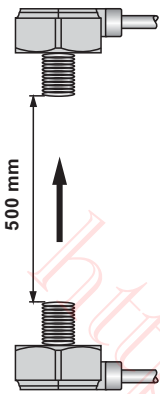


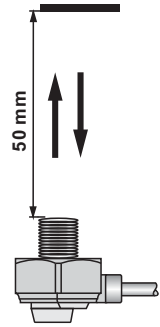




RP14 SERIES

AK: CP35 SERIES

Thru-beam Mode & Diffuse Mode

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>Thru-beam mode Sensing Distance 500mm Light source Red LED</p>	2m Cable 	10-30V DC	Emitter	<u>RP14-T0500D-EY6C2L2</u>
			NPN Light-ON	<u>RP14-T0500N-LY6C3U2</u>
			NPN Dark-ON	<u>RP14-T0500N-DY6C3U2</u>
			PNP Light-ON	<u>RP14-T0500P-LY6C3U2</u>
			PNP Dark-ON	<u>RP14-T0500P-DY6C3U2</u>
	5m Cable 	10-30V DC	Emitter	<u>RP14-T0500D-EY6C2L5</u>
			NPN Light-ON	<u>RP14-T0500N-LY6C3U5</u>
			NPN Dark-ON	<u>RP14-T0500N-DY6C3U5</u>
			PNP Light-ON	<u>RP14-T0500P-LY6C3U5</u>
			PNP Dark-ON	<u>RP14-T0500P-DY6C3U5</u>
 <p>Diffuse mode Sensing Distance 50mm Light source Red LED</p>	2m Cable 	10-30V DC	NPN Light-ON	<u>RP14-D0050N-LY6C3U2</u>
			NPN Dark-ON	<u>RP14-D0050N-DY6C3U2</u>
			PNP Light-ON	<u>RP14-D0050P-LY6C3U2</u>
			PNP Dark-ON	<u>RP14-D0050P-DY6C3U2</u>
			—	—
	5m Cable 	10-30V DC	NPN Light-ON	<u>RP14-D0050N-LY6C3U5</u>
			NPN Dark-ON	<u>RP14-D0050N-DY6C3U5</u>
			PNP Light-ON	<u>RP14-D0050P-LY6C3U5</u>
			PNP Dark-ON	<u>RP14-D0050P-DY6C3U5</u>
			—	—

Note:

Coming Soon : Part numbers with underline
In Preparation: Part numbers with a line through the middle

RP14 SERIES

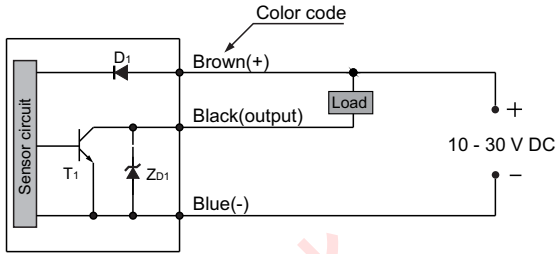
Specifications

Item	Type		Thru-beam Mode		Diffuse Mode	
	Model No.	NPN output	RP14-T0500N-LY6C3Ux	RP14-T0500N-DY6C3Ux	RP14-T0050N-LY6C3Ux	RP14-T0050N-DY6C3Ux
		PNP output	RP14-T0500P-LY6C3Ux	RP14-T0500P-DY6C3Ux	RP14-T0050P-LY6C3Ux	RP14-T0050P-DY6C3Ux
Sensing range	500 mm			50 mm(Note)		
Sensing object	φ2 mm or more opaque object			Opaque, translucent or transparent object		
Hysteresis	—			15 % or less of operation distance		
Repeatability	0.05 mm or less			0.5 mm or less		
Supply power	10 - 30 V DC 10% Ripple P-P % or less					
Current consumption	Emitter: 10 mA or less, Receiver: 15 mA or less			20 mA or less		
Output	<NPN output type> NPN open-collector transistor Maximum sink current: 50 mA Applied voltage: 30V DC or less(between output and 0V) Residual voltage: 1V or less(at 50 mA sink current) 0.4 V or less (at 16 mA sink current)			<PNP output type> PNP open-collector transistor Maximum source current: 50 mA Applied voltage: 30V DC or less(between output and +V) Residual voltage: 1V or less(at 50 mA source current) 0.4 V or less (at 16 mA source current)		
Output operation	Light-ON		Dark-ON		Light-ON	
Short-circuit protection	Incorporated					
Light source	Red LED (modulated)					
Response time	0.5 ms or less					
Operation indicator	Orange LED (lights up when the output is ON)(incorporated on the receiver for thru-beam type)					
Stability indicator	Green LED (lights up under stable light received condition or stable dark condition, incorporated on the receiver)			Green LED (lights up under stable light received condition or stable dark condition)		
Sensitivity adjuster	—			Continuously variable adjuster		
Pollution degree	3(Industrial environment)					
Protection	IP67 (IEC)					
Ambient temperature	-25 to 55 °C(No dew condensation or icing allowed), Storage: -30 to +70 °C					
Ambient humidity	35 to 85% RH,Storage:35 to 85% RH					
Ambient illuminance	Sunlight:11,000 lx at the light-receiving face, Incandescent light:3500 lx at the light-receiving face					
EMC	IEC 60947-5-2 Parts 7.2.6.1,2,3 or RFI>3V/m(ln30-1000MHz),EFT>1KV,ESD>4KV(contact)					
Voltage withstandability	IEC 60947-5-2 Parts 8.3.3.4, or 500VDC for one min between all supply terminals connected together and enclosure					
Insulation resistance	>20MΩ, with 250V DC megger between all supply terminals connected together and enclosure					
Vibration resistance	IEC 60947-5-2 Parts 7.4.2 or 10-55Hz 1.0m amplitude in x, y and z directions for 30 min					
Shock resistance	IEC 60947-5-2 Parts 7.4.1 or 30g 11ms in x, y and z directions for six time each					
Material	Enclosure: Die-cast zinc(Nickel plated), Lens: Polycarbonate, Enclosure cover: polycarbonate					
Cable	0.1 mm ² 3-core (thru-beam type sensor emitter: 2-core) cabtyre cable, 2 m long					
Cable extension	Extension up to total 50m is possible with 0.3mm ² , or more, cable (thru-beam type: both emitter and receiver).					
Weight	Emitter: 20g approx., Receiver: 20g approx.			20g approx.		

Note: The sensing range is specified of white non-glossy paper (100 X 100 mm) as the object.

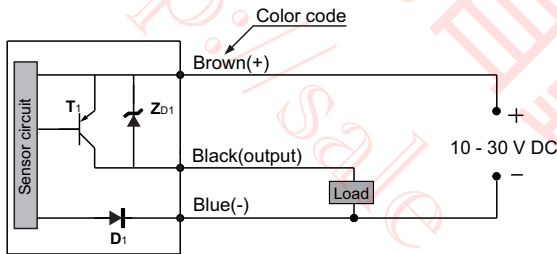
Connection Diagrams

NPN output type



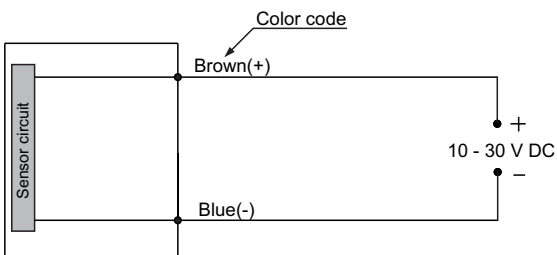
Symbols...D1: Reverse supply polarity protection diode
 ZD1: Surge absorption zener diode
 T1: NPN output transistor

PNP output type



Symbols...D1: Reverse supply polarity protection diode
 ZD1: Surge absorption zener diode
 T1: PNP output transistor

Emitter

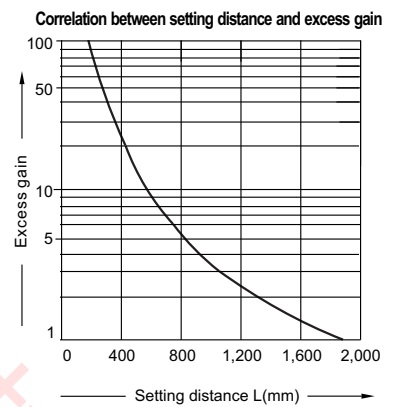
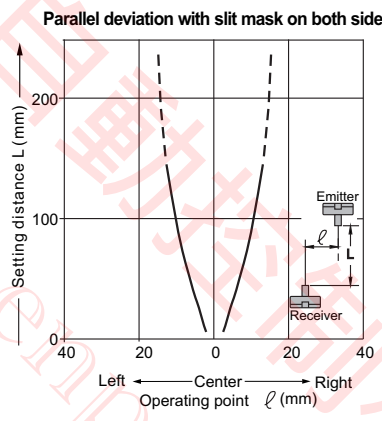
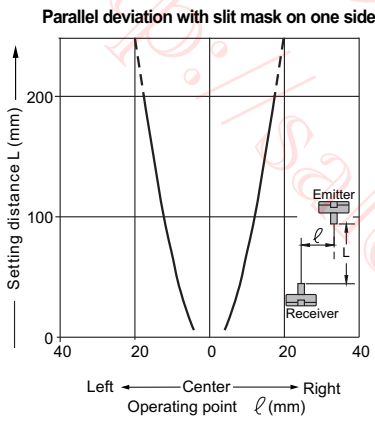
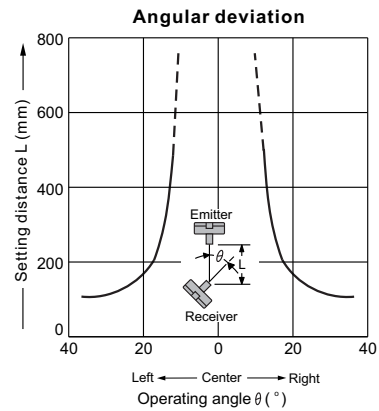
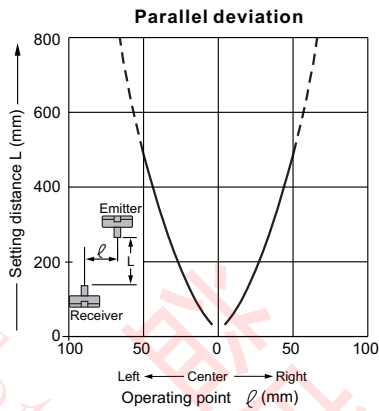


RP14 SERIES

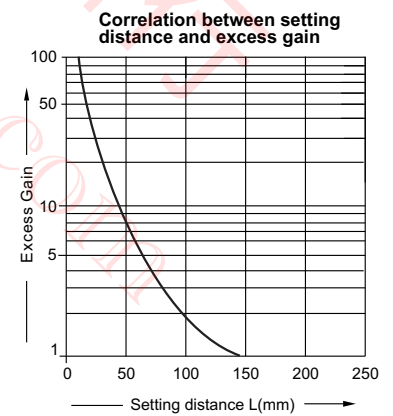
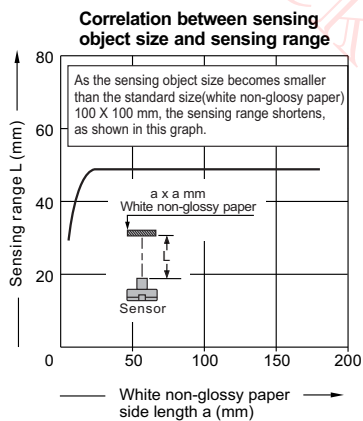
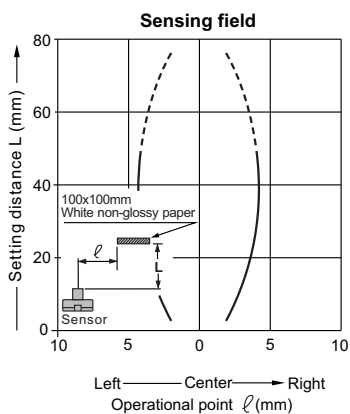
Sensing Characteristics (Typical)

AK: CP35 SERIES

Thru-beam Sensor



Diffuse Sensor



RP14 SERIES

AK: CP35 SERIES

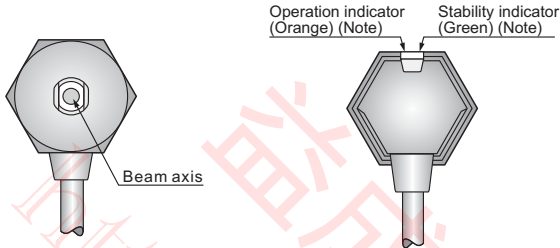
Precautions for Proper Use



This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

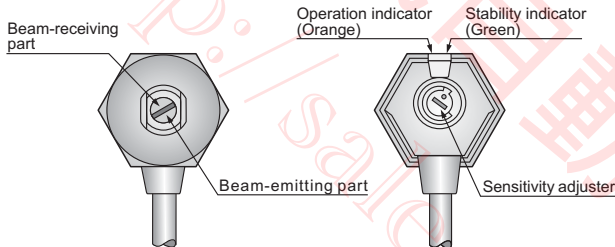
Part description

Thru-beam mode sensor



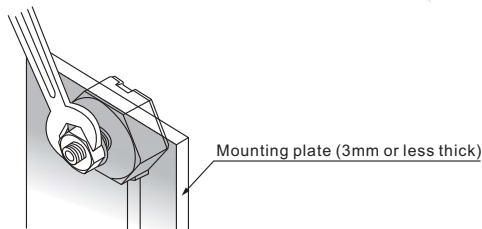
Note: Not incorporated on emitter.

Diffuse mode sensor



Mounting

Mount the sensor on a mounting plate 3mm or less thick, using the enclosed nut and toothed lock washer. When tightening the nut, hold the sensor with hand or a spanner and make sure that the tightening torque is 0.6 N·m (Diffuse mode sensor : 1N·m) or less. Do not tighten the sensor itself with a spanner, etc.



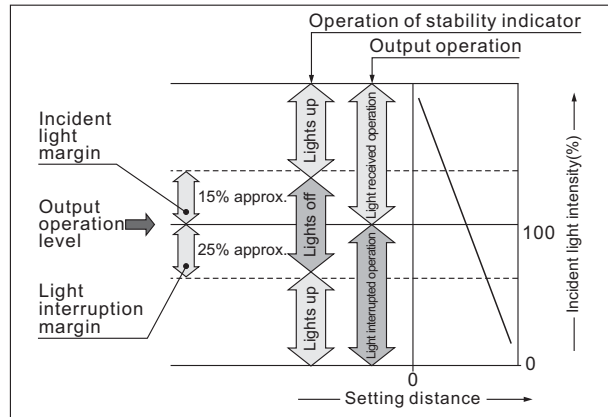
Sensitivity adjustment (Diffuse mode sensor only)

Step	Sensitivity adjuster	Description
(1)		Turn the sensitivity adjuster fully counter-clockwise to the minimum sensitivity position.
(2)		In the light received condition, turn the sensitivity adjuster slowly clockwise and confirm the point ① where the sensor enters the 'Light' state operation.
(3)		In the dark condition, turn the sensitivity adjuster further clockwise until the sensor enters the 'Light' state operation and then bring it back to confirm point ② where the sensor just returns to the 'Dark' state operation. (If the sensor does not enter the 'Light' state operation even when the sensitivity adjuster is turned fully clockwise, this extreme position is point ②.)
(4)		The position at the middle of points ① and ② is the optimum sensing position.

Note: Use the attached adjusting screwdriver to turn the adjuster slowly. Turning with excessive strength will damage the adjuster.

Stability indicator

The stability indicator (green) lights up when the incident light intensity has sufficient margin with respect to the operation level. If the incident light intensity level is such that the stability indicator lights up, stable sensing can be done without the light received operation being affected by a change in ambient temperature or supply voltage.



Wiring

Make sure that the power supply is off while wiring. Verify that the supply voltage variation is within the rating. If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground. In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground. Extension up to total 50m (thru-beam type: both emitter and receiver) is possible with 0.3mm² or more, cable. However, in order to reduce noise, make the wiring as short as possible. Don't run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction. Make sure to use an isolation transformer for the DC power supply. If an auto-transformer (single winding transformer) is used, this product or the power supply may get damaged. In case a surge is generated in the used power supply, connect a surge absorber to the supply and absorb the surge.

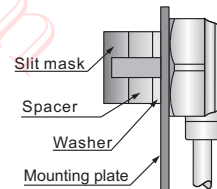
Optional slit mask (Thru-beam type only)

Apply the optional slit mask (RP14-A1) when detecting small objects or for increasing the accuracy of sensing position. However, the sensing range is reduced when the slit mask is mounted.

Mounting method

- Insert the sensor into the mounting plate.
- Fit the washer and spacers enclosed with the slit mask. Note that the number of spacers to be fitted differs with the mounting plate thickness, as give in the table below. (Note)
- Mount the slit mask. Make sure that the tightening torque is 0.6 N·m or less. Note: If the mounting plate thickness falls within the values mentioned in the table below, use the number of spacers that represents the thickness that comes closest to the actual thickness of the mounting plate being used. There will be no effect on the sensor if the slit comes out in the front because of the spacers.

Mounting plate thickness	No. of spacers
3 mm	0 pc.
2 mm	1 pc.
1 mm	2 pcs.



Others

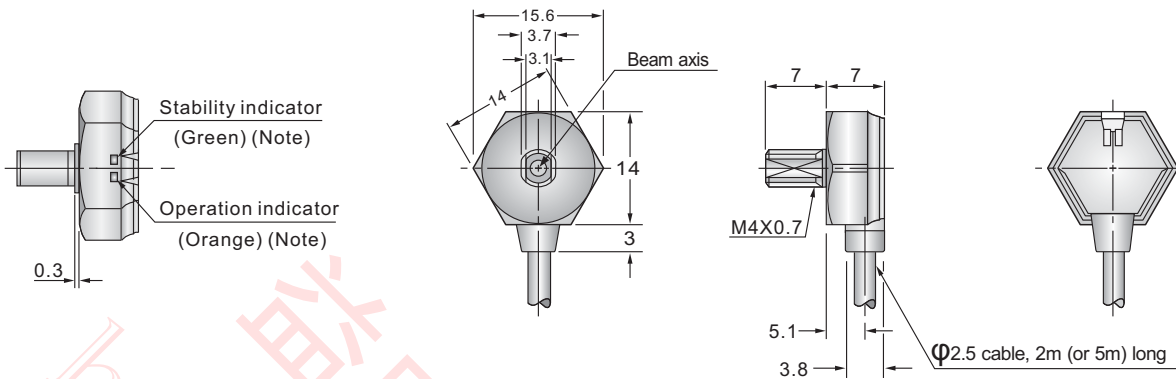
Do not use during the initial transient time (50ms) after the power supply is switched on. Take care that the sensor is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance. Avoid dust, dirt, and steam. Take care that the sensor does not come in direct contact with water, oil, grease, or organic solvents, such as thinner, etc. In case of using the sensor at a place where static electricity is generated, use a metal mounting plate. Also, ensure to ground the mounting plate.

RP14 SERIES

Dimensions (Unit: mm)

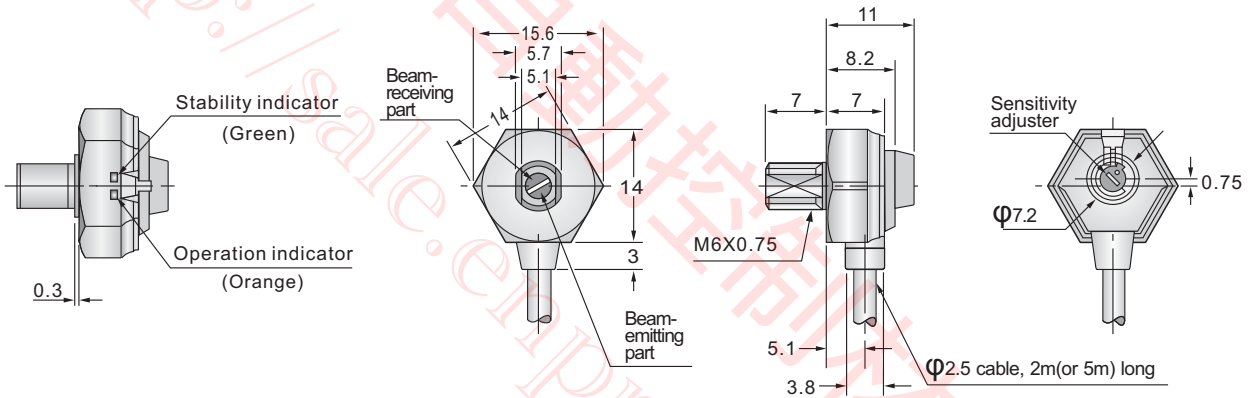
AK: CP35 SERIES

Thru-beam Sensor



Note: Not incorporated on the emitter

Diffuse Sensor

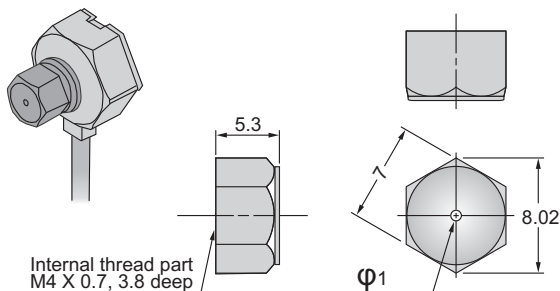


Slit mask (optional)

Slit mask	Model No.	Description
Slit mask(For thru-beam type sensor only)	RP14-A1 (Slit size Φ 1mm)	Slit on one side <ul style="list-style-type: none"> • Sensing range: 200 mm • Min. sensing object: Φ2 mm
		Slit on both sides <ul style="list-style-type: none"> • Sensing range: 150 mm • Min. sensing object: Φ1 mm

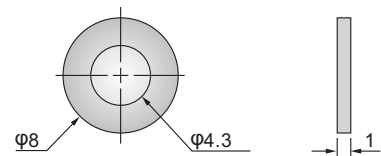
Note: One and two spacers are provided per set. Two sets are required when installing on both sides.

● RP14-A1 (Slit mask-optional)



Material: Brass(Nickel plated)

● RP14-A2 (Spacer-optional)

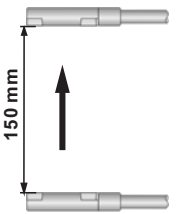

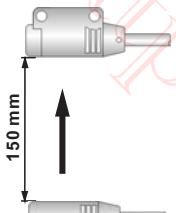

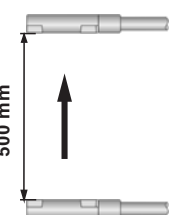

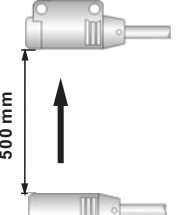



Material: POM

RP15 SERIES

Thru-beam Mode

AI: RP15 SERIES

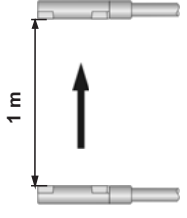

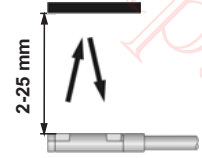

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>150 mm</p> <p>Thru-beam mode (Front sensing) Sensing Distance 150mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	Emitter	RP15-T0150D-EY6C2L2
			NPN Light-ON	RP15-T0150N-LY6C3U2
			NPN Dark-ON	RP15-T0150N-DY6C3U2
			NPN L.O./D.O.	RP15-T0150N-CY6C3U2
			PNP Light-ON	RP15-T0150P-LY6C3U2
			PNP Dark-ON	RP15-T0150P-DY6C3U2
			PNP L.O./D.O.	RP15-T0150P-CY6C3U2
 <p>150 mm</p> <p>Thru-beam mode (Side sensing) Sensing Distance 150mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	Emitter	RP15-T0150D-EY6C2L2-SD
			NPN Light-ON	RP15-T0150N-LY6C3U2-SD
			NPN Dark-ON	RP15-T0150N-DY6C3U2-SD
			NPN L.O./D.O.	RP15-T0150N-CY6C3U2-SD
			PNP Light-ON	RP15-T0150P-LY6C3U2-SD
			PNP Dark-ON	RP15-T0150P-DY6C3U2-SD
			PNP L.O./D.O.	RP15-T0150P-CY6C3U2-SD
 <p>500 mm</p> <p>Thru-beam mode (Front sensing) Sensing Distance 500mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	Emitter	RP15-T0500D-EY6C2L2
			NPN Light-ON	RP15-T0500N-LY6C3U2
			NPN Dark-ON	RP15-T0500N-DY6C3U2
			NPN L.O./D.O.	RP15-T0500N-CY6C3U2
			PNP Light-ON	RP15-T0500P-LY6C3U2
			PNP Dark-ON	RP15-T0500P-DY6C3U2
			PNP L.O./D.O.	RP15-T0500P-CY6C3U2
 <p>500 mm</p> <p>Thru-beam mode (Side sensing) Sensing Distance 500mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	Emitter	RP15-T0500D-EY6C2L2-SD
			NPN Light-ON	RP15-T0500N-LY6C3U2-SD
			NPN Dark-ON	RP15-T0500N-DY6C3U2-SD
			NPN L.O./D.O.	RP15-T0500N-CY6C3U2-SD
			PNP Light-ON	RP15-T0500P-LY6C3U2-SD
			PNP Dark-ON	RP15-T0500P-DY6C3U2-SD
			PNP L.O./D.O.	RP15-T0500P-CY6C3U2-SD

Note:

Coming Soon : Part numbers with underline
 In Preparation: Part numbers with a line through the middle
 — AI-01 —

RP15 SERIES

Thru-beam Mode & Convergent Mode

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>Thru-beam mode (Front sensing) Sensing Distance 1 m Light source Red LED</p>	2m Cable 	10-30V DC	Emitter	<u>RP15-T1000D-EY6C2L2</u>
			NPN Light-ON	<u>RP15-T1000N-LY6C3U2</u>
			NPN Dark-ON	<u>RP15-T1000N-DY6C3U2</u>
			NPN L.O./D.O.	<u>RP15-T1000N-CY6C3U2</u>
			PNP Light-ON	<u>RP15-T1000P-LY6C3U2</u>
			PNP Dark-ON	<u>RP15-T1000P-DY6C3U2</u>
			PNP L.O./D.O.	<u>RP15-T1000P-CY6C3U2</u>
 <p>Convergent mode (Front sensing) Convergent point 10 mm Sensing Distance 2 to 25 mm Light source Red LED</p>	2m Cable 	10-30V DC	NPN Light-ON	<u>RP15-C0025N-LY6C3U2</u>
			NPN Dark-ON	<u>RP15-C0025N-DY6C3U2</u>
			NPN L.O./D.O.	_____
			PNP Light-ON	<u>RP15-C0025P-LY6C3U2</u>
			PNP Dark-ON	<u>RP15-C0025P-DY6C3U2</u>
			PNP L.O./D.O.	_____
			_____	_____

AI: RP15 SERIES

Note:
 Coming Soon : Part numbers with underline
 In Preparation: Part numbers with a line through the middle
 — AI-02 —

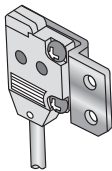
RP15 SERIES

Options

AI: RP15 SERIES

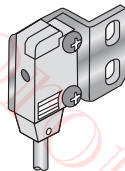
Designation	Model No.	Description
Sensor mounting bracket	RP15-A1	Mounting bracket for the front sensing type sensor [Cold rolled carbon steel (SPCC)] (The thru-beam mode sensor needs two brackets.)
	RP15-A2	Mounting bracket for the side sensing type sensor [Cold rolled carbon steel (SPCC)] (The thru-beam mode sensor needs two brackets.)
	RP15-A3	L-shaped mounting bracket [Cold rolled carbon steel (SPCC)] (The thru-beam mode sensor needs two brackets.)
	RP15-A4	Mounting bracket for the front sensing type sensor [Stainless steel (SUS304)] (The thru-beam mode sensor needs two brackets.)
	RP15-A5	Mounting bracket for the side sensing type sensor [Stainless steel (SUS304)] (The thru-beam mode sensor needs two brackets.)
	RP15-A6	L-shaped mounting bracket [Stainless steel (SUS304)] (The thru-beam mode sensor needs two brackets.)
Slit mask	RP15-A7 (Slit size ϕ 1.2mm)	Slit on one side Sensing range: 600mm [RP15-T1000N(P)-L(D)xxxxxx] 250mm [RP15-T0500N(P)-L(D)xxxxxx and RP15-T0500N-Cxxxxxx] Min. Sensing object: ϕ 2mm
		Slit on both sides Sensing range: 400mm [RP15-T1000N(P)-L(D)xxxxxx] 200mm [RP15-T0500N(P)-L(D)xxxxxx and RP15-T0500N-Cxxxxxx] Min. Sensing object: ϕ 1.2mm
	RP15-A8 (Slit size ϕ 1.5mm)	Slit on one side Sensing range: 800mm [RP15-T1000N(P)-L(D)xxxxxx] 350mm [RP15-T0500N(P)-L(D)xxxxxx] Min. Sensing object: ϕ 2mm
		Slit on both sides Sensing range: 500mm [RP15-T1000N(P)-L(D)xxxxxx] 300mm [RP15-T1000N(P)-L(D)xxxxxx] Min. Sensing object: ϕ 1.5mm
	RP15-A9 (Slit size ϕ 1.2mm)	Slit on one side Sensing range: 250mm [RP15-T0500N(P)-L(D)xxxxxx-SD and RP15-T0500N-Cxxxxxx-SD] Min. Sensing object: ϕ 2mm
		Slit on both sides Sensing range: 200mm [RP15-T0500N(P)-L(D)xxxxxx-SD and RP15-T0500N-Cxxxxxx-SD] Min. Sensing object: ϕ 1.2mm

RP15-A1



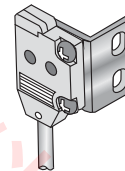
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws are attached.

RP15-A2



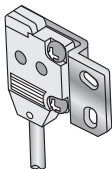
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 8mm) pan head screws are attached.

RP15-A3



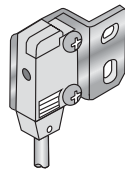
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws, and two M2 (length 8mm) pan head screws are attached.

RP15-A4



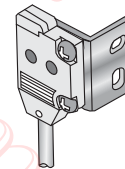
Material: Stainless steel (SUS304)
Two M2 (length 4mm) pan head screws [stainless steel (SUS304)] are attached.

RP15-A5



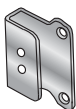
Material: Stainless steel (SUS304)
Two M2 (length 8mm) pan head screws [stainless steel (SUS304)] are attached.

RP15-A6

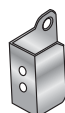


Material: Stainless steel (SUS304)
Two M2 (length 4mm) pan head screws [stainless steel (SUS304)] and two M2 (length 8mm) pan head screws [stainless steel (SUS304)] are attached.

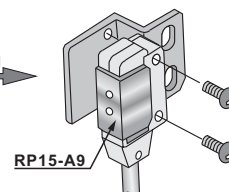
RP15-A7 / RP15-A8



RP15-A9



Example of mounting



RP15 SERIES

Specifications

Type	Thru-beam					Convergent	Thru-beam(with operation mode switch on bifurcation)(Note1)				
	Front sensing	Side sensing	Front sensing	Side sensing	Front sensing	Front sensing	Front sensing	Side sensing	Front sensing	Side sensing	
Item	Model number	RP15-T0150x -xY6C3U2	RP15-T0150x -xY6C3U2-SD	RP15-T0500x -xY6C3U2	RP15-T0500x -xY6C3U2-SD	RP15-T1000x -xY6C3U2	RP15-C0025x -xY6C3U2	RP15-T0150N -CY6C3U2	RP15-T0150N -CY6C3U2-SD	RP15-T0500N -CY6C3U2	RP15-T0500N -CY6C3U2-SD
Sensing range		150 mm		500 mm		1 m	2-25 mm (Note2)	150 mm		500 mm	
Sensing object		φ1mm opaque object (Setting distance between emitter and receiver:150mm)		φ2 mm opaque object (Setting distance between emitter and receiver:500mm)		φ 2 mm opaque object (Setting distance between emitter and receiver:1 m)	φ 0.1 mm copper wire (Setting distance : 10 m)	φ1mm opaque object (Setting distance between emitter and receiver:150mm)		φ2 mm opaque object (Setting distance between emitter and receiver:500mm)	
Hysteresis		—————					15% or less of operation distance	—————			
Repeatability		0.05 mm or less					0.1mm or less	0.05 mm or less			
Supply power		10 - 30 V DC 10% Ripple P-P % or less									
Current consumption		Emitter: 10mA or less, Receiver: 15mA or less					20 mA or less	30 mA or less			
Output		<p><NPN output type> NPN open-collector transistor Maximum sink current: 50 mA Applied voltage: 30V DC or less(between output and 0V) Residual voltage: 1V or less(at 50 mA sink current)</p> <p><PNP output type> PNP open-collector transistor Maximum source current: 50 mA Applied voltage: 30V DC or less(between output and +V) Residual voltage: 1V or less(at 50 mA source current)</p>					<p>NPN open-collector transistor Maximum sink current: 100 mA Applied voltage: 30V DC or less (between output and 0V) Residual voltage: 1.5 V or less (at 100 mA sink current)</p> <p>PNP open-collector transistor Maximum source current: 100 mA Applied voltage: 30V DC or less (between output and 0V) Residual voltage: 1.5 V or less (at 100 mA source current)</p>				
Short-circuit protection		Incorporated									
Light source		Red LED (modulated)									
Response time		0.5 ms or less									
Incident beam indicator		—————					Red LED (lights up under light received condition), located on the receiver				
Operation indicator		Red LED (lights up when the output is ON)					Orange LED(lights up when the output is ON), located on the bifurcation				
Stability indicator		Green LED (lights up under stable light received condition or stable dark condition)					Green LED(lights up under stable light received condition or stable dark condition), located on the receiver				
Pollution degree		3(Industrial environment)									
Protection		IP67 (IEC)									
Ambient temperature		-25 to +55 °C(No dew condensation or icing allowed), Storage: -30 to + 70 °C									
Ambient humidity		35 to 85% RH,Storage:35 to 85% RH									
Ambient illuminance		Sunlight:11,000 ℓ x at the light-receiving face, Incandescent light:3500ℓ x at the light-receiving face									
EMC		EN 50081-2, en 50082-2, EN 60947-5-2					—————				
Voltage withstandability		1000V AC for one min. between all supply terminals connected together and enclosure									
Insulation resistance		>20MΩ, with 250V DC megger between all supply terminals connected together and enclosure									
Vibration resistance		10 to 500 Hz frequency, 3mm amplitude in X, Y and Z directions for two hours each									
Shock resistance		500 m/s ² acceleration (50g approx.) in X, Y and Z directions for three times each									
Material		Enclosure: Polyethylene terephthalate, Lens: Polyallylate					Enclosure: Polyethylene terephthalate, Lens: Polyallylate; Bifurcation: Polyallylate				
Cable		0.1 mm ² 3-core (thru-beam type emitter: 2-core) cabtyre cable, 2 m long					0.2mm ² 3-core cabtyre cable, 2m or 5m long(beyond bifurcation; from emitter / receiver to bifurcation: 0.5 m long)				
Cable extension		Extension up to total 50m is possible with 0.3mm ² , or more, cable (thru-beam type: both emitter and receiver).					Extension up to total 100 m is possible with 0.3 mm ² , or more cable.				
Weight		Emitter: 20g approx., Receiver: 20g approx.					20g approx.	55g approx.			
Accessories		Mounting screws: 1set					Mounting screws: 1set, Adjusting screwdriver: 1 pc.				

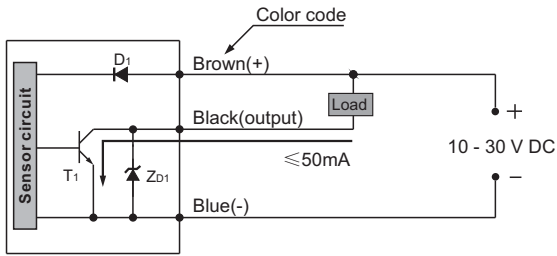
Note 1): Either Light-ON or Dark-ON can be selected by the operation mode switch (located on the bifurcation).
2): The sensing range of convergent mode type sensor is specified for white non-glossy paper (50x50 mm) as the object.

RP15 SERIES

Connection Diagrams

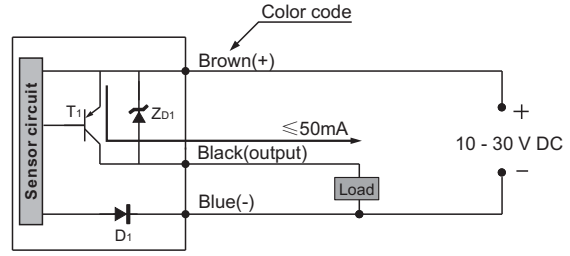
AI: RP15 SERIES

NPN Light-ON or Dark-ON output type



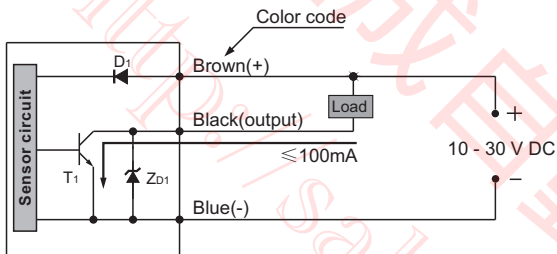
Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: NPN output transistor

PNP Light-ON or Dark-ON output type

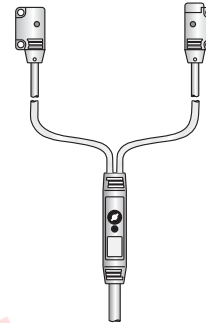


Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: PNP output transistor

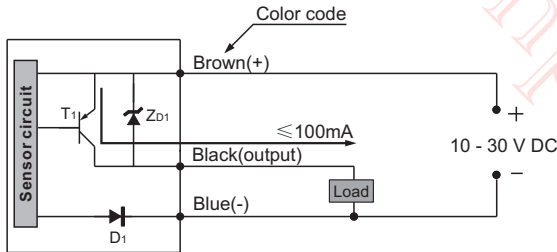
NPN Light/Dark changeover output type (Only for Thru-beam type sensor located on the bifurcation)



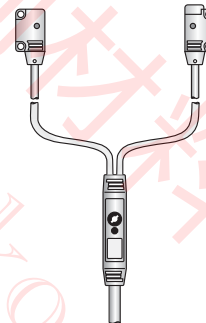
Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: NPN output transistor



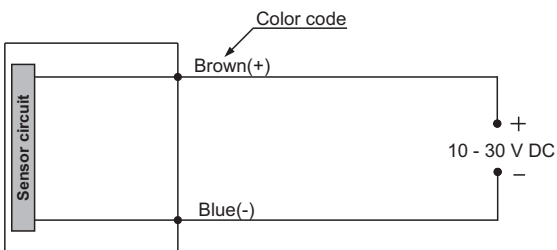
PNP Light/Dark changeover output type (Only for Thru-beam type sensor located on the bifurcation)



Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: PNP output transistor



Emitter of Thru-beam Mode sensor



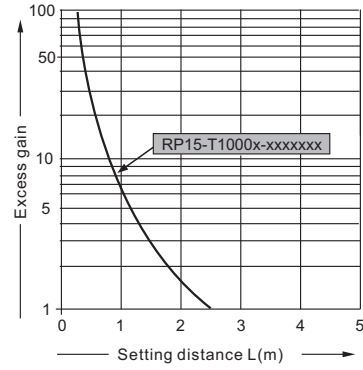
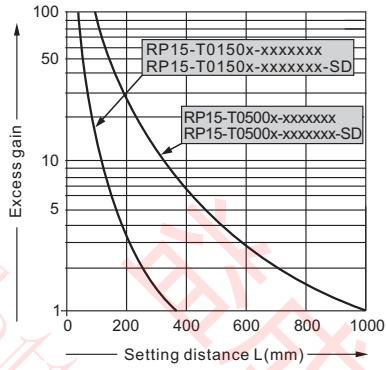
RP15 SERIES

Sensing Characteristics (Typical)

All Thru-Beam type sensors

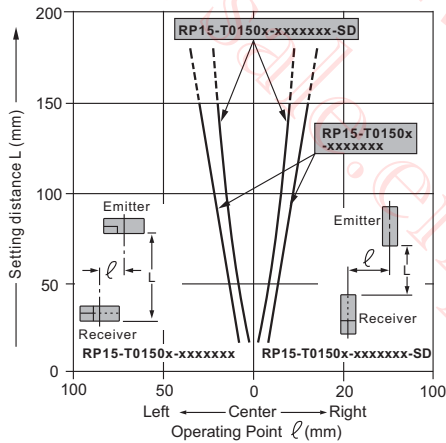
AI: RP15 SERIES

Correlation between setting distance and excess gain

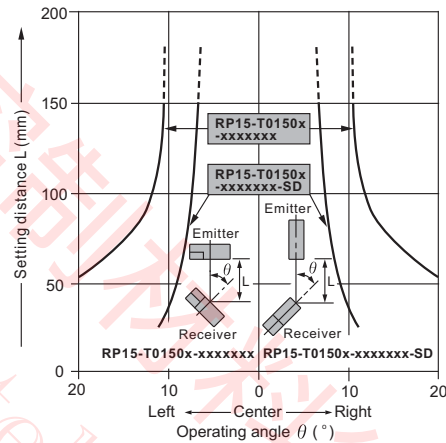


Thru-beam type sensor (Sensing distance=150mm)

Parallel deviation

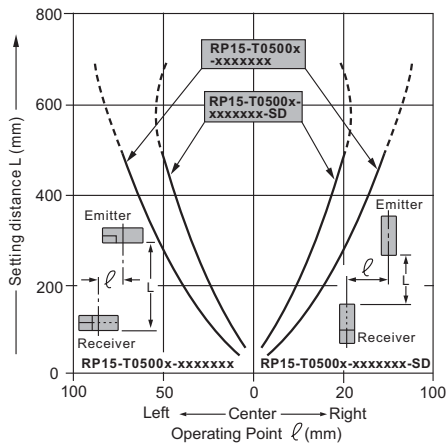


Angular deviation

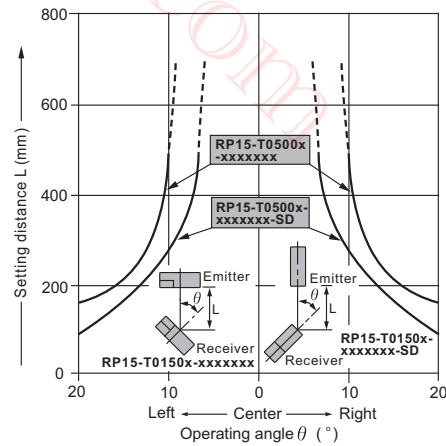


Thru-beam type sensor (Sensing distance=500mm)

Parallel deviation



Angular deviation



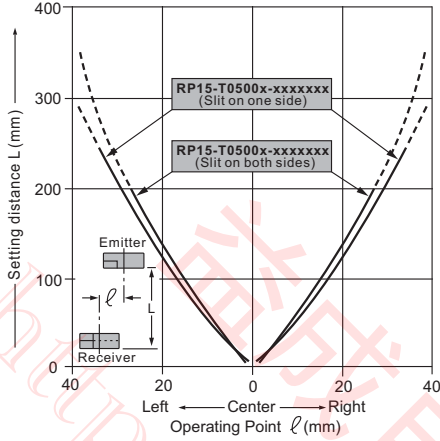
RP15 SERIES

Sensing Characteristics (Typical)

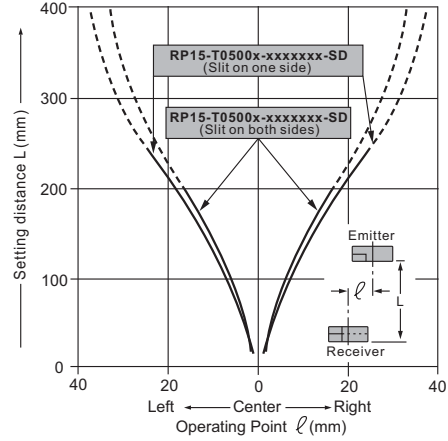
Thru-beam type sensor (Sensing distance=500mm)

AI: RP15 SERIES

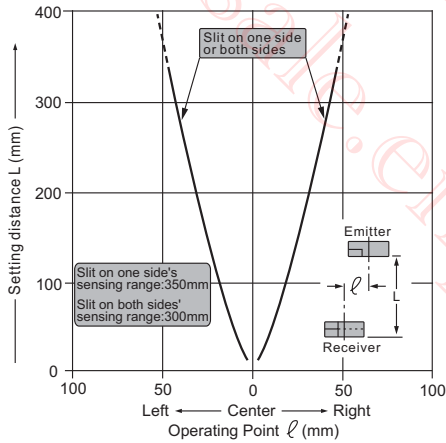
Parallel deviation with slit masks ($\phi 1.2\text{mm}$)



Parallel deviation with slit masks ($\phi 1.2\text{mm}$)

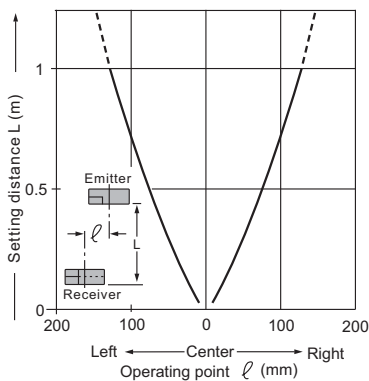


Parallel deviation with slit masks ($\phi 1.5\text{mm}$)

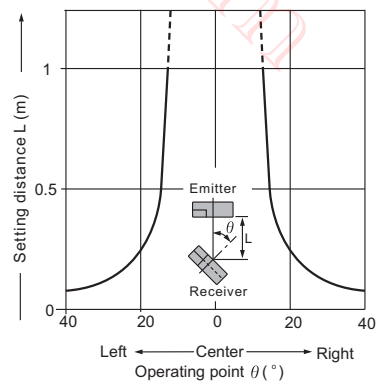


Thru-beam type sensor (Sensing distance=1m)

Parallel deviation



Angular deviation

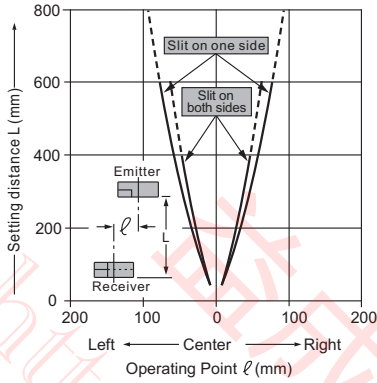


RP15 SERIES

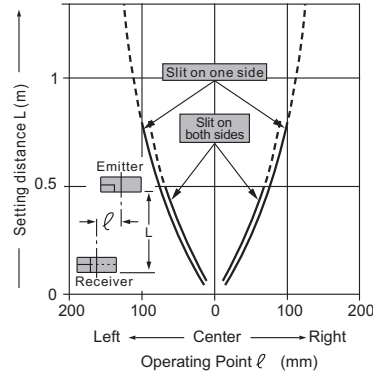
Sensing Characteristics (Typical)

Thru-beam type sensor (Sensing distance=1m)

Parallel deviation with round slit masks ($\phi 1.2\text{ mm}$)



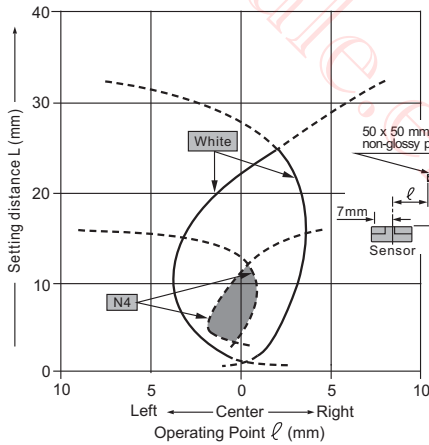
Parallel deviation with slit masks ($\phi 1.5\text{ mm}$)



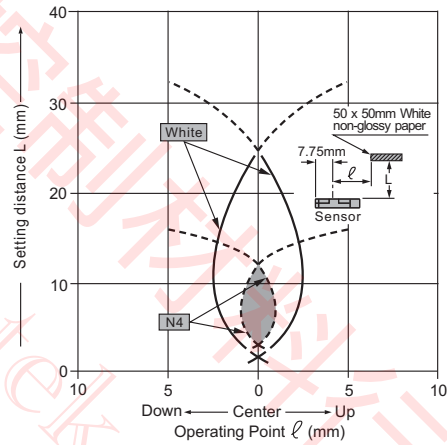
Convergent mode sensor (Sensing distance=25mm)

Sensing field

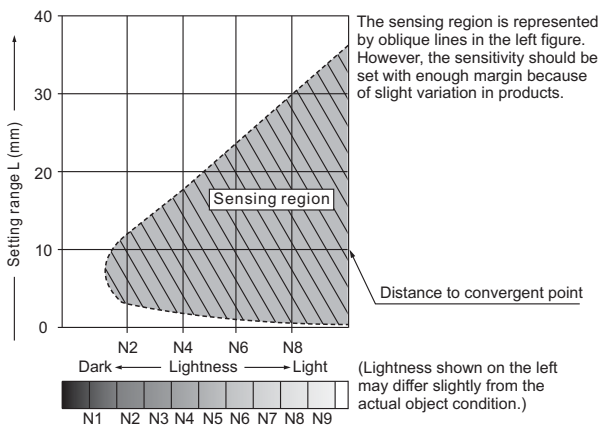
• Horizontal (left and right) direction



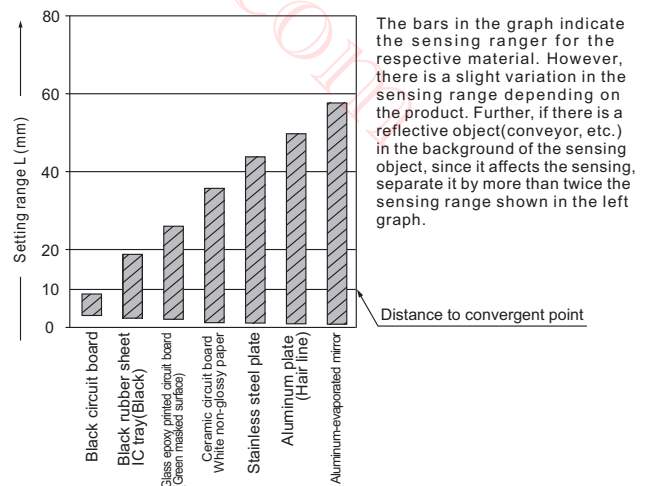
• Vertical (up and down) direction



Correlation between lightness and sensing range



Correlation between material (50x50mm) and sensing range



RP15 SERIES

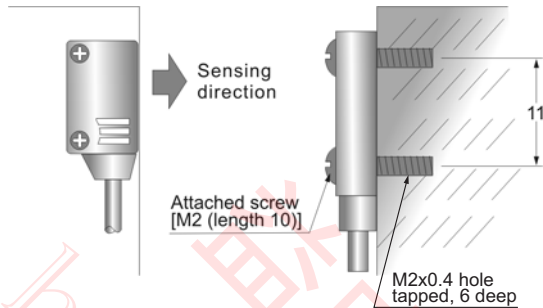
Precautions for Proper Use

AI: RP15 SERIES

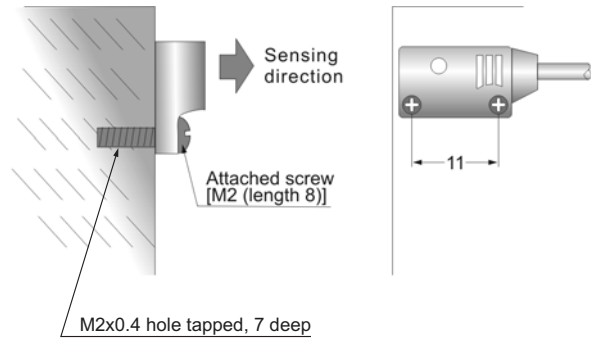
Mounting

In case of mounting on tapped holes (Unit: mm)

Side sensing type



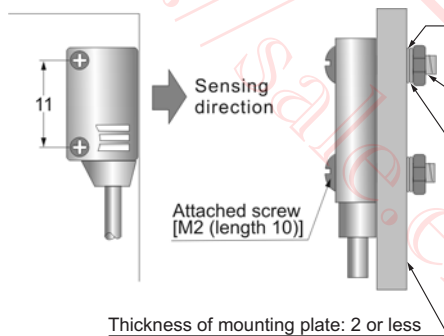
Front sensing type



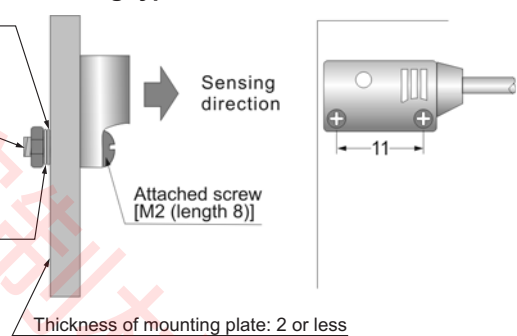
The tightening torque should be 0.2 N·m or less

In case of using attached screws and nuts (Unit: mm)

Side sensing type

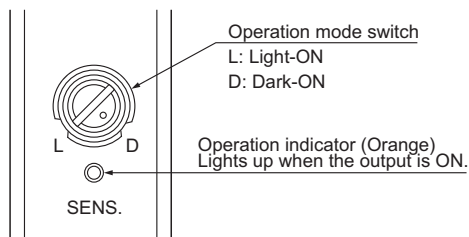


Front sensing type



The tightening torque should be 0.2 N·m or less

Operation mode switch (Thru-beam with operation mode switch on bifurcation type only)



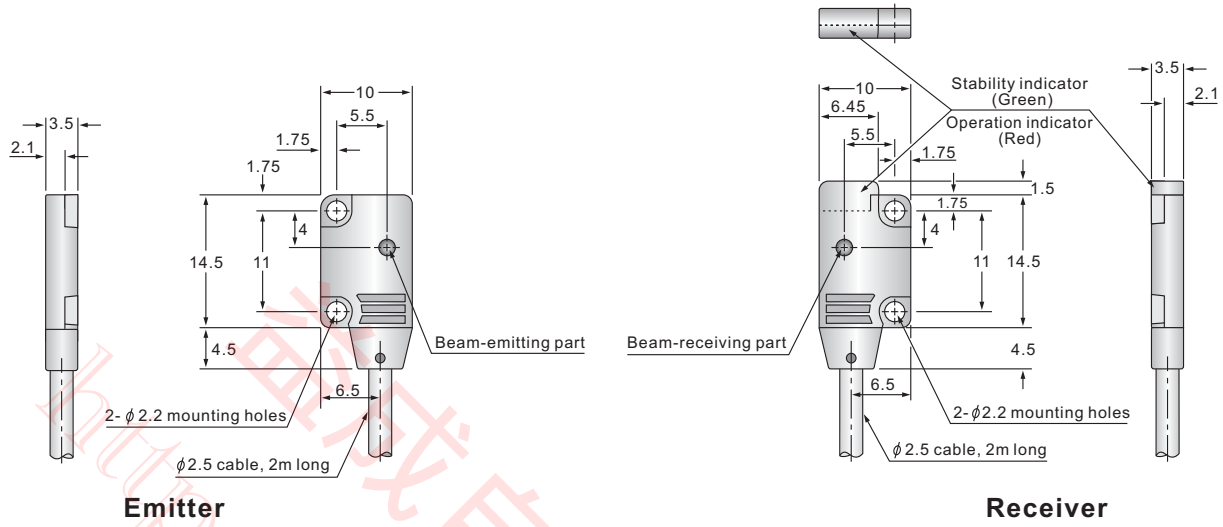
Switch position	Description
	Light-ON mode is set when the switch is turned fully clock wise (L side)
	Dark-ON mode is set when the switch is turned fully counterclockwise (D side)

RP15 SERIES

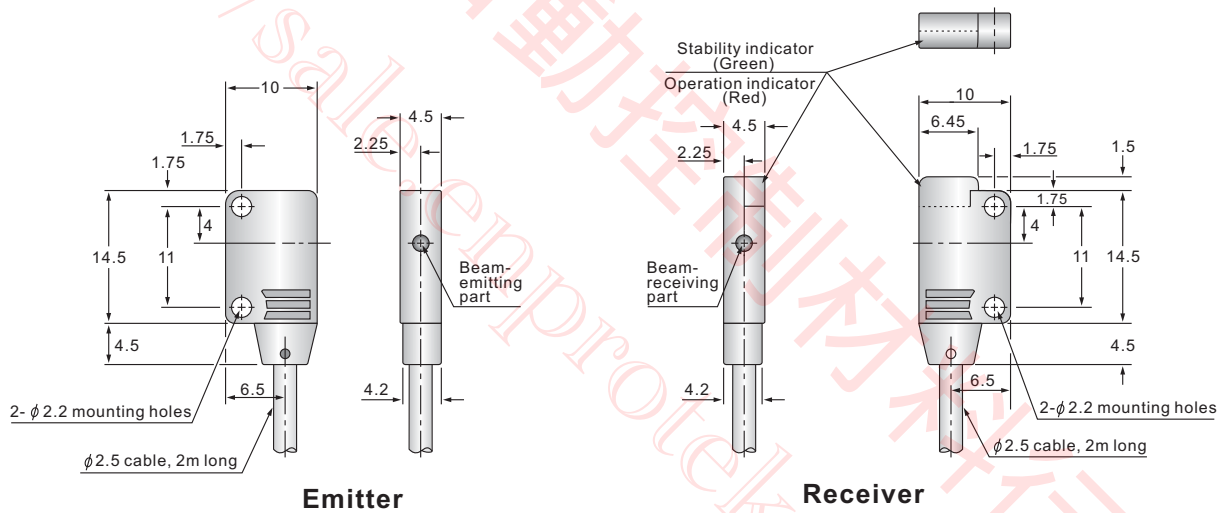
Dimensions (Unit: mm)

AI: RP15 SERIES

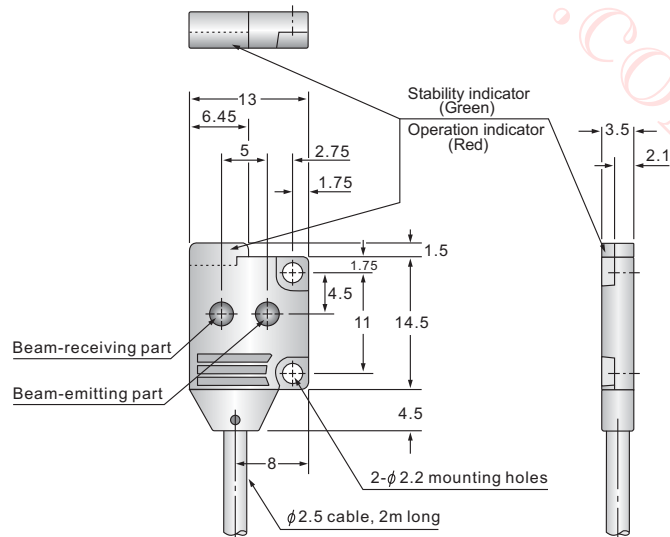
Thru-beam Mode with Front Sensing type sensor (Either Light-ON or Dark-ON type)



Thru-beam Mode with Side Sensing type sensor (Either Light-ON or Dark-ON type)



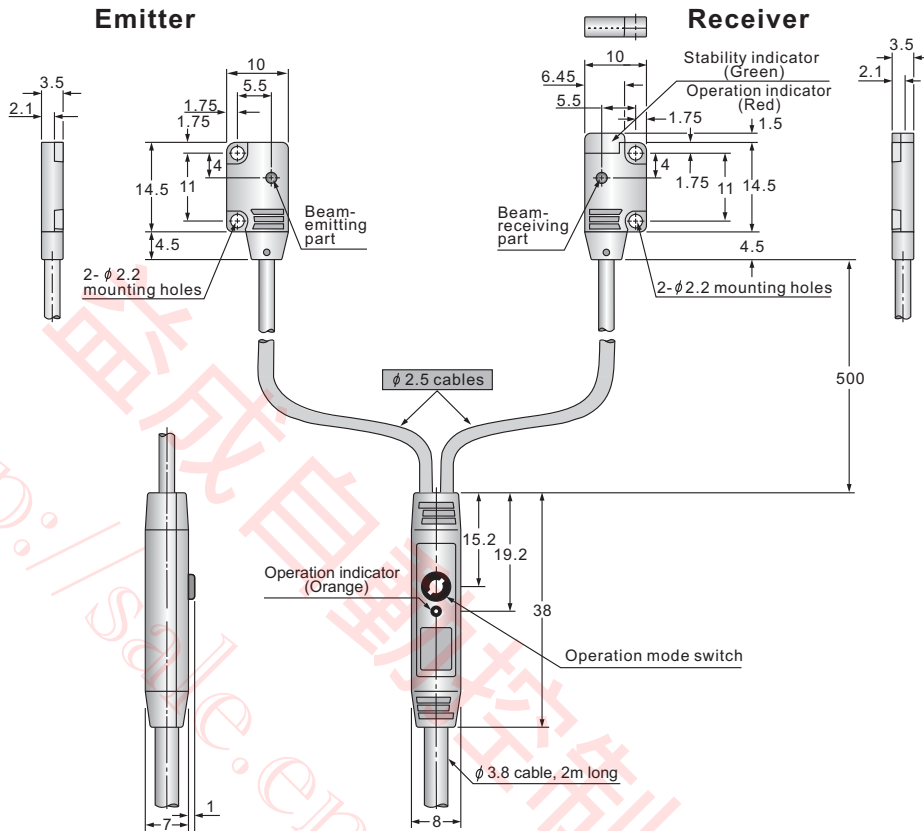
Convergent Mode with Front sensing type sensor



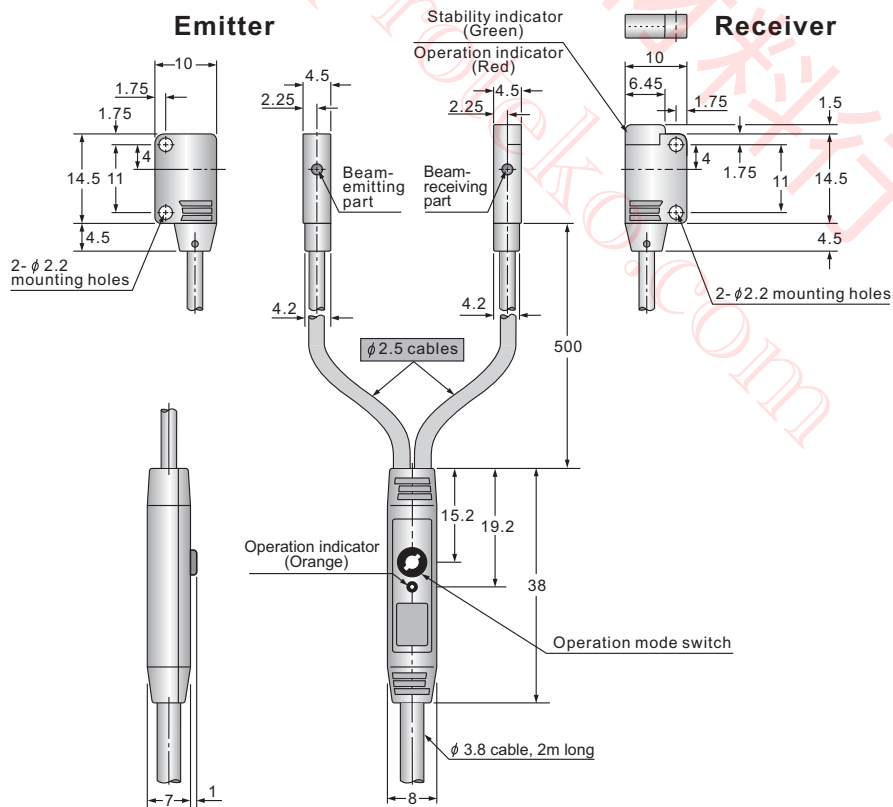
RP15 SERIES

Dimensions (Unit: mm)

Thru-beam Mode with Front Sensing type sensor (Light/Dark changeover type)



Thru-beam Mode with Side Sensing type sensor (Light/Dark changeover type)

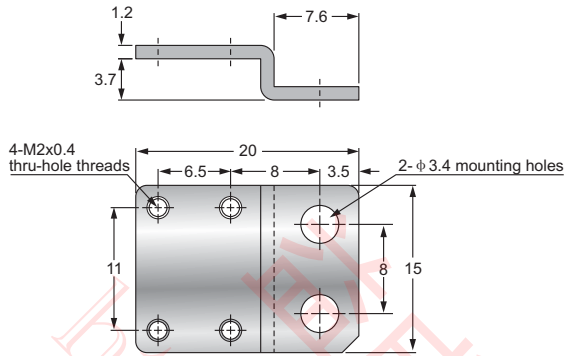


RP15 SERIES

Mounting Bracket's Dimensions (Unit: mm)

AI: RP15 SERIES

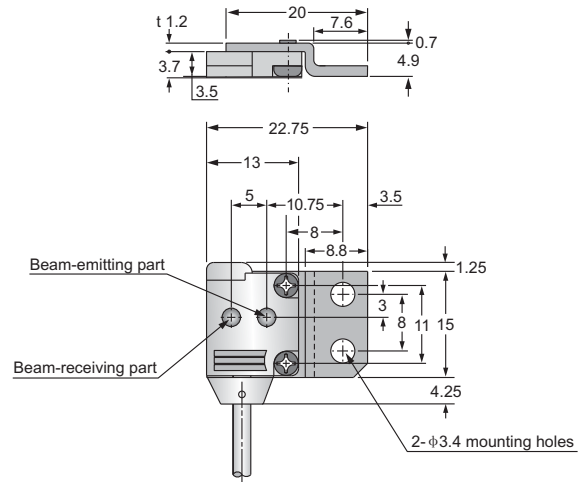
RP15-A1 (Optional)



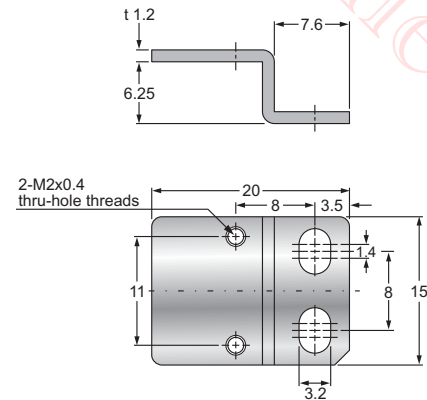
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws are attached.

Assembly dimensions

Mounting drawing with RP15-C0025N(P)-L(D)Y6C3U2 sensor



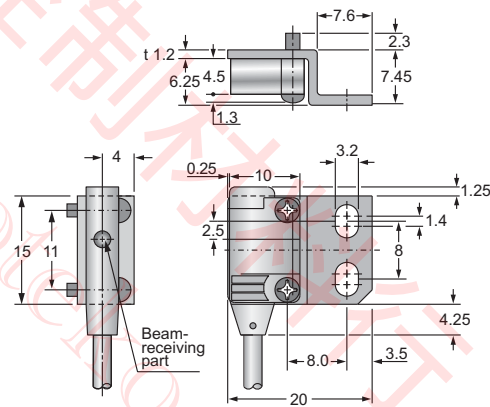
RP15-A2 (Optional)



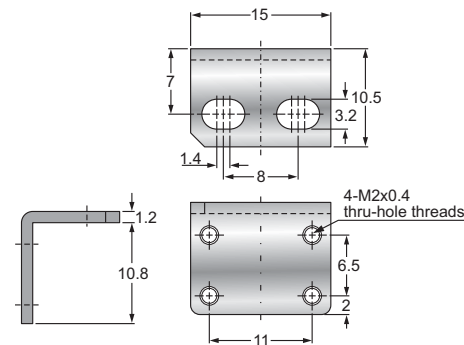
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 8mm) pan head screws are attached.

Assembly dimensions

Mounting drawing with RP15-T0150N(P)-L(D)Y6C3U2-SD or RP15-T0500N(P)-L(D)Y6C3U2-SD sensor



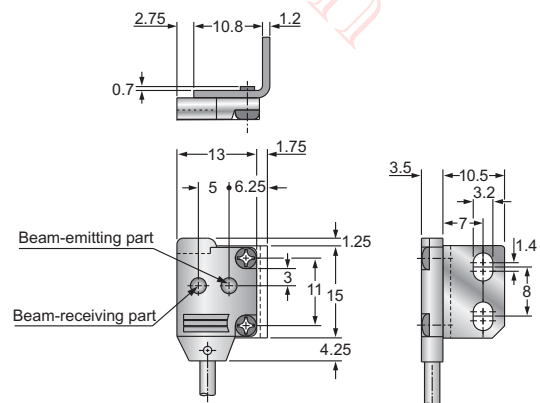
RP15-A3 (Optional)



Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws, and two M2 (length 8mm) pan head screws are attached.

Assembly dimensions

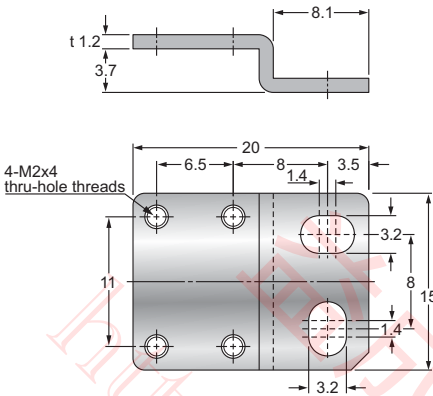
Mounting drawing with RP15-C0025N(P)-L(D)Y6C3U2 sensor



RP15 SERIES

Mounting bracket dimensions (Unit: mm)

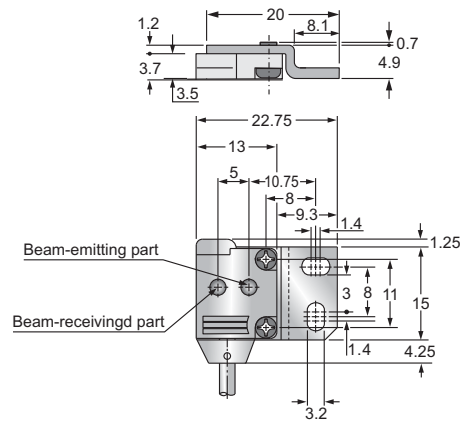
RP15-A4 (Optional)



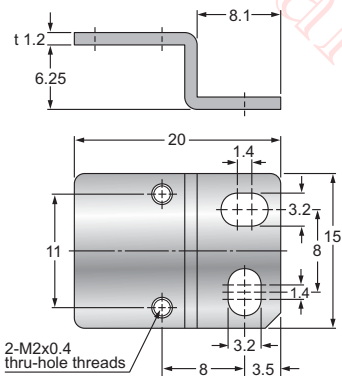
Material: Stainless steel (SUS304)
Two M2 (length 4mm) pan head screws [stainless steel(SUS304)] are attached.

Assembly dimensions

Mounting drawing with RP15-C0025N(P)-L(D)Y6C3U2 sensor



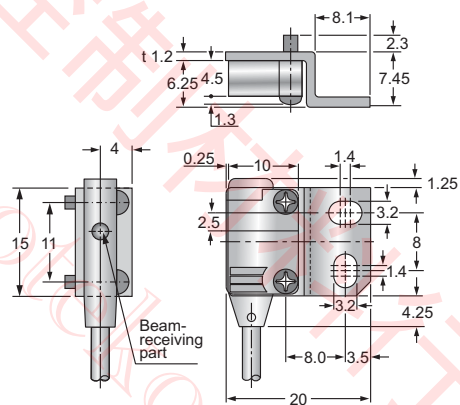
RP15-A5 (Optional)



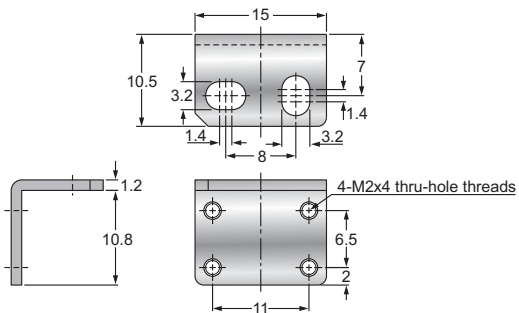
Material: Cold rolled carbon steel(SUS304) Two M2 (length 4mm) pan head screws [stainless steel(SUS304)] are attached.

Assembly dimensions

Mounting drawing with RP15-T0150N(P)-L(D)Y6C3U2-SD and RP15-T0500N(P)-L(D)Y6C3U2-SD sensor



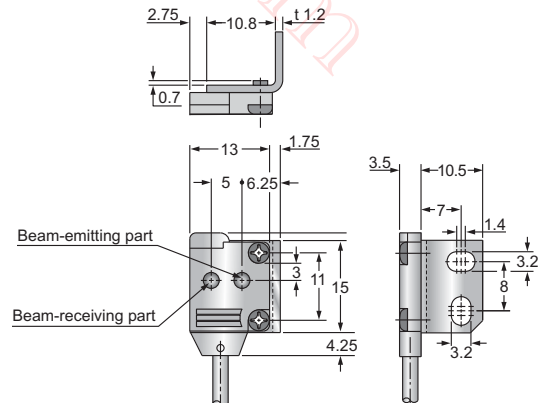
RP15-A6 (Optional)



Material: Cold rolled carbon steel(SUS304)
Two M2 (length 4mm) pan head screws [stainless steel(SUS304)] , and two M2 (length 8mm) pan head screws [stainless steel(SUS304)] are attached.

Assembly dimensions

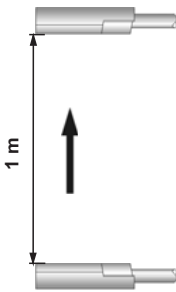

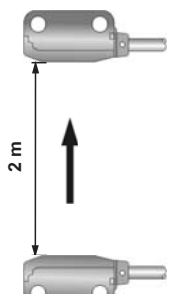

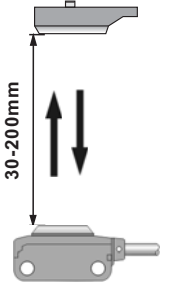

Mounting drawing with RP15-C0025N(P)-L(D)Y6C3U2 Sensor



RP16 SERIES

Selection Guide

Am: RP16 SERIES

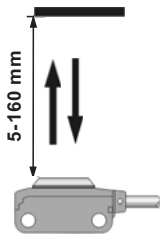

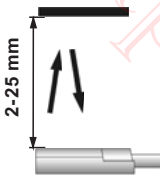

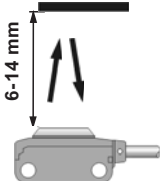

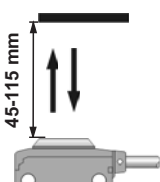

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>Thru-beam mode (Front sensing) Sensing Distance 1m Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	Emitter	<u>RP16-T1000D-EY6C2L2</u>
			NPN Light-ON	<u>RP16-T1000N-LY6C3U2</u>
			NPN Dark-ON	<u>RP16-T1000N-DY6C3U2</u>
			PNP Light-ON	<u>RP16-T1000P-LY6C3U2</u>
			PNP Dark-ON	<u>RP16-T1000P-DY6C3U2</u>
 <p>Thru-beam mode (Side sensing) Sensing Distance 2 m Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	Emitter	<u>RP16-T2000D-EY6C2L2-SD</u>
			NPN L.O./D.O.	<u>RP16-T2000N-CY6C3U2-SD</u>
			PNP L.O./D.O.	<u>RP16-T2000P-CY6C3U2-SD</u>
			---	---
			---	---
 <p>Retroreflective mode (Side sensing) Sensing Distance 30 to 200 mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	NPN Light-ON	<u>RP16-L0200N-LY6C3U2-SD</u>
			NPN Dark-ON	<u>RP16-L0200N-DY6C3U2-SD</u>
			PNP Light-ON	<u>RP16-L0200P-LY6C3U2-SD</u>
			PNP Dark-ON	<u>RP16-L0200P-DY6C3U2-SD</u>
			---	---

Note:

Coming Soon : Part numbers with underline
 In Preparation: Part numbers with a line through the middle
 — Am-01 —

RP16 SERIES

Selection Guide

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>Diffuse mode (Side sensing) Sensing Distance 5 to 160 mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	NPN Light-ON	<u>RP16-D0160N-LY6C3U2-SD</u>
			NPN Dark-ON	<u>RP16-D0160N-DY6C3U2-SD</u>
			PNP Light-ON	<u>RP16-D0160P-LY6C3U2-SD</u>
			PNP Dark-ON	<u>RP16-D0160P-DY6C3U2-SD</u>
 <p>Convergent mode (Front sensing) Convergent point 10 mm Sensing Distance 2 to 25 mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	NPN Light-ON	<u>RP16-C0025N-LY6C3U2</u>
			NPN Dark-ON	<u>RP16-C0025N-DY6C3U2</u>
			PNP Light-ON	<u>RP16-C0025P-LY6C3U2</u>
			PNP Dark-ON	<u>RP16-C0025P-DY6C3U2</u>
 <p>Convergent mode (Side sensing) Convergent point 10 mm Sensing Distance 6 to 14 mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	NPN Light-ON	<u>RP16-C0014N-LY6C3U2-SD</u>
			NPN Dark-ON	<u>RP16-C0014N-DY6C3U2-SD</u>
			PNP Light-ON	<u>RP16-C0014P-LY6C3U2-SD</u>
			PNP Dark-ON	<u>RP16-C0014P-DY6C3U2-SD</u>
 <p>Narrow view mode (Side sensing) Sensing Distance 45 to 115 mm Light source Red LED</p>	<p>2m Cable</p> 	<p>10-30V DC</p>	NPN Light-ON	<u>RP16-D0115N-LY6C3U2-SD</u>
			NPN Dark-ON	<u>RP16-D0115N-DY6C3U2-SD</u>
			PNP Light-ON	<u>RP16-D0115P-LY6C3U2-SD</u>
			PNP Dark-ON	<u>RP16-D0115P-DY6C3U2-SD</u>

Note:
 Coming Soon : Part numbers with underline
 In Preparation: Part numbers with a line through the middle
 —Am-02—

Am: RP16 SERIES

RP16 SERIES

Options

Designation		Model No.	Description	
Round slit mask (For thru-beam type sensor only)	For front sensing type	RP16-A1 (Slit size: ϕ 0.5mm)	Slit on one side	Sensing range:200mm Min. sensing object: ϕ 2.6mm
			Slit on both sides	Sensing range:40mm Min. sensing object: ϕ 0.5mm
	For side sensing type	RP16-A2 (Slit size: ϕ 0.5mm)	Slit on one side	Sensing range:350mm Min. sensing object: ϕ 3mm
			Slit on both sides	Sensing range:70mm Min. sensing object: ϕ 0.5mm
Rectangular slit mask (For thru-beam type sensor only)	For front sensing type	RP16-A3 (Slit size:0.5x3mm)	Slit on one side	Sensing range: 600mm Min. sensing object: ϕ 2.6mm
			Slit on both sides	Sensing range:300mm Min. sensing object: 0.5x3mm
	For side sensing type	RP16-A4 (Slit size:0.5x3mm)	Slit on one side	Sensing range:800mm Min. sensing object: ϕ 3mm
			Slit on both sides	Sensing range:400mm Min. sensing object: 0.5x3mm
Sensor mounting bracket		RP16-A5	Back angled mounting bracket for front sensing type sensor (The thru-beam type sensor needs two brackets)	
		RP16-A6	Foot angled mounting bracket for side sensing type sensor (The thru-beam type sensor needs two brackets)	
		RP16-A7	L-shaped mounting bracket for front sensing type sensor (The thru-beam type sensor needs two brackets)	
		RP16-A8	Back angled mounting bracket for side sensing type sensor (The thru-beam type sensor needs two brackets)	
Universal sensor mounting bracket (Only for thru-beam mode side sensing type sensor)		RP16-A9	It can adjust the height and the angle of the sensor. (Two brackets are needed)	
Mounting spacer (For front sensing type sensor only)		RP16-A10	It is used when mounting the front sensing type from the rear side. (One set consists of 10 pcs.)	

Am: RP16 SERIES

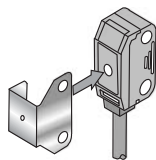
Round slit mask

Fitted on the front face of the sensor with one-touch.

RP16-A1



RP16-A2



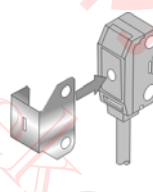
Rectangular slit mask

Fitted on the front face of the sensor with one-touch.

RP16-A3

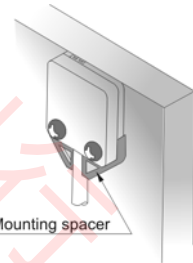


RP16-A4



Mounting spacer

RP16-A10

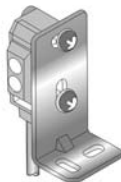


Sensor mounting bracket

RP16-A5



RP16-A6



RP16-A7

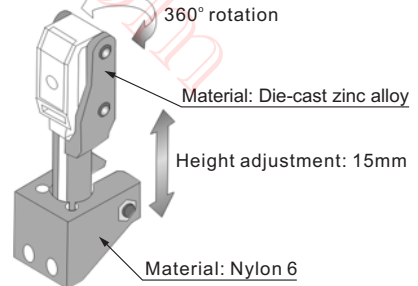


RP16-A8



Universal sensor mounting bracket

RP16-A9



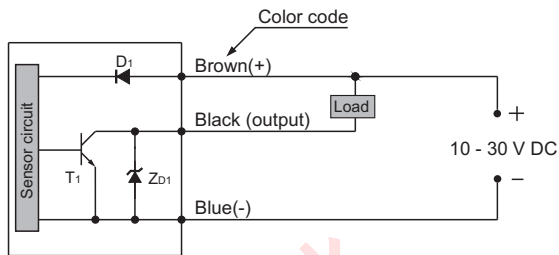
RP16 SERIES**Specifications**

Item	Type	Thru-beam		Retroreflective	Diffuse	Convergent mode		Narrow view	
		Front sensing	Side sensing	Front sensing	Side sensing	with diffused beam	with small spot beam	Long distance spot beam type	
		Front sensing	Side sensing	Front sensing	Side sensing	Front sensing	Side sensing	Side sensing	
Sensing range		1m	2m	30 to 200 mm	5 to 160 mm with white non-glossy paper (200x200 mm)	2 to 25 mm (Conv. point:10 mm) with white non-glossy paper(50x50 mm)	6 to 14 mm(Conv. point: 10mm) with white non-glossy paper(50x50mm), spot diameter ϕ 1mm with setting distance 10mm	45 to 115mm with white non-glossy paper (100x100mm) spot diameter ϕ 5mm with setting distance 80mm	
Sensing object		Min. ϕ 2.6 mm opaque object (Setting distance between emitter and receiver: 1 m)	Min. ϕ 3 mm opaque object (Setting distance between emitter and receiver: 2 m)	ϕ 15 mm or more opaque or translucent object	Opaque, translucent or transparent object	Min. ϕ 0.1 mm copper wire at Setting distance: 10mm	Min. ϕ 0.1 mm copper wire at Setting distance: 10mm	Opaque, translucent or transparent object (Min. ϕ 1mm copper wire at setting distance: 80mm)	
Hysteresis		—————			15 % or less of operation distance				
Repeatability		0.05 mm or less		0.5 mm or less	0.3 mm or less	0.1 mm or less at setting distance: 10mm	0.05 mm or less at setting distance: 10mm	0.3 mm or less	
Supply power		10 - 30 V DC			10% Ripple P-P % or less				
Current consumption		Emitter: 10mA or less, Receiver: 15mA or less		20 mA or less					
Output		<NPN output type> NPN open-collector transistor Maximum sink current: 50 mA Applied voltage: 30V DC or less(between output and 0V) Residual voltage: 1V or less(at 50 mA sink current) 0.4 V or less (at 16 mA sink current)				<PNP output type> PNP open-collector transistor Maximum source current: 50 mA Applied voltage: 30V DC or less(between output and +V) Residual voltage: 1V or less(at 50 mA source current) 0.4 V or less (at 16 mA source current)			
Short-circuit protection		Incorporated							
Light source		Red LED (modulated)							
Response time		0.5 ms or less							
Operation indicator		Orange LED (lights up when the output is ON)(thru-beam type: located on the receiver)							
Stability indicator		Green LED(lights up under stable light received condition or stable dark condition), located on the receiver		Green LED (lights up under stable light received condition or stable dark condition)					
Sensitivity adjuster		—————	Continuously variable adjuster, located on the emitter	Continuously variable adjuster	—————	Continuously variable adjuster			
Operation mode switch		—————	Located on the receiver	—————					
Pollution degree		3(Industrial environment)							
Protection		IP67 (IEC)							
Ambient temperature		-25 to +55 °C(No dew condensation or icing allowed), Storage: -30 to + 70 °C							
Ambient humidity		35 to 85% RH,Storage:35 to 85% RH							
Ambient illuminance		Sunlight:11,000 lx at the light-receiving face, Incandescent light:3500 lx at the light-receiving face							
EMC		IEC 60947-5-2 Parts 7.2.6.1,2,3 or RFI>3V/m(In30-1000MHz),EFT>1KV,ESD>4KV(contact)							
Voltage withstandability		IEC 60947-5-2 Parts 8.3.3.4, or 500VDC for one min between all supply terminals connected together and enclosure							
Insulation resistance		>20M Ω , with 250V DC megger between all supply terminals connected together and enclosure							
Vibration resistance		IEC 60947-5-2 Parts 7.4.2 or 10-55Hz 1.0m amplitude in x, y and z directions for 30 min							
Shock resistance		IEC 60947-5-2 Parts 7.4.1 or 30g 11ms in x, y and z directions for six time each							
Material		Enclosure: Polyethylene terephthalate, Lens: Polyallylate							
Cable		0.1 mm ² 3-core (thru-beam type sensor emitter: 2-core) cabtyre cable, 2 m long							
Cable extension		Extension up to total 50m is possible with 0.3mm ² , or more, cable (thru-beam type: both emitter and receiver).							
Weight		Emitter: 20g approx., Receiver: 20g approx.		20g approx.					
Accessories		—————	Adjusting screwdriver: 1pc.	Adjusting screwdriver: 1pc.	Adjusting screwdriver: 1pc.	—————	Adjusting screwdriver: 1pc.		

RP16 SERIES

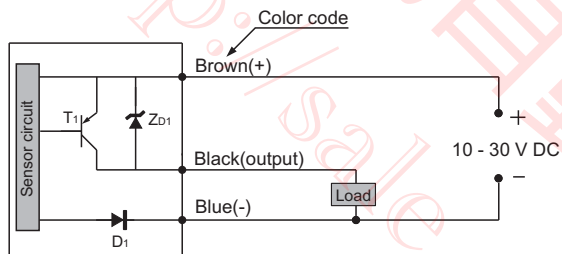
Connection Diagrams

NPN output type



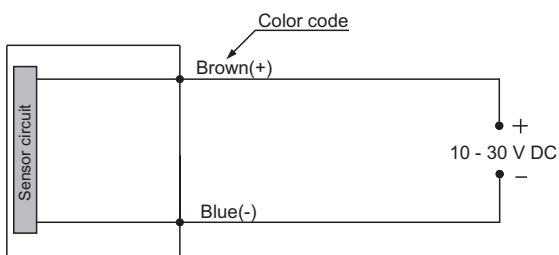
Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: NPN output transistor

PNP output type



Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: PNP output transistor

Emitter



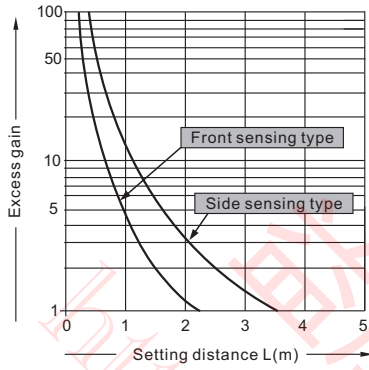
RP16 SERIES

Sensing Characteristics (Typical)

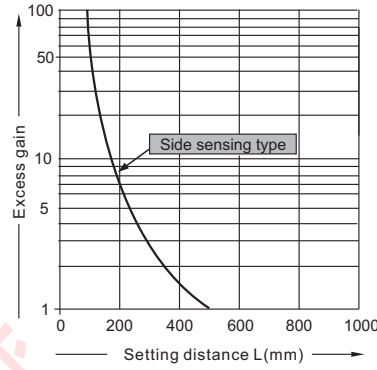
Thru-beam, Retroreflective & Diffuse mode sensor

Correlation between setting distance and excess gain

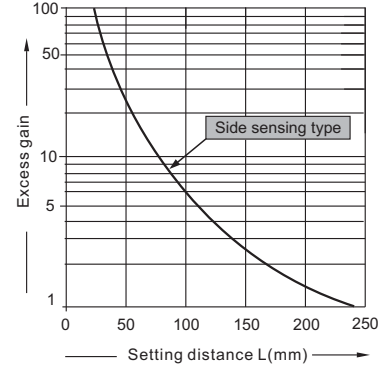
Thru-beam Sensor



Retroreflective Sensor

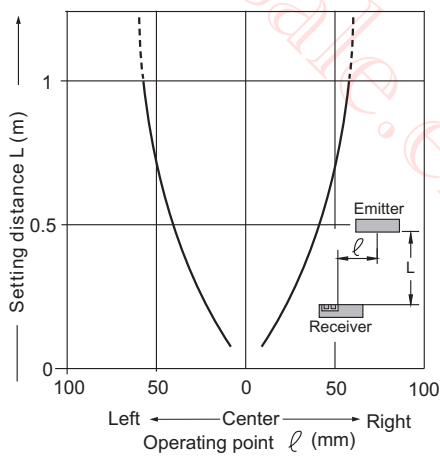


Diffuse Sensor

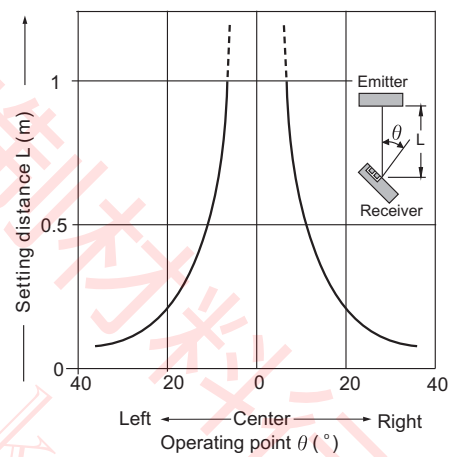


Thru-beam mode sensor (Front sensing type)

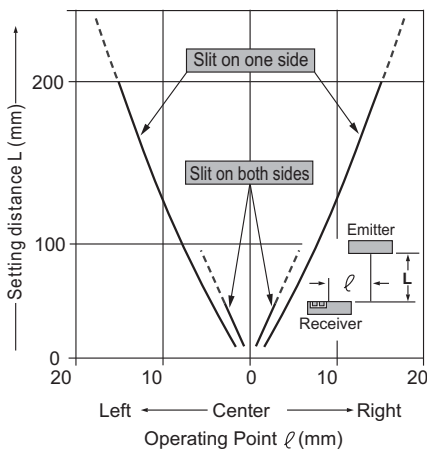
Parallel deviation



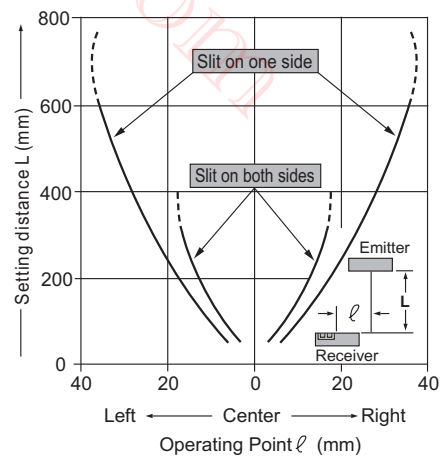
Angular deviation



Parallel deviation with round slit masks ($\phi 0.5\text{mm}$)



Parallel deviation with rectangular slit masks ($0.5 \times 3 \text{ mm}$)



Am: RP16 SERIES

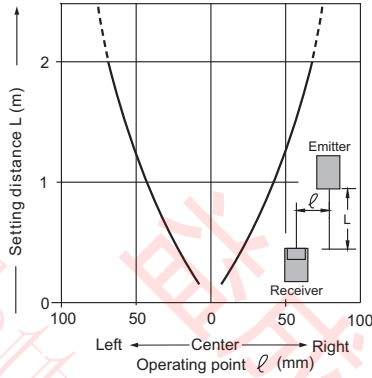
RP16 SERIES

Sensing Characteristics (Typical)

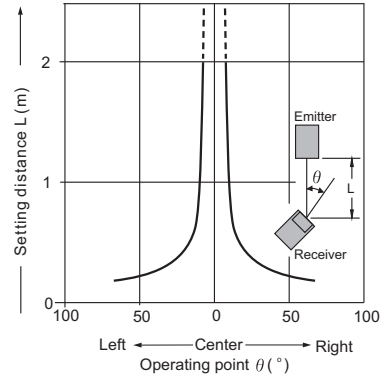
Thru-beam mode sensor (Side sensing type)

Am: RP16 SERIES

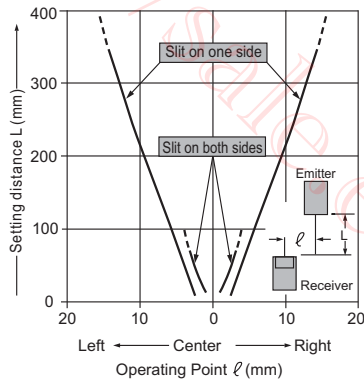
Parallel deviation



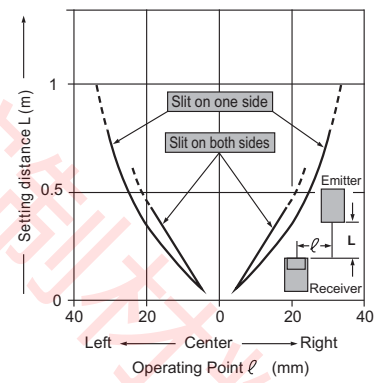
Angular deviation



Parallel deviation with round slit masks ($\phi 0.5\text{mm}$)

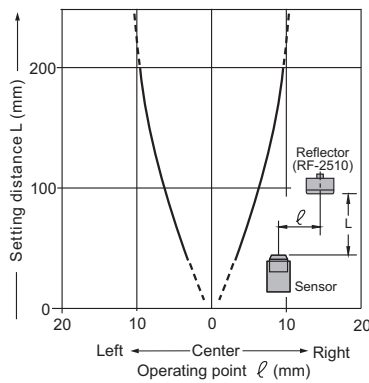


Parallel deviation with rectangular slit masks (0.5 X 3 mm)

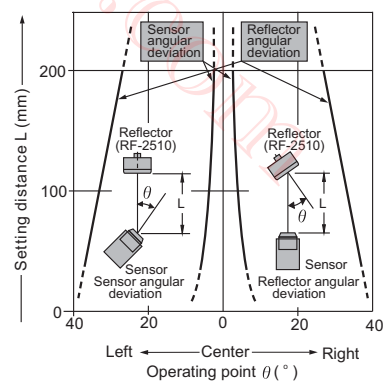


Retroreflective mode sensor (Side sensing type)

Parallel deviation



Angular deviation

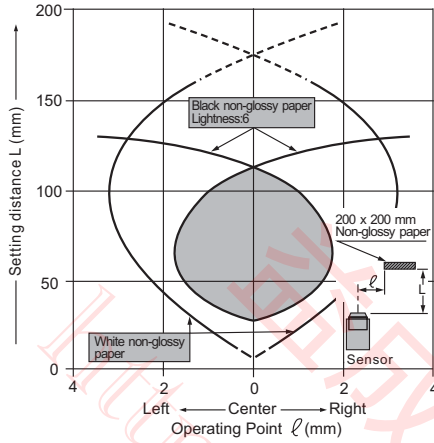


RP16 SERIES

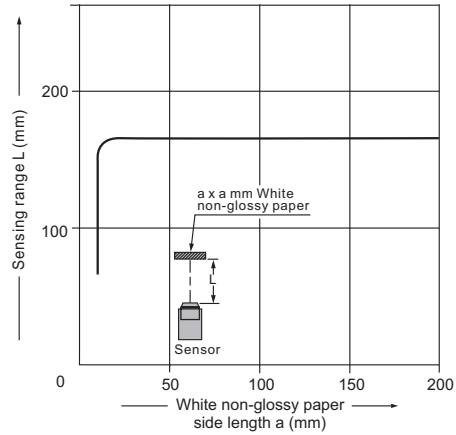
Sensing Characteristics (Typical)

Diffuse mode sensor (Side sensing type)

Sensing field



Correlation between sensing object size and sensing range

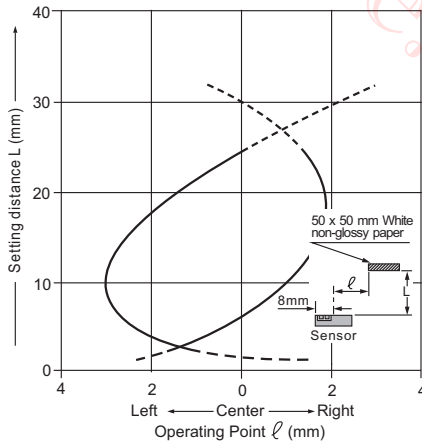


As the sensing object size becomes smaller than standard size (white non-glossy paper 200x200 mm), the sensing range shortens, as shown in the left graph.

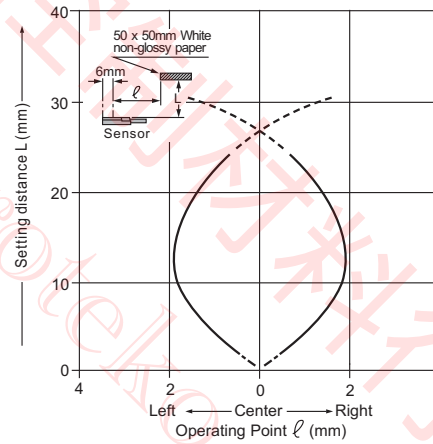
Convergent mode sensor (Front sensing type)

Sensing field

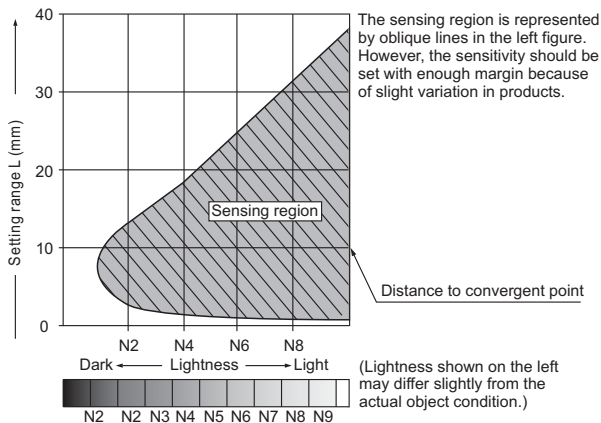
• Horizontal (left and right) direction



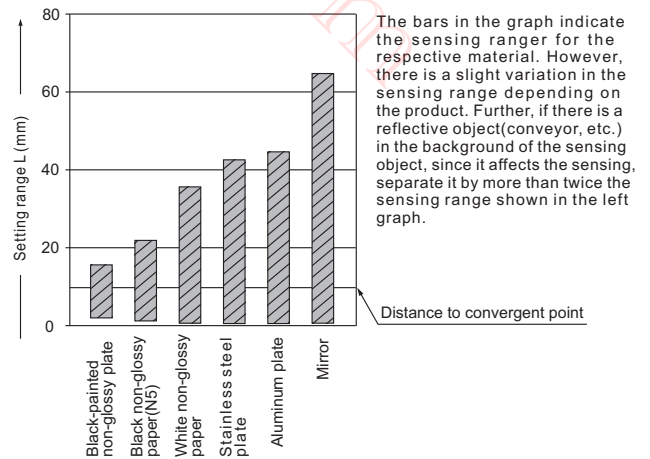
• Vertical (up and down) direction



Correlation between lightness and sensing range



Correlation between material (50x50mm) and sensing range



Am: RP16 SERIES

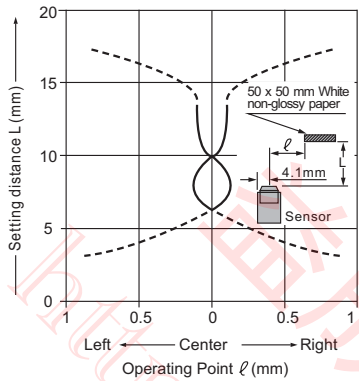
RP16 SERIES

Sensing Characteristics (Typical)

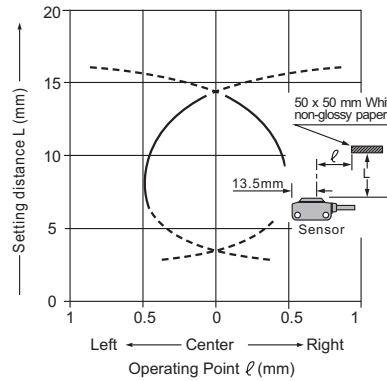
Convergent mode sensor (Side sensing type)

Sensing field

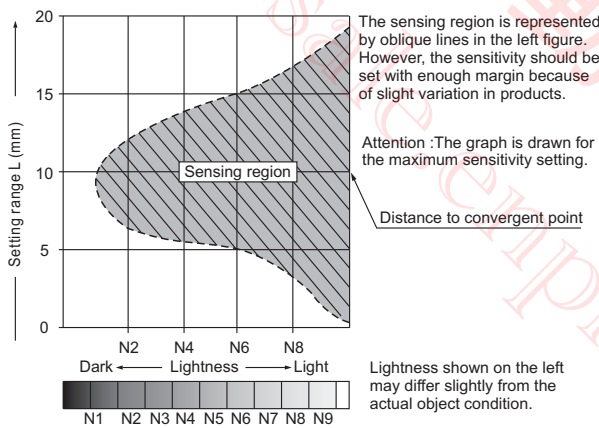
• Horizontal (left and right) direction



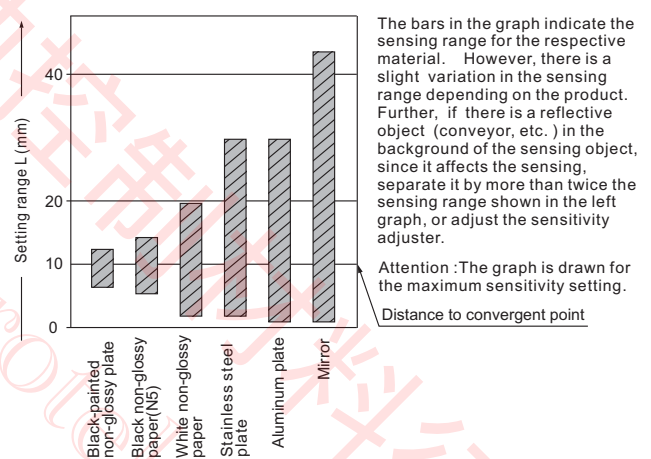
• Vertical (up and down) direction



Correlation between lightness and sensing range

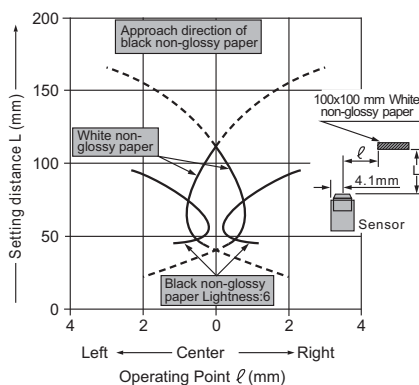


Correlation between material(50x50mm)and sensing range

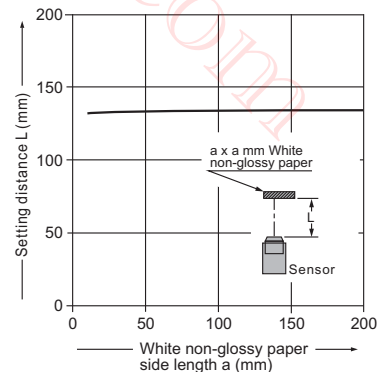


Narrow View mode sensor (Side sensing type)

Sensing field



Correlation between sensing object size and sensing range



As the sensing object size becomes smaller than the standard size (white non-glossy paper 100x100 mm), the sensing range shortens, as shown in the left graph.

RP16 SERIES

Precautions for Proper Use

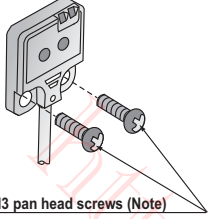


This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

Mounting

- Mounting using M3 screws. The tightening torque should be 0.5 N·m or less.

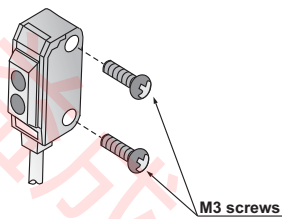
Front sensing type



M3 pan head screws (Note)

Note: When mounting the front sensing type sensor, use M3 pan head screws without washers, etc.

Side sensing type

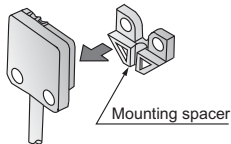


M3 screws

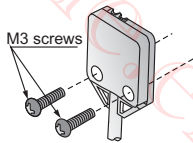
- When mounting the front sensing type from the backside, fit the mounting spacer RP16-A10 and fix with screws.

Mounting method

- (1) Fit the mounting spacer on the sensor.
- (2) Align the mounting holes of the mounting spacer and the sensor and mount with M3 screws. The tightening torque should be 0.5 N·m or less.



Mounting spacer



M3 screws

Sensitivity adjustment (Side sensing type only)

Step	Sensitivity adjuster	Description
(1)	Max	Turn the sensitivity adjuster fully counterclockwise to the minimum sensitivity position (* mark).
(2)	Max	In the light received condition, turn sensitivity adjuster slowly clockwise and confirm the point (A) where the sensor enters the 'Light' state operation.
(3)	Max	In the dark condition, turn the sensitivity adjuster further clockwise until the sensor enters the 'Light' state operation and then bring it back to confirm point (B) where the sensor just returns to the 'Dark' state operation. (If the sensor does not enter the 'Light' state operation even when the sensitivity adjuster is turned fully clockwise, this extreme position is point (B).)
(4)	Optimum position	The position at the middle of points (A) and (B) is the optimum sensing position.

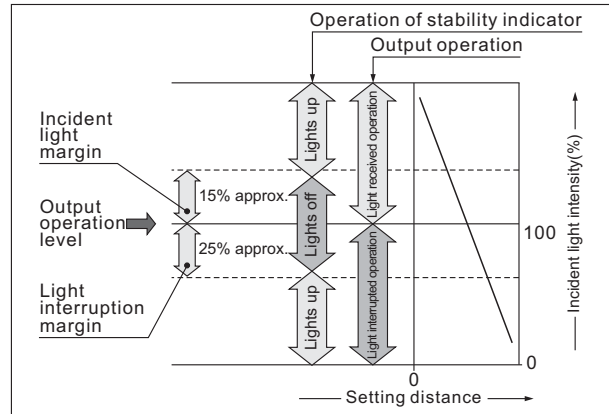
- Notes 1): Use the attached adjusting screwdriver to turn the adjuster slowly. Turning with excessive strength will damage the adjuster.
 2): In case of using diffuse mode sensor at a sensing distance of 50 mm or less, take care that the sensitivity adjustment range becomes extremely narrow.

Operation mode switch (Thru-beam side sensing type only)

Switch position	Description
	Light-ON mode is obtained when operation mode switch (located on the receiver) is turned fully clockwise (L side).
	Dark-ON mode is obtained when operation mode switch (located on the receiver) is turned fully counterclockwise (D side).

Stability indicator

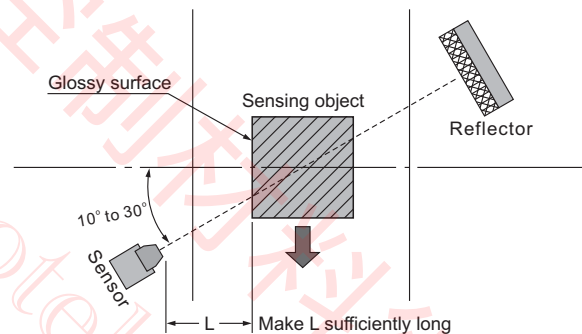
- The stability indicator (green) lights up when the incident light intensity has sufficient margin with respect to the operation level. If the incident light intensity level is such that the stability indicator lights up, stable sensing can be done without the light received operation and the light interrupted operation being affected by a change in ambient temperature or supply voltage.



Glossy object sensing (Retroreflective mode sensor)

- Please take care of the following points when detecting materials having a gloss.

- (1) Make L, shown in the diagram, sufficiently long.
- (2) Install at an angle of 10°~30° to the sensing object.



Wiring

- Make sure that the power supply is off while wiring. Verify that the supply voltage variation is within the rating. If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground. In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground. Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.

Others

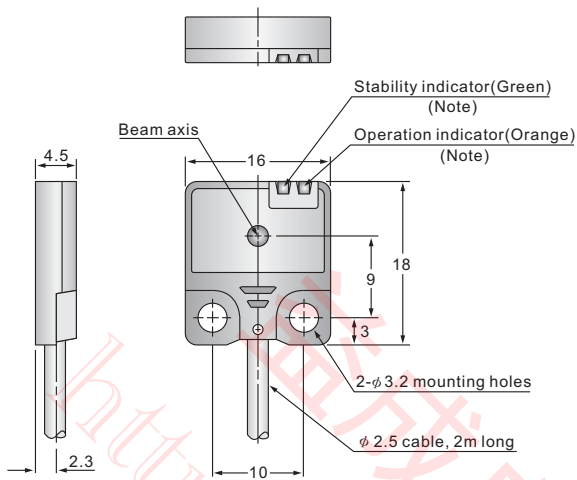
- Do not use during the initial transient time (50 ms) after the power supply vis switched on.
- If sensors are mounted close together and the ambient temperature is near the maximum rated value, provide for enough heat radiation/ventilation.
- If a reflective object is present in the background, the sensing of narrow view type sensor may be affected.
- When setting the sensor, make sure to confirm that the reflective object affects the sensing, take measures such as removing the reflective object or coloring it in black, etc.

Am: RP16 SERIES

RP16 SERIES

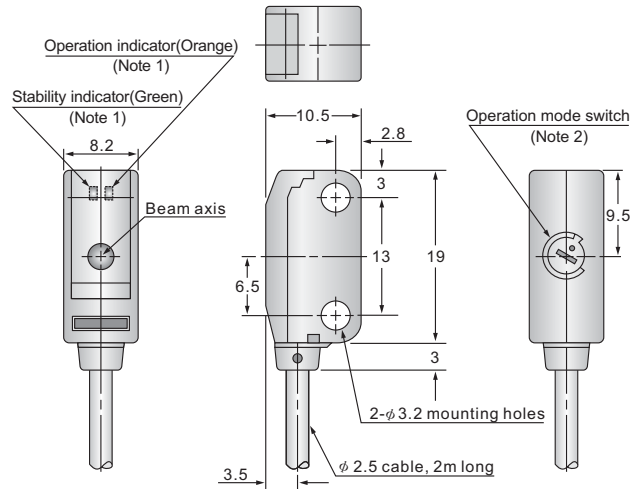
Dimensions (Unit: mm)

Thru-beam Sensor (Front sensing type)



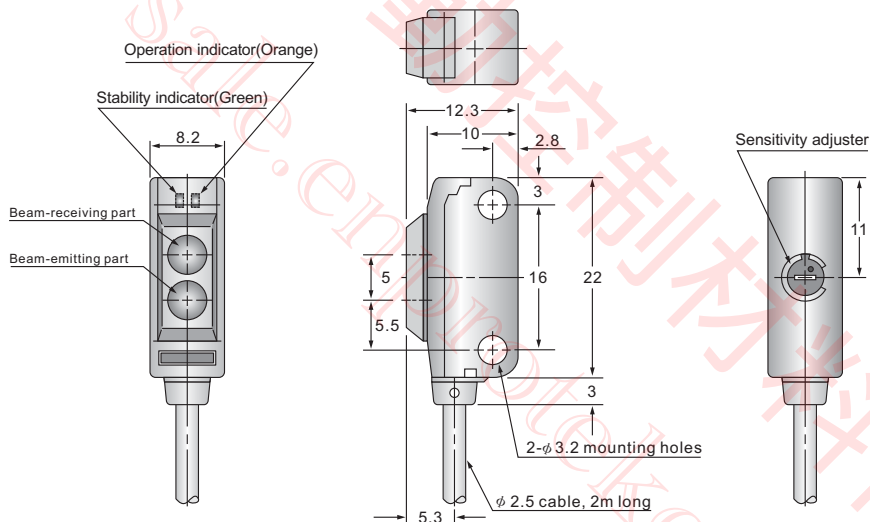
Note: Not incorporated on the emitter.

Thru-beam Sensor (Side sensing type)

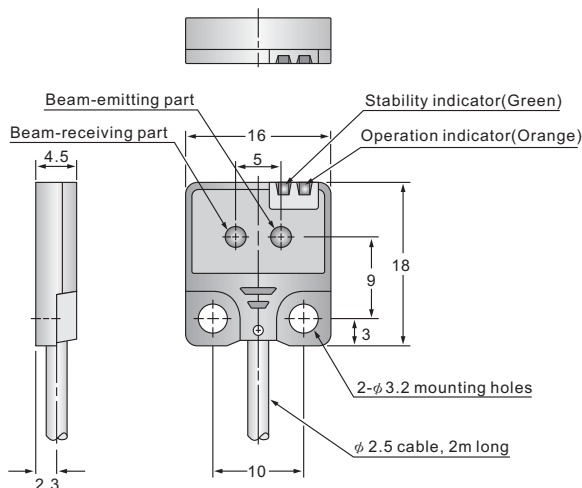


Note (1): Not incorporated on the emitter.
Note (2): It is sensitivity adjuster on the emitter.

Retroreflective, Diffuse, Convergent Narrow View Sensor (Side sensing type)



Convergent Sensor (Front sensing type)



RP16 SERIES

Dimensions (Unit: mm)

RP16-A5 (Sensor mounting bracket-optional)

Assembly dimensions
Mounting drawing with the receiver of the Thru-beam mode front sensing type sensor

Material: Stainless steel (SUS304)
Two M3 (length 5mm) pan head screws [stainless steel (SUS304)] are attached.

Am: RP16 SERIES

RP16-A6 (Sensor mounting bracket-optional)

Assembly dimensions
Mounting drawing with the receiver of the Thru-beam mode side sensing type sensor

Material: Stainless steel (SUS304)
Two M3 (length 14mm) screws with washers [stainless steel (SUS304)] are attached.

RP16-A7 (Sensor mounting bracket-optional)

Assembly dimensions
Mounting drawing with the receiver of the Thru-beam mode front sensing type sensor

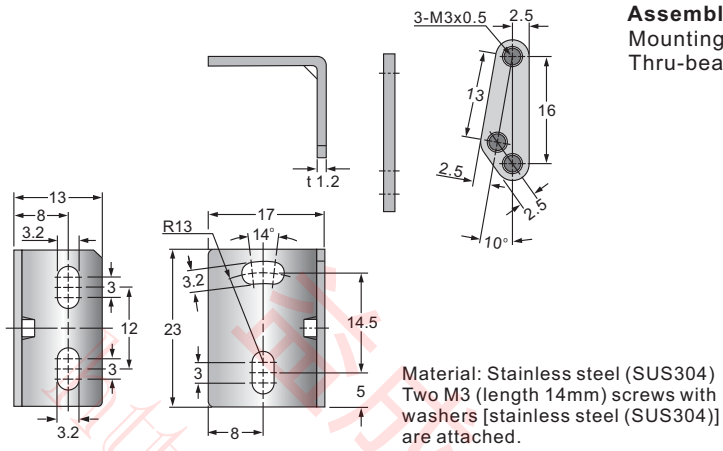
Material: Stainless steel (SUS304)
Two M3 (length 5mm) pan head screws [stainless steel (SUS304)] are attached.

RP16 SERIES

Dimensions (Unit: mm)

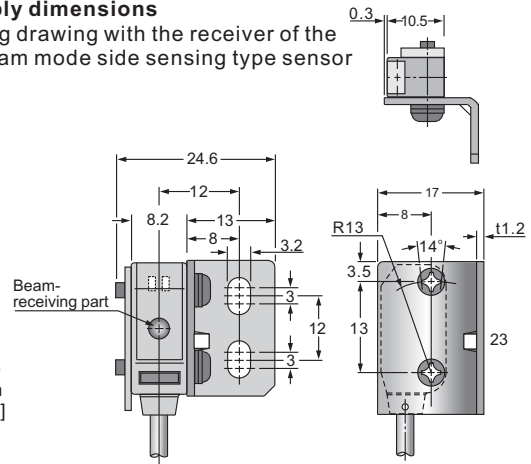
Am: RP16 SERIES

RP16-A8 (Sensor mounting bracket-optional)

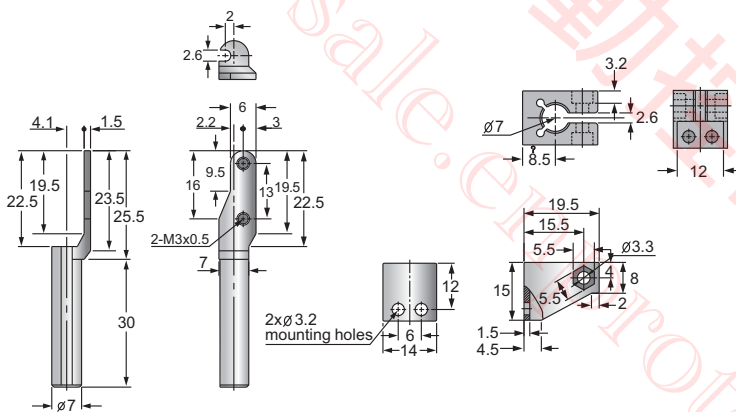


Assembly dimensions

Mounting drawing with the receiver of the Thru-beam mode side sensing type sensor

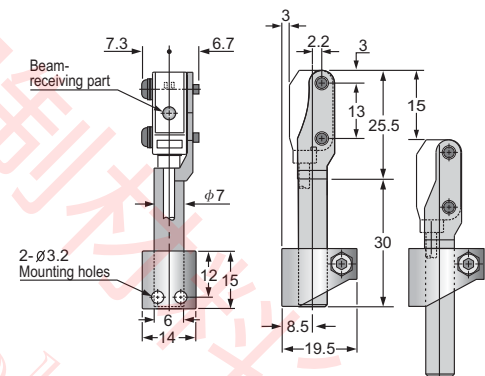


RP16-A9 (Universal sensor mounting bracket-optional)

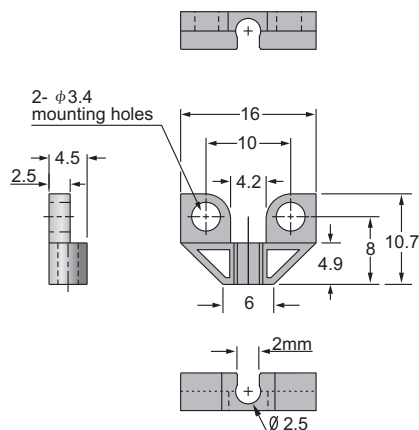


Assembly dimensions

Mounting drawing with the receiver of the Thru-beam mode side sensing type sensor

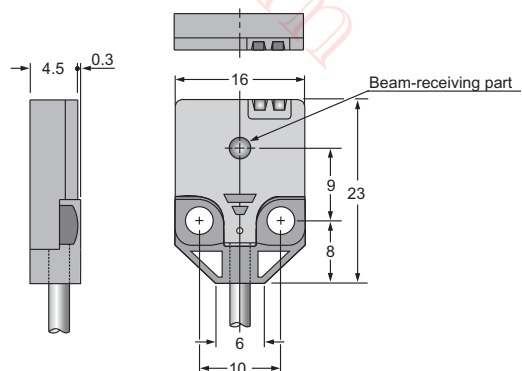


RP16-A10 (Mounting spacer-optional)



Assembly dimensions

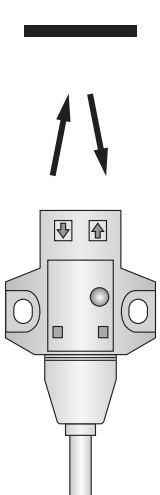

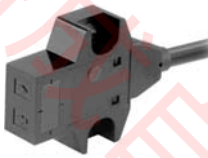




Mounting drawing with the receiver of the Thru-beam mode front sensing type sensor



RP25 SERIES

Convergent Mode

Aj: RP25 SERIES

Sensing Mode	Connection	Supply voltage	Output Mode	Part Number
<p>Convergent Mode</p> <p>Sensing distance 2.5-8 mm</p> <p>Convergent point 5 mm</p> <p>Light source Infrared</p> 	<p>1 m Cable (Horizontal View)</p> 	10-30V DC	NPN Light-ON	RP25-C0008N-LX9G3U1
			NPN Dark-ON	RP25-C0008N-DX9G3U1
			PNP Light-ON	RP25-C0008P-LX9G3U1
			PNP Dark-ON	RP25-C0008P-DX9G3U1
	<p>1 m Cable (Vertical View)</p> 	10-30V DC	NPN Light-ON	RP25-C0008N-LY9G3U1
			NPN Dark-ON	RP25-C0008N-DY9G3U1
			PNP Light-ON	RP25-C0008P-LY9G3U1
			PNP Dark-ON	RP25-C0008P-DY9G3U1
	<p>1 m Cable (Horizontal View with L shape)</p> 	10-30V DC	NPN Light-ON	RP25-C0008N-LX9G3U1/L
			NPN Dark-ON	RP25-C0008N-DX9G3U1/L
			PNP Light-ON	RP25-C0008P-LX9G3U1/L
			PNP Dark-ON	RP25-C0008P-DX9G3U1/L
	<p>Terminal (Horizontal View)</p> 	10-30V DC	NPN Light-ON	RP25-C0008N-LX9T3U
			NPN Dark-ON	RP25-C0008N-DX9T3U
			PNP Light-ON	RP25-C0008P-LX9T3U
			PNP Dark-ON	RP25-C0008P-DX9T3U
<p>Terminal (Vertical View)</p> 	10-30V DC	NPN Light-ON	RP25-C0008N-LY9T3U	
		NPN Dark-ON	RP25-C0008N-DY9T3U	
		PNP Light-ON	RP25-C0008P-LY9T3U	
		PNP Dark-ON	RP25-C0008P-DY9T3U	
<p>Terminal (Horizontal View with L shape)</p> 	10-30V DC	NPN Light-ON	RP25-C0008N-LX9T3U/L	
		NPN Dark-ON	RP25-C0008N-DX9T3U/L	
		PNP Light-ON	RP25-C0008P-LX9T3U/L	
		PNP Dark-ON	RP25-C0008P-DX9T3U/L	

Note:
 Coming Soon : Part numbers with underline
 In Preparation: Part numbers with a line through the middle
 — Aj-01 —

RP25 SERIES

Specifications

Item	Type	Convergent Mode					
		Cable type			Terminal type		
		Horizontal View	Vertical View	Horizontal view (L shape)	Horizontal View	Vertical View	Horizontal view(L shape)
Sensing range	2.5 - 8 mm (Spot size at focus: 5mm) with white non-glossy paper(15 x 15 mm)						
Minimum sensing object	φ 0.05 mm copper wire(setting distance: 5 mm)						
Hysteresis	20 % or less of operation distance with white non-glossy paper(15 x 15 mm)						
Repeatability (perpendicular to sensing axis)	0.08 mm or less (Note1)						
Supply power	10 - 30 V DC 10% Ripple P-P 5% or less						
Current consumption	Average: 25 mA or less, Peak: 80 mA or less						
Output	NPN open-collector transistor Maximum sink current: 100 mA Applied voltage: 30V DC or less(between output and 0V) Residual voltage: 1 V or less(at 50 mA sink current) 0.4 V or less (at 16 mA sink current)			PNP open-collector transistor Maximum source current: 100 mA Applied voltage: 30V DC or less(between output and 0V) Residual voltage: 1 V or less(at 50 mA sink current) 0.4 V or less (at 16 mA source current)			
Circuit protection	Output short circuit protection						
Output operation	Selectable either Light-ON / Dark-ON by type number						
Light source	Infrared LED (modulated)						
Response time	0.8 ms or less						
Operation indicator	Red LED (lights up when the output is ON)						
Pollution degree	3(Industrial environment)						
Ambient temperature	-10 to +55 °C (No dew condensation or icing allowed), Storage: -25°C to + 80 °C						
Ambient humidity	45% to 85 % RH, Storage:45 to 85 % RH						
Ambient illuminance	Sunlight: 11,000 ℓ x at the light-receiving face, Incandescent light: 3,500 ℓ x at th light-receiving face						
EMC	IEC 60947-5-2 Parts 7.2.6.1,2,3 or RFI>3V/m(In30-1000MHz),EFT>1KV,ESD>4KV(contact)						
Voltage withstandability	IEC 60947-5-2 Parts 8.3.3.4, or 500VDC for one min between all supply terminals connected together and enclosure						
Insulation resistance	>50MΩ, with 250V DC megger between all supply terminals connected together and enclosure						
Vibration resistance	IEC 60947-5-2 Parts 7.4.2 or 10-55Hz 1.0m amplitude in x, y and z directions for 30 min						
Shock resistance	IEC 60947-5-2 Parts 7.4.1 or 30g 11ms in x, y and z directions for six time each						
Material	Enclosure: Polycarbonate, Fixed cable part: PBT			Enclosure: Polycarbonate, Terminal part: HSM(Ag plated)			
Cable	0.2 mm ² 3-core cabtyre cable, 1m long (Note2)			—————			
Cable extension	—————			Total 2m is possible with 0.3 mm ² , or more, cable. (If the cable is extended for 2m, or more, a capacitor of 10 μF must be connected between +V and 0 V terminals.)			
Weight	25 g approx.			4.5 g approx.		4g approx.	

Note1): The repeatability is specified for white non-glossy paper (15x15mm) at a setting distance of 5 mm.

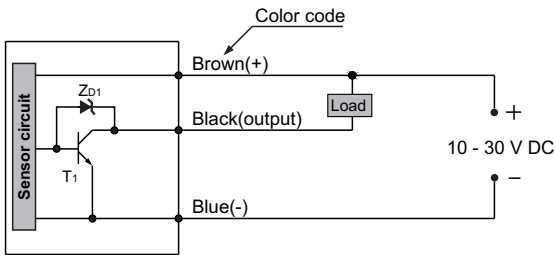
2): Cable cannot be extended.

RP25 SERIES

Connection Diagrams / Sensing Characteristics

Aj: RP25 SERIES

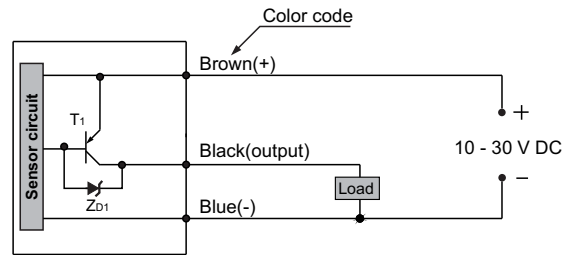
NPN output type



Symbols... ZD1: Surge absorption zener diode
T1: NPN output transistor

Note: Make sur to connect terminals correctly because the sensor does not incorporate a reverse polarity protection circuit.

PNP output type



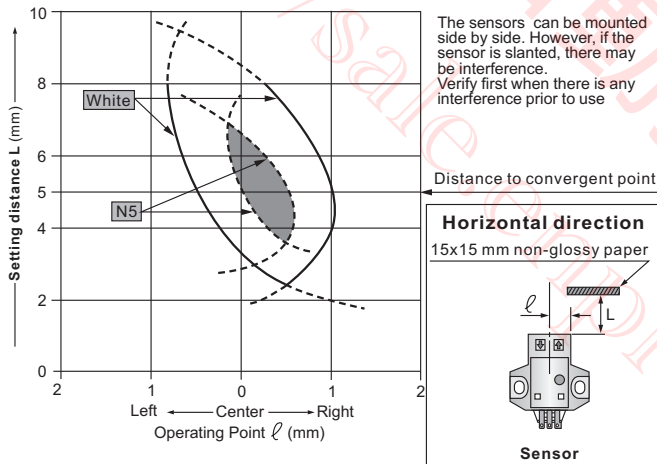
Symbols... ZD1: Surge absorption zener diode
T1: PNP output transistor

Note: Make sur to connect terminals correctly because the sensor does not incorporate a reverse polarity protection circuit.

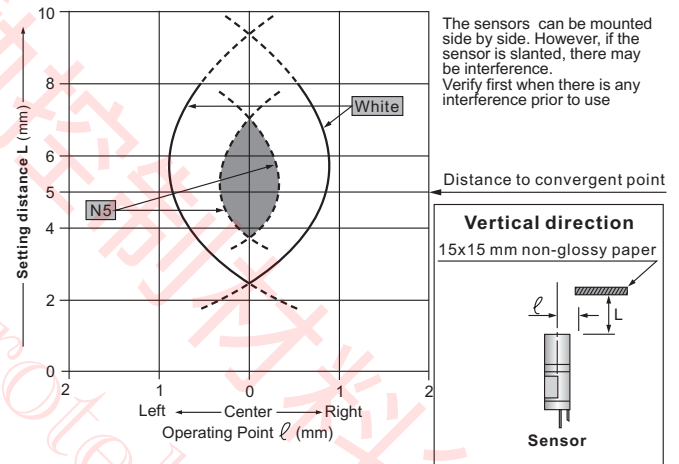
Sensing Characteristics (Typical)

Sensing field

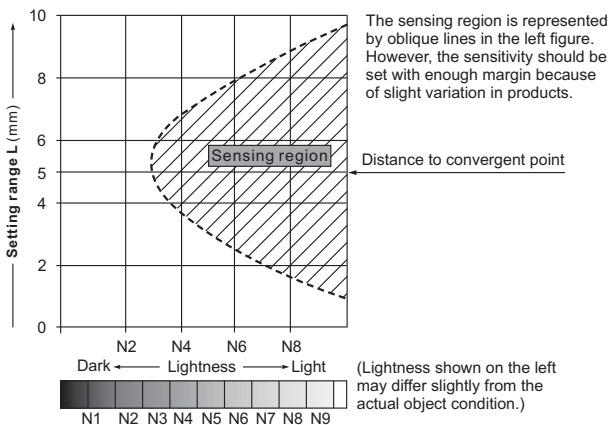
• Horizontal (left and right) direction



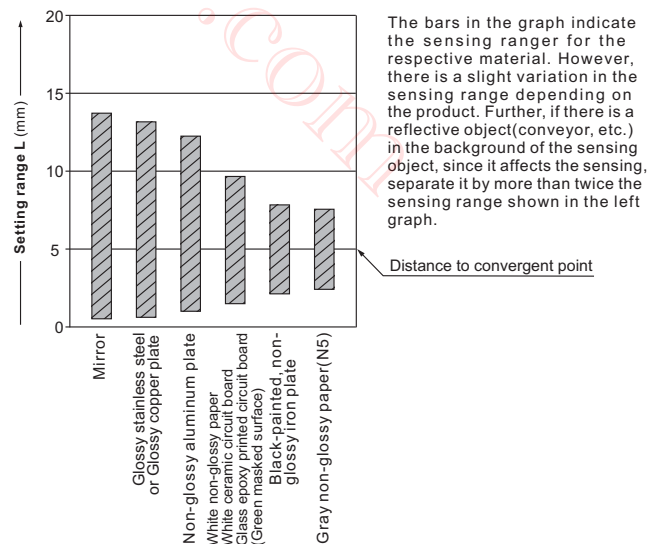
• Vertical (up and down) direction



Correlation between lightness and sensing range



Correlation between material(15x15mm)and sensing range

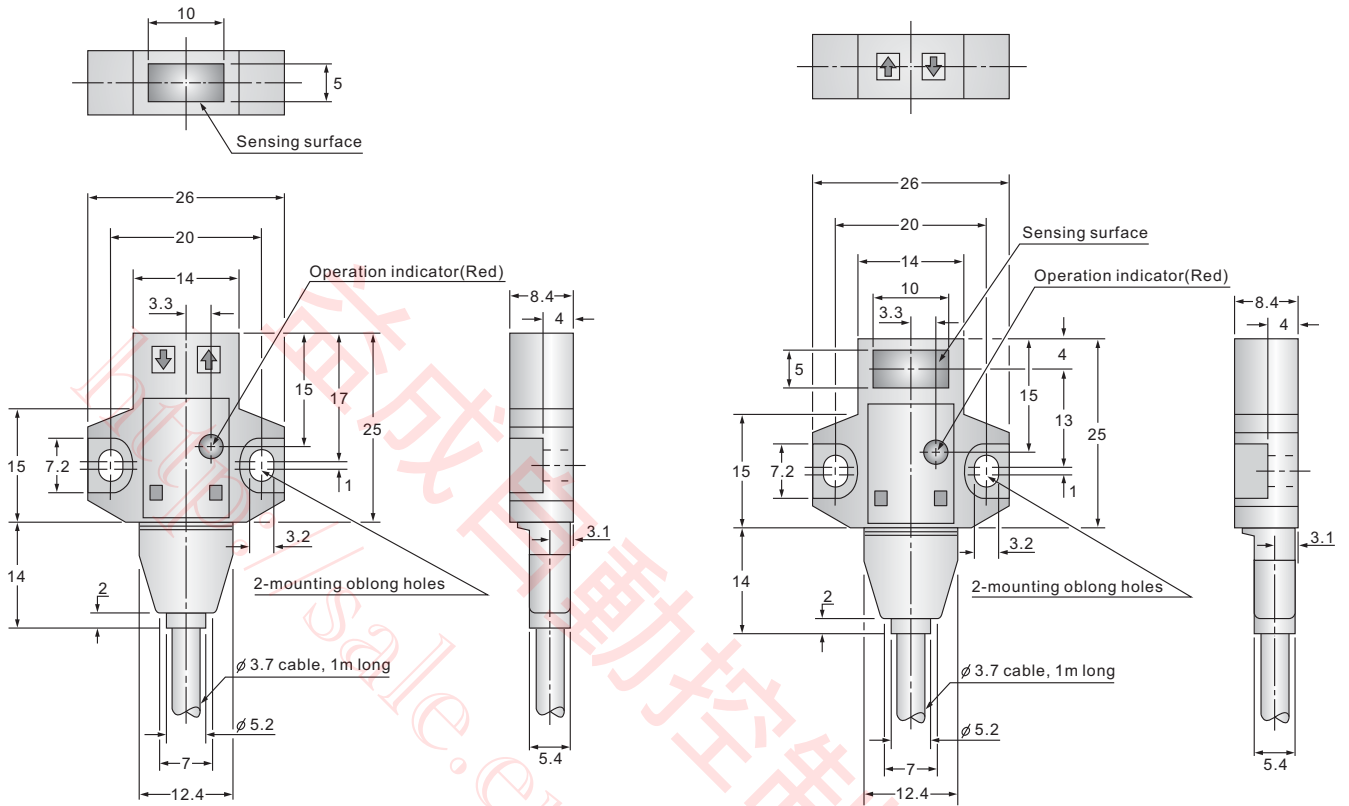


RP25 SERIES

Dimensions (Unit: mm)

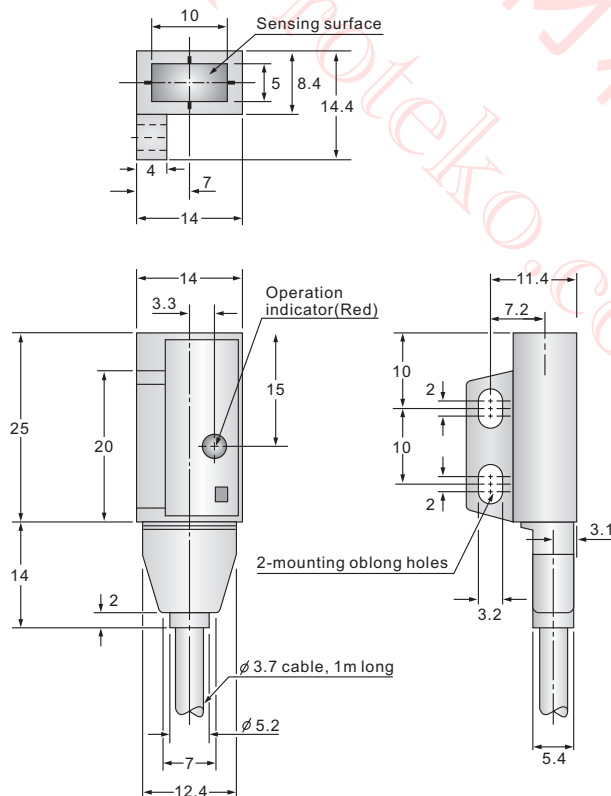
RP25-C0008N(P)-L(D)X9C3U1 (Horizontal View)

RP25-C0008N(P)-L(D)Y9C3U1 (Vertical View)



Aj: RP25 SERIES

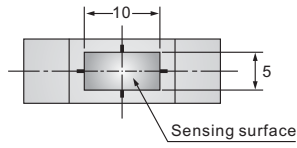
RP25-C0008N(P)-L(D)X9C3U1/L (Horizontal View with L shape)



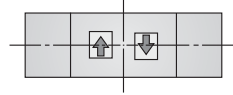
RP25 SERIES

Dimensions (Unit: mm)

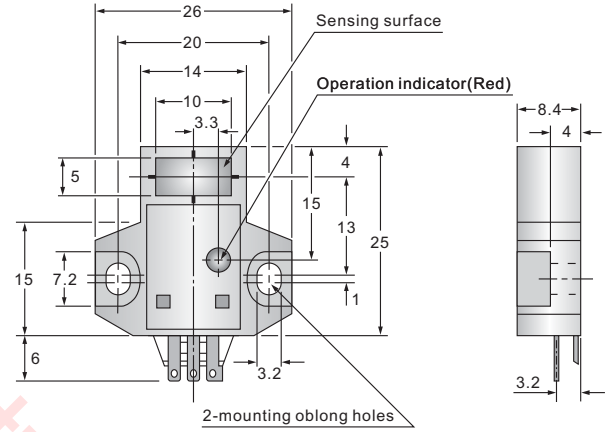
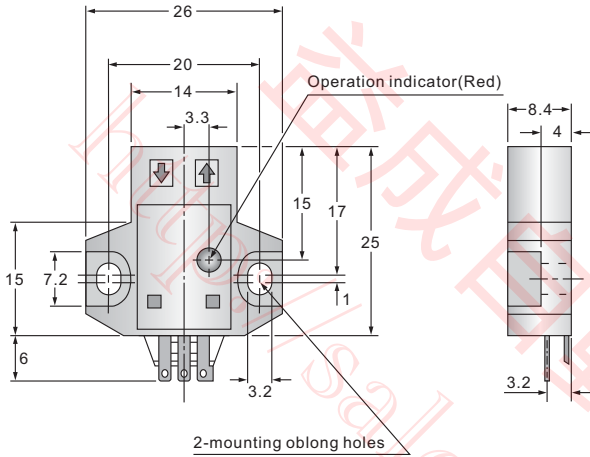
RP25-C0008N(P)-L(D)X9T3U (Horizontal View)



RP25-C0008N(P)-L(D)Y9T3U (Vertical View)

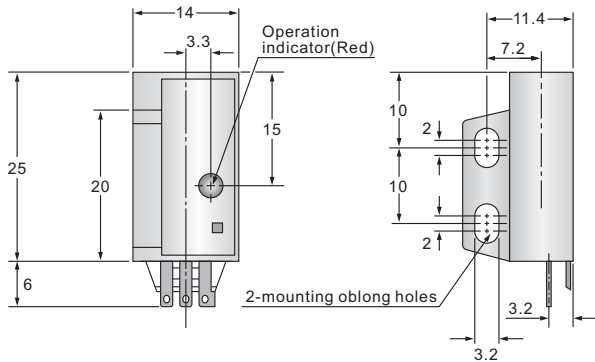
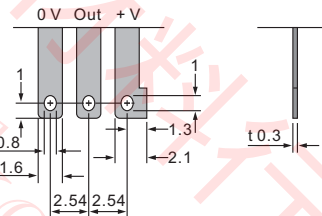
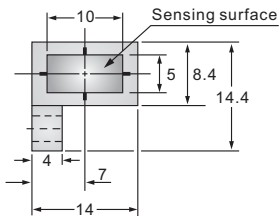


Aj: RP25 SERIES



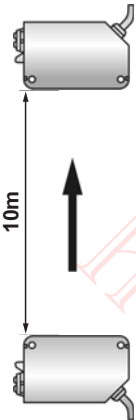




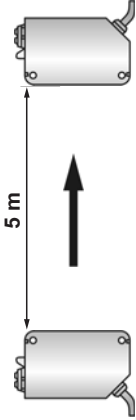




RP25-C0008N(P)-L(D)X9T3U/L (Horizontal View with L shape)

Terminal part



RP31 SERIES

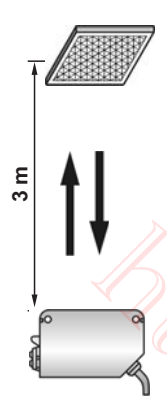




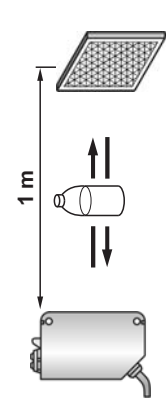




Standard Thru-beam Mode / Narrow Beam Thru-beam Mode

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>Thru-beam Mode</p> <p>Sensing Distance 10m</p> <p>Infrared LED</p>	2m Cable 	10-30V DC	Emitter	<u>RP31-T010MD-EY9C3L2</u>
			NPN	<u>RP31-T010MN-CY9C3U2</u>
			PNP	<u>RP31-T010MP-CY9C3U2</u>
	Quick Disconnect (Pico-Style) 	10-30V DC	Emitter	<u>RP31-T010MD-EY9Q4LP</u>
			NPN	<u>RP31-T010MN-CY9Q4UP</u>
			PNP	<u>RP31-T010MP-CY9Q4UP</u>
	6" Pigtail (Pico-Style) 	10-30V DC	Emitter	<u>RP31-T010MD-EY9P4LP</u>
			NPN	<u>RP31-T010MN-CY9P4UP</u>
			PNP	<u>RP31-T010MP-CY9P4UP</u>
	6" Pigtail (Euro-Style) 	10-30V DC	Emitter	<u>RP31-T010MD-EY9P4LE</u>
			NPN	<u>RP31-T010MN-CY9P4UE</u>
			PNP	<u>RP31-T010MP-CY9P4UE</u>
 <p>Thru-beam Mode (Narrow beam)</p> <p>Sensing Distance 5m</p> <p>Infrared LED</p>	2m Cable 	10-30V DC	Emitter	<u>RP31-T5000D-EY9C3L2-N</u>
			NPN	<u>RP31-T5000N-CY9C3U2-N</u>
			PNP	<u>RP31-T5000P-CY9C3U2-N</u>
	Quick Disconnect (Pico-Style) 	10-30V DC	Emitter	<u>RP31-T5000D-EY9Q4LP-N</u>
			NPN	<u>RP31-T5000N-CY9Q4UP-N</u>
			PNP	<u>RP31-T5000P-CY9Q4UP-N</u>
	6" Pigtail (Pico-Style) 	10-30V DC	Emitter	<u>RP31-T5000D-EY9P4LP-N</u>
			NPN	<u>RP31-T5000N-CY9P4UP-N</u>
			PNP	<u>RP31-T5000P-CY9P4UP-N</u>
	6" Pigtail (Euro-Style) 	10-30V DC	Emitter	<u>RP31-T5000D-EY9P4LE-N</u>
			NPN	<u>RP31-T5000N-CY9P4UE-N</u>
			PNP	<u>RP31-T5000P-CY9P4UE-N</u>

Ap: RP31 SERIES

RP31 SERIES

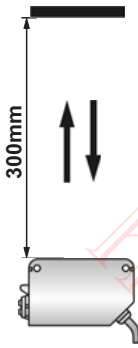




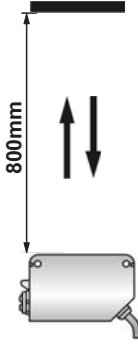




Polarized Retroreflective Mode / Clear Object Detector

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number		
<p>Retroreflective Mode (with polarizing filter)</p> <p>Sensing Distance 0.1 to 3 m (Note)</p> <p>Red LED</p> 	<p>2m Cable</p> 	10-30V DC	NPN	<u>RP31-L3000N-CY6C3U2-PF</u>		
			PNP	<u>RP31-L3000P-CY6C3U2-PF</u>		
		<p>Quick Disconnect (Pico-Style)</p> 	10-30V DC	NPN	<u>RP31-L3000N-CY6Q4UP-PF</u>	
		PNP		<u>RP31-L3000P-CY6Q4UP-PF</u>		
		<p>6" Pigtail (Pico-Style)</p> 	10-30V DC	NPN	<u>RP31-L3000N-CY6P4UP-PF</u>	
		PNP		<u>RP31-L3000P-CY6P4UP-PF</u>		
		<p>6" Pigtail (Euro-Style)</p> 	10-30V DC	NPN	<u>RP31-L3000N-CY6P4UE-PF</u>	
		PNP		<u>RP31-L3000P-CY6P4UE-PF</u>		
	<p>Clear Object Detector</p> <p>Sensing Distance 50 to 1000mm (Note)</p> <p>Red LED</p> 	<p>2m Cable</p> 	10-30V DC	NPN	<u>RP31-S4000N-CY6C3U2</u>	
				PNP	<u>RP31-S1000P-CY6C3U2</u>	
			<p>Quick Disconnect (Pico-Style)</p> 	10-30V DC	NPN	<u>RP31-S4000N-CY6Q4UP</u>
			PNP		<u>RP31-S1000P-CY6Q4UP</u>	
		<p>6" Pigtail (Pico-Style)</p> 	10-30V DC	NPN	<u>RP31-S4000N-CY6P4UP</u>	
		PNP		<u>RP31-S1000P-CY6P4UP</u>		
		<p>6" Pigtail (Euro-Style)</p> 	10-30V DC	NPN	<u>RP31-S4000N-CY6P4UE</u>	
		PNP		<u>RP31-S1000P-CY6P4UE</u>		

Ap: RP31 SERIES

RP31 SERIES

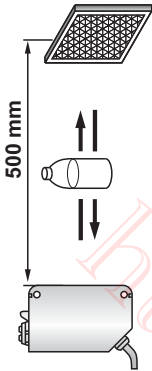




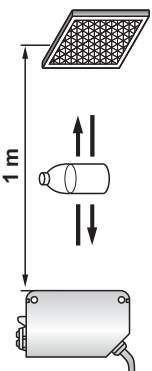




Standard Diffuse Mode / Long Range Diffuse Mode

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number	
 <p>Diffuse Mode (Standard) Sensing Distance 300mm Infrared LED</p>	2m Cable 	10-30V DC	NPN	<u>RP31-D0300N-CY9C3U2</u>	
			PNP	<u>RP31-D0300P-CY9C3U2</u>	
	Quick Disconnect (Pico-Style) 	10-30V DC	NPN	<u>RP31-D0300N-CY9Q4UP</u>	
			PNP	<u>RP31-D0300P-CY9Q4UP</u>	
	6" Pigtail (Pico-Style) 	10-30V DC	NPN	<u>RP31-D0300N-CY9P4UP</u>	
			PNP	<u>RP31-D0300P-CY9P4UP</u>	
	6" Pigtail (Euro-Style) 	10-30V DC	NPN	<u>RP31-D0300N-CY9P4UE</u>	
			PNP	<u>RP31-D0300P-CY9P4UE</u>	
	 <p>Diffuse Mode (Long Range) Sensing Distance 800mm Infrared LED</p>	2m Cable 	10-30V DC	NPN	<u>RP31-D0800N-CY9C3U2</u>
				PNP	<u>RP31-D0800P-CY9C3U2</u>
		Quick Disconnect (Pico-Style) 	10-30V DC	NPN	<u>RP31-D0800N-CY9Q4UP</u>
				PNP	<u>RP31-D0800P-CY9Q4UP</u>
6" Pigtail (Pico-Style) 		10-30V DC	NPN	<u>RP31-D0800N-CY9P4UP</u>	
			PNP	<u>RP31-D0800P-CY9P4UP</u>	
6" Pigtail (Euro-Style) 		10-30V DC	NPN	<u>RP31-D0800N-CY9P4UE</u>	
			PNP	<u>RP31-D0800P-CY9P4UE</u>	

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Polarized Retroreflective Mode / Clear Object Detector

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>500 mm</p> <p>Clear Object Detector</p> <p>Sensing Distance 500 mm (Note)</p> <p>Infrared Light</p>	2m Cable 	10-30V DC	NPN	<u>RP31-S0500N-CY6C3U2</u>
			PNP	<u>RP31-S0500P-CY6C3U2</u>
	Quick Disconnect (Pico-Style) 	10-30V DC	NPN	<u>RP31-S0500N-CY6Q4UP</u>
			PNP	<u>RP31-S0500P-CY6Q4UP</u>
	6" Pigtail (Pico-Style) 	10-30V DC	NPN	<u>RP31-S0500N-CY6P4UP</u>
			PNP	<u>RP31-S0500P-CY6P4UP</u>
	6" Pigtail (Euro-Style) 	10-30V DC	NPN	<u>RP31-S0500N-CY6P4UE</u>
			PNP	<u>RP31-S0500P-CY6P4UE</u>
 <p>1 m</p> <p>Clear Object Detector</p> <p>Sensing Distance 50 to 1000mm (Note)</p> <p>Infrared Light</p>	2m Cable 	10-30V DC	NPN	<u>RP31-S1000N-CY9C3U2</u>
			PNP	<u>RP31-S1000P-CY9C3U2</u>
	Quick Disconnect (Pico-Style) 	10-30V DC	NPN	<u>RP31-S1000N-CY9Q4UP</u>
			PNP	<u>RP31-S1000P-CY9Q4UP</u>
	6" Pigtail (Pico-Style) 	10-30V DC	NPN	<u>RP31-S1000N-CY9P4UP</u>
			PNP	<u>RP31-S1000P-CY9P4UP</u>
	6" Pigtail (Euro-Style) 	10-30V DC	NPN	<u>RP31-S1000N-CY9P4UE</u>
			PNP	<u>RP31-S1000P-CY9P4UE</u>

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Specifications

Item	Model No.	Type		Thru-beam		Retroreflective		Diffuse			
		NPN output type.	PNP output type.	Standard	Narrow Beam	with polarizing filters	Clear object detector	Long range	Standard		
				RP31-T010MN.....	RP31-T5000N.....	RP31-L3000N.....	RP31-S1000N.....	RP31-D0800N.....	RP31-D0300N.....		
				RP31-T010MP.....	RP31-T5000P.....	RP31-L3000P.....	RP31-S1000P.....	RP31-D0800P.....	RP31-D0300P.....		
Sensing range		10m		5 m		0.1 ~ 3m (Note)		50mm~1 m (Note)			
Sensing object		φ 12mm or more opaque object				φ 50mm or more opaque, translucent or specular object			Opaque, translucent or transparent object		
Hysteresis		_____						15% or less of operation distance			
Repeatability		0.5mm or less		0.05mm or less		0.5mm or less		1mm or less			
Supply voltage		10 to 30V DC 10% Ripple P-P 10% or less									
Current consumption		Emitter: 30mA or less Receiver: 30mA or less				30mA or less					
Sensing output		NPN open-collector transistor Maximum sink current: 100mA Applied voltage: 30V DC or less (between output and 0V) Residual voltage: 1.5V or less (at 100mA sink current)				PNP open-collector transistor Maximum sink current: 100mA Applied voltage: 30V DC or less (between output and +V) Residual voltage: 1.5V or less (at 100mA source current)					
Utilization category		DC-12 or DC-13									
Output operation		Switchable either Light-ON or Dark-ON									
Short-circuit protection		Incorporated									
Response time		1 ms or less									
Operation indicator		Red LED (lights up when the sensing output is ON)									
Stability indicator		Green LED (lights up under stable light received condition or stable dark condition)									
Power indicator		Red LED lights up when power is ON				_____					
Sensitivity adjuster		Continuously variable adjuster									
Automatic interference prevention function		_____				Incorporated (Two units of sensors can be mounted closely)		_____		Incorporated (Two units of sensors can be mounted closely)	
Environmental resistance	Pollution degree	3 (Industrial environment)									
	Protection	IP 67 (IEC)									
	Ambient temperature	-25 to +55°C (No dew condensation or icing allowed), storage: -30 to +70°C									
	Ambient humidity	35 to 85 % RH, storage: 35 to 85% RH									
	Ambient illuminance	Sunlight: 11000 lx at the light receiving face, Incandescent light: 3000 lx at the light-receiving face.									
	EMC	IEC 60947-5-2, Parts 7.2.6.1.2.3 or RFI>3V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)									
	Voltage withstandability	1000 V AC for one min. Between all supply terminals connected together and enclosure.									
	Insulation resistance	20M Ω ,or more, with 250V DC megger between all supply terminals connected together and enclosure									
	Vibration resistance	IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude In X, Y and Z directions for 30 min									
Shock resistance	IEC 60947-5-2, Part 7.4.1 or 30g, 11ms in X, Y and Z directions for six times each										
Emitting element		Infrared LED (modulated)			Red LED (modulated)			Infrared LED (modulated)			
Material		Enclosure: Polycarbonate, Lens: Polycarbonate, Indicator Cover: Polycarbonate, Front Cover: Polycarbonate									
Cable		0.2mm ² 3-core (thru-beam type emitter: 2-core) oil resistant cabtyre cable, 2m long									
Cable extension		Extension up to total 100m is possible with 0.3mm ² , or more, cable (thru-beam type: both emitter and receiver)									
Pigtail type		See Pigtail Series or our Cables & Connectors catalogue.									
Connector type		Pico style (M8) 4pin									
Weight		50g approx.									
Accessories		Adjusting screwdriver : 1pc.			RE-6152 (Reflector):1 pc. Adjusting screwdriver: 1 pc.			Adjusting screwdriver : 1pc.			

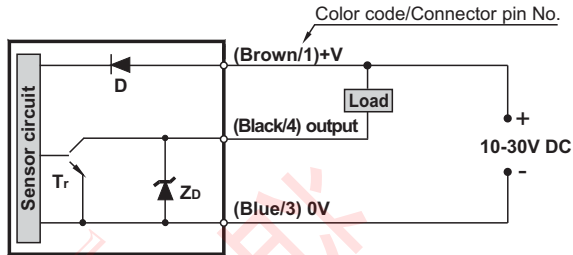
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Connection Diagrams

NPN output type

I/O circuit diagram



Symbols... D : Reverse supply polarity protection diode
Zd: Surge absorption zener diode
Tr: NPN output transistor.

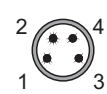
Connector pin position

Euro-style



- 1. Brown (+)
- 2. Not used
- 3. Blue (-)
- 4. Black (Output)

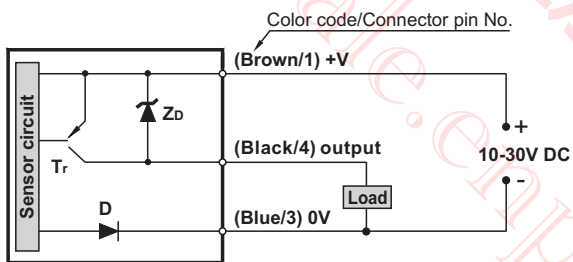
Pico-Style



- 1. Brown (+)
- 2. Not used
- 3. Blue (-)
- 4. Black (Output)

PNP output type

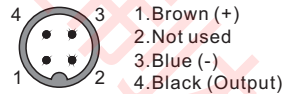
I/O circuit diagram



Symbols... D : Reverse supply polarity protection diode
Zd: Surge absorption zener diode
Tr: PNP output transistor.

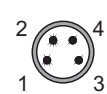
Connector pin position

Euro-style



- 1. Brown (+)
- 2. Not used
- 3. Blue (-)
- 4. Black (Output)

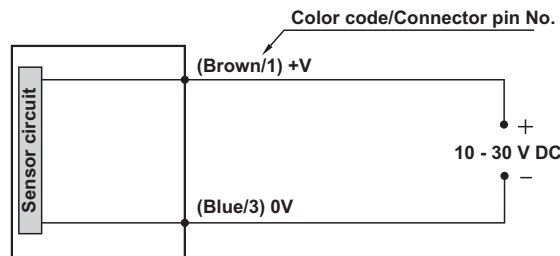
Pico-Style



- 1. Brown (+)
- 2. Not used
- 3. Blue (-)
- 4. Black (Output)

Emitter of Thru-beam Mode

I/O circuit diagram



Connector pin position

Euro-style



- 1. Brown (+)
- 3. Blue (-)
- 2. Not used
- 4. Not used

Pico-Style



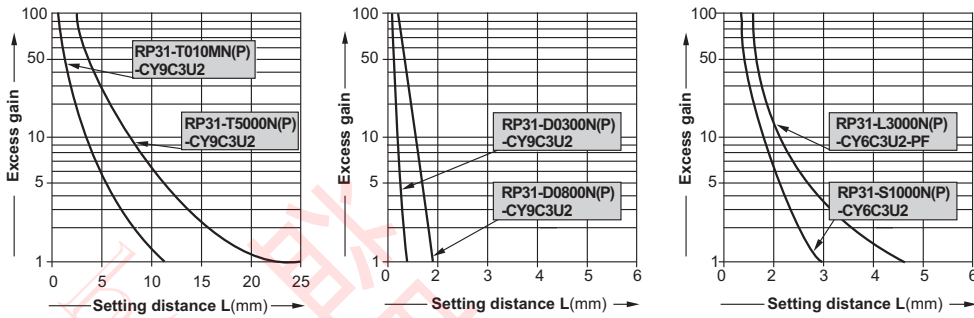
- 1. Brown (+)
- 3. Blue (-)
- 2. Not used
- 4. Not used

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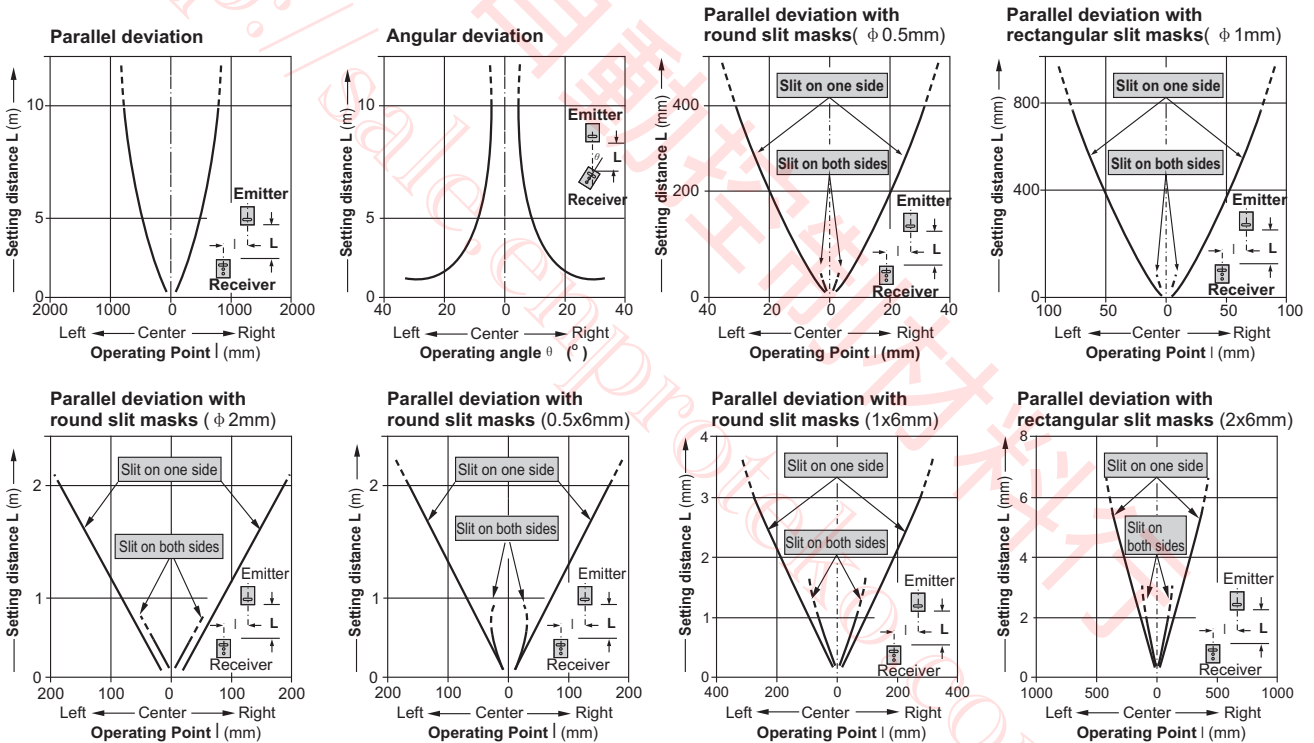
Sensing Characteristics (Typical)

All Models

Correlation between setting distance and excess gain

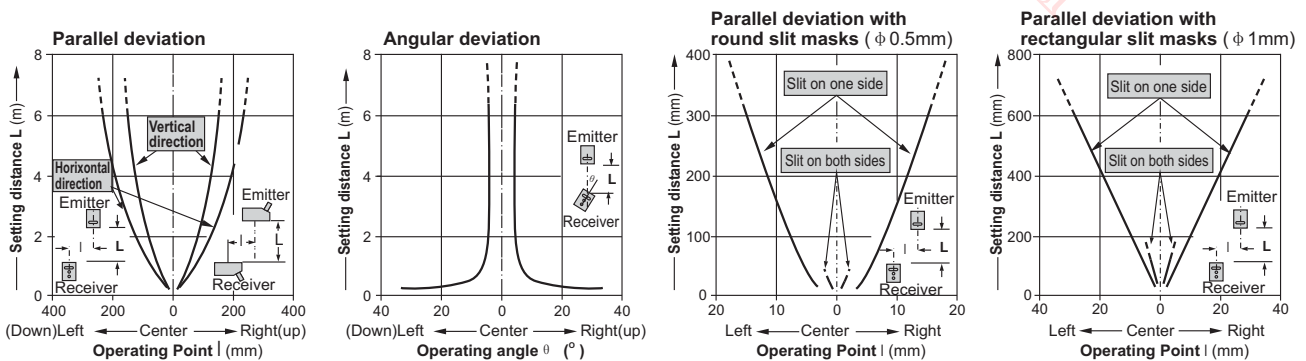


Thru-beam Mode (Sensing Distance=10 m)



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Thru-beam Mode (Sensing Distance=5 m)



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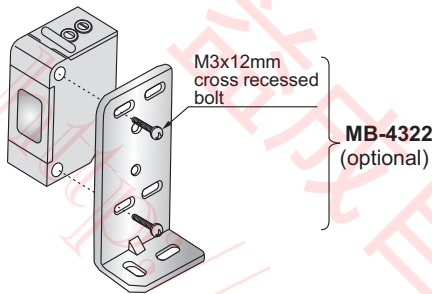
Precautions for Proper Use



This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

Mounting

Tightening torque must not exceed 0.5N·m {5.1kgf·cm}.



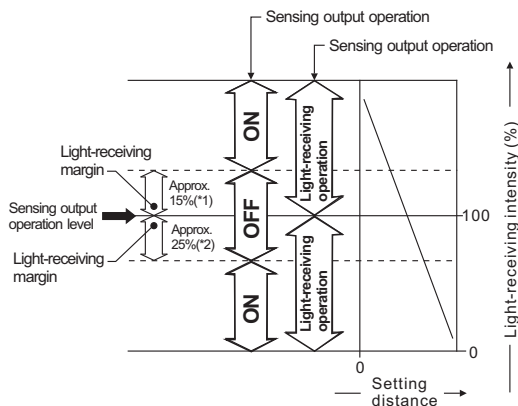
Operation mode selection switch

	Light-ON mode is obtained when the switch is turned fully counterclockwise.
	Dark-ON mode is obtained when the switch is turned fully clockwise.

Stable operation indicator

The stable operation indicator (green) turns on when the light-receiving intensity of the signal light is sufficient against the operation level.

If the light-receiving level where the stable operation indicator turns on, the sensor can detect stable without affecting the temperature and the voltage change at the Light-ON and the Dark-ON operation.



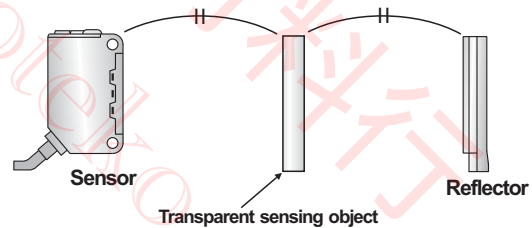
	“Light” state	“Dark” state
Thru-beam		
Retroreflective		
Diffuse		

Wiring

Power supply should be turned off before wiring.

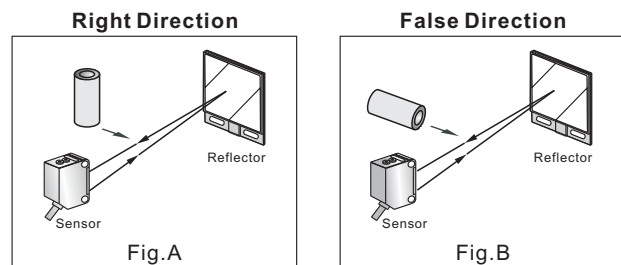
Verify voltage fluctuation so that it should not exceed the rated value. When using a switching regulator for the power supply readily available in the market, always ground the frame ground (F.G.) Terminal. When using an equipment which generates the noises (switching regulator or inverter motor, etc.) Near the sensor, ground the frame ground (F.G.) Terminal of the equipment. Do not run sensor cables high-voltage lines or power lines, nor put them together in the same raceway. Doing so may cause malfunctions due to inductive interference.

Retroreflective type sensor for sensing transparent objects
Optimum sensing is possible when the position of the transparent sensing object is set at the center of the sensor and the reflector. If the sensing position is set near the sensor or the reflector, the sensing may be unstable. In this case, set the sensing position at the center of the sensor and the reflector.



When the sensor detects an uneven plastic receptacle or glass bin, the received light intensity may differ with the sensing position or direction. Adjust the sensitivity after confirming the stable sensing condition by turning the sensing object, etc.

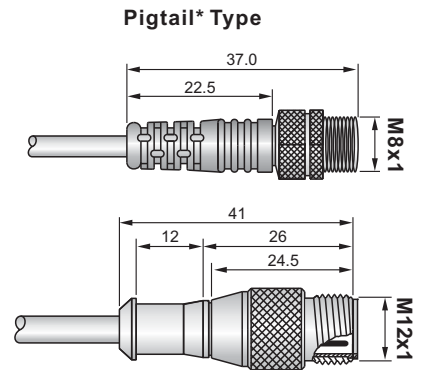
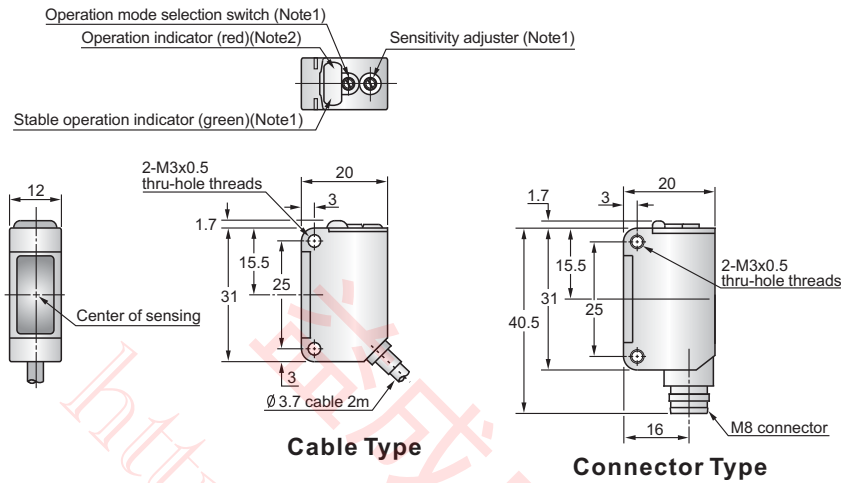
If the object is a transparent cylinder, feed it in a position as shown in Figure A. The sensor may fail to detect an object fed in a position as shown in Figure B.



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Dimensions (Unit: mm)

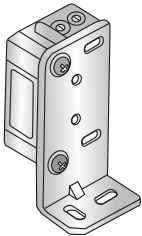
Sensor Type



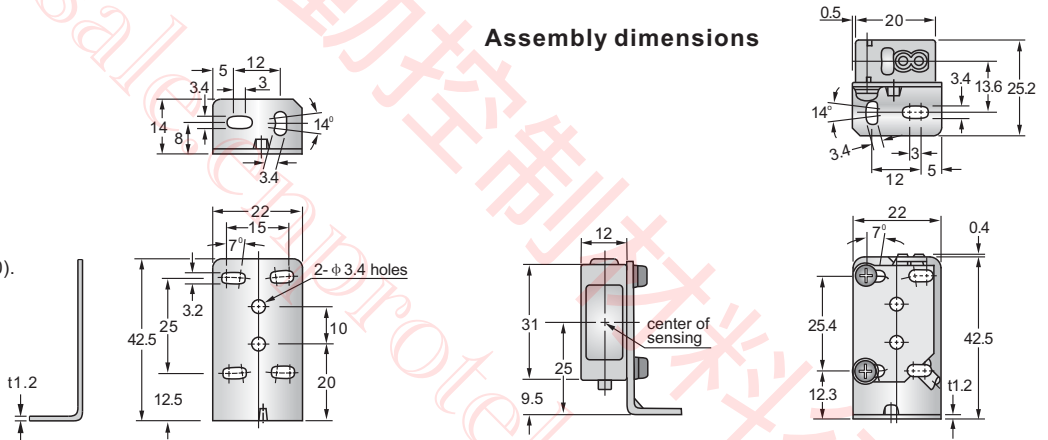
Note:1: Not included with the emitter of the thru-deam sensor.
2: It is the power indicator (red) for the emitter of the thru-deam sensor.

*: Please see Pigtail Series or our Cables & Connectors catalogue for more information.

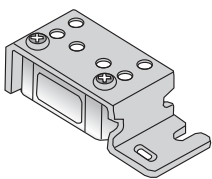
MB-4322 (Sensor mounting bracket-optional)



Material: Stainless steel (SUS30).
Two M3 (length 12mm) screws with washers are attached.



MB-5522 (Sensor mounting bracket-optional)



Material: Stainless steel (SUS304).
Two M3 (length 12mm) screws with washers are attached.

