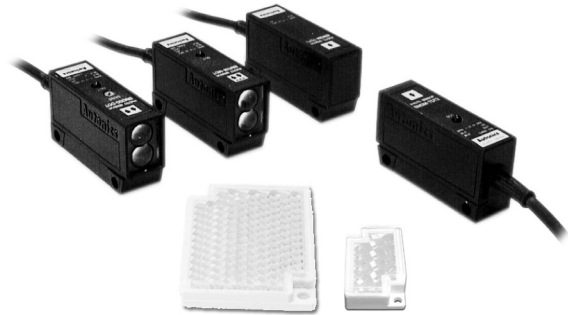


BM Series

Compact size fast response type

■ Features

- Able to install in narrow place because of compact size.
- Convenient to adjust the sensitivity by external sensitivity adjustment control.
(Applied Diffuse reflective type only)
- Easy to mount by screw type in mounting hole.
- Reverse power polarity protection built in.



(MS-2) (MS-5)

※ MS-5 is Optional

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



■ Specifications

Model	BM3M-TDT	BM1M-MDT	BM200-DDT
Type	Through-beam	Retroreflective	Diffuse reflective
Detecting distance	3m	(*1) 0.1 ~ 1m	(*2) 200mm
Detecting target	Opaque materials of min. ϕ 8mm	Opaque materials of min. ϕ 60mm	Transparent, Translucent, Opaque materials
Hysteresis	—————		Max. 10% at detecting distance
Response time	Max. 3ms		
Power supply	12-24VDC \pm 10% (Ripple P-P : Max. 10%)		
Current consumption	Max. 45mA	Max. 40mA	
Light source	Infrared LED(modulated)		
Sensitivity adjustment	Fixed		Adjustable VR
Operation mode	Dark ON		Light ON
Control output	NPN open collector output \Rightarrow Load voltage : Max. 30VDC, Load current : Max. 100mA, Residual voltage : Max. 1V		
Protection circuit	Reverse polarity protection		
Indication	Operation indicator : Red LED		
Connection	Outgoing cable		
Insulation resistance	Min. 20M Ω (at 500VDC)		
Noise strength	\pm 240V the square wave noise (pulse width:1 μ s) by the noise simulator		
Dielectric strength	1,000VAC 50/60Hz for 1minute		
Vibration	1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours		
Shock	500m/s ² (50G) in X, Y, Z directions for 3 times		
Ambient illumination	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx		
Ambient temperature	-10 ~ +60 $^{\circ}$ C (at non-freezing status), Storage : -25 ~ +70 $^{\circ}$ C		
Ambient humidity	35 ~ 85%RH, Storage : 35 ~ 85%RH		
Material	Case : ABS, Lens : PMMA		
Cable	3P, ϕ 4mm, Length : 2m		
Accessories	Individual	—————	Mirror (MS-2)
	Common	Mounting bracket, Bolts/nuts	
Approval	CE		
Weight	Approx. 170g	Approx. 105g	Approx. 88g

※ (*1) Detecting distance between sensor and MS-2, It is the same when using MS-5 it is detectable under 0.1m

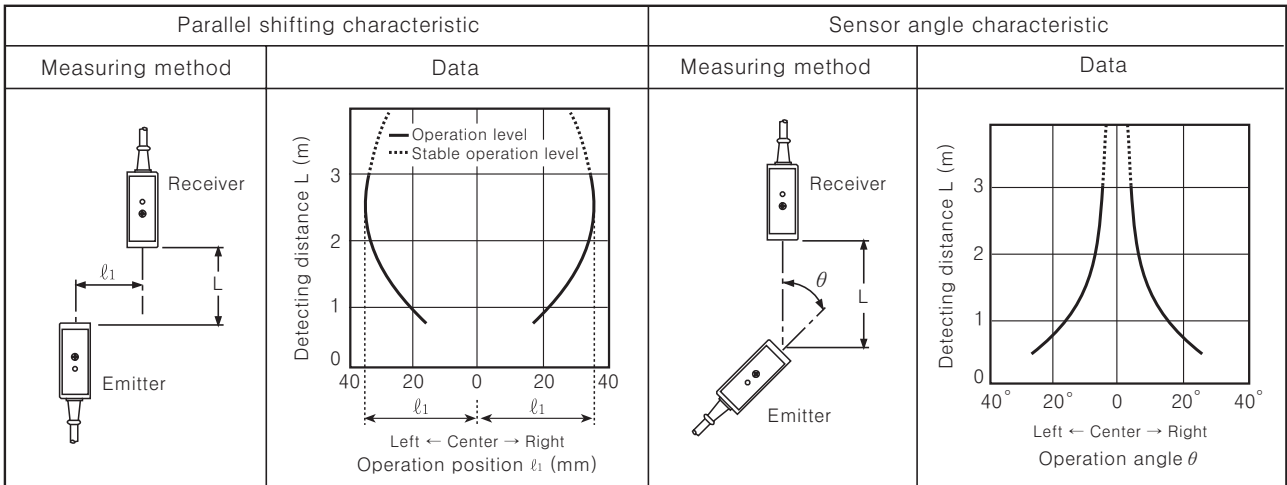
※ (*2) It is for Non-grossy white paper (100 \times 100mm)

DC Small size, Horizontal Mounting Type

Characteristic

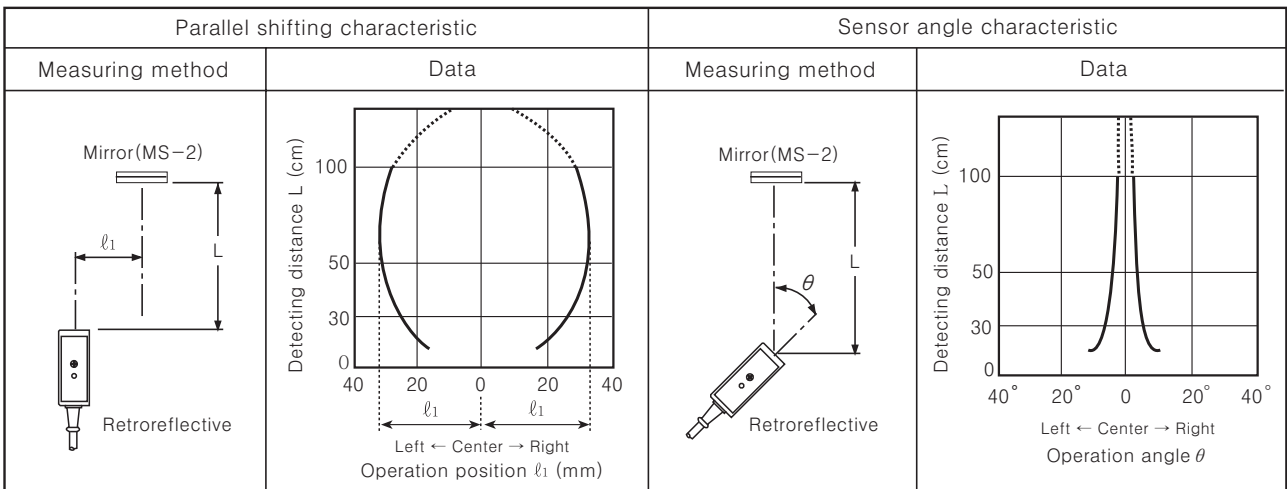
○Through-beam

●BM3M-TDT



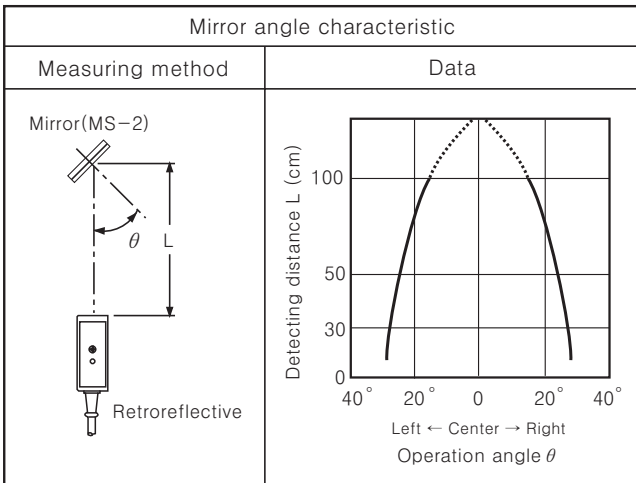
○Retroreflective

●BM1M-MDT



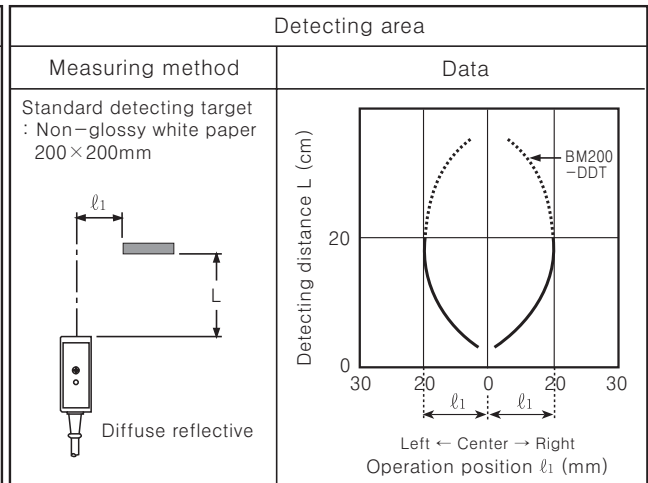
○Retroreflective

●BM1M-MDT



○Diffuse reflective

●BM200-DDT



(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Proximity sensor

(J) Photo electric sensor

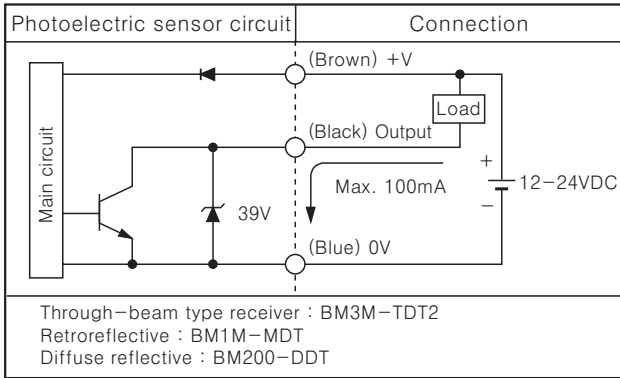
(K) Pressure sensor

(L) Rotary encoder

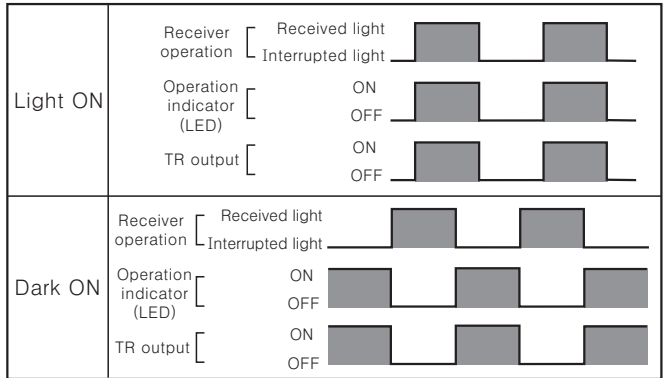
(M) 5-Phase stepping motor & Driver & Controller

BM Series

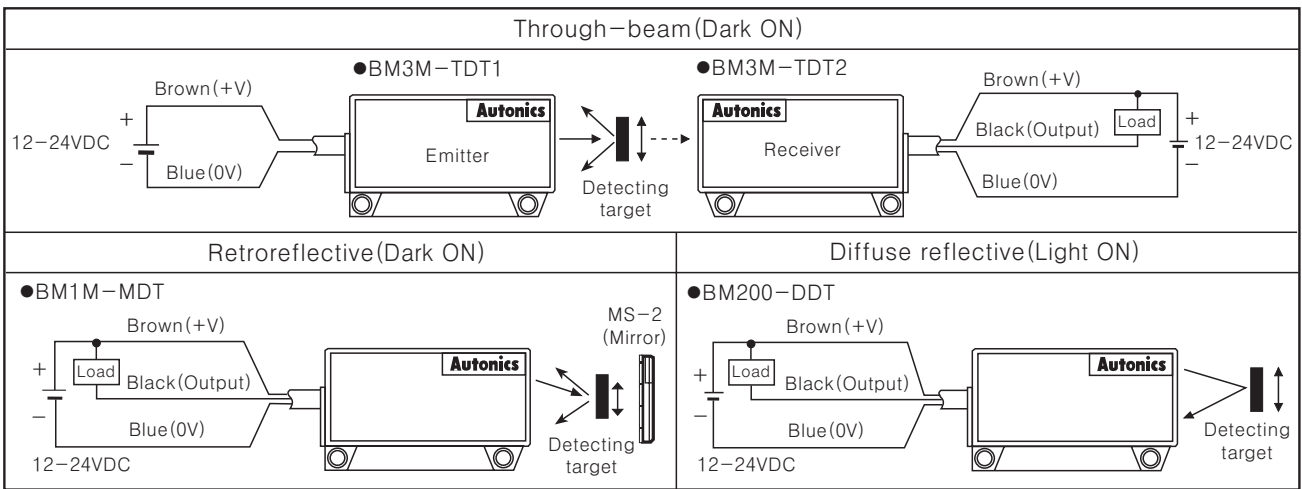
Control output diagram



Operation mode

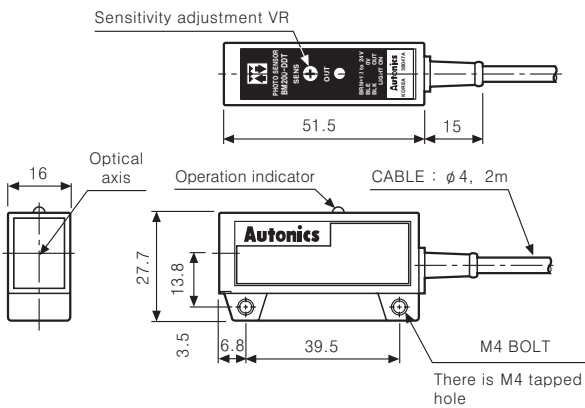


Connections

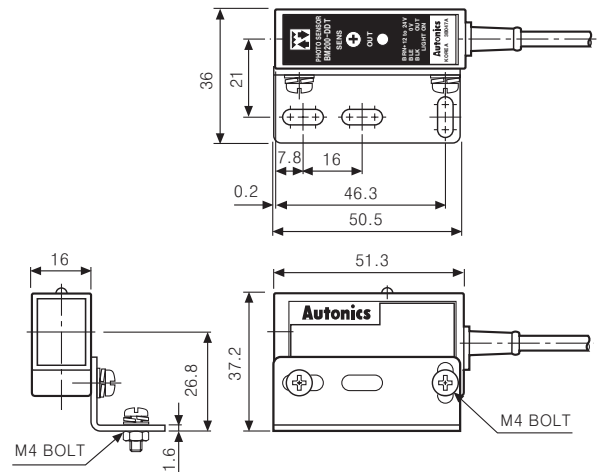


Dimensions

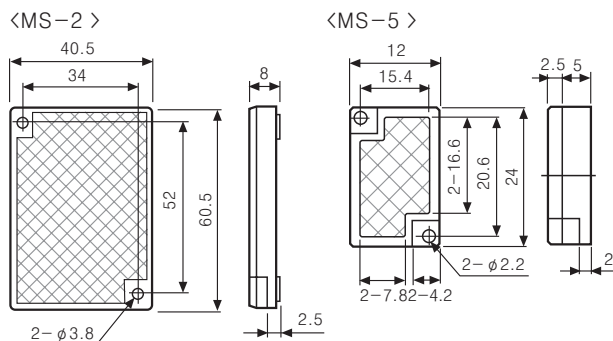
Product



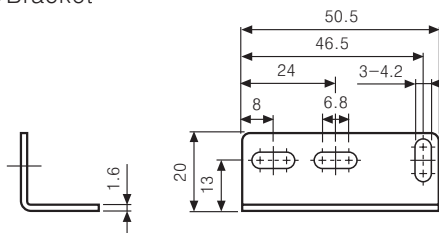
Bracket



Mirror



Bracket



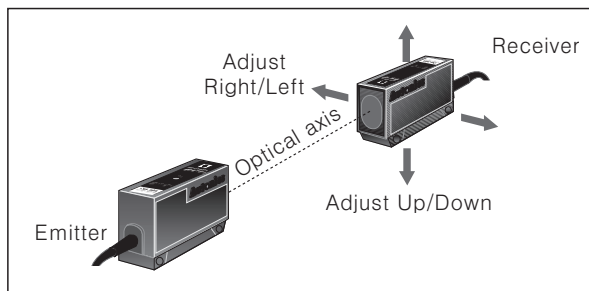
Unit:mm

DC Small size, Horizontal Mounting Type

■ Mounting & Adjustment

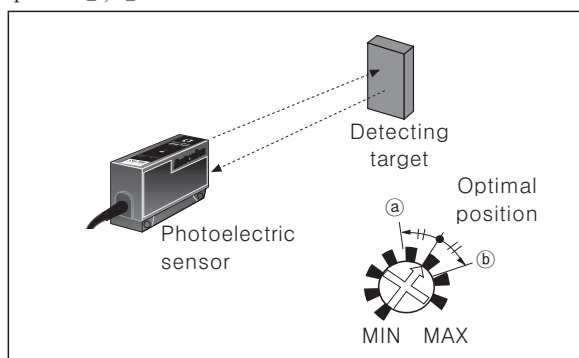
○ Through-beam type

1. Supply the power to the photoelectric sensor, after setting the emitter and the receiver in face to face.
 2. Set the receiver in center of position where indicator turns on, as adjusting the receiver or the emitter right and left, up and down.
 3. Fix both units tightly after checking that the unit detects the target.
- ※ If the detecting target is translucent body or smaller than $\phi 8\text{mm}$, it may not detect the target cause light passed.



○ Diffuse reflective type

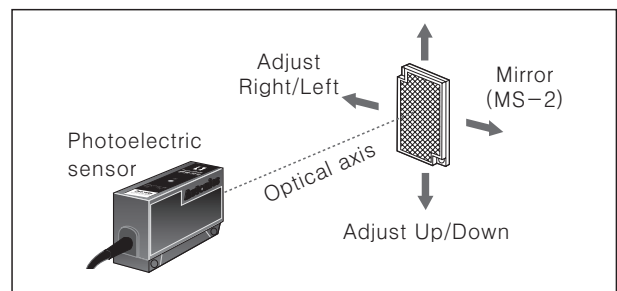
1. Even though the diffuse reflective type is set at Max. sensitive position, the sensitivity of the sensor must be adjusted according to the existence of the reflective material background.
2. Set the target at a position to be detected by the beam, then turn the adjuster until point (a) where the indicator turns on from min. position of the adjuster.
3. Take the target out of the sensing area, then turn the adjuster until point (b) where the indicator turns on. If the indicator does not turn on, Max. position is point (b).
4. Set the adjuster at the center of two switching point (a), (b).



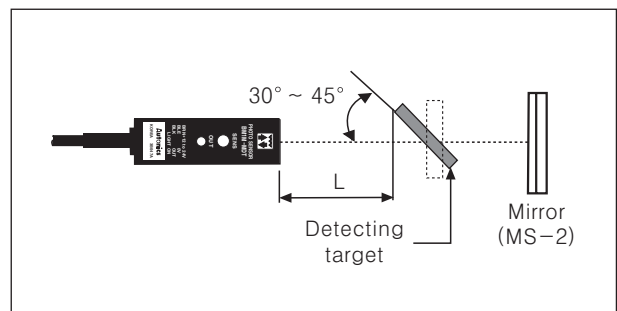
- ※ The detecting distance indicated on specification chart is against $200 \times 200\text{mm}$ of non-glossy white paper. Be sure that it can be different by size, surface and gloss of target.

○ Retroreflective type

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



- ※ 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 photoelectric sensor or the surface of target should be installed at an angle of $30^\circ \sim 45^\circ$ against optical axis.



- ※ If the installing place is too small, please use MS-5 instead of MS-2. It makes same detecting distance.



(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Proximity sensor

(J) Photo electric sensor

(K) Pressure sensor

(L) Rotary encoder

(M) 5-Phase stepping motor & Driver & Controller