Universal AC / DC
Photoelectric Sensors

BEN Series

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

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 EAC			
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	±240 VDC⎓ the square wave noise

View product detail

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/s² (≈ 50 G) in each X, Y, Z direction for 3 times	
Shock (malfunction)	100 m/s² (≈ 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)	