Autonics

Compact Long Distance Type Photoelectric Sensing with Amplifier

BJX SERIES

INSTRUCTION MANUAL



Thank you for choosing our Autonics product. Please read the following safety considerations before use.

■ Safety Considerations

- XPlease observe all safety considerations for safe and proper product operation to avoid hazards
- ★▲ symbol represents caution due to special circumstances in which hazards may occur.

Marning Failure to follow these instructions may result in serious injury or death ▲ Caution Failure to follow these instructions may result in personal injury or product damage.

- 1. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
 Failure to follow this instruction may result in fire, personal injury, or economic loss.

- Failure to follow this instruction may result in fire, personal injury, or economic loss.

 2. Do not disassemble or modify the unit.

 Failure to follow this instruction may result in fire.

 3. Do not connect, repair, or inspect the unit while connected to a power source.
- Failure to follow this instruction may result in fire.

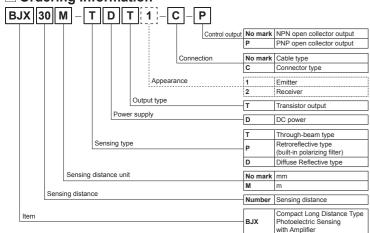
 4. Check 'Connections' before wiring.

 Failure to follow this instruction may result in fire.

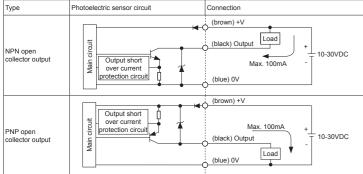
⚠ Caution

- Use the unit within the rated specifications.
 Failure to follow this instruction may result in fire or product damage
- 2. Use dry cloth to clean the unit, and do not use water or organic solvent
- Failure to follow this instruction may result in fire
- No not use the unit in the place where flammable/explosi vibration, impact, or salinity may be present.
 Failure to follow this instruction may result in fire or explosion.

Ordering Information



Control Output Circuit Diagram



normal control signal is not output due to the output short over current protection circuit.

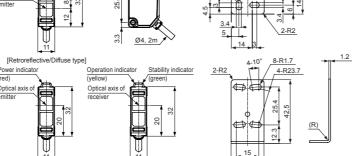
*The above specifications are subject to change and some models may be discontinued without notice.
*Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

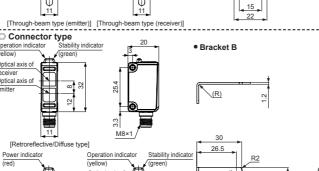
Specifications

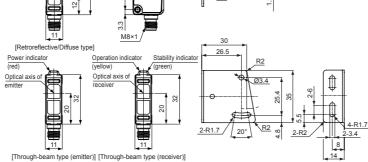
	NPN open	BJX30M-TDT	BJX15M-TDT	BJX10M-TDT	BJX3M-PDT	BJX1M-DDT	BJX300-DDT	BJX100-DDT		
Model	collector output		BJX15M-TDT-C	BJX10M-TDT-C	BJX3M-PDT-C	BJX1M-DDT-C	BJX300-DDT-C	BJX100-DDT-C		
IVIOUCI	PNP open	BJX30M-TDT-P	BJX15M-TDT-P	BJX10M-TDT-P	BJX3M-PDT-P	BJX1M-DDT-P	BJX300-DDT-P	BJX100-DDT-P		
	collector output	BJX30M-TDT-C-P	BJX15M-TDT-C-P	BJX10M-TDT-C-P		BJX1M-DDT-C-P	BJX300-DDT-C-P	BJX100-DDT-C		
Sensing type		Through-beam type			Retroreflective type (built-in polarizing filter)	Diffuse reflective type				
Sensing distance		30m	15m	10m	3m ^{×1}	1m ^{×2}	300mm ^{×3}	100mm ^{×3}		
Sensing target		Opaque material over Ø15mm			Opaque material over Ø75mm	Opaque, translucent materials				
Hysteresis		Max. 20% at sensing distance								
Respo	onse time	Max. 1ms								
Power	supply	10-30VDC ±	:10% (ripple P-	P: max. 10%)						
Power consumption		Emitter / Receiver: max. 20mA			Max. 30mA					
Light source		Red LED (660nm)	Infrared LED (850nm)	Red LED (660nm)	Red LED (660nm)	Red LED (660nm)	Red LED (660nm)	Infrared LE (850nm)		
Sensiti	vity adjustment	Sensitivity adj								
Opera	tion mode		rk ON selectab							
Contro	ol output	NPN or PNP open collector output								
Contac	oi output	 Load voltage: r 	nax. 30VDC • l	Load current: max	c. 100mA • Resid			PNP: max. 2VI		
Protection circuit		output short over current protection circuit			Power reverse polarity protection circuit, output short over current protection circuit, interference prevention function					
Indicator		Operation indicator: yellow LED, stability indicator: green LED (emitter's power indicator: red LED) Over 20MΩ (500VDC megger)								
					A N have the same	to a store to to a				
Noise immunity Dielectric strength		±240V the square wave noise (pulse width: 1µs) by the noise simulator 1.000VAC 50/60Hz for 1 minute								
					la (for 1 min) in	aach V V 7	lirection for 2 h	oure		
Vibration Shock		1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours 500m/s² (approx, 50G) in each X, Y, Z direction for 3 times								
		Sunlight: max. 11.000lx, incandescent lamp; max. 3.000lx (receiver illumination)								
Environ		-25 to 60°C, s				\				
-ment		35 to 85%RH, storage: 35 to 85%RH								
Protec		IP65 (IEC standard)								
Materi	ial	Case: polycar	bonate, LED C	AP: polycarbon	ate, sensing pa	art: polymethyl	methacrylate a	crylic,		
Cable ³	¥5	Ø4mm, 3-wire, 2m (emitter of through-beam type: Ø4mm, 2-wire, 2m)								
Cable		(AWG26, core diameter: 0.52mm, number of cores: 20, insulator out diameter: Ø1mm)								
Acces	Common	Mounting bracket ^{x6} , M3 bolt: 4, adjustment screwdriver			Mounting bracket ^{x6} , M3 bolt: 2, adjustment screwdriver					
	Individual			Reflector (MS-2A)	_					
Appro	val	(€ c 91 2 us								
Weight ×7	Cable type	Approx. 145g	(approx. 95g)		Approx. 115g (approx. 50g) Approx. 100g (approx. 50g)					
	Connector type	Approx. 65g (approx. 12g)		Approx. 75g (approx. 6g)	Approx. 60g ((approx. 6g)			

- | (approx. 6g) | Pspriox. 6g (approx. 6g) | (approx

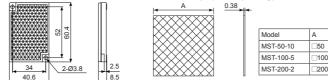
Dimensions O Cable type Optical axis of







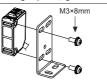
Reflector (MS-2A) Reflective tape (sold separately)

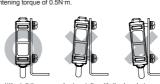


■ Installation and Adjustment

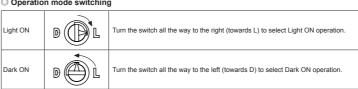
When using the reflective type photoelectric sensors closely over three units, it may result in malfunction due to mutual

When using the through-beam type photoelectric sensors closely over two units, it may result in malfunction due to mutual





Adjust Up/Down



XFor through-beam type, the switch is built-in the receiver.

Optical axis adjustment

Through-beam type

- After adjusting the position of the emitter and the receiver and checking their stable indicating range, mount them in the middle of the range.

 3. After mounting this unit, check the operation of the sensor and
- Alter mounting rise unit, circle, in experiation or the sensor and lighting of the stability indicator in both status. (none or sensing target status)
 If the sensing target is translucent body or smaller than Ø15mm, it may not sense the target because light is passed.

Retroreflective type

- Place the sensor and the reflector (or reflective tape) facing each
- 1. Place the sensor and the reflector (or reflective tape) facing each other and supply the power.

 2. After adjusting the position of the sensor and reflector (or reflective tape) and checking their stable indicating range, mount them in the middle of the range, (none or sensing target status)

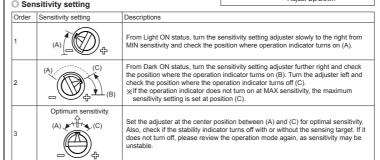
 3. After mounting this unit, check the operation of the sensor and in
- both status. (none or sensing target status)

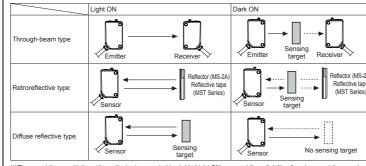
 XPlease use reflective tape (MST Series) for where a reflector can
- not be installed.

Diffuse reflective type

- Place the emitter and the receiver facing each other and supply After adjusting the position of the emitter and the receiver and
- checking their stable indicating range, mount them in the roof the range.
- B. After mounting this unit, check the operation of the sensor and lighting of the stability indicator in both status. (none or sensing

Sensitivity setting





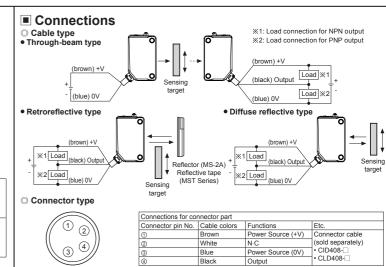
Welease set the sensitivity setting adjuster is executed in stable Light ON area and the reliability of environment (temperature, supply, dust etc.) is increased after the mounting it in a stable area.

Withen adjusting sensitivity or switching operation modes, please use the Autonics adjustment screwdriver (accessory included) Using a screwdriver with a bigger diameter than the adjuster buttons may cause errors when making adjustments.

It may cause breakdown when the sensitivity setting adjuster or the operation mode selection switch is turned by force.

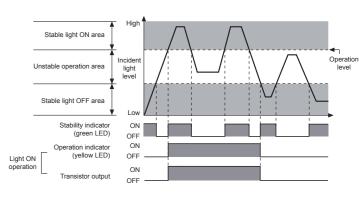
Operation Mode

	Operation mode	Light ON	Dark ON		
-	Receiver operation	Received light	Received light		
	receiver operation	Interrupted light -	Interrupted light		
	Operation indicator	ON	ON		
	(yellow LED)	OFF -	OFF		
∣	Transistor output	ON	ON		
] []	Transistor output	OFF -	OFF		

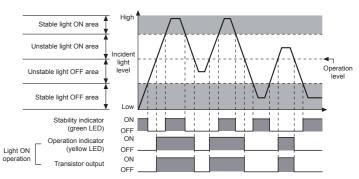


Operating Timing Diagram

[M8 connector pin]



Retroreflective/Diffuse reflective type



*The waveforms of 'Operation indicator' and 'Transistor output' are for Light ON operation.
The waveforms are reversed for Dark ON operation.

Cautions during Use

Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.

When connecting a DC relay or other inductive load to the output, remove surge by using diodes or varistors.

Use the product, 0.5 sec after supplying power.

When using separate power supply for the sensor and load, supply power to sensor first.

10-30VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device. Wire as short as possible and keep away from high voltage lines or power lines, to prevent inductive noise. When using switching mode power supply to supply the power, ground F.G. terminal and connect a condenser between

OV and F.G. terminal to remove noise.

When using sensor with the equipment which generates noise (switching regulator, inverter, servo motor, etc.), ground F.G. terminal of the equipment.

This unit may be used in the following environments.

Olndoors (in the environment condition rated in 'Specifications')

@Altitude max. 2,000m

③Pollution degree 3 ④Installation category II

Major Products

Photoelectric Sensors
Fiber Optic Sensors
Door Side Sensors
Door Side Sensors
Temperature/Humidity Transducers
SRs/Power Controllers
SRs/Power Controllers
SRs/Power Controllers
SRs/Power Controllers
SRs/Power Controllers
Timers
Timers
Trensure Sensors
Actary Encoders
Sensor Controllers
Timers
Tachometer/Pulse (Rate) Meters
Display Units
Control Switches/Lamps/Buzzers
Control Switches/Lamps/Buzzers
Control Switches/Lamps/Buzzers
Control Switches/Lamps/Buzzers
Control Switches/Lamps/Buzzers

Door Side Sensors
 Area Sensors
 Proximity Sensors
 Pressure Sensors
 Rotary Encoders

/O Terminal Blocks & Cables Stepper Motors/Drivers/Motion

■ Graphic/Logic Panels ■ Laser Marking System (Fiber, CO₂, Nd: YAG)
 ■ Laser Welding/Cutting System

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DRW160200AG