Photoelectric Sensor PSE series

LANBAO

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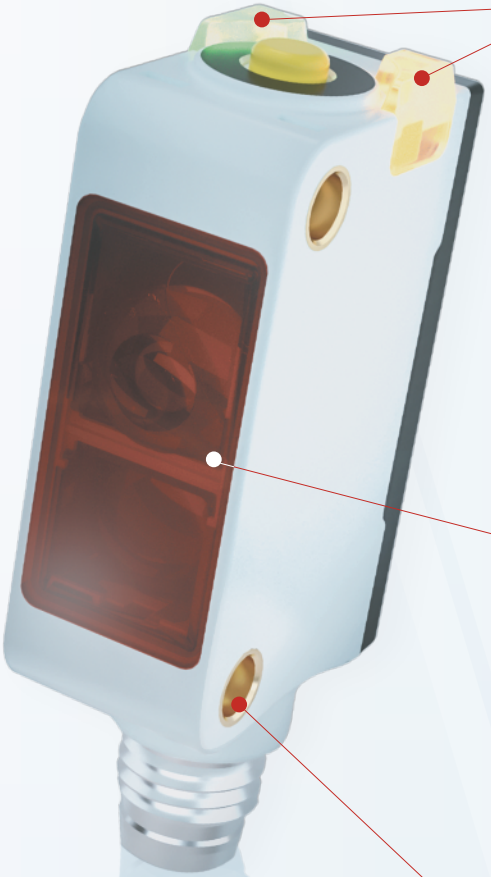
Sensoren
промышленные датчики

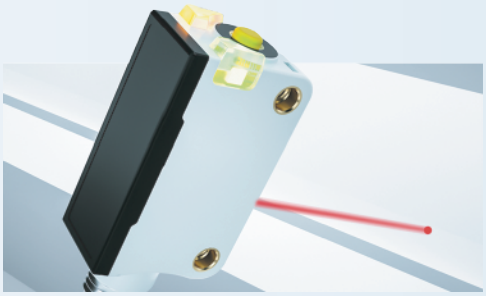
Economical and Reliable Compact Photoelectric sensor

PSE Series

Quick Recognition

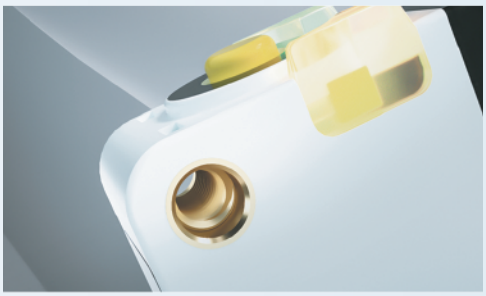
- Highlight 360°LED Indicator for easily condition recognition
- One-click to set distance, NO/NC, quickly and precisely





Easy Calibration

- Red spot light source for easily recognition



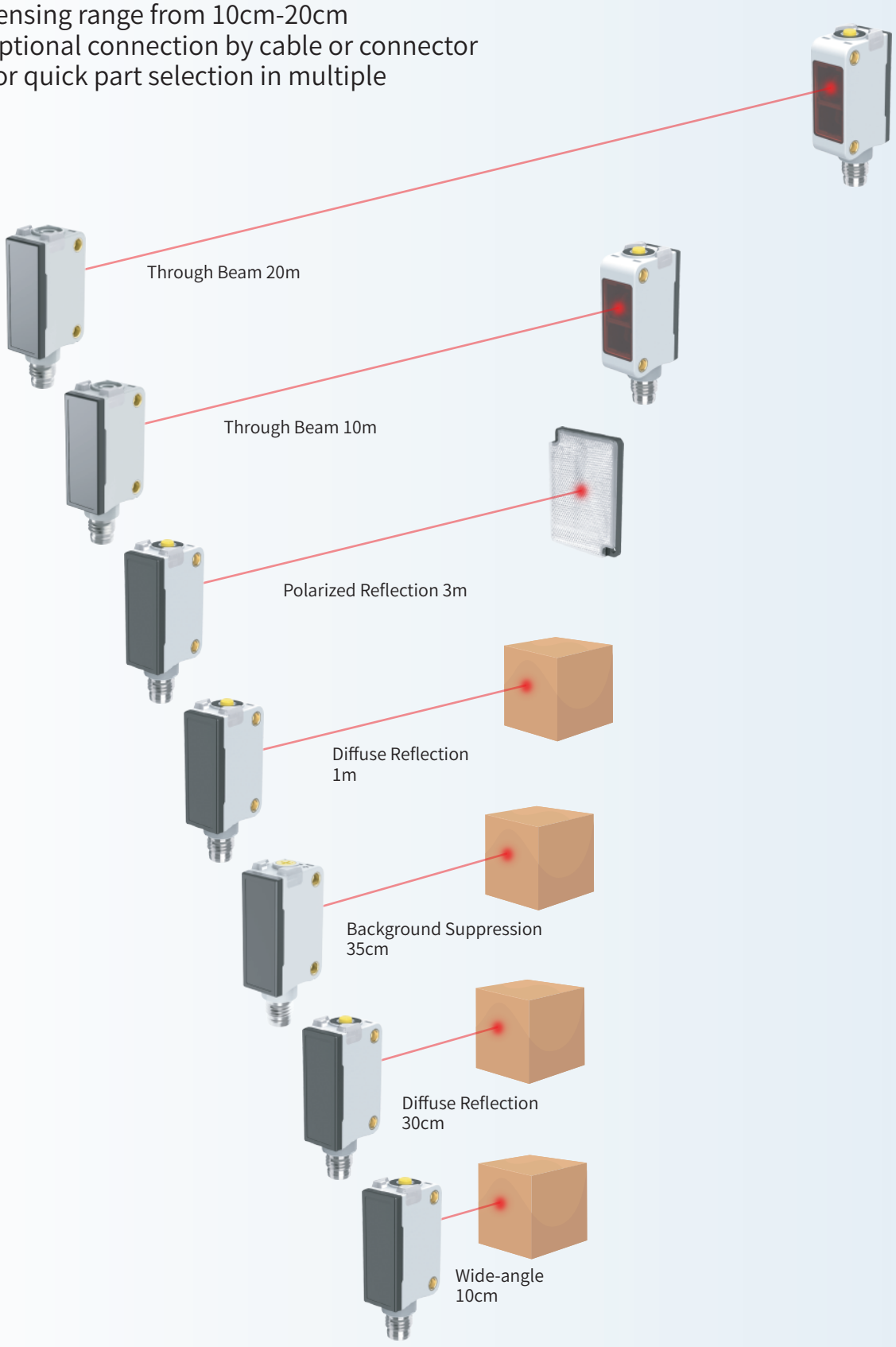
Easy Mounting

- Copper thread mounting, strong and endurable

Sensoren
промышленные датчики

Complete Range of Five Spec.: Through Beam, Diffuse Reflection, Background Suppression, Polarized Reflection, Wide-angle

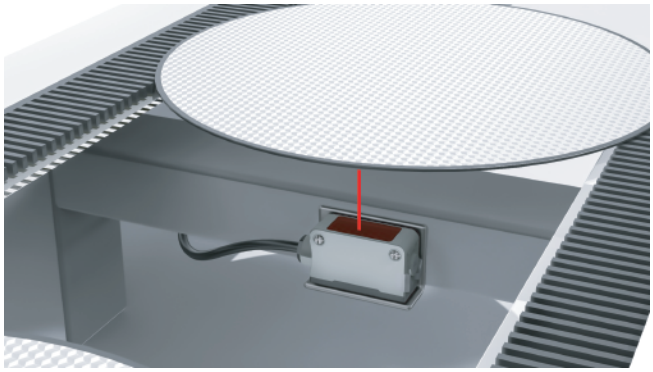
Broad Product Line:
Sensing range from 10cm-20cm
Optional connection by cable or connector
For quick part selection in multiple



Application

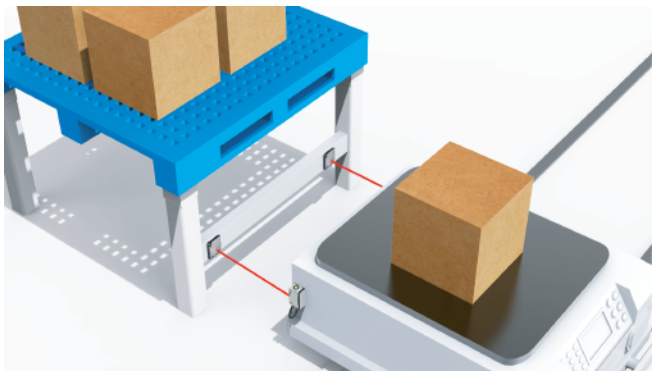
Wafer Pass Detection

Placed under conveyor belts, PSE background suppression sensor is used to detect the passage of the wafer, for which the conventional diffuse reflection sensor cannot achieve reliable detection, due to the difference in color and reflectivity of the wafer. The unique optical design of PSE background suppression sensor makes the product immune to fluorescent light and ambient light, realizing stable and reliable detection.



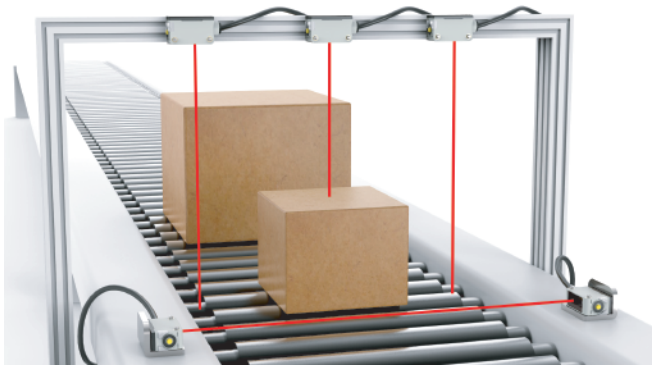
AGV in-position Detection

Installed on AGV or mobile devices, PSE polarized reflection sensors are used to judge if AGV or mobile devices are in right position. With polarizer imbed, sensors will make no wrong detection of mirror surfaces or high light objects, effectively preventing the misjudgment of the AGV or mobile devices in movement.



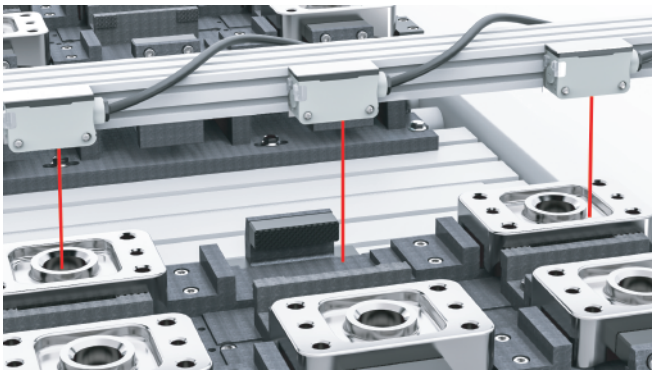
Commodity Size Classification

It is necessary to do the classification against the size before the goods are delivered out of the warehouse, helping with arrangements of delivery vehicles and personnel. PSE beam-type sensor installed on the edge of the conveyor belt cooperates with the PSE diffuse reflection type sensor on the gantry to realize the identification and size classification of the goods. Thanks to its fast response, and accurate sorting, cargo turnover rate is improved.



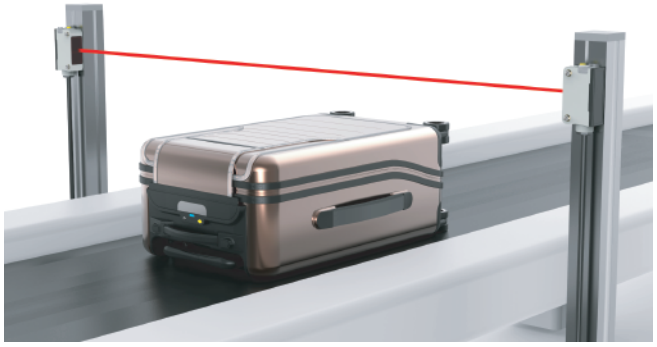
Automobile Assembly Line Missing Parts Inspection

In the automobile assembly line, it is necessary to keep compatible the color of various parts, and ignore the background light reflected on the pallet surface, to realize the material lack inspection of the assembly parts, for which PSE background suppression type can be selected to enable stable detection, thanks to its fine color sensitivity.



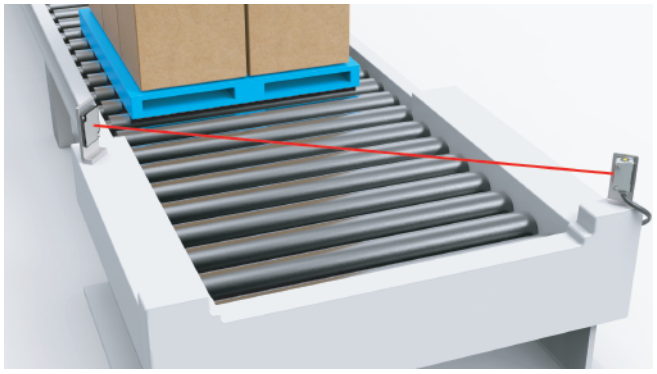
Airline Baggage Height Exceeding Detection

The PSE through beam sensor has red light as its emitting light source for easy alignment. It is convenient to adjust with one-click distance setting. On the airport baggage conveyor, the type of PSE can detect whether the air baggage is high beyond the limit, and prevent it from entering, ensuring proper loading of airline baggage.



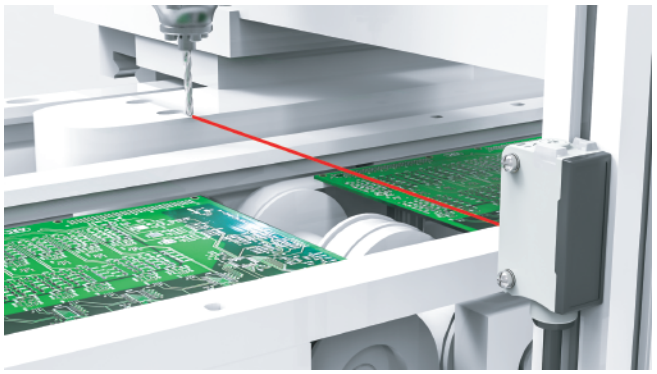
Load Platform Occupancy Recognition

The PSE polarized reflection sensor is installed at the tail part of loading platform to detect whether the loading platform is empty or occupied. It can judge in real time whether the cargo has a stay or stop to make it convenient for the shuttle, forklift and robot to proceed to the next step, effectively improving the efficiency of the conveyor line, unaffected by the changes of the cargo or pallet.



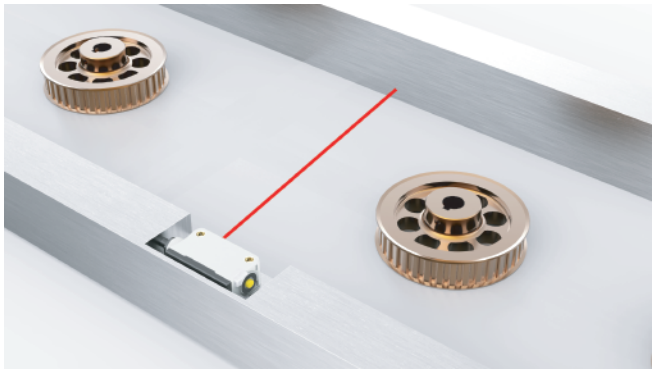
Drill Bit Detection

The PSE background suppression sensor is installed over the conveyor belt on the production line of the 3C components to detect the position of the drill bits. The product is designed with a red point light source, minimum spot size small as 4mm, making it easy to detect small objects.

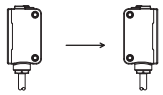
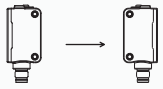
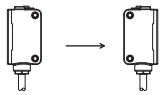
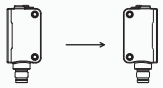
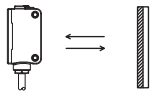
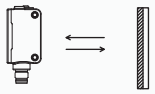
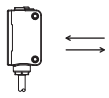
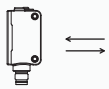
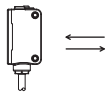
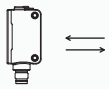
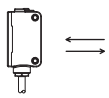
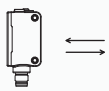
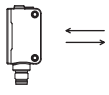
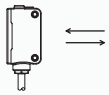


Glossy Objects Pass Detection

When the background is a glossy object, the PSE diffuse reflection sensor has wide viewing angle and small blind range, which can be used to detect the glossy objects, by eliminating the background effects and adopting the button setting to achieve a precise distance setting.



Guide Selection

Detection type	Shape	Connection	Sensing Distance	Model	
				NPN Output	PNP Output
Through beam		Cable 2m	20m	**Emitter** PSE-TM20D **Receiver** PSE-TM20DNB	**Emitter** PSE-TM20D **Receiver** PSE-TM20DPB
		Connector	20m	**Emitter** PSE-TM20D-E3 **Receiver** PSE-TM20DNB-E3	**Emitter** PSE-TM20D-E3 **Receiver** PSE-TM20DPB-E3
		Cable 2m	10m	**Emitter** PSE-TM10DR **Receiver** PSE-TM10DNBR	**Emitter** PSE-TM10DR **Receiver** PSE-TM10DPBR
		Connector	10m	**Emitter** PSE-TM10DR-E3 **Receiver** PSE-TM10DNBR-E3	**Emitter** PSE-TM10DR-E3 **Receiver** PSE-TM10DPBR-E3
Polarized reflection		Cable 2m	3m	PSE-PM3DNBR	PSE-PM3DPBR
		Connector	3m	PSE-PM3DNBR-E3	PSE-PM3DPBR-E3
Diffuse reflection		Cable 2m	1m	PSE-BC100DNB	PSE-BC100DPB
		Connector	1m	PSE-BC100DNB-E3	PSE-BC100DPB-E3
		Cable 2m	30cm	PSE-BC30DNBR	PSE-BC30DPBR
		Connector	30cm	PSE-BC30DNBR-E3	PSE-BC30DPBR-E3
Wide-angle		Cable 2m	10cm	PSE-BC10DNB	PSE-BC10DPB
		Connector	10cm	PSE-BC10DNB-E3	PSE-BC10DPB-E3
Background suppression		Cable 2m	35cm	PSE-YC35DNBR	PSE-YC35DPBR
		Connector	35cm	PSE-YC35DNBR-E3	PSE-YC35DPBR-E3

Accessories (Sold Separately)

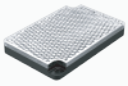
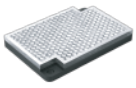
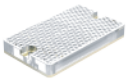
Mounting Bracket The sensor contains mounting bracket ZJP-8.

Applicable sensor	Shape	Model	Description
All part numbers		ZJP-8 (accessory)	**Dimensions:** 33*30*14mm **Material:** Cold rolled sheet SPCC Sand blasting and blue zinc plating (1.2mm thick)

Connector (necessary for connector type sensor), to be ordered separately.

Applicable sensor	Shape	Model	Description
Connector type sensor		QE8-N4F2	M8 connector (4 pins) ϕ4.4mm PVC cable 2m
		QE8-N4G2	M8 connector (4 pins) ϕ4.4mm PVC cable 2m

Reflector (necessary for polarized reflection sensor)
standard sensor type contains reflector TD-09, other than which is to be ordered separately.

Applicable sensor	Shape	Model	Description
Polarized reflection sensor		TD-09 (accessory)	Square 60*40mm
		TD-09A	Square 60*41mm
		TD-05	Round ϕ82mm
		TD-02	Square 65*40mm
		STD-06	Round ϕ25.6mm

Narrow slit (for through beam sensor) not contained with sensor, to be ordered separately.

Applicable sensor	Shape	Model	Description			
Through beam sensor		FJP-01A	Hole diameter	ϕ0.5mm	Material	Stainless steel (SUS304)
		FJP-01B		ϕ1mm		
		FJP-01C		ϕ2mm		
		FJP-02A	Slot width	0.5mm	Material	Stainless steel (SUS304)
		FJP-02B		1mm		
		FJP-02C		2mm		

Specification

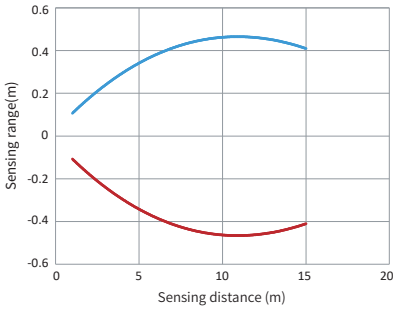
Detection type		Through beam		Polarized reflection	Diffuse reflection		Wide-angle	Background suppression
Model	NPN Cable	PSE-TM20D PSE-TM20DNB	PSE-TM10DR PSE-TM10DNBR	PSE-PM3DNBR	PSE-BC100DNB	PSE-BC30DNBR	PSE-BC10DNB	PSE-YC35DNBR
	NPN Connector	PSE-TM20D-E3 PSE-TM20DNB-E3	PSE-TM10DR-E3 PSE-TM10DNBR-E3	PSE-PM3DNBR-E3	PSE-BC100DNB-E3	PSE-BC30DNBR-E3	PSE-BC10DNB-E3	PSE-YC35DNBR-E3
	PNP Cable	PSE-TM20D PSE-TM20DPB	PSE-TM10DR PSE-TM10DPBR	PSE-PM3DPBR	PSE-BC100DPB	PSE-BC30DPBR	PSE-BC10DPB	PSE-YC35DPBR
	PNP Connector	PSE-TM20D-E3 PSE-TM20DPB-E3	PSE-TM10DR-E3 PSE-TM10DPBR-E3	PSE-PM3DPBR-E3	PSE-BC100DPB-E3	PSE-BC30DPBR-E3	PSE-BC10DPB-E3	PSE-YC35DPBR-E3
Sensing distance		20m	10m	3m*	100cm	30cm	10cm	35cm
Spot diameter		/				8mm@30cm	/	5mm@20cm 10mm@35cm
Sensing object		⩾ϕ10mm opaque object (within Sn range)		/				
Hysteresis range		/			3...20%			<5%
Direction angle		> 2°		/				
Distance setting		Press the button for 2...5s, when the yellow and green light flash synchronously at 4Hz, and lift to finish the distance setting. If the yellow and green light flash asynchronously @8Hz for 3s, setting fails and the product distance goes to the maximum.						5-turn knob adjustment
NO/NC adjustment		Press the button for 5...8s, when the yellow and green light flash synchronously at 2Hz, and lift to finish the state switching.						The status of white wire connected to the negative is NC, while connected to the positive hanging is NO.
Supply voltage		10...30 VDC						
Consumption current		Emitter：⩽20mA Receiver：⩽20mA		⩽25mA				
Load current		⩽200mA						
Voltage drop		⩽1V						
Protection circuit		Short circuit, Reverse polarity, Overload, Zener protection						
Light source		Infrared(850nm)	Red light(630nm)	Red light(640nm)	Infrared(860nm)	Red light(640nm)	Infrared(860nm)	Red light(640nm)
Response time		⩽1ms		⩽0.5ms				
Indicator	Green	Power, stable signal (unstable signal flash)						
	Yellow	Output, overload or short circuit (flash)						
Anti-ambient light		Anti-sunlight interference⩾10,000lux; Incandescent light interference⩾3,000lux						
Operating temperature		-25°C...55°C						
Storage temperature		-25°C...70°C						
Protection degree		IP67						
Certification		CE						
Production standard		EN60947-5-2:2012、IEC60947-5-2:2012						
Material		Housing: PC+ABS; Filter: PMMA						
Weight		Connector 10g, Cable 50g						
Optical element		Instruction manual, screw, reflector TD-09(only for polarized reflection sensor)						

*The data is the result of the Lanbao PSE polarized reflection sensor with standard reflector TD-09.

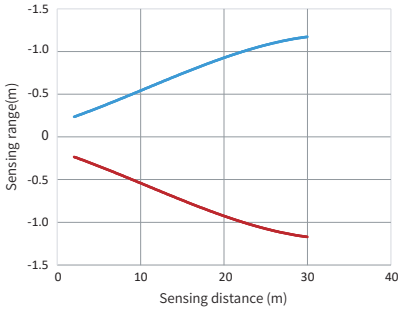
Performance

Sensing Range

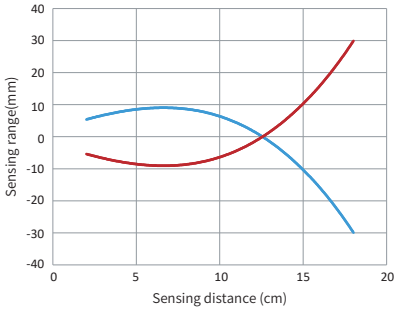
Through beam red light (PSE-TM10x.../-E3)



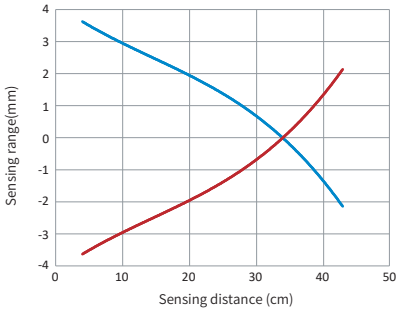
Through beam infrared (PSE-TM20x.../-E3)



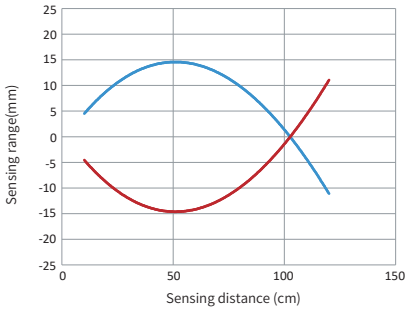
Wide-angle (PSE-BC10x.../-E3)



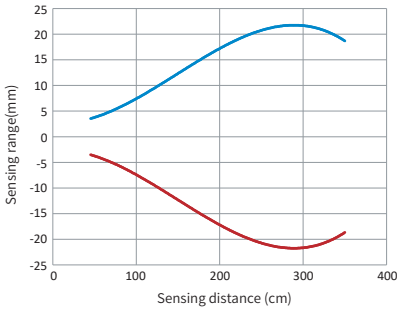
Diffuse reflection red light (PSE-BC30x.../-E3)



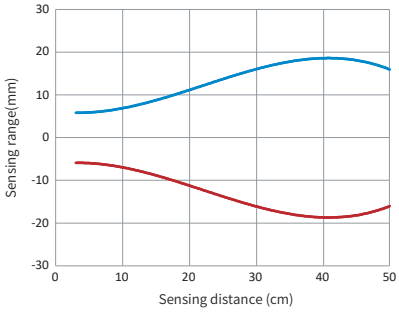
Diffuse reflection infrared (PSE-BC100x.../-E3)



Polarized reflection (PSE-PM30x.../-E3)

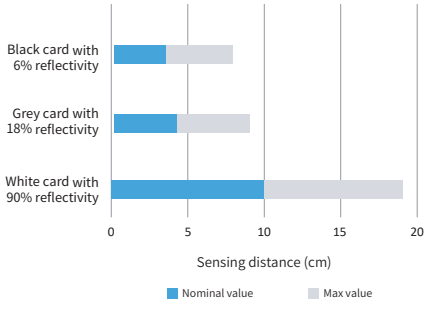


Background suppression (PSE-YC35x.../-E3)

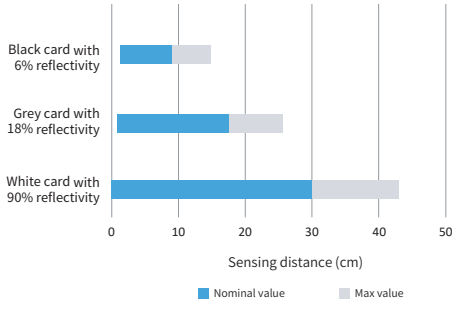


Sensing Distance

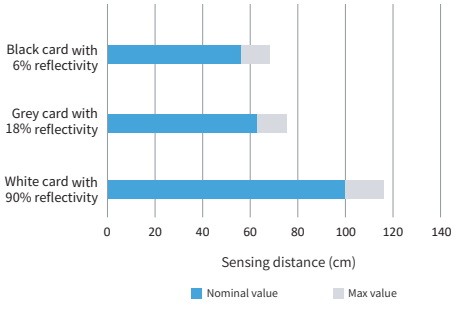
Wide-angle (PSE-BC10x.../-E3)



Diffuse reflection red light (PSE-BC30x.../-E3)



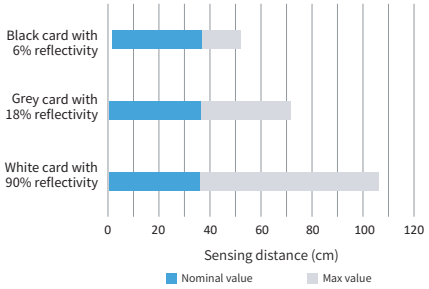
Diffuse reflection infrared (PSE-BC100x.../-E3)



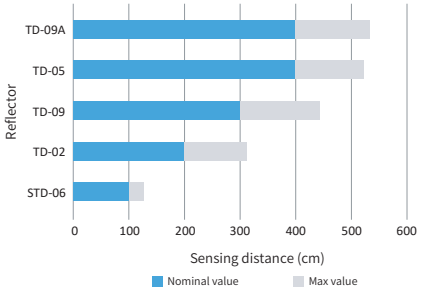
Performance

Sensing Distance

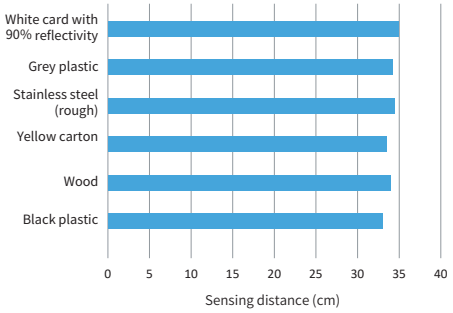
Background suppression (PSE-YC35x.../-E3)



Polarized reflection - different reflectivity (PSE-PM30x.../-E3)

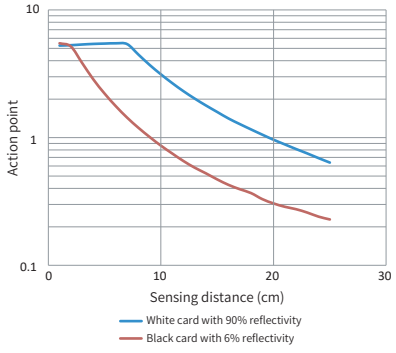


Background suppression - different materials (PSE-YC35x.../-E3)

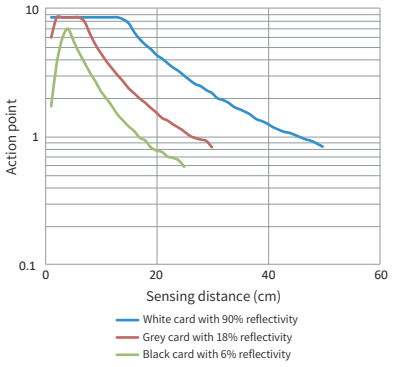


Signal Redundancy

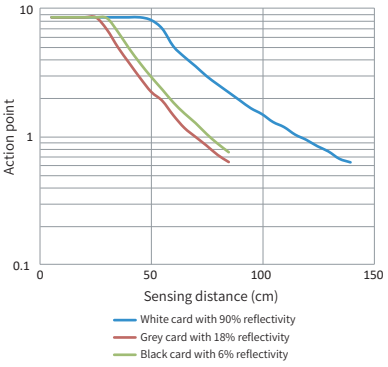
Wide-angle (PSE-BC10x.../-E3)



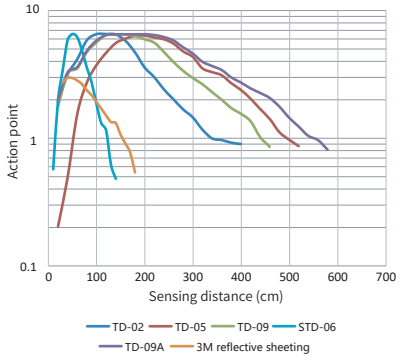
Diffuse reflection red light (PSE-BC30x.../-E3)



Diffuse reflection infrared (PSE-BC100x.../-E3)

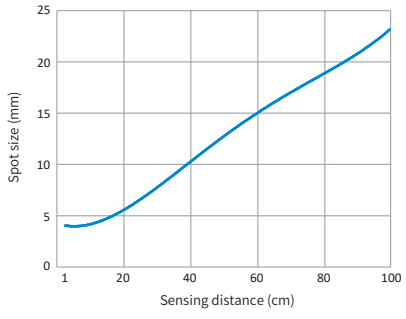


Polarized reflection (PSE-PM30x.../-E3)



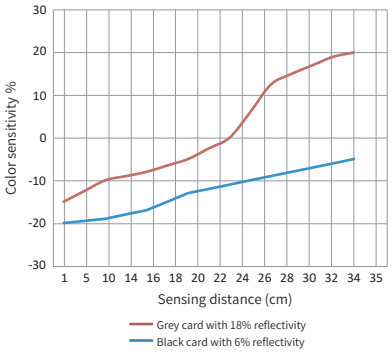
Spot Size

Background suppression (PSE-YC35x.../-E3)



Color Sensitivity

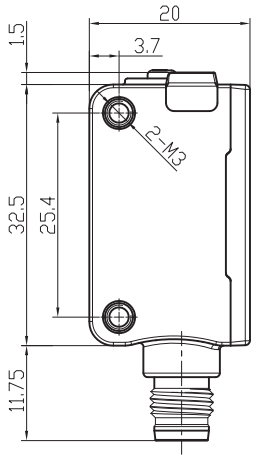
Background suppression (PSE-YC35x.../-E3)



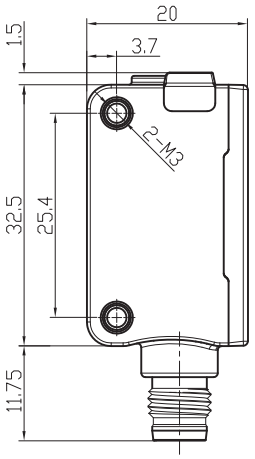
Dimensions

Connector

Through Beam, Diffuse Reflection, Polarized Reflection, Wide-angle

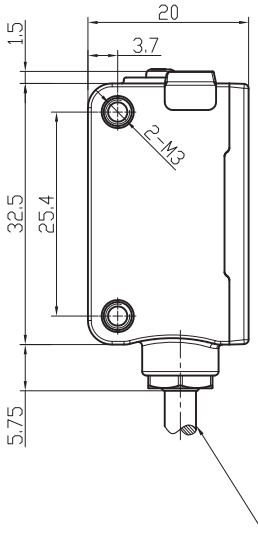


Background Suppression

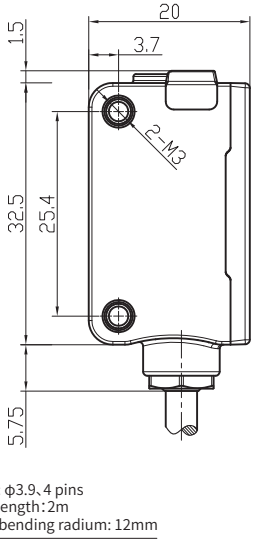


Cable

Through Beam, Diffuse Reflection, Polarized Reflection, Wide-angle

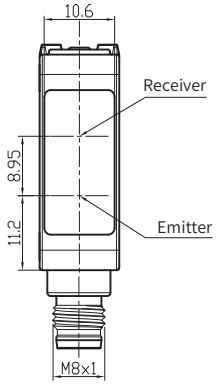


Background Suppression

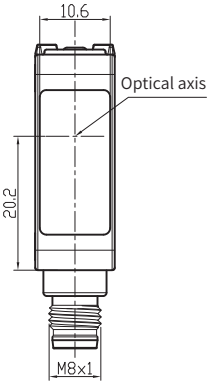


Connector

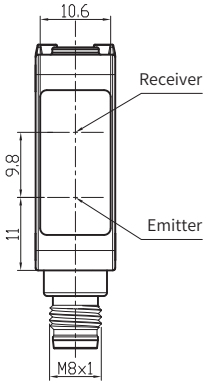
Diffuse Reflection, Polarized Reflection, Wide-angle



Through Beam

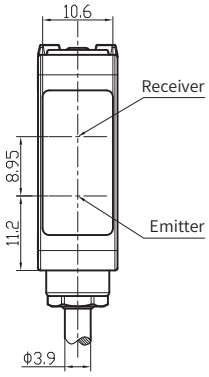


Background Suppression

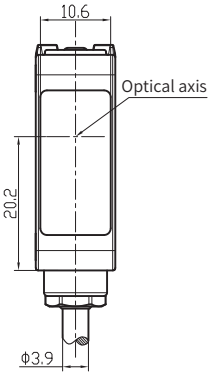


Cable

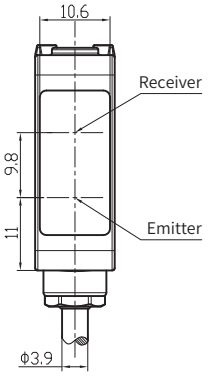
Diffuse Reflection, Polarized Reflection, Wide-angle



Through Beam



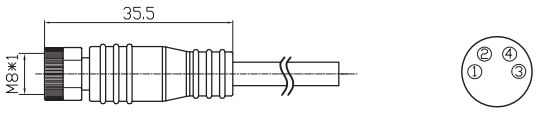
Background Suppression



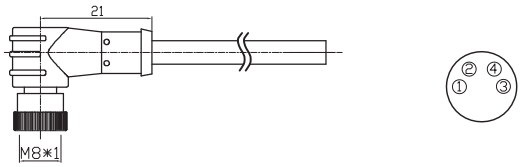
Through Beam -Emitter	Diffuse Reflection,Wide-angle Polarized Reflection, Through Beam-Receiver	Background Suppression	Through Beam -Emitter	Diffuse Reflection,Wide-angle Polarized Reflection, Through Beam-Receiver	Background Suppression
 1: + 3: -	 1: + 3: - 4: OUT	 1: + 4: OUT 3: - 2: -NC/+NO	brown: + blue: -	brown: + black: OUT blue: -	brown: + black: OUT blue: - white: -NC/+NO

Accessory Dimensions

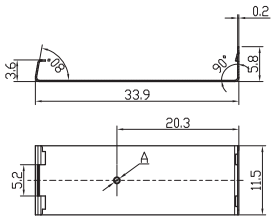
M8 Connector QE8-N4F2



M8 Connector QE8-N4G2

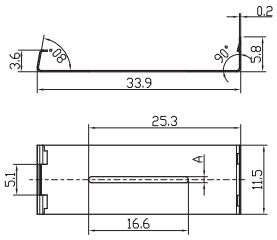


Narrow Slit FJP-01



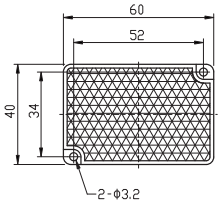
Model	A Size	Material
FJP-01A	ϕ0.5mm	Stainless steel (SUS304)
FJP-01B	ϕ1.0mm	
FJP-01C	ϕ2.0mm	

Narrow Slit FJP-02

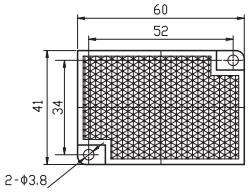


Model	A Size	Material
FJP-02A	0.5mm	Stainless steel (SUS304)
FJP-02B	1.0mm	
FJP-02C	2.0mm	

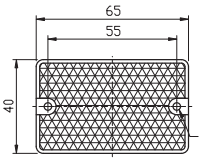
Reflector TD-09



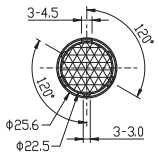
Reflector TD-09A



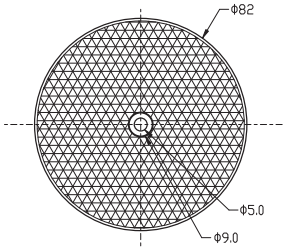
Reflector TD-02



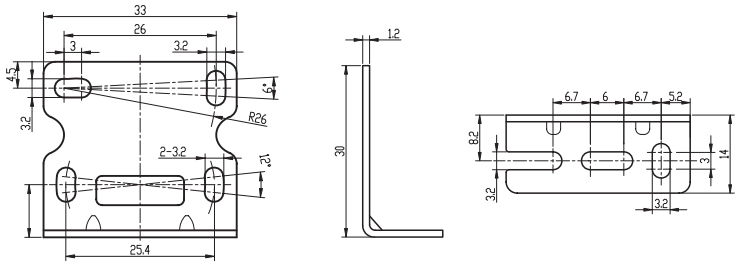
Reflector STD-06



Reflector TD-05

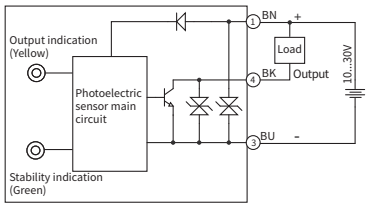


Mounting Bracket ZJP-8

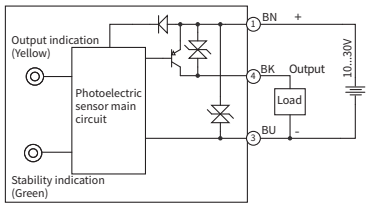


Wiring Diagram

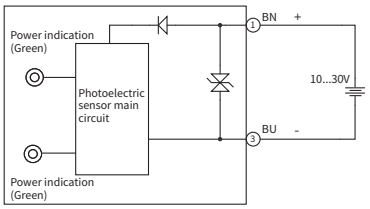
Through Beam-receiver, Diffuse Reflection, Polarized Reflection, Wide-angle-NPN Output



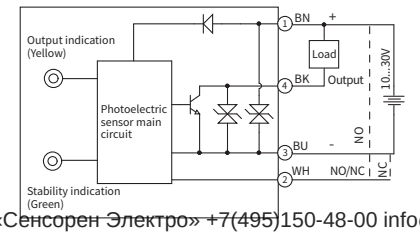
Through Beam-receiver, Diffuse Reflection, Polarized Reflection, Wide-angle-PNP Output



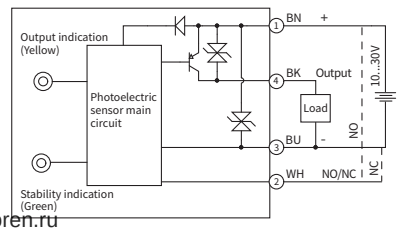
Through Beam-Emitter



Background Suppression-NPN Output



Background Suppression-PNP Output



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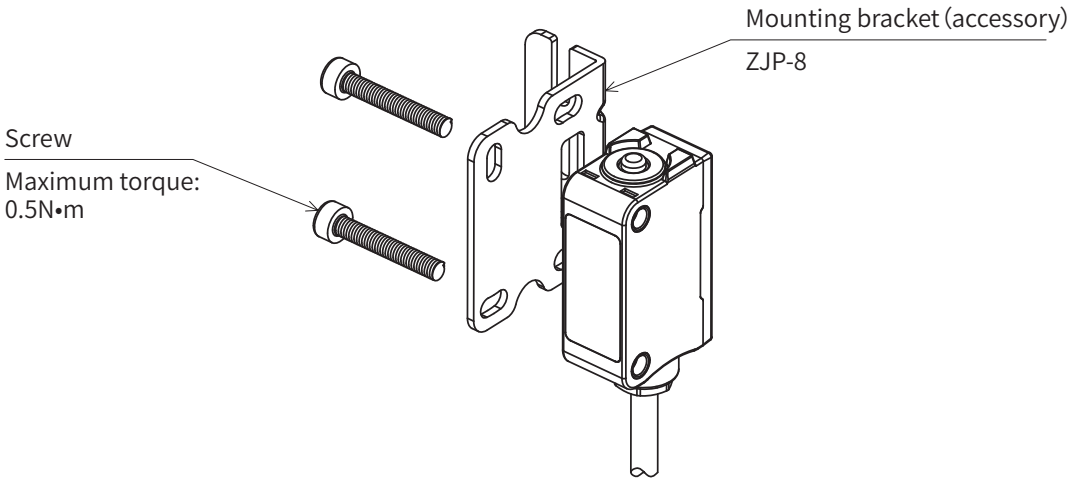
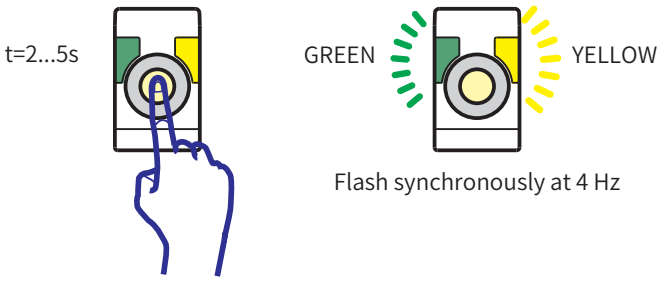
Installation Diagram



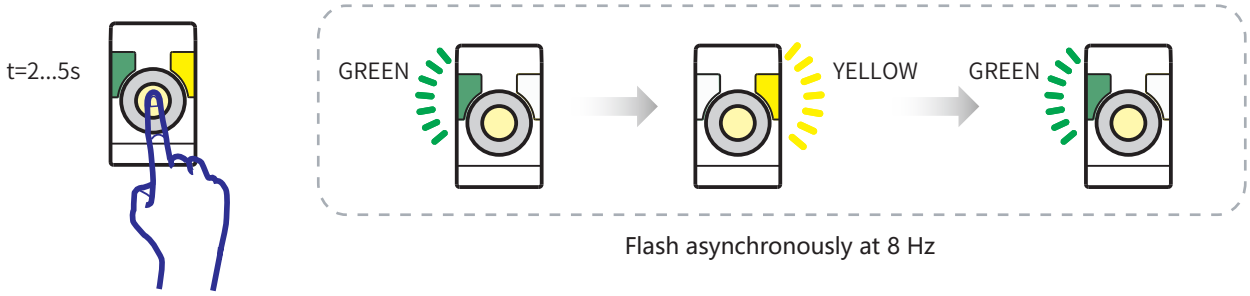
Button instruction

1.Press the button for the duration time "t", if t<2s or t⩾8s, the setting is invalid, NO/NC maintains in the original state, and the product distance maintains the original;

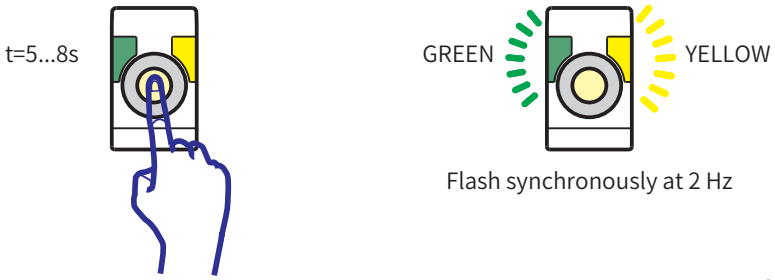
2.Put the product in face to the sensing object, and press the button for the duration "t", if 2s ⩽ t < 5s, the yellow and green lights flash synchronously at 4 Hz, when the button is released to finish distance setting. Refer to the figure on right



Note: For distancing setting, if the distance between the sensing object and the sensor exceeds the detection ability of the product, in duration 2s ⩽ t < 5s, the yellow and green lights flash synchronously at 4Hz, when the button is released to finish the distance setting but not successfully.
If the yellow and green lights flash asynchronously at 8 Hz, meaning that the product distance setting fails, and the product distance is automatically set to the maximum value, as shown in the following figure:



3.Press the button for the duration "t", if 5s ⩽ t < 8s, the yellow and green lights flash synchronously at 2 Hz, when the button is released to finish NO/NC state switchover .

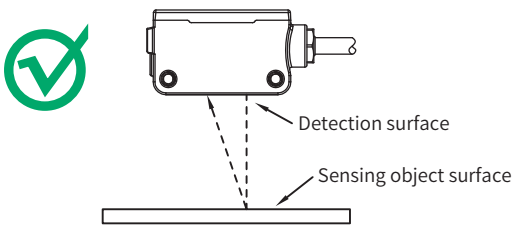


Precautions

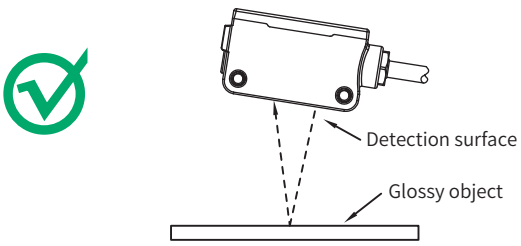
- The maximum allowable power supply of the sensor is 10% of the rated voltage. Please confirm that the power supply is less than the maximum allowable value before powering on.
- The time from powering-on to normal detection is 100ms. Please make sure to use the sensor after 100ms of powering-on.
- When using different power sources for the sensor and load, be sure to turn on the power of the sensor first.
- When the sensor is not used, it is recommended to cut off the power on the load first, and then cut off the power of the sensor.
- When installing the sensor, do not subject the sensor to severe external force (such as hammering, etc.), which may damage the sensor performance.
- Avoid using thinner, alcohol or other organic solvents when cleaning the sensor.

Notices for mounting(for polarized reflection sensor)

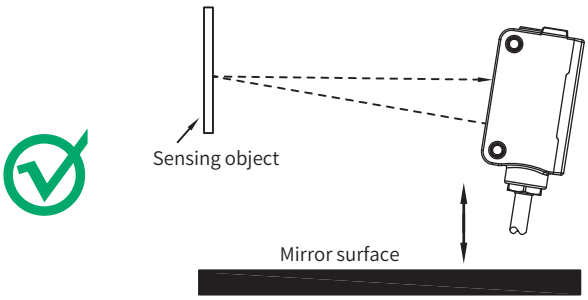
■ Keep the sensor detection surface and sensing object in parallel during mounting
(No inclination to the detection object is allowed)



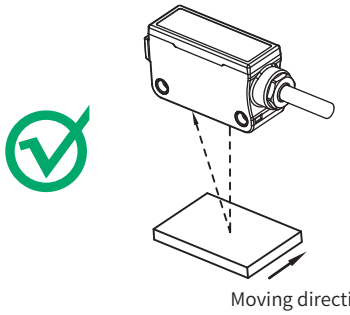
■ For detecting glossy objects (or glossy surfaces), install the sensor at a tilt of 5...10° as shown in below.

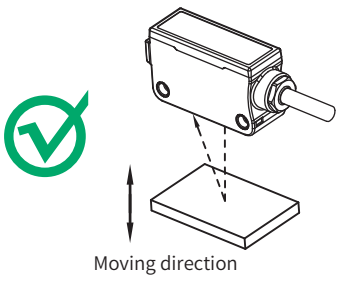


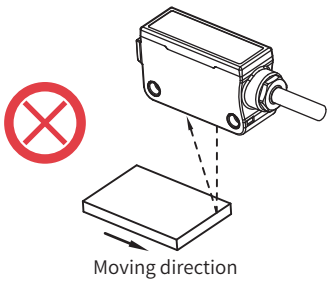
■ When the sensor is over any mirror object, the light emitted from the detection object is reflected back to the mirror object and returned to the sensor, which sometimes causes instability, and requires that the sensor be tilted or kept at a certain distance from the bottom in installation as shown in the figure on the right.



■ As to the mounting direction of the sensor, pay attention to the moving direction of the sensing object, and install it as shown below.







Notices for mounting(for polarized reflection sensor)

■ When detecting objects with large chromatic aberration or different material, please refer to the following ways to mount.

Safety Warning

- Do not use in an environment with flammable, explosive or corrosive gases;
- Do not use in an environment with oil or chemicals;
- Do not use in a high humidity environment;
- Do not use in direct sunlight;
- Do not use in other environmental conditions that exceed the rated value;
- Do not disassemble, repair or modify this product without authorization;

Scrap Treatment

- When the product is scrapped, please dispose of it as industrial waste.