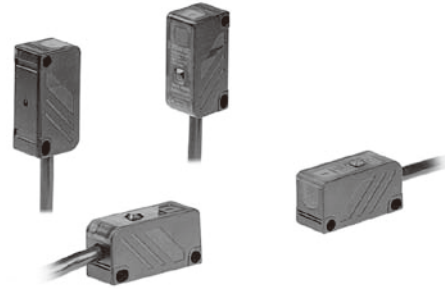


## Small emitter/receiver synchronizing type

### ■ Features

- Small size : W12×H16×D30mm
- Minimizing malfunction by extraneous light by synchronizing emitter and receiver
- Reverse power polarity and overcurrent protection circuit
- Fast response speed : Max. 1ms



**⚠ Please read "Caution for your safety" in operation manual before using.**

### ■ Specifications

| Model                 | Standard type  | Side sensing type  |
|-----------------------|--|--|
|                       | <b>BY500-TDT</b>   | <b>BYS500-TDT</b>  |
| 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<br>● Load voltage : 30VDC ● Load current : Max. 100mA ● Residual voltage : Max. 1V   |  |
| Protection circuit    | Reverse polarity protection, output short-circuit protection   |  |
| Indicator             | Operation indicator : red LED  |  |
| Insulation resistance | Min. 20MΩ(at 500VDC megger)  |  |
| Noise resistance      | ±240V the square wave noise(pulse width : 1μs) by the noise simulator  |  |
| Dielectric strength   | 1,000VAC 50/60Hz for 1minute   |  |
| Vibration             | 1.5mm amplitude or 300m/s <sup>2</sup> at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours  |  |
| Shock                 | 500m/s <sup>2</sup> (approx. 50G) in each of X, Y, Z directions for 3 times  |  |
| Environment           | Ambient illumination   | Sunlight : Max. 11,000lx Incandescent lamp : Max. 3,000 lx(Receiving illumination) |
|                       | Ambient temperature  | -10 to 60°C, storage : -25 to 70°C   |
|                       | Ambient humidity   | 35 to 85%RH, storage : 35 to 85%RH   |
| Protection            | IP50(IEC standard)   |  |
| Material              | Case : ABS, Sensing part : Acrylic   |  |
| Cable                 | ø4, 4-wire, Length : 2m (Emitter of through-beam type: ø4mm, 3-wire, Length: 2m)<br>(AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter: ø1.25) |  |
| Accessory             | Mounting bracket, Bolts/Nuts   |  |
| Unit weight           | Approx. 150g   |  |

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

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/ Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/ Speed/ Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching mode power supply

(Q) Stepper motor& Driver&Controller

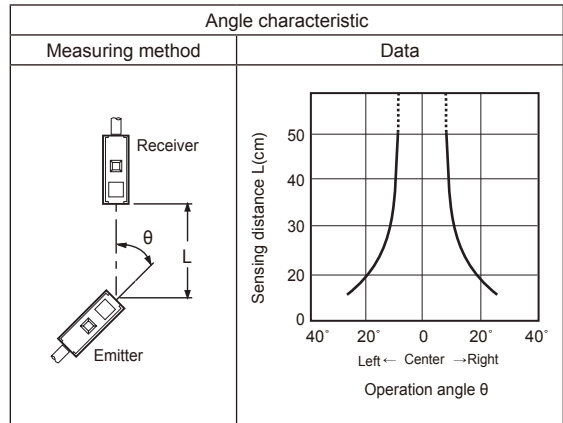
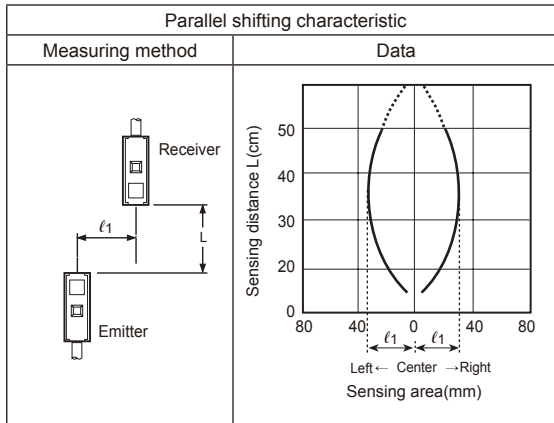
(R) Graphic/ Logic panel

(S) Field network device

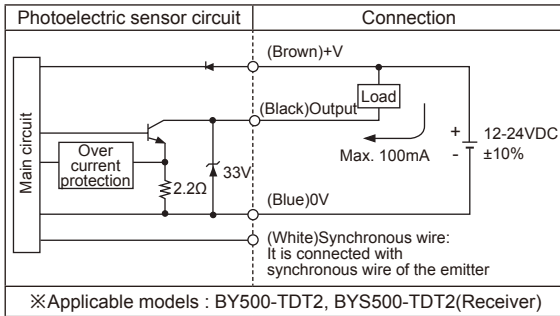
(T) Software

(U) Other

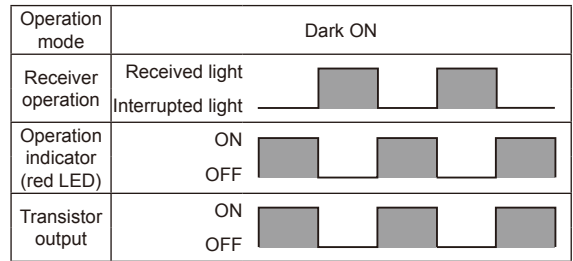
## Feature data



## Control output diagram



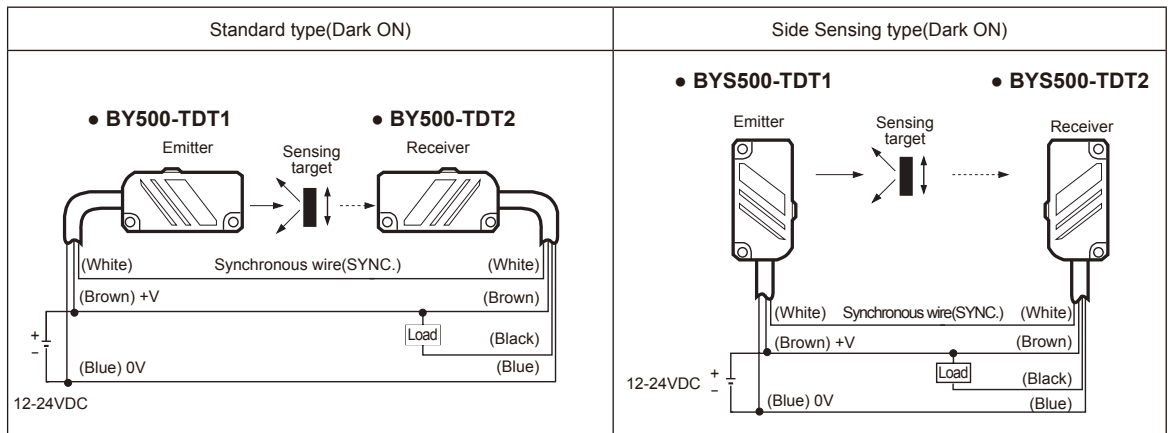
## Operation mode



※If the control output terminal is short-circuited or overcurrent condition exists, the control output turns OFF due to 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



※The power of the emitter and the receiver must be supplied from same power line.

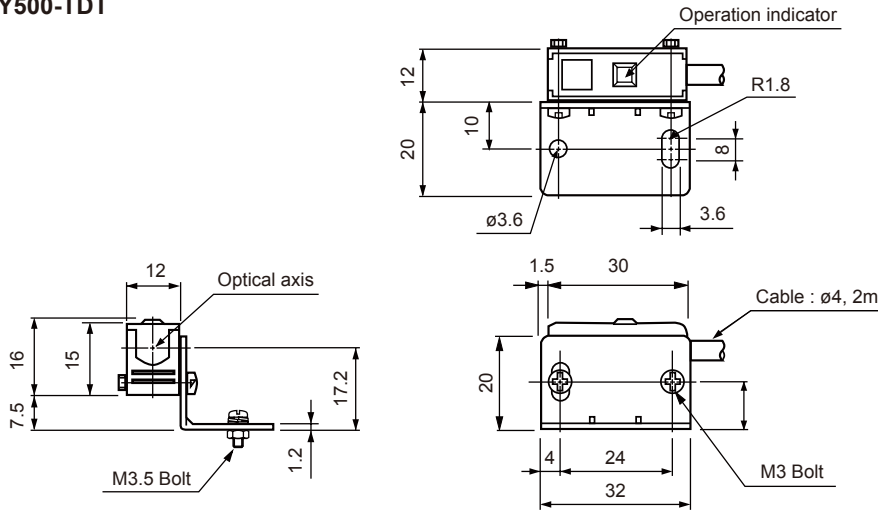
※Synchronous wire(white) of the receiver must be connected with that of the emitter, or it may cause malfunction.

# Small and Amplifier Built-in type

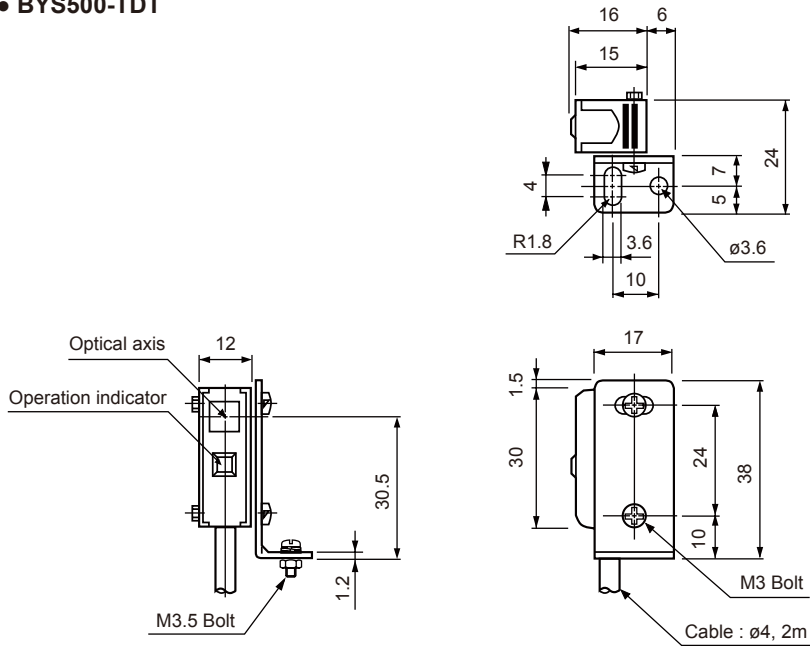
## ■ Dimensions

(unit: mm)

### ● BY500-TDT

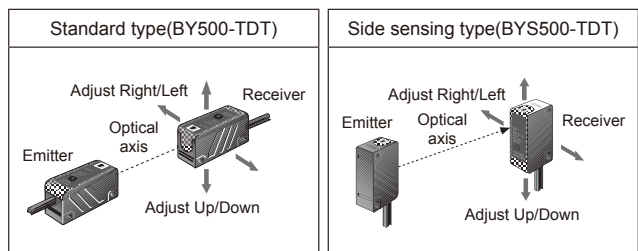


### ● BY500-TDT



## ■ 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  $\phi 5\text{mm}$ , it might not be detected because the target allows too much light to pass.



(A)  
Photo  
electric  
sensor

(B)  
Fiber  
optic  
sensor

(C)  
Door/Area  
sensor

(D)  
Proximity  
sensor

(E)  
Pressure  
sensor

(F)  
Rotary  
encoder

(G)  
Connector/  
Socket

(H)  
Temp.  
controller

(I)  
SSR/  
Power  
controller

(J)  
Counter

(K)  
Timer

(L)  
Panel  
meter

(M)  
Tacho/  
Speed/  
Pulse  
meter

(N)  
Display  
unit

(O)  
Sensor  
controller

(P)  
Switching  
mode power  
supply

(Q)  
Stepper  
motor&  
Driver&Controller

(R)  
Graphic/  
Logic  
panel

(S)  
Field  
network  
device

(T)  
Software

(U)  
Other