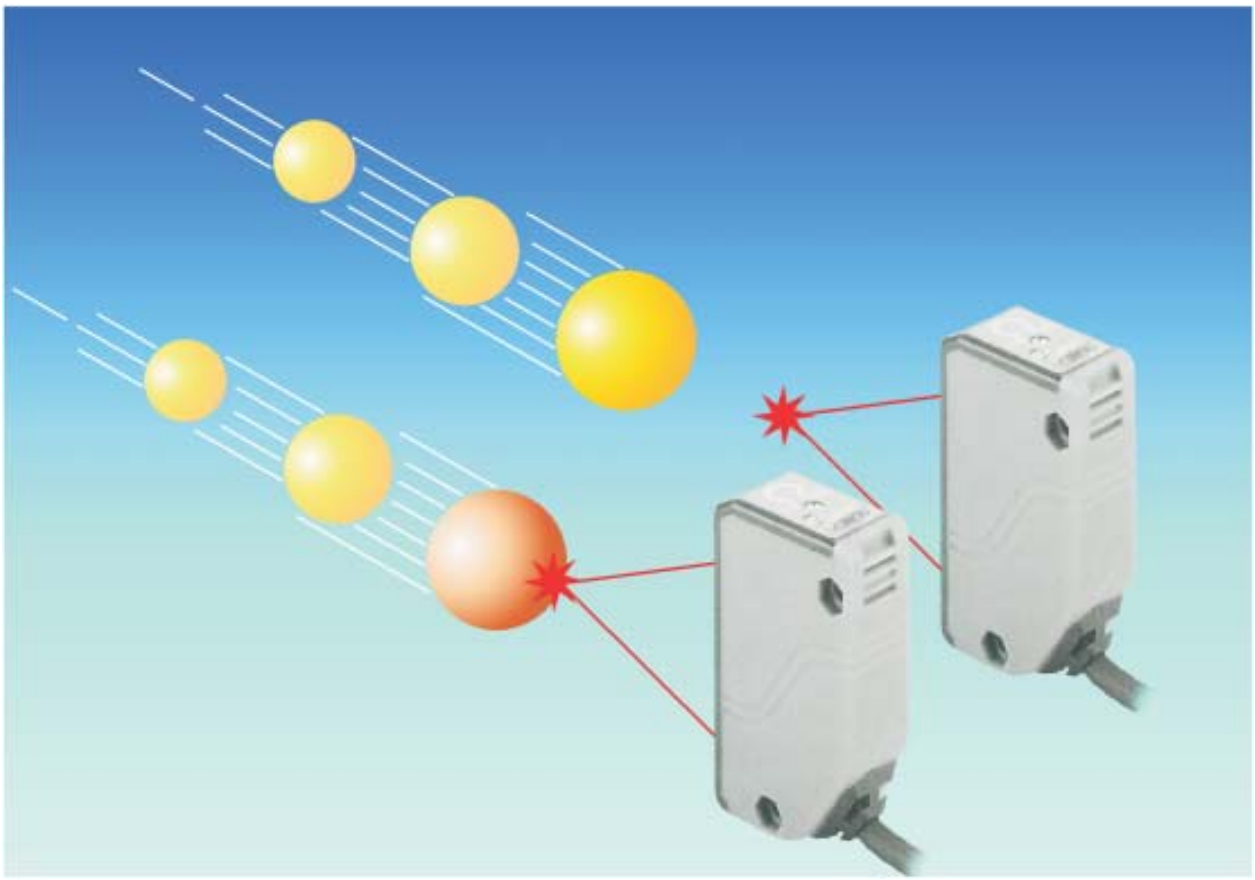
CP68 SERIES

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



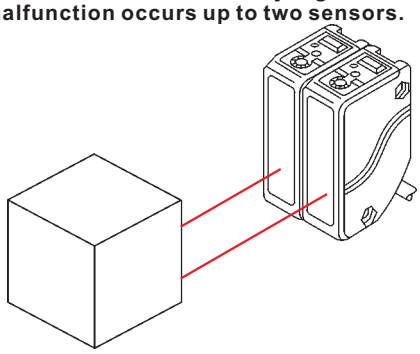
CP68 SERIES

PHOTOELECTRIC
ADVANTAGE AND APPLICATION

Advantage

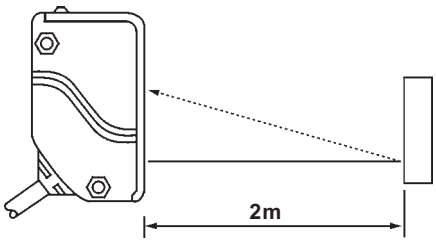
Automatic crosstalk prevention

Until the CP68 series, no other fixed-field sensing sensor has been equipped with the automatic crosstalk prevention. Even if mounted closely together or face to face, no malfunction occurs up to two sensors.



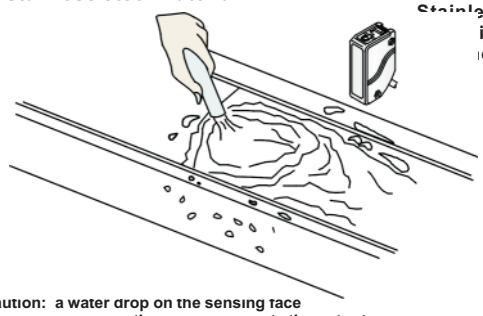
Long sensing range 2 m

The CP68 series catches an object 2m away. Long-range fixed-field sensing with sharp beam gives a variety of new ideas for your applications such as linear positioning or wide range detecting.



Waterproof

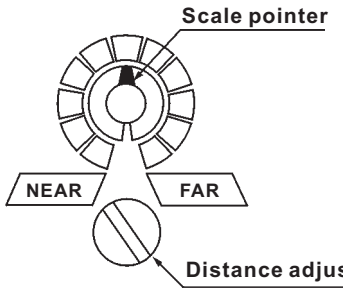
Achieves IP 67. The sensor can be put on machinery washed with water. The mounting bracket (option) is not corrosive as it is made of stainless steel material.



Caution: a water drop on the sensing face may cause the sensor generate the output.

Two-turn adjuster with the indicator

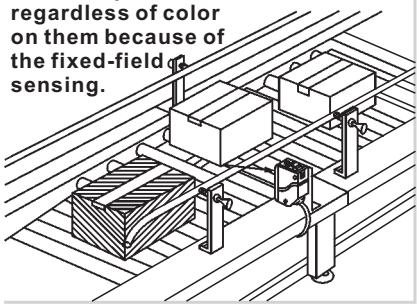
The CP68 series features the mechanical two-turn distance adjuster and the scale pointer that shows the set distance remarkably.



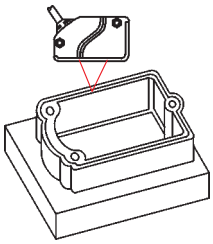
Application

Detecting cardboard boxes passing by

It securely detects cardboard boxes regardless of color on them because of the fixed-field sensing.

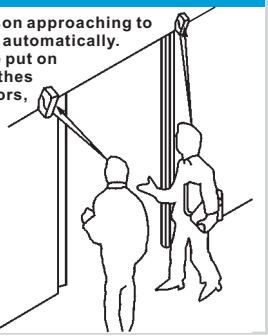


Detecting Gasket on Die-casting



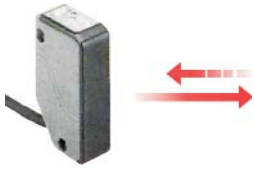
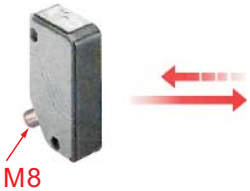
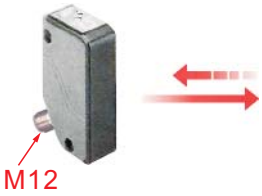
Detecting people in front of automatic door

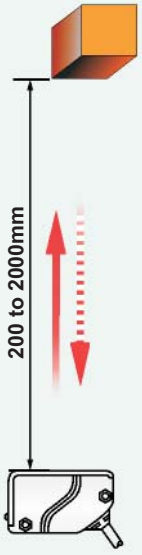
They detect person approaching to the door to open automatically. Although people put on own-desired clothes with various colors, they perfectly detect people.



CP68 SERIES

Order guide

Sensing mode	Appearance	Supply voltage	OUTPUT MODE	Part Number
Diffuse mode sensing distance 200 to 2000mm Infrared red LED		10 to 30V DC	NPN light-ON	CP68-D2000N-LX9C3U2
			NPN dark-ON	CP68-D2000N-DX9C3U2
			PNP light-ON	CP68-D2000P-LX9C3U2
			PNP dark-ON	CP68-D2000P-DX9C3U2
		10 to 30V DC	NPN light-ON	CP68-D2000N-LX9P4UP
			NPN dark-ON	CP68-D2000N-DX9P4UP
			PNP light-ON	CP68-D2000P-LX9P4UP
			PNP dark-ON	CP68-D2000P-DX9P4UP
		10 to 30V DC	NPN light-ON	CP68-D2000N-LX9P4UE
			NPN dark-ON	CP68-D2000N-DX9P4UE
			PNP light-ON	CP68-D2000P-LX9P4UE
			PNP dark-ON	CP68-D2000P-DX9P4UE
		10 to 30V DC	NPN light-ON	CP68-D2000N-LX9Q4UP
			NPN dark-ON	CP68-D2000N-DX9Q4UP
			PNP light-ON	CP68-D2000P-LX9Q4UP
			PNP dark-ON	CP68-D2000P-DX9Q4UP
		10 to 30V DC	NPN light-ON	CP68-D2000N-LX9Q4UE
			NPN dark-ON	CP68-D2000N-DX9Q4UE
			PNP light-ON	CP68-D2000P-LX9Q4UE
			PNP dark-ON	CP68-D2000P-DX9Q4UE

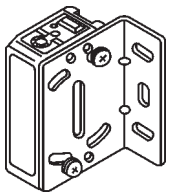


Order guide

Designation	Model Number	Description
Sensor mounting bracket	SMB-6954	Back angled mounting bracket
	SMB-7645	Foot angled mounting bracket

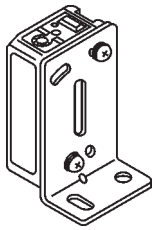
● SMB-6954

Material: SPCC includes two screws of M4x25mm and two M4 nuts



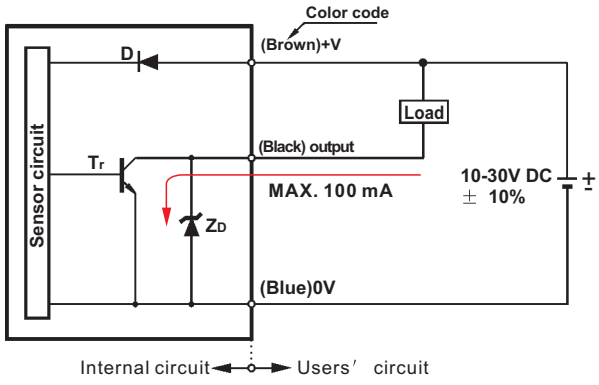
● SMB-7645

Material: SPCC includes two screws of M4x25mm and two M4 nuts

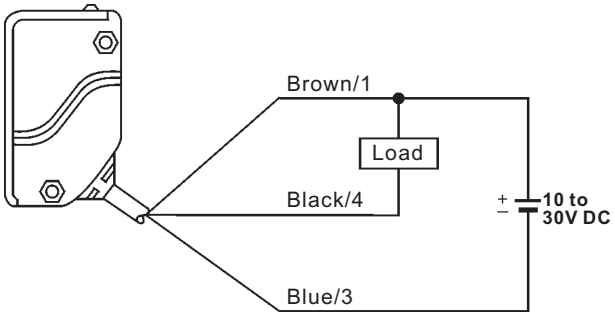


I/O circuit and wiring diagrams

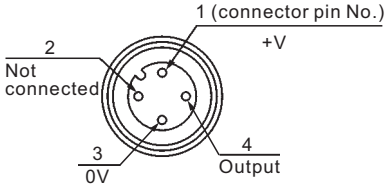
NPN output type



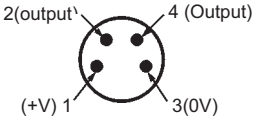
Symbol...D: Reverse polarity protection diode.
ZD: Surge absorption zener diode.
Tr: NPN output transistor.



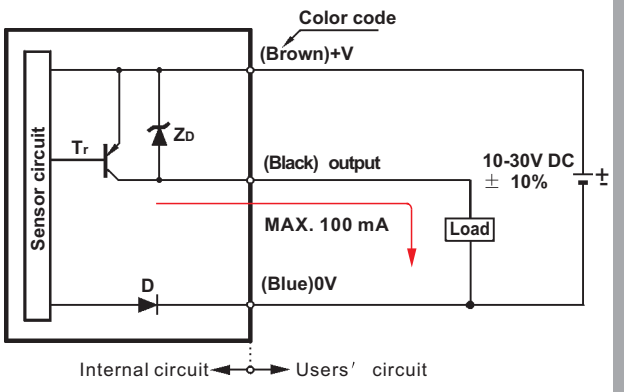
M12 connector type



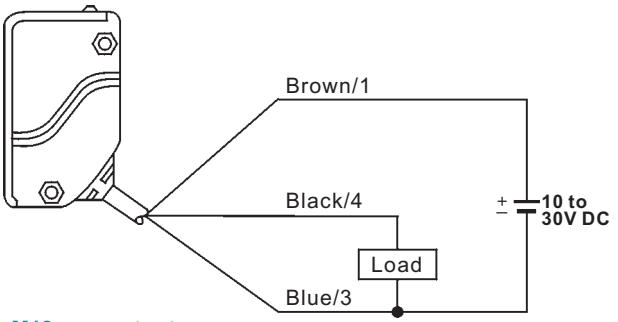
M8 connector type



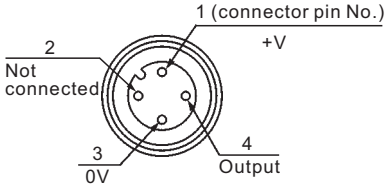
PNP output type



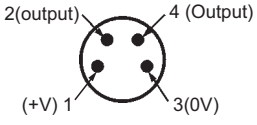
Symbol...D: Reverse polarity protection diode.
ZD: Surge absorption zener diode.
Tr: PNP output transistor.



M12 connector type



M8 connector type



SPECIFICATIONS

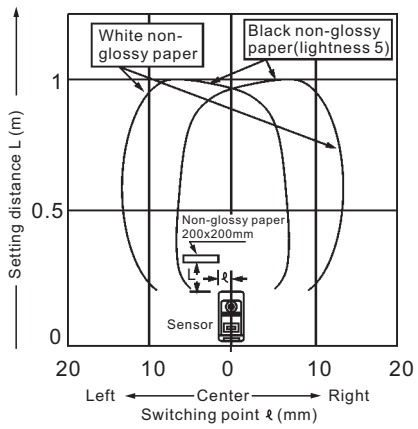
Specifications

Item \ Type / Model No.		Distance-adjustable & Long-range Fixed-field sensing mode	
		NPN output type	PNP output type
		CP68-D2000N-LX9xxUx CP68-D2000N-DX9xxUx	CP68-D2000P-LX9xxUx CP68-D2000P-DX9xxUx
Adjustable range		0.2 to 2m	
Sensing range(with white non-glossy paper and adjuster in Max.)		0.1 to 2m	
Hysteresis		10% or less at operation distance	
Repeatability		Beam axial: 10mm or less, Perpendicular to beam axis: 1mm or less	
Supply voltage		10 to 30V DC Ripple P-P: 10% or less	
Current consumption		50mA or less	55mA or less
Sensing output		NPN open-collector transistor Maximum sink current: 100mA Applied voltage: 30V DC or less Residual voltage: 1V or less(at 100mA sink current) 0.4V or less (at 16mA sink current)	PNP open-collector transistor Maximum source current: 100mA Applied voltage: 30V DC or less Residual voltage: 1V or less(at 100mA source current) 0.4V or less (at 16mA source current)
	Output operation	Selectable either Normally Open or Normally Closed	
	Short-circuit protection	Incorporated	
Response time		2ms or less	
Operation indicator		Red LED (lights up when the output is activated)	
Stability indicator		Green LED (lights up during the stable Light or the stable Dark condition).	
Distance adjuster		Mechanical two-turn adjuster with scale pointer	
Automatic crosstalk prevention function		Incorporated	
Environmental resistance	Protection	IP 67	
	Ambient temperature	-20 to +55℃(No dew condensation nor icing allowed), storage:-25 to +70℃	
	Ambient humidity	35 to 85% RH, Storage: 35 to 85% RH	
	Ambient light	Sunlight: 10000ℓx at the light receiving face, Incandescent light: 3000ℓx at the light-receiving face.	
	Noise immunity	Power line: 240Vp, 10ms cycle, and 0.5us pulse duration. Radiation: 300Vp,10ms cycle, and 0.5us pulse duration (With noise simulator)	
	Withstand voltage	AC 1000V for one min. Between all terminals connected and enclosure.	
	Insulation resistivity	20MΩ or more at 250V Megger between all terminals connected and enclosure.	
	Vibration-proof	10 to 55Hz frequency, 0.75mm amplitude, and X, Y, and Z directions each for two hours (unenergized)	
	Shock-proof	500m/s^2 acceleration (approx.50G), and X, Y, and Z directions each for three times(unenergized)	
Emitting element		Infrared LED (modulated)	
Material		Polyarilate	
Cable		Three-0.3mm^2-core cabtyre cable of 2m long	
Cable extension		Extendable up to 100m long with equivalent cable of which core is 0.3mm^2 or more	
Pigtail and connector		(M8) pico 4pin+6 " cable; (M12) Euro 4pin+6 " cable	
Weight		Approx. 150g	

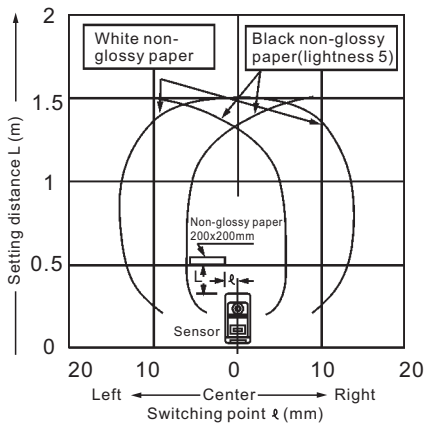
SENSING FIELDS(TYPICAL)

CP68-D2000N-xX9xxUx、CP68-D2000P-xX9xxUx

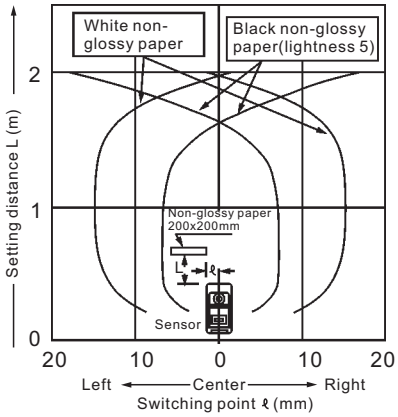
● Adjusted distance: 1m



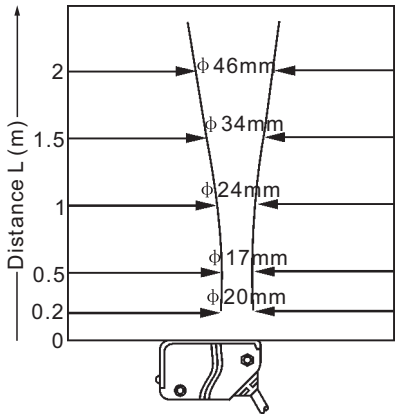
● Adjusted distance: 1.5m



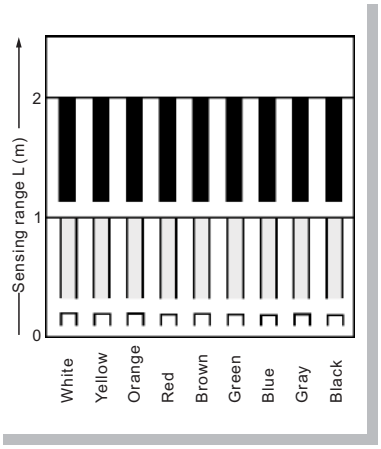
● Adjusted distance: 2m

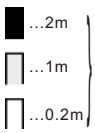


Emitting beam



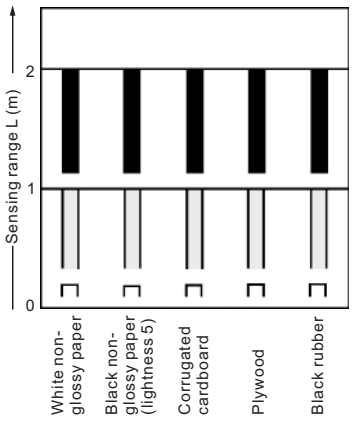
Correlation between color (200x200mm) and sensing range

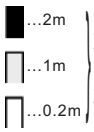




Each object is measured the sensing range on condition that the distance adjuster has been accommodated with white paper at the maximum of 2m, 1m and 0.2m long respectively.

Correlation between material (200x200mm) and sensing range





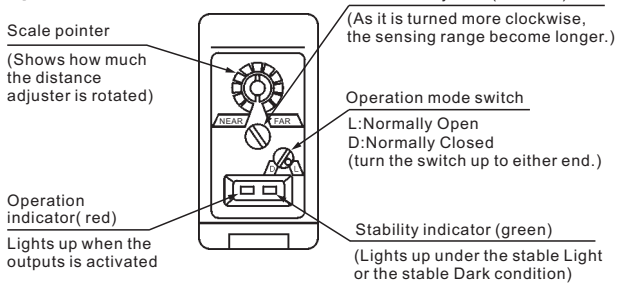
Each object is measured the sensing range on condition that the distance adjuster has been accommodated with white non-glossy paper at the maximum of 2m, 1m and 0.2m long respectively.

PRECAUTIONS FOR PROPER USE

This products is not a safety sensor designed to intend to protect life and prevent bodily injury or property damage from dangerous parts of machinery, but a normal object detection sensor.

Distance adjustment

<Top face>



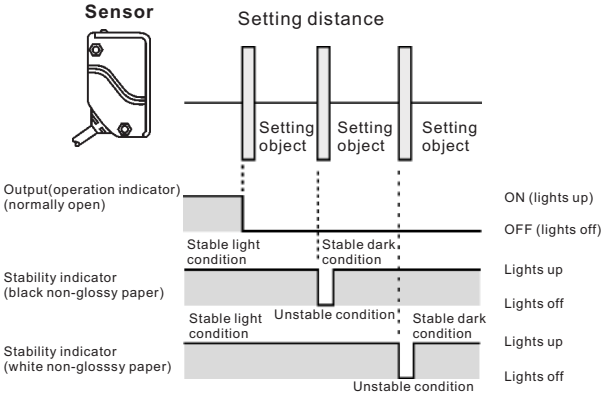
<Adjusting procedure>

1	Turn the distance adjuster counterclockwise fully to the minimum distance of approx. 0.2m.	Fully turned
2	Locate your sample object at the place that you expect the sensor to detect. Turn the adjuster gradually clockwise and find out the point A where the sensor goes into the light condition.	A
3	Remove the object. Turn the adjuster clockwise until the sensor goes into the light condition again. Once it switches on, turn the adjuster back a little until the sensor goes into the dark condition where called the point B . (If the sensor does not go into the light condition over the scale without the object, the point B shall be identified as the maximum point in the scale.)	A B
4	Settle the adjuster at the center between the point A and B that should be the optimum setting point to detect you object.	A Optimum position B

(*1): Turn the distance adjuster gradually and lightly with the attached screwdriver. If the distance adjuster is over-turned or pressed heavily, it may be damaged.

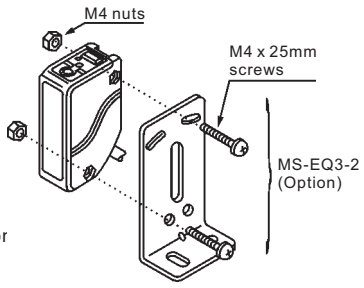
Stability indicator

CP68 series incorporates the two-divided photo-diode as the receiving element. The sensor compares two parts of it; which one receives incident beam reflected by an object more intensely to the other. Because this optical system is based on the angle of incident beam, the sensor generates output relating to the distance between the sensor and the object. However, the stability indicator signifies the sufficiency of incident beam, not the distance operating. As an object is approaching to the sensor, the unstable condition that the indicator light off and immediately on again arises before the maximum operating point that the operation indicator lights up. It also shifts according to the difference of reflection ratio among objects. Make sure that the stability indicator always lights up while the sensor is detecting your object.

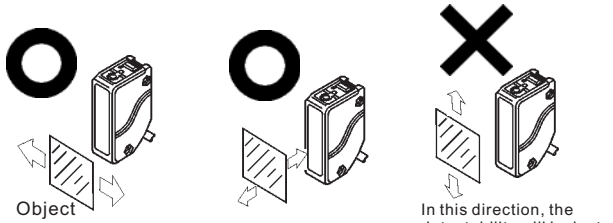


Mounting

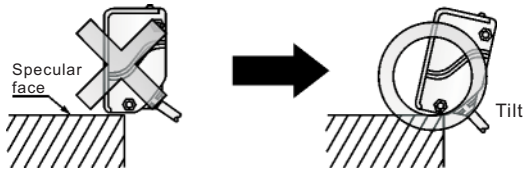
- Tightening torque should be 0.8N • m {8.2kgf • cm} or less



- Make sure which direction your objects move to the sensor.



- If your object is specular such as aluminum foil or copper foil, or its surface is painted or coated glossily, the sensor may not detect it by wrinkle on it or the severity of the sensing angle.
- Tilt the sensor slightly upwards to prevent the irregular reflection where the sensor is placed on a specular substance.



- If there is a specular substance or the like beyond the sensing field, the sensor may lose the detectability by slight angle change or motion of it. In such case, angle the sensor not to be affected and test the detectability in actual.
- Some object may produce the dead zone right in front of the sensor.

Wiring

- Do not supply power while wiring.
- Verify that supply voltage ripple is within the rating.
- With a commercial switching regulator, ground the F.G. Terminal.
- Where equipment generating noise such as a switching regulator or an inverter motor is placed around the sensor, ground its F.G. Terminal.
- Do not run the sensor cable along any high-voltage or power cable in parallel or in a same raceway. It may cause a malfunction by induction.

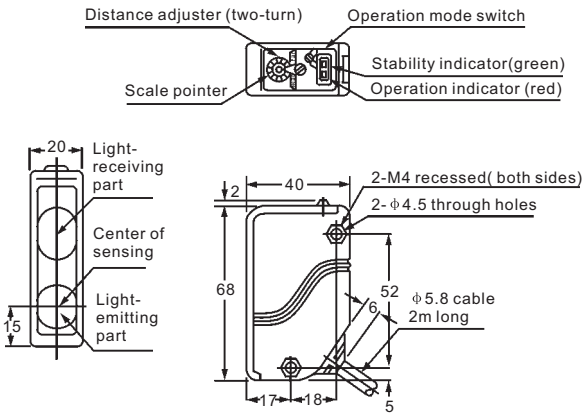
Other

Do not use the sensor output signal for 50ms immediately after the power is supplied to the sensor.

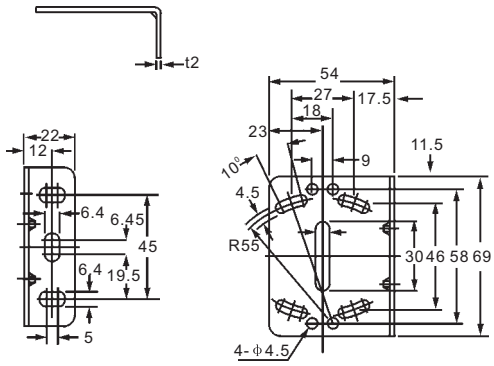
Avoid places where the sensor will be directly exposed to fluorescent lamp of rapid starter or high frequency lighting as it may affect the sensing performance.

Dimensions

CP68-D2000N-xX9xxUx
CP68-D2000P-xX9xxUx



SMB-6954



SMB-7645