

PHOTOELECTRIC SENSOR
BPS 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.

Caution: Injury or danger may occur under special conditions.

Warning

1. In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device. It may cause a fire, human injury or damage to property.

Caution

1. This unit shall not be used outdoors.

It might shorten the life cycle of the product or give an electric shock. Use this product inside only. Do not use the product outdoors or location subject to temperatures or humidity outside. (Ex: rain, dirty, frost, sunlight, condensation, etc.)

2. Do not use this unit in place where there is flammable or explosive gas. It may cause a fire or explosion.

3. Please observe the rated voltage and do not supply AC power. It may cause damage to this unit.

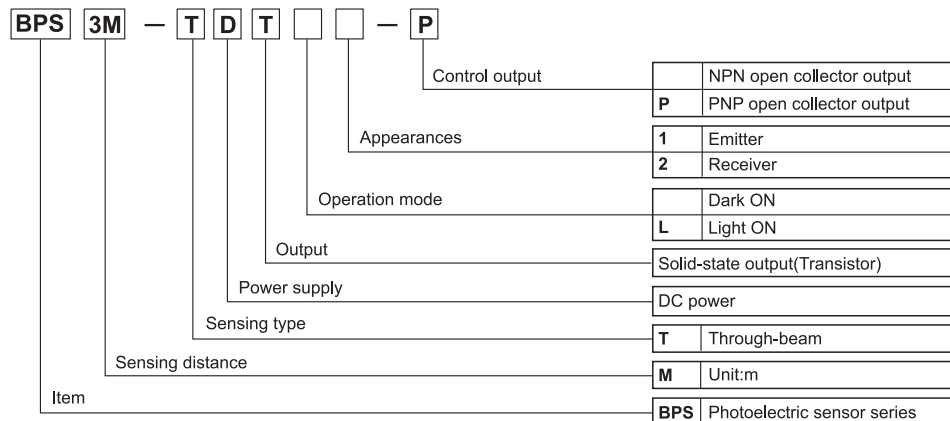
4. Please check the polarity of power and wrong wiring. It may cause damage to this unit.

5. Do not use this unit in place where there is vibration or impact. It may cause damage to this unit.

6. In cleaning the unit, do not use water or an oil-based detergent. It may cause electric shock or fire.

7. Do not short circuit the load. It may result in damage to this unit.

Ordering information

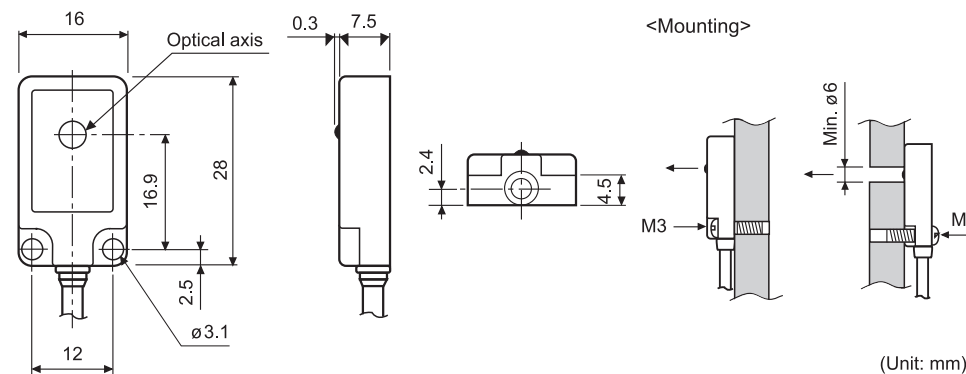


Specifications

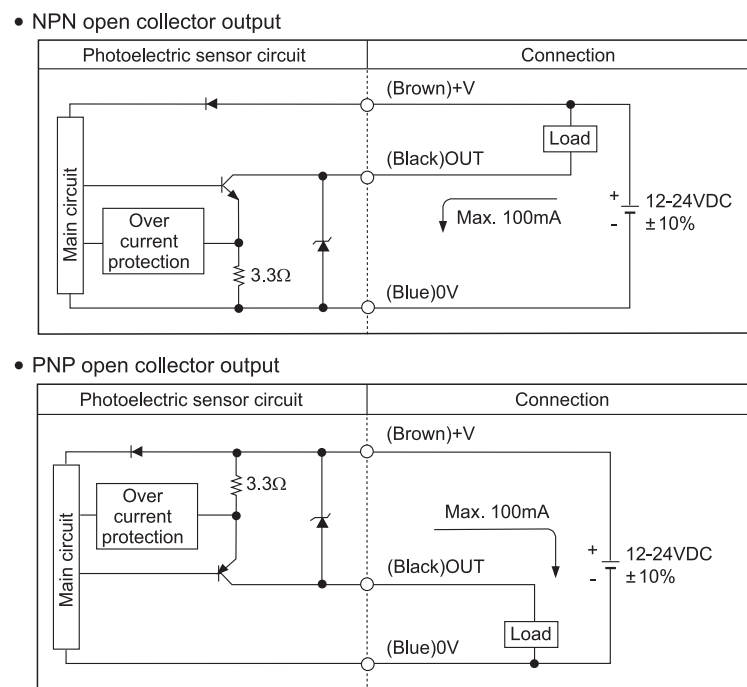
Model	NPN output type		PNP output type	
	BPS3M-TDT	BPS3M-TDTL	BPS3M-TDT-P	BPS3M-TDTL-P
Detecting target	Opaque materials of Min. ϕ 5mm			
Operation mode	Dark ON	Light ON	Dark ON	Light ON
Detecting distance	3m			
Response time	Approx. max.1ms			
Power supply	12-24VDC \pm 10%(Ripple P-P: Max. 10%)			
Current consumption	Max. 20mA			
Light source	Infrared LED(850nm)			
Control output	NPN or PNP open collector output • Load voltage: Max. 30VDC • Load current: Max. 100mA • Residual voltage - NPN: Max. 1V, PNP : Max. 2.5V			
Protection circuit	Reverse polarity protection, Output short-circuit protection			
Indication	Emitter: Power indicator(Red LED), Receiver: Operation indicator(Red LED)			
Insulation resistance	Min. 20M Ω (500VDC)			
Noise strength	\pm 240V the square wave noise(pulse width: 1 μ s) by the noise simulator			
Dielectric strength	1,000VAC 50/60Hz for 1minute			
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s ² (50G) in X, Y, Z directions for 3 times			
Environment	Ambient illumination	Sunlight: Max. 11,000lx, Incandescent lamp: Max. 3,000lx(Receiver illumination)		
	Ambient temperature	-25 to 65°C, Storage : -25 to 70°C		
	Ambient humidity	35 to 85%RH, Storage : 35 to 90%RH		
Protection	IP67(IEC standard)			
Material	Case: PC			
Cable	ϕ 3mm, 3-wire, length: 2m(Emitter of through-beam type: ϕ 3mm, 2-wire, length: 2m) (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator diameter: ϕ 1mm)			
Approval	CE			
Unit weight	Approx. 66g			

※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

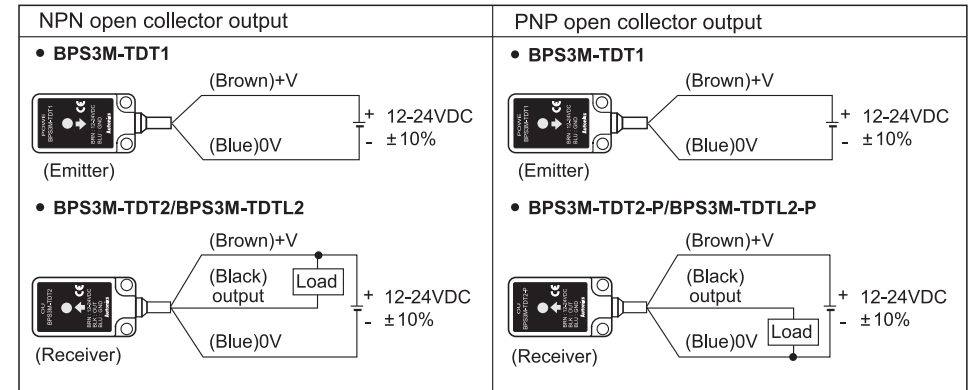
Dimension



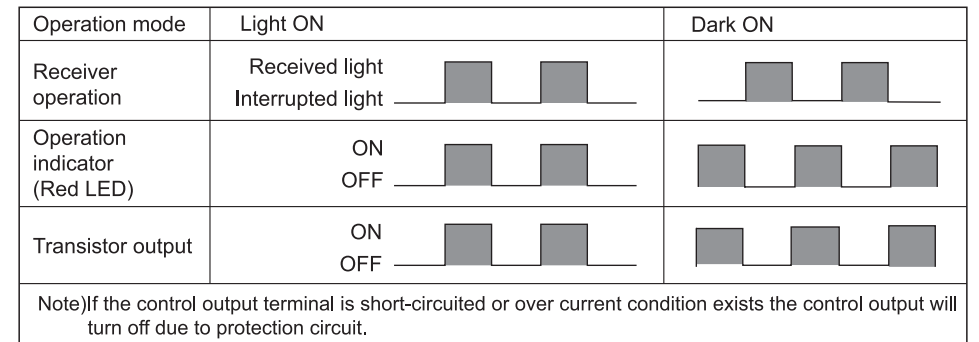
Control output circuit diagram



Connection

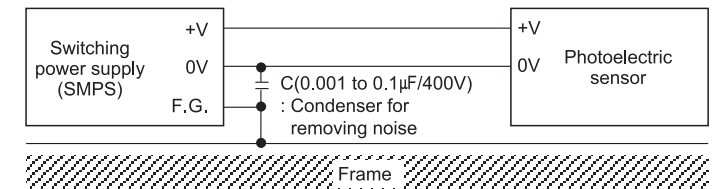


Operation mode



Caution for using

- Intercept a strong source of light as like sunlight, spotlight within inclination angle range of photoelectric sensor.
- The photoelectric sensor may cause malfunction under the fluorescent lamp light, so be sure to use cut-off light with panel.
- When more than 2 sets of Through-beam type sensor are used closely, it might cause interference each other. Be sure to put enough space between them in order to avoid malfunction.
- If photoelectric sensor is installed at flat part, it might cause malfunction by reflection light from flat part. Be sure to put space between photoelectric sensor and ground.
- When wire the photoelectric sensor with high voltage line, power line in the same conduit, it may cause malfunction or mechanical trouble. Therefore please wire separately or use different conduit.
- Avoid installing the unit as following place. Corrosive gas, oil or dust, strong flux, noise, sunlight, strong alkali, acid.
- In case of connect DC relay as inductive load to output, please remove surges by using diode or varistor.
- The 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, but do not use an organic materials such as alkali, acid, chromic acid.
- When use switching power supply as the source of supplying power, F.G. terminal shall be good earth ground and condenser for removing noise shall be installed between 0V and F.G. terminal.



- Installation environment
 - ① It shall be used indoor
 - ② Altitude Max. 2,000m
 - ③ Pollution Degree 3
 - ④ Installation Category II

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

Major products

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connector/Sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, CO₂, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate)meters
- Display units
- Sensor controllers

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