

# Universal AC/DC Photoelectric Sensors



## BEN 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 and power supply built-in type
- Easy installation with indicators on product
- Light ON/Dark ON mode selectable by switch
- Status and output indication
- Built-in IC photo diode for disturbing light and electrical noise

### Ordering Information

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

**BEN** ① - ② ③

#### ① Sensing distance

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

#### ③ Output method

FR: AC/DC power, relay contact output  
DT: DC power, solid state (transistor) output

#### ② Sensing type

T: Through-beam  
M: Retroreflective  
P: Polarized retroreflective  
D: Diffuse reflective

### Product Components

Sensing type	Through-beam	Retroreflective	Polarized retroreflective	Diffuse reflective
<b>Product components</b>	Product, instruction manual			
Reflector	-	MS-2	MS-2	-
Adjustment screwdriver	× 1	× 1	× 1	× 1
Bracket	× 2	× 1	× 1	× 1
M4 bolt / nut	× 4	× 2	× 2	× 2

## Specifications

Model	BEN10M-T	BEN5M-M	BEN3M-P	BEN300-D
Sensing type	Through-beam	Retroreflective	Polarized retroreflective	Diffuse reflective
Sensing distance	10 m	0.1 to 5 m <sup>(01)</sup>	0.1 to 3 m <sup>(01)</sup>	300 mm <sup>(02)</sup>
Sensing target	Opaque materials	Opaque materials	Opaque materials	Opaque, translucent materials
Min. sensing target	≥ Ø 16 mm	≥ Ø 60 mm	≥ Ø 60 mm	-
Hysteresis	-	-	-	≤ 20% of sensing distance
Response time	AC/DC power, relay contact output model: ≤ 20 ms DC power, solid state (transistor) output model: ≤ 1 ms			
Light source	Infrared	Infrared	Red	Infrared
Peak emission wavelength	850 nm	940 nm	660 nm	940 nm
Sensitivity adjustment	-	YES (Adjuster)	YES (Adjuster)	YES (Adjuster)
Operation mode	Light ON mode - Dark ON mode selectable (Adjuster)			
Indicator	Operation indicator (red), stability indicator (green), power indicator (red) <sup>(03)</sup>			
Approval	CE ENEC			
Unit weight (AC/DC power)	≈ 354 g	≈ 208 g	≈ 208 g	≈ 195 g
Unit weight (DC power)	≈ 342 g	≈ 200 g	≈ 200 g	≈ 187 g

01) Reflector (MS-2)

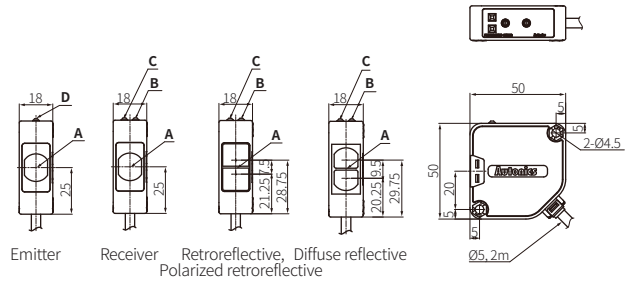
02) Non-glossy white paper 100 × 100 mm

03) Only for the emitter

Output method	AC/DC power, relay contact output	DC power, solid state (transistor) output
Power supply	24-240 VAC ~ ± 10% 50/60 Hz 24-240 VDC ~ ± 10% (ripple P-P: ≤ 10%)	12-24 VDC ~ ± 10% (ripple P-P: ≤ 10%)
Power / current consumption	≤ 4 VA	It depends on the sensing type
Through-beam	-	Emitter: ≤ 50 mA, receiver: ≤ 50 mA
Reflective	-	≤ 50 mA
Control output	Relay contact output	NPN open collector - PNP open collector simultaneous output
Contact capacity	250 VAC ~ 3 A of resistance load, 30 VDC ~ 3 A of resistance load	-
Contact composition	1c	-
Relay life cycle	Mechanical: ≥ 50,000,000 Electrical: ≥ 100,000	-
Load voltage	-	≤ 30 VDC ~
Load current	-	≤ 200 mA
Residual voltage	-	NPN: ≤ 1 VDC ~, PNP: ≤ 2.5 VDC ~
Protection circuit	-	Reverse power protection circuit, output short overcurrent protection circuit
Insulation resistance	≥ 20 MΩ (500 VDC ~ megger)	
Insulation type	Double or strong insulation (dielectric voltage between the measured input and the power: 1 kV)	-
Noise immunity	± 1,000 VDC ~ the square wave noise (pulse width: 1 μs) by the noise simulator	± 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	
Vibration (malfunction)	1.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 min	-
Shock	500 m/s <sup>2</sup> (≈ 50 G) in each X, Y, Z direction for 3 times	
Shock (malfunction)	100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times	-
Ambient illuminance (receiver)	Sunlight: ≤ 11,000 lx, incandescent lamp: ≤ 3,000 lx	
Ambient temperature	-20 to 65 °C, storage: -20 to 70 °C (no freezing or condensation)	
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)	
Protection rating	IP50 (IEC standard)	
Connection	Cable type	
Cable spec.	Ø 5 mm, Emitter: 2-wire, AC/DC power: 5-wire, DC power: 4-wire, 2 m	
Wire spec.	AWG22 (0.08 mm, 60-core), insulator outer diameter: Ø 1.25 mm	
Material	Case and case cover: heat resistant ABS, sensing part: PC (polarized retroreflective: PMMA)	

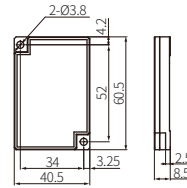
## Dimensions

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

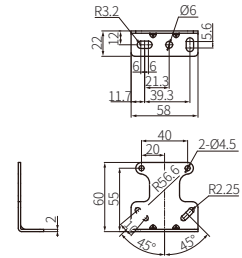


A	Optical axis	C	Stability indicator (green)
B	Operation indicator (red)	D	Power indicator (red)

### ■ Reflector (MS-2)



### ■ Bracket



## Sold Separately

• Reflector: MS Series

• Retroreflective tape: MST Series