Compact and Long sensing distance/Micro spot type

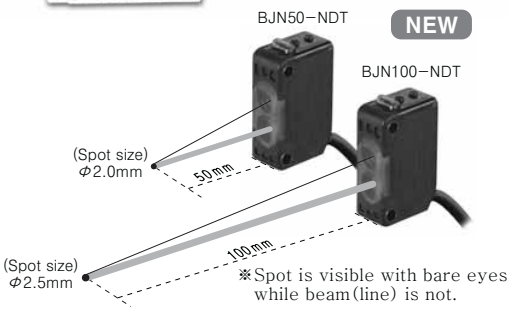
▣Features

■Long distance sensing type

- ●Long sensing distance with high quality lens
- ●Detects up to 15m(Transmitted beam type)
- ●Long sensing distance : Diffuse reflective type 1m, Polarized reflective type 3m(MS-2A)
- ●M.S.R(Mirror Surface Rejection) function (Polarized retroreflective type)

■Transparent glass sensing type / Micro spot type

- ●Stable detection for transparent object(LCD, PDP, glass etc) by BJG30-DDT.
- ●Easy to check sensing location with Red LED
- ●Suitable for sensing small objects (Min. sensing object: Ø0.2mm pure copper wire



※Spot is visible with bare eyes while beam(line) is not.

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

CE

▣Specifications

Model								
	NPN Open collector output	BJ15M-TDT	BJ10M-TDT	BJ7M-TDT	BJ3M-PDT	BJ1M-DDT	BJ300-DDT	BJ100-DDT
	PNP Open collector output	BJ15M-TDT-P	BJ10M-TDT-P	BJ7M-TDT-P	BJ3M-PDT-P	BJ1M-DDT-P	BJ300-DDT-P	BJ100-DDT-P
Sensing type		Through-beam			Polarized retroreflective	Diffuse reflective		
Sensing distance		0~15m	0~10m	0~7m	(★)0.1~3m (MS-2A)	1m (Non-glossy white paper 300×300mm)	300mm (Non-glossy white paper 100×100mm)	100mm (Non-glossy white paper 100×100mm)
Sensing target		Opaque material over ϕ12mm		Opaque material over ϕ8mm	Opaque material over ϕ75mm	Translucent, Opaque materials		
Hysteresis		————				Max. 20% at rated setting distance		
Response time		Max. 1ms						
Power supply		12-24VDC ±10%(Ripple P-P: Max.10%)						
Current consumption		Emitter/Receiver : Max. 20mA			Max. 30mA			
Light source		Infrared LED (850nm)	Red LED (660nm)	Red LED (Point light source 650nm)	Red LED (660nm)	Infrared LED (850nm)	Red LED (660nm)	Infrared LED (850nm)
Sensitivity adjustment		Built-in VR						
Operation mode		Light ON/Dark ON mode selectable						
Control output		NPN open collector output • Load voltage : Max. 26.4VDC • Load current : Max. 100mA • Residual voltage : Max. 1V						
		PNP open collector output • Load voltage : Max. 26.4VDC • Load current : Max. 100mA • Residual voltage : Min. (Power supply-2.5V)						
Protection circuit		Reverse polarity protection, Output short-circuit protection			Reverse polarity protection, Interference prevention function, Output short-circuit protection			
Indicator		Operation : Red, Stable : Green(Emitter's power indicator : Green)						
Connection		Outgoing cable type						
Insulation resistance		Max. 20MΩ (at 500VDC megger)						
Dielectric strength		1000VAC 50/60Hz for 1minute						
Vibration		1.5mm or 300mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours						
Shock		500m/s² X, Y, Z directions for 3 times						
Ambient illumination		Sunlight : Max. 11,000ℓx, Incandescent lamp : Max. 3,000ℓx(Receiver illumination)						
Ambient temperature		Operation : -25 ~ 55℃, Storage : -40 ~ 70℃(at non-freezing, at non-dew status)						
Ambient humidity		(at non-freezing, at non-dew status)						
Protection		IP65(IEC standard)						
Material		Case : PC+ABS, Lens : PMMA, LED Cap : PC						
Cable		ϕ3.5mm, 3P, Length : 2m(Emitter of transmitted beam type : ϕ3.5mm, 2P, Length : 2m) 22AWG, Core wire diameter: 0.08mm, No. of core wire: 60						
Accessory	Common	Mounting bracket, Bolt, Nut, VR adjustment driver						
	Individual	————			Reflector (MS-2A)	————		
Approval		CE						
Unit weight		Approx. 90g			Approx. 60g	Approx. 45g		

※(★) The sensing distance is extended to 0.1~4m or 0.1~5m when using optional reflector MS-2S or MS-3S.

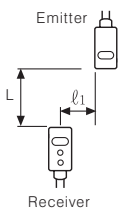
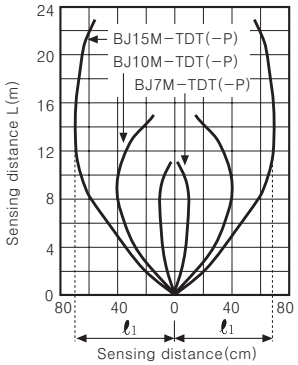
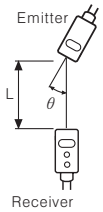
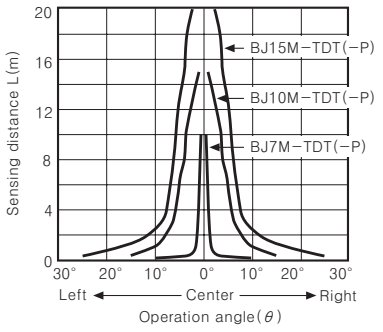
▣Specifications

Model	NPN open collector output	BJG30-DDT		BJN50-NDT	BJN100-NDT
	PNP open collector output	———		BJN50-NDT-P	BJN100-NDT-P
Sensing type		Diffuse reflective		Diffuse reflective(Narrow beam)	
Power supply		12−24VDC ±10%(Ripple P−P : Max.10%)			
Current consumption		Max. 30mA			
Min.diameter of transmitting SPOT		———		Approx. ϕ2.0mm	Approx. ϕ2.5mm
Min.sensing target		———		Approx. min. ϕ 0.2mm(Copper wire)	
Sensing distance		0~30mm	0~15mm	30~70mm	70~130mm
Sensing target		100×100mm Non−glossy white paper	Transparent glass 50×50mm (t=3.0mm)	Transparent, Translucent, Opaque materials (100×100mm Non−glossy white paper)	
Hysteresis		Max. 20% at sensing distance		Max. 25% at sensing distance	Max. 20% at sensing distance
Light source / Wavelength		Infrared LED(850nm)		Pin Point LED(Point source) / 650nm	
Control output		NPN Open collector type • Load voltage : Max. 26.4VDC • Load current : Max. 100mA • Residual voltage		NPN or PNP Open collector type • Load voltage : Max. 26.4VDC • Load current : Max. 100mA • Residual voltage ☞ NPN : Max. 1V, PNP : Min. (Power voltage −2.5V)	
Operation mode		Light ON mode fixed		Light ON / Dark ON mode selectable(Short rotator adjuster)	
Protection circuit		Reverse polarity protection, Output short−circuit protection, Interference prevention function			
Response time		Max. 1ms			
Sensitivity adjustment		Short rotation VR(210°)			
Ambient illumination		Sunlight : Max. 11,000ℓx, Incandescent lamp : Max. 3,000ℓx(Receiver illumination)			
Ambient temperature		Operation:−25~55℃, Storage:−40~70℃(at non−freezing, non−dew status)			
Ambient humidity		Operation & Storage : 35~85%RH(at non−dew status)			
Insulation resistance		Min. 20MΩ(at 500VDC megger)			
Dielectric strength		1,000VAC 50/60Hz for 1minute			
Vibration		1.5mm or 300m/s² amplitude at frequency of 10~55Hz in each of X, Y, Z directions for 2 hours			
Shock		500m/s² X, Y, Z directions for 3 times			
Protection		IP65(IEC standard)			
Connection		Outgoing cable type			
Indicator		Operation indicator : Red, Stability indicator : Green			
Material		Case : PC+ABS, Lens : PMMA, LED CAP : PC			
Cable		ϕ3.5mm, 3P, Length : 2m			
Accessory		Mounting bracket, Bolt		Mounting bracket, Bolt, Adjustment driver	
Approval		CE			
Unit weight		Approx. 45g			

▣Feature data

◎Through-beam

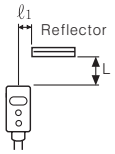
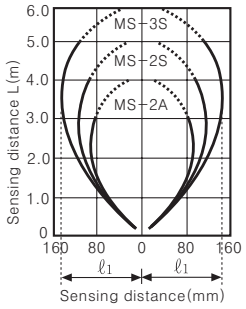
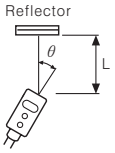
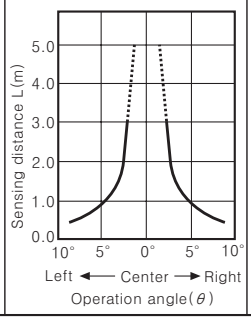
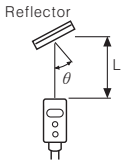
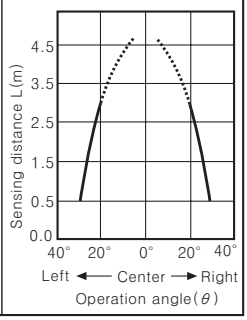
●BJ15M-TDT / BJ15M-TDT-P / BJ10M-TDT / BJ10M-TDT-P / BJ7M-TDT / BJ7M-TDT-P

Parallel shifting characterisitic		Angle characteristic	
Measuring method	Data	Measuring method	Data
			

▣Feature data

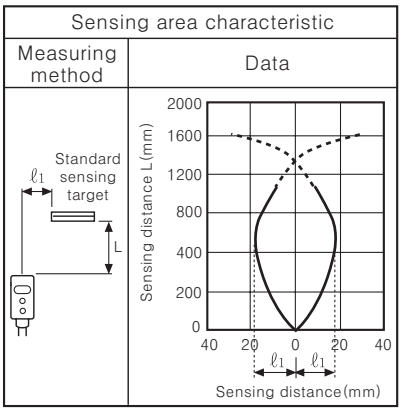
◎Polarized retroreflective

●BJ3M-PDT / BJ3M-PDT-P

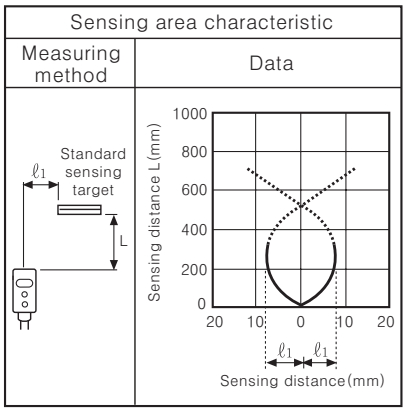
Parallel shifting characterisitic		Sensor angle characteristic		Reflector angle characteristic	
Measuring method	Data	Measuring method	Data	Measuring method	Data
					

◎Diffuse reflective

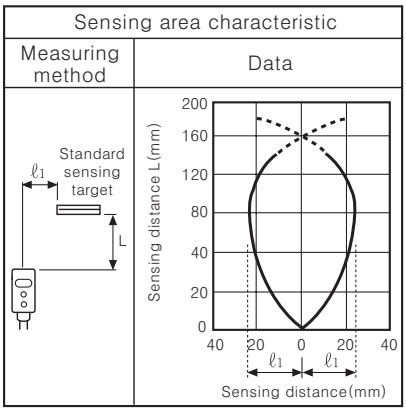
●BJ1M-DDT / BJ1M-DDT-P



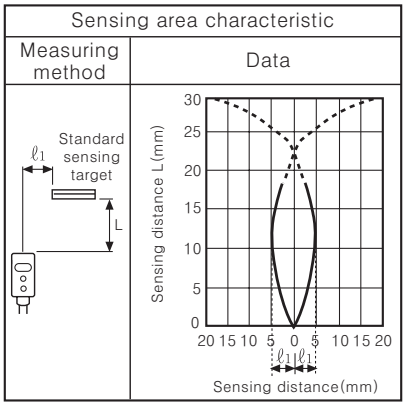
●BJ300-DDT / BJ300-DDT-P



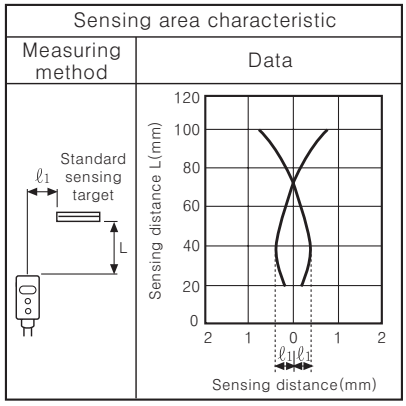
●BJ100-DDT / BJ100-DDT-P



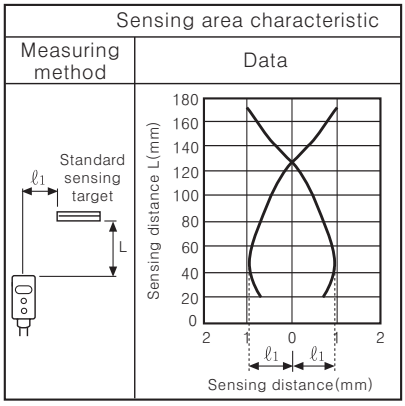
●BJG30-DDT



●BJN50-NDT / BJN50-NDT-P

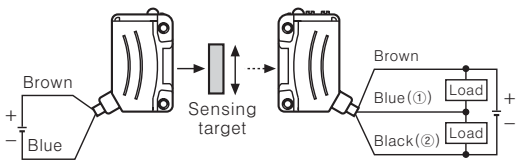


●BJN100-NDT / BJN100-NDT-P

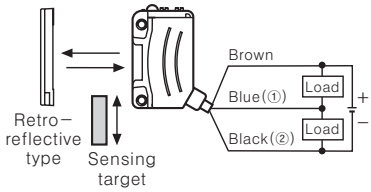


▣Connections

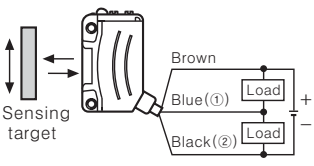
●Through-beam



●Polarized retroreflective type



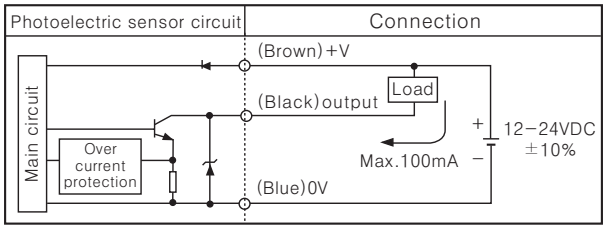
●Diffuse reflective



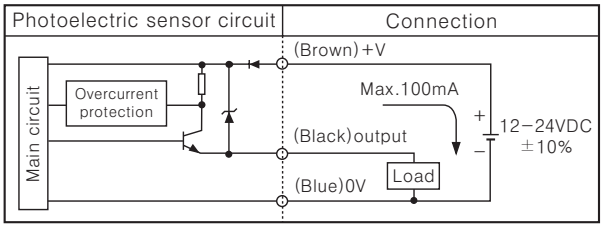
※① : The load connection of NPN open collector output, ② : The load connection of PNP open collector output

▣Control output diagram

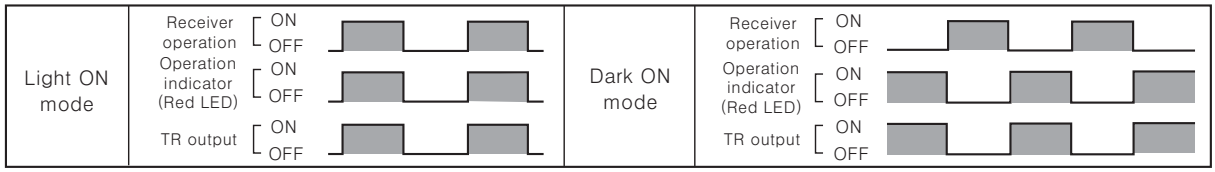
●NPN output



●PNP output



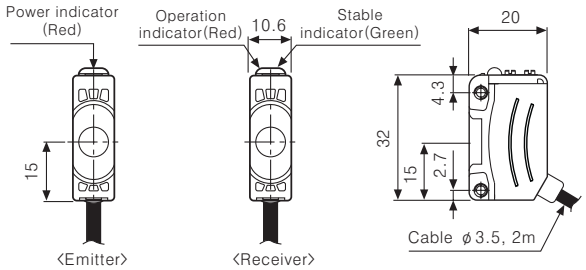
▣Operation mode



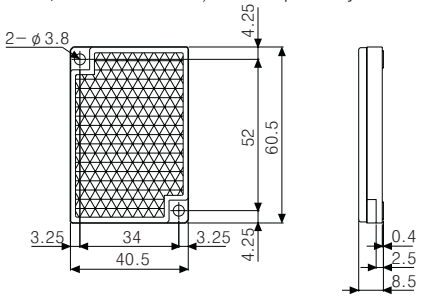
▣Dimensions

(Unit:mm)

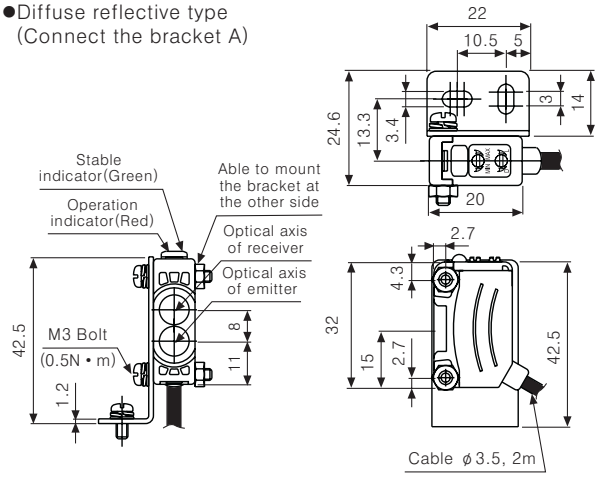
●Through-beam type



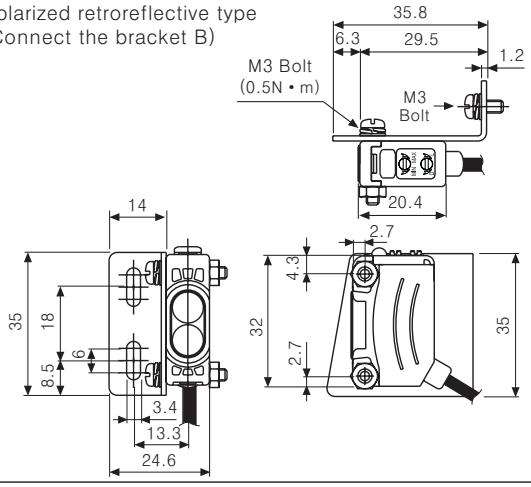
●Reflector(Include:MS-2A, Sold separately:MS-2S, MS-3S)



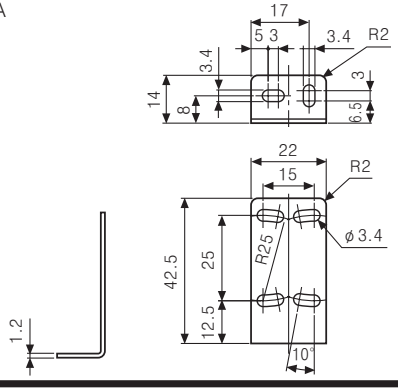
●Diffuse reflective type
(Connect the bracket A)



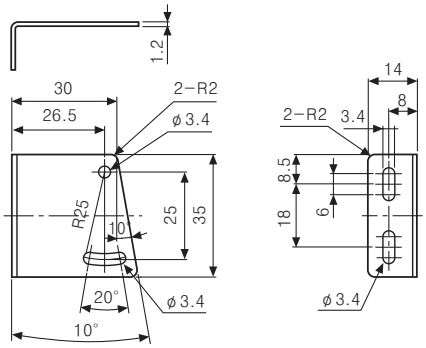
●Polarized retroreflective type
(Connect the bracket B)



●Bracket A

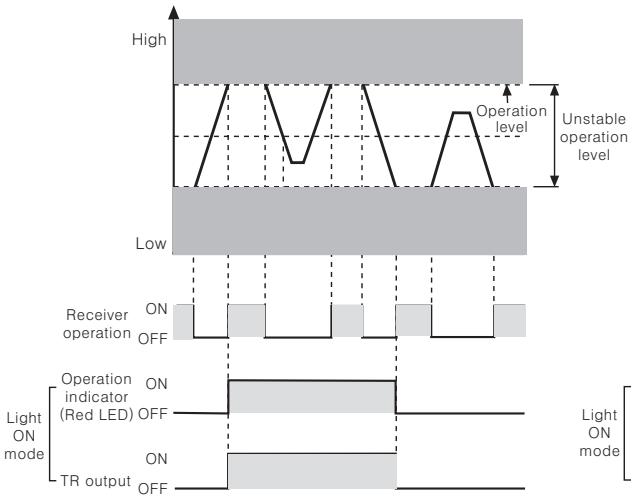


●Bracket B(Sold separately)

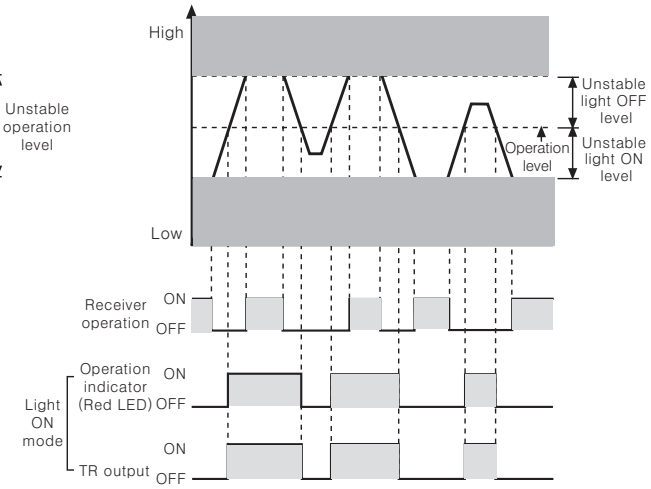


▣Operation mode and Timing diagram

◎Emitter



◎Diffuse reflective/Polarized retroreflective

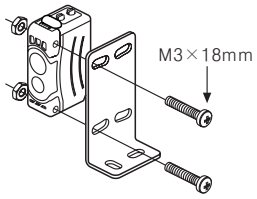


※The waveform of 'Operation mode indicator' and 'TR output' is for Light ON mode, it is operated as reverse in Dark ON mode.

▣Mounting and sensitivity adjustment

◎For mounting

Please use screw M3 for mounting of sensor, set the tightening torque under 0.5 N • m.



◎Switching of operation mode

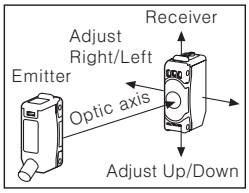
Light ON mode (Light ON)	D L	Turn the operation switching adjuster to right(L direction), it is set as Light ON mode.
Light OFF mode (Dark ON)	D L	Turn the operation switching adjuster to left(D direction), it is set as Light OFF mode.

※The operation switching adjuster is installed in the receiver for transmitted beam type.

◎Mounting

●Through-beam type

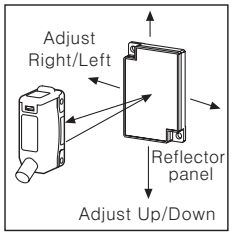
1. Place the emitter and receiver facing each other and apply the power.
2. After adjust the position of the emitter and receiver and check their stable indicating range, mount them in the middle of the range.
3. After mounting, check the operation of sensor and lighting of stable indicator in both status. (None or sensing target status)



※When the sensing target is translucent or small (Under ϕ16mm), it can be missed by the sensor because the light can penetrate it.

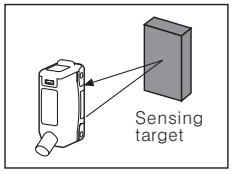
●Polarized retroreflective type

1. Place the Sensor and retroreflective facing each other and apply the power.
2. After adjust the position of the Sensor and retro-reflective and check their stable indicating range, mount them in the middle of the range.
3. After mounting, check the operation of sensor and lighting of stable indicating in both status. (None or sensing target status)

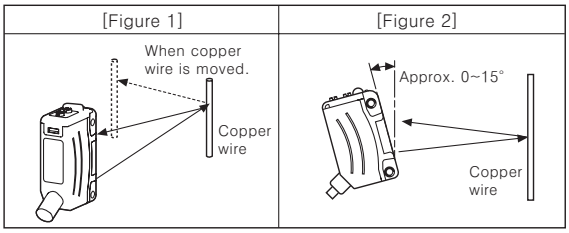


●Diffuse reflective type

After place a sensing target, adjust the sensor to up • down, left • right. Then, fix the sensor in center of position where the indicator is operating.



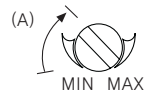
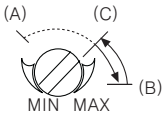
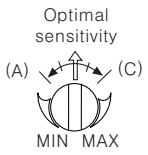
●Object(Copper wire) detection <Micro spot type>



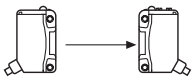
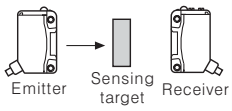
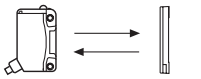
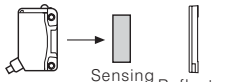
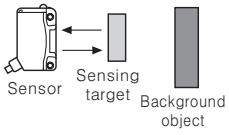
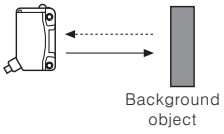
※Mount sensor slanted at an angle ranged 0~15 ° shown above as [Figure 2] for stable detection to detect as shown in [Figure 1].

▣Sensitivity adjustment

◎Sensitivity adjustment

Order	Position	Description
1		Turn the sensitivity adjuster to the right of min. and check position(A) where the indicator is turned on in "Light ON status".
2		Turn the sensitivity adjuster more to the right of position(A), check position(B) where the indicator is turned on. And turn the adjuster to the left, check position(C) where the indicator is turned off in "Dark ON status". ※If the indicator is not lighted although the adjuster is turned to the max. position, the max. position is(C).
3		Set the adjuster at the center of (A) and (C). To set the optimum sensitivity, check the operation and lighting of stable indicator with sensing target or without it. If the indicator is not lighted, please check the sensing method again because sensitivity is unstable.

※No sensitivity adjustment function available for BJG30-DDT models

	"Light ON status"	"Light OFF status"
Through-beam type		
Polarized retro-reflective type		
Diffuse reflective		

※Set the sensitivity to operate in a stable light ON area, the reliability for the environment(Temperature, voltage, dust etc) will be increased.

※Do not apply an excessive force on adjuster, it can be broken.