Autonics

Photoelectric Sensor BY 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

★▲ 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

hazards

1. 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.)

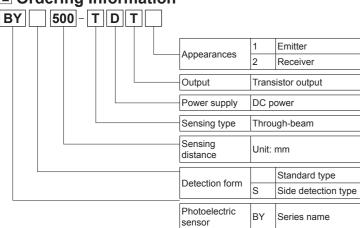
Failure to follow this instruction may result in fire, personal injury, or economic loss.

- 2. Do not disassemble or modify the unit.
- Failure to follow this instruction may result in fire.
- 3. Do not connect, repair, or inspect the unit while connected to a power source. Failure to follow this instruction may result in fire.
- 4. Check 'Connections' before wiring.
- Failure to follow this instruction may result in fire

▲ Caution

- 1. Use the unit within the rated specifications.
- Failure to follow this instruction may result in fire or product damage.
- 2. Use dry cloth to clean the unit, and do not use water or organic solvent. Failure to follow this instruction may result in fire.
- 3. 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



- XThe 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).

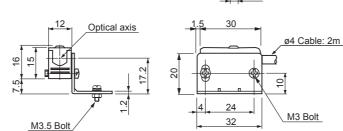
Specification

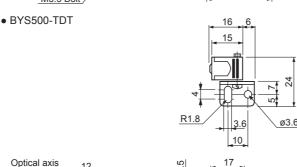
Туре		Through-beam	
Model		Standard type	Side detection type
		BY500-TDT	BYS500-TDT
Sensing distance		500mm	
Sensing target		Opaque materials of min. ø5mm	
Response time		Max. 1ms	
Power supply		12-24VDC== ±10% (ripple P-P: max. 10%)	
Current consumption		Max. 30mA	
Light source		Infrared LED (940nm)	
Operation mode		Dark ON	
Control output		NPN open collector output Load voltage: 30VDC= Load current: max. 100mA Residual voltage: max. 1VDC=	
Protection circuit		Reverse polarity protection circuit, output short overcurrent protection circuit	
Indication		Operation indicator: red LED	
Connection		Outgoing cable	
Insulation resistance		Over 20MΩ (500VDC)	
Noise strength		±240V the square wave noise (pulse width:1µs) by the noise simulat	
Dielectric strength		1000VAC 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/s²(50G) in X, Y, Z directions for 3 times	
Environ ment	Ambient illu.	Sunlight: max. 11,000lx, incandescent lamp: max. 3,000lx	
	Ambient temp.	-10 to 60°C, storage: -25 to 70°C	
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH	
Protection structure		IP50 (IEC standard)	
Material		Case: acrylonitrile butadiene styrene, sensing part: acrylic, bracket: steel plate cold commercial, bolt: Steel chromium molybdenum, nut: steel chromium molybdenum	
Cable		Ø4mm, 4-wire, 2m (emitter of through-beam type: Ø4mm, 3-wire, 2n (AWG22, core diameter: 0.08mm, number of cores: 60, insulator out diameter: Ø1.25mm)	
Accessories		Fixing bracket, M3 bolt: 4, M3 nuts: 4	
Weight		Approx. 150g	

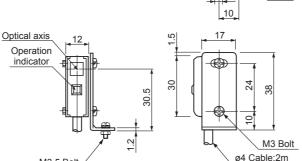
*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment

Dimension

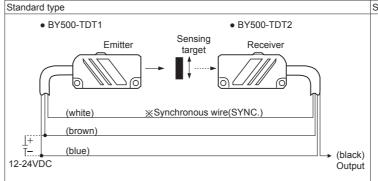
(unit: mm) BY500-TDT Operation indicator F

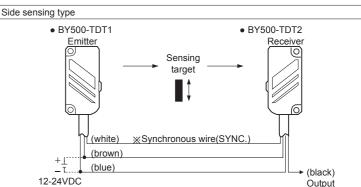






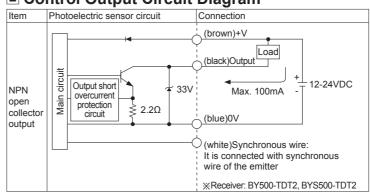
Connection





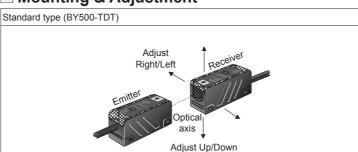
*The power of the emitter and the receiver must be used as same power line. Synchronous wire(White) of the receiver must be connected with that of the emitter XNon-using wires are insulated.

Control Output Circuit Diagram



XIf 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

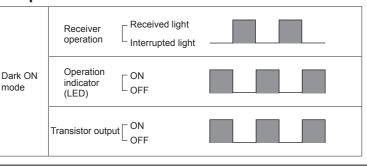
Mounting & Adjustment



Side detection type (BYS500-TDT) Adjust Up/Down

- 1. Supply the power to the sensor, after installing the emitter and the receiver in
- 2. Set the receiver in center of position where indicator turns on, as adjusting the receiver to the right and the left or up and down.
- 3. Fix both units tightly after checking that the units sense the target.
- If the sensing target is translucent body or smaller than ø5mm, it might not detect the target cause light passed.
- *When using photoelectric sensors closely over two units, it may result in malfunction due to mutual interference.
- When installing the product, tighten the screw with a tightening torque of 0.3Nm.

Operation Mode



Cautions during Use

- . Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected
- 2. When connecting a DC relay or other inductive load to the output, remove surge by using diodes or varistors.
- 3. Use the product, 0.5 sec after supplying power. When using separate power supply for the sensor and load, supply power to sensor
- . 12-24VDC power supply should be insulated and limited voltage/current or Class 2,
- SELV power supply device. 5. Wire as short as possible and keep away from high voltage lines or power lines, to
- 6. 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. 8. This unit may be used in the following environments.
- ①Indoors (in the environment condition rated in 'Specifications') ②Altitude max. 2,000m
- ③Pollution 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
- Connector/Sockets
- Temperature controllers
- Temperature/Humidity transducers ■ SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate) meters
- Display units
- Sensor controllers
- Switching mode power supplies
- Control switches/Lamps/Buzzers ■ I/O Terminal Blocks & Cables
- Stepper motors/drivers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, CO₂, Nd:YAG)
- Laser welding/soldering system

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