

L 3.7 mm Flat Photoelectric Sensors



BTF 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

- Ultra-thin size of only 3.7mm
 - W 13 × H 19 × L 3.7 mm (Through-beam type)
 - W 13 × H 24 × L 3.7 mm (Diffuse reflective type, BGS reflective type)
- Detection methods and minimum target size
 - Through-beam type (BTF1M): Ø 2 mm
 - Diffuse reflective type (BTF30): Ø 0.2 mm (sensing distance: 10 mm)
 - BGS reflective type (BTF15): Ø 0.2 mm (sensing distance: 10 mm)
- BGS (background suppression) minimizes detection errors from background objects and the color or material of target objects.
- Maximum sensing distance: 1 m (Through-beam type)
- Operation indicator (red) and stability indicator (green) show operation status
- Stainless steel (SUS304) mounting brackets
- IP67 protection rating (IEC standard)

Ordering Information

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

BTF ① - ② **D T** ③ - ④

① Sensing distance

Number: Sensing distance (unit: mm)
Number+M: Sensing distance (unit: m)

③ Operation mode

L: Light ON
D: Dark ON

② Sensing type

T: Through-beam
D: Diffuse reflective
B: BGS reflective

④ Control output

No mark: NPN open collector output
P: PNP open collector output

Product Components

Sensing type	Through-beam	Diffuse reflective	BGS reflective
Product components	Product, instruction manual		
Bracket	× 2	× 1	× 1
M2 bolt	× 4	× 2	× 2

Specifications

Model	BTF1M-TDT□-□	BTF30-DDT□-□	BTF15-BDT□-□
Sensing type	Through-beam	Diffuse reflective	BGS reflective
Sensing distance	1 m	5 to 30 mm ⁰¹⁾	1 to 15 mm ⁰¹⁾
Sensing target	Opaque materials	Opaque materials, translucent materials	Opaque materials, translucent materials
Min. sensing target	≥ Ø 2 mm	≥ Ø 0.2 mm ⁰²⁾	≥ Ø 0.2 mm non-illuminated objects ⁰²⁾
Hysteresis	-	≤ 20% of sensing distance	≤ 5% of sensing distance
Black/white difference	-	-	≤ 15% of sensing distance
Response time	≤ 1 ms		
Light source	Red		
Peak emission wavelength	650 nm		
Operation mode	Light ON mode / Dark ON mode model		
Indicator	Operation indicator (red), stability indicator (green)		
Approval	CE ENEC	CE ENEC	CE ENEC
Unit weight (packaged)	≈ 40 g (≈ 70 g)	≈ 25 g (≈ 40 g)	≈ 25 g (≈ 40 g)

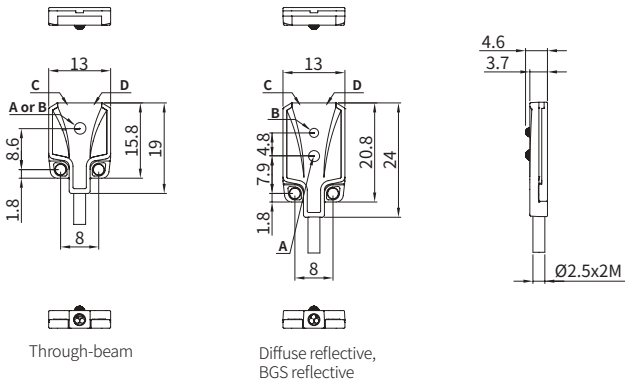
01) Non-glossy white paper 50 × 50 mm

02) Sensing distance 10 mm

Power supply	12-24 VDC± ± 10 % (ripple P-P: ≤ 10%)
Current consumption	It depends on the sensing type
Through-beam	Emitter: ≤ 20 mA, receiver: ≤ 20 mA
Reflective	≤ 20 mA
Control output	NPN open collector output / PNP open collector output model
Load voltage	≤ 26.4 VDC±
Load current	≤ 50 mA
Residual voltage	NPN: ≤ 1 VDC±, PNP: ≤ 2 VDC±
Protection circuit	Reverse power protection circuit, output short overcurrent protection circuit
Insulation resistance	≥ 20 MΩ (500 VDC± megger)
Noise immunity	±240 VDC± the square wave noise (pulse width: 1 μs) by the noise simulator
Dielectric strength	1,000 VAC ~ 50/60 Hz for 1 min
Vibration	1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock	500 m/s ² (≈ 50 G) in each X, Y, Z direction for 3 times
Ambient illuminance (receiver)	Sunlight: ≤ 10,000 lx, incandescent lamp: ≤ 3,000 lx
Ambient temperature	-25 to 55 °C, storage: -40 to 70 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)
Protection rating	IP67 (IEC standard)
Connection	Cable type
Cable spec.	Ø 2.5 mm, 3-wire (emitter: 2-wire), 2 m
Wire spec.	AWG 28 (0.08 mm, 19-core), insulator outer diameter: Ø 0.9 mm
Material	Case: PBT, sensing part: PMMA, bracket: SUS304, bolt: carbon steel, sleeve: SUS304

Dimensions

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



A	Optical axis of emitter	C	Operation indicator (red)
B	Optical axis of receiver	D	Stability indicator (green)

Bracket

