

Photo Sensor

PEN 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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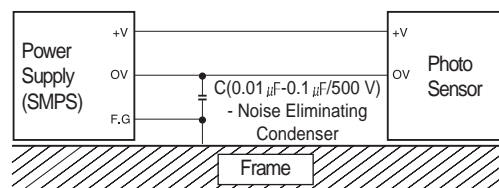
Safety information

Please read safety information carefully before use and then use this product properly. Safety information described in this manual contains important contents related with safety. So please follow the instructions accordingly. Safety information is composed of WARNING and CAUTION.

Warning

- This product is not designed as the safety device so when using this product with the machine that cause casualties, mass damage to the assets or etc, users must attach the safety device twice and use it.
- Please supply in the proper power supply voltage accordance to the rating in order to prevent the product from breaking down or damage.
- When detaching the device, please turn OFF the power and perform it. Not doing so may cause an electric shock, malfunction or breaking the device.
- Do not disassemble, manufacture, upgrade or fix the product. There are possibilities of malfunction or electric shock or fire to occur.

- When setting the sensitivity, do not actuate the sensitivity volume with the strong force on it. Doing so may break the volume.
- When using the power supply device (SMPS), users must earth the frame ground (F.G) terminal. Not doing so may cause malfunction to occur due to the switching noise of the power so please be cautious.



※ Not following safety issues which stated above may cause product to break down so users must follow them.

Caution

- Please do not use sub-trans in order to maintain the safety of power supply voltage of the product. Please use the insulation trans.
- When extending the cable, please use thick wire (at least thickness 0.3 mm²) and at this moment, please watch out for the voltage-drop.
- Please separately wire the high-tension wire/power line from the sensor.
- Turning the power ON/OFF continuously will shorten the life expectancy of the product or may cause the malfunction so please be cautious.
- 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.

Suffix code

Mode	Code	Description
PEN-	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	long distance photo sensor
Detection method	T 10	Through beam 10 m
and	M 5	Retro reflection 0.1 ~ 5 m
detection range	R 700	Diffuse reflection 700 mm
Power supply voltage	A	24 ~ 240 V d.c/a.c 50 ~ 60 Hz
	B	12 ~ 24 V d.c ±10 %

Specification

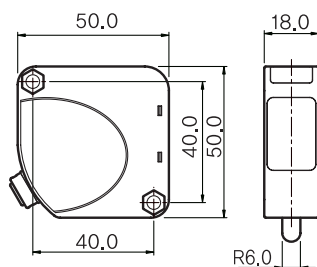
Model	Power built-in type (A type)			Amp built-in type (B type)		
	PEN - T10A	PEN - M5A	PEN - R700A	PEN - T10B	PEN - M5B	PEN - R700B
Detection method	through beam type	retro reflection type	diffuse reflection type	through beam type	retro reflection type	diffuse reflection type
Detection range	10 m	0.1 - 5 m	700 mm	10 m	0.1 - 5 m	700 mm
Sensing object	Opaque object above Ø20 mm	opaque object above Ø60 mm	white non-glossy paper 200 x 200 mm	Opaque object above Ø20 mm	opaque object above Ø60 mm	white non-glossy paper 200 x 200 mm
Power supply voltage	24 - 240 V d.c/a.c 50 - 60 Hz			12 - 24 V d.c ±10 %		
Power consumption (current)	transmitter : 1 W max receiver : 2 W max	2 W max		transmitter : 35 mA max receiver : 20 mA max	45 mA max	
Operation mode	Light ON / Dark ON ※ selected by the mode volume					
Sensitivity adjustment	—	built-in the sensitivity adjustment volume		—	built-in the sensitivity adjustment volume	
Control output	Relay contact output (1c) 30 V d.c 5 A / 250 V a.c 5 A (resistive load) Electrical life expectancy : min 100,000 times			Yield the NPN/PNP open collector synchronously, Load current : 150 mA d.c max (resistive load), Remaining vltage : NPN / PNP 1 V d.c max		
Response time	20 ms max			1 ms max		
Hysteresis	—	—	within the 20 % of the detection range	—	—	within the 20 % of the detection range
Light source	infrared ray LED (modulation type)					
Indicator	Output indication : red LED (In case of the transmitter, red indicates the power state), Stability: green LED					
Material	Case : heat resistant ABS, Lens: P.C					
Protective circuit	—			Short-circuit protection, Reverse polarity protection, Inverter light noise protection		
Connection method	Cable extended type (# of cables : 5P, diameter : Ø 6 mm, length : 2 m) ※ but transmitter is 2P			Cable extended type (# of cables : 4P, diameter : Ø 6 mm, length : 2 m) ※ but transmitter is 2P		
Ambient illumination	Sunlight : 11000 Lux max , Incandescent lamp: 3000 Lux max					
Ambient temperature	-20 ~ 65 °C (storage ambient temperature : -25 ~ 70 °C)					
Ambient humidity	35 ~ 85 % RH (without dew condensation)					
Protection	IP 64 (IEC)					
Vibration (durability)	10 - 55 Hz 0.75 mm double amplitude for 2 hours each in X, Y and Z directions (but when power is OFF)					
Dielectric withstanding (durability)	1000 V a.c (50 / 60 Hz 1 minute)					
Shock (durability)	500 %, 3 times each in X, Y and Z directions					
Insulation resistance	20 MΩ min (500 V d.c mega between the recharging part and case)					

Cautious 1) the sensing distance can be varied depending on the size, surface condition, glossy, non-glossy of the sensing object.

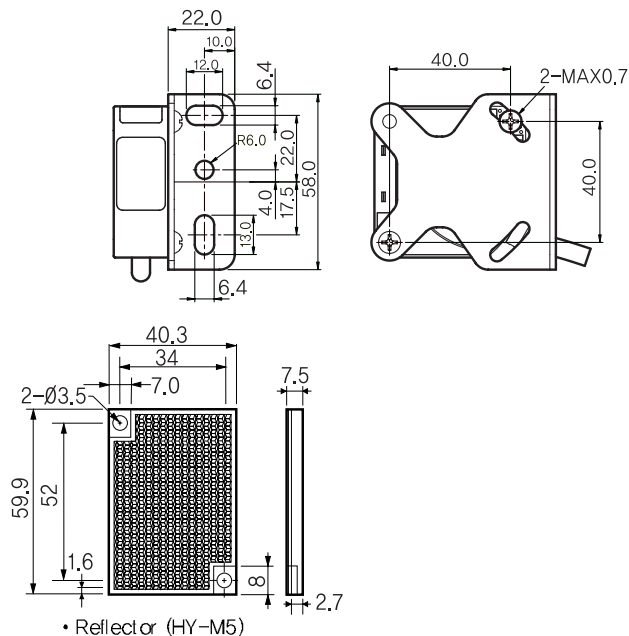
Cautious 2) the detection range of PEN-M5A (B) is the distance when using the HY-M5 (reflector)

Dimension

Outer dimension

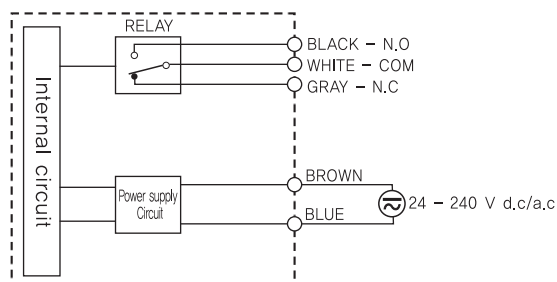


Bracket mounted

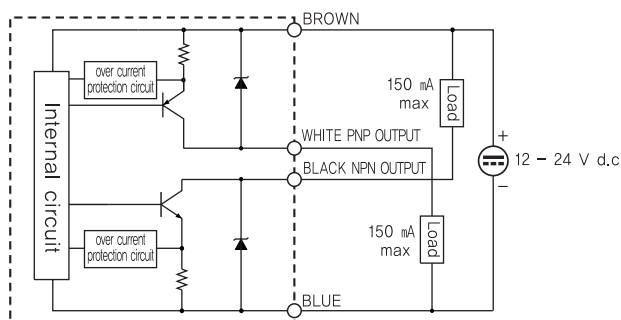


Connection diagram

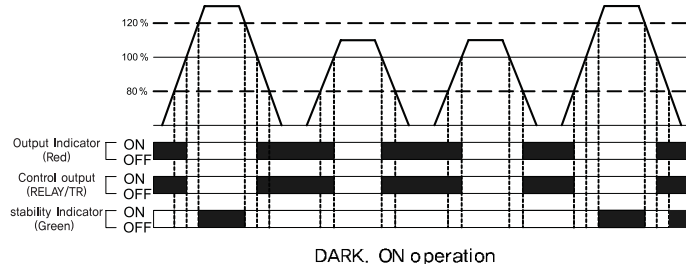
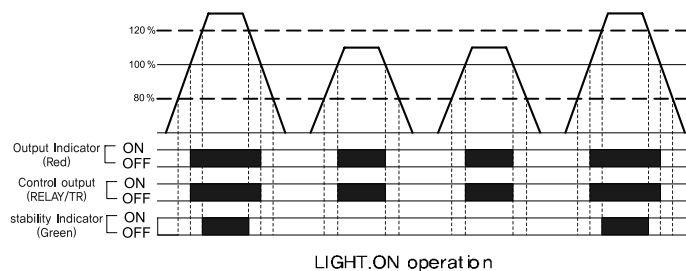
PEN A-TYPE (Through-beam type is limited to the receiver)



PEN B-TYPE (Through-beam type is limited to the receiver)



Output operation characteristic



Installation

Through-beam type

NO	Method	Picture	Output mode
1	Supply in the power after placing the transmitter and receiver face to face each other.		Dark ON fixed
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	Method	Picture	Output mode
1	Supply in the power after placing the sensor and mirror face to face each other in the straight line.		Dark ON
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.		

Diffuse-reflective type

NO	Method	Picture	Sensitivity Volume	Output mode
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).			Light ON
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 ON (OFF) then 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.			