

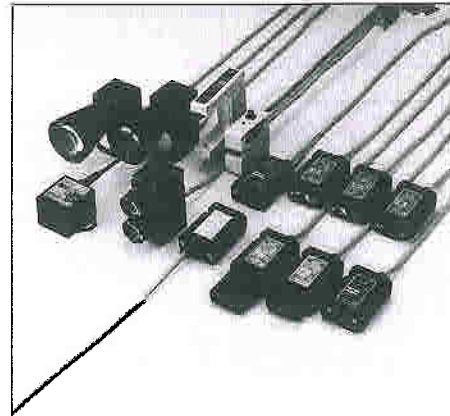
Amplifier built-in type

RS/RT series

Beam sensors

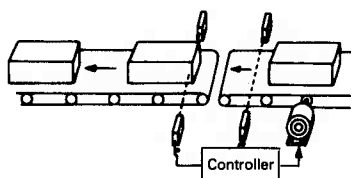
Substantial series for new version of beam sensor

- **Rich variety**
Multi-purpose, long distance or U-shape type for thru-beam type sensors and diffuse-reflective, limited distance diffuse-reflective type, or mark sensor for reflective type sensors. Our sensor fulfill your every need.
- **Strong die casting enclosure**
Our strong die casting enclosure for worry-free operation is available on all models.

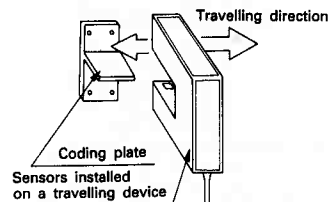


APPLICATIONS

Positioning of cardboard boxes/ Thru-beam type

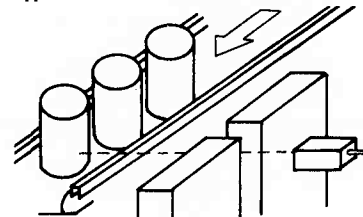


Address reading/U-shape type

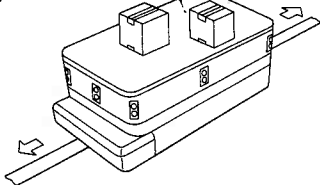


Also suited for pass detection of orbit objects such as crane-carrying truck.

Detection through narrow spaces/ Narrow-view diffuse-reflective type

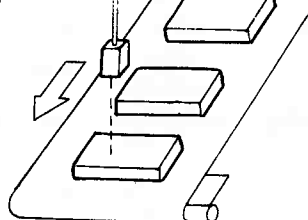


Collision prevention on un-manned car/ Long distance diffuse-reflective type



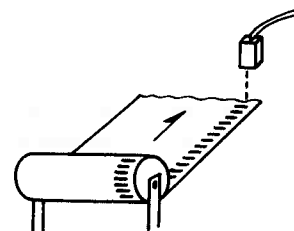
Long distance diffuse-reflective type is best suited for collision prevention

Package detection over conveyors/ Limited-distance diffuse-reflective type





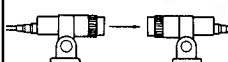











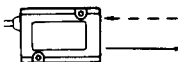


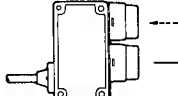



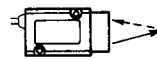















It won't detect conveyor or backwall.

Mark detection/Mark sensor



CLASSIFICATIONS

		Appearance	Sensing distance	Unit No.	Power source	Output	Emitting element			
Thru-beam	For mark detection		 5m	RT-110	12 to 24V DC ± 10%	NPN transistor with pull-up resistor	Infrared LED			
			 2m	RT-110-R			Red LED			
			 30cm	RT-110-G			Green LED			
	Long distance		 10m	RT-310			Infrared LED			
			 50m	RT-311						
			 150m	RT-911-5						
U-shape	For mark detection		 10mm	RT-610-10			12 to 24V DC ± 10%	NPN transistor with pull-up resistor	Infrared LED	
			 20mm	RT-610-20						
			 50mm	RT-610-50						
			 10mm	RT-610-10R						Red LED
			 20mm	RT-610-20R						
			 10mm	RT-610-10G					Green LED	
			 20mm	RT-610-20G						
			Diffuse-reflective		 70cm	RS-120H-1			12V DC ± 10%	NPN transistor solid state
 55cm	RS-220H-1									
Long distance diffuse-reflective		 3m	RS-720H-1							
			RS-720H-3							
			RS-720H-5							
Narrow-view diffuse-reflective		 1.5m	RS-820H-1							
Limited-distance diffuse-reflective	Diffuse light		 90mm (center 30mm)	RS-120HF-4	12 to 24V DC ± 10%	NPN transistor with pull-up resistor	Red LED			
			 17cm (center 6cm)	RS-120HF-8			Infrared LED			
	Spot light		 14 to 60mm (center 30mm)	RS-120HF-6R			Red LED			
			 10 to 50mm (center 30mm)	RS-120HF-6G			Green LED			
	Mark sensor	Multi-purpose		 8 to 28mm (center 15mm)			RS-120HF-5R	12 to 24V DC ± 10%	Red LED	
				 12 to 20mm (center 15mm)			RS-120HF-5G		Green LED	
High-speed and microscope spotted			 4 to 8mm (center 5mm)	RS-120HF-9R	12 to 24V DC ± 10%	Red LED				
			 4 to 7mm (center 5mm)	RS-120HF-9G	12V DC ± 10%	Green LED				
Long distance		 30 to 100mm	RS-120HF-7R	12 to 24V DC ± 10%	Red LED					

*1 : The limited distance diffuse-reflective type with spot light can be used as a mark sensor as well.

*2 : Multi-purpose or high-speed and microscope spotted mark sensor can be used as a limited-distance diffuse-reflective type as well.

● Hood or slit mask equipped types are available for thru-beam RT-110 sensors as follows

Unit No.	RT-110HF-13	RT-110HF-15	RT-110HF-23	RT-110HF-25	RT-110HF-05S	RT-110HF-1S
Content	With hood (Detector ø3mm) (Length: 19.5mm) • Sensing distance: 5m	With hood (Detector ø5mm) (Length: 19.5mm) • Sensing distance: 5m	With hood (Detector ø3mm) (Length: 41.5mm) • Sensing distance: 4m	With hood (Detector ø5mm) (Length: 41.5mm) • Sensing distance: 5m	With slit mask (Detector ø0.5mm) • Sensing distance: 1m	With slit mask (Detector ø1mm) • Sensing distance: 2m

OPTIONAL COMPONENTS (available by separate order)

Article	Mounting bracket (*1)		
Unit No.	MS-12 (*2)	MS-31	MS-72
Content	For RT-110..., RT-120...	For RT-310, RT-311	For RS-720H..., RT-911...

*1: When using thru-beam type, purchase two pieces of mounting bracket (as for MS-12 and MS-31) or two sets (as for MS-72).

*2: As screws are not attached to MS-12, they have to be purchased separately.

• In case insulation mounting bracket is needed, please notify us on purchasing.

SPECIFICATIONS (thru-beam type)

Classification		Thru-beam					
		For mark detection			Long distance		
Item	Unit No.	RT-110	RT-110-R	RT-110-G	RT-310	RT-311	RT-911-5 RT-911-15
Sensing distance		5m	2m	30cm	10m	50m	150m
Detectable object		Opaque of over ø4mm	Opaque, translucent of over ø4mm		Opaque of over ø28mm		Opaque of over ø50mm
Power source		12 to 24V DC ± 10% Ripple P-P: Less than 10%					
Consumption		Less than 50mA		Less than 55mA	Less than 70mA		
Output		NPN transistor with pull-up resistor • Sink current: Max. 80mA • Residual voltage: Less than 1V at 80mA sink current					
	Output operation	Light-ON / Dark-ON operation can be selected by two output wires					
Response time		Less than 5ms					
Operation indicator		Red LED (illuminates when receiving lights)					
Sensitivity adjustor		Continuously variable adjustor equipped					
Environmental resistance	Protection	IP62					IP66
	Ambient temperature	-10 to +60°C (with no dew and ice condensation)					
	Ambient humidity	35 to 85%RH					
	Extraneous light	Sun light: 11,000 lx at light receiving face Incandescent light: 3,500 lx at light receiving face	Sun light: 3,000 lx at light receiving face Incandescent light: 1,000 lx at light receiving face		Sun light: 11,000 lx at light receiving face Incandescent light: 3,500 lx at light receiving face		
	Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y and Z directions for 2 hours each in power OFF state					
	Shock	500m/s² (approx. 50G) impulse in each of X, Y and Z directions for 3 times each in power OFF state					
Emitting element		Infrared LED (modulated)	Red LED (modulated)	Green LED (modulated)	Infrared LED (modulated)		
Grounding method		Projector: Floating, Detector: Direct grounding					
Material		Enclosure: Zinc alloy die casting			Enclosure: Iron, Lens: Glass		Enclosure: Zinc alloy die casting, Lens: Glass, Lens holder: ABS
Cable		0.3mm² × 4 cores with 2m of cabtyre cable (2 cores only for projector)					
Cable extension		Extensible up to 100m using more than 0.3mm² cable					
Weight		Approx. 680g (projector and detector set)			Approx. 450g (projector and detector set)	Approx. 680g (projector and detector set)	Approx. 1,260g (projector and detector set)
Accessories		Screwdriver for sensitivity adjustment: 1 pc.					

SPECIFICATIONS (U-shape)

Classification		U-shape						
Item	Unit No.	For mark detection						
		RT-610-10	RT-610-20	RT-610-50	RT-610-10R	RT-610-20R	RT-610-10G	RT-610-20G
Sensing distance (fixed)		10mm	20mm	50mm	10mm	20mm	10mm	20mm
Detectable object		Opaque of over $\phi 4\text{mm}$			Opaque, translucent of over $\phi 4\text{mm}$			
Power source		12 to 24V DC $\pm 10\%$ Ripple P-P: Less than 10%						
Consumption		Less than 40mA						
Output		NPN transistor with pull-up resistor • Sink current: Max. 80mA • Residual voltage: Less than 1V at 80mA sink current						
Output operation		Light-ON/Dark-ON operation can be selected by two output wires						
Response time		Less than 1ms		Less than 2ms	Less than 1ms			
Operation indicator		Red LED (illuminates when receiving light)						
Sensitivity adjustor		Continuously variable adjustor equipped			Continuously variable adjustor equipped			
Environmental resistance	Protection	IP62	IP66		IP62	IP66	IP62	IP66
	Ambient temperature	-10 to +60°C (with no dew or ice condensation)						
	Ambient humidity	35 to 85%RH						
	Extraneous light	Sun light: 11,000 lx at light receiving face Incandescent light: 3,500 lx at light receiving face			Sun light: 3,000 lx at light receiving face Incandescent light: 1,000 lx at light receiving face			
	Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y and Z directions for 2 hours each in power OFF state						
	Shock	500m/s ² (approx. 50G) impulse in each of X, Y and Z directions for 3 times each in power OFF state						
Emitting element		Infrared LED (modulated)			Red LED (modulated)		Green LED (modulated)	
Grounding method		C (condenser) grounding						
Material		Enclosure: Aluminum alloy die casting						
Cable		0.3mm ² × 4 cores with 1m of cabtyre cable	0.3mm ² × 4 cores with 2m of cabtyre cable	0.3mm ² × 4 cores with 1m of cabtyre cable		0.3mm ² × 4 cores with 2m of cabtyre cable	0.3mm ² × 4 cores with 1m of cabtyre cable	0.3mm ² × 4 cores with 2m of cabtyre cable
Cable extension		Extensible up to 100m using more than 0.3mm ² cable						
Weight		Approx. 150g	Approx. 240g	Approx. 180g	Approx. 150g	Approx. 240g	Approx. 150g	Approx. 240g
Accessories		Screwdriver for sensitivity adjustment: 1 pc., Insulation mounting bracket: 1 set						

SPECIFICATIONS (Diffuse-reflective)

Classification		Diffuse-reflective									
		Multi-purpose		Long distance				Narrow-view			
				Fan-shaped view	Trumpet-shaped view				Red light		
Item	Unit No.	RS-120H-1	RS-220H-1	RS-720H-1	RS-720H-3	RS-720H-5	RS-820H-1	RS-120HF-1	RS-120HF-2	RS-120HF-2R	
Sensing distance		70cm (*1)	55cm (*1)	3m (*2)	3m (*3)		1.5m (*2)	60cm (*1)	40cm (*1)	16cm (*1)	
Detectable object		Opaque, translucent and transparent									
Hysteresis		Less than 10% of sensing distance									Less than 15% of sensing distance
Lateral direction repeat accuracy								Less than 2mm	Less than 1mm		
Power source		12 to 24V DC ± 10% Ripple P-P: Less than 10%					12V DC ± 10% Ripple P-P: Less than 10%	12 to 24V DC ± 10% Ripple P-P: Less than 10%			
Consumption		Less than 50mA					Less than 70mA	Less than 50mA			
Output		NPN transistor with pull-up resistor • Sink current: Max. 80mA • Residual voltage: Less than 1V at 80mA sink current					NPN transistor · solid state • Sink current: Max. 80mA • Residual voltage: Less than 1V at 80mA sink current	NPN transistor with pull-up resistor • Sink current: Max. 80mA • Residual voltage: Less than 1V at 80mA sink current			
Output operation		Light-ON/Dark-ON operation can be selected by two output wires									
Response time		Less than 5ms									
Operation indicator		Red LED (illuminates when receiving lights)									
Sensitivity adjustor		Continuously variable adjustor equipped									
Environmental resistance	Protection	IP62		IP66				IP62			
	Ambient temperature	-10°C to +60°C (with no dew or ice condensation)									
	Ambient humidity	35 to 85%RH									
	Extraneous light	Sun light: 11,000 lx at light receiving face Incandescent light: 3,500 lx at light receiving face									Sun light: 3,000 lx at light receiving face Incandescent light: 1,000 lx at light receiving face
	Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y and Z directions for 2 hours each in power OFF state									
	Shock	500m/s ² (approx. 50G) impulse in each of X, Y and Z directions for 3 times in power OFF state									
Emitting element		Infrared (modulated)									Red LED (modulated)
Grounding method		Direct grounding									
Material		Enclosure: Zinc alloy die casting		Enclosure: Zinc alloy die casting, Lens: Glass Lens holder: Resin (equivalent to ABS)			Enclosure: Zinc alloy die casting				
Cable		0.3mm ² × 4 cores with 2m of cabtyre cable									
Cable extension		Extensible up to 100m using more than 0.3mm ² cable									
Weight		Approx. 350g		Approx. 500g			Approx. 385g		Approx. 415g		
Accessories		Screwdriver for sensitivity adjustment: 1 pc.									

*1: Sensing distance of multi-purpose and narrow-view diffuse-reflective type are the values to a target of non-glossy white paper (20 × 20cm).

*2: Sensing distance of RS-720H-1 and RS-820H-1 are the values to a target of non-glossy white paper (30 × 30cm).

*3: Sensing distance of RS-720H-3 and RS-720H-5 are the values to a target of non-glossy white paper (100 × 100cm).

■ SPECIFICATIONS (limited-distance diffuse-reflective, mark sensor)

Classification		Limited-distance diffuse-reflective				Mark sensor					
		Diffuse-reflective (infrared light)		Spotted beam		Multi-purpose		High-speed and microscope spotted		Long distance (red light)	
				Red light	Green light	Red light	Green light	Red light	Green light		
Item	Unit No.	RS-120HF-4	RS-120HF-8	RS-120HF-6R	RS-120HF-6G	RS-120HF-5R	RS-120HF-5R-1M	RS-120HF-5G	RS-120HF-9R	RS-120HF-9G	RS-120HF-7R
Sensing distance (*1)		9cm (center 3cm)	17cm (center 6cm)	14 to 60mm (center 30mm)	10 to 50mm (center 30mm)	8 to 28mm (center 15mm)		12 to 20mm (center 15mm)	4 to 8mm (center 5mm)	4 to 7mm (center 5mm)	30 to 100mm
Detectable object		Opaque, translucent and transparent				Mark and opaque, transparent					
Hysteresis		Axial direction: 5mm Lateral direction: 0.2mm	Less than 10% of sensing distance	Axial direction: 2mm Lateral direction: 0.5mm		Lateral direction: 0.02mm		Lateral direction: 0.5mm	Lateral direction: 0.02mm		Less than 15% of sensing distance
Lateral direction repeat accuracy		Less than 0.2mm	Less than 2mm	Less than 0.2mm		Less than 0.02mm		Less than 0.6mm	Less than 0.02mm		Less than 2mm
Power source (*2)		12 to 24V DC ± 10%			12V DC ± 10%	12 to 24V DC ± 10%		12V DC ± 10%	12 to 24V DC ± 10%	12V DC ± 10%	12 to 24V DC ± 10%
Consumption		Less than 50mA			Less than 55mA	Less than 50mA		Less than 55mA	Less than 50mA	Less than 55mA	Less than 50mA
Output		NPN transistor with pull-up resistor • Sink current: Max. 80mA • Residual voltage: Less than 1V at 80mA sink current									
Output operation		Light-ON/Dark-ON operation can be selected by two output wires									
Response time		Less than 5ms				Less than 1ms	Less than 5ms	Less than 1ms		Less than 5ms	
Operation indicator		Red LED (illuminates when receiving lights)									
Sensitivity adjustor		Continuously variable adjustor equipped									
Environmental resistance	Protection	IP62									
	Ambient temperature	-10 to +60°C (with no dew or ice condensation)									
	Ambient humidity	35 to 85%RH									
	Extraneous light	Sun light: 11,000 lx at light receiving face Incandescent light: 3,500 lx at light receiving face		Sun light: 3,000 lx at light receiving face Incandescent light: 1,000 lx at light receiving face							
	Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y and Z directions for 2 hours each in power OFF state									
	Shock	500m/s ² (approx. 50G) impulse in each of X, Y and Z directions for 3 times each in power OFF state									
Emitting element		Infrared LED (modulated)	Red LED (modulated)	Green LED (modulated)		Red LED (modulated)	Green LED (modulated)	Red LED (modulated)	Green LED (modulated)	Green LED (modulated)	Red LED (modulated)
Grounding method		Direct grounding									
Material		Enclosure: Zinc alloy die casting	Enclosure: Zinc alloy die casting, Lens: Glass								
Cable		0.3mm ² × 4 cores with 2m of cabtyre cable									
Cable extension		Extensible up to 100m using more than 0.3mm ² cable									
Weight		Approx. 360g	Approx. 380g	Approx. 360g				Approx. 355g		Approx. 415g	
Accessories		Screwdriver for sensitivity adjustment: 1 pc.									

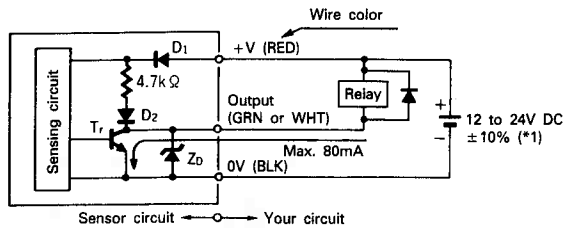
*1: Sensing distance is the value to a target of non-glossy white paper (20 × 20 cm). Sensing distance of RS-120HF-7R only is the value to a target of cardboard paper (20 × 20 cm).

*2: Tolerable ripple of power source is less than 10% of rated power voltage.

INPUT/OUTPUT AND TYPICAL CONNECTION DIAGRAMS

INPUT/OUTPUT Diagrams

• NPN transistor with pull-up resistor (for all sensors but RS-820H-1)



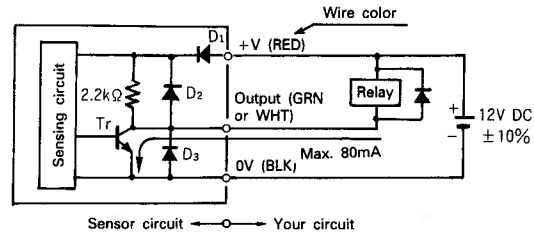
Where.....D₁ : Reverse polarity protection diode
 D₂ : Reverse current prevention diode
 Z_D : Surge absorption zener diode
 Tr : Output transistor

• Projector has the two-core cable for power source (+V and 0V)
 *1: RS-120HF-6G, RS-120HF-5G and RS-120HF-9G: 12V DC ± 10%

• Output operation

Wire color \ Classification	Thru-beam	Reflective
GRN	Dark-ON	Light-ON
WHT	Light-ON	Dark-ON

• NPN transistor solid state output (RS-820H-1)



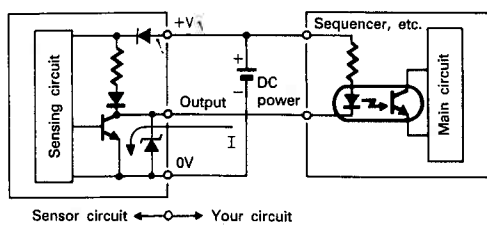
Where.....D₁ : Reverse polarity protection diode
 D₂, D₃ : Surge absorption diode
 Tr : Output transistor

• Output operation

Wire color is green...Light-ON
 Wire color is white...Dark-ON

Typical connection diagrams

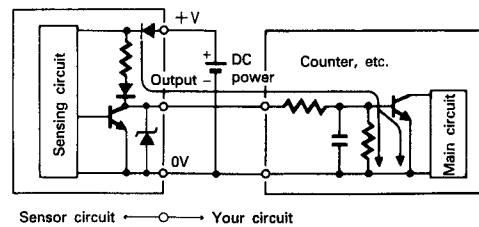
• For current-driven loads (sequencer, counter and photo-coupler)



I : Sink current

• Connection of solid state output is identical to that of NPN transistor with pull-up resistor shown above.

• For voltage-driven loads (sequencer, counter and logic circuit)

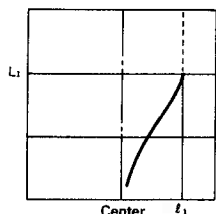


• Connection of solid state output is identical to that of NPN transistor with pull-up resistor shown above.

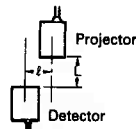
SENSING FIELDS

(These are typical sensing fields, and are subject to slight changes from unit to unit.)

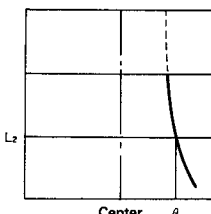
• Parallel deviation



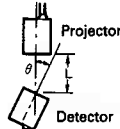
Ex) When the projector and the detector are at a distance L_1 and the sensor is moved toward the center from the right, the detector is activated in the light-ON operation mode at a distance l_1 away from the center (at max. sensitivity).



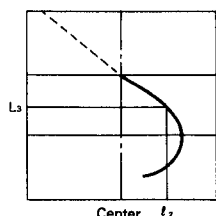
• Angular deviation



Ex) When the projector and the detector are at a distance L_2 and the angle θ_1 is gradually reduced by turning the sensor toward the center from the right, the detector is activated in the light-ON operation mode at angle θ_1 (at max. sensitivity).

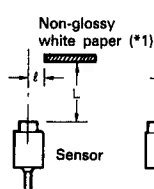


• Parallel deviation

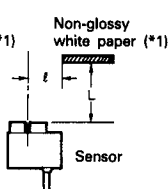


Ex) When the sensor and the target of non-glossy white paper are at a distance of L_3 and the paper is from the right (or from the top), and l_2 away from the center, the sensor is activated in the light-ON operation mode (at max. sensitivity).

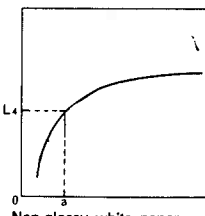
Horizontal (left-right) direction



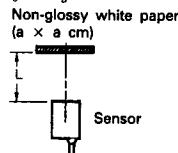
Vertical (up-down) direction



• Target size - Sensing distance correlation



In detecting a non-glossy white paper with a size smaller than the specified value, the sensing distance becomes shorter following the curve shown at left. For example, target size is $a \times a$, sensing distance is given as L_4 , at which the curve crosses "a".



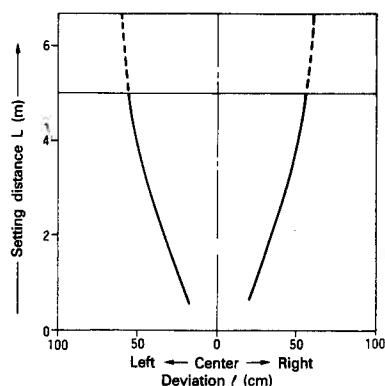
(The curve shows the values obtained when the sensor is adjusted to detect the specified non-glossy white paper at max. sensing distance.)

*1: Size of non-glossy white paper
RS-720H-1, RS-820H-1 (30 × 30cm)
RS-720H-3, RS-720H-5 (1 × 1m)
Others (20 × 20cm)

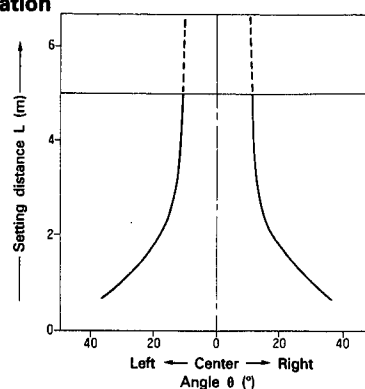
• When horizontal direction and vertical direction are identical, horizontal direction only is noted.

• RT-110/Thru-beam

• Parallel deviation

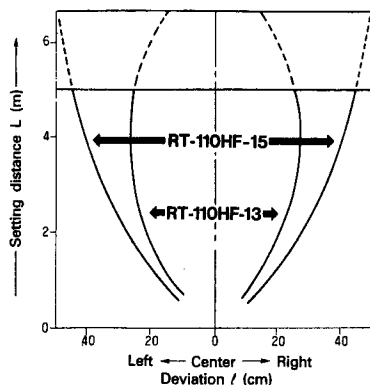


• Angular deviation

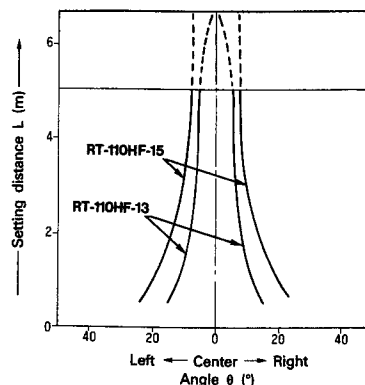


• RT-110HF-13, RT-110HF-15/Thru-beam with hood

• Parallel deviation

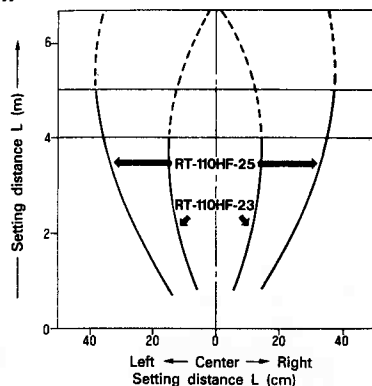


• Angular deviation

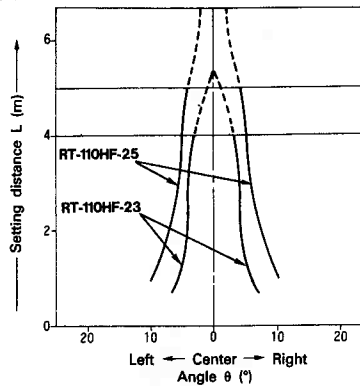


• RT-110HF-23, RF-110HF-25/Thru-beam with hood

• Parallel deviation

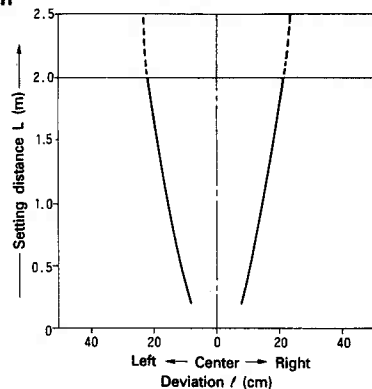


• Angular deviation

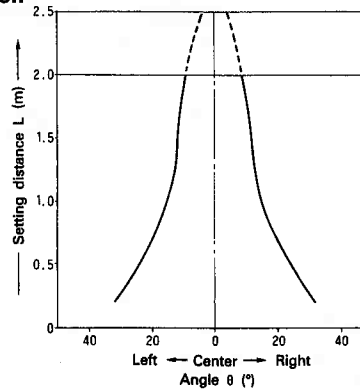


• RT-110-R/Thru-beam

• Parallel deviation

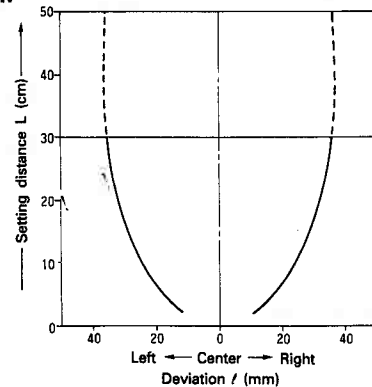


• Angular deviation

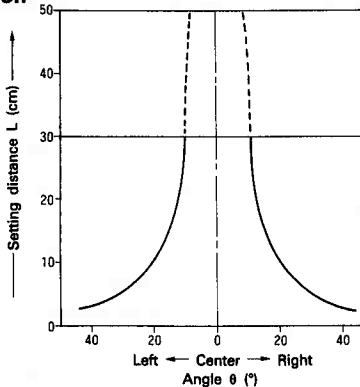


• RT-110-G/Thru-beam

• Parallel deviation

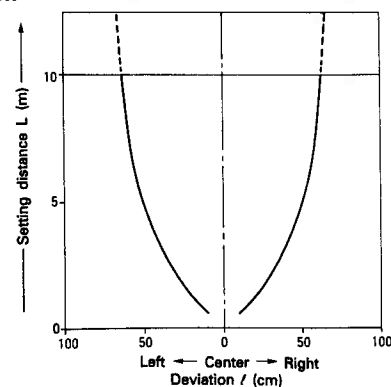


• Angular deviation

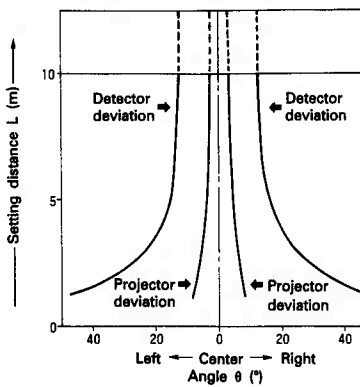


• RT-310/Thru-beam

• Parallel deviation

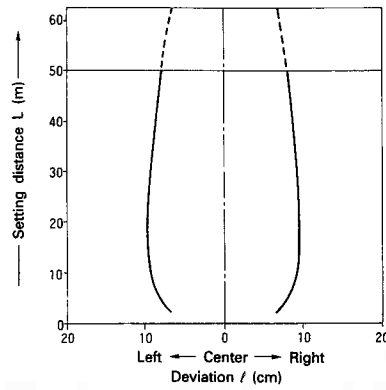


• Angular deviation

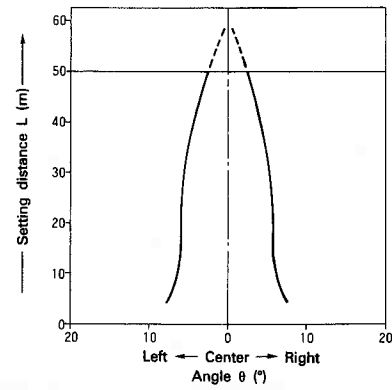


• RT-311/Thru-beam

• Parallel deviation

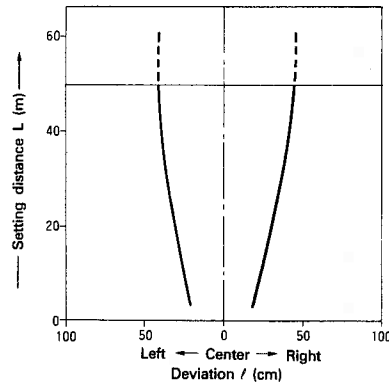


• Angular deviation

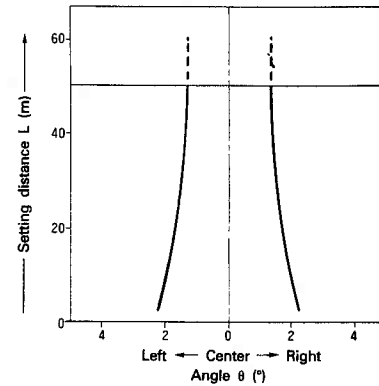


• RT-911-5/Thru-beam

• Parallel deviation

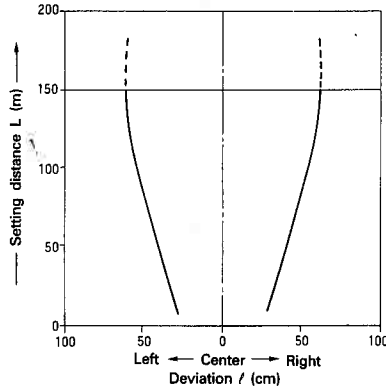


• Angular deviation

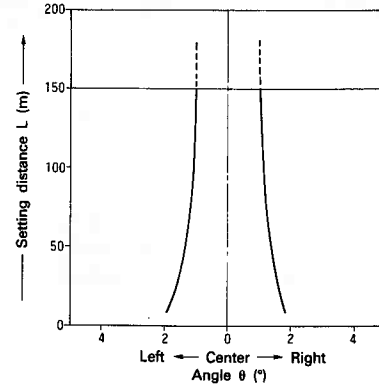


• RT-911-15/Thru-beam

• Parallel deviation

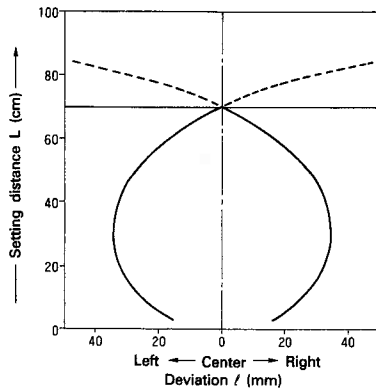


• Angular deviation

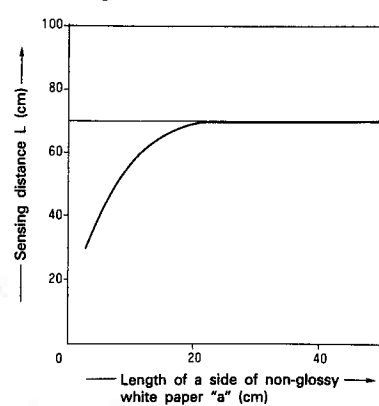


• RS-120H-1/Diffuse-reflective

• Parallel deviation

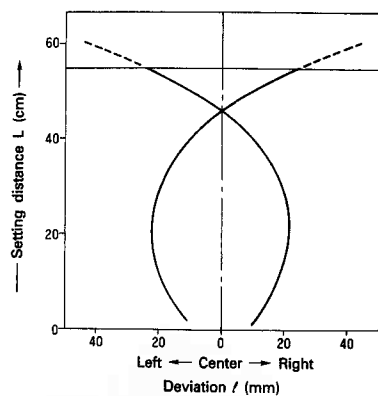


• Target size - Sensing distance correlation

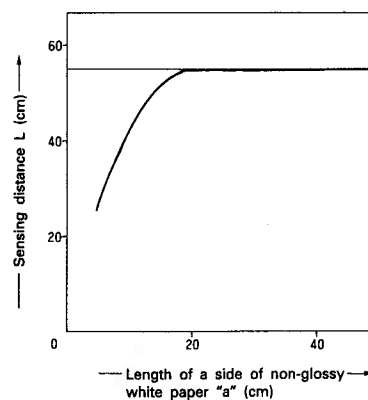


• RS-220H-1/Diffuse-reflective

• Parallel deviation

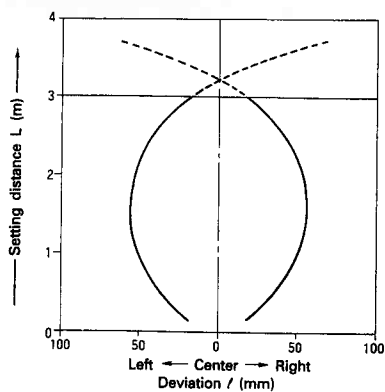


• Target size - Sensing distance correlation

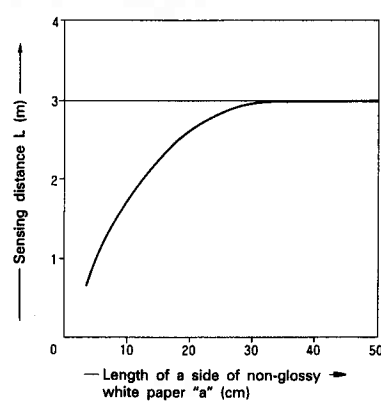


• RS-720H-1/Diffuse-reflective

• Parallel deviation

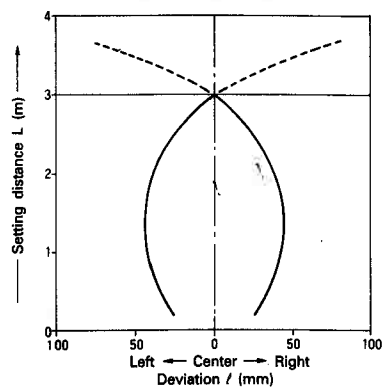


• Target size - Sensing distance correlation

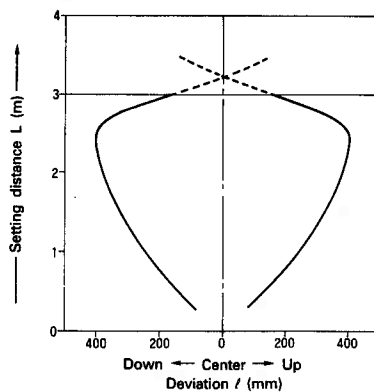


• RS-720H-3/Diffuse-reflective

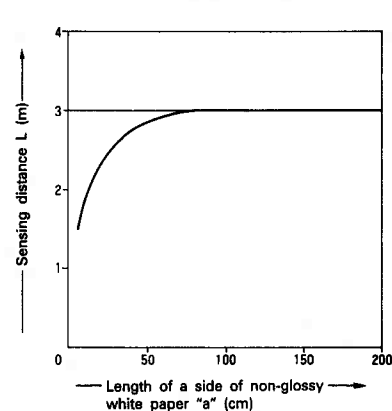
• Parallel deviation (horizontal)



• Parallel deviation (lateral)

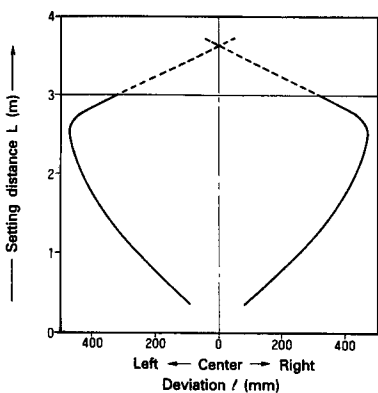


• Target size - Sensing distance correlation

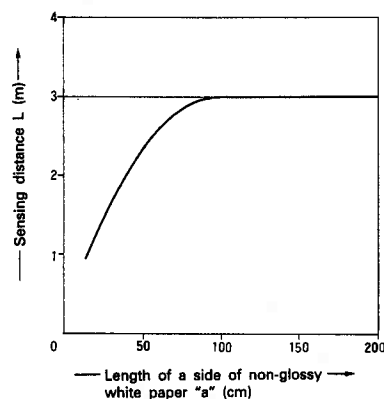


• RS-720H-5/Diffuse-reflective

• Parallel deviation

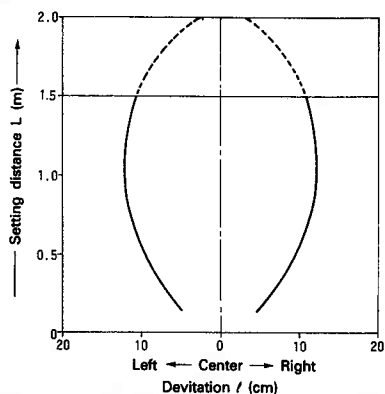


• Target size - Sensing distance correlation

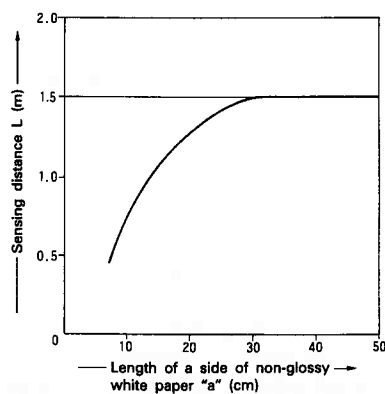


● RS-820H-1/Diffuse-reflective

● Parallel deviation

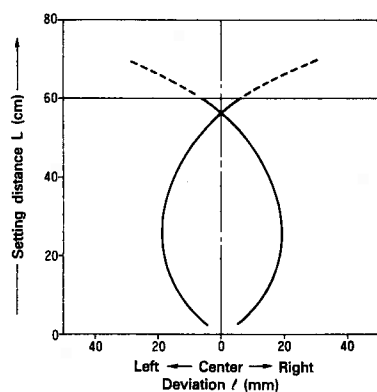


● Target size - Sensing distance correlation

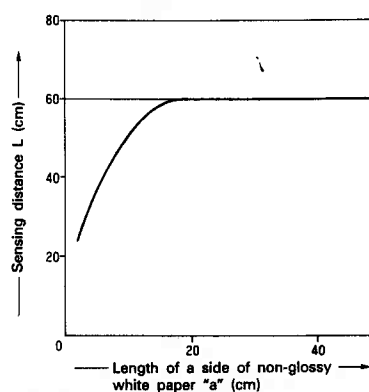


● RS-120HF-1/Diffuse-reflective

● Parallel deviation

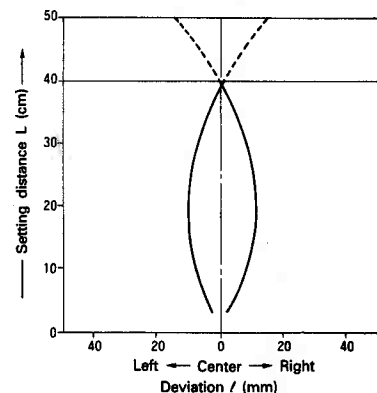


● Target size - Sensing distance correlation

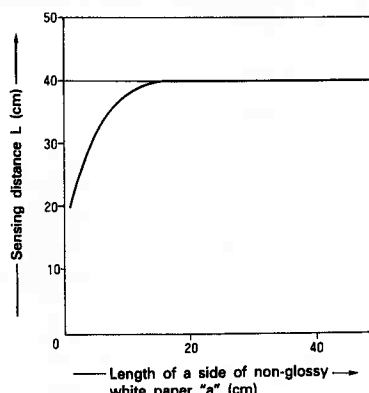


● RS-120HF-2/Diffuse-reflective

● Parallel deviation

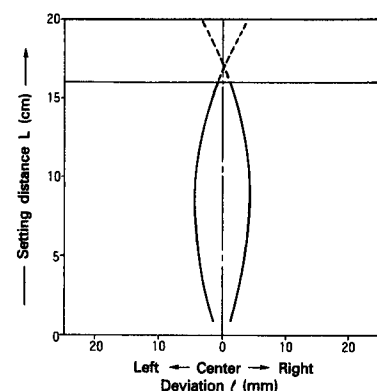


● Target size - Sensing distance correlation

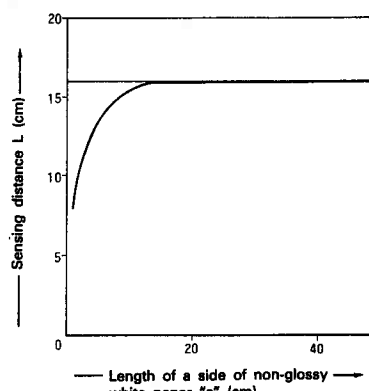


● RS-120HF-2R/Diffuse-reflective

● Parallel deviation

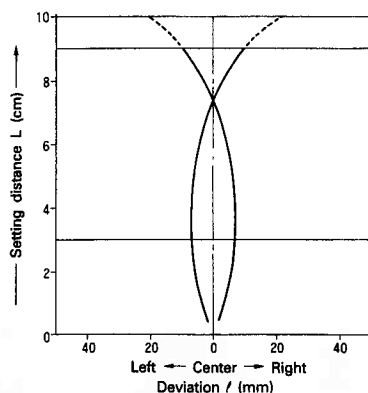


● Target size - Sensing distance correlation

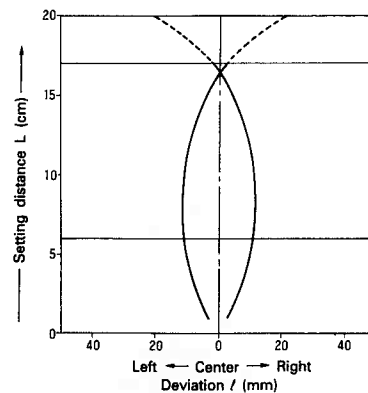


● RS-120HF-4/Limited-distance diffuse-reflective — ● RS-120HF-8/Limited-distance diffuse-reflective

● Parallel deviation

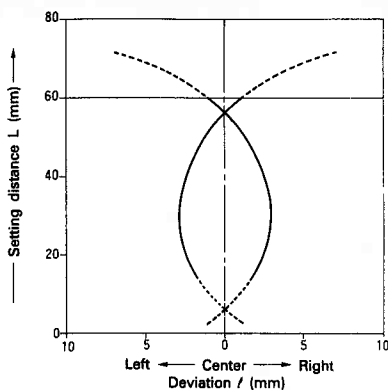


● Parallel deviation

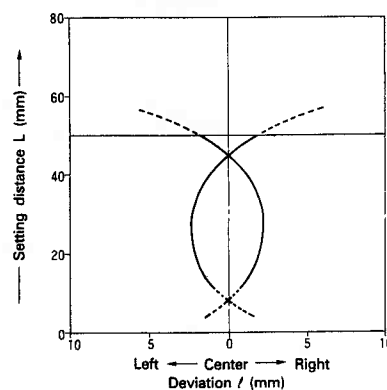


● RS-120HF-6R/Limited-distance diffuse-reflective — ● RS-120HF-6G/Limited-distance diffuse-reflective

● Parallel deviation

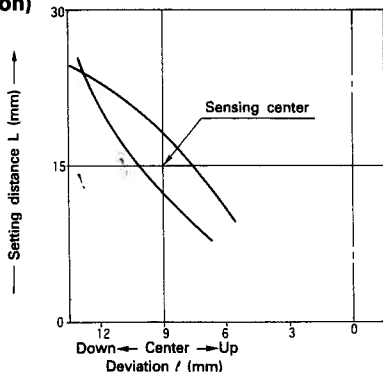


● Parallel deviation

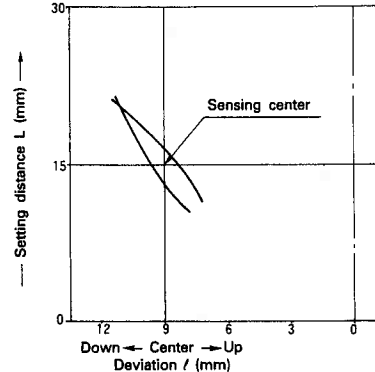


● RS-120HF-5R, RS-120HF-5R-1M/Mark sensor — ● RS-120HF-5G/Mark sensor

● Parallel deviation (lateral direction)



● Parallel deviation (lateral direction)

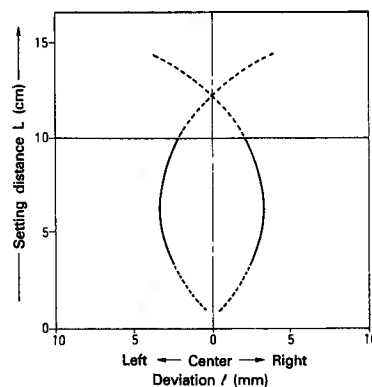
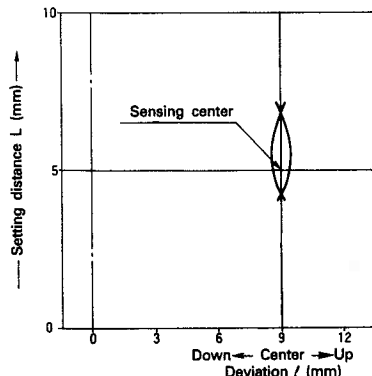
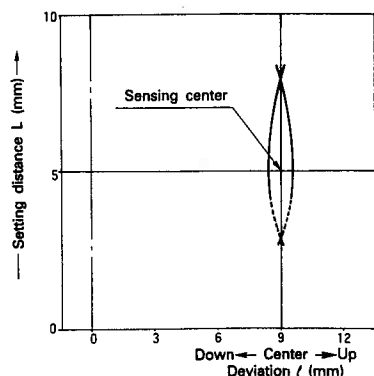


● RS-120HF-9R/Mark sensor — ● RS-120HF-9G/Mark sensor — ● RS-120HF-7R/Mark sensor

● Parallel deviation (lateral direction)

● Parallel deviation (lateral direction)

● Parallel deviation



FOR PROPER USE

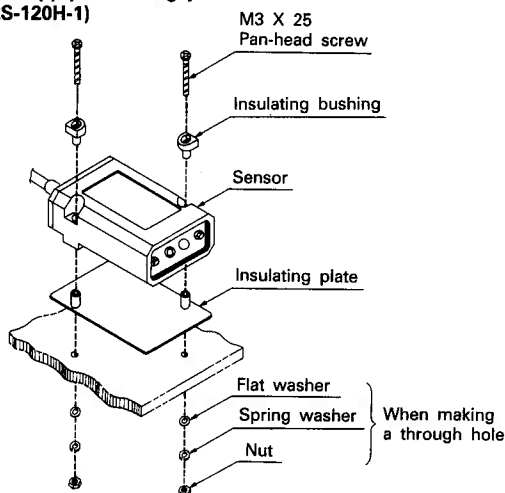
Enclosure grounding

In the RS/RT series, C (condenser) grounding method is used for RT-610 type and direct grounding for the rest of the series to improve noise resistance. Use insulating fittings in the following two cases. (Please contact SUNX supplier for the fittings since sensors except RT-610 type do not have insulating fittings as accessories.)

1. A welder, an ultrasonic welder or other equipment which make high frequency noise exists near the sensor, and the mounting holder is made from conductive material (metal etc.).
2. Mounting bracket of electrically-conductive material and sensor circuit's 0V cannot be connected.

* Do not use power source with an autotransformer (single volume transformer).

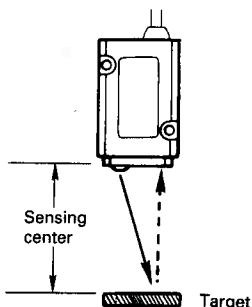
How to apply insulating parts (for RS-120H-1)



Setting distance of mark sensor

Sensing center (center of detecting and projecting range) is the optimum distance to be used as a mark sensor.

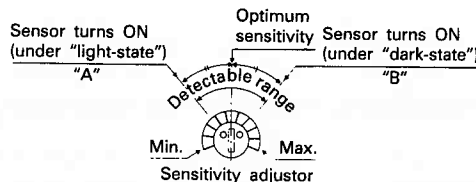
	Center of sensing distance	Spot
RS-120HF-5R RS-120HF-5R-1M RS-120HF-5G	15mm	Approx. $\phi 1\text{mm}$
RS-120HF-9R RS-120HF-9G	5mm	Approx. $\phi 0.5\text{mm}$



Sensitivity adjustment

1. First turn the adjustor to the min. position (full counter-clockwise).
2. Then, turn it slowly clockwise and check the point "A" at which the sensor becomes light receiving state with "light-state".

3. Remove the target to make "dark-state".
4. Turn the adjustor further clockwise to find the point "B" where the sensor becomes light receiving state due to the reflected lights from the background. If there exists no point where the sensor becomes light receiving state, the max. point (full clockwise point) is regarded as the point "B".
5. The optimum sensitivity is obtained by setting the reading at a midway between "A" and "B". To make this adjustment, use the supplied screwdriver and turn the adjustor slowly. Too much force to the adjustor may cause damage.



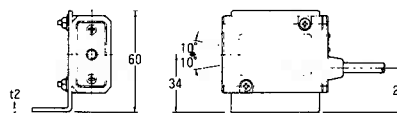
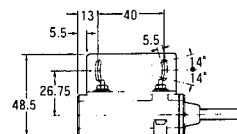
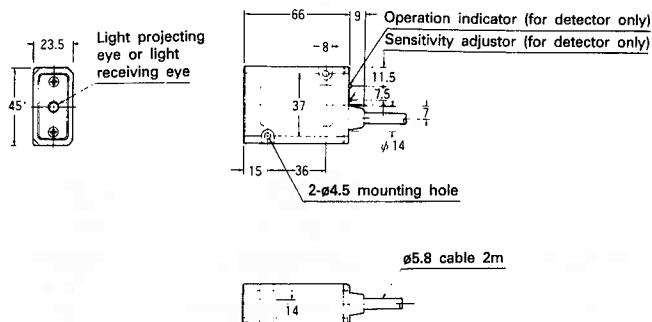
	"Light" state	"Dark" state
Thru-beam		
U-shape		
Diffuse-reflective		
Limited-distance diffuse-reflective		
Mark sensor		

- If a switching regulator is used for the power source of the sensor, be sure to ground the frame ground (F.G.) terminal to an actual ground.
- RS/RT series is not equipped with short-circuit protection. Do not connect directly to power source or to capacitive load.
- Do not use a beam sensor where it may be exposed to steam or dust, or where it may come in direct contact with water.
- Do not run sensor cables parallel to high-voltage lines or power lines, nor put them together in the same raceway. This warning should be strictly observed to prevent malfunctions caused by inductive interference.
- Avoid places where the beam sensors are exposed to direct fluorescent lights with rapid-starters or high frequency starters.

DIMENSIONS (mm)

- RT-110
- RT-110-R
- RT-110-G

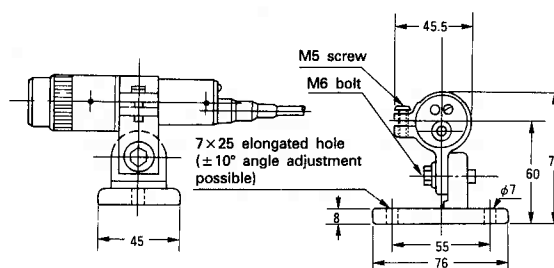
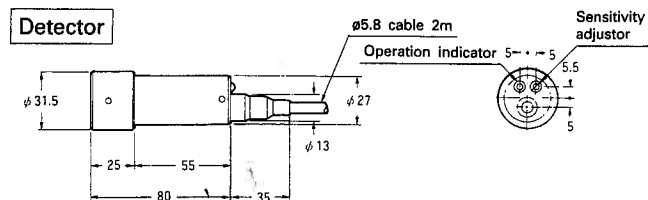
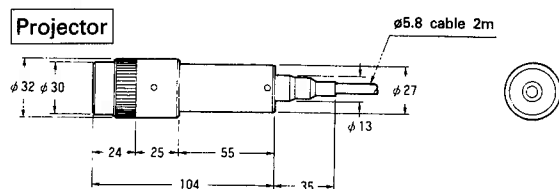
Mounting of MS-12



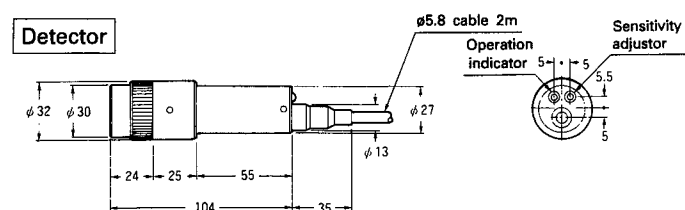
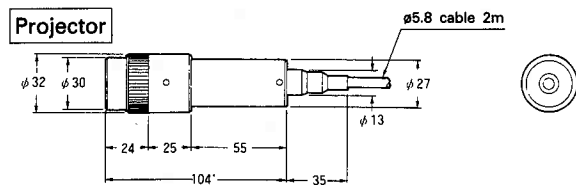
• Dimensions of the RT-110... and the RS-120... are identical to the above figures.

RT-310

Mounting of MS-31



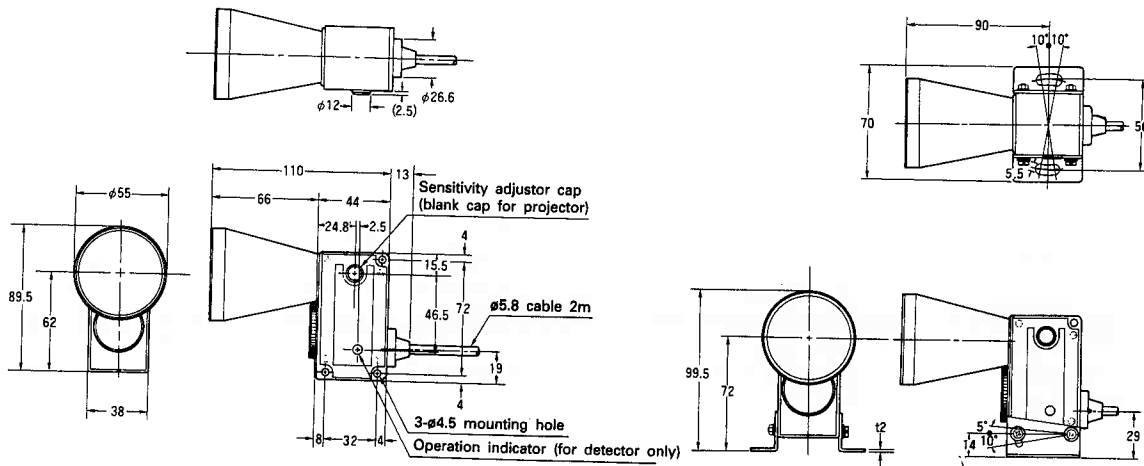
RT-311



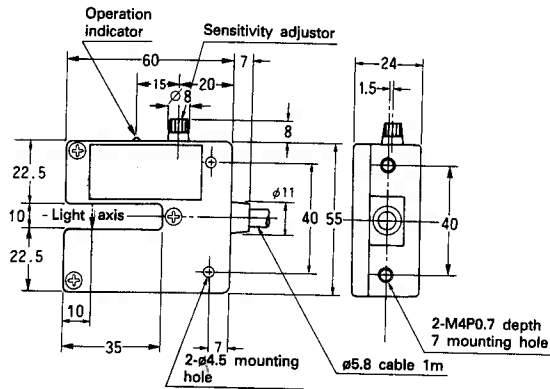
(mm)

- RT-911-5
- RT-911-15

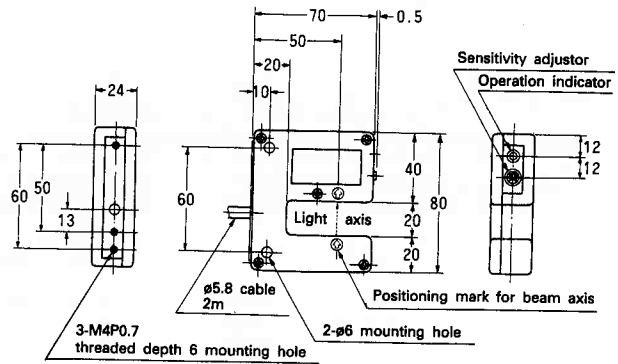
• Mounting of MS-72



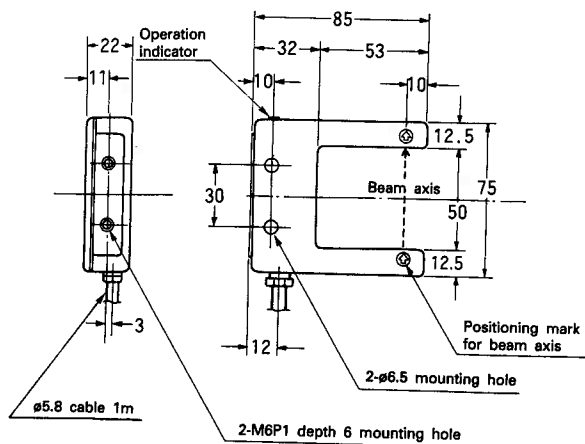
- RT-610-10
- RT-610-10R
- RT-610-10G



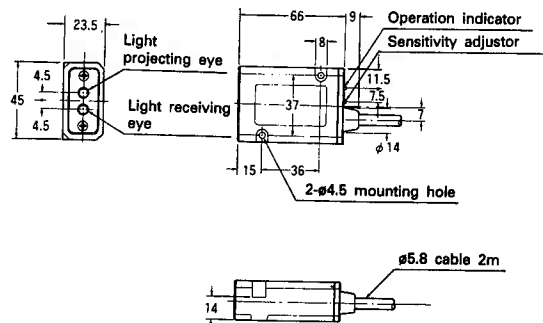
- RT-610-20
- RT-610-20R
- RT-610-20G



- RT-610-50



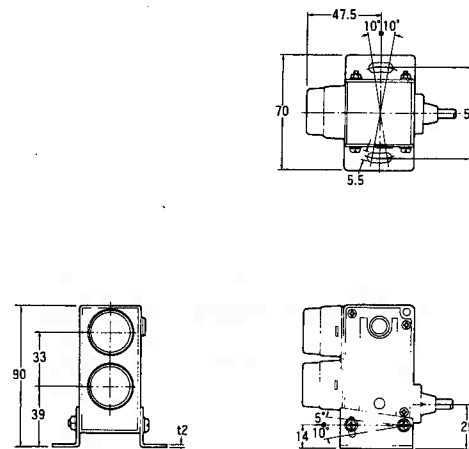
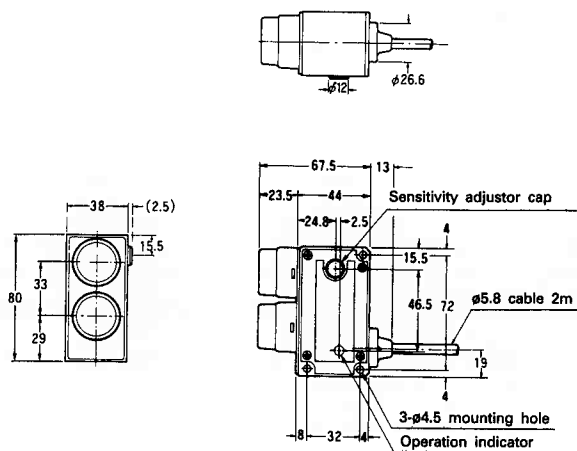
- RS-120H-1
- RS-220H-1



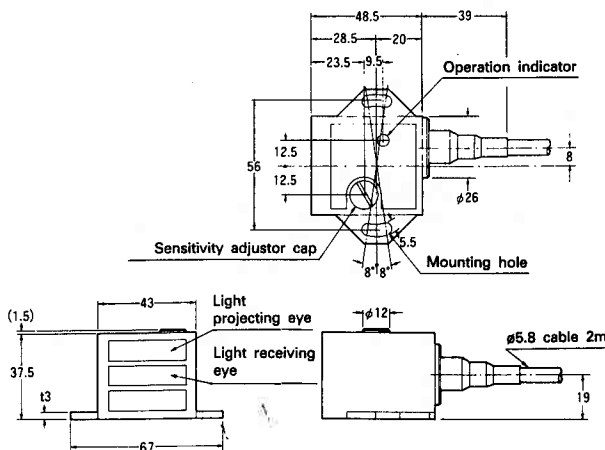
(mm)

- RS-720H-1
- RS-720H-3
- RS-720H-5

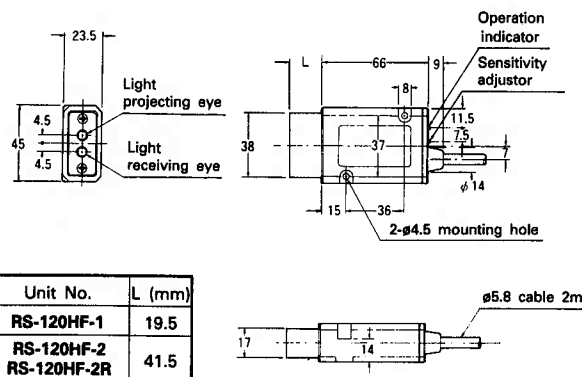
• Mounting of MS-72



• RS-820H-1

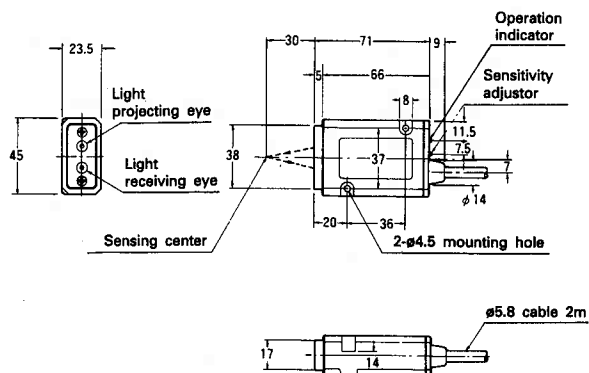


- RS-120HF-1
- RS-120HF-2
- RS-120HF-2R

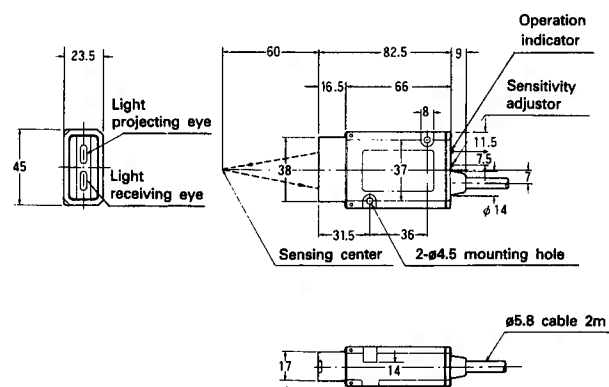


Unit No.	L (mm)
RS-120HF-1	19.5
RS-120HF-2	41.5
RS-120HF-2R	41.5

• RS-120HF-4

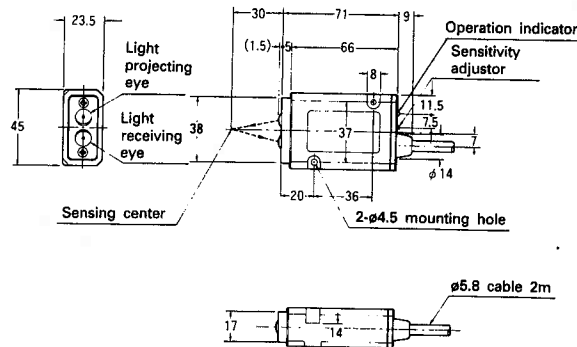


• RS-120HF-8

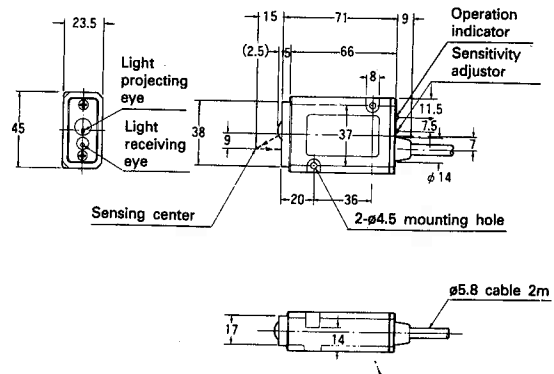


(mm)

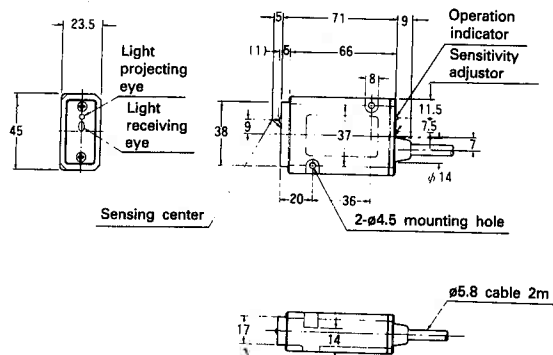
- RS-120HF-6R
- RS-120HF-6G



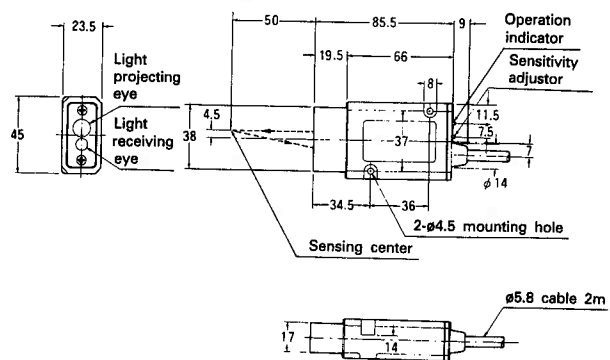
- RS-120HF-5R
- RS-120HF-5R-1M
- RS-120HF-5G



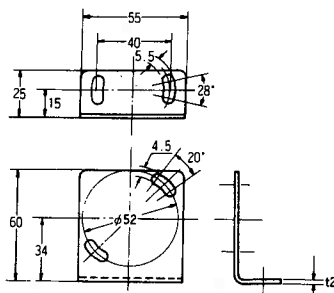
- RS-120HF-9R
- RS-120HF-9G



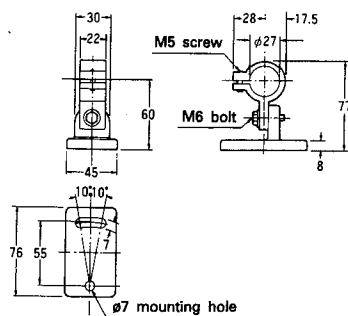
- RS-120HF-7R



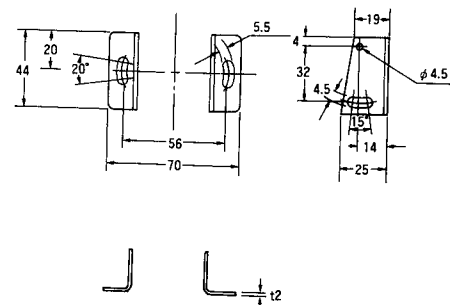
- MS-12 (optional)



- MS-31 (optional)



- MS-72 (optional)



Material: SPC

- Mounting bracket does not include screw, nut, spring washer and flat washer.
- M4 Pan-head screw (25mm long), nut, spring washer and flat washer are optional.

Material: Aluminum alloy

Material: SPC (uni-chrome plated)

- Two M4 × 50mm pan-head screws, four flat washers, two spring washers and two nuts included.