

Photo area sensor

PAS series

INSTRUCTION MANUAL

Thank you for purchasing HANYOUNG product.

Please check whether the product is the exactly same as you ordered.

Before using the product, please read this instruction manual carefully.

Please keep this manual where you can view at any time

HEAD OFFICE

HANYOUNGNUX CO.,LTD

1381-3, Juan-Dong, Nam-Gu Incheon, Korea, TEL: (82-32)876-4697 FAX: (82-32)876-4696 <http://www.hynux.net>

HANYOUNG NUX

Safety information

Alerts declared in the manual are classified to Danger, Warning and Caution by their criticality

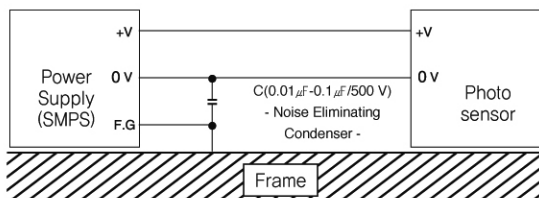
	DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
	WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

Warning

- Please use proper power supply voltage to prevent damage or malfunction of product.
- Since this product is not designed with explosion-protective structure, do not use it any place with flammable or explosive gas.
- Reassemble this product while the power is OFF. Otherwise, it may be a cause of malfunction or electric shock.
- Due to the danger of electric shock, use this product installed onto a panel while an electric current is applied.
- The Photo wide sensor series are not safety sensor for press operation.
- Please note that this product does not have control function for prevention of accidents and disasters. So, we do not take any responsibilities for the compensation related to the prevention of accidents and disasters.

Caution

- The contents of this manual may be changed without prior notice.
- If you use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
- Do not decompose, modify, revise or repair this product. This may be a cause of malfunction, electric shock or fire.
- If the malfunction of this product can be cause of serious accident, please use proper protection circuit on the outside to prevent accident.
- Do not use this product at any place with a large inductive difficulty or occurring static electricity or magnetic noise.
- Do not use this product at any place with possible thermal accumulation due to direct sunlight or heat radiation.
- When the product gets wet, the inspection is essential because there is a danger of electric leakage or fire.
- Do not connect anything to the unused terminals.
- After checking the polarity of terminal, connect wires at the correct position.
- For the continuous safe use of this product, the periodical maintenance is recommended.
- Make its wiring be as short as possible and wire extension shall be max 25 m (over $\varnothing 0.5\text{mm}^2$ thickness wires).
- Avoid switching the power source On and Off continuously.
- Use a dry cloth to wipe off the substance when cleaning the lens or cases. Never use thinner or organic solvents.
- Do not use this product at any place with much dust, vibration or impact.
- Before inserting power source, make sure that the circuit wiring is properly connected.
- In the case of wiring inductive loads such as DC Relay and others to output, use diode, varistor and others to prevent surge.
- To avoid malfunction caused by noise, do not put high voltage or power line with sensor wire in a same conduit
- Prevent strong disturbance light such as sunlight and others which directly enter into the directional angle of the sensor by putting a glare shield.
- When using the Switching Power Supply as the power source, earth the Frame Ground (F.G) terminal and be sure to connect the noise-eliminating condenser between 0 V and F.G.



※ If you do not follow the instructions described in the safety information then it is possible to be a cause of the product's malfunction so please follow them.

Characteristic

- 13 mm slim body type
- Include interference protection function
- Auto sensing correction function
- Fast response time: 7 ms max

Suffix code

Model	Code	Information
PAS -	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Photo Area
Detection method	T	Through Beam
Number of optical axis	4	4 Optical axis
	8	8 Optical axis
	12	12 Optical axis
	16	16 Optical axis
	20	20 Optical axis
Output type	N	NPN open collector type
	P	PNP open collector type

Specification

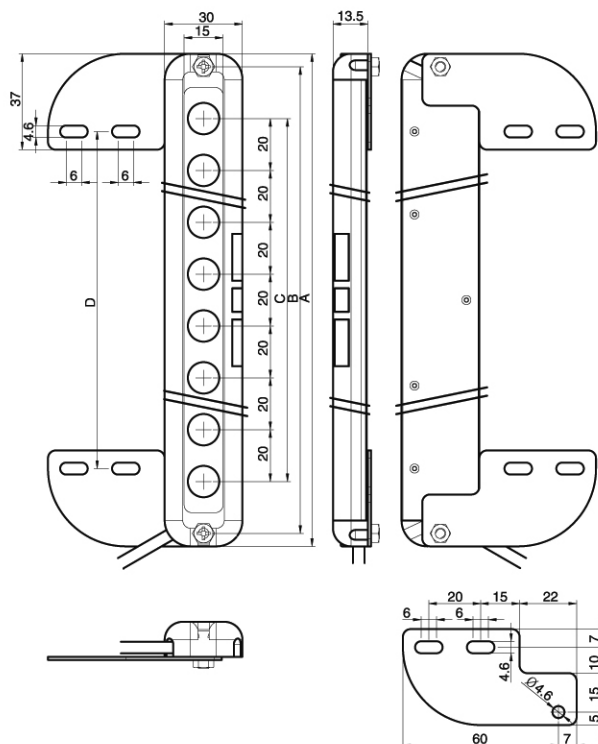
Model	NPN	PAS-T4N	PAS-T8N	PAS-T12N	PAS-T16N	PAS-T20N
	PNP	PAS-T4P	PAS-T8P	PAS-T12P	PAS-T16P	PAS-T20P
Number of optical axis		4	8	12	16	20
Sensing width		60 mm	140 mm	220 mm	300 mm	380 mm
Sensing distance		5 m				
Sensing object		Opaque object $\varnothing 30$ mm min.				
Optical axis pitch		20 mm				
Power supply voltage		12 - 24 V d.c less than $\pm 10\%$				
Current consumption		80 mA max	90 mA max	100 mA max	110 mA max	120 mA max
Output		NPN open collector output / PNP open collector output Load voltage : 30 V d.c max, Resistive load : 100 mA max Inductive load : 50 mA Residual voltage : 1 V d.c max				
Output mode		All optical axes L.ON, then ON operation (More than 1 optical axis D.ON then OFF operation)				
Response time		7 ms max				
Pointing angle		Within $\pm 5^\circ$ (Only with distance more than sensing distance 2 m)				
Light source		Infrared LED (wavelength 850 nm)				
Indicator		Trns. : Power (Green LED), M/S (Red LED), Output (Red LED) Rcvr. : Light on stability (Green LED), Output (Red LED) E1 (Red LED), E2 (Blue LED)				
Ambient illumination		Sunlight : 10,000 Lux max				
Ambient temperature		$-10 \sim 55^\circ\text{C}$ (Storage temperature : $-25 \sim 70^\circ\text{C}$)				
Ambient humidity		35 ~ 85 % R.H. (With no condensation)				
Protective structure		IP 40(IEC)				
Insulating resistance		20 M Ω min (500 V d.c)				
Dielectric strength		1,000 V a.c 50/60 Hz for 1 min				
Vibration resistance		10 - 55 Hz, Double amplitude : 1.5 mm, for 2 hours in X, Y and Z direction				
Shock resistance		500 %, 3 times each in X, Y and Z directions				
Connection method		Cable extended type, 0.2 mm ² 5 pin, Thickness : $\varnothing 4.3$ mm, Length 3 m				
Material		Case : ABS, Display unit : Acryl				
Weight (g)		160 max	180 max	200 max	220 max	240 max
Protective function		Auto sensitivity compensation, mutual interference prevention in parallel installation (M/S mode) reverse polarity protection, over current protection				

- Please be cautious : Detection range may vary depending on the size of detecting object, surface condition, and presence of gloss.
- PAS-TL8 (Transmitter) and PAS-TR8N (receiver) are 1 set of PAS-T8N
- Weight given above did not include weight of packing box.

[Unit: mm]

[illegible]

※ Please purchase straight type fixing bracket separately

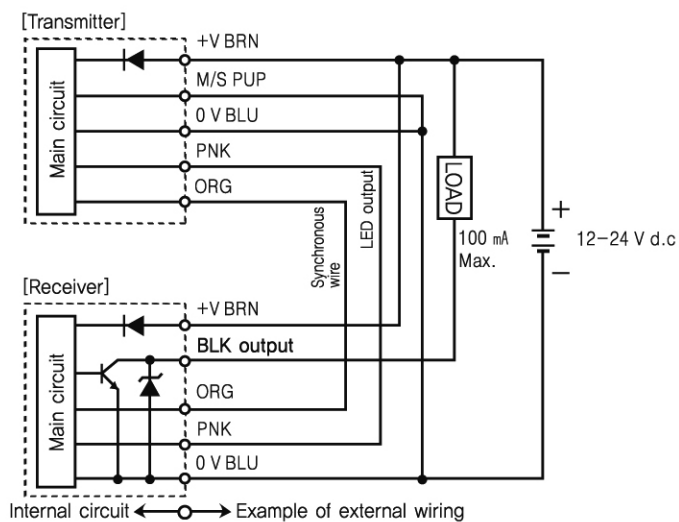


operation Mode	detection state	amount of received light	safety area operation area	
Output ON when entire optical axis received light	operation indicator (red LED)	ON	OFF	
	control output	ON	OFF	
	Stable indicator (Green LED)	ON	OFF	
	ambient light	ON	OFF	
	E2 indicator (blue LED)	ON	OFF	

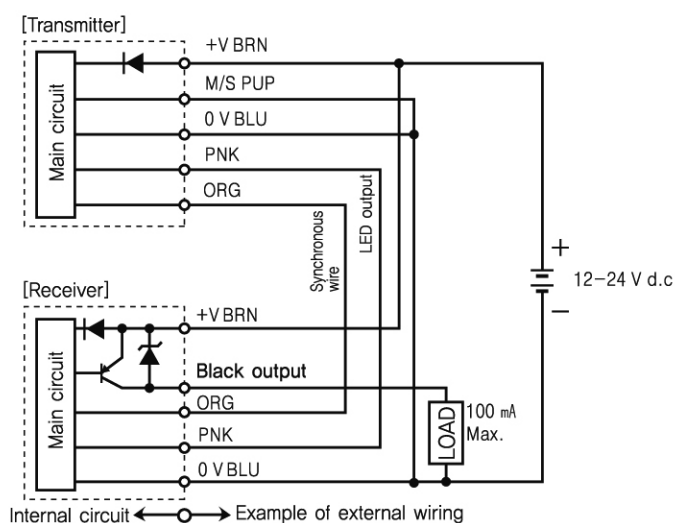
- Green LED of transmitter is the power indication
- E1 light (red LED) of the receiver turned off when the baseline is short-circuited.
- E2 light (blue LED) of the receiver turned off when ambient light occurred such as sunlight and fluorescent light.

(Attention : E2 display light may not work correctly in case of turning off light)

- NPN open collector output type

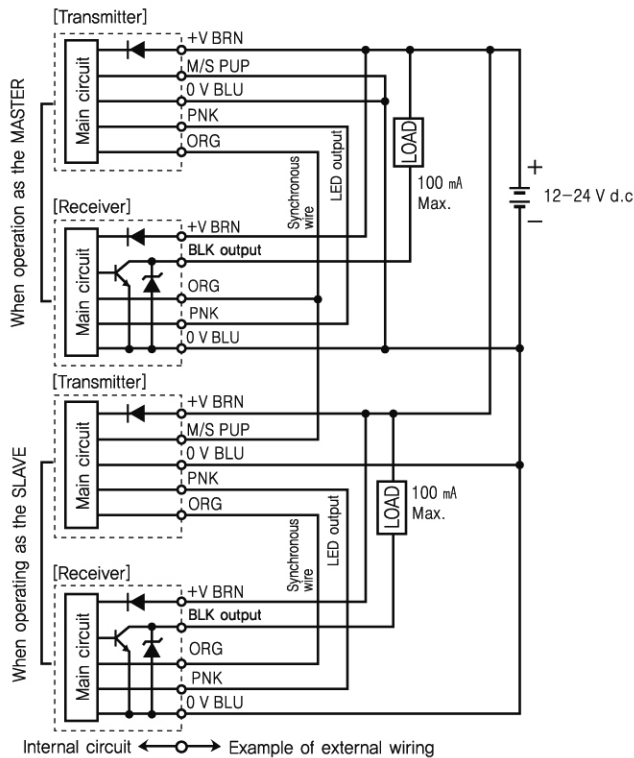


- PNP open collector output type

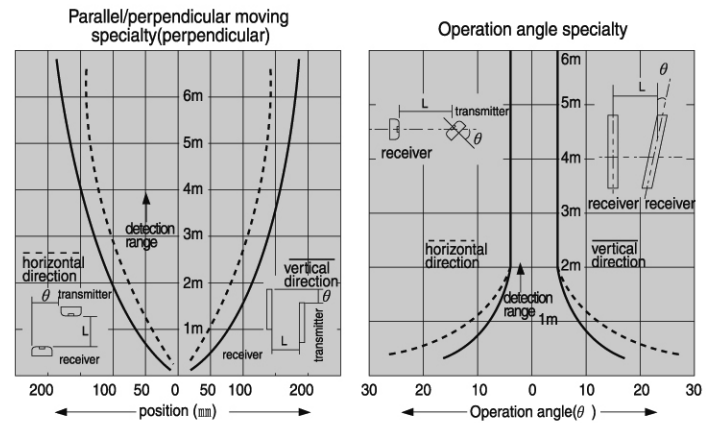


- Note 1) connect M/S line (purple) of transmitter to power line 0 V (blue).
In this case within sensor, only master mode (M mode) operates.
- Note 2) must common 0 V (blue) when using power of transmitter and receiver separately.

- Master/Slave Connection
 - Interference protection function

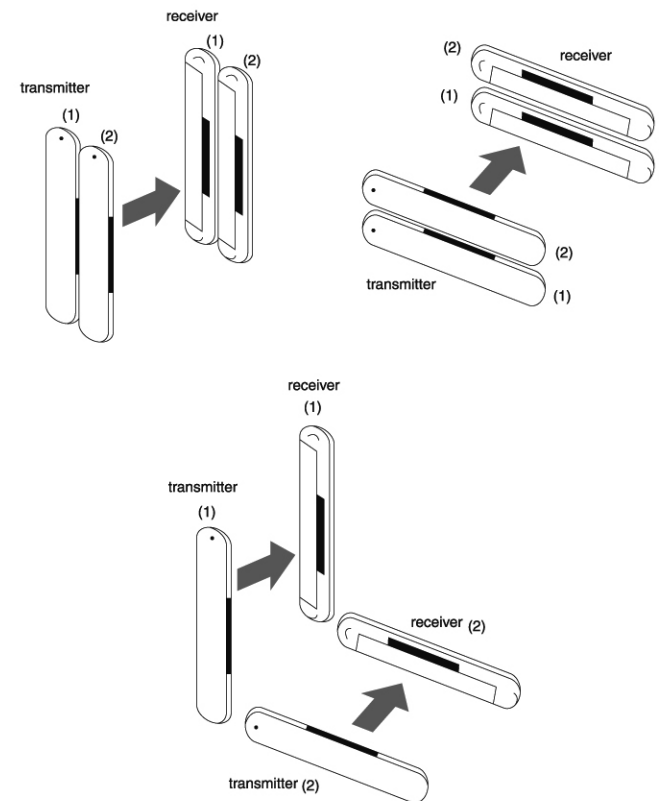


Characteristic Graph



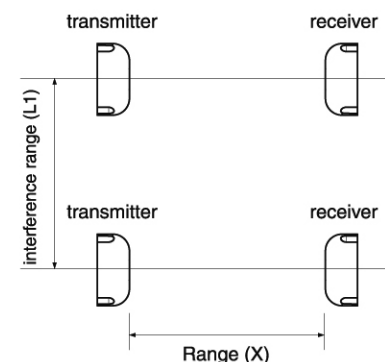
In case of using Interference protection function

- Installing 2 pair of sensors face to face does not affect each other



In case of not using Interference protection function

- Installing left and right(arranging left and right)



Warning

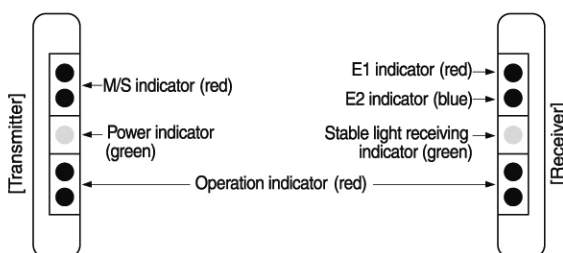
- Note 1) Connect M/S line (purple) of transmitter within one of 2 sensors to 0 V (blue). In this case, sensor only operates in Master Mode (M mode).
- Note 2) Connect M/S line (purple) of transmitter within one of 2 sensors to opposite side of baseline (Orange). In this case, sensor only operates in Slave Mode(S mode).
- Note 3) Connect to GND (0 V) commonly when using power of transmitter and receiver separately

Operation arrangement of indicator

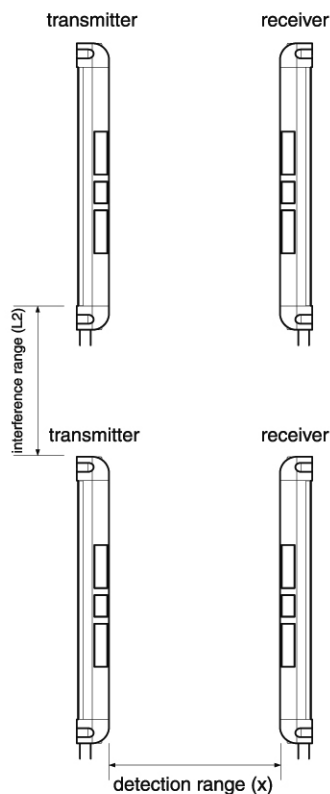
Indicator operations

	Name	Color	Name
Transmitter	M/S	Red	When operating Master, LED output OFF / When operating Slave, LED output ON
	power indicator	Green	Power indicator lamp
	operation indicator	Red	Light ON when incoming light shade (more than 1 optical axis light shade)
Receiver	Error1 (E 1)	Red	Click (Synchronization signal)/Light turn off when reset signal light is disconnected or cut off
	Error2 (E 2)	Blue	Light turn off due to ambient light such as other sensor, mercury lamp, fluorescent lamp and etc
	Stable light receiving indicator	Green	Light turn ON when receiving lens received light more than safety control level
	Operation indicator	Red	Light ON when incoming light shade (more than 1 optical axis light shade)

Position of indicator

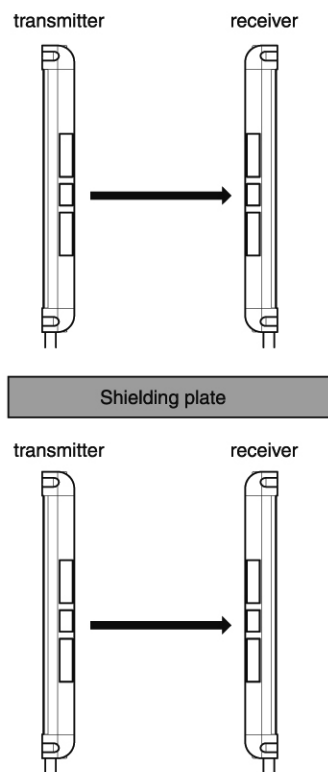


■ Installing top and bottom(arranging top and bottom)



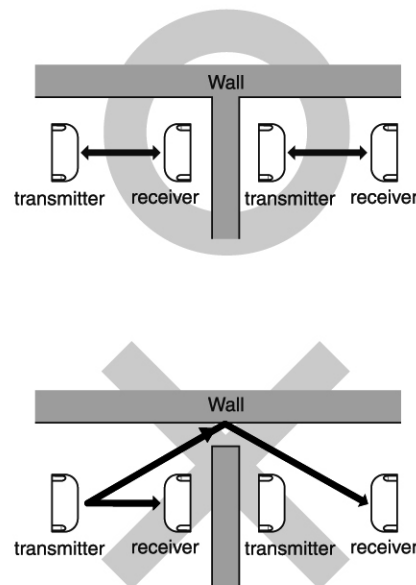
- Distance L1 and L2 which do not interfere with contiguity sensor, are used with spreading out approximately 1.5 times of parallel moving specialty.

■ In case of installing shielding plate



〈Picture 1〉

- Install shielding plate just like picture 1 which prevents light to come in from other transmitter. Also, due to reflection from contiguity surface wall or floor surface, there are possibilities of malfunction because of detour of shielding plate. So please be cautious when installing shielding plate. (Make sure reflected light is also blocked) 〈Picture 2〉

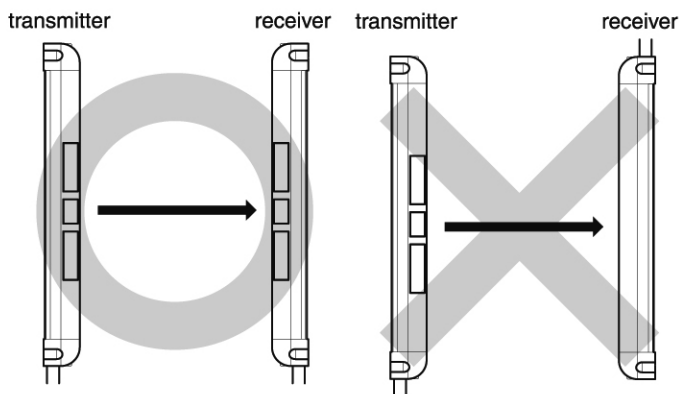


〈Picture 2〉

Things to consider when installing

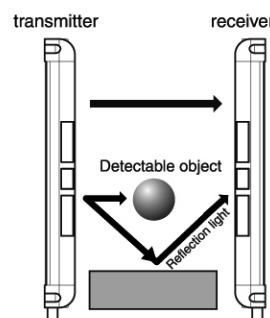
Considering reflection light within floor and wall surface when installing

- Just like following pictures, in case of installing without maintaining proper distance, reflection from surface of floor can cause this device to operate not properly. Also reflection from side wall can cause malfunction too. When installing please check for proper operation before using it.

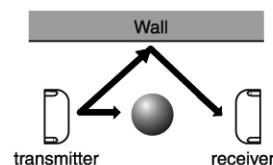


- Please install that none of strong light such as sun light, fluorescent lamp, incandescent lamp and etc go in to Far field beam distribution of the area sensor. When installing area sensor, please avoid strong impaction or strong force on to the device because they can destroy some of parts inside. Make sure that direction of code draw out is same for transmitter and receiver. (Refer to above image)

■ Side view



■ Top side view



Panel and Optical Axial Adjustment

- Make sure that direction of cable draw out is same for transmitter and receiver.
- Check the lighting of power light (green) of the transmitter after verifying the connection condition and power input
- Move the transmitter to the directions of left, right, up and down to turn on the Light ON Stable Light (green) of Receiver
- Auto sensing correction, resetting power will make auto correcting sensitivity to operate and sensor will be set as best sensitivity. Also, if pollutants or alien substances are stick on to lens, then it will automatically clean them and set as best sensitivity.