

# TAKEX FLAME PASSIVE SENSOR

## Instruction Manual

We appreciate your purchase of a TAKEX flame Passive sensor. Please read this instruction manual carefully for correct and effective use.

This sensor is designed to detect flames and/or intrusion and to initiate an alarm; it is not a fire-preventing device. TAKEX is not responsible for damage, injury or losses caused by accident, theft, Acts of God (including inductive surge by lightning), abuse, misuse, abnormal usage, faulty installation or improper maintenance.



Do not subject the sensor to a strong impact; it may cause damage, malfunction, or a loss in performance. Do not handle the unit in a rough manner.

Intense flames caused by gas explosion etc. may damage the sensor, without detecting the flame.

## 1 PRODUCT DESCRIPTION

FP-5500E is a combination sensor; integrating flame and passive infrared sensors into one unit. FP-5500E features two output modes; "AND" detection mode and "Individual" detection mode.

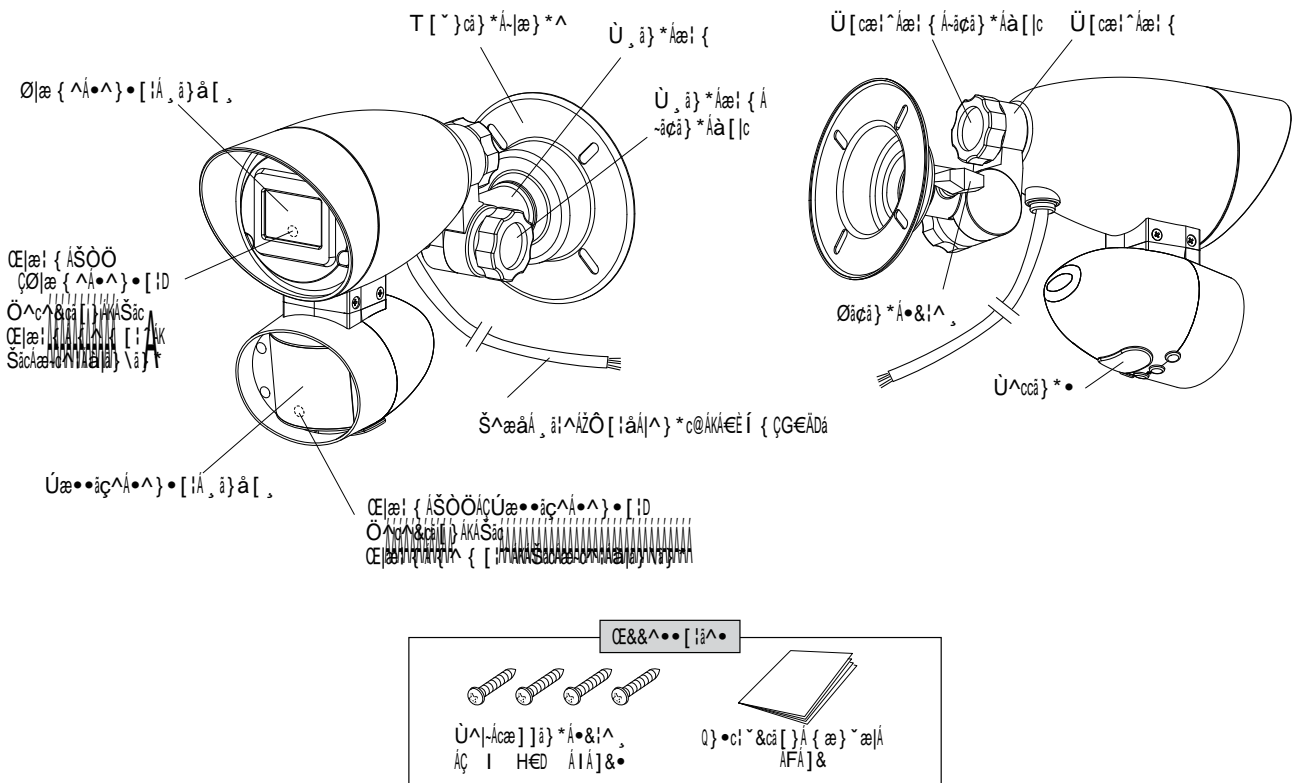
s "AND" detection mode initiates flame and passive alarm signal output together when both the flame sensor and passive y infrared sensor detect during the selected time.

s "Individual" detection mode initiates flame or passive alarm signal output when either the flame sensor or passive infrared y sensor detects.

There is also a "Forced flame alarm output" operation.

s The flame sensor initiates flame alarm signal after continued detection for a certain period of time even without passive infrared y detection in "AND" detection mode.


## 2 PARTS DESCRIPTION



# 3 PRECAUTIONS Be sure to observe


**Warning** This indicates the possibility of severe injury, even death, if ignored or a user handles the unit incorrectly


**Caution** This indicates the possibility of minor injury and/or damage to properties, or of a notification delay in your system due to false operations and/or non-detection, if ignored or a user handles the unit incorrectly.


 A prohibited action, you must not do.

 An action you must do, and information you should keep in mind.


## Warning


 Do not disassemble or alter this product.


 Strictly observe the specified voltage (10 to 30V DC).


 If the following events occur, turn off the power of the unit immediately, and ask the place of purchase for repair. Failure to follow this may result in fire, electric shock, and/or malfunction.


- Smoke, abnormal odor, and/or sound are found
- Liquid, such as water, and/or foreign material has entered the unit
- The unit has deformed and/or damaged parts

 Mount the unit on wall surfaces where reinforcement materials are used. If you mount the unit on non-wood materials such as plaster board or concrete, surely mount it using anchors and mounting screws that match the wall materials. Unstable mounting may result in injury and/or property damage if the unit falls


 Do not touch the wiring leads with wet hands.


 Do not connect devices which exceed the capacitance of this sensor.


 This sensor detects ultraviolet rays contained in flames and outputs a signal. It is not a fire-fighting device (fire alarm, detector for fire alarm system) and does not detect smoke or heat that does not contain ultraviolet rays. Please note that we are not liable for any accidents caused by fire, personal injury, and disaster, mistakes in equipment usage, inadequate maintenance and inspection, natural disasters (including induced lightning surges), etc.


 Do not install this device in a location that cannot support its weight. This may cause the device to fall and cause an injury or malfunction of the device.


## Caution

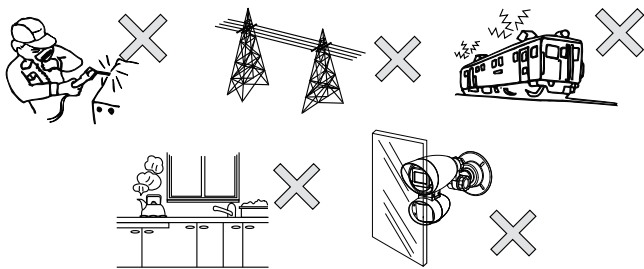
 Do not apply impact to the unit. Strong impact may result in performance deterioration and/or damage to the unit.


 The unit may not operate properly near the devices that generate a strong electric or magnetic field. Also, the devices near the unit may not operate properly due to the magnetic field and/or magnetism generated by the unit. Make sure to confirm before operation.

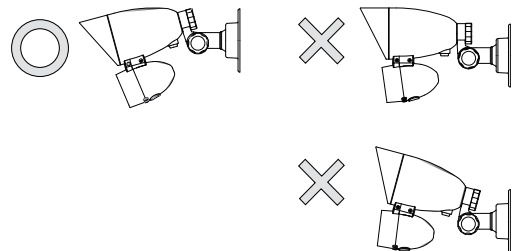
 Make sure to perform a sufficient operation check on the whole system before operation.


 Never touch the detection element with your bare hands. If it gets dirty with oil from your hands, the sensitivity will decrease.

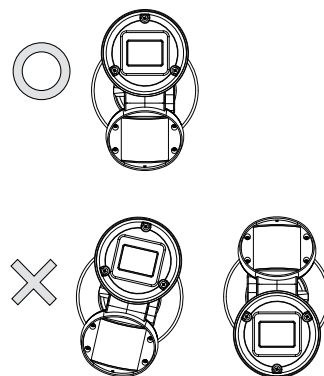
 Do not install the unit in locations where sparks or flames are usually used (kitchen, incinerator, etc.).  
Do not install the unit in locations subject to severe shock or electric noise.  
Do not install the unit in locations where a shield object (glass, transparent resin, etc.) is in front of the sensor.  
Do not install the unit near high voltage power lines. Sparks from pylons may cause false detection.  
Do not install the unit near railways. Sparks from pantographs may cause false detection.



 Be sure to install the unit downward from horizontal.

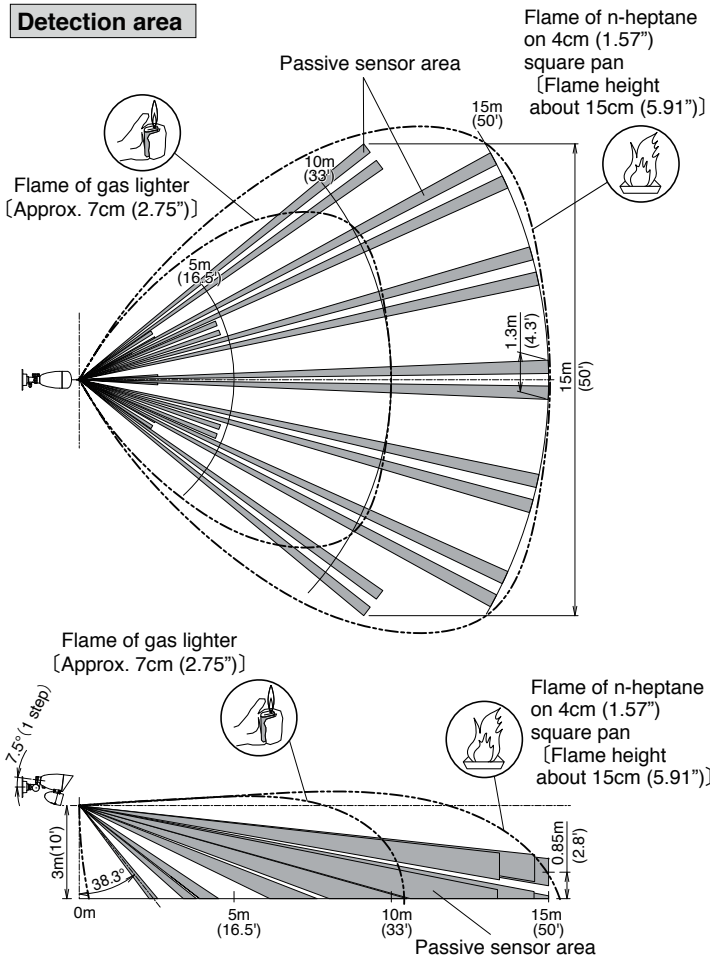


 Keep the detection window straight and the setting section at the bottom.



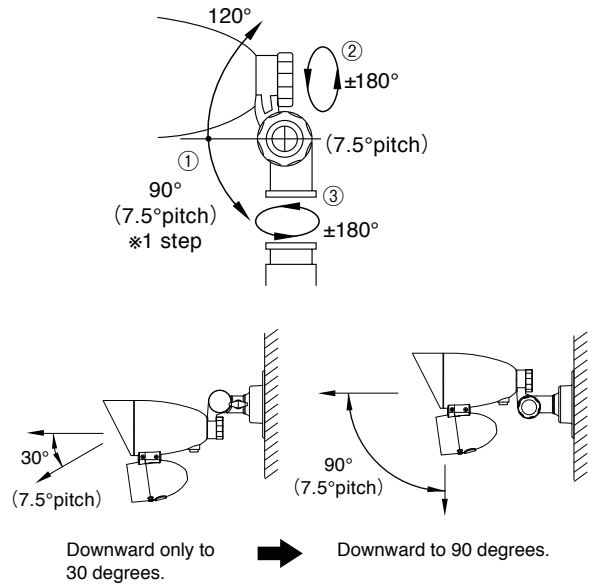
# 4 DETECTION AREA

## Detection area



## Angle adjustment

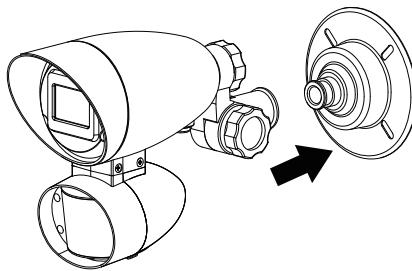
Three-part rotation mechanism, as shown below, enables adjustment in various angles. Adjustable angles may be limited depending on mounting location and change mounting way if necessary.



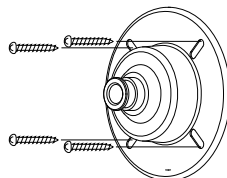
\* For outdoor application, be sure to adjust the detection area downward to avoid the influence of sunlight and the detection of unexpected objects in the distance.

# 5 INSTALLATION

- Loosen the fixing screw and remove the mounting flange from the main body.

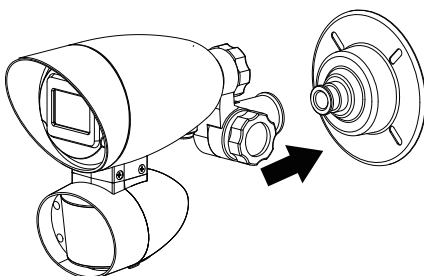


- Fix the mounting flange at the mounting location with the four self tapping screws provided.



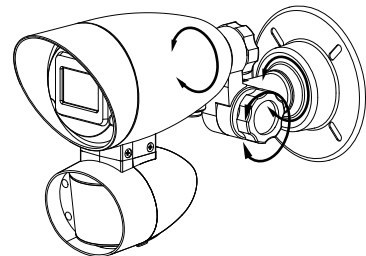
- !** Securely fix it with an anchor etc. on the mounting surface.

- Insert the swing arm into the mounting flange and tighten the fixing screw to temporarily fix it.



- Slightly loosen the rotation fixing bolt, swing fixing bolt, and mounting fixing screw to determine the direction and angle of the detection area, and then tighten and fix them.

(Refer to "4 DETECTION AREA")

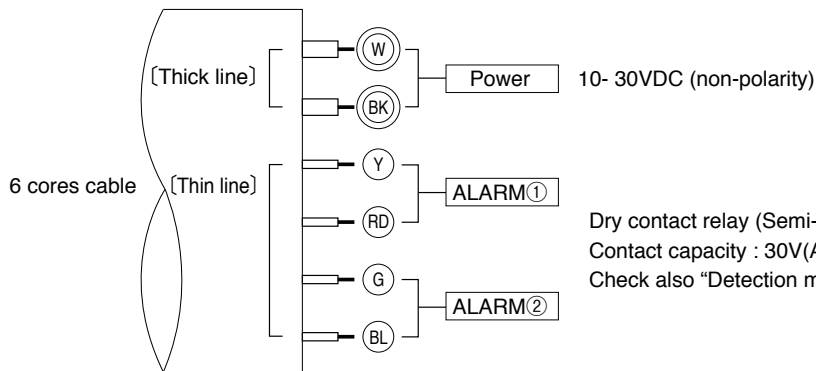


- Proceed to wiring. (Refer to "6 WIRING")

- Perform operation check.

(Refer to "8 OPERATION CHECK")

# 6 WIRING



Dry contact relay (Semi-conductor) (N.O./N.C. selectable)  
 Contact capacity : 30V(AC/DC) 0.25A Max. (resistive load)  
 Check also "Detection mode setting"(DIP switch 4,5,6)

### Output operation in AND mode

Output terminal	Output operation
ALARM①	Forced flame alarm signal When flame sensor detects a flame twice during the selected AND timer. (Detection time after 2nd detection + off delay. Approx. 2 sec.) Or When flame sensor continues to detect a flame for flame duration time 30 or 60 sec. (Detection time after 30/60 sec + off delay. Approx. 2 sec.)
ALARM②	AND detection signal When both passive and flame sensors detect during the selected AND timer. When flame sensor detection is 1st and passive sensor detection is 2nd : (One shot, Approx. 2 sec.) When passive sensor detection is 1st and flame sensor detection is 2nd : (Detection time + off delay. Approx. 2 sec.)

### Output operation in Individual mode

Output terminal	Output operation
ALARM①	Flame sensor alarm signal (Detection time + off delay. Approx. 2 sec.)
ALARM②	Passive sensor alarm signal (One shot, Approx. 2 sec.)

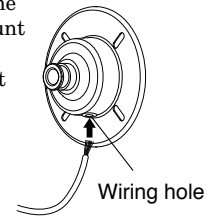
### Allowable wiring distance between sensor and power source

Wire Size \ Voltage	12V	24V
AWG 22 (φ 0.65mm)	350m (1,100')	2,600m (8,500')
AWG 20 (φ 0.8mm)	600m (1,950')	4,200m (13,750')
AWG 18 (φ 1.0mm)	950m (3,100')	6,600m (21,650')

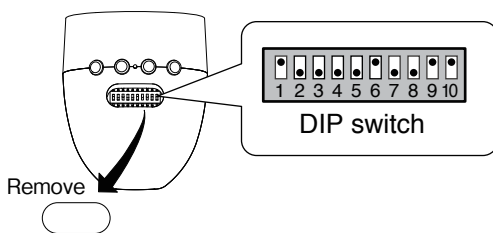
\* The maximum wire length, when two or more units are connected, is the above distance divided by the number of units.



When wiring inside the mounting flange, mount it so that the wiring hole of the flange is at the bottom, and take sufficient rainproof measures such as caulking around the flange, the mounting screw, and the wiring hole.



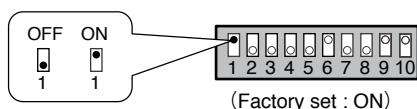
# 7 MODE SETTING



\* Remove the rubber plug when setting and be sure to reattach it afterward.

### Alarm LED (DIP switch 1)

Set alarm LED of both flame and passive sensors to light ON/OFF.



### Alarm memory

**ON (Auto)** : When the sensor initiates an alarm signal, the alarm LED blinks for 3 minutes, lights for 47 minutes, and automatically goes off afterward. If the alarm is issued while it is lit, the timer will be reset and it will be lit again for 47 minutes. (Retrigger operation)

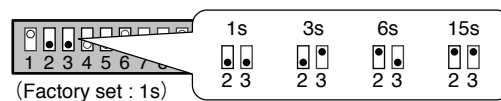
**OFF** : Disable memory function

\* If you want to reset the sensor (blinking or lit), turn it on again after turning off the power.

\* When AND mode is selected, the alarm memory functions only for the flame sensor.

### Detection timer in flame sensor (DIP switch 2,3)

This sensor initiates flame alarm signal when the flame sensor continues to detect a flame for longer than the set detection timer.



<Recommended setting>

For AND mode : 1 sec.

For INDIVIDUAL mode : 3, 6, 15 sec.

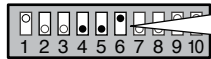


When the intensity of the UV light received by the sensor is weak (related to the size and distance of the flame), the alarm may start later than the set detection timer. Discontinuous disturbances (ultraviolet rays) not exceeding the set timer will be cancelled regardless of the intensity.

**Detection mode setting (DIP switch 4,5,6)**

“AND” mode : The sensor outputs alarm signal when both flame and passive sensors detect during the set AND timer. (ALARM②)  
 In addition, alarm signal will be output even when the flame sensor alone detects twice within the AND timer, or if the flame continues for flame duration time 30 or 60 sec. (ALARM①)  
 \* When AND operation is set, the detection sensitivity of the flame sensor is fixed at “H” (100%).

“Individual” mode : The sensor outputs flame or passive alarm signal when either of the sensors detect.  
 ● Detected by flame sensor : ALARM① ● Detected by passive sensor : ALARM②  
 Adjust flame sensor sensitivity to detect the size of flame (strength of ultraviolet ray) .  
 \* Detection distance for “L” is half of that for “H” in case of same flame size  
 \* Sensitivity for passive sensor can be adjusted.

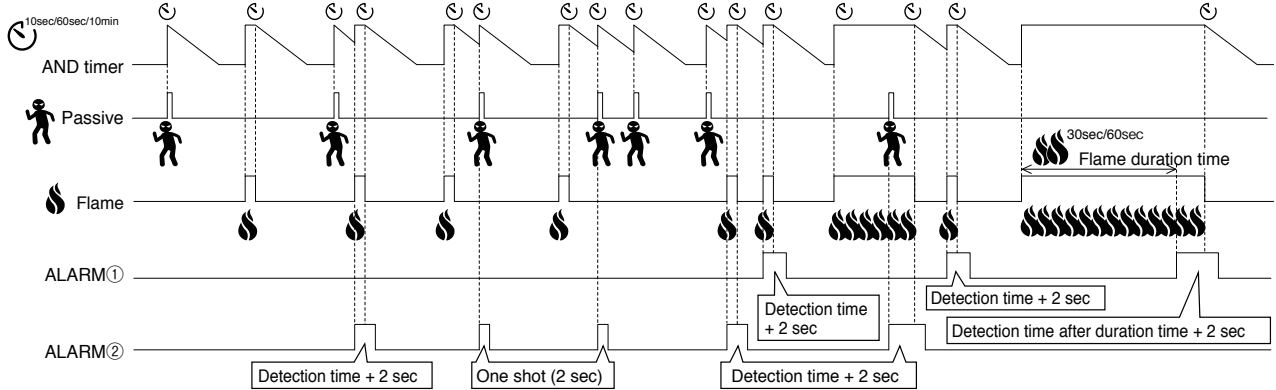


(Factory set : AND)

- \* AND timer 60sec
- \* Flame duration time 30sec

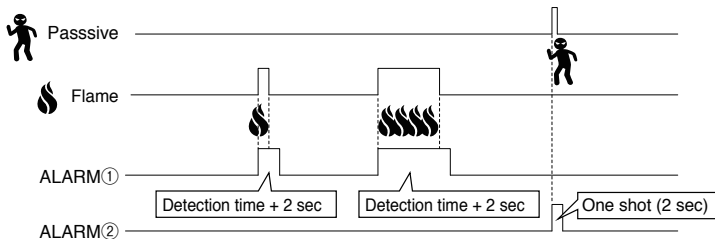
Individual mode		AND mode		
Setting	Flame sensor sensitivity	Setting	AND timer	Flame duration time
	L (50%)		10sec ()	60sec () 30sec ()
	H (100%)		60sec ()	60sec () 30sec ()
			10min ()	60sec () 30sec ()

**Time chart in AND mode**



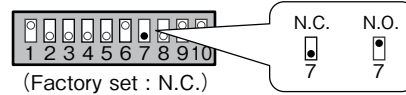
⚠ ALARM ① is output even when detecting only the flame to notify spontaneous combustion or spread of fire from the outside of the detection area.

**Time chart in Individual mode**

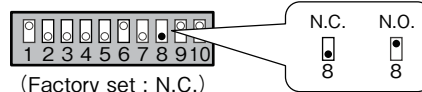


⚠ When installed outdoors with “Individual” mode, the passive sensor may detect something other than the human body due to its operating principle of detecting temperature changes. Therefore, select the sensitivity of 20%,50% or 80% according to the site environment, and sufficiently perform operation check.

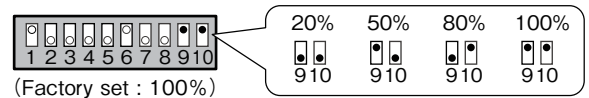
**Contact output changeover setting (ALARM①:DIP switch 7)**



**Contact output changeover setting (ALARM②:DIP switch 8)**



**Sensitivity adjustment (Passive sensor: DIP switch 9,10)**



(Recommended setting)  
 For “AND” mode : 100%  
 For “Individual” mode : 20%, 50%, 80%

# 8 OPERATION CHECK



It is dangerous to perform operation testing in fire-prohibited environments. Operation tests should only be performed in accordance with site fire safety regulations, under the supervision of responsible persons. During AND operation, be sure to check not only the LED lights but also the operation of the connected device.

When the power is turned ON, the alarm LED (passive sensor : RED) starts blinking, which shows warm up status. Wait approximately 1 minute until blinking ends.

After the blinking ends, 5 minute test mode starts.

During the test mode, the LED lights when each sensor detect, regardless of the alarm LED settings.

After the test mode ends, the LED follows the display settings.

## <AND mode >

Check ALARM ①

Ignite twice (interval : about 5 sec) a lighter etc. for longer than setting time in "Detection timer "while walking within the detection area to make sure that the alarm signal is output from ALARM① terminal.

Check ALARM ②

Ignite a lighter etc. for longer than setting time in "Detection timer "while walking within the detection area to make sure that the alarm signal is output from ALARM② terminal.

## <Individual MODE >

① Ignite a lighter etc. for longer than setting time in "Detection timer "within the detection area to make sure that the alarm LED (flame sensor) lights and the alarm signal is output from ALARM① terminal.

② Walk within detection area to make sure that the alarm LED (passive sensor) lights and the alarm signal is output from ALARM② terminal.

Start actual operation after confirming that the unit is functioning properly.

# 9 TROUBLE SHOOTING

Solve possible problems according to the following table .

If normal operations cannot be restored by these remedies actions, contact either the dealer from whom you bought the unit or TAKEX.

Status	Cause	Remedy
<b>Completely inoperative</b>	①No power supply (Broken wire or improper wiring) Low power supply voltage ②Object in front of detection area. (Including glass, transparent resin ) ③Not yet the 1minute warming up completed. (Blinking Alarm LED )	①Check power supply and connecting wire. ②Remove the object. ③Wait for approx. 1 minute.
<b>Sometimes inoperative</b>	①Improper area setting. ②Detection window gets dirty with dust, grease, etc. ③Low power supply voltage.	①Relocate the sensor to appropriate position. ②Clean up the detection window. ③Set the power supply voltage properly.
<b>Activated without flame</b>	①Large electrical noise source such as radio station or high-voltage wire nearby. ②Unexpected ultraviolet rays nearby. (Refer to: "3 PRECAUTIONS")	①Relocate the sensor to appropriate position. ②Remove the source of ultraviolet rays or relocate the sensor.
<b>Activated without person has passed</b>	①Unstable power supply voltage. ②Something moving objects within detection area or too rapid temperature variations. ③Large electrical noise source such as high-voltage wire nearby. ④Intense reflection of sun light or car head light shining on the sensor. ⑤Detect the object pass by outside of detection area. ⑥Unit detects pets. ⑦Unit detects an automatic cleaning robot.	①Set the power supply voltage properly. ②Remove the source of variations. ③Relocate the sensor to appropriate position. ④Relocate the sensor to appropriate position. ⑤Readjust the detection area. ⑥Keep pets away from the detection area. ⑦Keep automatic cleaning robots away from the detection area.
<b>The alarm LED lights, but connected units are inoperative</b>	①Poor contact output connection or broken wire or short circuit. ②Improper alarm output setting. ③The connected unit is faulty.	①Fix poor connection or broken wire. ②Correct the alarm output setting. ③Check the connected unit.

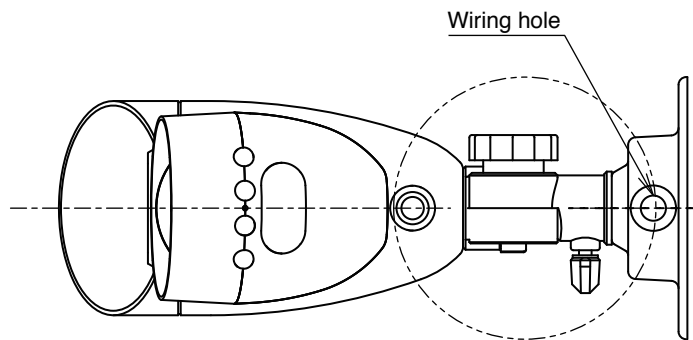
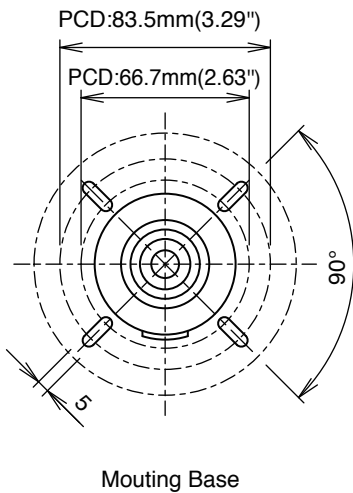
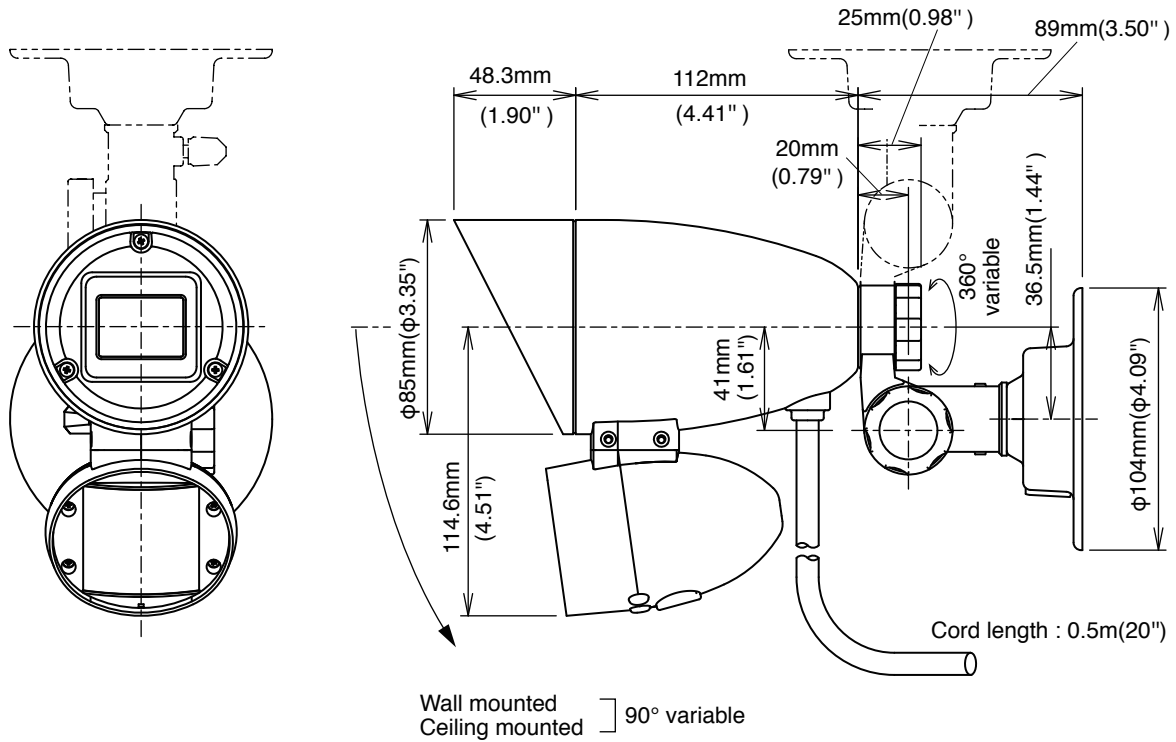
### Maintenance

- Check the operation once a week.
- Do not fail to check operation whenever a furniture in the place is moved in and out of detection area. When housing is stained, remove the stain with a soft cloth using water or mild detergent. Do not use such chemicals as thinner or benzine to clean the housing.

# 10 SPECIFICATIONS

Product name	FLAME PASSIVE SENSOR
Model	FP-5500E
<b>Flame sensor</b>	
Detection system	Ultraviolet rays (Detection wave length 185 to 260nm)
Detection distance	15m(50') : 15cm(5.90") flame on 4cm (1.57") square pan in front 10m(33') : 7cm (2.75" ) lighter flame in front
Detection area angle	Approx. 120° conically
Detection setting	Detection timer 4 steps (1sec, 3sec, 6sec, 15sec) Detection sensitivity (H [100%], L [50%]) *Selectable only at "Individual" mode (Fixed to H [100%] at "AND" mode)
Alarm LED (RED)	Inside front window • Lighting at alarm (Detection time + off delay. Approx. 2 sec.) • Blinking (3 min) and Lighting (47 min) at memory
<b>Passive sensor</b>	
Detection system	Passive infrared
Detection area angle	Wide Angle 15m (49') Max
Sensitivity setting	4 steps (100%, 80%, 50%, 20%)
Alarm LED (RED)	Inside front lens • Lighting at alarm (One shot. Approx. 2 sec.) • Blinking (3 min) and Lighting (47 min) at memory *No memory available at "AND" mode
Power supply	10V to 30VDC (non-polarity)
Power consumption	25mA Max.
<b>Alarm① output</b>	
Contact operation	<b>[AND mode]</b> When flame sensor detects again within set "AND" timer, (Detection time after 2nd detection + off delay. Approx. 2 sec.) or When flame sensor detects for "Flame duration time" (Detection time after 30/60 sec + off delay. Approx. 2 sec.)  <b>[Individual mode]</b> When flame sensor detects (Detection time + off delay. Approx. 2 sec.)
Contact method	Dry contact relay (Semi-Conductor) (N.O. / N.C. selectable)
Contact capacity	30V (AC/DC) 0.25A Max. (resistive load)
<b>Alarm② output</b>	
Contact operation	<b>[AND mode]</b> When both flame and passive sensor detect within set "AND" timer (Detection time (2 sec Min.)  <b>[Individual mode]</b> When passive sensor detects (One shot. Approx. 2 sec)
Contact method	Dry contact relay (Semi-Conductor) (N.O./N.C. selectable)
Contact capacity	30V (AC/DC) 0.25A Max. (resistive load)
Alarm memory	Reset after blinking (3 min) and lighting (47 min) (Operative individually with flame and passive sensors) * No indication when Alarm LED is off
Ambient temperature range	-20°C to + 50°C (-4°F to + 122°F) without condensation and freeze
Mounting position	Indoor / outdoor (IP43)
Connections	Lead wire [Cord length : 0.5m (20")](6 core : 2×power, 4×alarm)
Weight	Approx. 550g (including flange)
Appearance	Body : Resin (Black)

# 11 EXTERNAL DIMENSIONS



## Limited Warranty :

TAKEX products are warranted to be free from defects in material and workmanship for 12 months from original date of shipment. Our warranty does not cover damage or failure caused by Acts of God (including inductive surge by lightning), abuse, misuse, abnormal usage, faulty installation, improper maintenance or any repairs other than those provided by TAKEX. All implied warranties with respect to TAKEX, including implied warranties for merchantability and implied warranties for fitness, are limited in duration to 12 months from original date of shipment. During the Warranty Period, TAKEX will repair or replace, at its sole option, free of charge, any defective parts returned prepaid. Please provide the model number of the products, original date of shipment and nature of difficulty being experienced. There will be charges rendered for product repairs made after our Warranty period has expired.

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