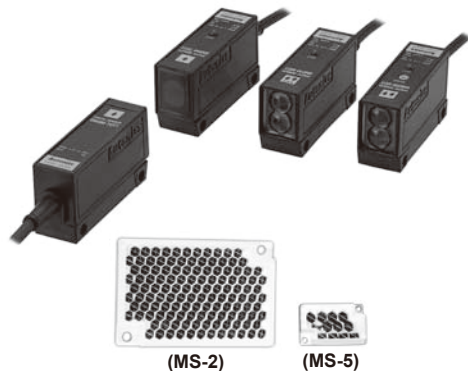


BM Series

Small and light, common type

■ Features

- Easy to mount at a narrow space with small size and light weight.
- Convenient to adjust the sensitivity by external sensitivity adjustment control.(Diffuse reflective type only)
- Easy to mount by screw type in mounting hole.
- Reverse power polarity protection circuit.



⚠ Please read "Caution for your safety" in operation manual before using.



(MS-2)

(MS-5)

※MS-5 is sold separately.

■ Specifications

Model	BM3M-TDT	BM1M-MDT	BM200-DDT
Sensing type	Through-beam	Retroreflective	Diffuse reflective
Sensing distance	3m	0.1 to 1m※ ¹	200mm※ ²
Sensing target	Opaque materials of Min. ø8mm	Opaque materials of Min. ø60mm	Translucent, Opaque materials
Hysteresis	—		Max. 10% at rated settingdistance
Response time	Max. 3ms		
Power supply	12-24VDC ±10%(Ripple P-P : Max. 10%)		
Current consumption	Max. 45mA	Max. 40mA	
Light source	Infrared LED(940nm)		
Sensitivity adjustment	Fixed		Adjustable VR
Operation mode	Dark ON		Light ON(Dark ON: Option)
Control output	NPN open collector output ●Load voltage : Max. 30VDC ●Load current : Max. 100mA ●Residual voltage : Max. 1V		
Protection circuit	Reverse polarity protection		
Indication	Operation indicator : red LED		
Insulation resistance	Min. 20MΩ(at 500VDC megger)		
Noise resistance	±240V the square wave noise(pulse width : 1μs) by the noise simulator		
Dielectric strength	1,000VAC 50/60Hz for 1minute		
Vibration	1.5mm amplitude or 300m/s ² at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours		
Shock	500m/s ² (approx. 50G) in each of X, Y, Z directions for 3 times		
Environment	Ambient illumination	Sunlight : Max. 11,000lx Incandescent lamp : Max. 3,000lx (Receiver illumination)	
	Ambient temperature	-10 to 60°C, storage : -25 to 70°C	
	Ambient humidity	35 to 85%RH, storage : 35 to 85%RH	
Material	Case : ABS, Sensing part : PC	Case : ABS, Sensing part : Acrylic(Retroreflective: PC)	
Cable	ø4, 3-wire, Length : 2m(Emitter of through-beam type: ø4, 2-wire, Length : 2m) (AWG22, Core diameter : 0.08mm, Numner of cores : 60, Insulator out diameter : ø1.25)		
Accessories	Individual	—	Reflector(MS-2) VR adjustment driver
	Common	Mounting bracket, Bolts/nuts	
Approval	CE		
Unit weight	Approx. 170g	Approx. 105g	Approx. 88g

※1: It is mounting distance between sensor and reflector MS-2 and it is same when MS-5 is used. It is detectable under 0.1m.

※2: It is for Non-glossy white paper(200×200mm)

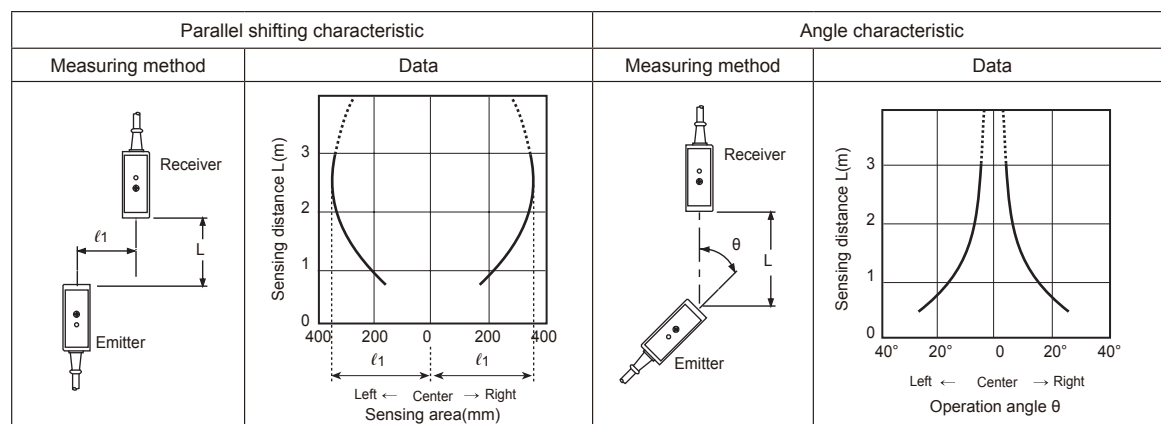
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Amplifier Built-in type for General Purpose

■ Feature data

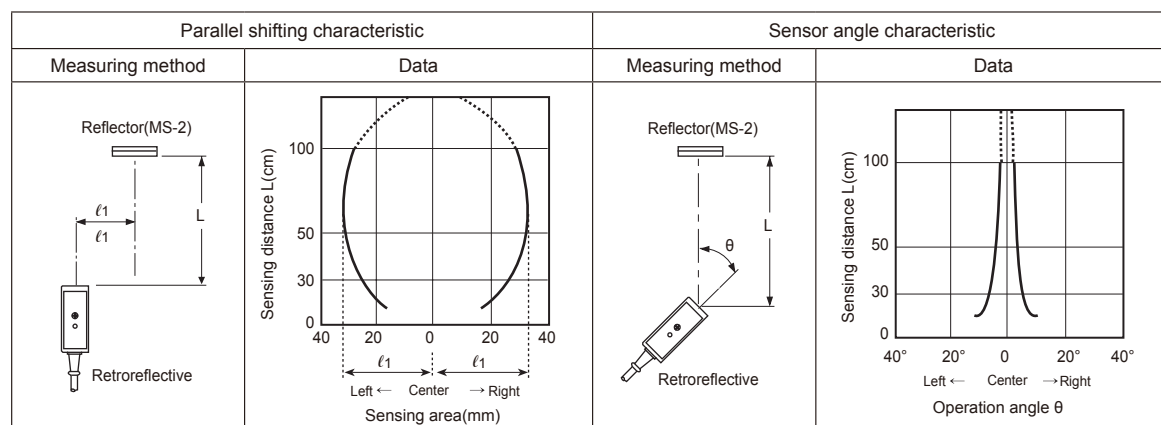
◎ Through-beam type

● BM3M-TDT



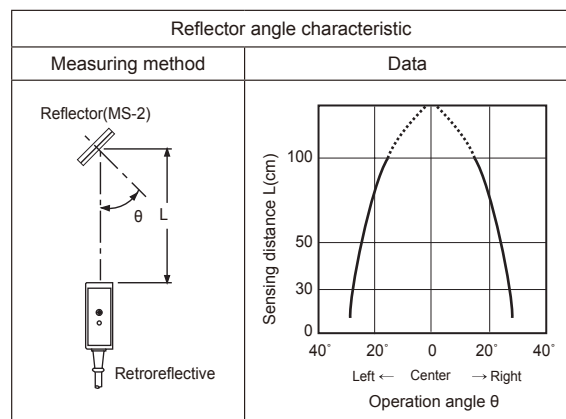
◎ Retroreflective type

● BM1M-MDT



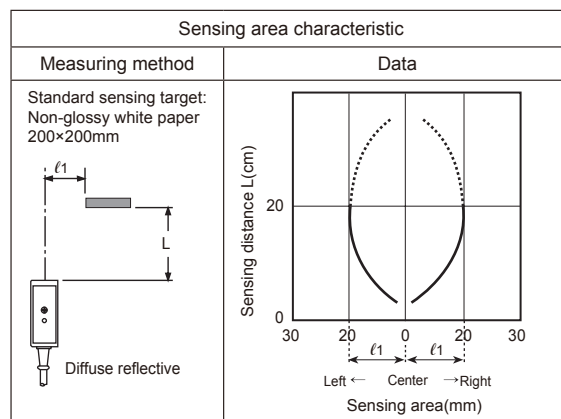
◎ Retroreflective type

● BM1M-MDT



◎ Diffuse reflective type

● BM200-DDT



(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/Speed/Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/Logic panel

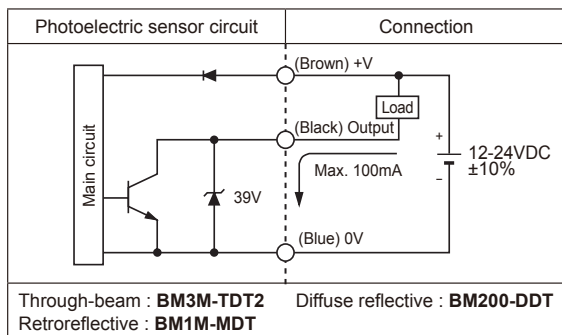
(S) Field network device

(T) Software

(U) Other

BM Series

Control output diagram

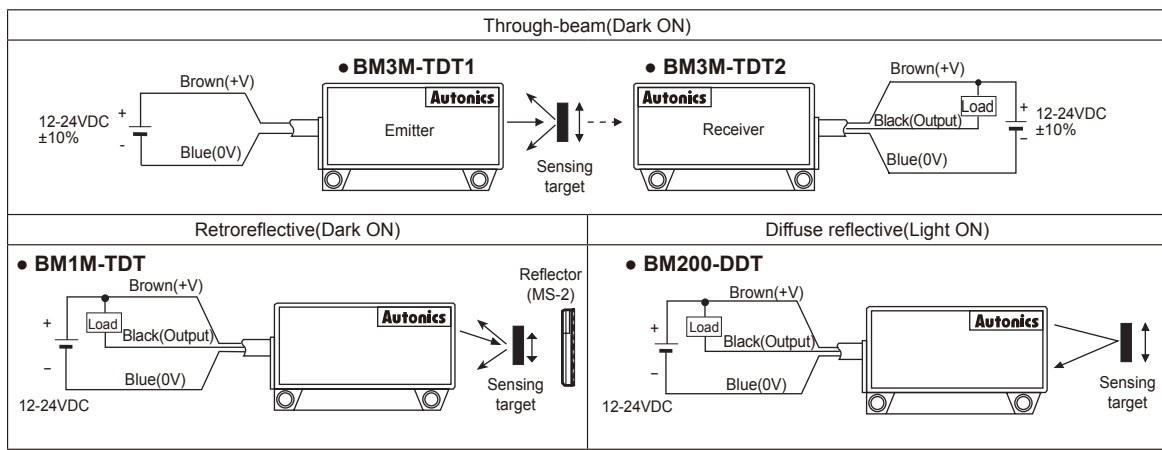


Operation mode

Operation mode		Light ON
Receiver operation	Received light Interrupted light	
Operation indicator (red LED)	ON OFF	
Transistor output	ON OFF	

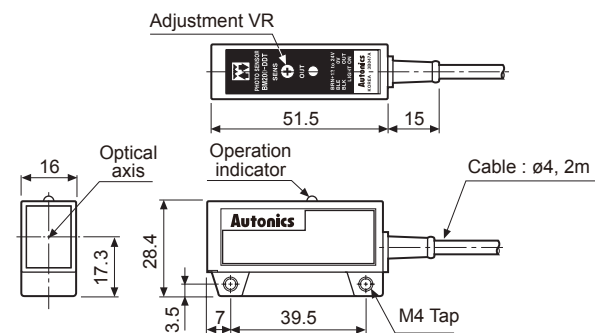
Operation mode		Dark ON
Receiver operation	Received light Interrupted light	
Operation indicator (red LED)	ON OFF	
Transistor output	ON OFF	

Connections

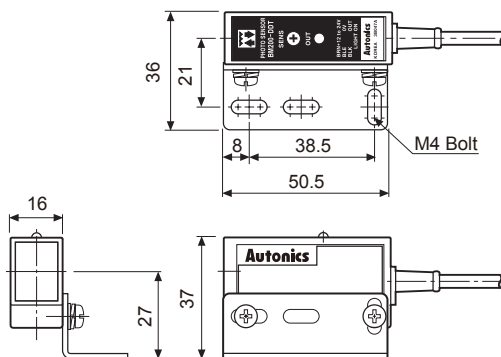


Dimensions

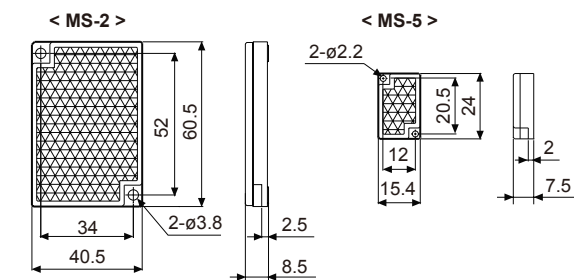
(unit: mm)



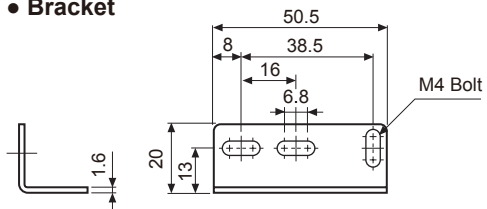
Connect the bracket



Reflector



Bracket

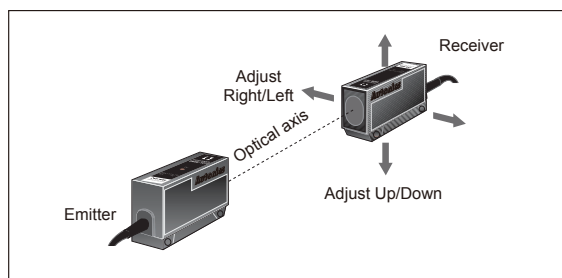


Amplifier Built-in type for General Purpose

■ Mounting and sensitivity adjustment

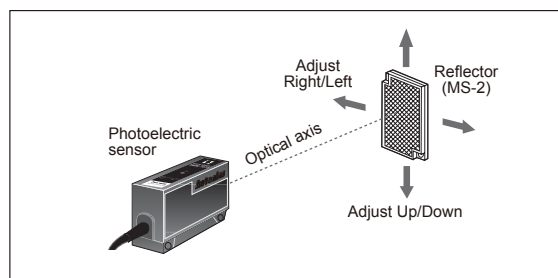
◎ Through-beam type

1. Supply the power to the photoelectric sensor, after setting the emitter and the receiver facing each other.
 2. Set the receiver in center of position in the middle of the operation range of indicator adjusting the receiver or the emitter right and left, up and down.
 3. After adjustment, check the stability of operation putting the object at the optical axis.
- ※If the sensing target is translucent body or smaller than $\varnothing 8\text{mm}$, it can be missed by sensor cause light penetrate it.



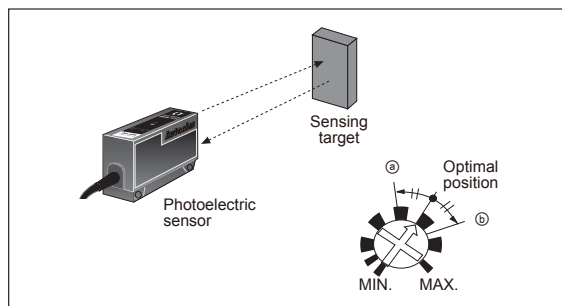
◎ Retroreflective type

1. Supply the power to the photoelectric sensor, after setting the photoelectric sensor and the reflector (MS-2) in face to face.
 2. Set the photoelectric sensor in the position which indicator turns on, as adjusting the reflector or the sensor right and left, up and down.
 3. Fix both units tightly after checking that the unit detects the target.
- ※If using more than 2 photoelectric sensors in parallel, the space between them should be more than 30cm.

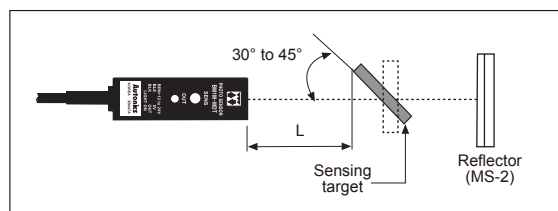


◎ Diffuse reflective type

1. The sensitivity should be adjusted depending on a sensing target or mounting place.
2. Set the target at a position to be detected by the beam, then turn the adjustment VR until position ㉓ where the operation indicator turns ON from min. position of the adjustment VR.
3. Take the target out of the sensing area, then turn the adjustment VR until position ㉔ where the operation indicator turns ON. If the indicator dose not turn ON, max. position is ㉔.
4. Set the adjustment VR at the center of two switching position ㉓, ㉔.



※If reflectance of target is higher than non-glossy white paper, it might cause malfunction by reflection from the target when the target is near to photoelectric sensor. Therefore put enough space between the target and the photoelectric sensor or the surface of the target should be installed at angle of 30° to 45° against optical axis.



※If the mounting place is too narrow, please use MS-5 instead of MS-2.



※The sensing distance indicated on specification chart is for 200×200mm of non-glossy white paper. Be sure that it can be different by size, surface and gloss of target.

(A) Photo electric sensor

(B) Fiber optic sensor

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