

Round type Photo Sensor

PR series

INSTRUCTION MANUAL

Thank you for purchasing Hanyoung Nux products. Please read the instruction manual carefully before using this product, and use the product correctly. Also, please keep this instruction manual where you can see it any time.

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HANYOUNG NUX



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Safety information

Please read the safety information carefully before use, and use the product correctly. The alerts declared in the manual are classified into Danger, Warning and Caution according to their importance

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

⚠ DANGER

The input/output terminals are subject to electric shock risk. Never let the input/output terminals come in contact with your body or conductive substances.

⚠ WARNING

This product is not for outdoor use (it may shorten the product lifetime and cause electric shock)
Do not use this product in places with flammable or explosive gases (it does not have an explosion-proof structure, so there are fire or explosion risks)
Do not use the product in places where vibrations or shocks exceed the reference values (it has a double insulation structure, but the components may be damaged)

⚠ CAUTION

Never use it on AC power.
Be careful of wiring. It may cause explosion, fire, or machine breakdown.
Do not use the product in a state where the product body or cable is crashed.
Do not disassemble, repair or modify the product.
When the lens of the photo sensor is contaminated by foreign substances, use a dry piece of cloth and wipe off the substance lightly. Never use thinner or organic solvents.
Separate high voltage cable and power line from the sensor wire. Be cautious since using the same pipe during wiring could cause malfunction.
If the cable needs to be extended, use over 0.3mm and be cautious because of a possible sudden voltage drop.
When using the sensor under lights with high frequency, such as fluorescent lamps or mercury lamps, block it with a light shading plate and avoid the lens from facing the light directly.
Malfunction can occur due to mutual interference when using

more than 2 pairs of through-beam type photo sensors. Therefore, leave enough space for the mutual separation distance and install the light emitters and the light receivers in alternating positions.
Using inductive load (relay, coil) for the output can cause an instantaneous increase in load by more than two times and damage the TR of the output. Therefore, please set half of the maximum load.
There is an over-current protecting circuit within the output side that breaks the output when the current is higher than the rated load current. Therefore, please set within 70% of the maximum load.
Do not use the product in places with heavy dust or debris that can contaminate the lenses and consequently cause malfunctions.
The contents of this manual may be changed without prior notification.
Any use of the product other than those specified by the manufacturer may result in personal injury or property damage.
When using the Switching Power Supply as power source, ground the Frame Ground (F.G.) terminal and be sure to connect the noise-cancelling condenser between OV and F.G. terminals

Suffix code

Model	Metal	NPN	PRM-T7RN	PRM-T10N	PRM-M2N	PRM-R01N	PRM-R04N
		PNP	PRM-T7RP	PRM-T10P	PRM-M2P	PRM-R01P	PRM-R04P
Model	Plastic	NPN	PRP-T7RN	PRP-T10N	PRP-M2N	PRP-R01N	PRP-R04N
		PNP	PRP-T7RP	PRP-T10P	PRP-M2P	PRP-R01P	PRP-R04P
Sensing mode		Through-beam		Retroreflective (mirror)	Diffuse-reflective		
Sensing distance		7m / 10m		0.1-2m (Note 1)	0.1m / 0.4m		
Hysteresis distance		-		Less than 20% of the sensing range			
Detecting object		Opaque Ø10 mm or more		Ø25 mm more (Opaque)	White non-glossy paper (100 x 100 mm)		
Light source (Wavelength)		RED(640 nm)	IR(860 nm)	IR(860 nm)			
Current consumption		Emitter : 20mA, Receiver : Max.20mA		Max. 30 mA			
Power voltage		12-24Vd.c. ±10% (Ripple max. 10%)					
Control output		NPN or PNP open collector output Load current - max. 100 mA (26.4Vd.c. standard) Residual voltage - NPN: max. 1V, PNP: max. 1V					
Operation mode		Light ON / Dark ON (By white cable)					
Protection circuit	Common	Power reverse connection protection, Output reverse connection protection, Output short-circuit over-current protection, Output short-circuit alarm (Note 2)					
	Individual	-			Mutual interference prevention function		
Response time		1 ms or less					
Insulation Resistance		More than 20MΩ(500Vd.c. mega)					
Noise immunity		Square wave noise by noise simulator(pulse width 1μs) ±240V					
Dielectric strength		1,000Va.c.(50/60 Hz for 1 minute)					
Vibration resistance		10 - 55 Hz, Double amplitude : 1.5mm, X-Y-Z 2 in each direction for 2 hours					
Shock resistance		500%, X-Y-Z each direction 3 times					
Ambient illumination		Sunlight : max. 11,000lx / Incandescent: max 3,000lx(Light receiving surface illuminance)					
Ambient temperature		During operation : -25~+55°C, During storage : -40~+70°C (Without condensation or icing)					
Ambient humidity		35-85%RH(Without condensation)					
Degree of protection		IP66(IEC standard)					
Certification		CE					
Material	Case	Metal: Brass plating / Plastic: Plastic					
	Display	PC					
	Lens	PC					
Accessory	Common	Metal: 2 fixing nuts, 1 washer, V / R adjustment screwdriver Plastic: 2 fixing nuts, V / R adjustment screwdriver					
	Individual	-			Mirror(HY-M5)		
Weight		Metal : Approx. 320g Plastic : Approx. 280g		Metal : Approx. 160g Plastic : Approx. 140g			

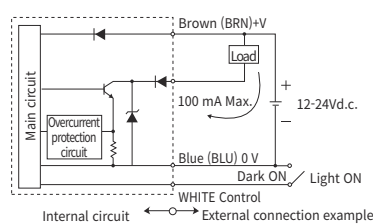
(Note 1) HY-M5S when using 0.1-3m

(Note 2) Red LED flashes when overloaded. (ON Time : 200μs, OFF Time : 40μs)

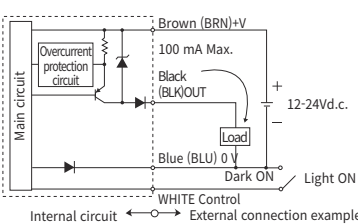
Output circuit

Diffuse-reflective, distance-settable, retro-reflective, receiver of through-beam types only (However, the emitter of through-beam type has 12-24Vd.c. power input only.)

NPN TYPE



PNP TYPE



How to set sensitivity and operation mode

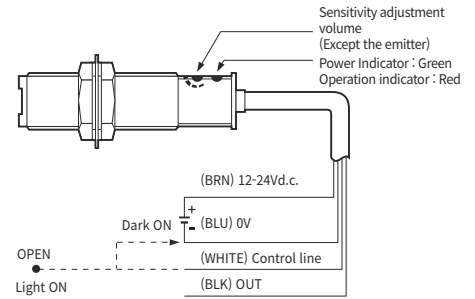
Sensitivity adjustment

MIN. rotation direction (counterclockwise) : Minimum sensitivity
MAX rotation direction (clockwise) : Maximum sensitivity

Operation mode

Control line OPEN : Light ON
Control wire to 0V : Dark ON

Single emitter has one red power indicator



Installation and Adjustment

Through-beam type

Sequence	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

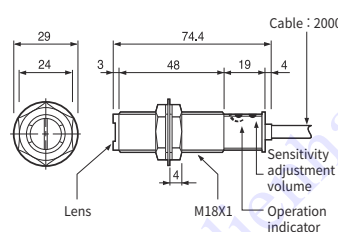
Sequence	How to install	Picture
1	Supply in the power after placing the sensor and mirror face to face each other in the straight line.	
2	Fix either the sensor or mirror and check for the range where the operation indicator becomes turned OFF by controlling in the direction of up, down, left and right. 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

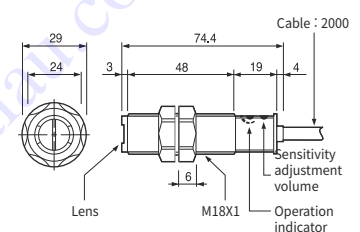
Sequence	How to install	Picture	Sensitivity Volume
1	After removing the sensing object, turn sensitivity volume gradually to the max direction and once indicator lights up, that position will be referred as 'A' from now on. (If indicator does not get turned ON (OFF) even in the position of maximum then 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 be turned OFF than that position will be referred as 'B'.		
3	Place the sensitivity volume in the middle of the sensitivity A and B. And then confirm the operation condition of sensing object that occurs within the setting range.		

Dimensions

Metal case (M)

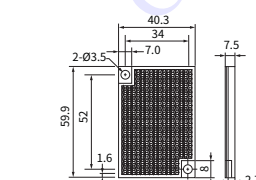


Plastic case (P)



Accessory

Mirror HY-M5, HY-M5S (sold separately)



Volume driver

