Projecting element	Infrared LED (modulation)			
Receiving element	2-segment photo diode			
Detectable range*	0.2 to 1.0m	0.2 to 2.5m	0.2 to 1.0m	0.2 to 2.5m

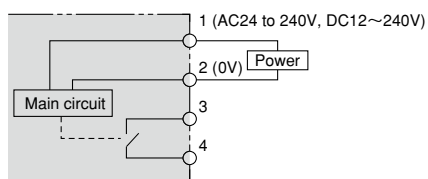
Detecting distance*	0.1 to 1.0m	0.1 to 2.5m	0.1 to 1.0m	0.1 to 2.5m
Detectable objects	Semi-transparent/opaque objects			
Detecting mode	BGS		BGS/FDS Changeover type	
Distance adjuster	Provided (mechanical adjuster with indicator)			
Hysteresis *	10% or less of operating distance			
Operating mode	Changeover of Light-ON/Dark-ON			
Output	1a relay, 250VAC 3A, 30VDC 3A Electrical life: 0.1 million times or more Mechanical life: 50 million times or more		NPN/PNP open-collector 2 output 30VDC 100mA or less Residual voltage: 1V or less (at 100mA)	
Response time	20msec or less		2msec or less	
Indication lamps	Operating lamp (Orange LED): lights up when output ON, Stable lamp (Green LED): Lights up when stable operation			
Connection	Terminal box			
Ambient illuminance	Sunlight: 10,000lx or less, incandescent lamp: 3,000lx or less			
Ambient temperature	-25 to +55℃ (-30 to +70℃ when stored)			
Ambient humidity	35 to 85%, not icing/not condensing			
Insulation resistance	100MΩ or more (by 500VDC megger): Energized part, non energized metal part contact output each other		20MΩ or more (by 250VDC megger): between energized part and case	
Vibration resistance	Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions			
Impact resistance	500m/s², each 3 time in X, Y and Z directions			
Withstand voltage	2,000VAC/min.: energized part, non energized metal pat contact output each other 1,000VAC/min.: between contacts		1,000VAC/min.:between energized part and case	
Protective structure	IP67 (IEC standard)			
Case material	Case: ABS resin, lens: polycarbonate			
Weight	Approx. 100g		Approx. 85g	
Accessory	Adjuster, fitting metal, screw			

*Setting range is max.range of setting adjuster.

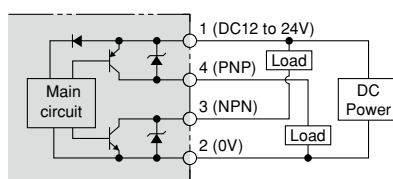
Detectable range, distance and hysteresis are made by white paper with 200×200mm.

Output circuit

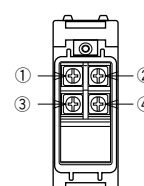
Free power type



DC power type

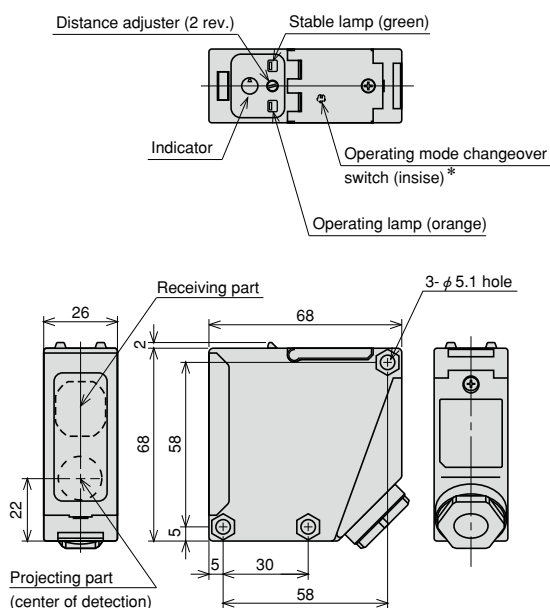


Terminal arrangement

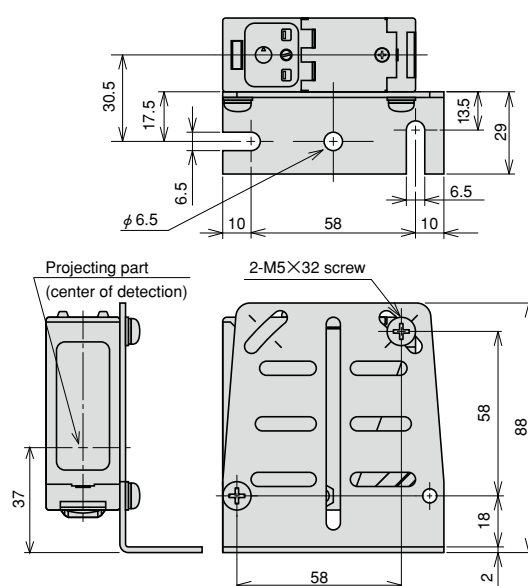


External dimensions

Sensor



Fitting metal under installation



*Changeover of operating mode is made by dipswitch for DC power type.