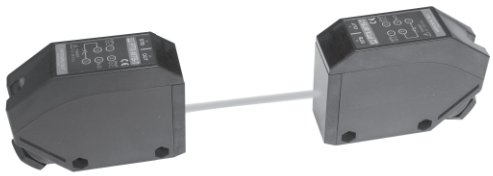
PTX Series

Photo sensor



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

Suffix code

Model	Code				Description	
PTX-	□	□	□	□	Photo sensor	
Sensing type and distance	T	15			Through-beam	15 m
	T	30			Through-beam	30 m
	M	7			Retro-reflection	7 m
	R	1			Diffuse reflection	1 m
Power supply voltage			A		24 – 240 V AC/DC ±10 % 50/60 Hz	Power built-in type
			B		12 – 24 V DC ±10 %	Amp built-in type
Timer				-	Normal type	
				-T	Timer built-in type	

※ PTX-T30B, PTX-T30B-7: Order made items (Only for Amp built in type).

Specification

Model		Power built-in type		
	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㎜×200m
Power supply voltage		24 – 240 V AC/DC ±10 % 50/60 Hz		
Power consumption		Emitter : 2 W max. / Receiver : 1 W max.	2 W max.	
Control output		Relay contact output (Contact composition 1a, 1b), Contact capacity : 30 V DC 5 A / 250 V AC 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 ㎳ 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 ℃, Storage : -25 ~ 70 ℃ (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 DC mega)			
Dielectric strength		1500 V AC (for 1min)			
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			

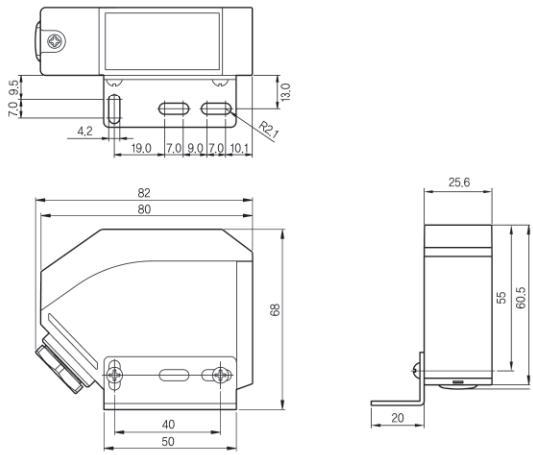
Model		Amp built-in type			
	Normal type	PTX-T15B	PTX-T30B	PTX-M7B	PTX-R1B
	Timer built-in type	PTX-T15B-T	PTX-T30B-T	PTX-M7B-T	PTX-R1B-T
Sensing type		Through beam type		Retro reflection type	Diffuse reflection type
Sensing distance		15 m		7 m	1 m
Sensing object		Opaque object above ø20 mm		Opaque object above ø60 mm	White paper with no gloss 200㎜×200㎜
Power supply voltage		12 ~ 24 V DC ±10 %			
Power consumption		Emitter : 35 mA max. / Receiver : 20 mA max.		45 mA max.	
Control output		NPN/PNP open collector yield output at the same time, Load current : 150 mA DC (Resistive load) NPN Residual voltage : 1 V DC max. / PNP Residual voltage : 2 V DC max.			
Operation mode		Light ON/Dark ON are selectable by the selector switch			
Response time		1 ㎳ 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 ~ 60 ℃, Storage : -25 ~ 70 ℃ (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 DC mega)			

Dielectric strength		1500 V AC (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		

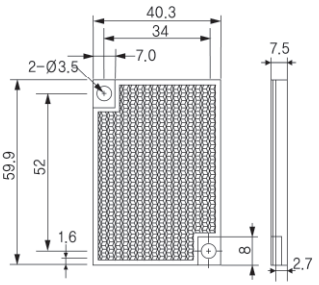
Cautious1) The sensing distance may become changed depending on the size, surface condition, glossy, non-glossy of the sensing object
Cautious2) The sensing distance of PTX-M7A (-T), PTX-M7B (-T) is the distance when using the reflector

Dimension (Unit : ㎜)

■ Dimension



■ Reflector (HY-M5)

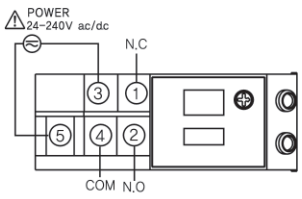


Connection diagram

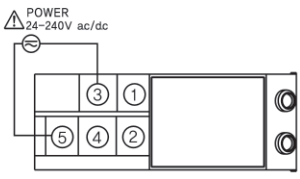
■ Power built-in type (24 ~ 240 V AC/DC)

● Through beam type (PTX-T15A, PTX-TR15A-T)

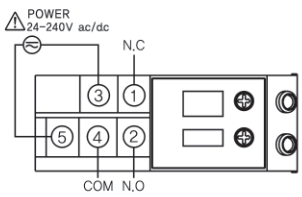
Receiver



Emitter



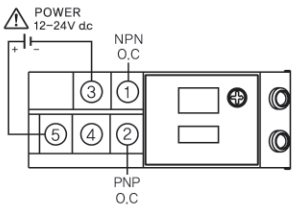
● Retro reflection/Diffuse reflection type (PTX-M7A, PTX-M7A-T, PTX-R1A,PTX-R1A-T)



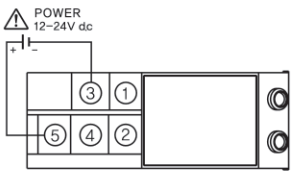
■ Amp built-in type (12 - 24 V DC)

● Through beam type (PTX-T15B, PTX-TR15B-T)

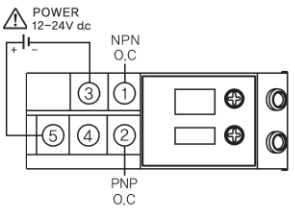
Receiver



Emitter



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

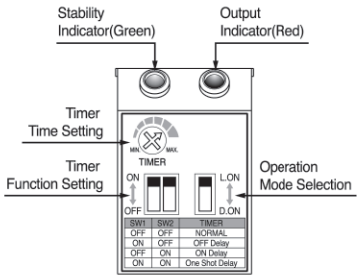


Name of each part

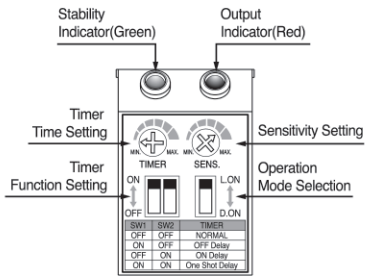
■ Through beam type

• Emitter

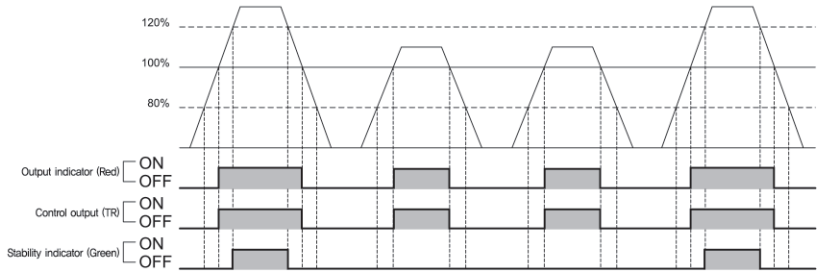
• Receiver



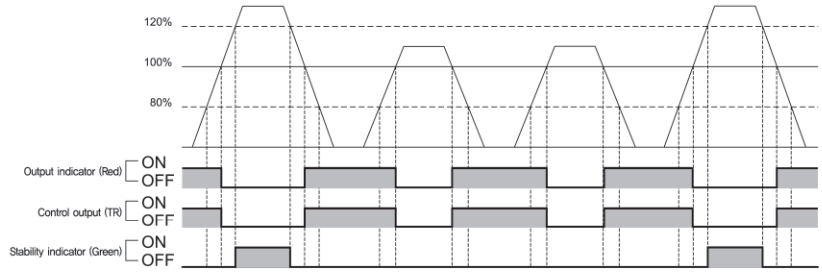
■ Retro reflection type / Diffuse reflection type



Operation chart



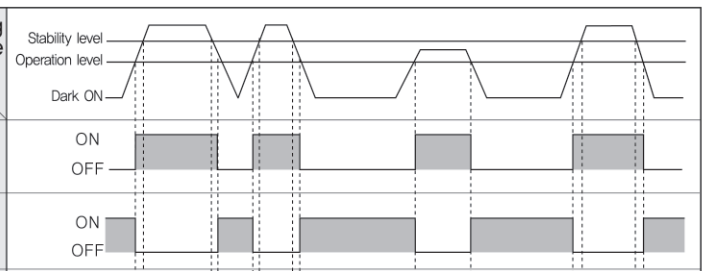
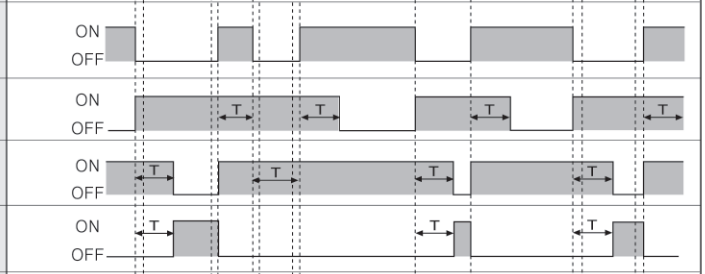
Light ON operation



Dark ON operation

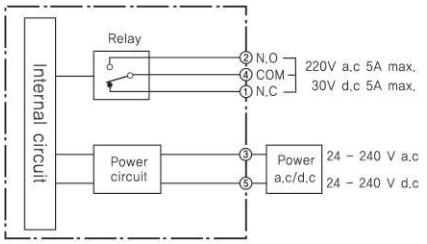
※ Stability indicator becomes ON when an amount of light exceed the operation level and becomes 120 % (stable L.ON area). It can be used as the environmental change after setup or level down during operation and initial operation check.

Timer function

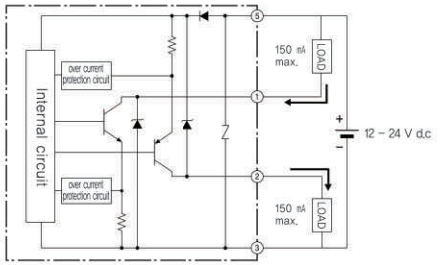
Timer Mode	Switch Mode SW1	Switch Mode SW2	Sensing state / Operation mode	
NORMAL Mode	OFF	OFF	Light ON	
			Dark ON	
OFF Delay Mode	ON	OFF	Light ON	
			Dark ON	
ON Delay Mode	OFF	ON	Light ON	
			Dark ON	
One Shot Delay Mode	ON	ON	Light ON	
			Dark ON	

Control output circuit diagram

■ Power built-in type
(See-through type is only limited as receiver)

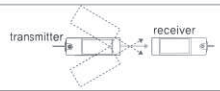
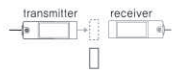


■ Amp built-in type
(See-through type is only limited as receiver)

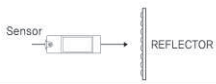
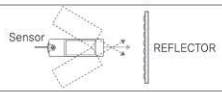
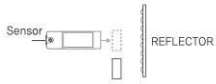


Installation and adjustment method

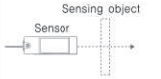
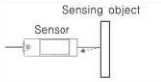
■ Through-beam type (L.ON)

NO	How to install	Picture
1	Supply in the power after placing the emitter and receiver face to face each other.	
2	Fix either the emitter 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 (L.ON)

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 (L.ON)

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.