

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
Product components	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 ⁽⁰¹⁾	0.1 to 3 m ⁽⁰¹⁾	300 mm ⁽⁰²⁾
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) ⁽⁰³⁾			
Approval	CE			
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)

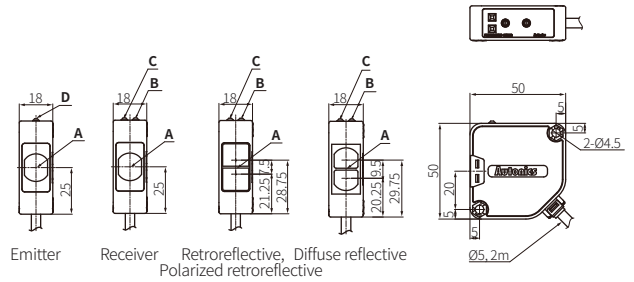
02) Non-glossy white paper 100 × 100 mm

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 ² (≈ 50 G) in each X, Y, Z direction for 3 times	
Shock (malfunction)	100 m/s ² (≈ 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)	

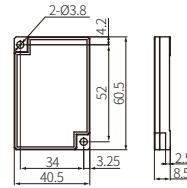
Dimensions

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

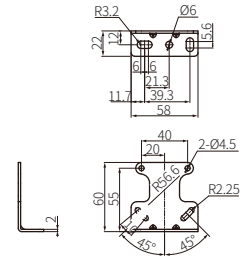


A	Optical axis	C	Stability indicator (green)
B	Operation indicator (red)	D	Power indicator (red)

■ Reflector (MS-2)



■ Bracket



Sold Separately

• Reflector: MS Series

• Retroreflective tape: MST Series