

Autonics

PHOTOELECTRIC SENSOR BJN SERIES

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

- *Please keep these instructions and review them before using this unit.
- *Please observe the cautions that follow;
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- *The following is an explanation of the symbols used in the operation manual.
- ▲ : Injury or danger may occur under special conditions.

Warning

- In case of using this unit with machinery(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it is required to install fail-safe device, or contact us for information on type required.**
It may cause serious human injury or a fire, property.
- Do not disassemble or modify this unit. Please contact us if it is required.**
It may give an electric shock and cause a fire.

Caution

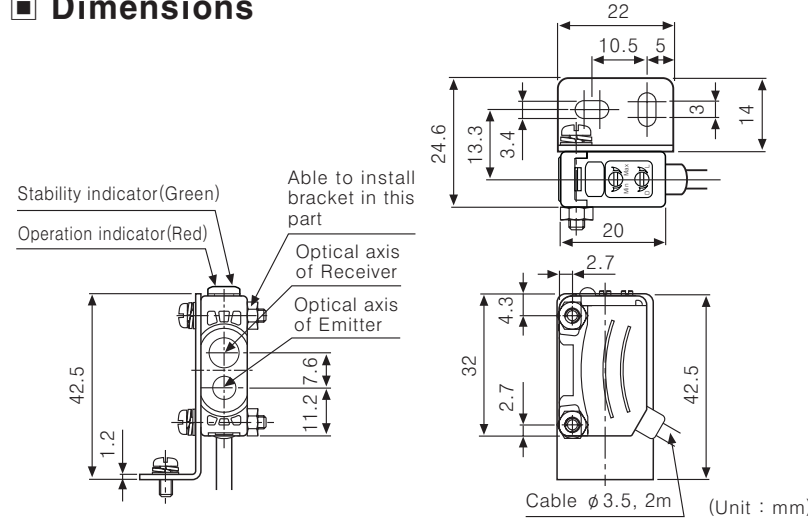
- This unit shall not be used outdoors.**
It might shorten the life cycle of the product or give an electric shock.
- Do not use this unit in place where there is flammable or explosive gas.**
It may cause a fire or explosion.
- Please observe the rated specifications.**
It may shorten the life cycle or damage to the product.
- Do not use this unit beyond rated power and do not supply AC power to DC power type.**
It may cause a damage to product.
- Please check the polarity of power and wrong wiring.**
It may cause a damage to product.
- Do not use this unit in place where there is vibration or impact.**
It may cause a damage to product.
- In cleaning the unit, do not use water or an oil-based detergent.**
It may cause a fire, give an electric shock or damage to product.

Ordering information

BJN	50	-	NDT	-	P

*The above specifications are subject to change without notice.

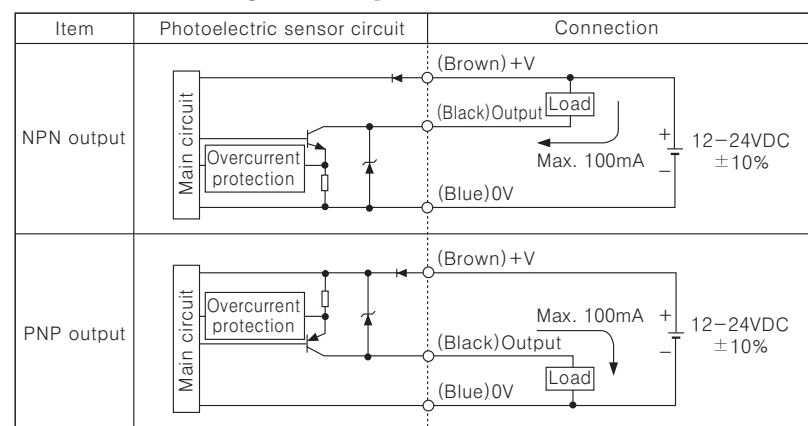
Dimensions



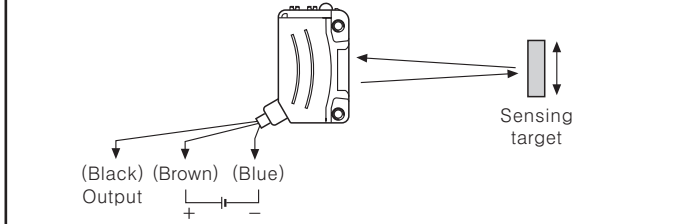
Specifications

Sensing type	Narrow beam reflective type	
	NPN output	BJN50-NDT
PNP output	BJN50-NDT-P	BJN100-NDT-P
Power supply	12-24VDC ±10% (Ripple P-P : Max.10%)	
Current consumption	Max. 30mA	
Min. diameter of transmitting SPOT	Approx. φ 2.0mm	Approx. φ 2.5mm
Min. sensing target	Approx. min. φ 0.2mm (Copper wire)	
Sensing target	Transparent, Translucent, Opaque materials	
Sensing distance	30~70mm (100×100mm Non-glossy white paper)	70~130mm (100×100mm Non-glossy white paper)
Hysteresis	Max. 25% at sensing distance	Max. 20% at sensing distance
Light source / Wavelength	Pin Point LED(Point source) / 650nm	
Control output	NPN or PNP Open collector type • Load voltage : Max. 26.4VDC • Load current : Max. 100mA • Residual voltage ⚡ NPN : Max. 1V, PNP : Min. (Power voltage -2.5V)	
Operation mode	Light ON / Dark ON selectable(Short rotator adjuster)	
Protection circuit	Reverse polarity protection, Output short-circuit protection, Interference prevention function	
Response time	Max. 1ms	
Sensitivity adjustment	Short rotator adjuster(210°)	
Ambient illumination	Sunlight:Max. 11,000lx, Incandescent lamp:Max. 3,000lx(Receiver illumination)	
Ambient temperature	Operation:-25~55°C, Storage:-40~70°C(at non-freezing, non-dew status)	
Ambient humidity	Operation & Storage : 35~85%RH(at non-dew status)	
Insulation resistance	Min. 20MΩ (500VDC)	
Dielectric strength	1,000VAC 50/60Hz for 1minute	
Vibration	1.5mm or 300mm amplitude at frequency of 10~55Hz in each of X, Y, Z directions for 2 hours	
Shock	500m/s ² X, Y, Z directions for 3 times	
Protection	IP65(IEC standard)	
Connection	Outgoing cable type	
Indicator	Operation indicator : Red, Stability indicator : Green	
Material	Case : PC+ABS, Lens : PMMA, LED CAP : PC	
Cable	φ 3.5mm, 3P, Length : 2m	
Accessory	Mounting bracket, Bolt, Adjustment driver	
Unit weight	Approx. 45g	

Control output diagram



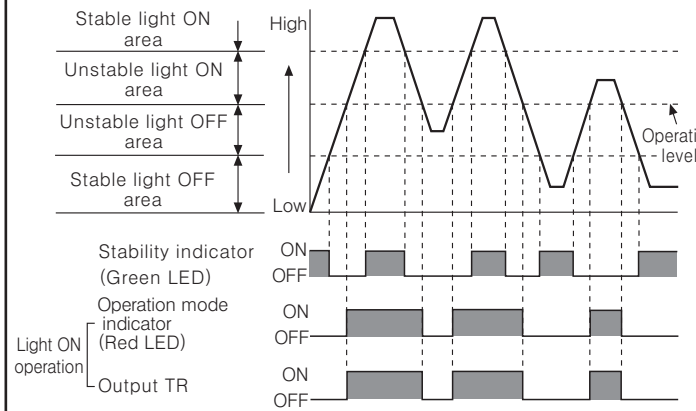
Connections



Operation mode

Operation mode	Light ON mode	Dark ON mode
Receiver	Received light Interrupted light	
Operation indicator (Red LED)	ON OFF	
TR Output	ON OFF	

Operation mode and timing diagram



*The waveform of "Operation mode indicator" and "Output TR" is for Light ON mode, it is operated as reverse in Dark ON mode.

Mounting and sensitivity adjustment

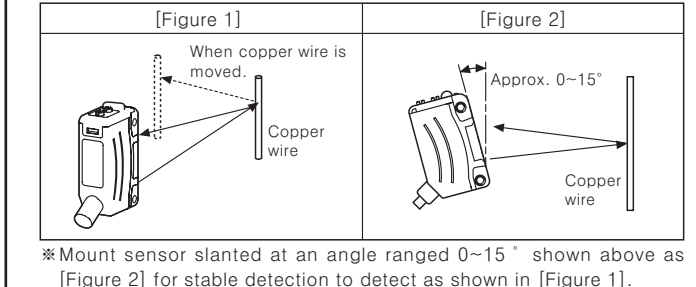
- For mounting**
Please use screw M3 for mounting of sensor, set the tightening torque under 0.5N.m.
-
- Switching of operation mode**

Light ON mode (Light ON)		Turn the operation switching adjuster to right(L direction), it is set as Light ON mode.
Dark ON mode (Dark ON)		Turn the operation switching adjuster to left (D direction), it is set as Dark ON mode.

Optical axis adjustment

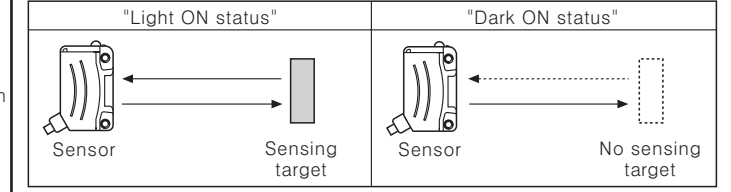
After place a sensing target, fix it in the middle of position where the indicator is operated adjusting the sensor to up • down, left • right.

Object(Copper wire) detection



Sensitivity adjustment

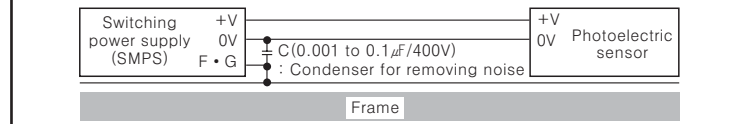
Order	Sensitivity adjuster	Description
1		Turn the sensitivity adjuster to the right of min. and check position(A) where the indicator is turned on in "Light ON status".
2		Turn the sensitivity adjuster more to the right of position(A), check position(B) where the indicator is turned on. And turn the adjuster to the left, check position(C) where the indicator is turned off in "Dark ON status". *If the indicator is not lighted although the adjuster is turned to the max. position, the max. position is(C).
3		Set the adjuster at the center of (A) and (C). To set the optimum sensitivity, check the operation and lighting of stable indicator with sensing target or without it. If the indicator is not lighted, please check the sensing method again because sensitivity is unstable.



*Please set adjuster as sensitivity adjustment is executed in stable Light ON area and the reliability of environment(temperature, supply, dust etc) is increased after the mounting it in a stable area.
*Do not apply an excessive force on adjuster, it can be broken.

Caution for using

- The sensor will be in a detectable status within 500ms after supply the power. If the power line of the load and the sensor is different, supply power voltage to the sensor first.
- Shade a strong source of light as like sunlight, spotlight not to be let in the inclination angle range of photoelectric sensor directly.
- The photoelectric sensor may cause malfunction under the fluorescent lamp light, be sure to use the cover or the shutter to shade the light.
- If photoelectric sensor is installed at flat part, it may cause malfunction by reflection light from flat part. Be sure to put space between photoelectric sensor and ground.
- When wiring the photoelectric sensor with high voltage line, power line in a same conduit, it may cause malfunction or mechanical problem, please do wire separately or use different conduit.
- Avoid install the unit in place with corrosive gas, oil or dust, strong flux, noise, sunlight, strong alkali and acid.
- In case of connecting relay as inductive load to output, please remove surge by using diode or varistor.
- Photoelectric sensor cable shall be used as short as possible, because it may cause malfunction by noise through the cable.
- When it is stained by dirt at lens, please clean the lens with dry cloth, do not use an organic materials such as alkali, acid and chromic acid.
- When use switching power supply as the source of supplying power, F.G terminal shall be grounded and a condenser for removing noise shall be installed between 0V and F.G terminal.



*It may cause malfunction if above instructions are not followed.

Major products

- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- AREA SENSOR
- FIBER OPTIC SENSOR
- DOOR/DOOR SIDE SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- SWITCHING POWER SUPPLY
- TEMPERATURE CONTROLLER
- TEMPERATURE/HUMIDITY TRANSDUCER
- POWER CONTROLLER
- RECORDER
- TACHOMETER/PULSE(RATE) METER
- METER METER
- INDICATOR
- SIGNAL CONVERTER
- COUNTER
- TIMER
- DISPLAY UNIT
- GRAPHIC PANEL
- STEPPING MOTOR & DRIVER
- MOTION CONTROLLER

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Satisfiable Partner For Factory Automation

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