

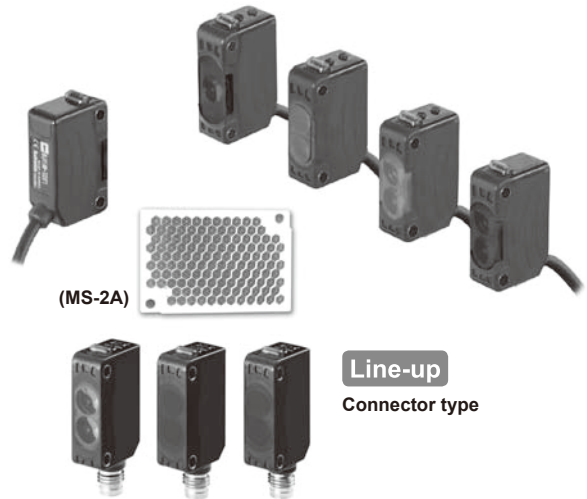
# BJ Series

## Compact and Long sensing distance

### ■ Features

#### ■ Long distance sensing type

- Long sensing distance with high quality lens
- Long sensing distance
  - : Through-beam type 15m, Diffuse reflective type 1m, Polarized retroreflective type 3m(MS-2A)
- M.S.R.(Mirror Surface Rejection) function (Polarized retroreflective type)
- Compact size: W20×H32×L10.6mm
- Protection structure IP65/IP67(IEC standard)
- Light ON/Dark ON selectable by VR
- Sensitivity adjustment VR incorporated
- Built-in reverse power polarity, output short, overcurrent protection circuit
- Mutual interference prevention function (Except through-beam type)
- Improved noise resistance and minimize effect of disturbance light



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



### ■ Specifications

※The model name with '-C' is connector type.

Type		Long distance sensing type							
Model	NPN open collector output	BJ15M-TDT BJ15M-TDT-C	BJ10M-TDT BJ10M-TDT-C	BJ7M-TDT	BJ3M-PDT BJ3M-PDT-C	BJ1M-DDT BJ1M-DDT-C	BJ300-DDT BJ300-DDT-C	BJ100-DDT BJ100-DDT-C	
	PNP open collector output	BJ15M-TDT-P BJ15M-TDT-C-P	BJ10M-TDT-P BJ10M-TDT-C-P	BJ7M-TDT-P	BJ3M-PDT-P BJ3M-PDT-C-P	BJ1M-DDT-P BJ1M-DDT-C-P	BJ300-DDT-P BJ300-DDT-C-P	BJ100-DDT-P BJ100-DDT-C-P	
Sensing type		Through-beam			Polarized retroreflective	Diffuse reflective			
Sensing distance		15m	10m	7m	0.1 to 3m <sup>※1</sup> (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 $\phi$ 12mm		Opaque material over $\phi$ 8mm	Opaque material over $\phi$ 75mm	Translucent, opaque materials			
Hysteresis		—					Max. 20% at sensing distance		
Response time		Max. 1ms							
Power supply		12-24VDC $\pm$ 10%(Ripple P-P: Max.10%)							
Current consumption		Emitter/Receiver: Max. 20mA			Max. 30mA				
Light source		Infrared LED (850nm)	Red LED (660nm)	Red LED (650nm)	Red LED (660nm)	Infrared LED (850nm)	Red LED (660nm)	Infrared LED (850nm)	
Sensitivity adjustment		Built-in the adjustment VR							
Operation mode		Light on/Dark on selectable by VR							
Control output		NPN or PNP open collector output ●Load voltage: Max. 26.4VDC ●Load current: Max. 100mA ●Residual voltage - NPN: Max. 1V, PNP: Max. 2.5V							
Protection circuit		Reverse polarity protection, output short-circuit protection, interference prevention function(Except through-beam type)							
Indicator		Operation: Red, Stable: Green(Emitter's power indicator: Green)							
Insulation resistance		Max.20M $\Omega$ (at 500VDC megger)							
Noise resistance		$\pm$ 240V the square wave noise(pulse width:1 $\mu$ s) by the noise simulator							
Dielectric strength		1000VAC 50/60Hz for 1minute							
Vibration		1.5mm amplitude or 300m/s <sup>2</sup> at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours							
Shock		500m/s <sup>2</sup> (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	-25 to 55°C, storage: -40 to 70°C							
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH							
Protection		BJ - IP65(IEC standard), BJ-C - IP67(at non-dew status)							
Material		Case: PC+ABS, LED Cap: PC, Sensing part: PMMA							
Cable <sup>※2</sup>		BJ: $\phi$ 3.5, 3-wire, Length: 2m(Emitter of through-beam type: $\phi$ 3.5, 2-wire, Length: 2m) (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: $\phi$ 1)							
Accessory	Common	Mounting bracket, Bolt, Nut, VR adjustment driver							
	Individual	—			Reflector(MS-2A)	—			
Approval		<b>CE</b>							
Unit weight		BJ: Approx. 90g, BJ-C: Approx. 20g			BJ: Approx 60g BJ-C: Approx 30g	BJ: Approx. 45g, BJ-C: Approx. 10g			

※1: The sensing distance is extended to 0.1 to 4m or 0.1 to 5m when using optional reflector MS-2S or MS-3S.

※2: M8 connector cable is sold separately. (Cable - AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator out diameter:  $\phi$ 1.25)

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

# Long sensing distance/BGS reflective/Micro spot type

## Transparent glass sensing/BGS reflective/Micro spot type

### ■ Features

#### ■ BGS reflective type

- Adopts BGS method superior than convergent reflective to minimize error by background, or color, material of sensing object for stable sensing by adjusting the volume
- Visible light source to check the position of sensing spot and small spot minimizing effect of the ambient objects with narrow sensing width

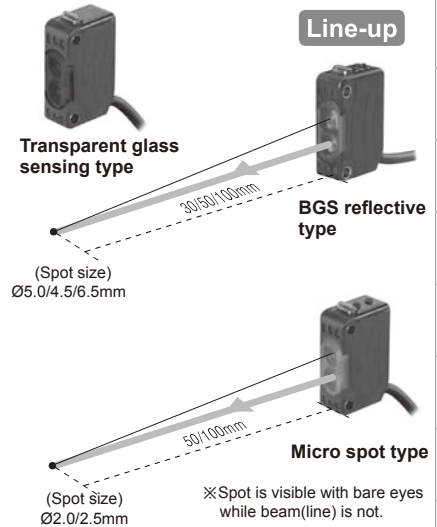
#### ■ Transparent glass sensing type / Micro spot type

- Stable sensing for transparent object(LCD, PDP, glass etc) by BJG30-DDT
- Easy to check sensing location with visible micro spot(BJN Series)
- Detects tiny objects (min. sensing target  $\varnothing 0.2\text{mm}$  copper wire)

#### ■ Commonness

- Compact size: W20×H32×L10.6mm
- Protection structure IP65(IEC standard)
- Light ON/Dark ON selectable by VR(Except BJG30-DDT)
- Sensitivity adjustment VR incorporated(Except BJG3 DDT)
- Built-in reverse power polarity, output short, overcurrent protection circuit
- Mutual interference prevention function(Except BGS reflective type)
- Improved noise resistance and minimized effect of disturbance light

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



### ■ Specifications

Type	Transparent glass sensing type		BGS reflective type			Micro spot type	
Model	NPN open collector output <b>BJG30-DDT</b>		<b>BJ30-BDT</b>	<b>BJ50-BDT</b>	<b>BJ100-BDT</b>	<b>BJN50-NDT</b>	<b>BJN100-NDT</b>
	PNP open collector output —		<b>BJ30-BDT-P</b>	<b>BJ50-BDT-P</b>	<b>BJ100-BDT-P</b>	<b>BJN50-NDT-P</b>	<b>BJN100-NDT-P</b>
Sensing type	Diffuse reflective		BGS reflective			Narrow beam reflective	
Sensing distance	30mm (Non-glossy white paper 100×100mm)	15mm (Transparent glass 50×50mm, t=3.0mm)	10 to 30mm (Non-glossy white paper 50×50mm)	10 to 50mm (Non-glossy white paper 50×50mm)	10 to 100mm (Non-glossy white paper 100×100mm)	30 to 70mm	70 to 130mm
Sensing target	Transparent glass, opaque materials, translucent		Translucent, opaque materials			Translucent, opaque materials	
Min. diameter of transmitting SPOT	—		Approx. $\varnothing 5.0\text{mm}$	Approx. $\varnothing 4.5\text{mm}$	Approx. $\varnothing 6.5\text{mm}$	Approx. $\varnothing 2.0\text{mm}$	Approx. $\varnothing 2.5\text{mm}$
Min. sensing target	—		—			Approx. min. $\varnothing 0.2\text{mm}$ (Copper wire)	
Hysteresis	Max. 20% at sensing distance		Max. 10% at sensing distance			Max. 25% at sensing distance	Max. 20% at sensing distance
Response time	Max. 1ms		Max. 1.5ms			Max. 1ms	
Power supply	12-24VDC $\pm 10\%$ (Ripple P-P: Max. 10%)						
Current consumption	Max. 30mA						
Light source/Wavelength	Infrared LED(850nm)		Red LED(660nm)			Red LED(650nm)	
Sensitivity adjustment	—						
Operation mode	Light ON fixed		Light ON / Dark ON selectable by VR				
Control output	NPN open collector output ●Load voltage: Max. 26.4VDC ●Load current: Max. 100mA ●Residual voltage: Max. 1V		NPN or PNP open collector output ●Load voltage: Max. 26.4VDC ●Load current: Max. 100mA ●Residual voltage - NPN: Max. 1V, PNP: Min. 2.5V				
Protection circuit	Reverse polarity protection, output short-circuit protection, interference prevention function(Except BGS reflective type)						
Indicator	Operation indicator: red, Stability indicator: green						
Insulation resistance	Min. 20M $\Omega$ (at 500VDC megger)						
Noise resistance	$\pm 240\text{V}$ the square wave noise(pulse width:1 $\mu\text{s}$ ) by the noise simulator						
Dielectric strength	1,000VAC 50/60Hz for 1minute						
Vibration	1.5mm amplitude or 300m/s <sup>2</sup> at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours						
Shock	500m/s <sup>2</sup> (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	-25 to 55°C, storage: -40 to 70°C					
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH					
Protection	IP65(IEC standard)						
Material	Case: PC+ABS, LED Cap: PC, Sensing part: PMMA						
Cable	$\varnothing 3.5$ , 3-wire, Length: 2m(AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: $\varnothing 1$ )						
Accessory	Mounting bracket, Bolt		Mounting bracket, Bolt, Adjustment driver				
Approval	<b>CE</b>						
Unit weight	Approx. 45g		Approx. 50g			Approx. 45g	

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

(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