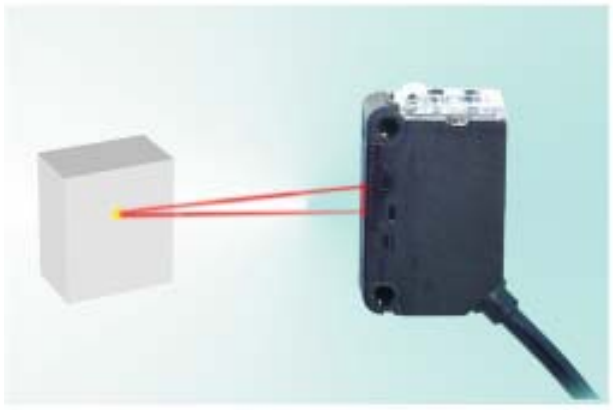
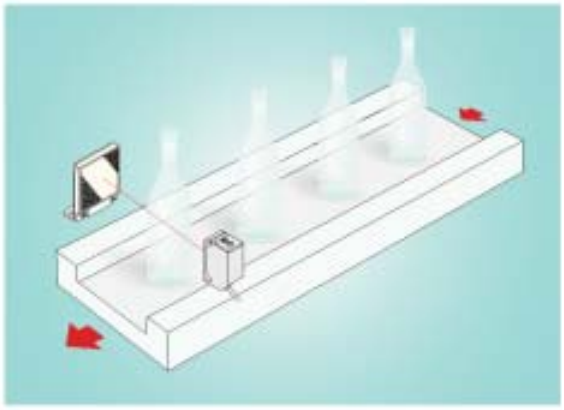
CP31 SERIES

Any target of any color and material can be detected at a consistent distance.....

- Advantage and application.....O-01
- Order guide..... O-02~O-04
- Options.....O-05~O-06
- Specifications.....O-07
- I/O circuit and wiring diagrams.....O-08
- Sensing fields.....O-09~O-10
- Precautions For Proper Use.....O-11~O-12
- Dimensions.....O-13...O-17



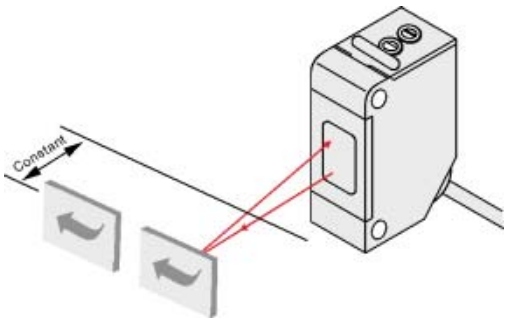


CP31 SERIES

PHOTOELECTRIC
ADVANTAGE AND APPLICATION

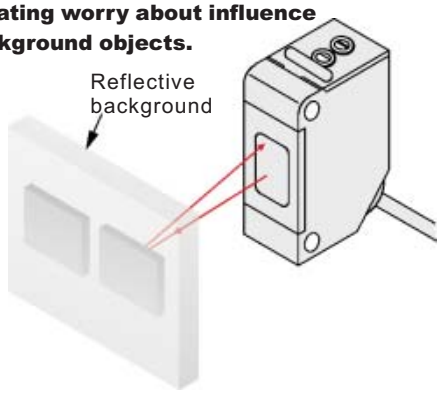
Unaffected by target color

Even with a change in target color, the distance remains the same.



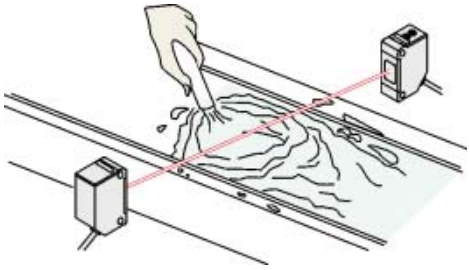
Unaffected by background objects

Sensing area is strictly limited, eliminating worry about influence of background objects.



Waterproof

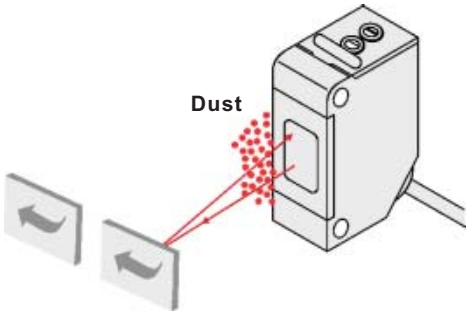
Achieves IP 67. The sensor can be put on machinery washed with water. The mounting bracket (option) is not corrosive as it is made of stainless steel material.



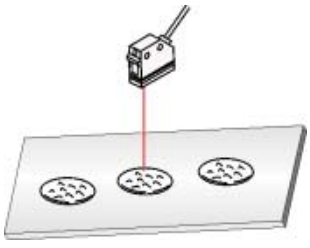
Note: However, a water drop on the sensing face may cause the sensor generate the output.

Unaffected by dust

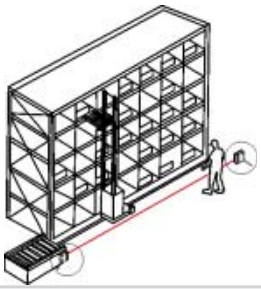
Strong light beam intensity eliminates trouble from fine dusts.



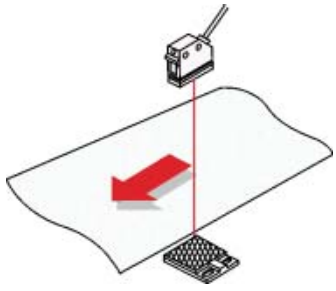
Sensing of thin-baked rice crackers



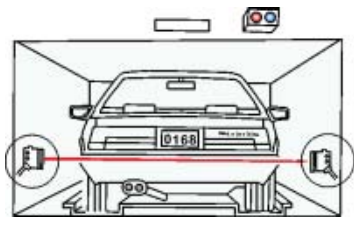
Detecting person entering stacker crane path



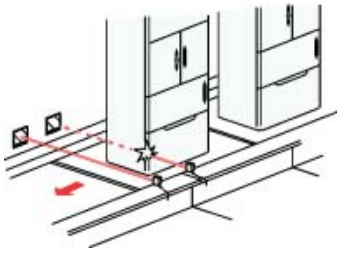
Sensing transparent sheet



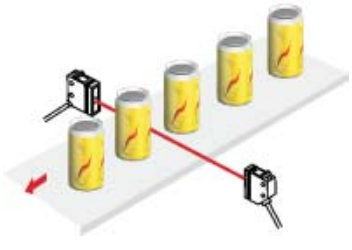
Detecting car entering dangerous place



Detection of specular goods



Counting cans



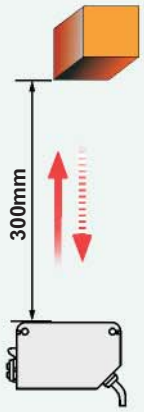
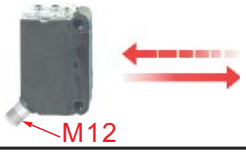
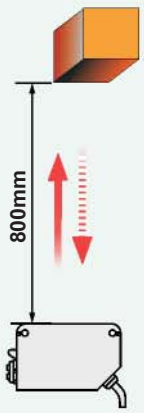
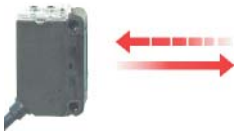
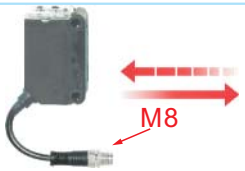
CP31 SERIES

Order guide

Sensing mode	Appearance	Supply voltage	OUTPUT MODE	Part Number
Through-beam mode Sensing distance 10000mm Red LED		10 to 30V DC	Emitter	CP31-T10000N-EX6C3U2
			NPN light-ON	CP31-T10000N-LX6C3U2
			NPN dark-ON	CP31-T10000N-DX6C3U2
			PNP light-ON	CP31-T10000P-LX6C3U2
			PNP dark-ON	CP31-T10000P-DX6C3U2
		10 to 30V DC	Emitter	CP31-T10000N-EX6P4UP
			NPN light-ON	CP31-T10000N-LX6P4UP
			NPN dark-ON	CP31-T10000N-DX6P4UP
			PNP light-ON	CP31-T10000P-LX6P4UP
			PNP dark-ON	CP31-T10000P-DX6P4UP
		10 to 30V DC	Emitter	CP31-T10000N-EX6P4UE
			NPN light-ON	CP31-T10000N-LX6P4UE
			NPN dark-ON	CP31-T10000N-DX6P4UE
			PNP light-ON	CP31-T10000P-LX6P4UE
			PNP dark-ON	CP31-T10000P-DX6P4UE
		10 to 30V DC	Emitter	CP31-T10000N-EX6Q4UP
			NPN light-ON	CP31-T10000N-LX6Q4UP
			NPN dark-ON	CP31-T10000N-DX6Q4UP
			PNP light-ON	CP31-T10000P-LX6Q4UP
			PNP dark-ON	CP31-T10000P-DX6Q4UP
		10 to 30V DC	Emitter	CP31-T10000N-EX6Q4UE
			NPN light-ON	CP31-T10000N-LX6Q4UE
			NPN dark-ON	CP31-T10000N-DX6Q4UE
			PNP light-ON	CP31-T10000P-LX6Q4UE
			PNP dark-ON	CP31-T10000P-DX6Q4UE
Retro-reflective mode Sensing distance 3000 mm Red LED with Polarizing filters		10 to 30V DC	NPN light-ON	CP31-L3000N-LX6C3U2-PF
			NPN dark-ON	CP31-L3000N-DX6C3U2-PF
			PNP light-ON	CP31-L3000P-LX6C3U2-PF
			PNP dark-ON	CP31-L3000P-DX6C3U2-PF
		10 to 30V DC	NPN light-ON	CP31-L3000N-LX6P4UP-PF
			NPN dark-ON	CP31-L3000N-DX6P4UP-PF
			PNP light-ON	CP31-L3000P-LX6P4UP-PF
			PNP dark-ON	CP31-L3000P-DX6P4UP-PF
		10 to 30V DC	NPN light-ON	CP31-L3000N-LX6P4UE-PF
			NPN dark-ON	CP31-L3000N-DX6P4UE-PF
			PNP light-ON	CP31-L3000P-LX6P4UE-PF
			PNP dark-ON	CP31-L3000P-DX6P4UE-PF
		10 to 30V DC	NPN light-ON	CP31-L3000N-LX6Q4UP-PF
			NPN dark-ON	CP31-L3000N-DX6Q4UP-PF
			PNP light-ON	CP31-L3000P-LX6Q4UP-PF
			PNP dark-ON	CP31-L3000P-DX6Q4UP-PF
		10 to 30V DC	NPN light-ON	CP31-L3000N-LX6Q4UE-PF
			NPN dark-ON	CP31-L3000N-DX6Q4UE-PF
			PNP light-ON	CP31-L3000P-LX6Q4UE-PF
			PNP dark-ON	CP31-L3000P-DX6Q4UE-PF

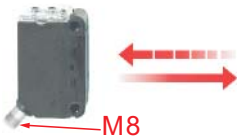
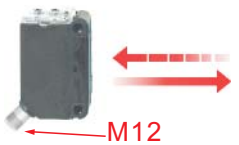
CP31 SERIES

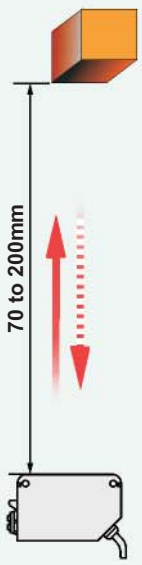
Order guide

Sensing mode	Appearance	Supply voltage	OUTPUT MODE	Part Number
 **Diffuse mode** Short sensing distance 300mm Infrared red LED		10 to 30V DC	NPN light-ON	CP31-D0300N-LX9C3U2
			NPN dark-ON	CP31-D0300N-DX9C3U2
			PNP light-ON	CP31-D0300P-LX9C3U2
			PNP dark-ON	CP31-D0300P-DX9C3U2
		10 to 30V DC	NPN light-ON	CP31-D0300N-LX9P4UP
			NPN dark-ON	CP31-D0300N-DX9P4UP
			PNP light-ON	CP31-D0300P-LX9P4UP
			PNP dark-ON	CP31-D0300P-DX9P4UP
		10 to 30V DC	NPN light-ON	CP31-D0300N-LX9P4UE
			NPN dark-ON	CP31-D0300N-DX9P4UE
			PNP light-ON	CP31-D0300P-LX9P4UE
			PNP dark-ON	CP31-D0300P-DX9P4UE
		10 to 30V DC	NPN light-ON	CP31-D0300N-LX9Q4UP
			NPN dark-ON	CP31-D0300N-DX9Q4UP
			PNP light-ON	CP31-D0300P-LX9Q4UP
			PNP dark-ON	CP31-D0300P-DX9Q4UP
		10 to 30V DC	NPN light-ON	CP31-D0300N-LX9Q4UE
			NPN dark-ON	CP31-D0300N-DX9Q4UE
			PNP light-ON	CP31-D0300P-LX9Q4UE
			PNP dark-ON	CP31-D0300P-DX9Q4UE
 **Diffuse mode** Long sensing distance 800mm Infrared red LED		10 to 30V DC	NPN light-ON	CP31-D0800N-LX9C3U2
			NPN dark-ON	CP31-D0800N-DX9C3U2
			PNP light-ON	CP31-D0800P-LX9C3U2
			PNP dark-ON	CP31-D0800P-DX9C3U2
		10 to 30V DC	NPN light-ON	CP31-D0800N-LX9P4UP
			NPN dark-ON	CP31-D0800N-DX9P4UP
			PNP light-ON	CP31-D0800P-LX9P4UP
			PNP dark-ON	CP31-D0800P-DX9P4UP
		10 to 30V DC	NPN light-ON	CP31-D0800N-LX9P4UE
			NPN dark-ON	CP31-D0800N-DX9P4UE
			PNP light-ON	CP31-D0800P-LX9P4UE
			PNP dark-ON	CP31-D0800P-DX9P4UE
		10 to 30V DC	NPN light-ON	CP31-D0800N-LX9Q4UP
			NPN dark-ON	CP31-D0800N-DX9Q4UP
			PNP light-ON	CP31-D0800P-LX9Q4UP
			PNP dark-ON	CP31-D0800P-DX9Q4UP
		10 to 30V DC	NPN light-ON	CP31-D0800N-LX9Q4UE
			NPN dark-ON	CP31-D0800N-DX9Q4UE
			PNP light-ON	CP31-D0800P-LX9Q4UE
			PNP dark-ON	CP31-D0800P-DX9Q4UE

CP31 SERIES

Order guide

Sensing mode	Appearance	Supply voltage	OUTPUT MODE	Part Number
Diffuse mode Narrow-view sensing distance 70 to 200mm Red LED		10 to 30V DC	NPN light-ON	CP31-D0200N-LX6C3U2-N
			NPN dark-ON	CP31-D0200N-DX6C3U2-N
			PNP light-ON	CP31-D0200P-LX6C3U2-N
			PNP dark-ON	CP31-D0200P-DX6C3U2-N
		10 to 30V DC	NPN light-ON	CP31-D0200N-LX6P4UP-N
			NPN dark-ON	CP31-D0200N-DX6P4UP-N
			PNP light-ON	CP31-D0200P-LX6P4UP-N
			PNP dark-ON	CP31-D0200P-DX6P4UP-N
		10 to 30V DC	NPN light-ON	CP31-D0200N-LX6P4UE-N
			NPN dark-ON	CP31-D0200N-DX6P4UE-N
			PNP light-ON	CP31-D0200P-LX6P4UE-N
			PNP dark-ON	CP31-D0200P-DX6P4UE-N
		10 to 30V DC	NPN light-ON	CP31-D0200N-LX6Q4UP-N
			NPN dark-ON	CP31-D0200N-DX6Q4UP-N
			PNP light-ON	CP31-D0200P-LX6Q4UP-N
			PNP dark-ON	CP31-D0200P-DX6Q4UP-N
		10 to 30V DC	NPN light-ON	CP31-D0200N-LX6Q4UE-N
			NPN dark-ON	CP31-D0200N-DX6Q4UE-N
			PNP light-ON	CP31-D0200P-LX6Q4UE-N
			PNP dark-ON	CP31-D0200P-DX6Q4UE-N



OPTIONS

Designation	Model No.	Slit size	Sensing range		Min.sensing object	
			Slit on one side	Slit on both sides	Slit on one side	Slit on both sides
Round slit mask (For thru-beam type sensor only)	OS-05	ϕ0.5mm	400 mm	20 mm	ϕ12mm	ϕ0.5mm
	OS-1	ϕ1mm	900 mm	100 mm	ϕ12mm	ϕ1mm
	OS-2	ϕ2mm	2m	400 mm	ϕ12mm	ϕ2mm
Rectangular slit mask (For thru-beam type sensor only)	RS-05x6	0.5x6mm	2 m	400 mm	ϕ12mm	0.5x6mm
	RS-1x6	1x6mm	3 m	1m	ϕ12mm	1x6mm
	RS-2x6	2x6mm	5m	2m	ϕ12mm	2x6mm

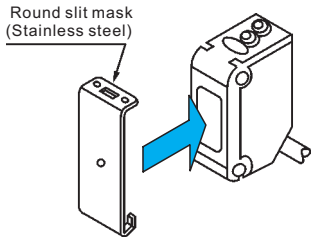
Designation	Model No.	Sensing range	Min. sensing object
Interference prevention filter (for thru-beam type sensor only)	PF-V (Vertical)	5m (Note 1)	ϕ12mm (Note 1)
	PF-H (Horizonal)	5m (Note 1)	ϕ12mm (Note 1)
Reflector (for retro-reflector type sensor only)	RE-1333	1m (Note 2)	ϕ30mm
	RE-4235	1.5m (Note 2)	ϕ35mm

Notes: 1) Value when attached to both sides.
2) Set the distance between the sensor and the reflector to 0.1m or more.

Round slit mask

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

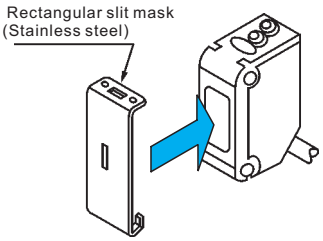
● OS-x



Rectangular slit mask

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

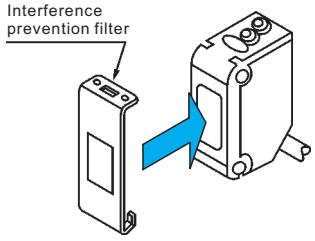
● RS-xx6



Interference prevention filter

Two sets of thru-beam type sensors can be mounted close together.

● PF-V
● PF-H



OPTIONS

<table>
<tr><th>Designation</th><th>Model No.</th><th colspan="3">Description</th></tr>
<tr><td rowspan="3">Reflector mounting bracket</td><td>MB-RE-1333</td><td colspan="3">Protective mounting bracket for RE-1333
It protects the reflector from damage and maintains alignment.</td></tr>
<tr><td>MB-RE-4235</td><td colspan="3">For RE-4235</td></tr>
<tr><td>MB-RE-5950</td><td colspan="3">For RE-5950</td></tr>
<tr><td rowspan="2">Reflective tape</td><td>RT-0830</td><td>Sensing range:
0.5m (Note 2)</td><td rowspan="2">Ambient temperature:
-25 to +50℃
Ambient humidity:
35 to 85% RH
Notes: 1) Keep the tape free from stress.
If it is pressed too much, its capability may deteriorate.
2) Do not cut the tape. It will deteriorate the sensing performance.</td></tr>
<tr><td>RT-2530</td><td>Sensing range:
0.7m (Note 2)</td></tr>
<tr><td rowspan="5">Sensor mounting bracket (Note1)</td><td>SMB-4322</td><td colspan="2">Foot angled mounting bracket
It can also be used for mounting RE-1333.</td><td rowspan="5">The thru-beam type sensor needs two brackets.</td></tr>
<tr><td>SMB-5522</td><td colspan="2">Foot biangled mounting bracket
It can also be used for mounting RE-1333.</td></tr>
<tr><td>SMB-4629</td><td colspan="2">Protective mounting bracket</td></tr>
<tr><td>SMB-4537</td><td colspan="2">Back biangled mounting bracket</td></tr>
<tr><td>SMB-3530</td><td colspan="2">Back angled mounting bracket</td></tr>
</table>

Notes: 1) The plug-in connector type sensor does not allow use of same sensor mounting brackets because of the protrusion of the connector.
2) Set the distance between the sensor and the reflective tape to 0.1m or more.

CP31 SERIES

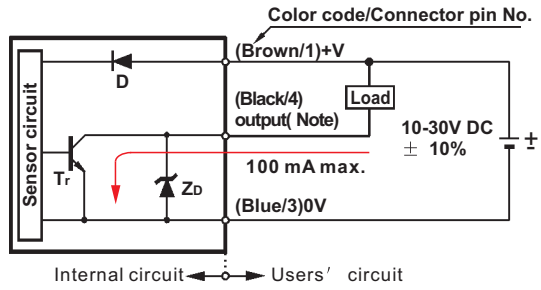
PHOTOELECTRIC SPECIFICATIONS

Item	Type	Thru-beam	Retroreflective	Diffuse reflective		
			With polarizing filters	Short sensing range	Long sensing range	Narrow-view reflective
Model No.	NPN output type.	CP31-T10000N-xX6xxUx	CP31-L3000N-xX6xxUx-PF	CP31-D0300N-xX9xxUx	CP31-D0800N-xX9xxUx	CP31-D0200N-xX6xxUx-N
	PNP output type.	CP31-T10000P-xX6xxUx	CP31-L3000P-xX6xxUx-PF	CP31-D0300P-xX9xxUx	CP31-D0800P-xX9xxUx	CP31-D0200P-xX6xxUx-N
Sensing range		**10m**	**3m**	**300mm(Note 2)**	**800mm(Note 2)**	**70 to 200mm(Note 2)**
Sensing object		Φ12mm or more opaque object (Note 3)	Φ50mm or more opaque, translucent or specular object	Opaque, translucent or transparent object		Opaque, translucent or transparent object (Min. Sensing object Φ0.5mm copper wire)
Hysteresis		———		15% or less of operation distance		
Repeatability(Perpend-icular to sensing axis)		0.5mm or less		1mm or less		0.5mm or less
Supply voltage		10 to 30V DC ±10% Ripple P-P 10% or less				
Current consumption		Emitter: 20mA or less Receiver:20mA or less	20mA or less	25mA or less		20mA or less
Sensing output		<NPN output type> NPN open-collector transistor ● Maximum sink current: 100mA ● Applied voltage: 30V DC or less(between output and 0V) ● Residual voltage: 1V or less (at 100mA sink current) 0.4V or less(at 16mA sink current)		<PNP output type> PNP open-collector transistor ● Maximum sink current: 100mA ● Applied voltage: 30V DC or less(between output and +V) ● Residual voltage: 1V or less (at 100mA source current) 0.4V or less(at 16mA 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		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 for thru-beam type)				
Power indicator		Green LED	———			
Sensitivity adjuster		Continuously variable adjuster (incorporated on the receiver for thru-beam type)				
Automatic interference prevention function		Two units of sensors can be mounted close together with interference prevention filters.(Sensing range: 5m)	Incorporated (Two units of sensors can be mounted close together.)			
Environmental resistance	**Pollution degree**	3 (Industrial environment)				
	Protection	IP 67 (IEC)				
	Ambient temperature	-25 to +55℃ (No dew condensation or icing allowed), storage: -30 to +70℃				
	Ambient humidity	35 to 85 % RH, storage:35 to 85% RH				
	Ambient illuminance	Sunlight: 10000 ℓ x at the light receiving face, Incandescent light: 3000 ℓ x 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)				
	Viotage with standability	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 enclosurre				
	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		Red LED (modulated)		Infrared LED (modulated)		Red LED (modulated)
Material		Enclosure: PBT (polybutylene terephthalate), lens: acrylic, front cover: acrylic				
Cable		0.2mm² 3-core (thru-beam type emitter: 2-core) cabtyre cable, 2m long				
Cable extension		Extension up to total 100m is possible with 0.3mm², or more, cable (thru-beam type: both emitter and receiver)				
Pigtail type		M8 pico 4pin+6” cable; M12 Euro 4pin+6” cable.				
Connection type		M8 pico 4pin; M12 Euro 4pin.				
Weight		50g approx. (Emitter or thru-beam type: 45g approx.)				
Accessories		———	RE-5950(Reflector):1 pc.	———		

Notes: 1) The sensing range and the sensing object of the retroreflective type sensor are specified for the RE-5950 reflector.
In addition, set the distance between the sensor and the reflector to 0.1m or more.
2)The sensing range of the diffuse reflective type sensor and narrow-view reflective type sensor are specified for white non-glossy paper(200x200 mm) as the object.
3)If slit masks (optional) are fitted, an fitted, an object of Φ0.5mm (using round slit mask) can be detected.

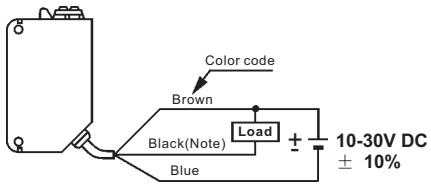
NPN output type

I/O circuit diagram



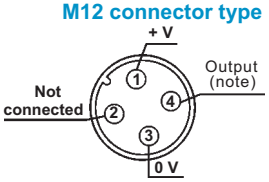
Note: The emitter of the thru-beam type sensor does not incorporate the output.

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

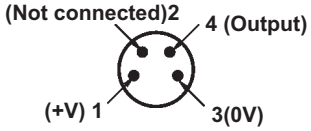


Note: The emitter of the thru-beam type sensor does not incorporate the black wire.

M12 connector type



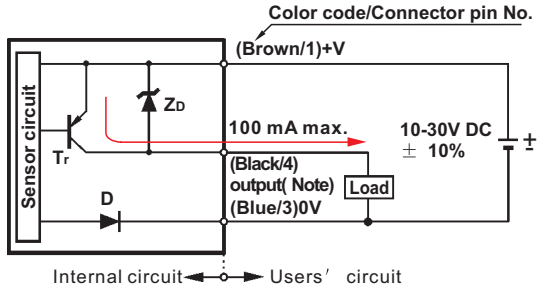
M8 connector type



Note: The emitter of the thru-beam type sensor does not incorporate the output.

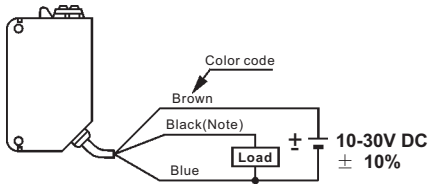
PNP output type

I/O circuit diagram



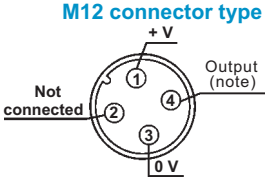
Note: The emitter of the thru-beam type sensor does not incorporate the output.

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

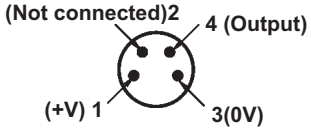


Note: The emitter of the thru-beam type sensor does not incorporate the black wire.

M12 connector type



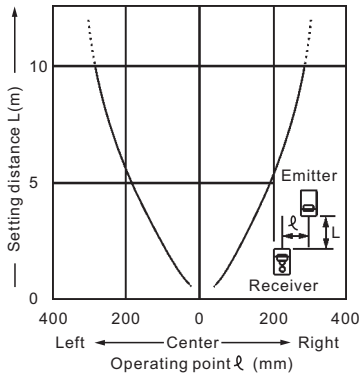
M8 connector type



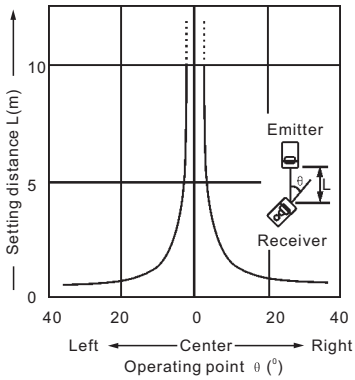
Note: The emitter of the thru-beam type sensor does not incorporate the output.

Thru-beam type CP31-T10000N-xX6xxUx CP31-T10000P-xX6xxUx

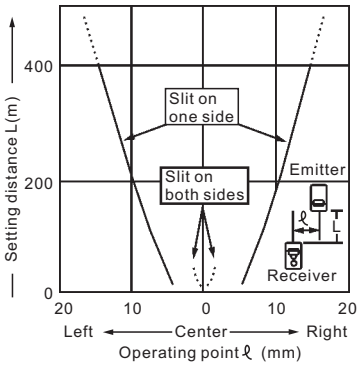
Parallel deviation



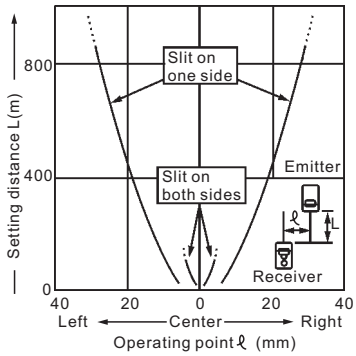
Angular deviation



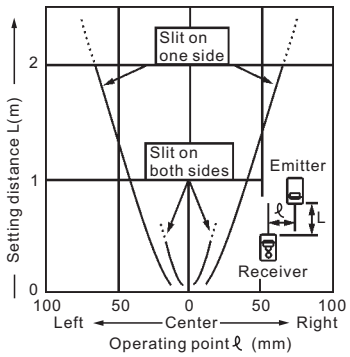
Parallel deviation with round slit masks (ϕ 0.5mm)



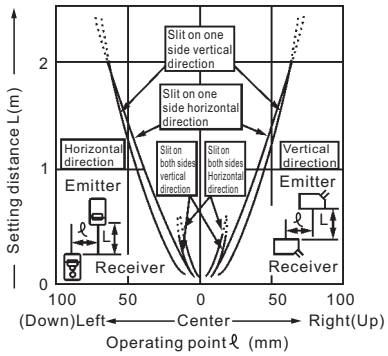
Parallel deviation with round slit masks (ϕ 1mm)



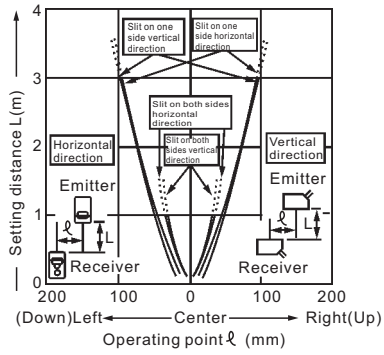
Parallel deviation with round slit masks (ϕ 2mm)



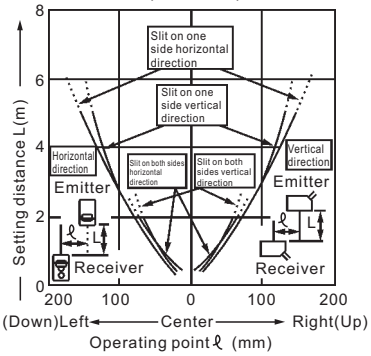
Parallel deviation with rectangular slit masks (0.5x6 mm)



Parallel deviation with rectangular slit masks (1x6 mm)

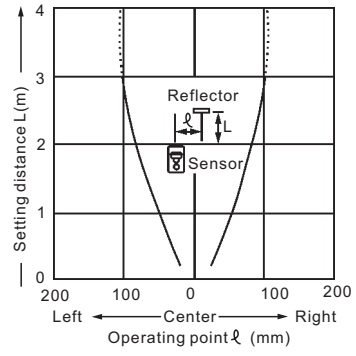


Parallel deviation with rectangular slit masks (2x6 mm)

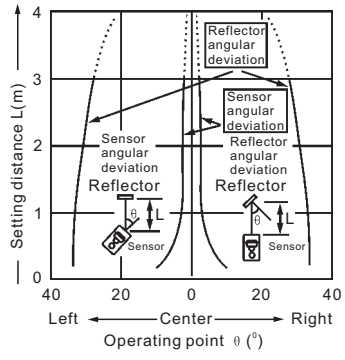


Retroreflective type CP31-L3000N-xX6xxUx-PF CP31-L3000P-xX6xxUx-PF

Parallel deviation

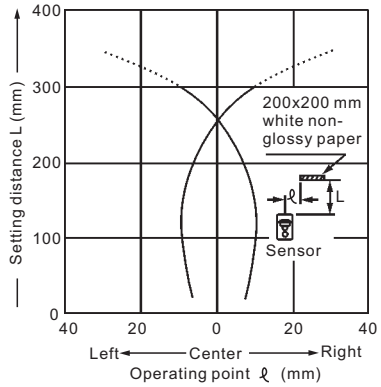


Angular deviation

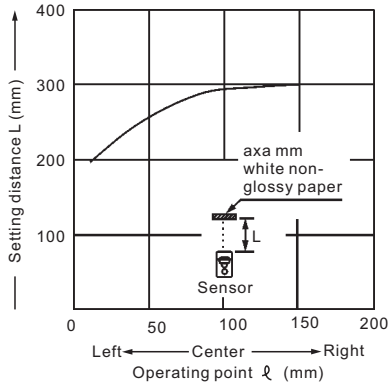


Diffuse reflective type CP31-D0300N-xX9xxUx CP31-D0300P-xX9xxUx

Sensing field



Correlation between sensing object size and sensing range

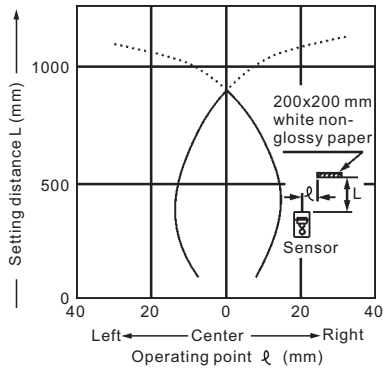


As the sensing object size becomes smaller than the standard size (white non-glossy paper 200x200 mm), the sensing range shortens, as shown in the left graph.

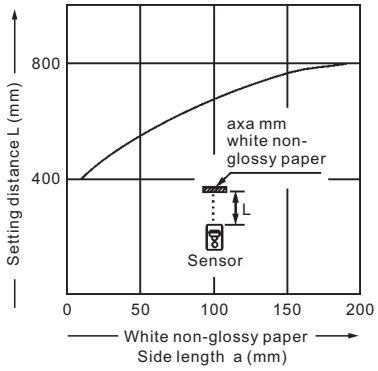
For plotting the left graph, the sensitivity has been set such that a 200x200 mm white non-glossy paper is just detectable at a distance of 300 mm.

Diffuse reflective type CP31-D0800N-xX9xxUx CP31-D0800P-xX9xxUx

Sensing field



Correlation between sensing object size and sensing range

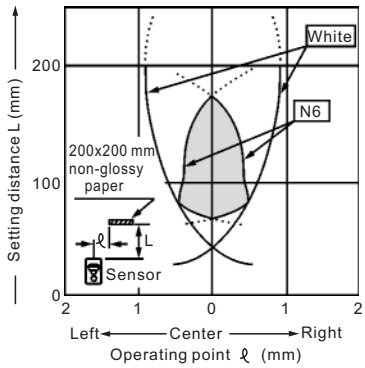


As the sensing object size becomes smaller than the standard size (white non-glossy paper 200x200 mm), the sensing range shortens, as shown in the left graph.

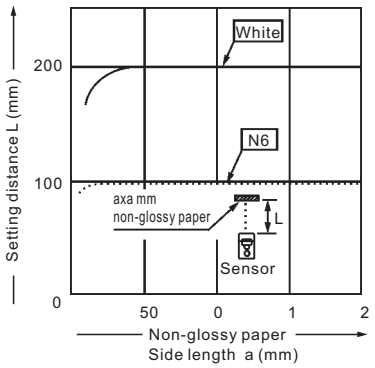
For plotting the left graph, the sensitivity has been set such that a 200x200 mm white non-glossy paper is just detectable at a distance of 800mm.

Narrow-view reflective type CP31-D0200N-xX6xxUx-N CP31-D0200P-xX6xxUx-N

Sensing field



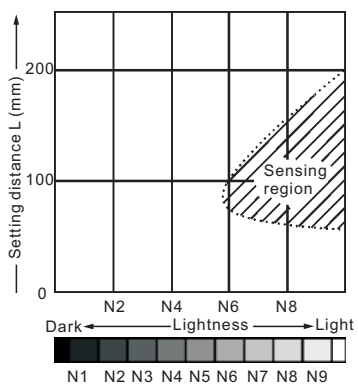
Correlation between sensing object size and sensing range



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

For plotting the left graph, the sensitivity has been set such that a 200x200 mm white non-glossy paper is just detectable at a distance of 200mm.

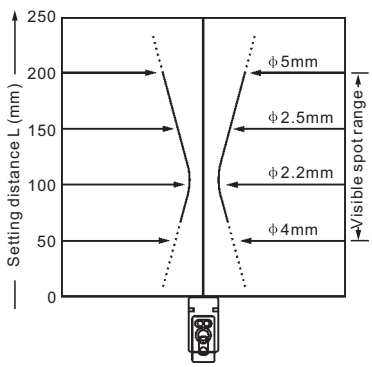
Correlation between sensing object size and sensing range



The sensing region is represented by oblique lines in the left figure. However, the sensitivity should be set with an enough margin because of slight variation in products.

Lightness shown on the lift may differ slightly from the actual object condition.

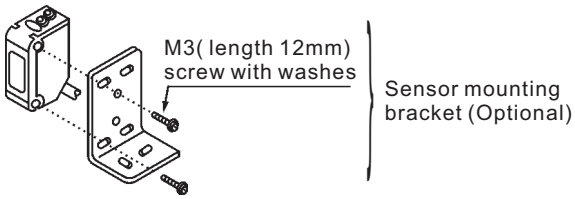
Emitted beam



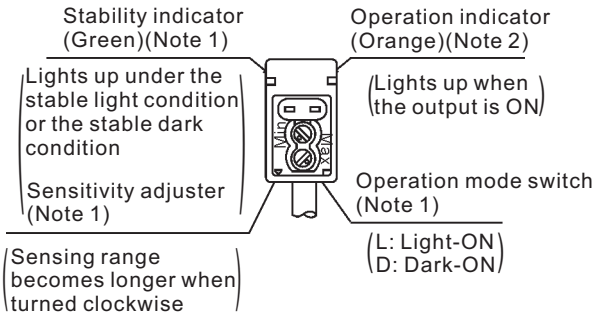
This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

Mounting

- The tightening torque should be 0.5N•m or less.



Functional description



Notes: 1) Not incorporated on the thru-beam type sensor emitter.
2) It is the power indicator (Green LED)(lights up when the power is ON) for the thru-beam type sensor emitter.

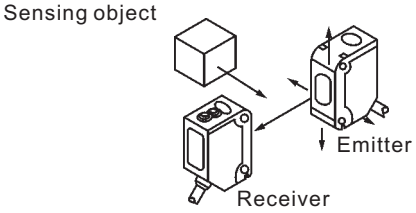
Operation mode switch

Operation mode switch	Description
	Light-ON mode is obtained when the operation mode switch(located on the receiver for the thru-beam type) is turned fully clockwise(L side)
	Dark-ON mode is obtained when the operation mode switch (located on the receiver for the thru-beam type) is turned fully counterclockwise (D side).

Beam alignment

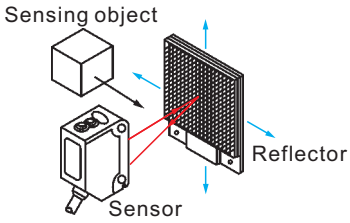
Thru-beam type sensor

①Set the operation mode switch to the Light-ON mode position (L side).
②Placing the emitter and the receiver face to face along a straight line, move the emitter in the up, down, left and right directions, in order to determine the range of the light received condition with the help of the operation indicator (orange). Then, set the emitter at the center of this range.
③Similarly, adjust for up, down, left and right angular movement of the emitter.
④Further, perform the angular adjustment for the receiver also.
⑤Check that the stability indicator (green) lights up.
⑥Choose the operation mode, Light-ON or Dark-ON, as per your requirement, with the operation mode switch.

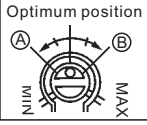


Retroreflective type sensor

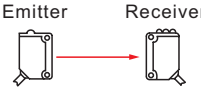
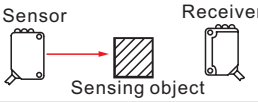
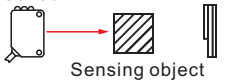
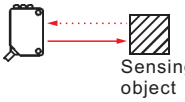
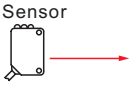
① Set the operation mode switch to the Light-ON mode position(L side).
② Placing the sensor and the reflector face to face along a straight line, move the reflector in the up, down, left and right directions, in order to determine the range of the light received condition with the help of the operation indicator (orange). Then, set the reflector at the center of this range.
③ Similarly, adjust for up, down, left and right angular movement of the reflector.
④ Further, perform the angular adjustment for the sensor also
⑤ Check that the stability indicator(green) lights up.
⑥ Choose the operation mode, Light-ON or Dark-ON, as per your requirement, with the operation mode switch.



Sensitivity adjustment

Step	Sensitivity adjuster	Description
①		Turn the sensitivity adjuster fully counter-clockwise to the minimum sensitivity position, MIN.
②		In the light received condition, turn the sensitivity adjuster slowly clockwise and confirm the point Ⓐ 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 Ⓑ 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, the position is point Ⓑ)
④		The position at the middle of point Ⓐ and Ⓑ is the optimum sensing position.

Note: Use the 'minus' adjusting screwdriver(please arrange separately) to turn the adjuster slowly. Turning with excessive strength will cause damage to the adjuster.

	Light received condition	Dark condition
Thru-beam type		
Retroreflective type		
Diffuse reflective type and Narrow-view reflective type		

Relation between output and indicators

In case of Light-ON			Sensing condition	In case of Dark-ON		
Stability indicator	Operation indicator	Output		Stability indicator	Operation indicator	Output
●	●	ON	Stable light receiving	OFF	○	●
○			Unstable light receiving			○
	○	OFF	Unstable dark receiving	ON	●	
●			Stable dark receiving			●

● ● :Lights up ○ :Lights off

Retroreflective type sensor with polarizing filters

- If a shiny object is covered or wrapped with a transparent film, such as those described below, the retroreflective type sensor with polarizing filters may not be able to detect it. In that case, follow the steps given below.

Example of sensing objects

- Can wrapped by clear film
- Aluminum sheet covered by plastic film
- Gold or silver color (specular) label or wrapping paper

Steps

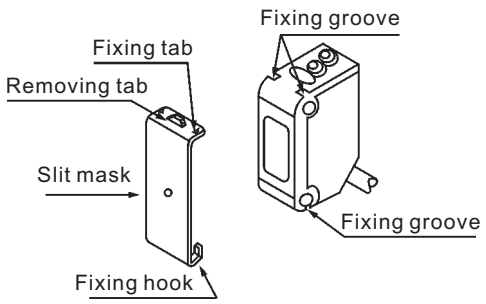
- Tilt the sensor with respect to the sensing object while fitting.
- Reduce the sensitivity.
- Increase the distance between the sensor and the sensing object.

Slit mask (optional) (Exclusively for thru-beam type sensor)

- With the slit mask (OS-x), the sensor can detect a small object. However, the sensing range is reduced when the slit mask is mounted.

How to mount

Insert the fixing hook into the fixing groove.
Then, pressing the slit mask against the main unit, insert the fixing tab into the fixing groove.

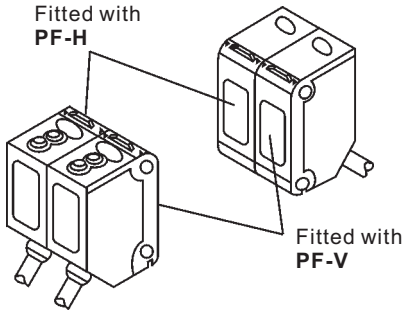


How to remove

Insert a screwdriver into the removing tab
Pull forward while lifting the remove tab

Interference prevention filter(Optional) (Exclusively for thru-beam type sensor)

- By mounting interference prevention filters(PF-x), two sets of CP31-T10000x-xX6xxUx can be mounted close together. However, the sensing range is reduced when the interference prevention filter is mounted.
- The filters can be mounted by the same method as for the slit masks.
- The two sets of sensors should be fitted with different types of interference prevention filters.
  The interference prevention does not work even if the filters are mounted for emitters only, receivers only or the same model No. Of the interference prevention filters are mounted on both the set of the sensor.



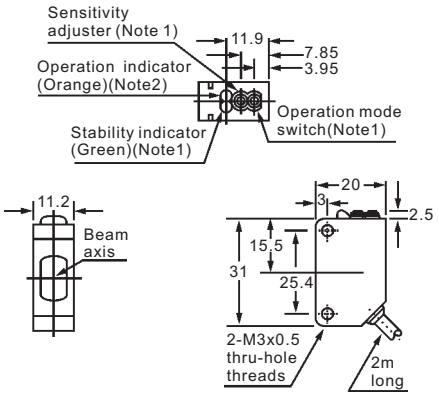
Wiring

- Make sure to carry out the wiring in the power supply off condition.
- Take care that wrong wiring will damage the sensor.
- 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.
- Extension up to total 100m (thru-beam type: both emitter and receiver) is possible with 0.3mm^2, or more, calbe. However, in order to reduce noise, make the wiring as short as possible.
- Make sure that stress by forcible bend or pulling is not applied directly to the sensor cable joint.

Others

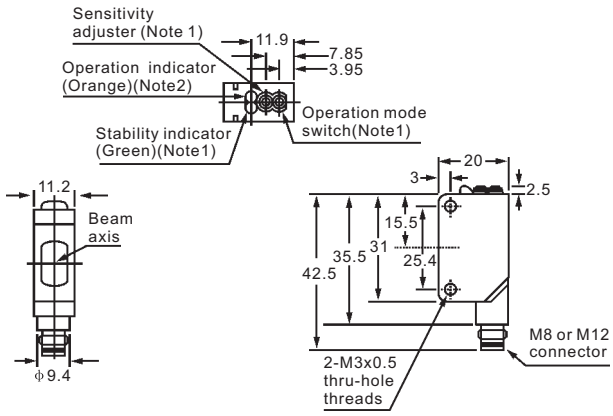
- Do not use during the initial transient time (50 ms) after the power supply is switched on.
- This sensor is suitable for indoor use only.
- Avoid dust, dirt, and steam.
- Take care that the sensor does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.

CP31-T10000x-xX6xxUx ——— **Cable style**



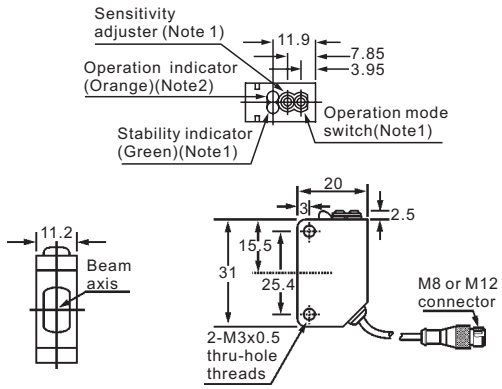
Notes: 1)Not incorporated on the emitter.
2) It is the power indicator (green) on the emitter.

CP31-T10000x-xX6xxUx ——— **Connector style**



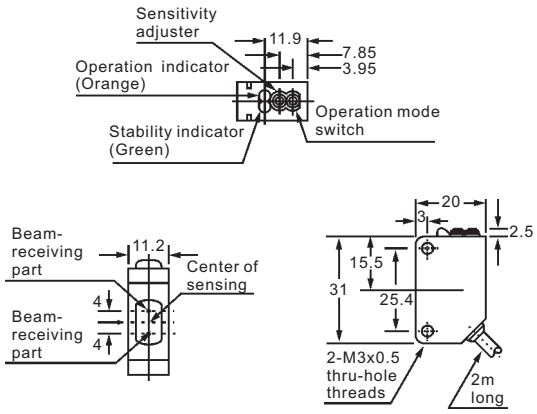
Notes: 1)Not incorporated on the emitter.
2) It is the power indicator (green) on the emitter.

CP31-T10000x-xX6xxUx ——— **Pigtail style**

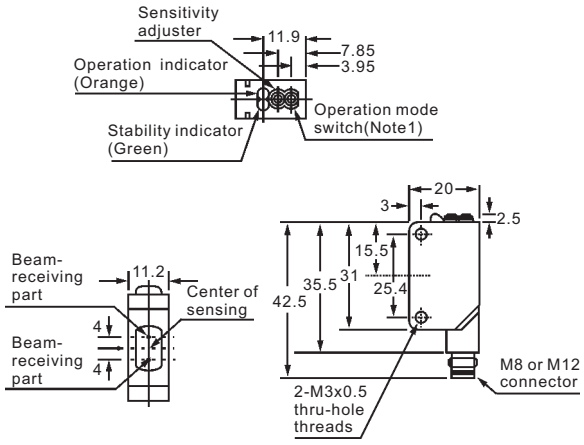


Notes: 1)Not incorporated on the emitter.
2) It is the power indicator (green) on the emitter.

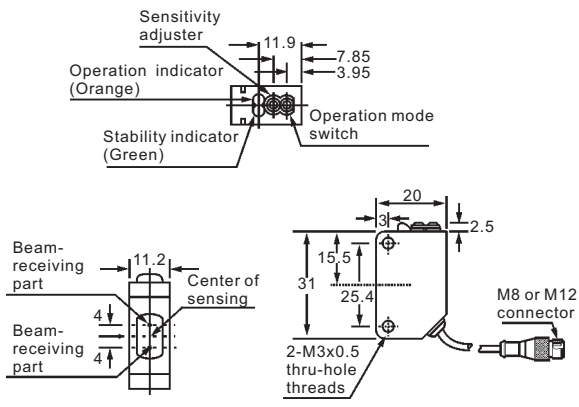
CP31-L3000x-xX6xxUx-PF
CP31-D0300x-xX9xxUx
CP31-D0800x-xX9xxUx ——— **Cable style**



CP31-L3000x-xX6xxUx-PF
CP31-D0300x-xX9xxUx
CP31-D0800x-xX9xxUx ——— **Connector style**

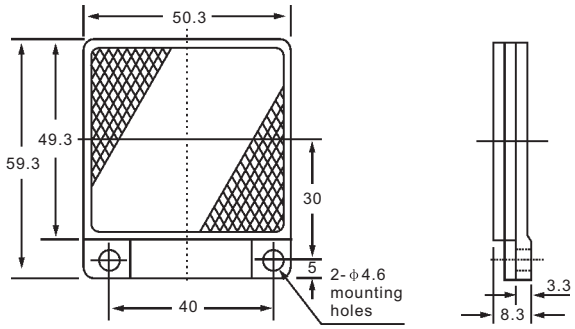


CP31-L3000x-xX6xxUx-PF
CP31-D0300x-xX9xxUx
CP31-D0800x-xX9xxUx ——— **Pigtail style**



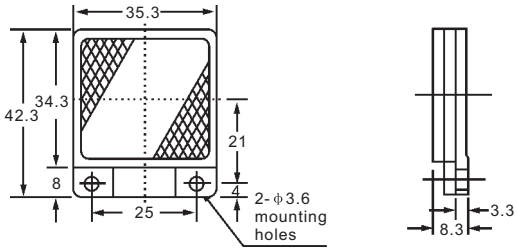
CP31 SERIES

RE-5950



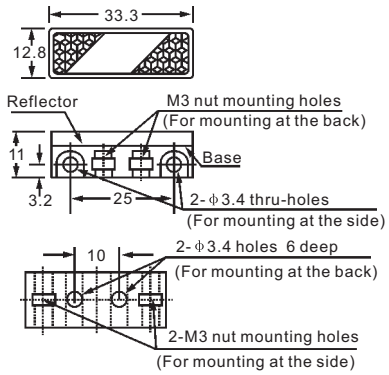
Material :Acrylic (Reflector)
ABS (Base)

RE-4235



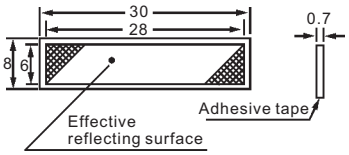
Material :Acrylic (Reflector)
ABS (Base)

RE-1333 Reflector (Optional)



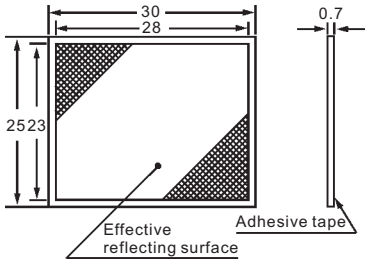
Material: Acrylic (Reflector) ABS (Base)
Two M3 (length 8mm) screws with
washes and two nuts are attached.

RT-0830 Reflector tape (Optional)



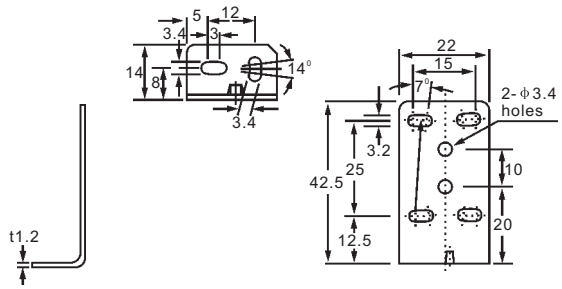
Material: Acrylic

RT-2530 Reflector tape (Optional)



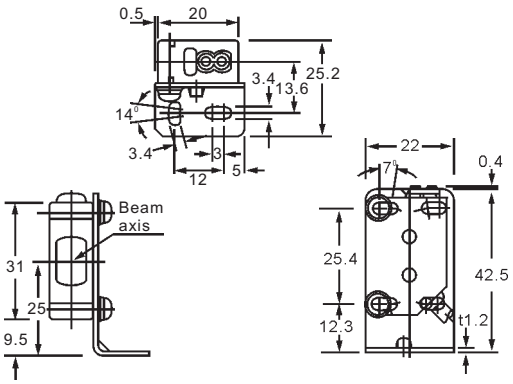
Material: Acrylic

SMB-4322 Sensor mounting bracket (Optional)

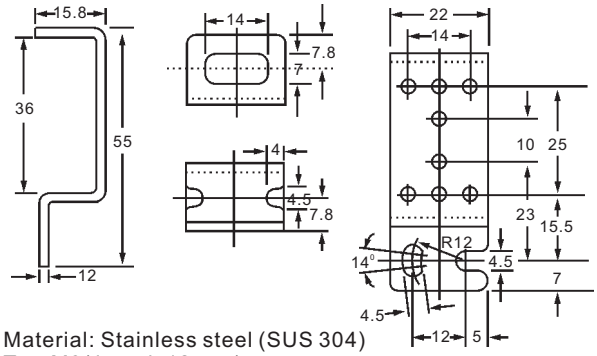


Material: Stainless steel (SUS 304)
Two M3 (length 12mm) screws with
washers are attached.

Assembly dimensions
Mounting drawing with
the receiver of **CP31-T10000x-xX6xxUx**

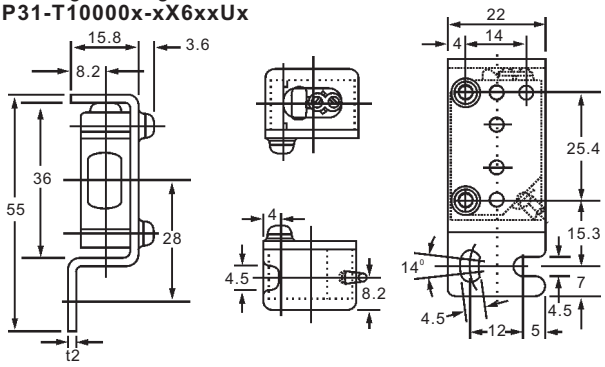


SMB-5522 Sensor mounting bracket (Optional)

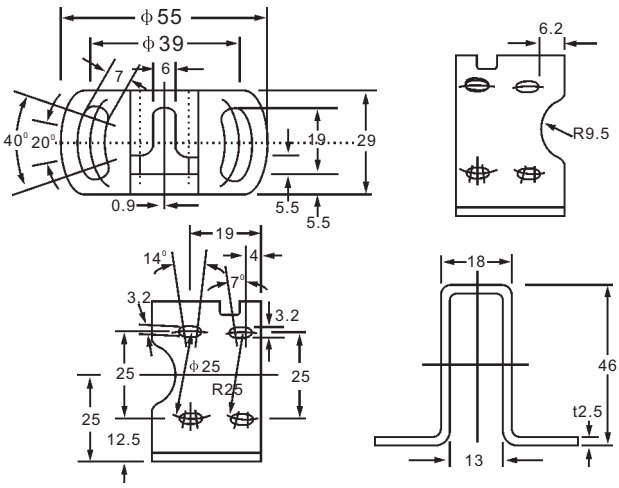


Material: Stainless steel (SUS 304)
Two M3(length 12 mm) screws
with washers are attached.

Assembly dimensions
Mounting drawing with the receiver of
CP31-T10000x-xX6xxUx

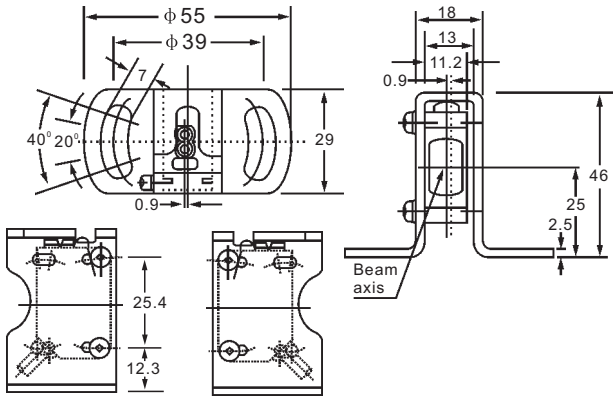


SMB-4629 Sensor mounting bracket (Optional)

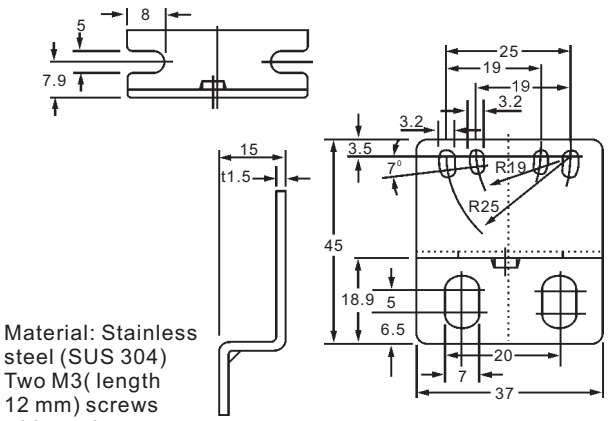


Material: Stainless steel (SUS 304)
Two M3(length 12 mm) screws
with washers are attached.

Assembly dimensions
Mounting drawing with the receiver of
CP31-T10000x-xX6xxUx

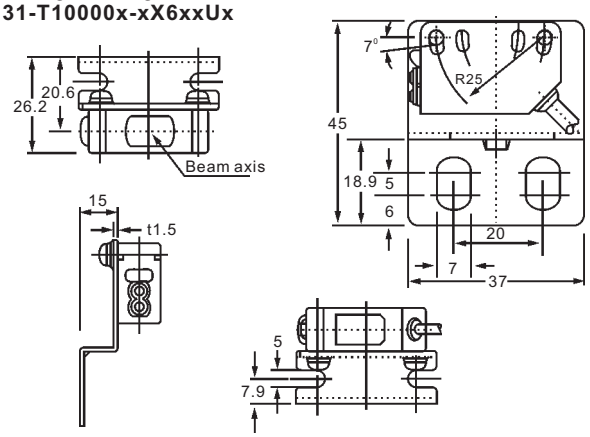


SMB-4537 Sensor mounting bracket (Optional)

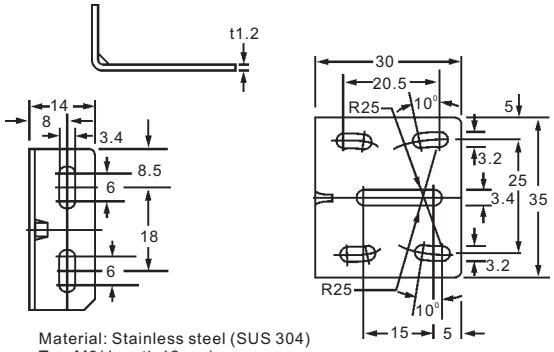


Material: Stainless
steel (SUS 304)
Two M3(length
12 mm) screws
with washers
are attached.

Assembly dimensions
Mounting drawing with the receiver of
CP31-T10000x-xX6xxUx

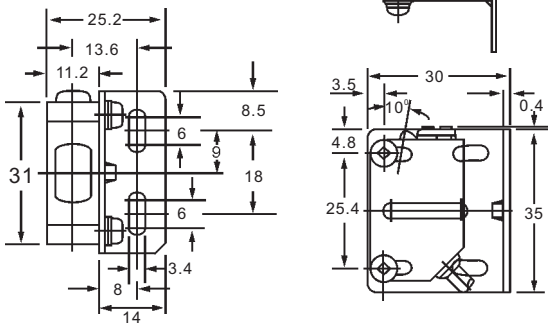


SMB-3530 Sensor mounting bracket (Optional)



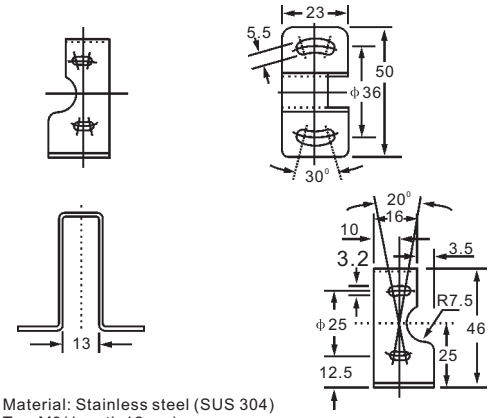
Material: Stainless steel (SUS 304)
Two M3(length 12mm) screws
with washers are attached

Assembly dimensions
Mounting drawing with the receiver of
CP31-T10000x-xX6xxUx

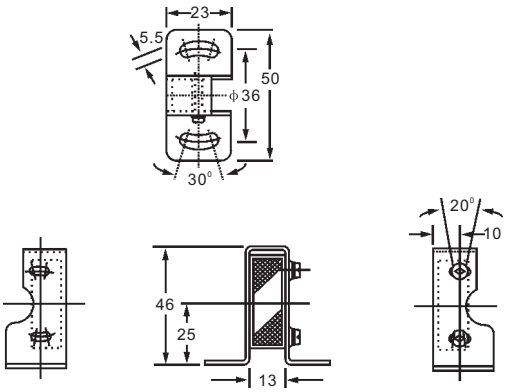


MB-RE-1333 Reflector mounting bracket of RE-1333 (Optional)

Assembly dimensions

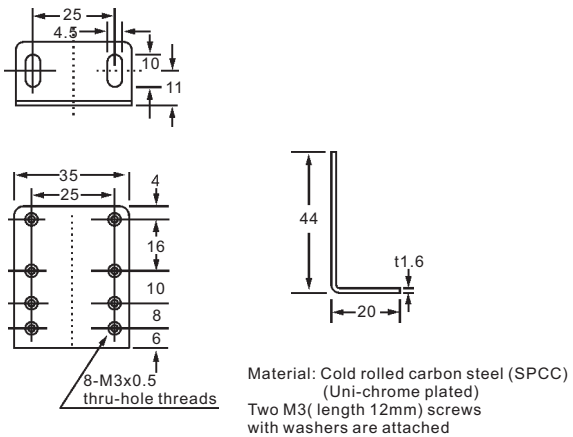


Material: Stainless steel (SUS 304)
Two M3(length 12mm) screws
with washers are attached

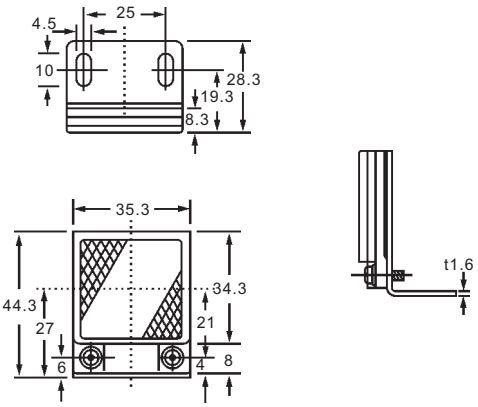


MB-RE-4235 Reflector mounting bracket for RE-4235 (Optional)

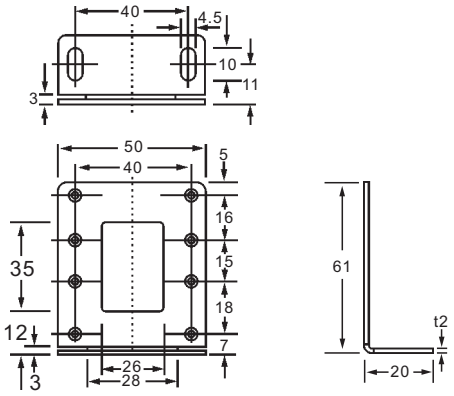
Assembly dimensions



Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M3(length 12mm) screws
with washers are attached



MB-RE-5950 Reflector mounting bracket for RE-5950 (optional)



Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M4(length 10mm) screws
with washers are attached

Assembly dimensions