

# Photoelectric Sensors with Synchronous Detection



## BY Series CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

### Features

- Small size: W 12 × H 30 × L 16 mm
- Minimize malfunction by extraneous light by synchronizing emitter and receiver
- Reverse power protection circuit, output short overcurrent protection circuit
- Fast response speed: Max.1 ms

### Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

BY ① 500 - T D T

#### ① Detecting direction

No mark: Front

S: Side

### Product Components

- Emitter × 1, Receiver × 1
- Bracket × 2
- Instruction manual
- M3 bolt × 4, M3 nut × 4

### Specifications

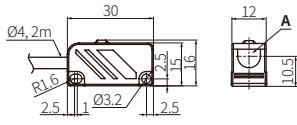
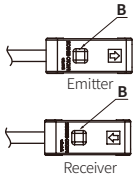
|                                       |   |
|---------------------------------------|---|
| <b>Model</b>                          | BY□500-TDT  |
| <b>Sensing type</b>                   | Through-beam  |
| <b>Sensing distance</b>               | 500 mm  |
| <b>Sensing target</b>                 | Opaque materials  |
| <b>Min. sensing target</b>            | ≥ Ø 5 mm  |
| <b>Response time</b>                  | ≤ 1 ms  |
| <b>Light source</b>                   | Infrared  |
| <b>Peak emission wavelength</b>       | 940 nm  |
| <b>Operation mode</b>                 | Dark ON mode  |
| <b>Indicator</b>                      | Operation indicator (red)   |
| <b>Approval</b>                       | CE EAC  |
| <b>Unit weight</b>                    | ≈ 150 g   |
| <b>Power supply</b>                   | 12-24 VDC± ±10% (ripple P-P: ≤ 10%)   |
| <b>Current consumption</b>            | Emitter: ≤ 30 mA, receiver: ≤ 30 mA   |
| <b>Control output</b>                 | NPN open collector output   |
| <b>Load voltage</b>                   | ≤ 30 VDC±   |
| <b>Load current</b>                   | ≤ 100 mA  |
| <b>Residual voltage</b>               | ≤ 1 VDC±  |
| <b>Protection circuit</b>             | Reverse power protection circuit, output short overcurrent protection circuit                         |
| <b>Insulation resistance</b>          | ≥ 20 MΩ (500 VDC± megger)   |
| <b>Noise immunity</b>                 | ±240 VDC± the square wave noise (pulse width: 1 μs) by the noise simulator                            |
| <b>Dielectric strength</b>            | 1,000 VAC~ 50/60 Hz for 1 min   |
| <b>Vibration</b>                      | 1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours |
| <b>Shock</b>                          | 500 m/s <sup>2</sup> (≈ 50 G) in each X, Y, Z direction for 3 times                                   |
| <b>Ambient illuminance (receiver)</b> | Sunlight: ≤ 11,000 lx, incandescent lamp: ≤ 3,000 lx  |
| <b>Ambient temperature</b>            | -10 to 60 °C, storage: -25 to 70 °C (no freezing or condensation)                                     |
| <b>Ambient humidity</b>               | 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)                                     |
| <b>Protection rating</b>              | IP50 (IEC standard)   |
| <b>Connection</b>                     | Cable type  |
| <b>Cable spec.</b>                    | Ø 4 mm, 4-wire (Emitter: 3-wire), 2 m   |
| <b>Wire spec.</b>                     | AWG22 (0.08 mm, 60-core), insulator outer diameter: Ø 1.25 mm   |
| <b>Material</b>                       | Case: ABS, sensing part: Acrylic, bracket: SPCC, bolt: SCM, nut: SCM                                  |

## Dimensions

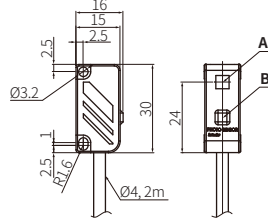
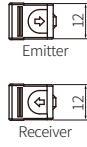
• Unit: mm, For the detailed drawings, follow the Autonics website.

|          |                           |
|----------|---------------------------|
| <b>A</b> | Optical axis              |
| <b>B</b> | Operation indicator (red) |

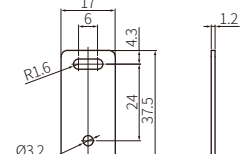
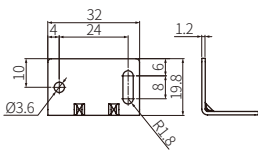
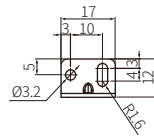
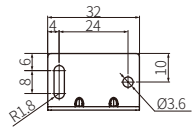
### ■ Front detection type



### ■ Side detection type



### ■ Bracket



Front detection type

Side detection type