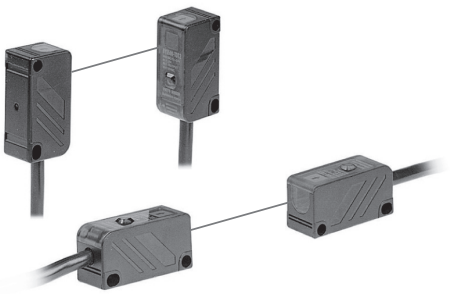
Small Emitter/Receiver Synchronizing Type

▣ Features

- Small size: W12×H30×L16mm
- Minimize malfunction by extraneous light by synchronizing emitter and receiver
- Built-in reverse polarity protection circuit, output short overcurrent protection circuit
- Fast response speed: Max. 1ms

Please read "Safety Considerations" in the instruction manual before using.



▣ Specifications

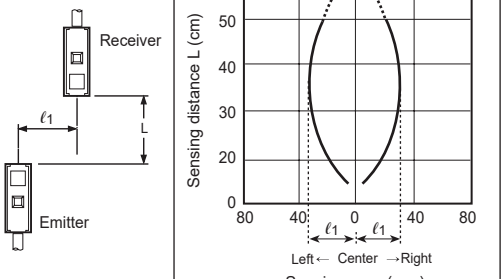
Model		Standard type	Side sensing type
		BY500-TDT	**BYS500-TDT**
Sensing type		Through-beam	
Sensing distance		500mm	
Sensing target		Opaque materials of min. Ø5mm	
Response time		Max. 1ms	
Power supply		12-24VDC⎓ ±10% (ripple P-P: max. 10%)	
Current consumption		Max. 30mA	
Light source		Infrared LED (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	
Indicator		Operation indicator: red LED	
Insulation resistance		Over 20MΩ (at 500VDC megger)	
Noise immunity		±240V the square wave noise (pulse width: 1μs) by the noise simulator	
Dielectric strength		1,000VAC 50/60Hz for 1 minute	
Vibration		1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times	
Environment	Ambient illumination	Sunlight: max. 11,000lx, incandescent lamp: max. 3,000lx (receiving illumination)	
	Ambient temperature	-10 to 60℃, storage: -25 to 70℃	
	Ambient humidity	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, 2m) (AWG22, core diameter: 0.08mm, number of cores: 60, insulator out diameter: Ø1.25mm)	
Accessories		Fixing bracket, M3 bolt: 4, M3 nut: 4	
Unit weight		Approx. 150g	

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

■ Feature Data

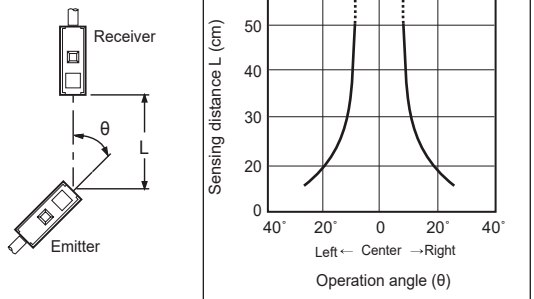
Parallel shifting characteristic

Measuring method	Data



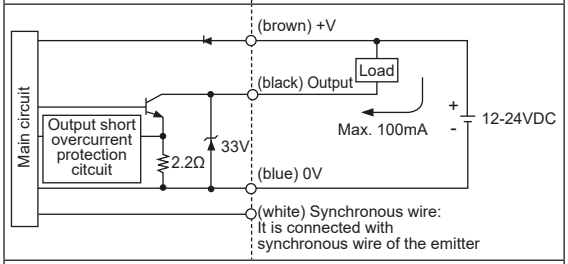
Angle characteristic

Measuring method	Data



■ Control Output Diagram

Photoelectric sensor circuit	Connection



※Applicable models: BY500-TDT2, BYS500-TDT2 (receiver)

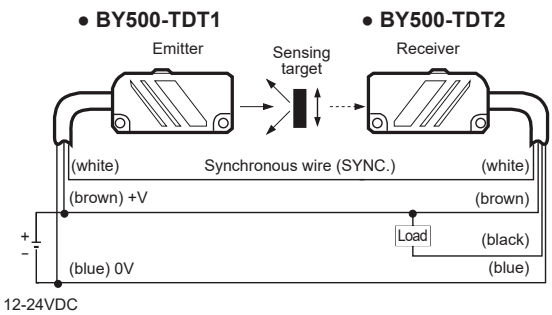
■ Operation Mode

Operation mode	Dark ON
Receiver operation	Received light / Interrupted light
Operation indicator (red LED)	ON / OFF
Transistor output	ON / OFF

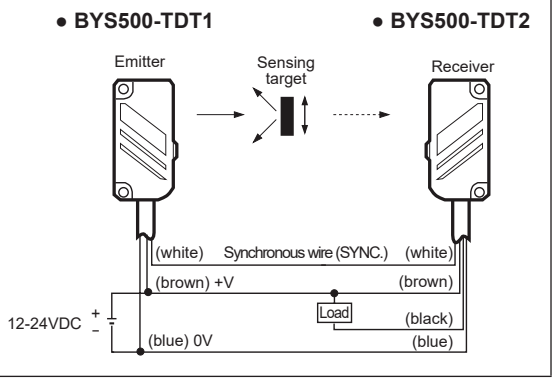
※If short-circuit the control output terminal or supply current over the rated specification, normal control signal is not output due to the output short over current protection circuit.
※Please supply the power to the brown and the blue wires of the emitter and Synchronous wire (white) of the receiver must be connected with that of the emitter.

■ Connections

Standard type (dark on)



Side Sensing type (dark on)

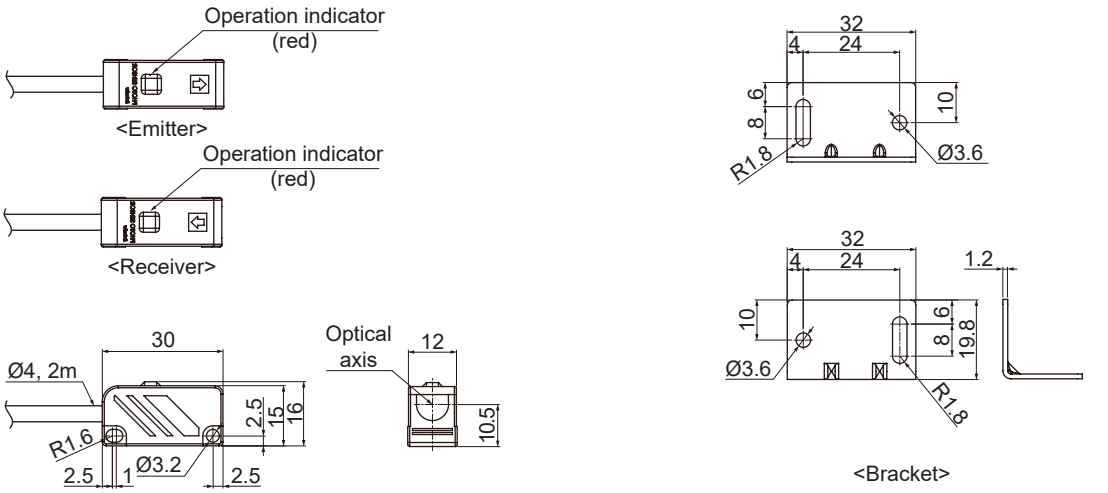


※The power of the emitter and the receiver must be supplied from the same power line.
※Synchronous wire (white) of the receiver must be connected with that of the emitter, or it may cause malfunction.

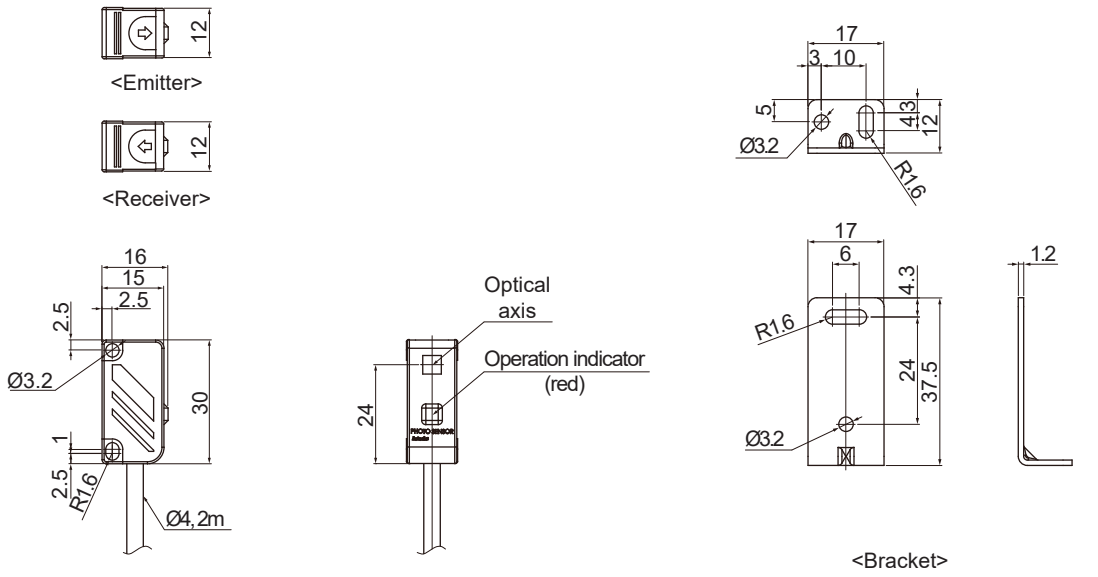
▣ Dimensions

(unit: mm)

● **BY500-TDT**



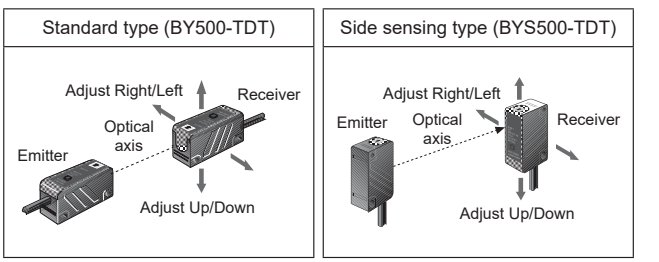
● **BYS500-TDT**



▣ Mounting and Sensitivity Adjustment

1. Supply the power to the sensor, after installing the emitter and the receiver facing each other.
2. Set the receiver in the middle of position where the operation indicator turns ON adjusting the receiver to the right and the left or up and down.
3. Fix both units tightly after checking that the unit detects the target.

※If a sensing target is translucent body or smaller than Ø5mm, it might not be detected because the because light penetrate it.



※ 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 0.3N·m.