

INSTRUCTION MANUAL



- Do not use the product for detection for the protection of human body.
- When using the product for safety purposes, ensure safety with the control system as a whole as well as the detection.
- This product is not explosion-proof. For applications requiring explosion-proof, use barrier sensor models certified for the purpose.

RATING/PERFORMANCE/SPECIFICATION



Rating/performance	Model	Cable	NE2-T30R-2	NE2-T50-2	NE2-M10R-2	NE2-R10-2
		Connector	NE2-T30R-J2	NE2-T50-J2	NE2-M10R-J2	NE2-R10-J2
	Detection method	Through-beam type			Polarization reflector type	Diffuse-reflective type
	Detecting distance	30m max.		50m max.	0.05 to 10m max.	1m max.
	Detection object	Φ 21mm (Min.) Opaque			Mirror-like object Opaque object Translucent object (※1)	Opaque objects (White paper 200×200mm) (※2)
	Power supply	12 to 24VDC ± 10% Ripple 10%				
	Current consumption	Transmitter : 22mA max. Receiver : 17mA max.			28mA max.	25mA max.
	Output mode	NPN/PNP open collector 2 outputs NPN open collector output Sink current Rating : 100mA (30VDC) max. PNP open collector output Source current Rating : 100mA (30VDC) max.				
	Operation mode	Dark-ON / Light-ON selectable				
	Light emission stop function	Provided (non-voltage input)			_____	
	Cross talk protection	Provided by using filters (for 2 sensors)	_____		_____	
	Response time	0.5 ms max.				
	Hysteresis	_____				10% max.
Operating angle	5° (at receiver)			30° (reflector)	_____	
Specification	Light source	Red LED (700nm)	Infrared LED (880nm)	Red LED (700nm)	Infrared LED (880nm)	
	Indicator	Transmitter : power indicator (Orange LED) Receiver : operation indicator (Orange LED) Stability indicator (Green LED)			Operation indicator (Orange LED) Stability indicator (Green LED)	
	Volume	Sensitivity adjustment				
	Protection	Short circuit protection				
	Material	Lens : Acrylic Case : Polycarbonate				
	Wiring	Cable	Transmitter : 0.3sq. 3 core 2m length Receiver : 0.3sq. 4 core 2m length			0.3sq. 4 core 2m length
		Connector	M12 Quick disconnect (90 degree adjustable)			
	Weight	Cable	Approx 130g (each transmitter/receiver)			Approx 130g
		Connector	Approx 26g (each transmitter/receiver)			Approx 26g
Accessory	None			K-7 reflector	None	

(※1) Some materials do not allow stable detection.

Mirror-like objects wrapped in transparent film, glossy objects, laminated aluminum nameplates, etc., may inherently affect polarization.

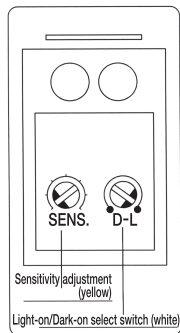
In such cases, the polarized waves of the sensor may be disturbed, which causes unstable detection.

(※2) Detecting objects with higher transmission may offer shorter detecting distance.

ENVIRONMENTAL SPECIFICATION

Ambient light	5,000 lx max.
Ambient temperature	-25 to +55°C (non-freezing)
Ambient humidity	35 to 85%RH (non-condensing)
Protective structure	I P 67
Vibration	10 to 55Hz, 1.5mm amplitude 2 hours each in 3 direction
Shock	100m/s ² 3 times each in 3 directions
Dielectric withstanding	1000VAC for 1 minute
Insulation resistance	500VDC, 20MΩ or higher

HOW TO CHANGE THE MODE SWITCH (LIGHT-ON/DARK-ON)

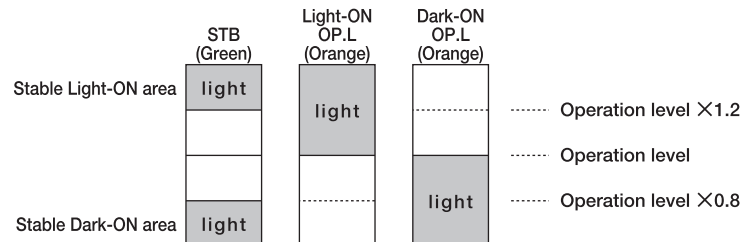


(in case of Light-on mode)
D-L
Turn to L.ON

(in case of Dark-on mode)
D-L
Turn to D.ON

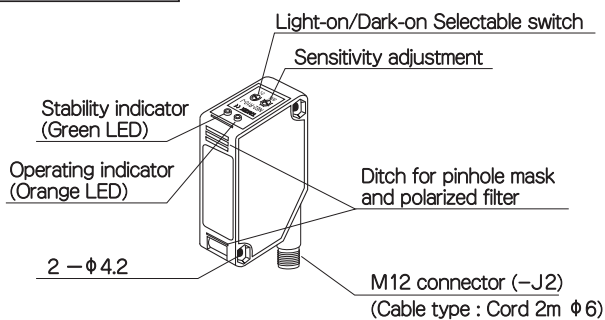
DESCRIPTION OF THE INDICATORS

- The transmitter has a power indicator (Orange LED) fitted.
- The receiver has an operation indicator (Orange LED) and a stability indicator (Green LED) fitted and the number of LEDs on indicates the operation level as in the below picture.
- After optical axis adjustment and sensitivity adjustment, repeat letting the beam through or interrupting the beam and check whether it is within the area of stable beam through and stable interruption, as shown below.
- When it is set in the stability area, the reliability will be higher against environmental change after setting.

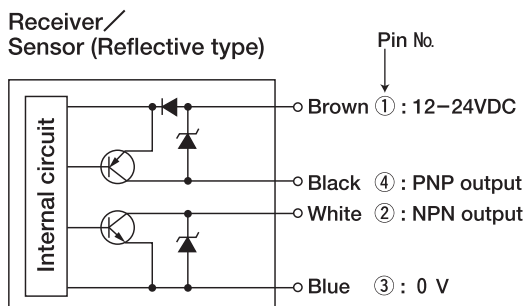
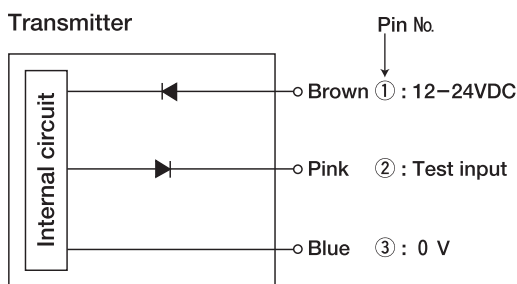


The Orange LED is an operation indicator.
For Light On Type, it will light when the beam goes through.
For Dark On Type, it will light when the beam is interrupted.

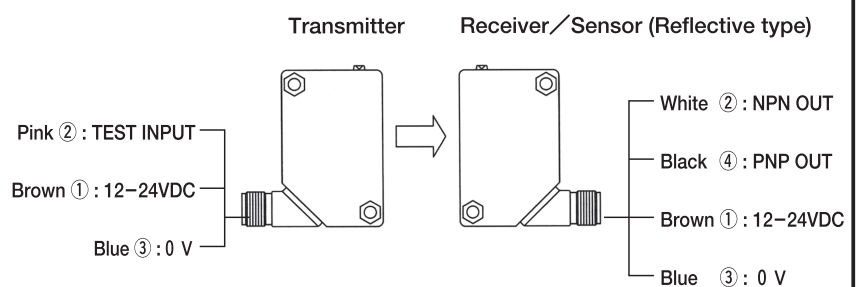
APPEARANCE



OUTPUT CIRCUIT



WIRING



- The output transistor becomes OFF when it's short or overload.
- Make sure all connections are correct before turning the power on.

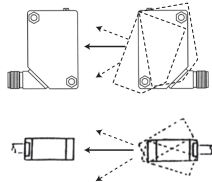
※ The numeral in ○ means pin number of connector.

HOW TO INSTALL & HOW TO ADJUST

- Mounting bracket is optional item.
Refer to dimensions when install.
Tightening torque is within 0.8N·m when mounting by screw.
- Refer to Description of the indicator regarding the indicator and operating mode.

◆ Throughbeam type

For the throughbeam sensors, align the light source and receiver so that the operation indicator (Orange LED) lights. Then adjust the receiver up/down and left/right and set it at the center between the positions where the operation indicator (Orange LED) is off in each direction. Confirm the stability indicator (Green LED) lights.



◎ Usage for Pinhole Mask (Option)

It is possible to affix pinhole mask to the lens surface.

· Setting distance : affix to Trns. and Rcvr.

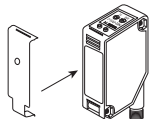
Model : NE2-T30R-2(-J2)

MODEL	NE2-P3	NE2-P5	NE2-P5x1
Pinhole mask	φ3	φ5	5×1mm
Setting Distance	3m	7m	2m

Model : NE2-T50-2(-J2)

MODEL	NE2-P3	NE2-P5	NE2-P5x1
Pinhole mask	φ3	φ5	5×1mm
Setting Distance	5m	10m	3m

Pinhole mask



When pushing the pinhole mask into top and bottom ditch of lens surface, it cracks.

◎ Usage for Interference Protection Filter (Option)

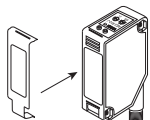
Trough beam type, NE2-T30R-2(-J2) can install side by side without clearance (up to 2 sets).

The 2 kinds of interference protection filter are prepared as option. Set (2 kinds of it them) to 2 sensors separately.

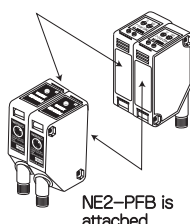
However, in this case, the detecting range reduces at 5m. In addition, install 2 transmitters and receivers side by side.

MODEL : NE2-PFA(Polarizer)
NE2-PFB(Analyzer)

NE2-PFA is attached



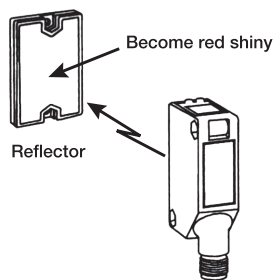
When pushed the Pinhole mask into top and bottom ditch of lens surface, it cracks.



NE2-PFB is attached

◆ Retro-Reflection Type

- ① Set the polarized reflection (mirror) and sensor. Move the sensor up/down and left/right opposite the reflective target and set it at the center between the positions where the Operation indicator (Orange LED) is off in each direction (for foreign light elimination). Adjust the axis at the position where the mirror becomes red shiny.
- ② Set the sensitivity adjuster (SENS.) to MAX.
- ③ Turn the SENS. counterclockwise in case that target object such as transluence object blocks the axis.



· The range depends on reflector type. So, it is impossible to use except for below reflectors due to polarized Retro-reflection type.

Reflector	K-7	K-71	K-8
Range	0.05~10m	0.05~4m	0.05~13m
Notes	Accessory	Option	Option

◆ Diffuse Reflection Type

※ In case of reflective background

- ① Set a target object to the desired position and then increase the sensitivity adjustment gradually from the minimum position until the indicator (Orange LED) is on (Point A).
- ② Remove the target object and gradually decrease the sensitivity adjustment from the maximum position until the LED is off (Point B). If the LED is still off even though the potentiometer is at the maximum position, this maximum position should be the Point B.
- ③ Set the potentiometer at the center between Points A and B.



※ In case of no-reflective background

- ① Point A is the same point mentioned above.
- ② Set the potentiometer at the center between Point A and MAX.



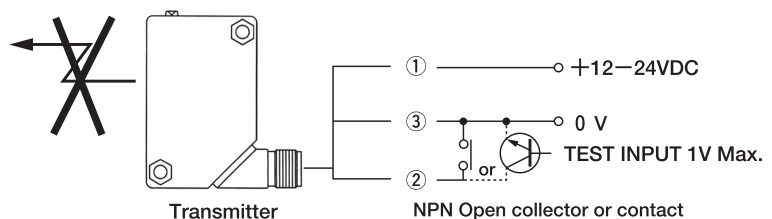
Confirm both of orange LED and green LED light.

TEST INPUT

It is possible to interrupt the emitting light (transmitter) by means of making Blue and Pink cable short.

TEST INPUT : It connects to 0V (Short)

※ In case of using TEST INPUT, confirm that there is no object within the range in front of Sensor.



- In case of not using test input, connect the brown cable ① to +12-24VDC.

CONNECTOR TYPE (J2)

Disposition of Pin. on Sensor side

Transmitter		
Pin No.	Cable Color	
1	Brown	12—24VDC
2	Pink	TEST INPUT
3	Blue	0 V
4	—	—

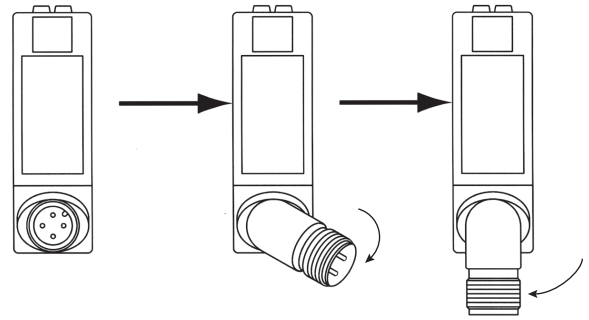
Receiver / Sensor		
Pin No.	Cable Color	
1	Brown	12—24VDC
2	White	NPN OUTPUT
3	Blue	0 V
4	Black	PNP OUTPUT

- The cable with connector is optional item.
Model : FAC-D4R2S 2m · FAC-D4R5S 5m (Straight type)
FAC-D4R2L 2m · FAC-D4R5L 5m (Angle type)

Transmitter		
Pin No.	Cable Color	
1	Brown	12—24VDC
2	White	TEST INPUT
3	Blue	0 V
4	Black	—

Receiver / Sensor		
Pin No.	Cable Color	
1	Brown	12—24VDC
2	White	NPN OUTPUT
3	Blue	0 V
4	Black	PNP OUTPUT

CONNECTOR : 90 degree adjustable

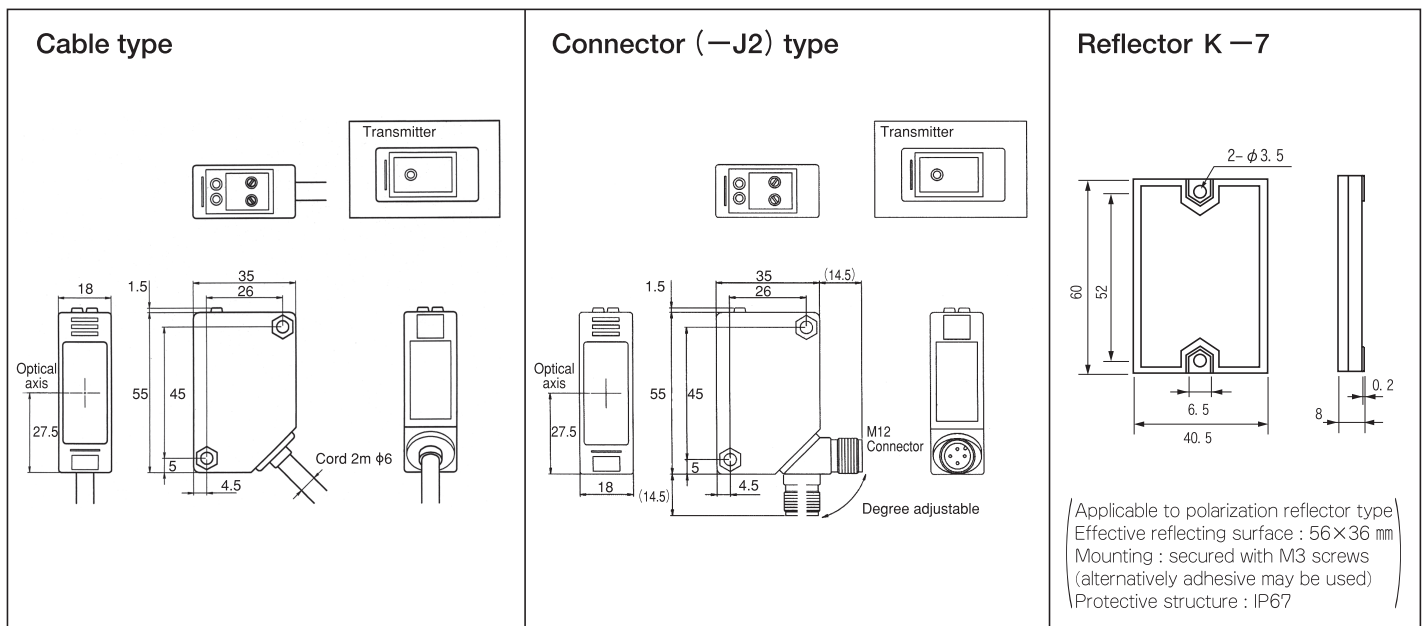


- There is directionality of the rotation in a 90° rotatable connector. Please use it in the direction of the rotation shown in figure.
- The connector might break for the wrong use in directions other than showing in figure.

NOTES

- Use a dry, soft cloth for cleaning the lens and case.
Lightly wipe it off. Never use solvents such as thinner.
- Never cycle on/off frequently.
- Under normal conditions, product may generate a low oscillating noise.
- Connect an auxiliary relay for longer life. The internal relay cannot be replaced.
- Sole wiring through metal tube is required by high voltage or power line as preventing from mistaking and damage.
- Never cycle on/off frequently. (Avoid such a usage as continuously switching on and off the power supply.)
- Do not wire together with power line. Sole wiring through metal tube is required by high voltage or power line preventing from mistake and damage.
- Use power supply which is limited the current (3A) in accordance with the lead wire size of the sensor.

DIMENSIONS (in mm)



NOTE : ● This sensor is designed to detect an object ; it is not a safety device. TAKENAKA is not responsible for damage or losses caused by accident, calamity, acts of God, abuse, misuse abnormal usage, faulty installation or improper maintenance.
● Specifications and external dimensions described herein may be subject to change without notice, if necessary for the purpose of improvements.