

Slim type Photo Sensor

# PY series

## INSTRUCTION MANUAL

Thank you for purchasing HANYOUNG NUX CO.,Ltd. Product. Please check whether the product you purchased is the exactly same as you ordered. Before using product, please read instruction manual carefully.



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## Safety information

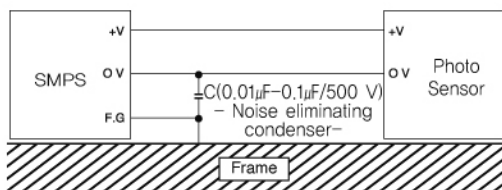
Before you use, read safety precautions carefully, and use this product properly. The precautions described in this manual contains important contents related with safety; therefore, please follow the instructions accordingly. The precautions are composed of DANGER, WARNING and CAUTION.

### ⚠ WARNING

- This product is not for outdoor use. (It is the cause of weakening the product durability and possible electric shock.)
- Since this product is not designed with explosion-protective structure, do not use it at any place with flammable or explosive gas.
- Do not use this product at any place with direct vibration or impact.

### ⚠ CAUTION

- When the lens of the photo sensor is contaminated by foreign substance, use a dry cloth to wipe off the substance. Never use thinner or organic solvents.
- Separate high voltage cable and power line from sensor wire. Be cautious since using a same pipe arrangement for the wire could cause malfunction.
- This product is equipped with a structure (IP67), which allows partial waterproof but do not use this product under water at all times.
- If the cable needs to be extended, use over 0.3 mm<sup>2</sup> and be cautious of a possible sudden drop in voltage.
- When using the sensor under the light such as fluorescent lighting or mercury lamp with high frequency, block it with a light trap and avoid the lens from facing the light directly.
- Malfunction can occur due to mutual interference when using the through beam type photo sensor more than 2 pairs. Therefore, leave a plenty of space for the mutual distance length and place the light transmitter section and light receiver section in alternating positions.
- Using inductive load (relay, coil) for the output of power can cause an immediate increase in load by twice and damage the TR of the output of power. Therefore, set up half of the maximum load.
- There is an over-current protection circuit within the output side that breaks the output when the current is higher than the regular load current. Use within the 70% of the maximum load.
- Refrain from using the product in such locations with heavy dust or foreign substances that can contaminate the lens since there is a chance of malfunction.
- The contents of the instruction manual can be modified without prior notification or advance announcement.
- When using the product with the methods other than those established by the manufacturer, injury or loss in assets can 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 OV and F.G.



※ Please keep the contents mentioned above as cautions for safety since they can cause the product to breakdown.

## Suffix code

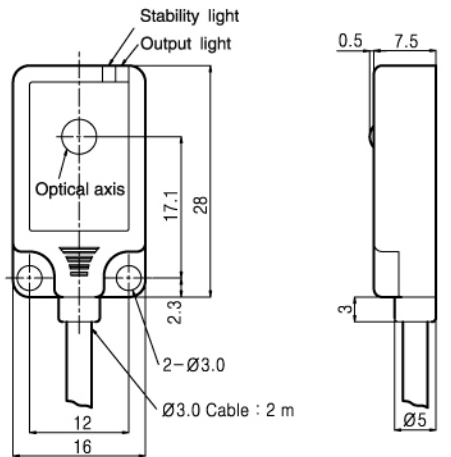
MODEL	Suffix Code	Description
PY-	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Slim type Photo Sensor
Detection	T	Through beam
Range	3	3 m
Output	N	NPN Open Collector Output
	P	PNP Open Collector Output
Operation	D	Dark ON Operation
	L	Light ON Operation

## Specification

MODEL	NPN	PY-T3N-D	PY-T3N-L
	PNP	PY-T3P-D	PY-T3P-L
Sensing method	Through - beam		
Sensing distance	3 m		
Sensing object	min object (over 5 mm then opaque object)		
Power voltage	12 - 24 V d.c ± 10 % (Max. ripple 10%)		
Current consumption	Emitter : 23 mA, Receiver : less than 18 mA (with 24V d.c)		
Output	Control	NPN/PNP open collector output max 100 mA (30V d.c)	
	Stable	NPN open collector output less than 50 mA (30 V d.c) (but there is no stable output in the PNP output type)	
Output action	Dark ON)		Light ON)
Response time	max. 1 ms		
Hysteresis	within 10% of the sensing distance		
Light source (wave length)	Infrared lightening diode LED (890 nm)		
LED	Emitter : red LED (power indication)		
	Receiver : red LED control output, green LED : stable output		
Protective circuit	Power reverse connection protecting circuit and output break protecting circuit (exclude the stable output)		
Ambient illumination	Sunlight : max 11000 lx, Incandescent lamp : max 3000 lx		
Ambient temperature	-25 ~ 55 °C (Surrounding storage temperature : -25 ~ 70 °C)		
Ambient humidity	35 ~ 85 % R.H. (with no condensation)		
Protective structure	IP 67		
Insulation resistance	min. 20Mohm, (500V d.c between the code and case)		
Dielectric strength	1,000 V a.c (50/60 Hz for 1 min)		
Vibration resistance	10 - 55 Hz, double amplitude : 1.5mm for 2 hours in X, Y and Z direction		
Shock resistance	500 %, 3 times each in X, Y and Z directions		
Connection method	Emitter : 2P, Receiver : 3P (NPN type 4P), thickness : 0.3mm, length : 2m		
Material	Case : PC, Lens : PC		
Weight	approx. 66g		

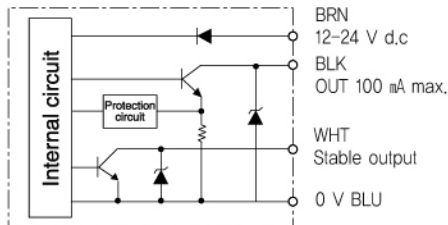
## Dimension

[Unit: mm]

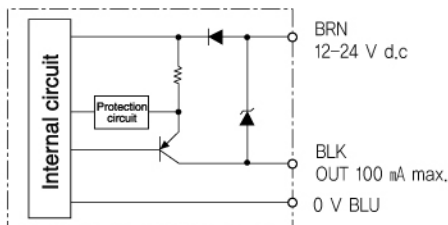


## Output circuit

### NPN open collector output



### PNP open collector output



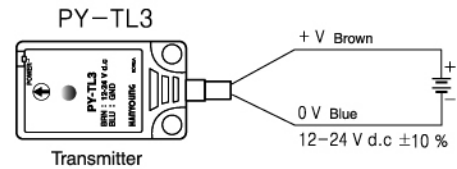
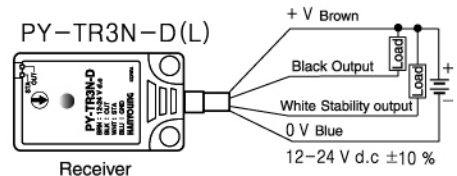
## Operation chart

Operation mode	Output method	Receiver light	Stability level	Operation level
Light ON	Control output	ON OFF	120 % 100 %	
	Stable output	ON OFF		
Dark ON	Control output	ON OFF		
	Stable output	ON OFF		

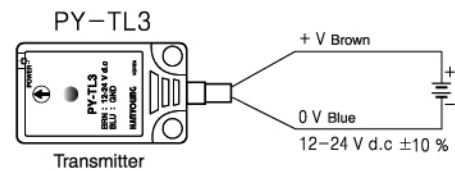
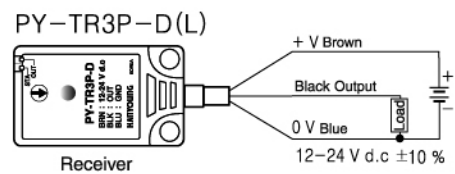
**(Cautious)** The stability output is used for checking convulsion changes after setting the distance or level drop during its usage at the initial stage. If the amount of light exceeds the operation level of 120% (stable level) or gets distant from the standard detection distance, the control output of power will recognize it as an OFF state and generate the power. However the PY-T3P-D/ type has the stability indication function only and not the stability output of power.

## Connection diagram

### NPN open collector output



### PNP open collector output



## LED (indicator)

- Operation LED (red LED) and stability LED (green LED) indicate the level of the picture
- Setting within the stable area will provide the high reliability regarding the change of a light amount even after setting up.

