

Autonics

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.

⚠ : Injury or danger may occur under special conditions.

Warning

- In case of using this unit with machineries (Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required. It may result in serious damage, fire or human injury.

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 voltage rating and do not supply AC power. It may result in damage to this unit.
- Please check the polarity of power and wrong wiring. It may result in damage to this unit.
- Do not use this unit in place where there is vibration or impact. It may result in damage to this unit.
- In cleaning the unit, do not use water or an oil-based detergent. It might cause an electric shock or fire that will result in damage to this product.
- Do not short circuit the load. It may result in damage to this unit.

Ordering information

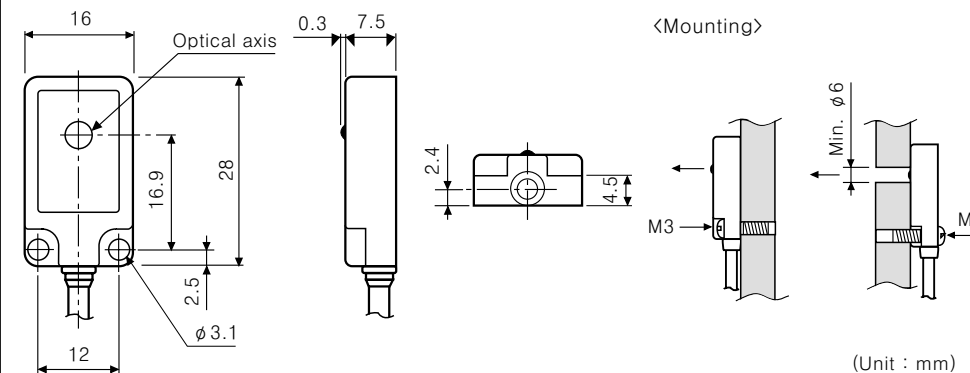
BPS	3M	-	T	D	T	□	□	-	P
Control output	NPN open collector output		P		PNP open collector output				
Appearances	1	Emitter							
	2	Receiver							
Operation mode	L	Dark ON							
	L	Light ON							
Output	Solid-state output (TR)								
Power supply	DC power								
Detecting type	T	Through-beam							
Detecting distance	M	Unit: m							
Photoelectric sensor	BPS	Series name							

※ The above specifications are changeable without notice anytime.

Specification

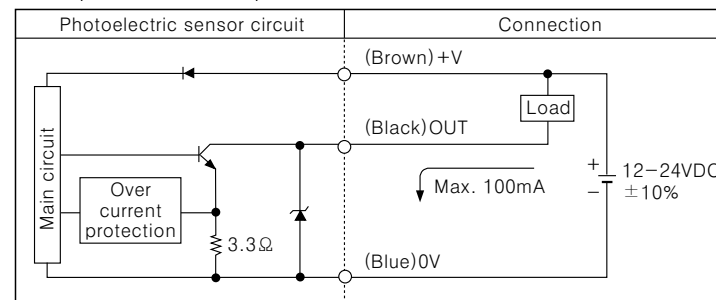
Model	NPN output type		PNP output type	
	BPS3M-TDT	BPS3M-TDTL	BPS3M-TDT-P	BPS3M-TDTL-P
Detecting target	Opaque materials of Min. ϕ 5mm			
Operation mode	Dark ON mode	Light ON mode	Dark ON mode	Light ON mode
Detecting distance	3m			
Response time	Approx. max.1ms			
Power supply	12-24VDC \pm 10% (Ripple P-P: Max. 10%)			
Current consumption	Max. 20mA			
Light source	Infrared LED (modulated)			
Control output	NPN open collector output Load voltage : Max. 30VDC, Load current : Max. 100mA, Residual voltage : Max. 1V		PNP open collector output Output voltage : (Min. Power supply - 2.5V), Load current : Max. 100mA	
Protection circuit	Reverse polarity protection, Short-circuit protection			
Indication	Emitter: Power indicator (Red LED), Receiver: Operation indicator (Red LED)			
Connection	Outgoing cable			
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 1 minute			
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			
Ambient illumination	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx			
Ambient temperature	-25 to +65 $^{\circ}$ C (non-freezing condition), Storage : -25 to +70 $^{\circ}$ C			
Ambient humidity	35 to 85%RH, Storage : 35 to 90%RH			
Protection	IP67			
Material	Case : PC			
Cable	• Emitter: ϕ 3mm, 2P		• Receiver: ϕ 3mm, 3P length: 2m	
Weight	Approx. 66g			
Approval	CE			

Dimension

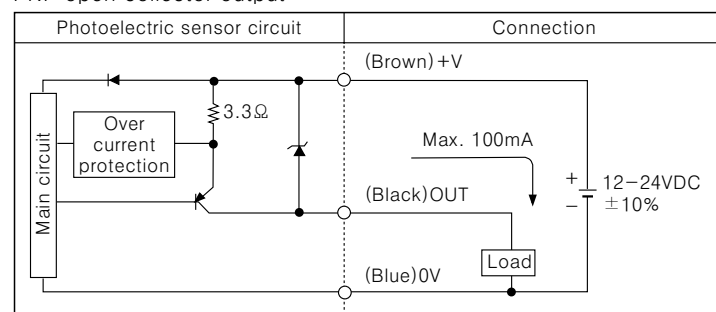


Control output circuit diagram

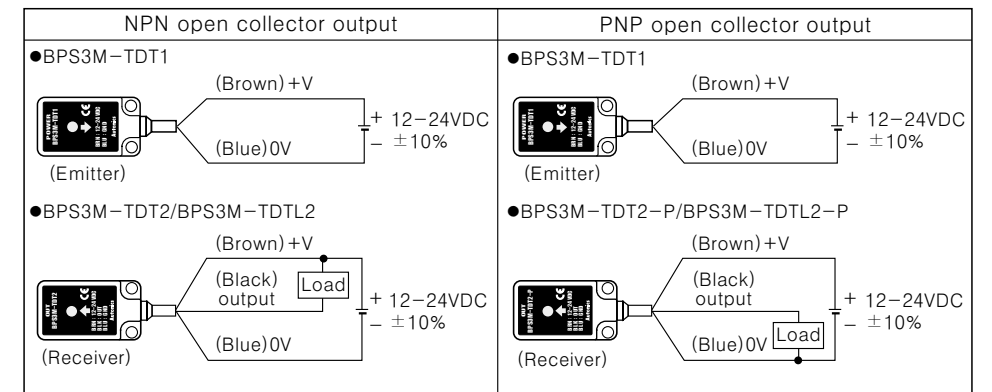
• NPN open collector output



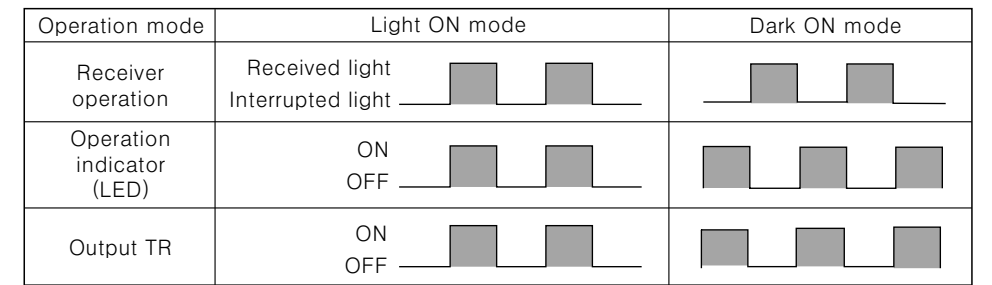
• PNP open collector output



Connection



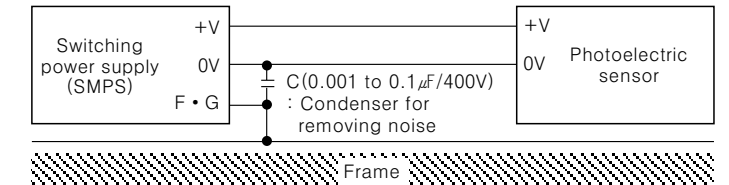
Operation mode



Note) If the control output terminal is short-circuited or flow beyond rating current, the control signal will not be output normally due to protection circuit.

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 don't 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.



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

Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHOMETER
- LINE SPEED METER
- DISPLAY UNIT
- PROXIMITY SWITCH
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER

Autonics Corporation
<http://www.autonics.net>

■ HEAD QUARTER :
41-5, Yongdang-Ri, Ungsang-Up, Yangsan-Shi, Kyung-Nam, Korea 626-847.
■ TRADE DEPARTMENT :
511 Ansong B/D, 410-13, Shindolim-Dong, Kuro-Gu, Seoul, Korea 152-070
TEL: 82-2-679-6585 / FAX: 82-2-679-6556
■ E-mail : sales@autonics.net

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