

Autonics

**Photoelectric Sensor
BPS SERIES**

INSTRUCTION MANUAL



Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.

※⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow these instructions may result in serious injury or death.

⚠ Caution Failure to follow these instructions may result in personal injury or product damage.

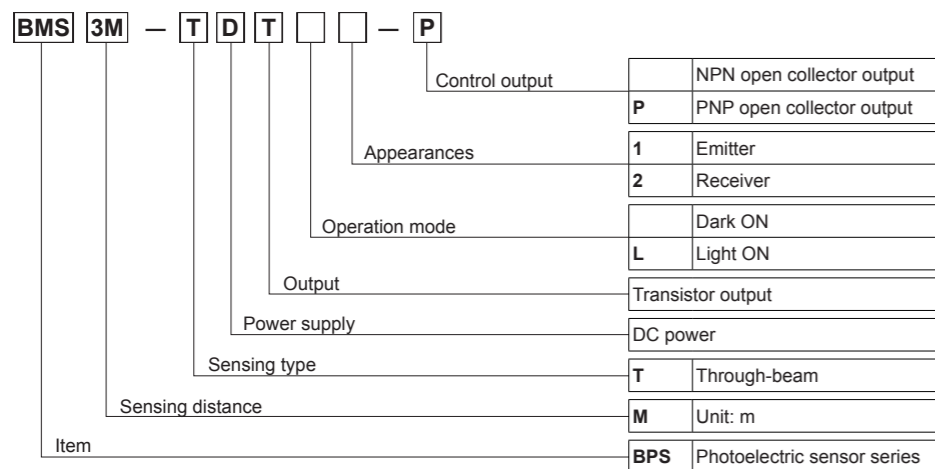
⚠ Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
Failure to follow this instruction may result in fire, personal injury, or economic loss.
- Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.
- Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
- Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.

⚠ Caution

- Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
- Use dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
Failure to follow this instruction may result in fire or explosion.

■ Ordering Information



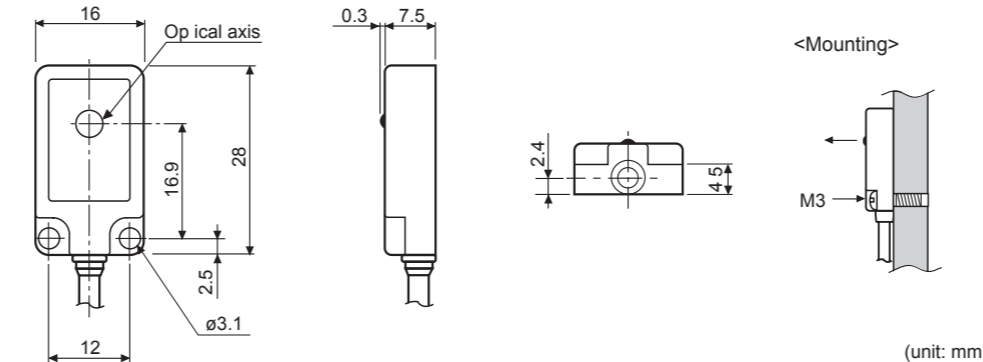
※The above specifications are subject to change and some models may be discontinued without notice.
※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

■ Specifications

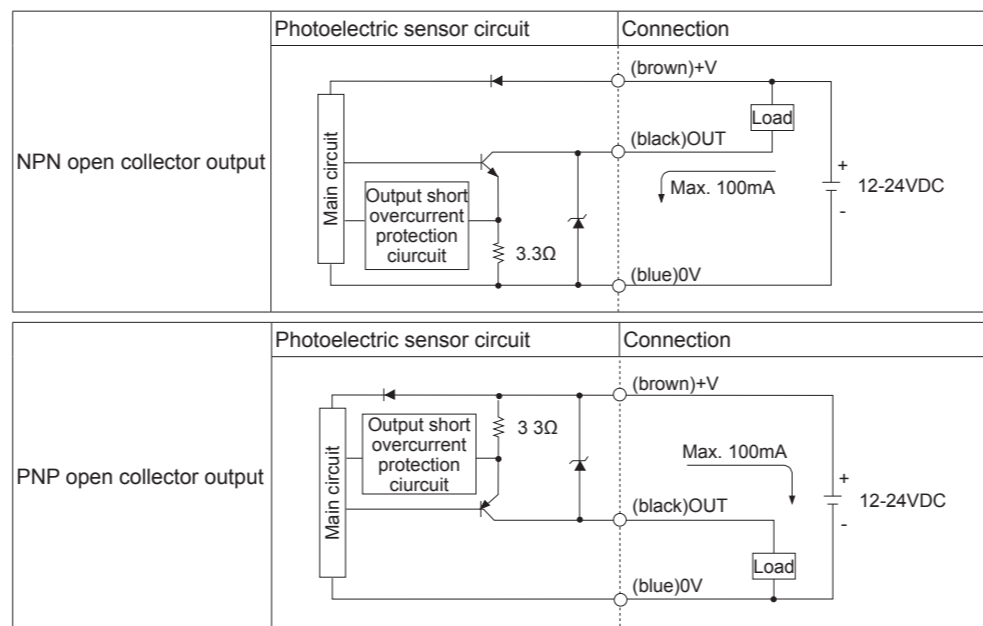
Model	NPN output type		PNP output type	
	BPS3M-TDT	BPS3M-TDTL	BPS3M-TDT-P	BPS3M-TDTL-P
Detecting target	Opaque materials of min. ø5mm			
Operation mode	Dark ON	Light ON	Dark ON	Light ON
Detecting distance	3m			
Response time	Approx. max.1ms			
Power supply	12-24VDC±10% (ripple P-P: max. 10%)			
Current consumption	Max. 20mA			
Light source	Infrared LED (850nm)			
Control output	NPN or PNP open collector output • Load voltage: max. 30VDC± • Residual voltage - NPN: max. 1VDC±, PNP: max. 2.5VDC			
Protection circuit	Reverse polarity protection circuit, output short overcurrent protection circuit			
Indication	Emitter: power indicator (red LED), receiver: operation indicator (red LED)			
Insulation resistance	Over 20MΩ (at 500VDC megger)			
Noise immunity	±240V he square wave noise (pulse width: 1μs) 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 structure	IP67 (IEC standard)			
Material	Case: PC			
Cable	ø3mm, 3-wire, length: 2m (emitter of through-beam type: ø3mm, 2-wire, length: 2m) (AWG24, core diameter: 0.08mm, number of cores: 40, insulator diameter: ø1mm)			
Accessory	M3 bolt: 4, M3 nut: 4			
Approval	CE			
Unit weight	Approx. 66g			

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

■ Dimension

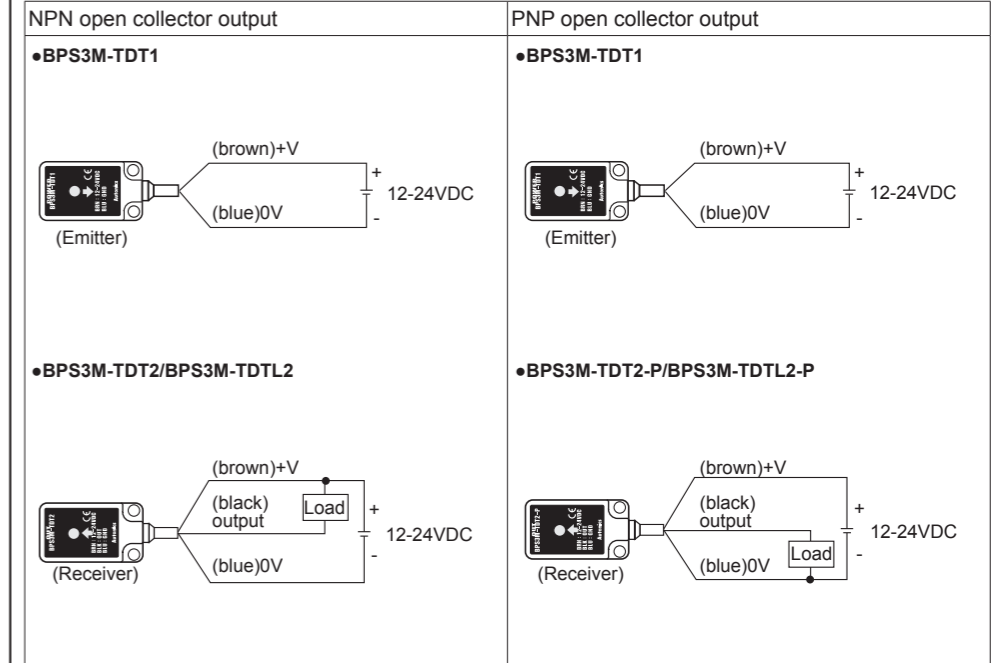


■ Control Output Circuit Diagram

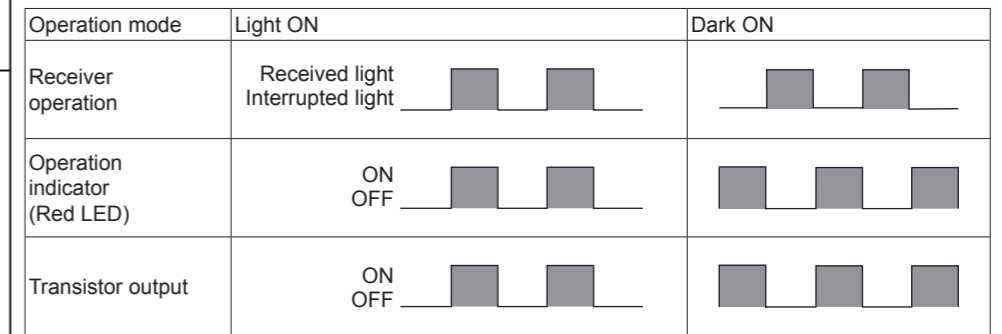


※If short-circuit the control output terminal or supply current over the rated specification, normal control signal is not output due to the output short over current protection circuit.

■ Connection



■ Operation Mode



■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- When connecting a DC relay or other inductive load to the output, remove surge by using diodes or varistors.
- Use the product, 0.5 sec after supplying power.
When using separate power supply for the sensor and load, supply power to sensor first.
- 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent inductive noise.
- When using switching mode power supply to supply the power, ground F.G. terminal and connect a condenser between 0V and F.G. terminal to remove noise.
- When using sensor with the equipment which generates noise (switching regulator, inverter, servo motor, etc.), ground F.G. terminal of the equipment.
- This unit may be used in the following environments.
 - ① Indoors (in the environment condition rated in 'Specifications')
 - ② Altitude max. 2,000m
 - ③ Pollution degree 3
 - ④ Installation category II

■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connectors/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- /O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, CO₂, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers