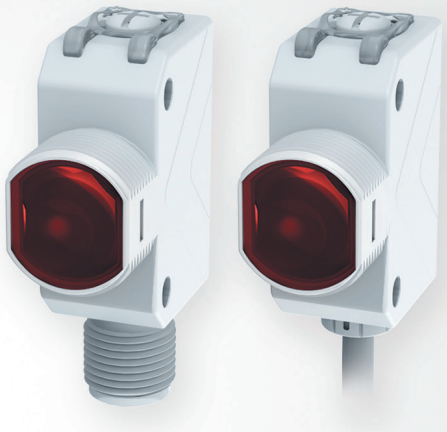
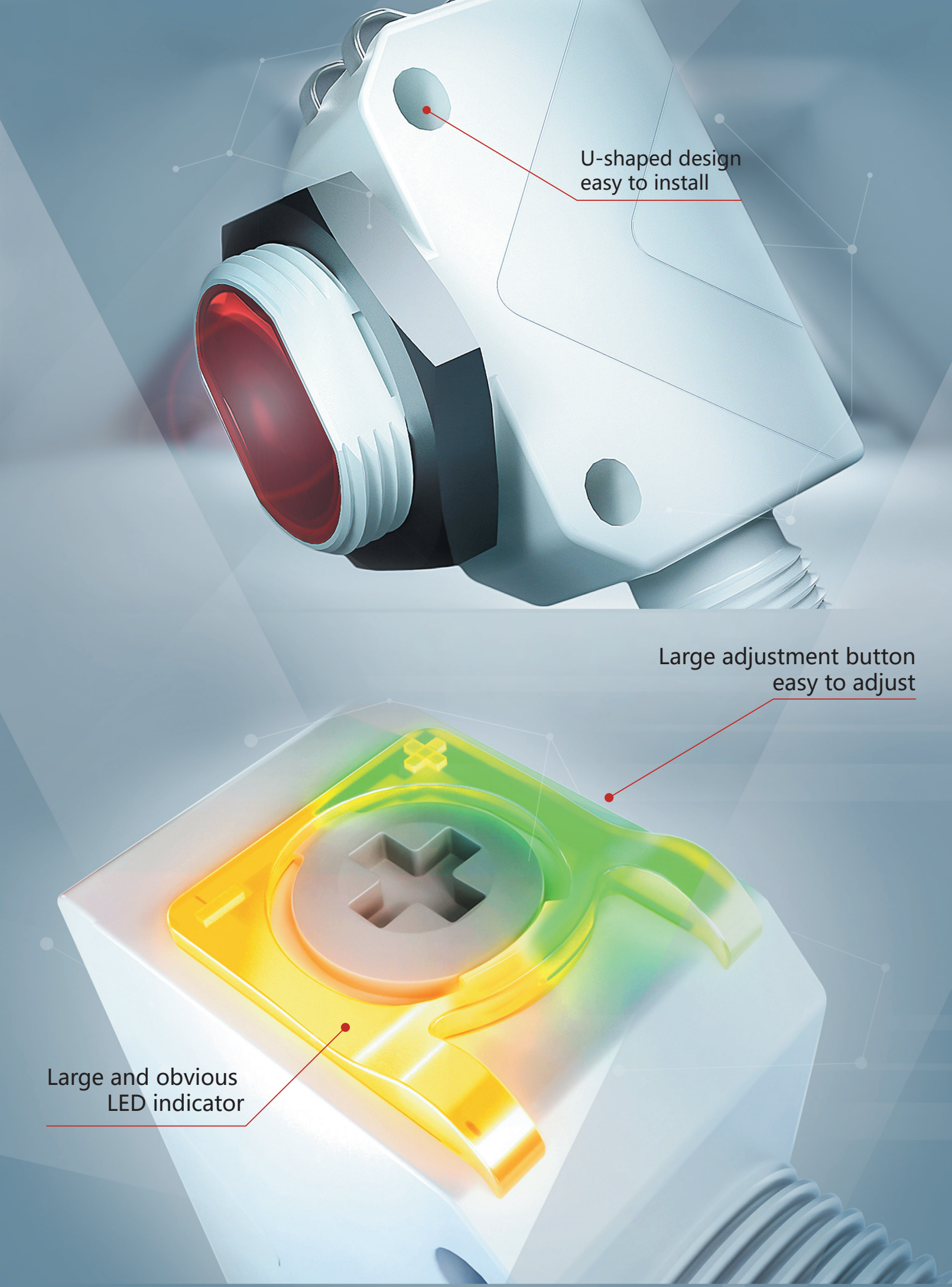
Photoelectric sensor PSR series



LANBAO

Shanghai Lanbao Sensing Technology Co., Ltd.


U-shaped design
easy to install
Large adjustment button
easy to adjust
Large and obvious
LED indicator

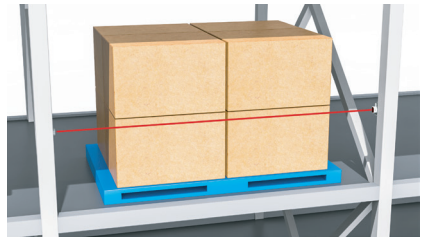
APPLICATION

Packaging Inspection

The diffuse reflection sensor adopts a red light source design, which can easily realize the alignment of the detected objects and facilitate quick debugging. 360° LED display makes it easy to observe the change of indicator light during debugging, which is beneficial to realize stable and reliable detection of objects on the packaging line.

Protrusion Cargo Detection

On the three-dimensional overhead warehouse, there are stackers and shuttles to store and pick up the goods continuously. The PSR through beam sensors are installed on both sides of the storage, giving real-time signal indication to the prominent position of the goods, which is convenient for the stacker to adjust the run to avoid collisions.

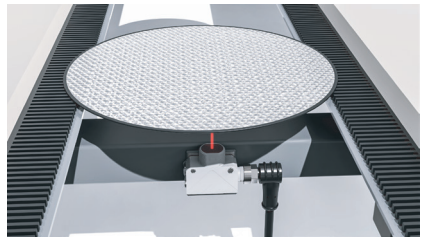


Black And White Target Detection

The background suppression sensor is not affected by the color and material of the detected object, and has a bright red spot display, which can detect the target object accurately.

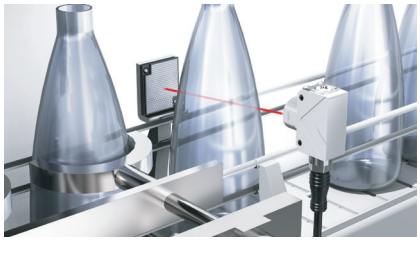
Wafer Passing Inspection

Conventional diffuse reflection sensors cannot achieve reliable detection due to differences in color and reflectivity of the target wafer. This PSR background suppression sensors are unaffected by the color and reflectivity of the surface of the wafer, enabling fast and efficient identification of wafer passing on the conveyor.



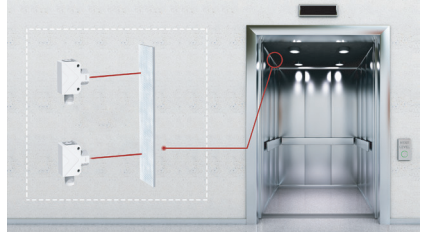
Transparent Object Detection

The unique optical design of polarized product makes it stable to detect high-brightness objects and transparent bodies without malfunction. The response time of the sensor is short, reliable detection can be achieved even if the target is in the process of high-speed flow.



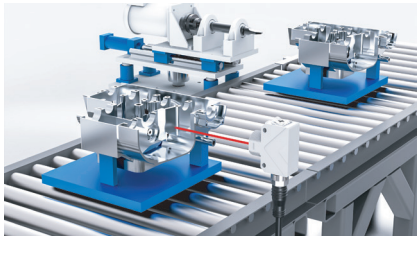
Elevator Leveling Control

Elevator shaft positioning system requires precise and reliable signal positioning, so that the elevator can accurately dock on each floor. Lanbao PSR sensor series are easy to install and calibrate in this application due to its high brightness indicator and small size.



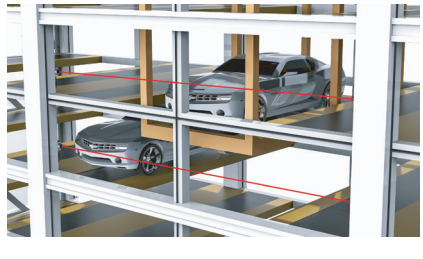
Object Passing Detection

PSR diffuse reflection sensor adopts 270° large knob design, easy to debug and can detect the work piece on assembly line. The detection signal can be used for multiple control tasks, such as trigger signals for other sensors or for start-stop functions. The product maintains excellent performance even in complex inspection surfaces.

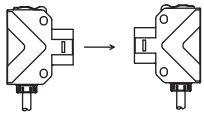
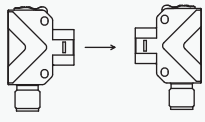
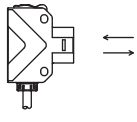
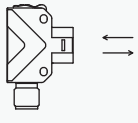
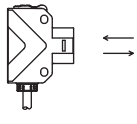
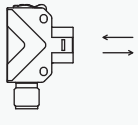
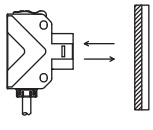
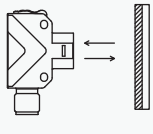


Oversized Vehicle Detection

PSR through beam sensors are used in stereo garage vehicles detection, with IP67 protection structure and strong anti-light interference capability. They can achieve reliable and stable detection even in harsh environments such as dust adhesion and condensation.



Product Model List

Detection method	Shape	Connection method	Sensing distance	Model	
				NPN output	PNP output
Through beam		cable 2m	20m	emitter PSR-TM20D receiver PSR-TM20DNB	emitter PSR-TM20D receiver PSR-TM20DPB
		connector	20m	emitter PSR-TM20D-E2 receiver PSR-TM20DNB-E2	emitter PSR-TM20D-E2 receiver PSR-TM20DPB-E2
Background suppression		cable 2m	10cm	PSR-YC10DNBR	PSR-YC10DPBR
		connector	10cm	PSR-YC10DNBR-E2	PSR-YC10DPBR-E2
Diffuse reflection		cable 2m	30cm	PSR-BC30DNBR	PSR-BC30DPBR
		connector	30cm	PSR-BC30DNBR-E2	PSR-BC30DPBR-E2
Polarized reflection		cable 2m	3m	PSR-PM3DNBR	PSR-PM3DPBR
		connector	3m	PSR-PM3DNBR-E2	PSR-PM3DPBR-E2

List Of Accessories (Sold Separately)

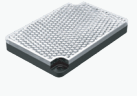
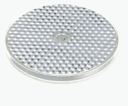
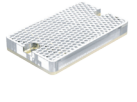
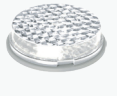
Mounting Bracket Standard sensor contains mounting bracket ZJP-8.

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 Necessity for sensors with connector, must be ordered separately.

Applicable sensor	Shape	Model	Description
connector sensor (M12 connector)		QE12-N4F2	M12 connector(4 pins) Φ5.2mm PVC cable 2m
		QE12-N4G2	M12 connector(4 pins) Φ5.2mm 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*40mm
		TD-05	Round ϕ 82mm
		TD-02	Square 65*40mm
		STD-06	Round ϕ 25.6mm

Specifications

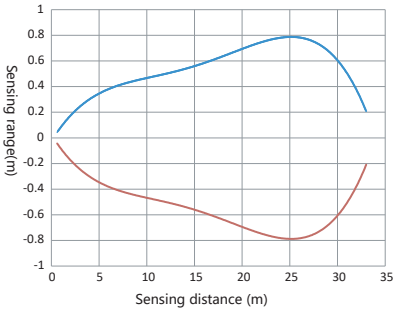
Detection type		Through beam	Polarized reflection	Diffuse reflection	Background suppression
Model	NPN cable	PSR-TM20D PSR-TM20DNB	PSR-PM3DNBR	PSR-BC30DNBR	PSR-YC10DNBR
	NPN connector	PSR-TM20D-E2 PSR-TM20DNB-E2	PSR-PM3DNBR-E2	PSR-BC30DNBR-E2	PSR-YC10DNBR-E2
	PNP cable	PSR-TM20D PSR-TM20DPB	PSR-PM3DPBR	PSR-BC30DPBR	PSR-YC10DPBR
	PNP connector	PSR-TM20D-E2 PSR-TM20DPB-E2	PSR-PM3DPBR-E2	PSR-BC30DPBR-E2	PSR-YC10DPBR-E2
Sensing distance		0.3...20m	0...3m*	5...300mm	100mm
Spot size		/	180*180mm@3m	18*18mm@30cm	8*8mm@10cm
Standard target		Φ15mm or more opaque objects(in the range of Sn)	/		
Hysteresis range		/		3...20%	≤5%
Direction angle		> 4°	/		
Light source		Infrared（850nm）	Red light（660nm）		
NO/NC adjustable		cable：White wire is connected to the positive pole, NO mode; White wire is connected to the negative pole, NC mode connector:Feet 2 is connected to the positive pole, NO mode; Feet 2 is connected to the negative pole, NC mode			
Operating Voltage		10...30 VDC			
Current consumption		emitter：≤15mA receiver：≤18mA	≤20mA		≤25mA
Load current		≤100mA			
Voltage drop		≤1V			≤1.8V
Protection circuit		Short circuit protection, polarity protection, overload protection, Zener protection			
Distance adjustment		Single-turn potentiometer			unadjustable
Response time		≤1ms	≤0.5ms		
Indicator	Green light	Power indicator	Power indication, stable indication (blinking means unstable signal)		Power indication, stable indication (low brightness, weak signal)
	Yellow light	Output indication, short circuit or overload indication (flashing)	Output indication, short circuit or overload indication (flashing)		Output indication, short circuit or overload indication (flashing)
Anti-ambient light		Anti-sunlight interference < 10,000lux; Incandescent light interference < 3,000lux			
Ambient temperature		-15℃...60℃			
Storage temperature		-25℃...70℃			
Protection degree		IP67			
Certification		CE			
Production standard		EN60947-5-2:2012、IEC60947-5-2:2012			
Installation method		Composite installation			
Housing material		Housing ABS; filter PMMA			
Weight		connector 10g ,cable52g			
Optical element		Instruction manual, M18*1 nut, reflectorTD-09(Polarized reflection type sensor only) ,mounting brackets ZJP-8			

*This data is the result of the TD-09 test of the reflector of the Lanbao PSR polarized sensor.

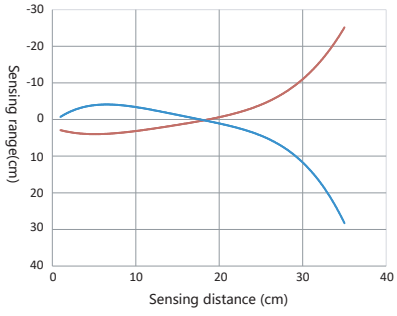
Detection Characteristics

Sensing range

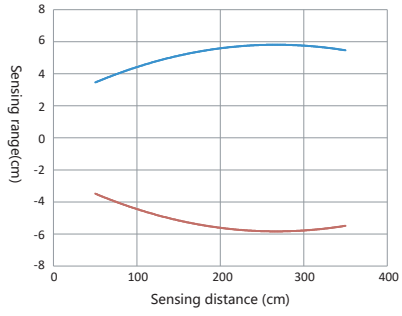
Through beam



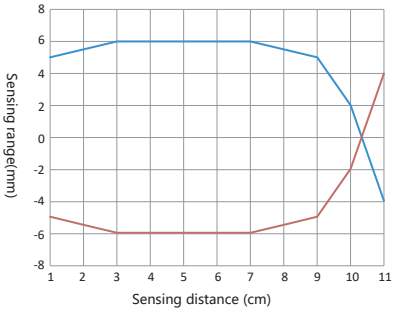
Diffuse reflection



Polarized reflection

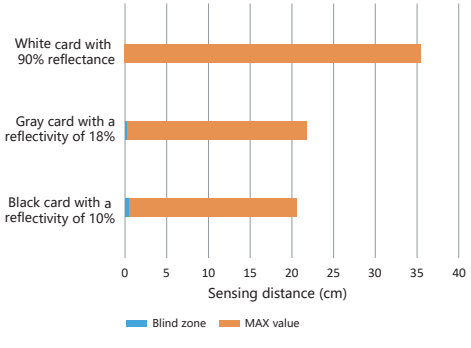


Background suppression

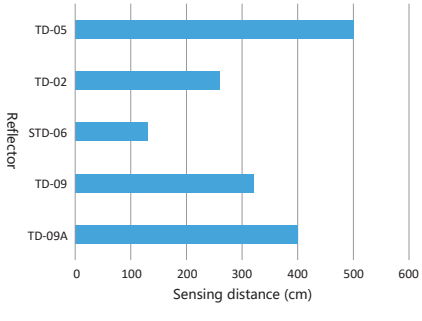


Sensing distance

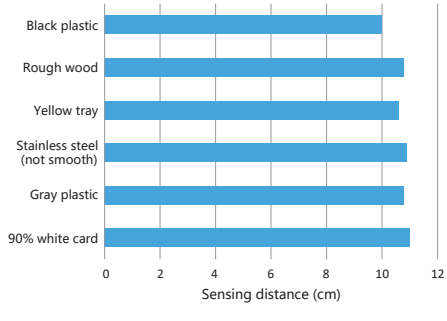
Diffuse reflection



Polarized reflection

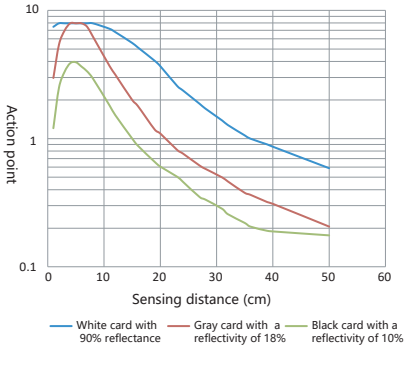


Background suppression

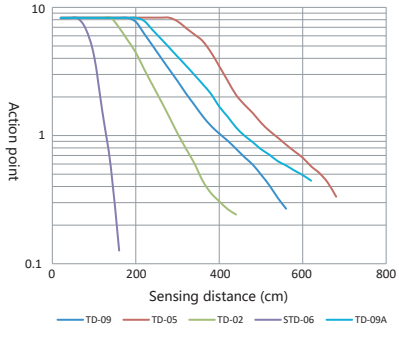


Signal redundancy

Diffuse reflection

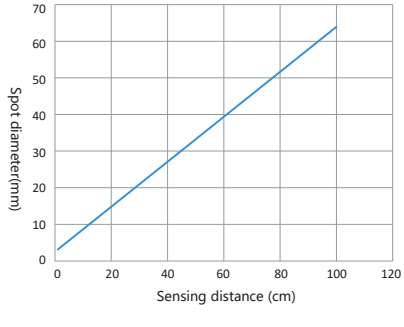


Polarized reflection



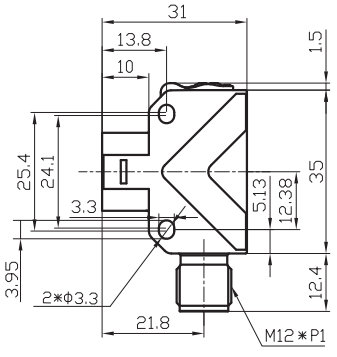
Spot diameter

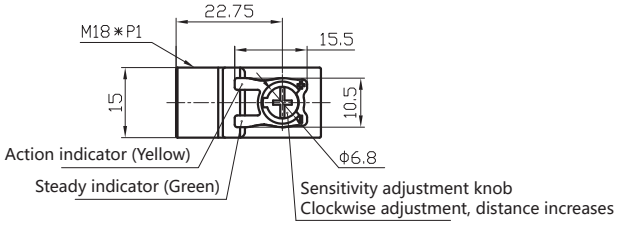
Diffuse reflection
Background suppression
Polarized reflection



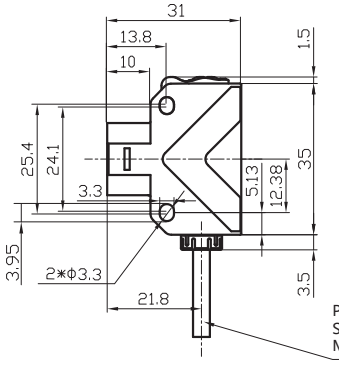
Product Size

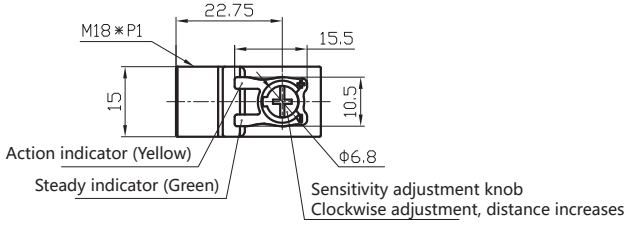
Connector



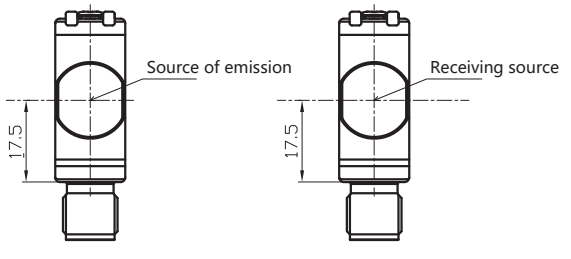


Cable

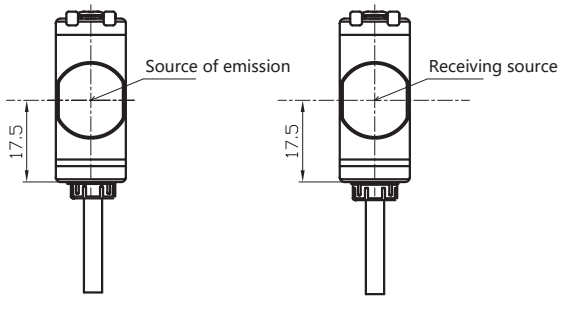




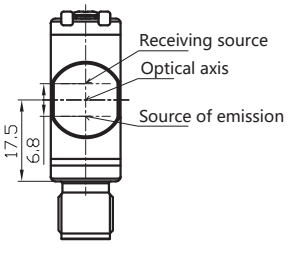
Through beam



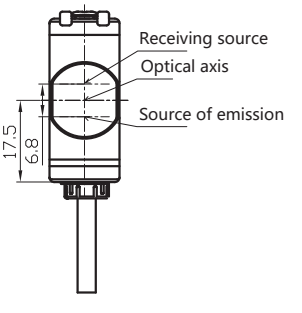
Through beam



Diffuse reflection、Background suppression、Polarized reflection



Diffuse reflection、Background suppression、Polarized reflection

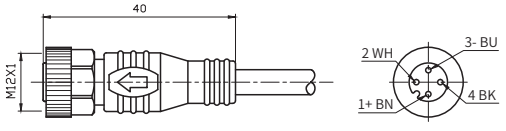


Emitter wiring diagram	Diffuse reflection、Background suppression、Polarized reflection 、radiation receiver
1: + 3: -	1: + 4: OUT 3: - 2: -NC/+NO

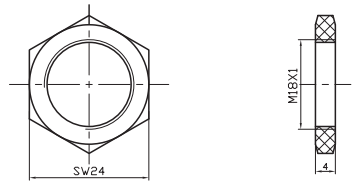
Emitter wiring diagram	Diffuse reflection、Background suppression、Polarized reflection 、radiation receiver
brown: + blue: -	brown: + black: OUT blue: - white: -NC/+NO

Accessory Dimension Drawing

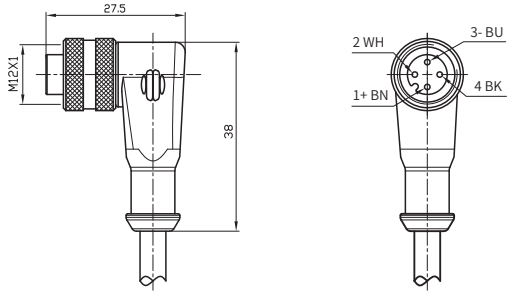
M12 connector QE12-N4F2



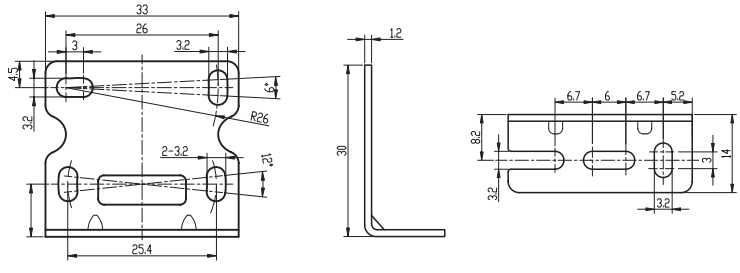
M18 nut



M12 connector QE12-N4G2

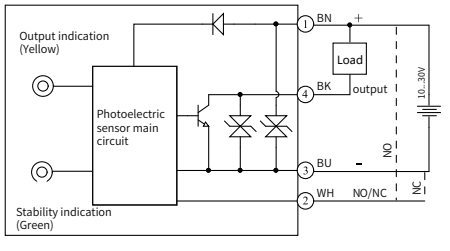


Mounting brackets ZJP-8

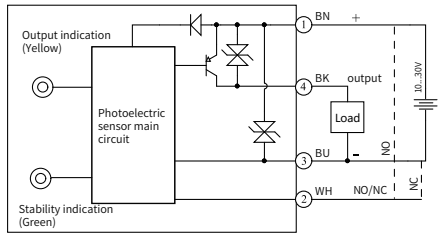


Electrical Wiring Diagram

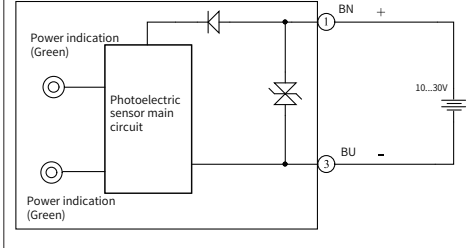
NPN



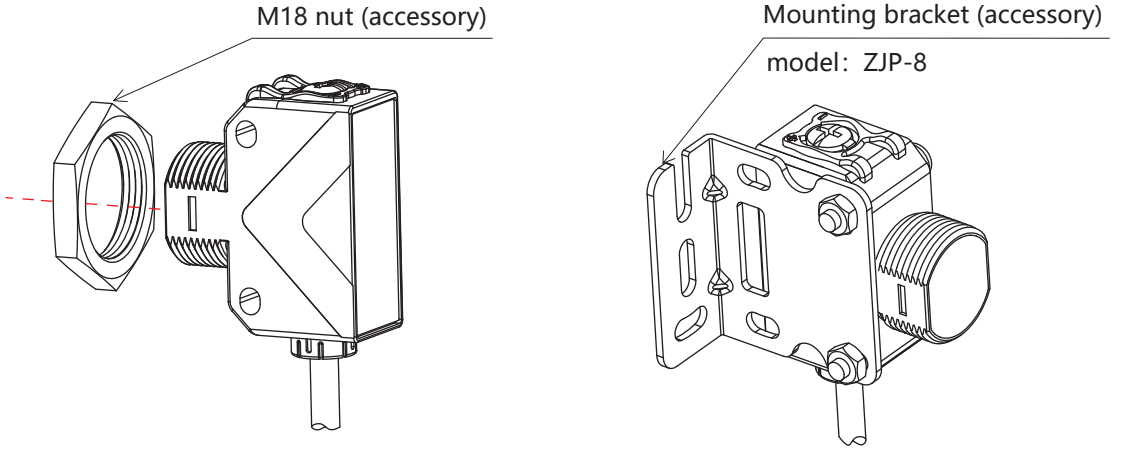
PNP



Emitter



Installation Diagram

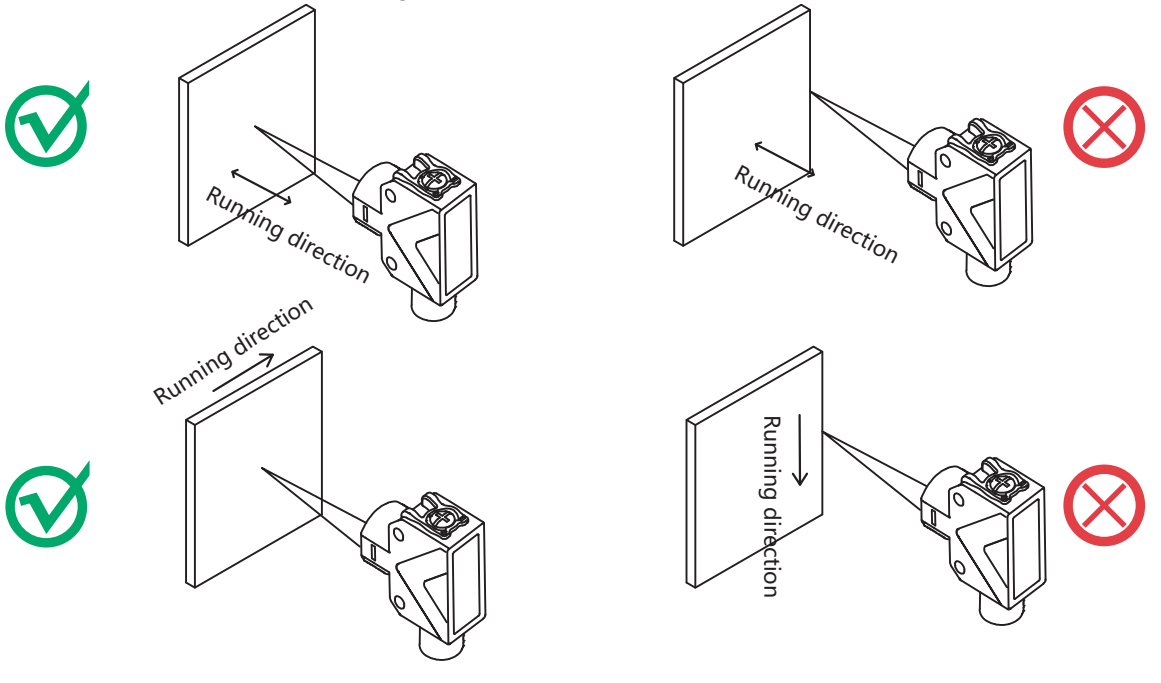


Precautions

- 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.

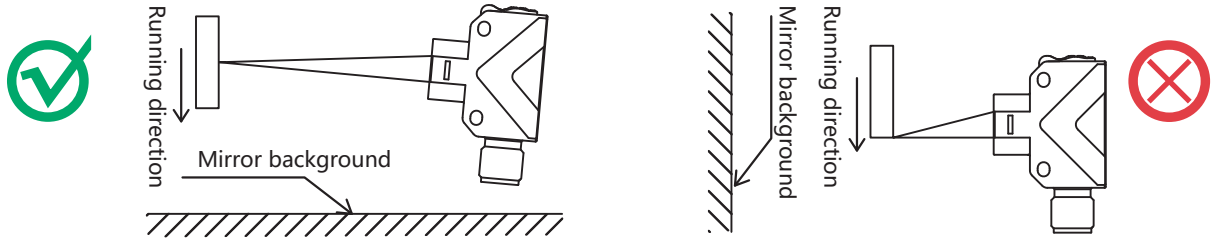
Installation Precautions

■ In order to accurately detect moving objects, the optical axis should be aligned with the middle of the object, not the edge position. Please refer to the following method for installation.

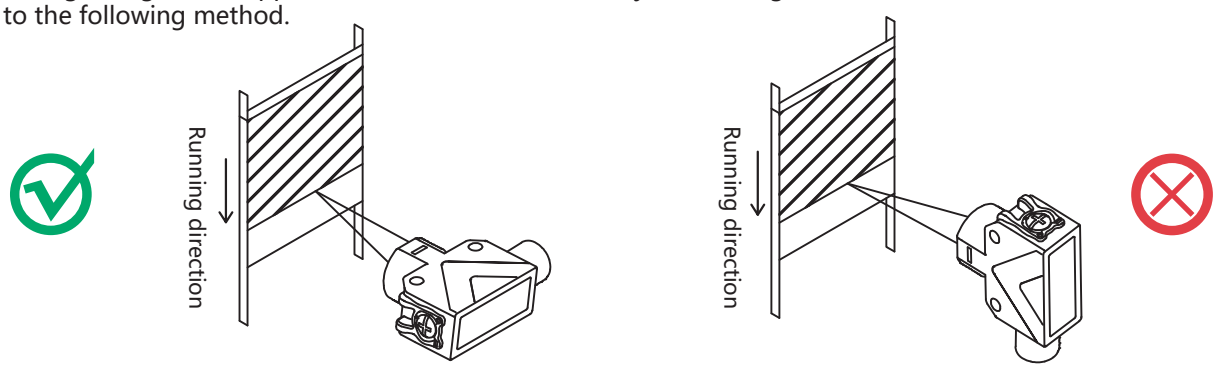


Installation Precautions

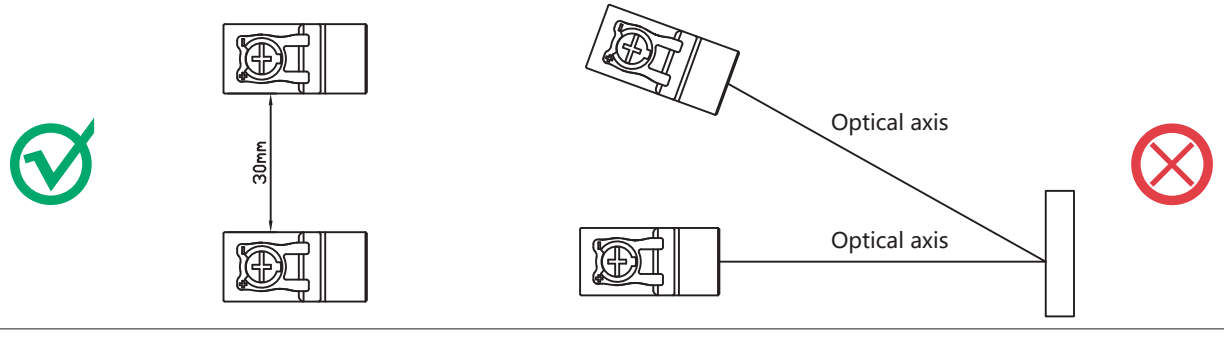
■ In order to avoid the influence of the mirror background on the sensor, please refer to the following method for installation.



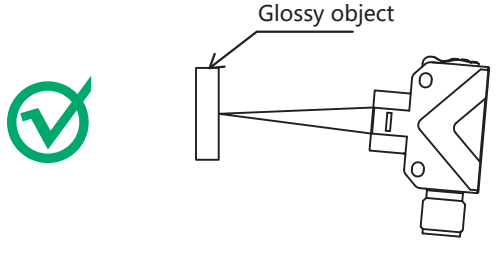
■ When using background suppression sensor to detect an object with large color difference or different materials, please refer to the following method.



■ Background suppression, diffuse reflection type: When the sensors are installed side by side, please refer to the following methods for installation. The sensor installation should be parallel, and the installation spacing should not be less than 30mm to prevent the product spots from overlapping each other.



■ Background suppression type: In order to reliably detect glossy objects, the optical axis and the glossy object should have an angle of 5~8°. Please refer to the following method for installation.



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.

Hotline **800-820-8259**

LANBAO

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