

## Ultra-thin photoelectric PSV series



 **LANBAO**

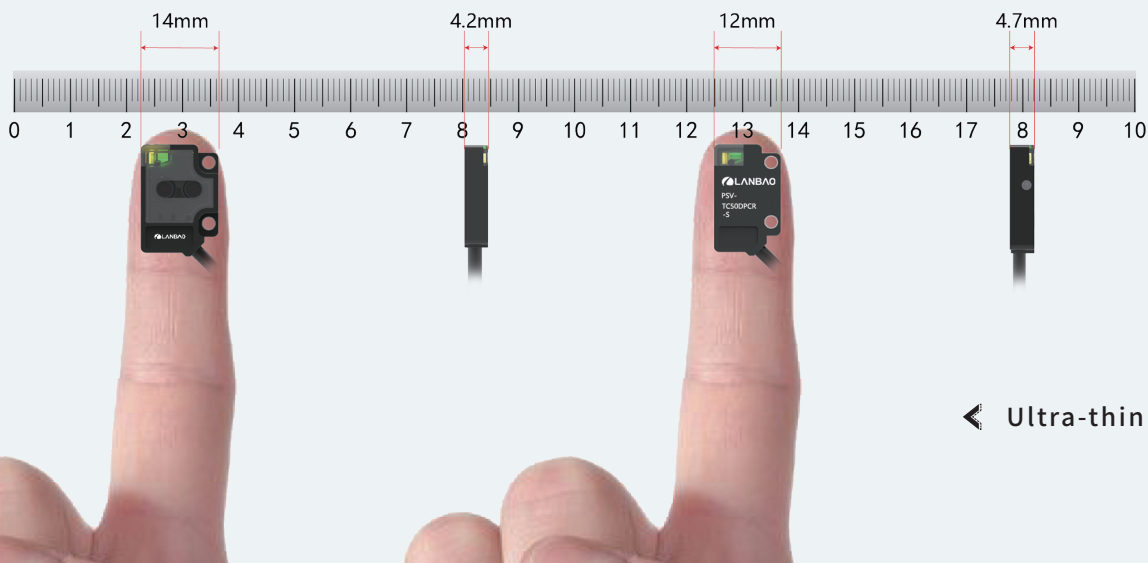
Shanghai Lanbao Sensing Technology Co., Ltd.

- ▼ Complete product line, options of through beam, diffuse, background suppression, convergent reflection  
Through beam sensor with front and side light emitting to satisfy different applications



- ▼ Quick response, suitable to detect fast moving tiny objects

- ▼ Clear dual color indicator, red light source for easy alignment

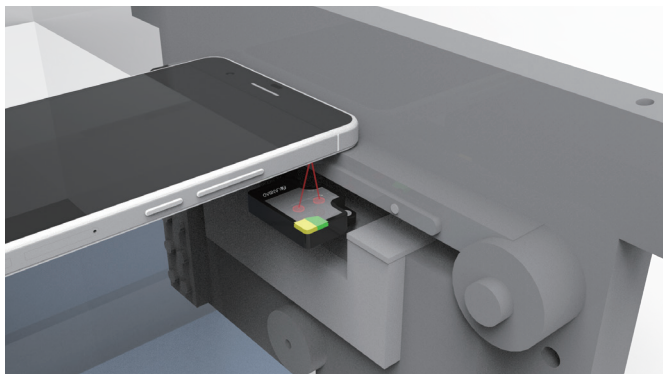


- ◀ Ultra-thin size, good for small space

## Application

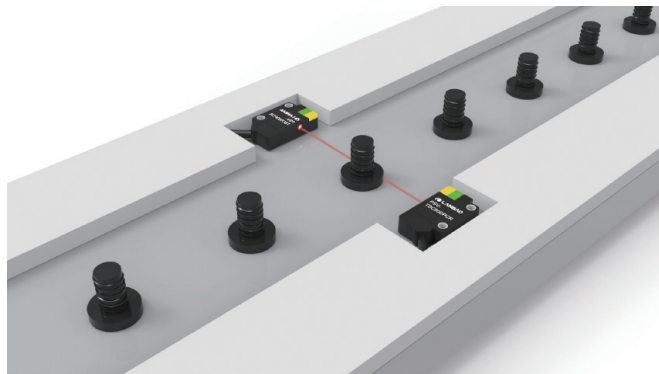
### Detection of cell phone cover plate

Convergent reflection series,suitable to fix inside narrow machine body regardless of background impact



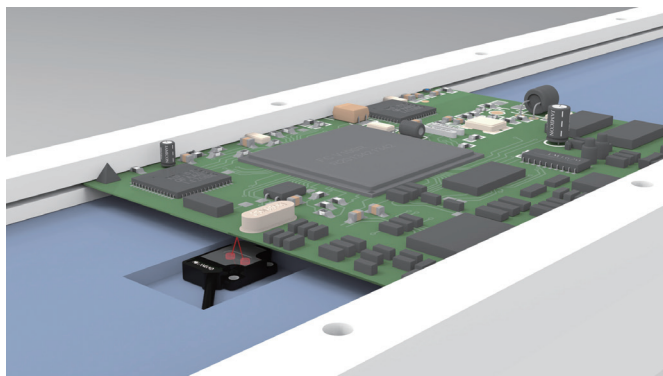
### Components pass counting

Side light through beam sensor,installed in narrow space to make stable detection of small objects



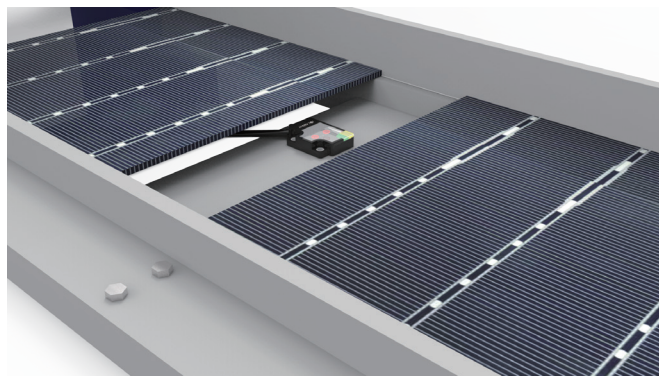
### Tiny electrical elements position detection

Background suppression series with laser-like lightspot and excellent black&white color sensitivity,able to detect elements position



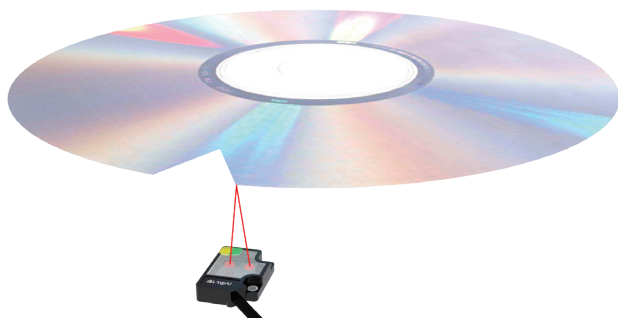
### Silicon wafer pass recognition

Background suppression series with powerful background suppression function and super small dead zone,used for fast and efficient silicon wafer detection in narrow space.



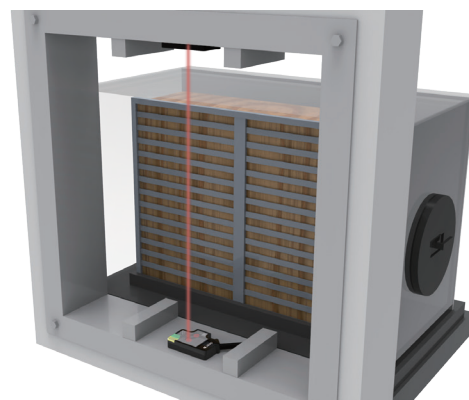
### Glass wafer notch detection

Convergent reflection,focus center 10mm,on center,able to sense notch of tiny objects or wafer

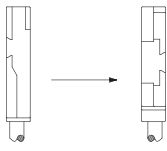
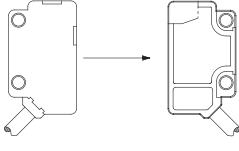
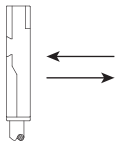
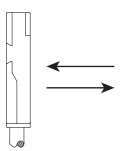
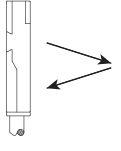


### Lead frame error detection

Through beam front light sensor,red light source design,for irregular stack of lead frames





## Guide Selection

Detection method	Shape	Connection method	Detection distance	Model	
				NPN Output	PNP Output
Through beam		Cable type (Front light)	50cm	Emitter PSV-TC50DR Receiver PSV-TC50DNOR	Emitter PSV-TC50DR Receiver PSV-TC50DPOR
		Cable type (Front light)	50cm	Emitter PSV-TC50DR Receiver PSV-TC50DNCR	Emitter PSV-TC50DR Receiver PSV-TC50DPCR
		Cable type (Side light)	50cm	Emitter PSV-TC50DR-S Receiver PSV-TC50DNOR-S	Emitter PSV-TC50DR-S Receiver PSV-TC50DPOR-S
		Cable type (Side light)	50cm	Emitter PSV-TC50DR-S Receiver PSV-TC50DNCR-S	Emitter PSV-TC50DR-S Receiver PSV-TC50DPCR-S
Diffuse reflection		Cable type	10cm	PSV-BC10DNOR	PSV-BC10DPOR
		Cable type	10cm	PSV-BC10DNCR	PSV-BC10DPCR
Background suppression		Cable type	15mm	PSV-YR15DNOR	PSV-YR15DPOR
			30mm	PSV-YR30DNOR	PSV-YR30DPOR
		Cable type	15mm	PSV-YR15DNCR	PSV-YR15DPCR
			30mm	PSV-YR30DNCR	PSV-YR30DPCR
Convergent reflection		Cable type	25mm	PSV-SR25DNOR	PSV-SR25DPOR
		Cable type	25mm	PSV-SR25DNCR	PSV-SR25DPCR

## Accessories(order separately)

### Mounting bracket(Purchased separately)

Applicable sensor	Shape	Model	Description
All part numbers		ZJP-14	Material:SPCC
All part numbers		ZJP-16	Material:SPCC

## Specifications

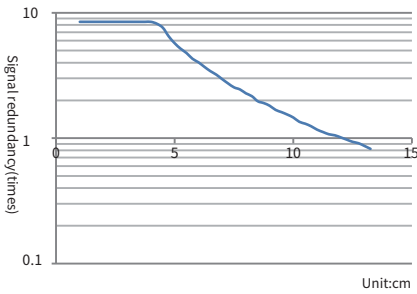
Detection type		Through beam		Diffuse reflection	Background suppression		Convergent reflection
		Side light	Front light				
Model	NPN	PSV-TC50DR-S PSV-TC50DNOR-S	PSV-TC50DR PSV-TC50DNOR	PSV-BC10DNOR	PSV-YR15DNOR	PSV-YR30DNOR	PSV-SR25DNOR
		PSV-TC50DR-S PSV-TC50DNCR-S	PSV-TC50DR PSV-TC50DNCR	PSV-BC10DNCR	PSV-YR15DNCR	PSV-YR30DNCR	PSV-SR25DNCR
	PNP	PSV-TC50DR-S PSV-TC50DPOR-S	PSV-TC50DR PSV-TC50DPOR	PSV-BC10DPOR	PSV-YR15DPOR	PSV-YR30DPOR	PSV-SR25DPOR
		PSV-TC50DR-S PSV-TC50DPCR-S	PSV-TC50DR PSV-TC50DPCR	PSV-BC10DPCR	PSV-YR15DPCR	PSV-YR30DPCR	PSV-SR25DPCR
Detection distance		50cm	50cm	10cm <sup>①</sup>	15mm <sup>①</sup>	30mm <sup>①</sup>	25mm
Dead zone		/	/	<5mm	<2mm	<4mm	<2mm
Standard target		φ2mm Above opaque objects	φ2mm Above opaque objects	50*50mm white cards	50*50mm white cards	50*50mm white cards	φ0.1mm copper wire (at the detection distance of 10mm)
Direction angle		<2°	<2°	/			
Light spot size		7*7cm@50cm	10*10cm@50cm	15mm@10cm	2mm@30mm	2mm@30mm	/
Color sensitivity		/	/	/	>90%	>85%	/
Hysteresis		/	/	3...20%	<20%	<20%	<20%
Supply voltage		10...30VDC					
Consumption current		Emitter:≤10mA Receiver:≤12mA	Emitter:≤10mA Receiver:≤12mA	≤15mA			
Load current		≤50mA					
Voltage drop		<1.5V					
Light source		Red light LED(640nm)	Red light LED(625nm)	Red light LED(640nm)	Red light LED(680nm)		Red light LED(640nm)
Protection circuit		Short circuit protection,Polarity protection,Overload protection,Zener protection					
Indicator		Green:Power supply indicator,stability indication; Yellow: Output indication					
Response time		<1ms					
Anti ambient light		Sunlight interference ≤10,000 lux;Incandescent light interference ≤3,000 lux					
Operating temperature		- 20...55 °C					
Storage temperature		- 30...70 °C					
Protection degree		IP65					
Certification		CE					
Housing Material		PC+PBT					
Lens		PMMA	PC				
Weight		Emitter:20g Other:22g					
Accessory		M2 Screws×2、 Nut×2					

①Use 50\*50mm 90% reflectivity white card

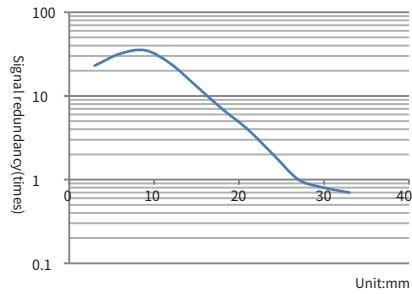
# Performance\*

## Signal redundancy

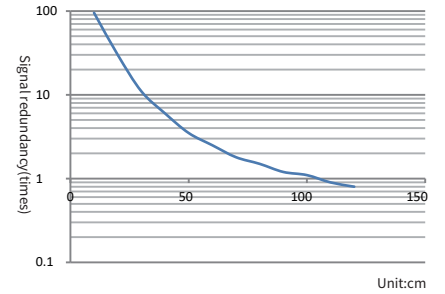
Diffuse reflection(PSV-BC\*\*)



Convergent reflection(PSV-SR\*\*)

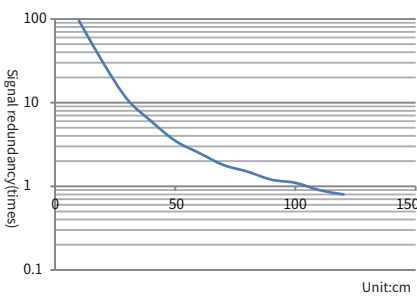


Through beam-Front light(PSV-TC\*\*)



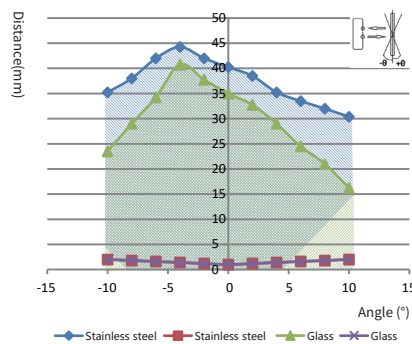
## Angle detection area characteristics

Through beam-Side light(PSV-TC\*\*-S)



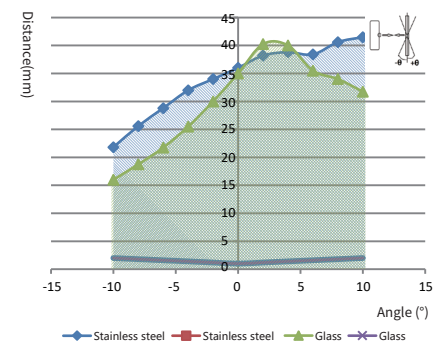
Convergent reflection(PSV-SR\*\*)

Left and right direction



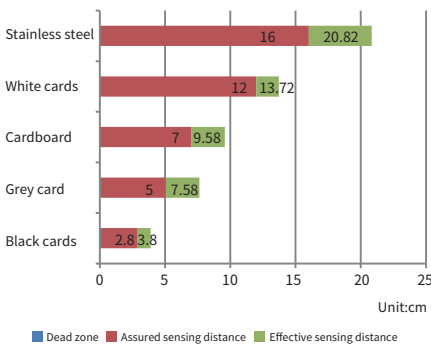
Convergent reflection(PSV-SR\*\*)

Up and down direction

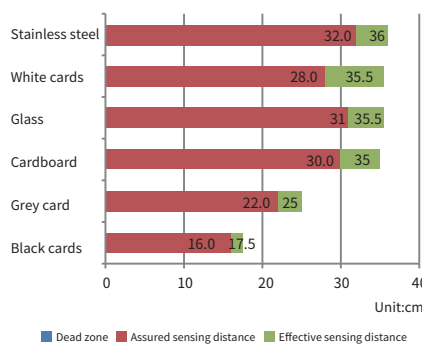


## Color sensitivity

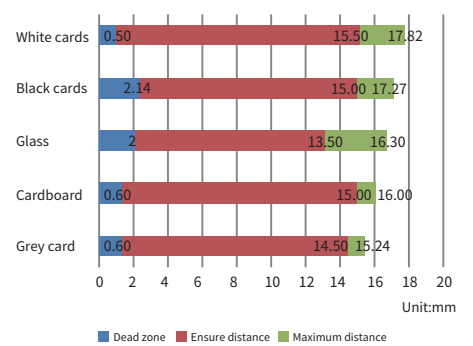
Diffuse reflection(PSV-BC\*\*)



Convergent reflection(PSV-SR\*\*)



Background suppression(PSV-YR15\*\*)

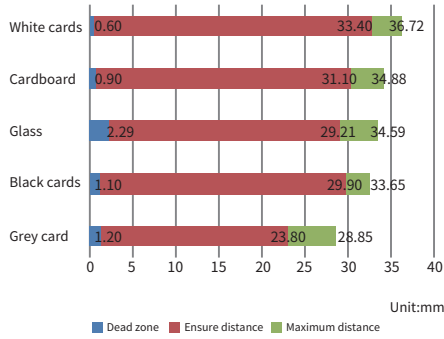


\*This data based on standard sensing object

# Performance\*

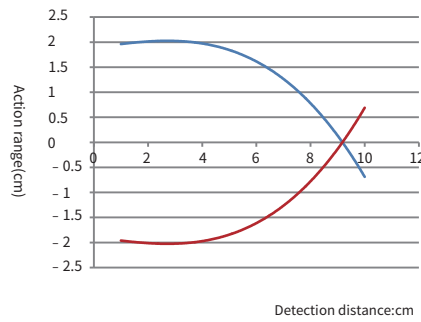
## Color sensitivity

Background suppression(PSV-YR30\*\*)

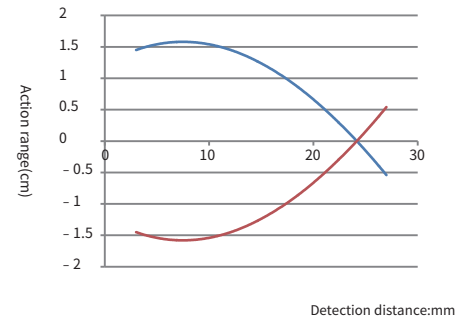


## Action range

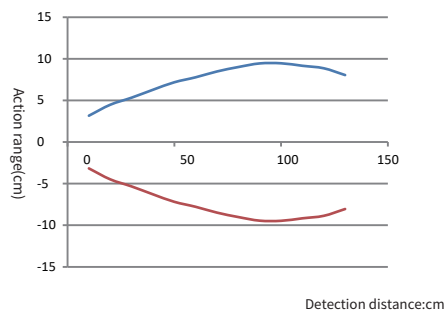
Diffuse reflection(PSV-BC\*\*)



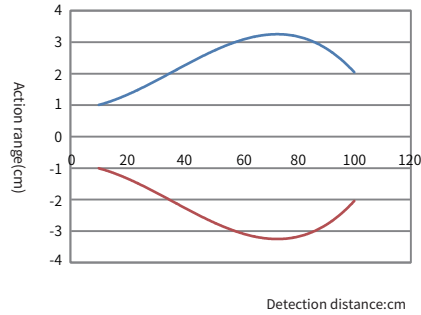
Convergent reflection(PSV-SR\*\*)



Through beam-Front light(PSV-TC\*\*)

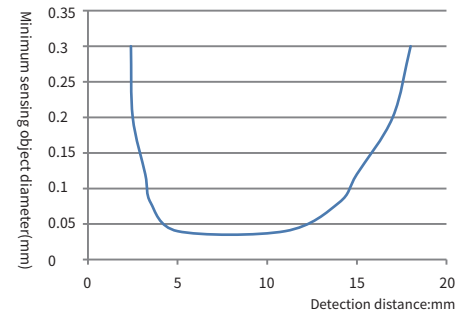


Through beam-Side light(PSV-TC\*\*-S)



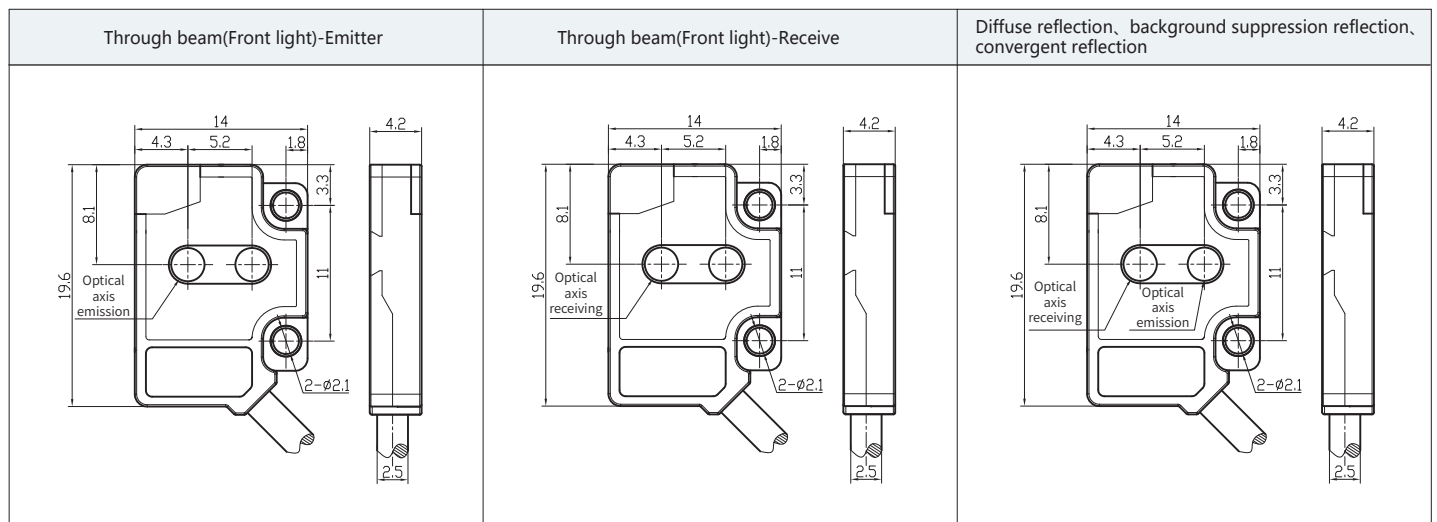
## Smallest detector

Convergent reflection(PSV-SR\*\*)



\*This data based on standard sensing object

## Dimension dwg



### Dimension dwg

Through beam(Side light)-Emitter	Through beam(Side light)-Receive

### Accessory Dimensions

Mounting bracket ZJP-14	Mounting bracket ZJP-16

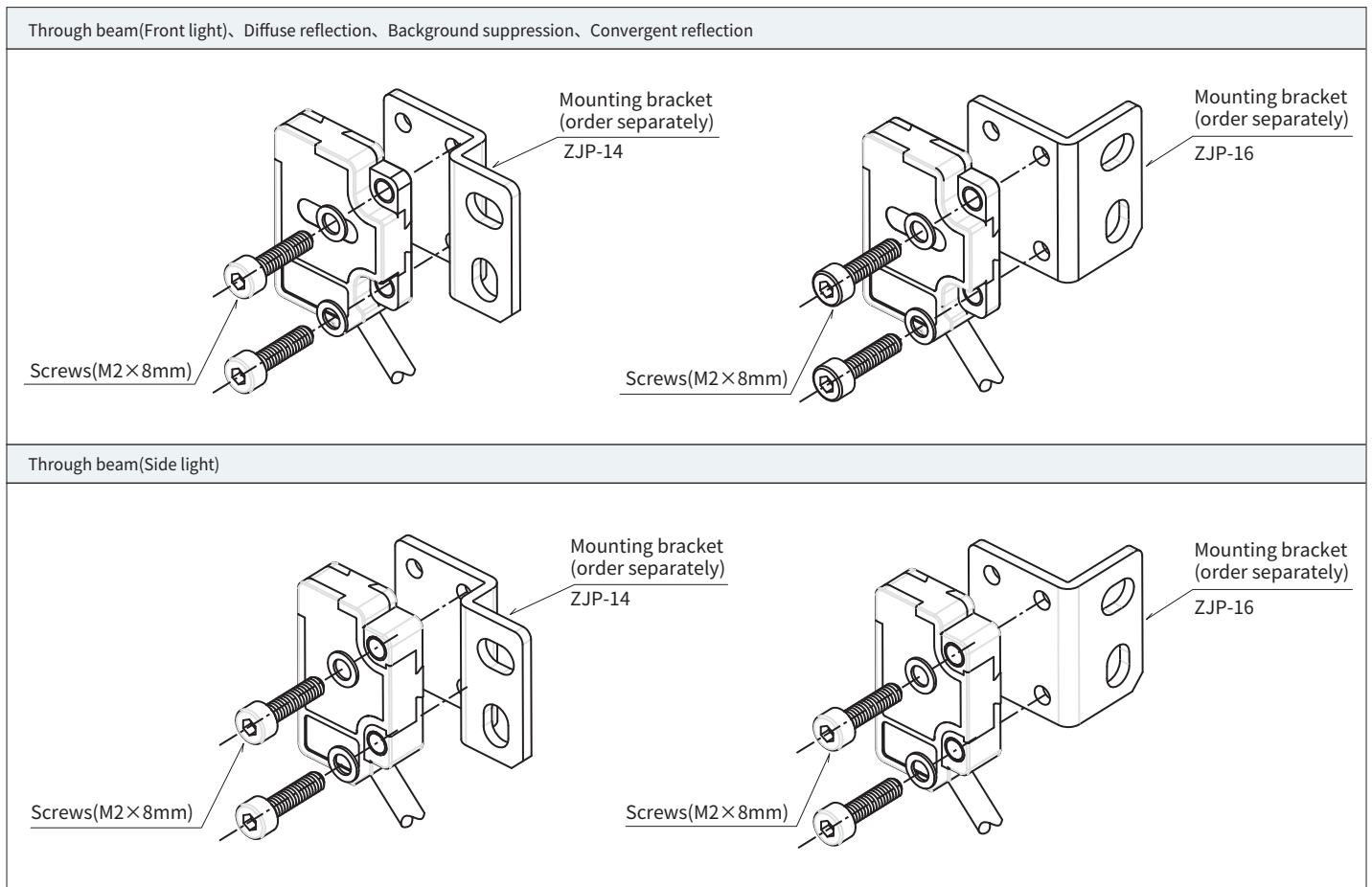
### Wiring Diagram

Through beam receiver,retro reflection,background suppression reflection,convergent reflection-NPN output	Through beam receiver,retro reflection,background suppression reflection,convergent reflection-PNP output	Through beam emitter



## Installation

### Product Installation Diagram



Remark:For mounting,please keep the tightening torque below  $0.2N \cdot m$

## Precautions

- Please make sure that the power supply voltage is within the rated 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
- Do not subject the sensor to severe external forces (such as hammer hits,etc.) during installation,so as not to damage the sensor performance
- Avoid using thinner,alcohol or other organic solvents when cleaning the sensor

## 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