

















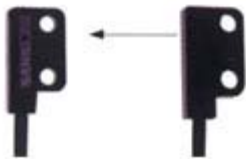



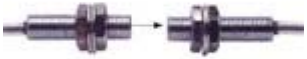















**SENSOR HEAD**

 SB-99     SB-99I

Model	Shape	Sensing distance	Specifics
BT-17 BT-17-7		   100(150)mm    700(900)mm	Solid metal case Smallest sensing object 0.3Ø
BT-5M BT-5M-7		   100(150)mm    700(900)mm	Adjustable an optical axis M5 screw Smallest sensing object 0.3Ø
BT-12		   300(500)mm	Thickness 3mm Smallest sensing object 0.3Ø
BT-12F		   300(500)mm	Thickness 3mm Smallest sensing object 0.3Ø

BT-8M		 5(6.5)m	General-purpose tubular type M8 Stainless case
BR-5S		 30(40)mm	Cylinder type Infrared ray diffuse-reflective
BR-6M		 30(40)mm	Tubular type M6 Infrared ray diffuse-reflective
BR-20		 50(65)mm	Square type Infrared ray diffuse-reflective
BR-20R		 35(45)mm	Red light mark sensor
BR-20RH		 40(55)mm	
BR-20RS		 4(5)mm	Red light micro mark sensor 0.4Ø spot

BR-20RW		 100(130)mm	Red light extra diffuse-reflective
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### SB-99 SPECIFICATIONS

Items	Classification	AMP UNIT
	Model	SB-99, SB-99 I (Different frequency type)
Supply voltage	12~24V DC±10% Ripple P-P Max. 10%	
Consumption current	Max. 35 mA	
Sensing output	NPN Open-collector transistor <ul style="list-style-type: none"> <li>• Current sink : Max. 100 mA</li> <li>• Applied voltage : Max. DC 30V</li> <li>• Residual voltage : Max. 1.0V at 100 mA current sink, Max. 0.4V at 16 mA current sink</li> </ul>	
Circuit protection	Reverse connection of power supply, absorbing surge voltage, over current protection circuit	
Output operation	ON/OFF mode is set by the buttons	
Response time	Max. 0.5ms	
Operation indicator lamp	Red LED (illuminates when output is on state)	
Stable operation indicator lamp	Green LED	
Sensitivity adjustor	3 turns continuously variable VR	
Timer function	OFF delay timer equipped, approx. 40ms fixed (by timer S/W operation)	
Environmental resistance	Ambient temperature	-10~+55°C (with no dew or ice condensation), storage:-20~+70°C
	Ambient humidity	35~85% RH
	Noise	-Power line: 240Vp *cycle:10ms *duration:0.5 μs -Radiation: 300Vp *cycle:10ms *duration:0.5 μs (by noise simulator)
	Dielectric	1000V AC applied between live parts and enclosure for 1min
	Insulation	More than 20 MΩ applied between live parts and enclosure at 250V DC
	Vibration	0.75mm amplitude at frequency of 10~55 Hz in each of X,Y and Z directions for 2 hours each in power OFF state
	Shock	100 m/s <sup>2</sup> (approx.10G) impulse in each of X,Y and Z directions for 5 times each in power OFF state

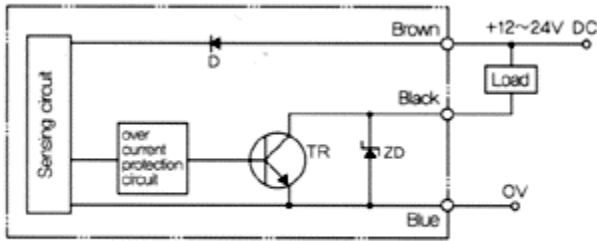
C A B L E	0.08 mm <sup>2</sup> × 60cores×3 lines with captyre cable 2m of oil, heat and cold resistant
CABLE extension	Extensible up to 100m using more than 0.3 mm <sup>2</sup> cable
Accessories	Bracket: 1pc, Adjustment driver: 1pc

## RATING/SPECIFICATIONS

※ Sensing distance : ( ) in case of SB-99I installed

	Model	Sensing distance	Smallest sensing object	Source of Light	Protection	Ambient temperature	Ambient illumination	Cable length
Transmission type	BT-12	300(500)mm	0.3Ø	Infrared LED	-	-10~+60℃	Sun lamp: 11,000Lx Electric lamp: 3,000Lx	1 core shield cable 2m
	BT-12F	300(500)mm	0.3Ø					
	BT-17	100(150)mm	0.3Ø					
	BT-17-7	700(900)mm	0.5Ø					
	BT-5M	100(150)mm	0.3Ø					
	BT-5M-7	700(900)mm	0.5Ø					
	BT-8M	5(6)mm	5Ø		Sun lamp: 11,000Lx		1 core shield cable 3m	
Diffuse-reflection type	BR-5S	30(40)mm	-		IP-67			
	BR-6M	30(40)mm						
	BR-20	50(65)mm						
	BR-20N	80(100)mm						
Mark sensor	BR-20RM	5~15mm	2mm mark	5~15mm Ø2 spot	IP-66	-10~+60℃	Sun lamp: 11,000Lx Electric lamp: 3,000Lx	Parallel 2 lines shield cable 2m
	BR-20R	35mm	2.5mm mark	Red LED Ø2.5 spot				
	BR-20RN	100mm	5mm mark	Red LED 30mm~ Ø25 spot				
	BR-20GN	50mm	5mm mark	Green LED Ø25 spot				
	BR-20RH	40mm	3mm mark	Red LED 10mm~ Ø3 spot				
	BR-20GH	30(40)mm	3mm mark	Green LED 10mm Ø3 spot				
Micro mark sensor	BR-20RS	4mm	0.5mm mark	Red LED Ø0.4 spot				
Diffuse-reflection type	BR-20RW	100(150)mm		Red LED				

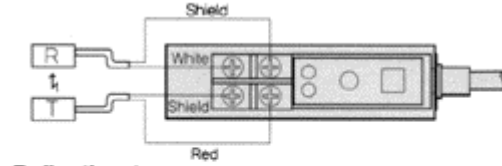
## INPUT/OUTPUT DIAGRAM AND CONNECTION



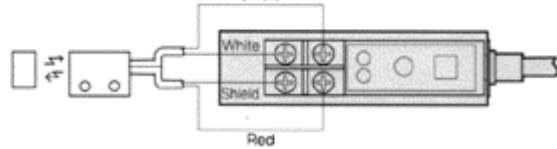
- D : Reverse polarity protection Diode
- ZD : Surge absorption Zener Diode
- TR : NPN output Transistor

## CONNECTION

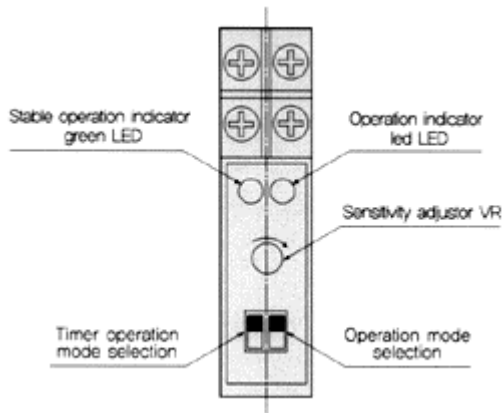
### Transmission type



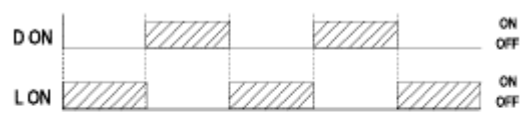
### Reflection type



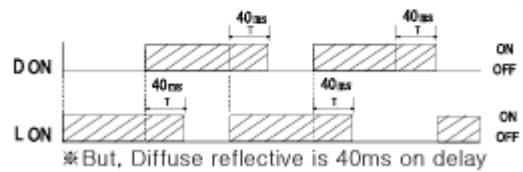
## COMPONENTS



### Normal operation











### Timer operation (Thru beam retro-reflection)



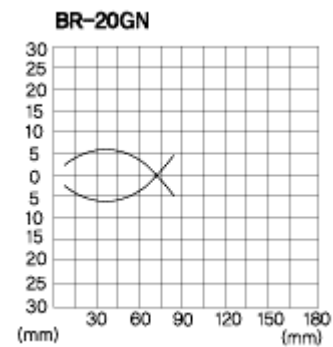
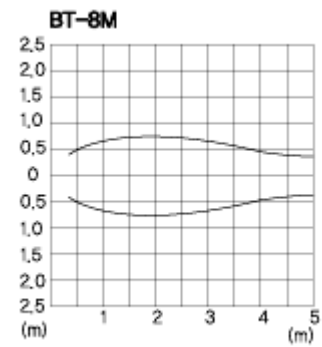
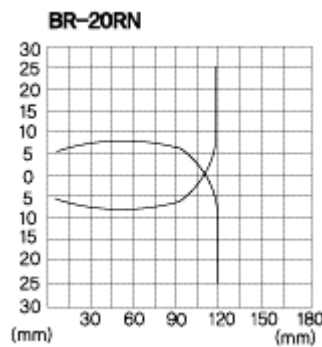
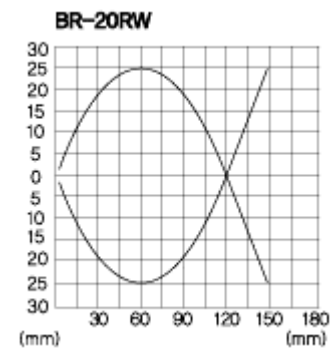
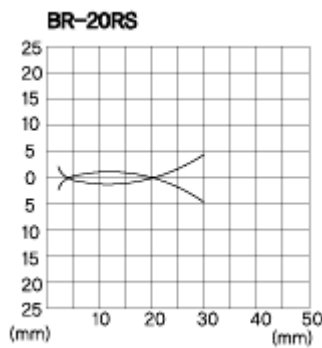
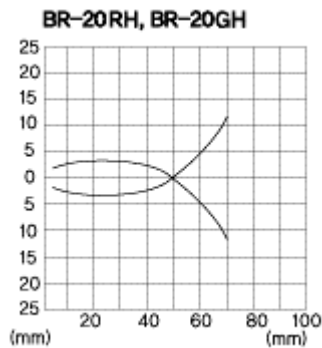
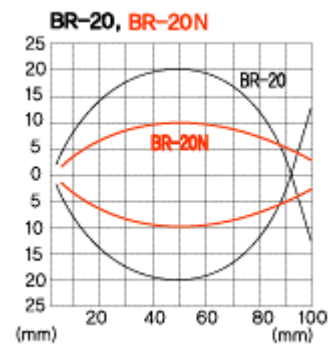
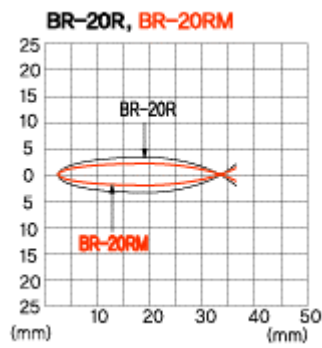
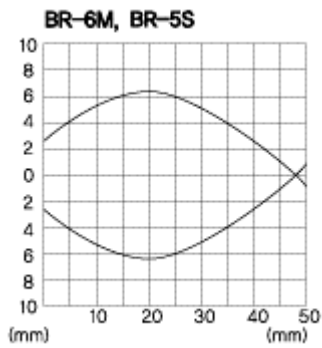
## ADJUSTMENT METHOD

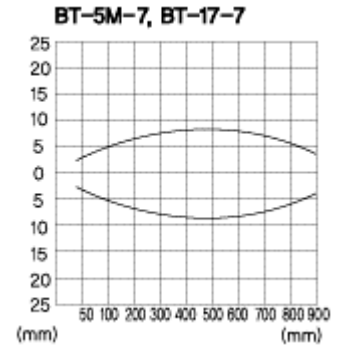
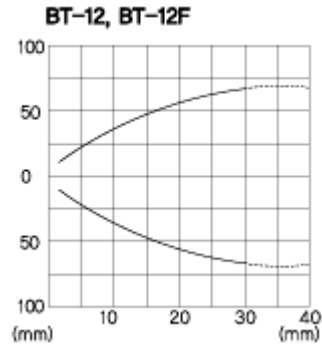
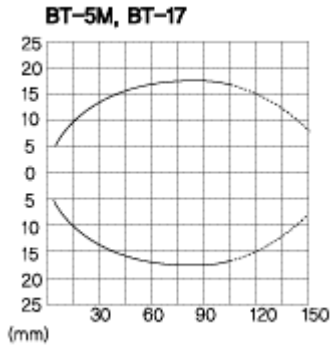
	No	Adjustment	Volume	Lamp	Adjustment method
Thru beam (Retro-reflective)	1			Green Red	In state of no detectable object, turn volume to the right for Green lamp. This point is A.
	2			Green Red	In state of no detectable object, turn to the right for Red lamp. This point is B. (If no lamp, B is the point to turn to the end.)
	3			Green Red	Fix volume in the middle of A and B, and check sensor's operation.
Reflection type	1			Green Red	In state of no detectable object, turn to the right for Green lamp. This point is A.

2			<p>Green </p> <p>Red </p>	<p>Remove a detective object turn to the right for Red lamp. This point is B. (If no lamp, B is the point to turn to the end.)</p>
3			<p>Green </p> <p>Red </p>	<p>Fix volume in the middle of A and B, and check sensor's operation.</p>

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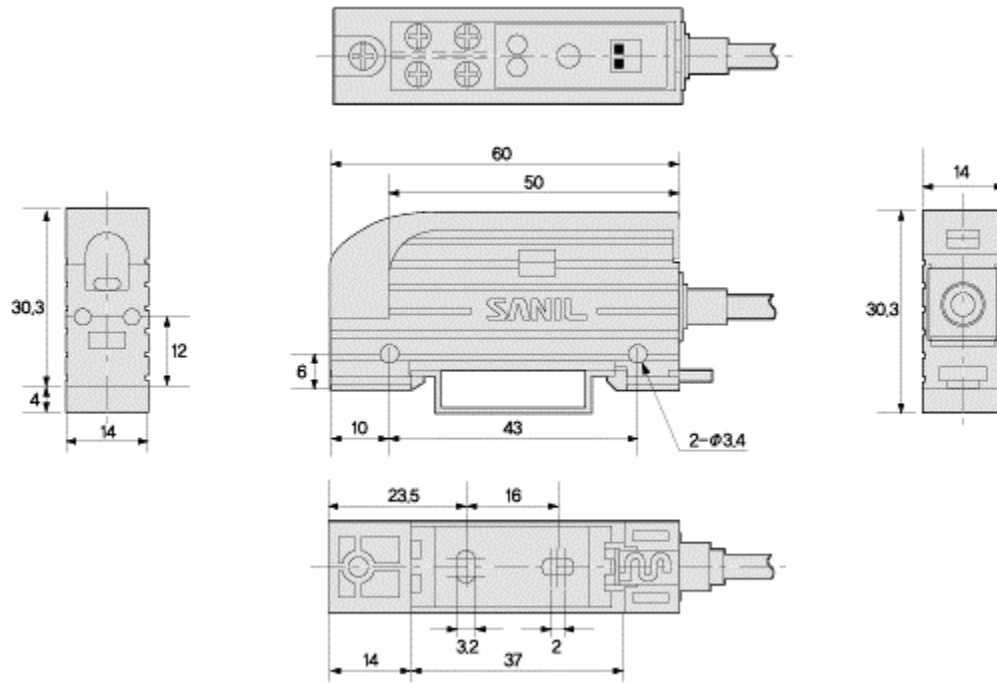
**SENSOR HEAD SENSING FIELDS**





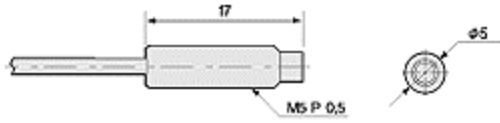
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**OUTLINE DIMENSIONS(SB-99)**

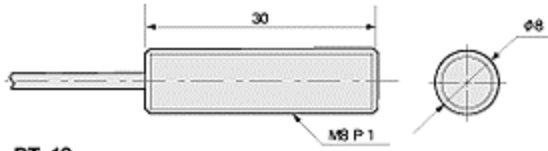


**OUTLINE DIMENSIONS(Sensor)**

BT-5M, BT-5M-7



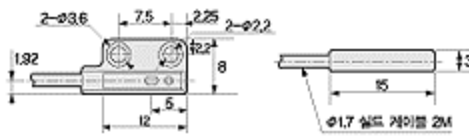
BT-8M



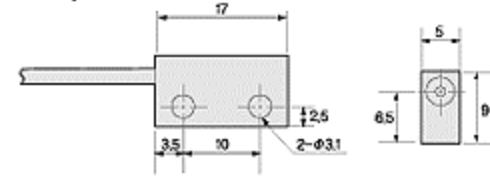
BT-12



BT-12F



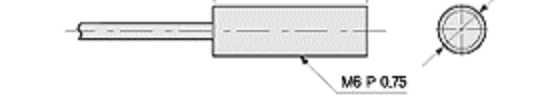
BT-17, BT-17-7



BR-5S



BR-6M



BR-20, BR-20N, BR-20R, BR-20RS, BR-20RW, BR-20GH, BR-20RH, BR-20GN, BR-20RN

