

Photo sensor

PTX 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

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Safety information

Before using the product, please read the safety information thoroughly and use it properly.
Alerts declared in the manual are classified to Danger, Warning and Caution by their criticality

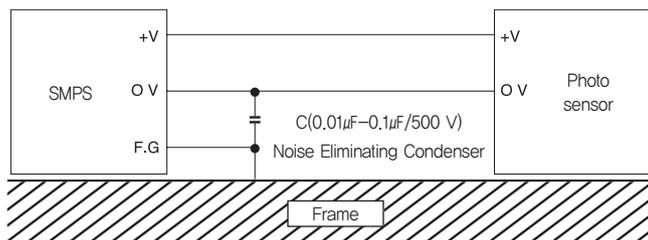
	DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
	WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION	CAUTION indicates a potentially hazardous situation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

Warning

- The contents of this manual may be changed without prior notification.
- If the user use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
- Please do not use outdoor (It may cause of shorten the life of the product or electric shock).
- Do not use flammable, explosive gas environments.
Please do not use this product at any place where have over specification of vibration and shock.
- Please use a dry cloth to wipe off dusts and do not use thinner or solvent.

Caution

- When cleaning the lens and the case, please use a dry cloth and gently wipe the surface. Must not use solvents such as thinner or alcohol.
- The sensor wire should be separate from high voltage line or power line. Having the same pipe for wiring can be cause of malfunction.
- This product has (IP 66) water proof structure but do now use permanent underwater place.
- When extending the cable, please use thick wire (at least thickness mm²) and at this moment, please watch out for the voltage-drop.
- When using the sensor under the light such as fluorescent lighting or mercury lamp with high frequency, please block it with a light rap and avoid the lens from facing the light directly.
- When 2 units of through beam type of photo sensor are used, it can be cause of malfunction due to interference. Please make enough space and please install the receiver and emitter positions are crossed.
- In case of use Inductive load (relay, coil), the instantaneous load increases 2 times and it may break TR. So, please set maximum load at half.
- A lot of dusts pollute lens and it may cause of malfunction so please avoid using this product dust area.
- Information in the manual may changed without prior notification.
- If you do not follow instruction in this manual, injury or damage of property may occur.
- 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.
- After wiring, please use Top Cover. Otherwise, it may cause of electric shock or malfunction of this product.
- Before using this product, Please remove protective film in the lens.



Characteristic

- Adopt terminal block type connection method for convenient wiring.
- Various range of power supply voltage (24 - 240 V d.c/a.c, 12 - 24V d.c).
- Long detection distance.
- Timer function available.
- In the case of DC power supply, NPN/PNP open collector output at the same time.
- Built in the protecting circuit for reverse power connection and for output break.
- IP66 protection structure.

Suffix code

Model	Code	Information
PTX	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Photo sensor
Sensing type and distance	T : 15	Through beam type, 15 m
	T : 30	Through beam type, 30 m
	M : 7	Retro reflection type, 7 m
	R : 1	Diffuse reflection type, 1 m
Power supply voltage	A	24 - 240 V d.c/a.c ±10%, 50/60 Hz
	B	12 - 24 V d.c ±10%
Timer	None	Normal type
	-T	Timer built-in type

Specification

Power built-in type

Model	Normal type	PTX-T15A	PTX-M7A	PTX-R1A
	Timer built-in type	PTX-T15A-T	PTX-M7A-T	PTX-R1A-T
Sensing type	Through beam type	Retro reflection type	Diffuse reflection type	
Sensing distance	15 m	7 m	1 m	
Sensing object	Opaque object above Ø20 mm	Opaque object above Ø60 mm	White paper with no gloss 200 mm × 200 mm	
Power supply voltage	24 - 240 V d.c/a.c ±10 %, 50/60 Hz			
Power consumption	Emitter : 2 W max, Transmitter : 1 W max.	2 W max.		
Control output	Relay contact output (Contact composition 1a, 1b), Contact capacity : 30 V d.c 5 A / 250 V a.c 5 A resistive load, rated load life expectancy less than 100,000 times.			
Operation mode	Light ON/Dark ON are selectable by the selector switch			
Response time	20 ms max.			
Hysteresis	-		Less than 20 % of sensing distance	
Indicator	Output indication : Red LED, Stability indication : Green LED			
Sensitivity adjustment	-	Sensitivity adjusting volume built-in		
Protective circuit	Surge protective circuit			
Timer function built-in (Only corresponds to timer built-in type)	Select OFF Delay, ON Delay or One Shot Delay by using the ON/OFF switch. Delay Time : 0.1 ~ 5 sec adjust by the volume.			
Ambient illumination	Sun light : 11,000 lx max, Incandescent lamp : 3,000 lx max			
Ambient temperature	Operation : -20 ~ 60 °C, Storage : -25 ~ 70 °C(with no icing nor dew condensation)			
Ambient humidity	35 ~ 85 % RH (with no icing nor dew condensation)			
Degree of protection	IP 66 (IEC standard)			
Insulation resistance	20 MΩ min (standard on 500 V d.c mega)			
Dielectric strength	1500 V a.c (for 1 min)			
Vibration resistance	10 - 55 Hz, Double amplitude : 1.5 mm, 2hours to each of X, Y, Z directions			
Shock resistance	500 %g (approx 50 G), 3 times to each of X, Y, Z directions			
Connection method	Terminal			
Material	Case : ABS, Lens : PC			
Weight	80 g max.			
Accessories	Individual	-	Reflector (HY-M5)	-
	Common	Driver, Bracket, Bolt, Nut, Water-proof rubber, Wire holder		

■ Amp built-in type

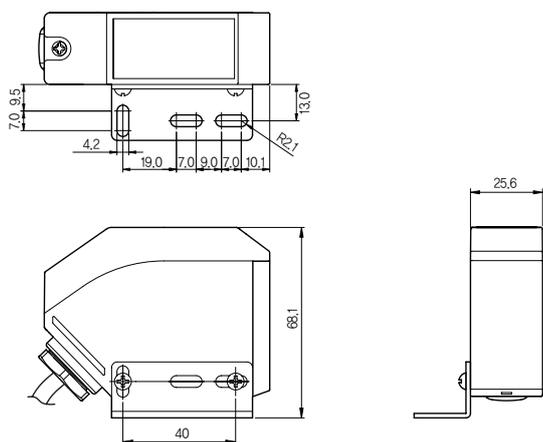
Model	Normal type	PTX-T15B	PTX-T30B	PTX-M7B	PTX-R1B
	Timer built-in type	PTX-T15B-T	PTX-T30B-T	PTX-M7B-T	PTX-R1B-T
Sensing type	Through beam type		Retro reflection type	Diffuse reflection type	
Sensing distance	15 m	30 m	7 m	1 m	
Sensing object	Opaque object above $\varnothing 20$ mm		Opaque object above $\varnothing 60$ mm	White paper with no gloss 200 mm x 200 m	
Power supply voltage	12 - 24 V d.c. ± 10 %				
Power consumption	Emitter : 35 mA max. Transmitter : 20 mA max.		45 mA max.		
Control output	NPN/PNP open collector yield output at the same time, Load current : 150 mA d.c. (Resistive load) NPN Residual voltage : Max 1V d.c. / PNP Residual voltage : Max 2 V d.c.				
Operation mode	Light ON/Dark ON are selectable by the selector switch				
Response time	1 ms max.				
Hysteresis	-			Less than 20 % of sensing distance	
Indicator	Output indication : Red LED, Stability indication : Green LED				
Sensitivity adjustment	-		Sensitivity adjusting volume built-in		
Protective circuit	Protective circuits for power reverse connection and output break				
Timer function built-in (Only corresponds to timer built-in type)	Select OFF Delay, ON Delay or One Shot Delay by using the ON/OFF switch. Delay Time : 0.1 ~ 5 sec adjust by the volume.				
Ambient illumination	Sun light : 11,000 lx max, Incandescent lamp : 3,000 lx max				
Ambient temperature	Operation : $-20 \sim 60$ °C, Storage : $-25 \sim 70$ °C (with no icing nor dew condensation)				
Ambient humidity	35 ~ 85 % RH (with no icing nor dew condensation)				
Degree of protection	IP 66 (IEC standard)				
Insulation resistance	20 M Ω min (standard on 500 V d.c. mega)				
Dielectric strength	1500 V a.c. (for 1 min)				
Vibration resistance	10 - 55 Hz, Double amplitude: 1.5 mm, 2hours to each of X, Y, Z directions				
Shock resistance	500 % (approx 50 G), 3 times to each of X, Y, Z directions				
Connection method	Terminal				
Material	Case : ABS, Lens : PC				
Weight	80 g max.				
Accessories	Individual	-		Reflector(HY-M5)	-
	Common	Driver, Bracket, Bolt, Nut, Water-proof rubber, Wire holder			

Cautious 1) The sensing distance may become changed depending on the size, surface condition, glossy, non-glossy of the sensing object

Cautious 2) The sensing distance of PTX-M7A (-T), PTX-M7B (-T) is the distance when using the reflector

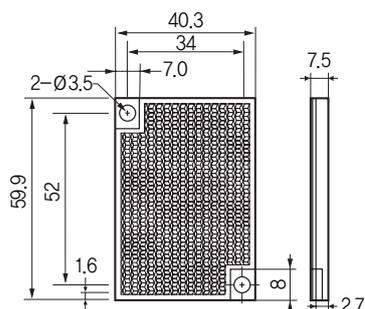
Dimension

[Unit : mm]



Reflector dimension

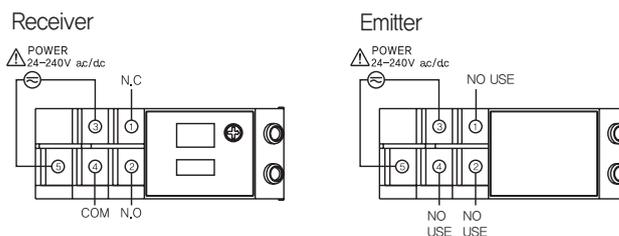
■ HY-M5



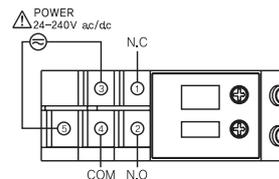
Connection diagram

A type

■ Through beam type (PTX-T15A, PTX-T15A-T)

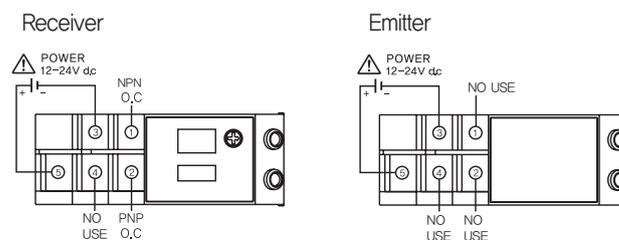


■ Retro reflection/Diffuse reflection type (PTX-M7A, PTX-M7A-T, PTX-R1A, PTX-R1A-T)

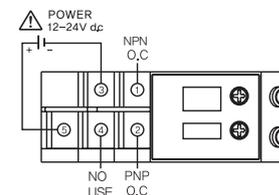


B type

■ Through beam type (PTX-T15B, PTX-T15B-T, PTX-T30B, PTX-T30B-T)

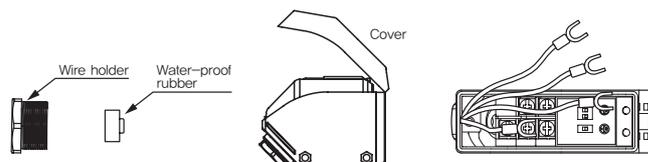
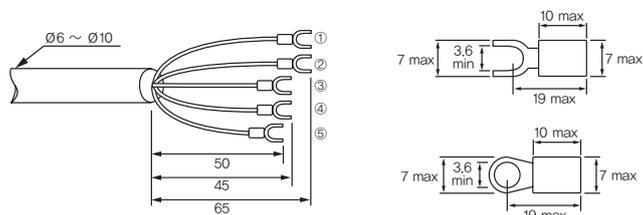


■ Retro reflection/Diffuse reflection type (PTX-M7B, PTX-M7B-T, PTX-R1B, PTX-R1B-T)



Precautions when installing

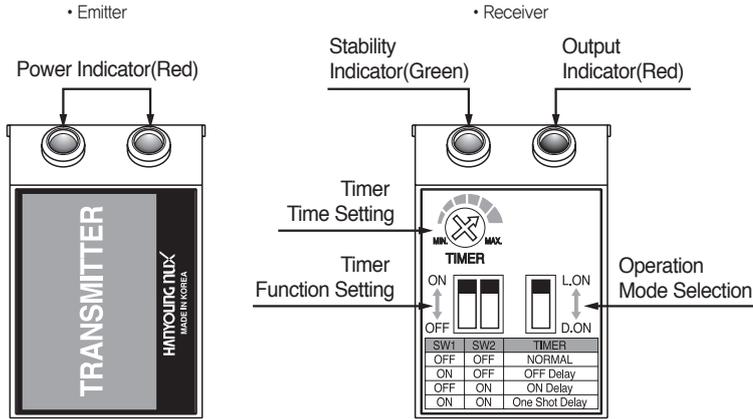
[Unit : mm]



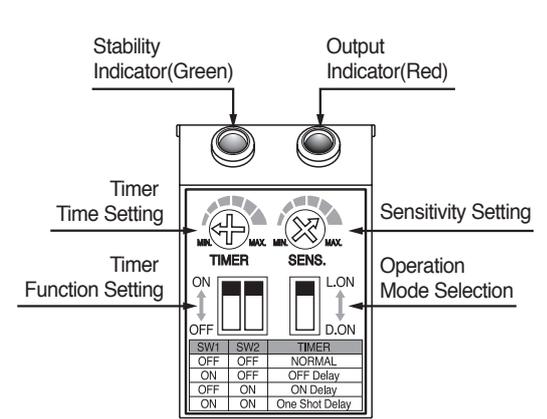
- When wiring the product to each terminal, please follow like an image above. If users want to wire the product with maintaining water-proof function, please use $\varnothing 6 \sim \varnothing 10$ wires and make sure to tighten the wire holder with 1.0 ~ 1.5 Nm torque.
- When wiring to the terminal, please tighten it with 0.8 N.m torque.

Name of part

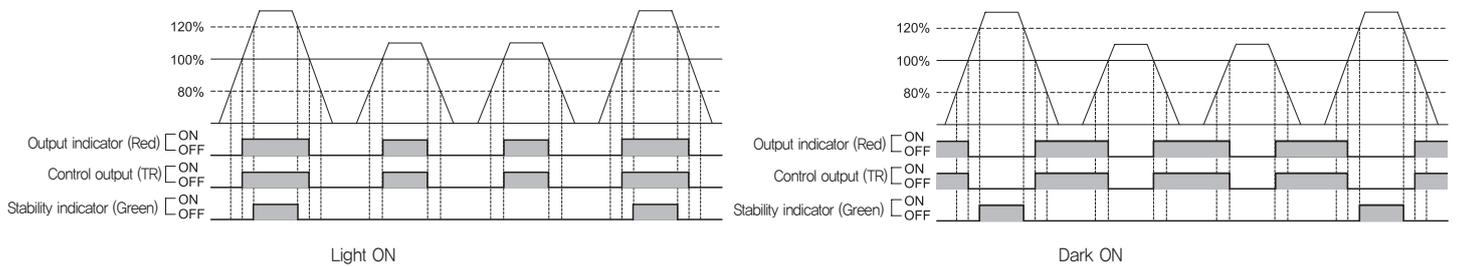
Through beam type



Retro reflection type / Diffuse reflection type

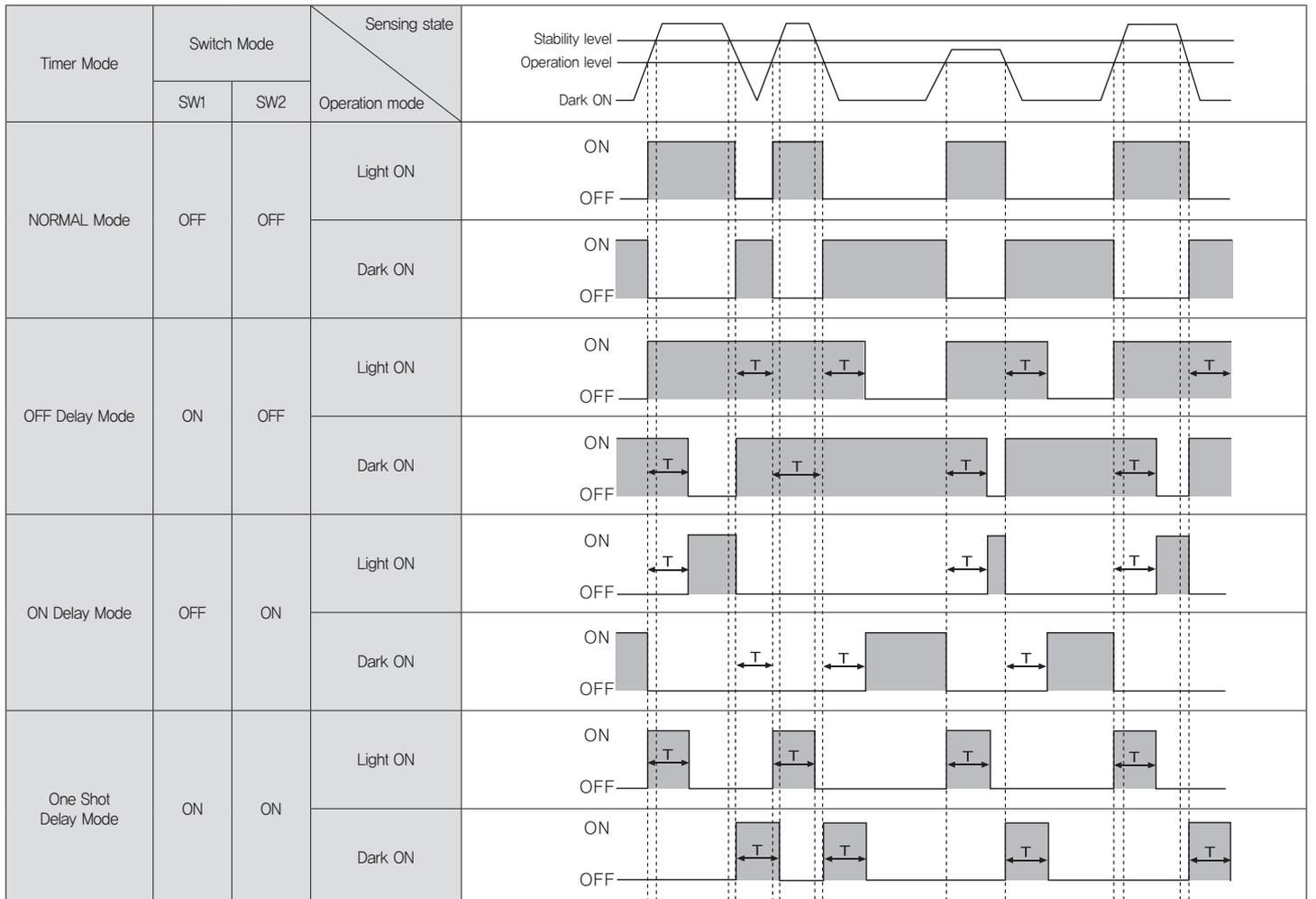


Operation chart



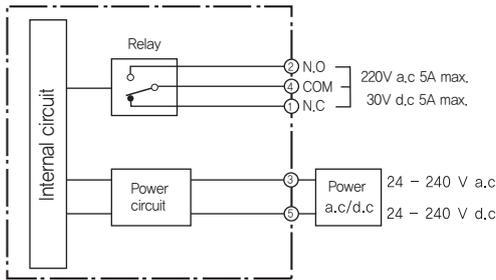
※ Stability indicator becomes ON when an amount of light exceed the operation level and becomes 120% (stable L.ON area). It can be used as the environmental change after setup or level down during operation and initial operation check.

Timer function

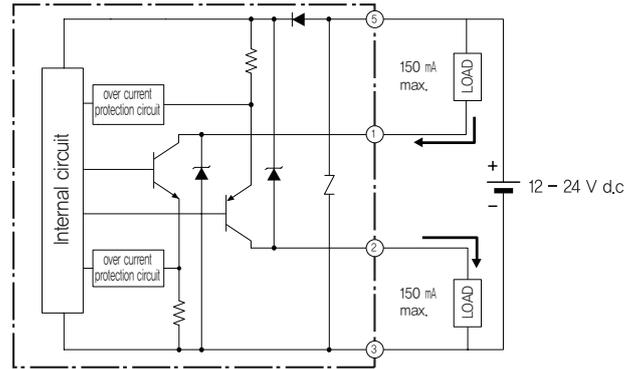


Control output circuit diagram

■ PTX A-Type (See-through type is only limited as receiver)



■ PTX B-Type (See-through type is only limited as receiver)



Installation and adjustment method

■ Through-beam type

NO	How to install	Picture
1	Supply in the power after placing the transmitter and receiver face to face each other.	
2	Fix either the transmitter or receiver and check for the range where the operation indicator becomes turned ON or turned OFF by controlling in the direction of up, down, left and right. After finishing the confirmation, place it in the middle and fix it.	
3	Place the sensing object within the setting range and confirm the condition of proper operation.	

■ Retro-reflective type

NO	How to install	Picture
1	Supply in the power after placing the sensor and mirror face to face each other in the straight line.	
2	Fix either the sensor or mirror and check for the range where the operation indicator becomes turned OFF by controlling in the direction of up, down, left and right. After finishing the confirmation, place it in the middle and fix it.	
3	Place the sensing object within the setting range and confirm the condition of proper operation and once the confirmation is finished, fix the sensor. ※ Please refer to the How to install for the diffuse reflection type Regarding the sensitivity adjustment, please refer to the 'How to install' for the diffuse reflection type	

■ Diffuse-reflective type

NO	How to install	Picture	Sensitivity Volume
1	After removing the sensing object, turn sensitivity volume gradually to the max direction and once indicator lights up, that position will be referred as 'A' from now on. (If indicator does not get turned ON (OFF) even in the position of maximum then it is indicating the max position).		
2	Place the sensing object in the desirable setting position and gradually turn the sensitivity volume from 'A' to the 'min' direction and once the indicator gets to turned OFF than that position will be referred as 'B'.		
3	Place the sensitivity volume in the middle of max sensitivity and 'A' or 'B' and confirm the operation condition of sensing object that occurs within the setting range.		