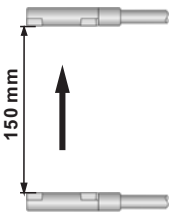

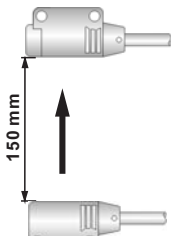

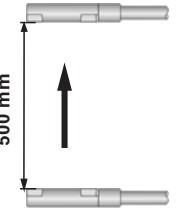

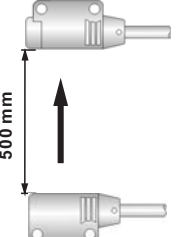



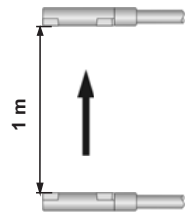

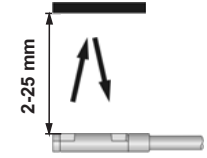

Thru-beam Mode

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 —

Thru-beam Mode & Convergent Mode

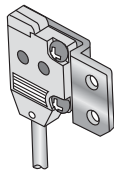
Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
 <p>Thru-beam mode (Front sensing) Sensing Distance 1 m Light source Red LED</p>	2m Cable 	10-30V DC	Emitter	<u>RP15-T1000D-EY6C2L2</u>
			NPN Light-ON	<u>RP15-T1000N-LY6C3U2</u>
			NPN Dark-ON	<u>RP15-T1000N-DY6C3U2</u>
			NPN L.O./D.O.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

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

Options

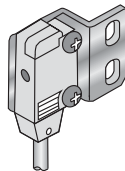
Designation	Model No.	Description
Sensor mounting bracket	RP15-A1	Mounting bracket for the front sensing type sensor [Cold rolled carbon steel (SPCC)] (The thru-beam mode sensor needs two brackets.)
	RP15-A2	Mounting bracket for the side sensing type sensor [Cold rolled carbon steel (SPCC)] (The thru-beam 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



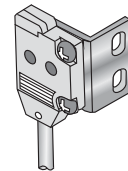
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws are attached.

RP15-A2



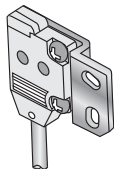
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 8mm) pan head screws are attached.

RP15-A3



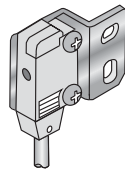
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws, and two M2 (length 8mm) pan head screws are attached.

RP15-A4



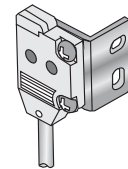
Material: Stainless steel (SUS304)
Two M2 (length 4mm) pan head screws [stainless steel (SUS304)] are attached.

RP15-A5



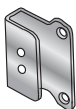
Material: Stainless steel (SUS304)
Two M2 (length 8mm) pan head screws [stainless steel (SUS304)] are attached.

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.

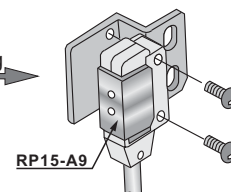
RP15-A7 / RP15-A8



RP15-A9



Example of mounting



RP15 SERIES

Specifications

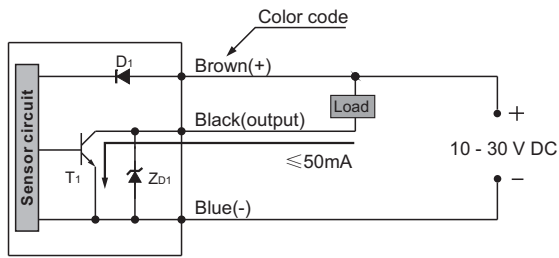
Type Item	Thru-beam				Convergent	Thru-beam(with operation mode switch on bifurcation)(Note1)				
	Front sensing	Side sensing	Front sensing	Side sensing	Front sensing	Front sensing	Side sensing	Front sensing	Side sensing	
Model number	RP15-T0150x -xY6C3U2	RP15-T0150x -xY6C3U2-SD	RP15-T0500x -xY6C3U2	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.

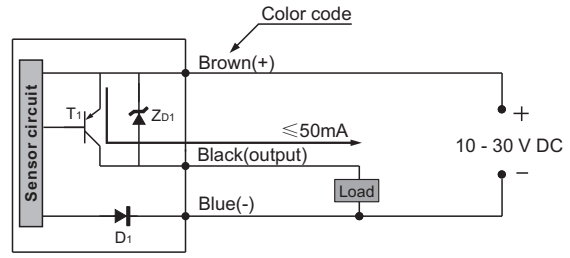
Connection Diagrams

NPN Light-ON or Dark-ON output type



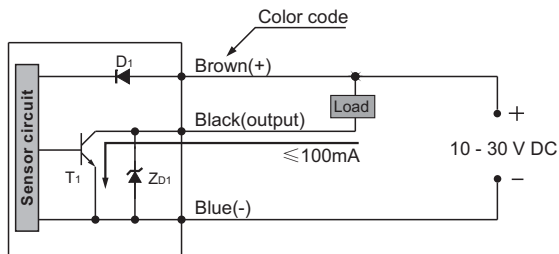
Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: NPN output transistor

PNP Light-ON or Dark-ON output type

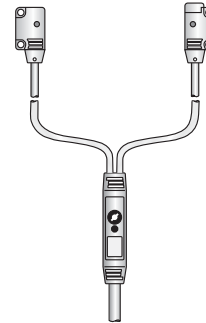


Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: PNP output transistor

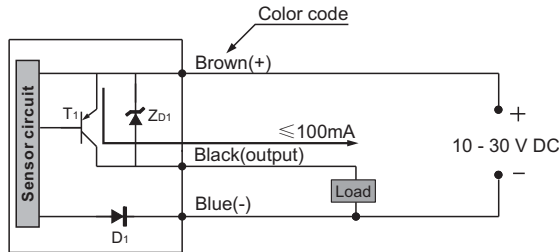
NPN Light/Dark changeover output type (Only for Thru-beam type sensor located on the bifurcation)



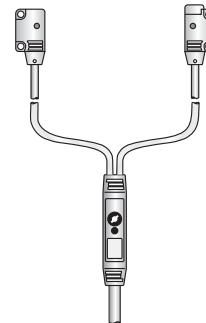
Symbols...D1: Reverse supply polarity protection diode
ZD1: Surge absorption zener diode
T1: NPN output transistor



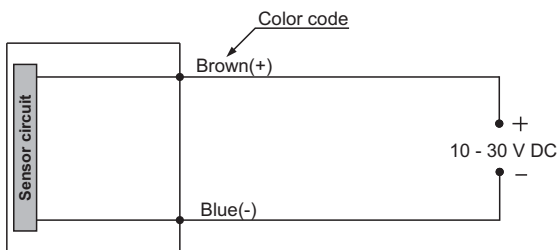
PNP Light/Dark changeover output type (Only for Thru-beam type sensor located on the bifurcation)



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



Emitter of Thru-beam Mode sensor

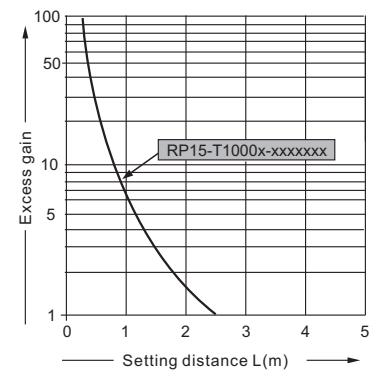
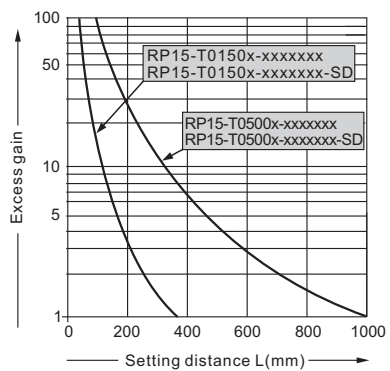


Sensing Characteristics (Typical)

All Thru-Beam type sensors

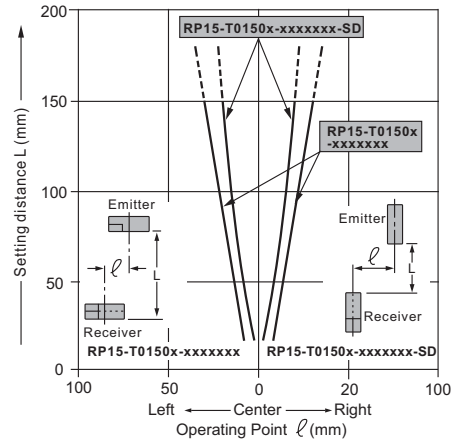
AI: RP15 SERIES

Correlation between setting distance and excess gain

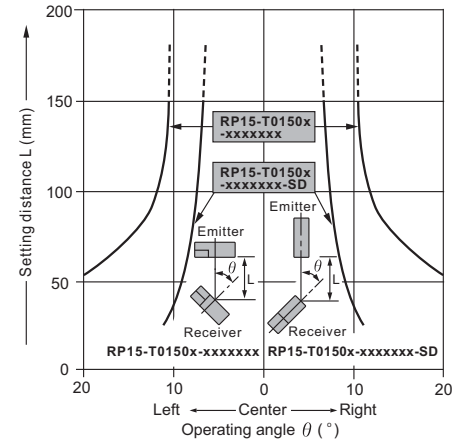


Thru-beam type sensor (Sensing distance=150mm)

Parallel deviation

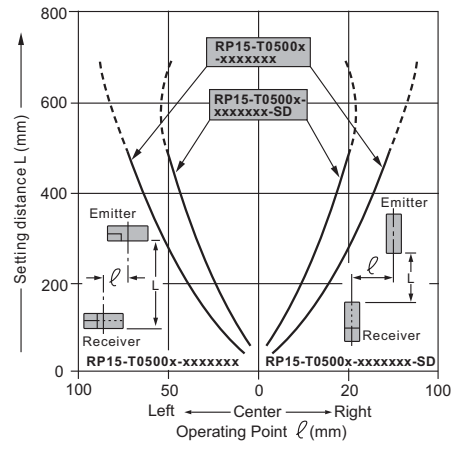


Angular deviation

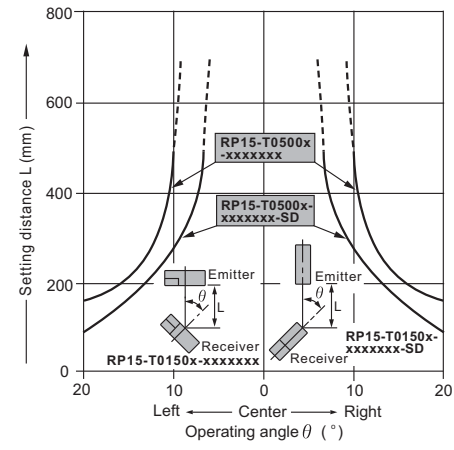


Thru-beam type sensor (Sensing distance=500mm)

Parallel deviation



Angular deviation

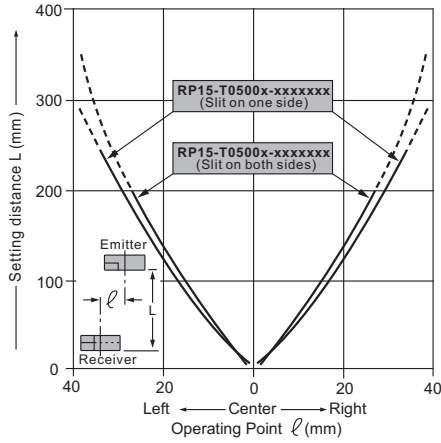


Sensing Characteristics (Typical)

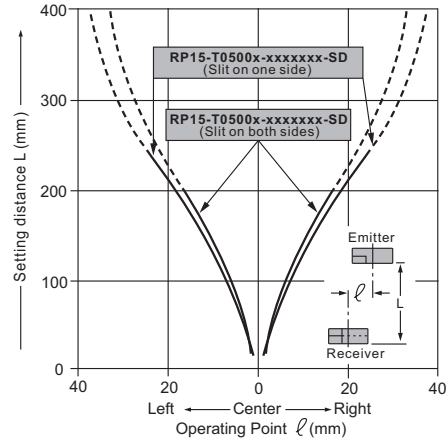
Thru-beam type sensor (Sensing distance=500mm)

AI: RP15 SERIES

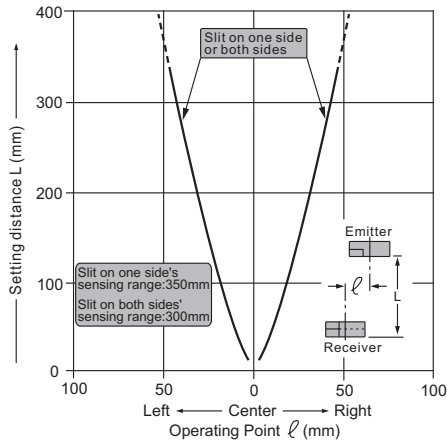
Parallel deviation with slit masks ($\phi 1.2\text{mm}$)



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

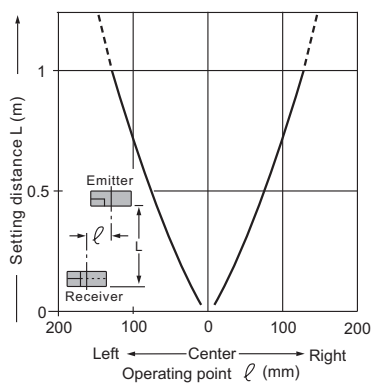


Parallel deviation with slit masks ($\phi 1.5\text{mm}$)

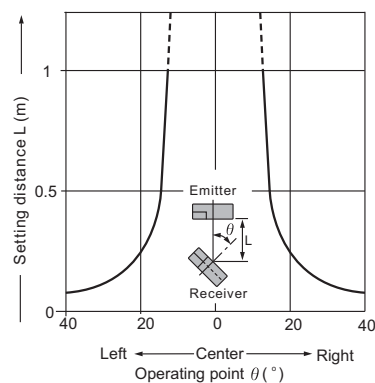


Thru-beam type sensor (Sensing distance=1m)

Parallel deviation



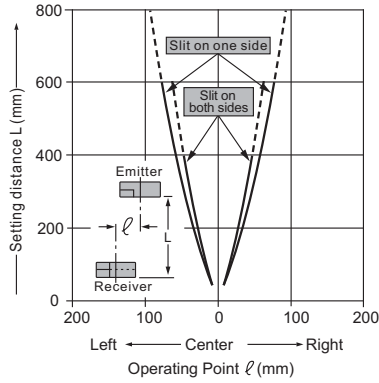
Angular deviation



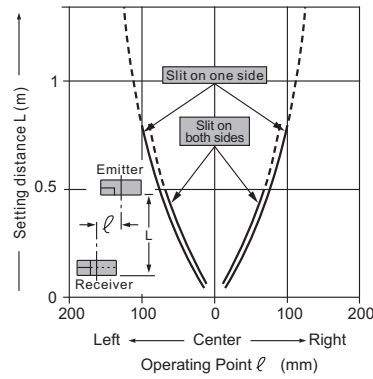
Sensing Characteristics (Typical)

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

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



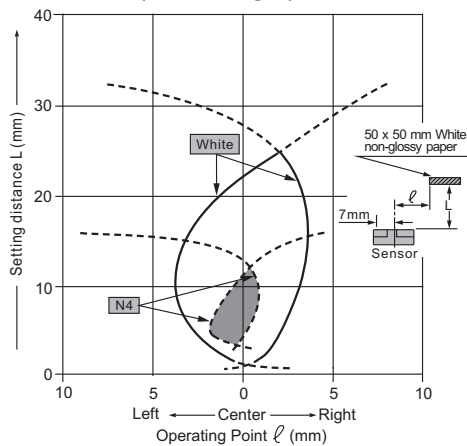
Parallel deviation with slit masks ($\phi 1.5\text{ mm}$)



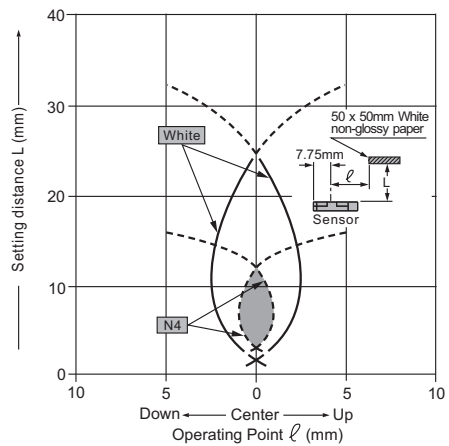
Convergent mode sensor (Sensing distance=25mm)

Sensing field

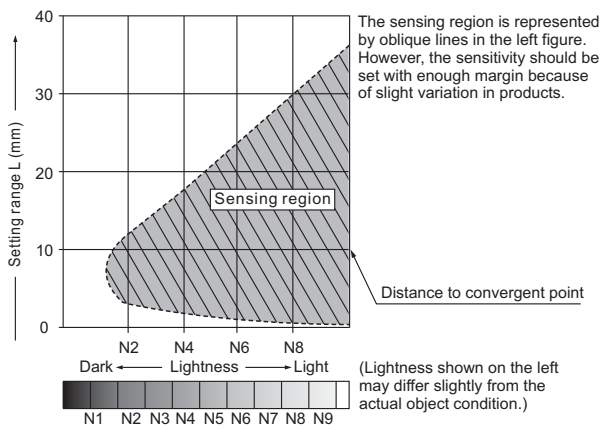
• Horizontal (left and right) direction



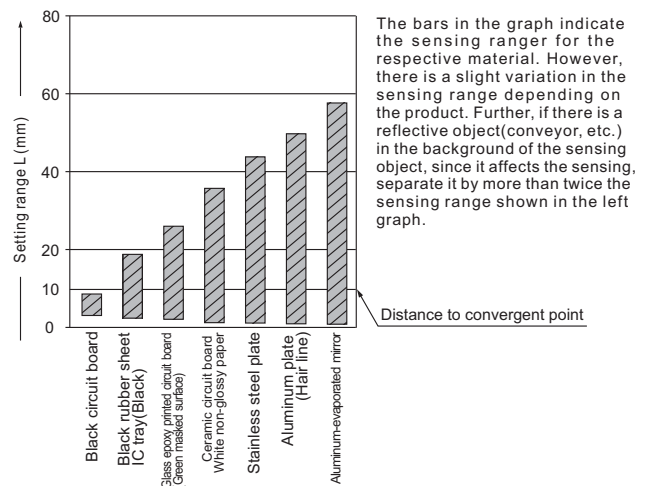
• Vertical (up and down) direction



Correlation between lightness and sensing range



Correlation between material (50x50mm) and sensing range

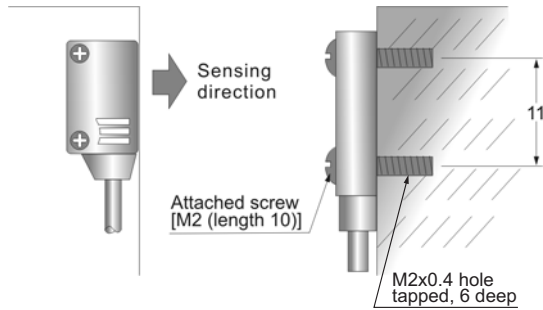


Precautions for Proper Use

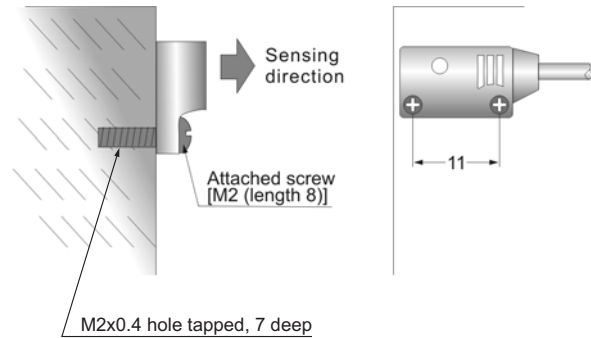
Mounting

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

Side sensing type



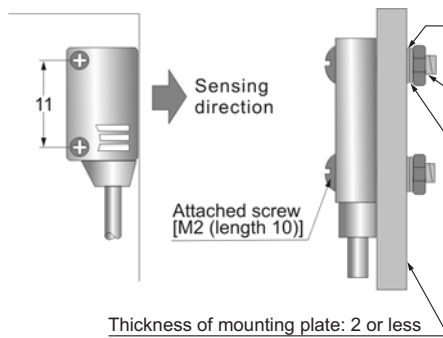
Front sensing type



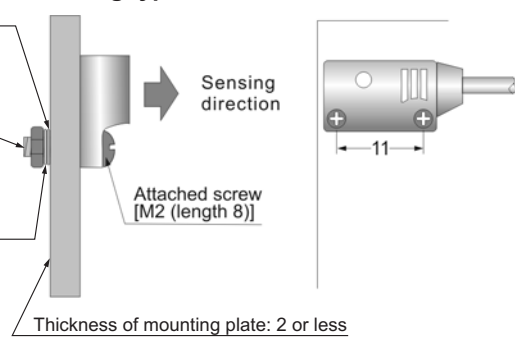
The tightening torque should be 0.2 N·m or less

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

Side sensing type

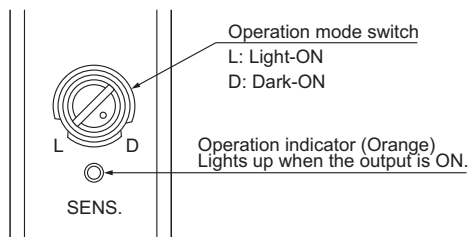


Front sensing type



The tightening torque should be 0.2 N·m or less

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

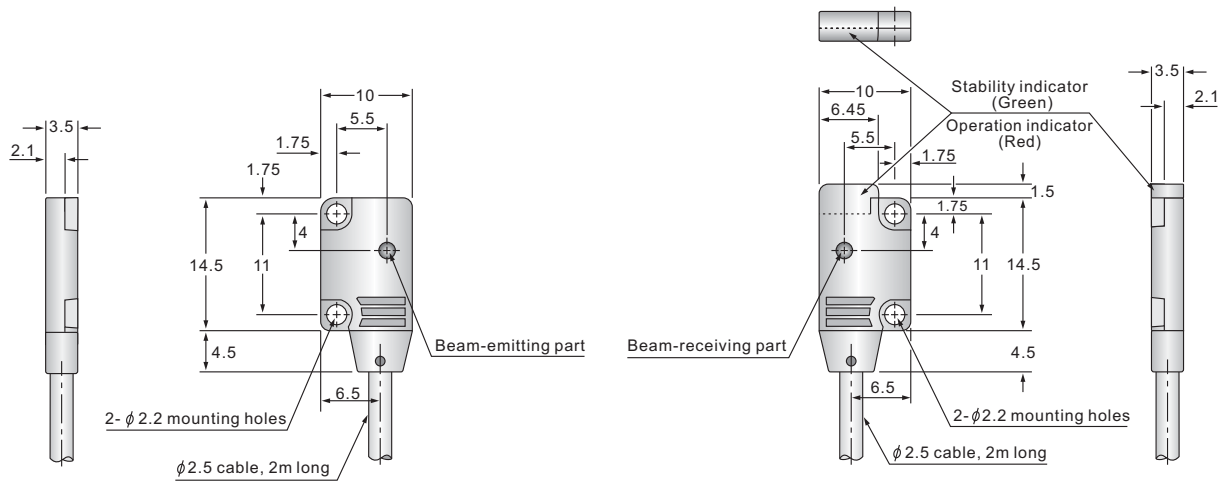


Switch position	Description
	Light-ON mode is set when the switch is turned fully clock wise (L side)
	Dark-ON mode is set when the switch is turned fully counterclockwise (D side)

Dimensions (Unit: mm)

AI: RP15 SERIES

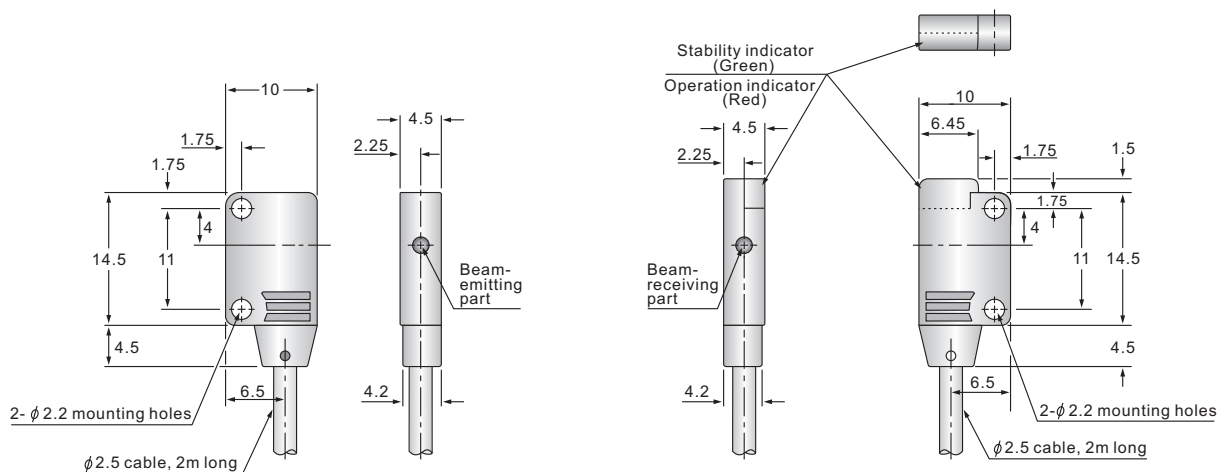
Thru-beam Mode with Front Sensing type sensor (Either Light-ON or Dark-ON type)



Emitter

Receiver

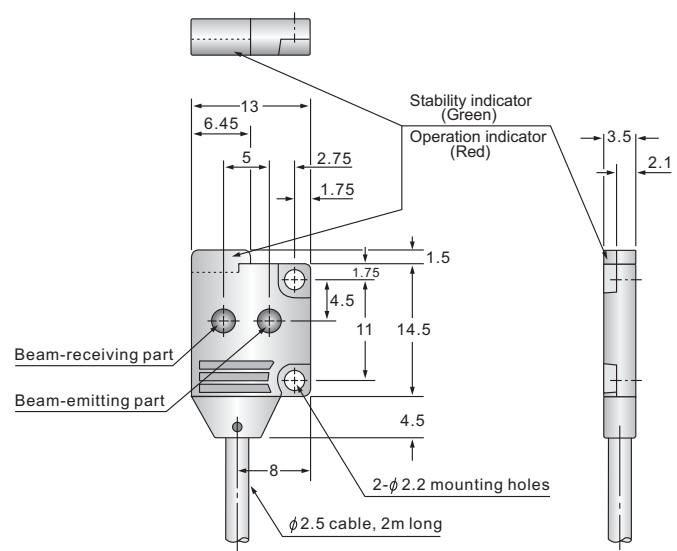
Thru-beam Mode with Side Sensing type sensor (Either Light-ON or Dark-ON type)



Emitter

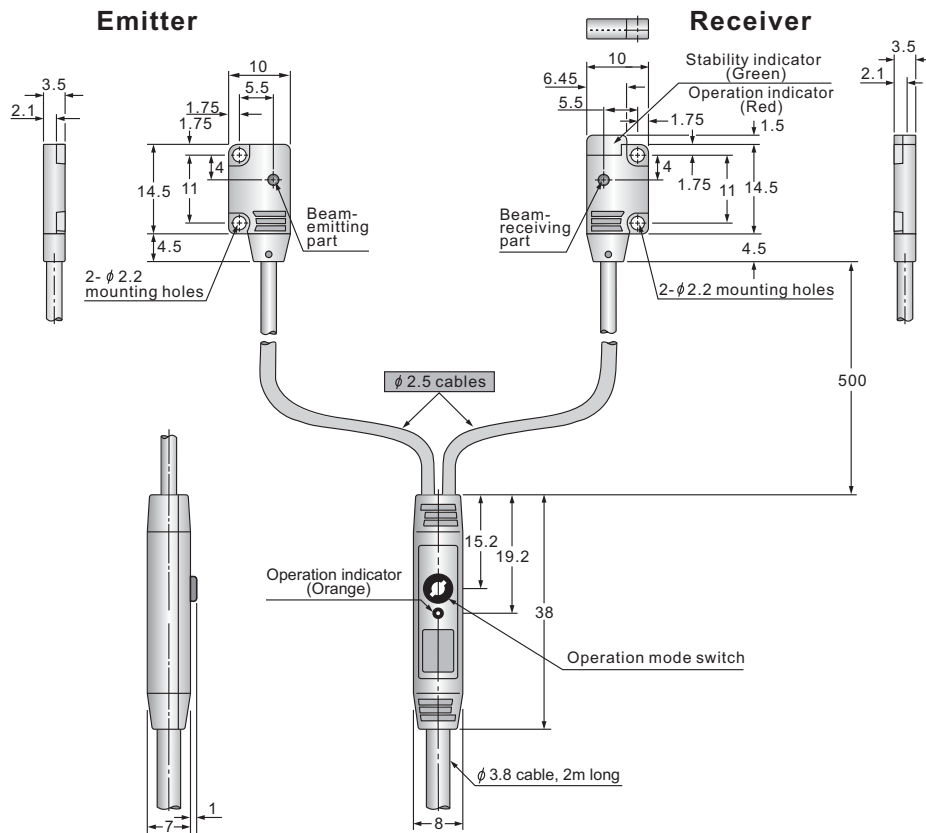
Receiver

Convergent Mode with Front sensing type sensor

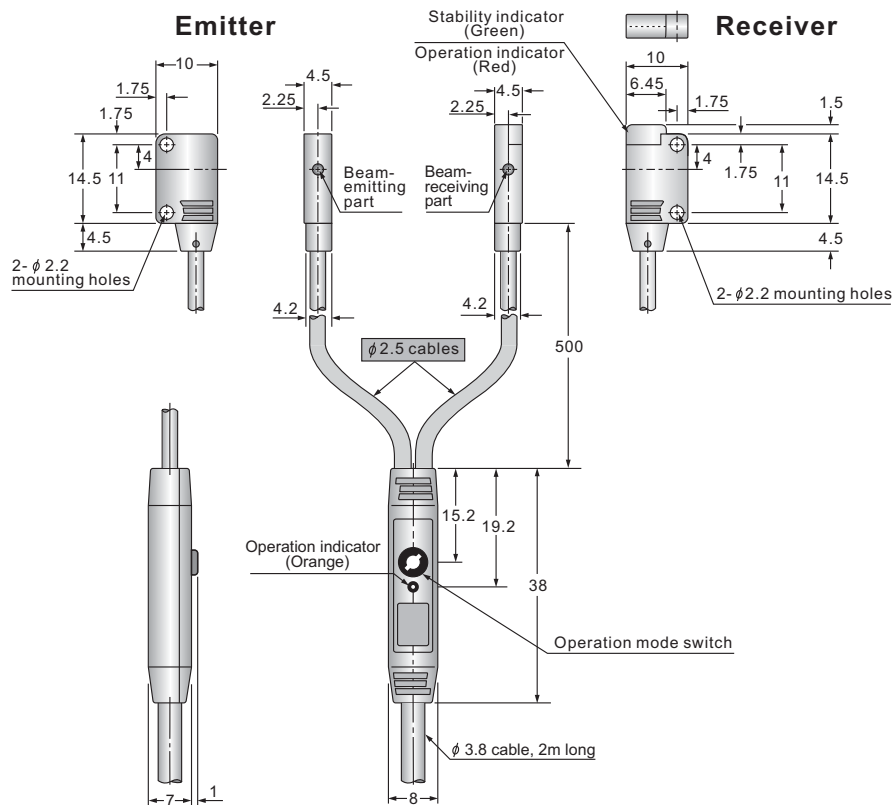


Dimensions (Unit: mm)

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



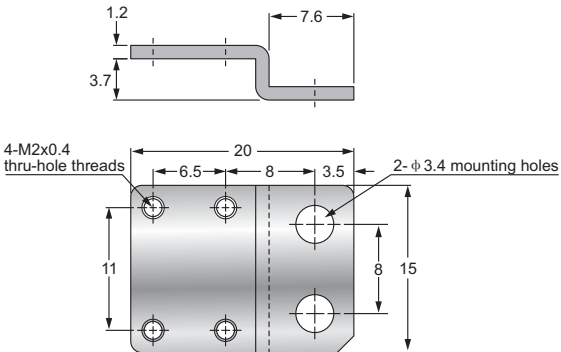
Thru-beam Mode with Side Sensing type sensor (Light/Dark changeover type)



Mounting Bracket's Dimensions (Unit: mm)

AI: RP15 SERIES

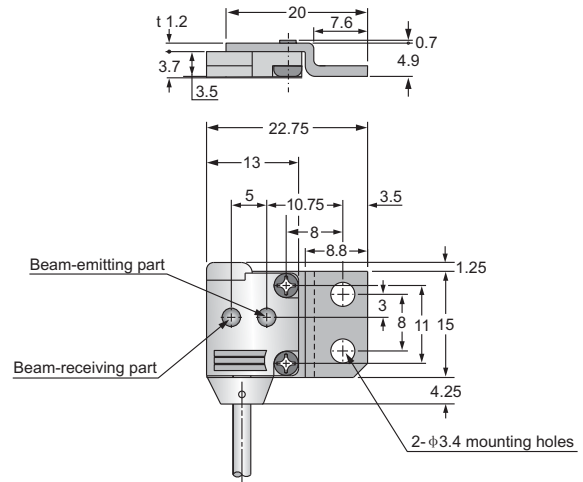
RP15-A1 (Optional)



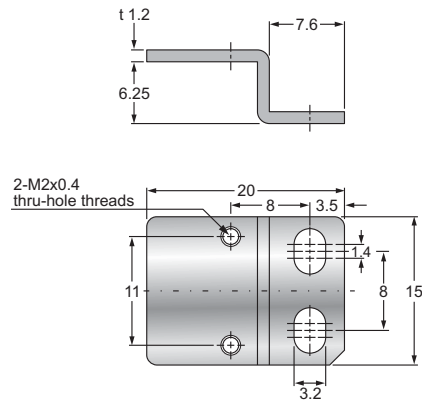
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 4mm) pan head screws are attached.

Assembly dimensions

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



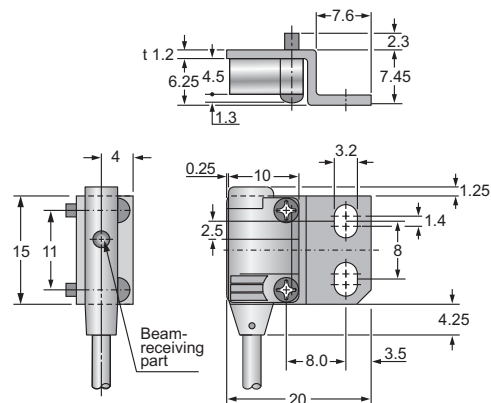
RP15-A2 (Optional)



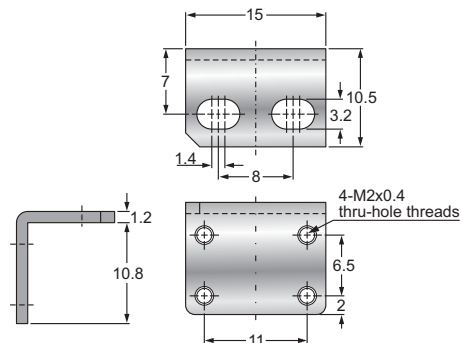
Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M2 (length 8mm) pan head screws are attached.

Assembly dimensions

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



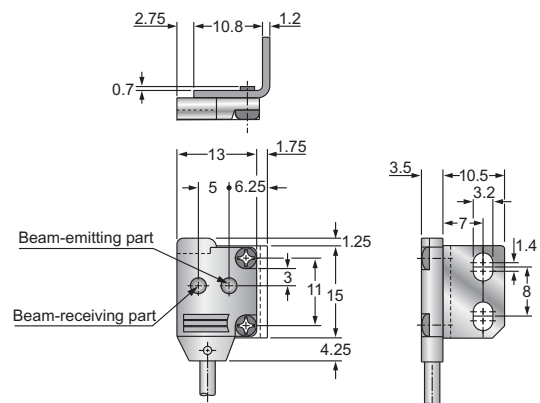
RP15-A3 (Optional)



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.

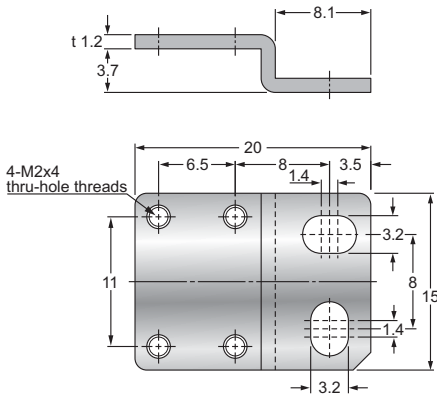
Assembly dimensions

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



Mounting bracket dimensions (Unit: mm)

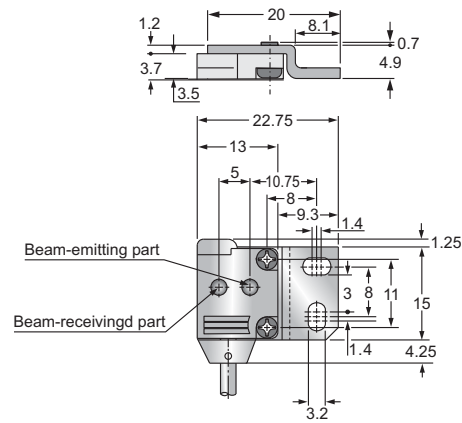
RP15-A4 (Optional)



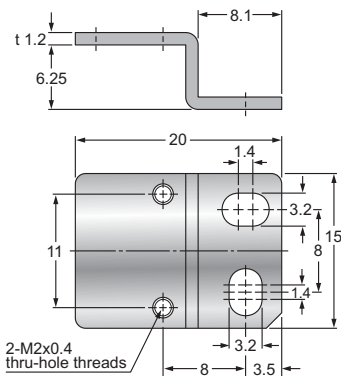
Material: Stainless steel (SUS304)
Two M2 (length 4mm) pan head screws [stainless steel(SUS304)] are attached.

Assembly dimensions

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



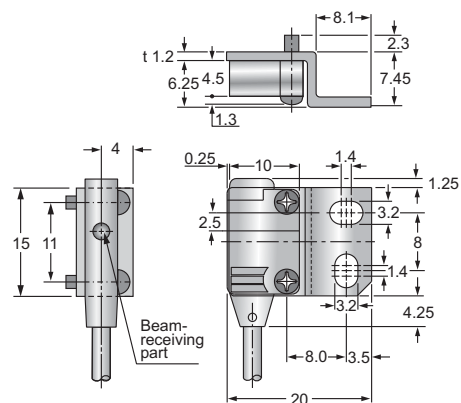
RP15-A5 (Optional)



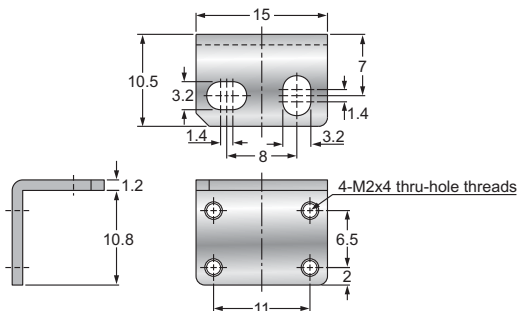
Material: Cold rolled carbon steel(SUS304) Two M2 (length 4mm) pan head screws [stainless steel(SUS304)] are attached.

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

