

TAKEX PASSIVE INFRARED SENSOR

Wide angle protection : PA-8410E

Vertical curtain protection : PA-8420E

Instruction Manual

We appreciate your purchase of a TAKEX passive infrared sensor. This sensor will provide long and dependable service when properly installed. Please read this Instruction Manual carefully for correct and effective use.

Please Note : This sensor is designed to detect intrusion and to initiate an alarm ; it is not a burglary-preventing device.

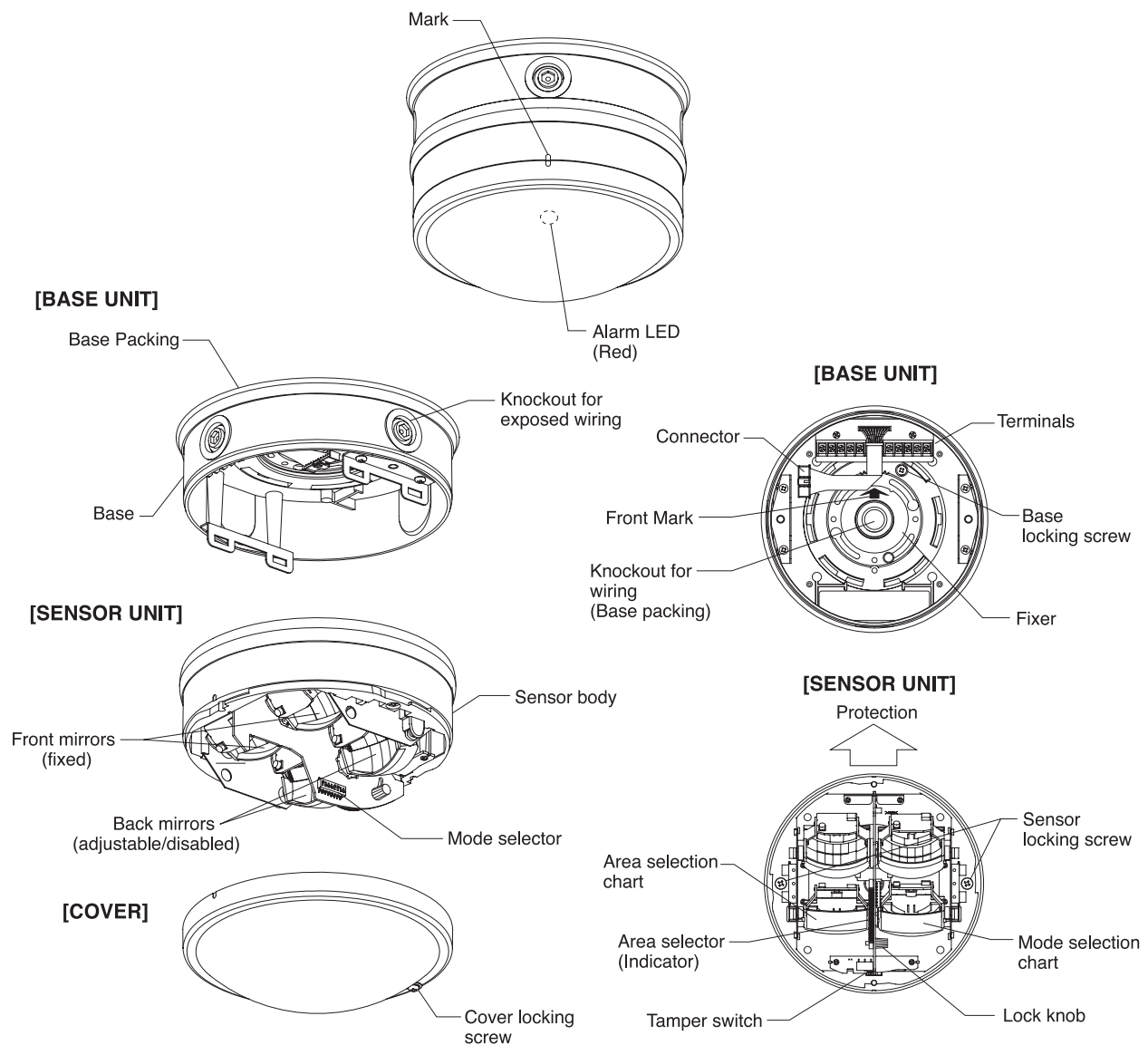
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1 PRODUCT DESCRIPTION

PA-8410E/PA-8420E are passive infrared sensors which detect far-infrared rays emitted from a human body and issue an alarm signal.

With its unique high-density protection area, the unit can protect places with high ceilings such as showrooms, halls, factories and warehouses.

2 PARTS DESCRIPTION



3 DETECTION AREA

Install the unit at the height of 13'(4m) to 26'(8m) from the ground.

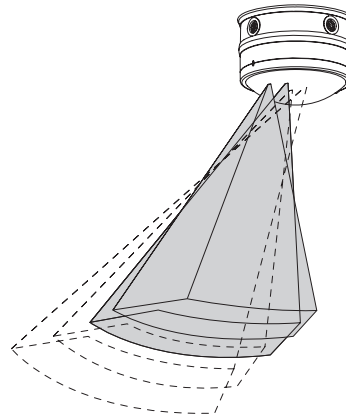
The detection area is created by 4 mirrors equipped inside the unit.

Installation less than 13'(4m) may spoil the original functionality.

Two back mirrors are movable, enabling the adjustment of the max. detection distance.

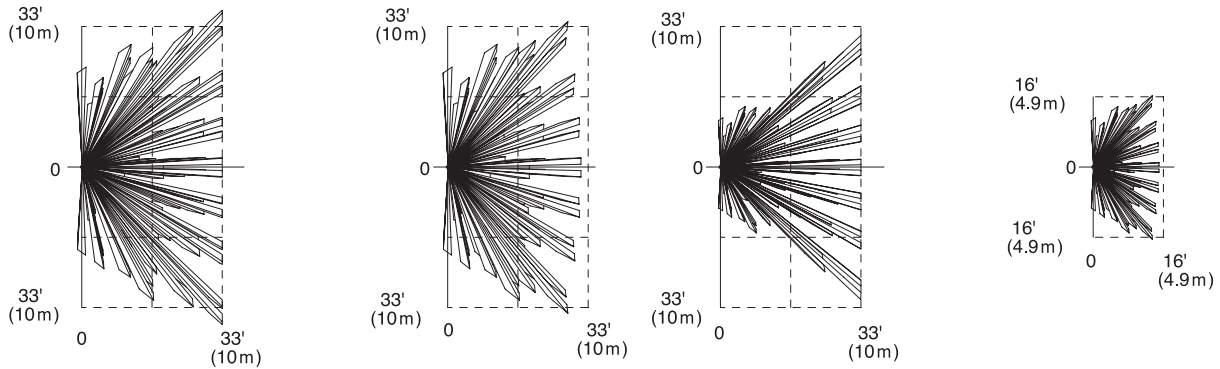
With area control function (A/C), each protection area coverage of the back mirrors can be eliminated.

(Refer to section "7. PATTERN SETTING" & "10. FUNCTIONS".)

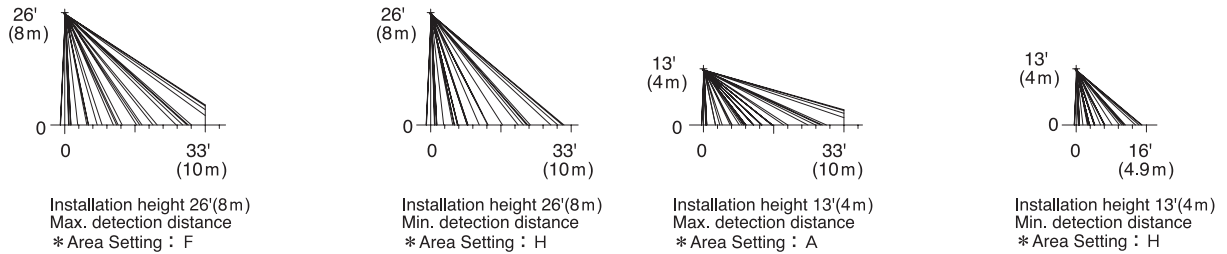


Wide angle protection <PA-8410E>

[TOP VIEW]

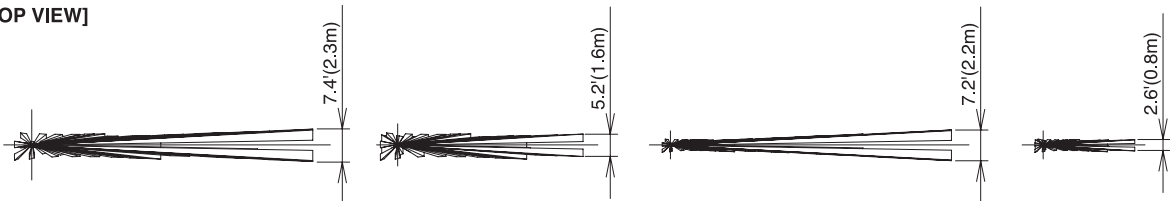


[SIDE VIEW]

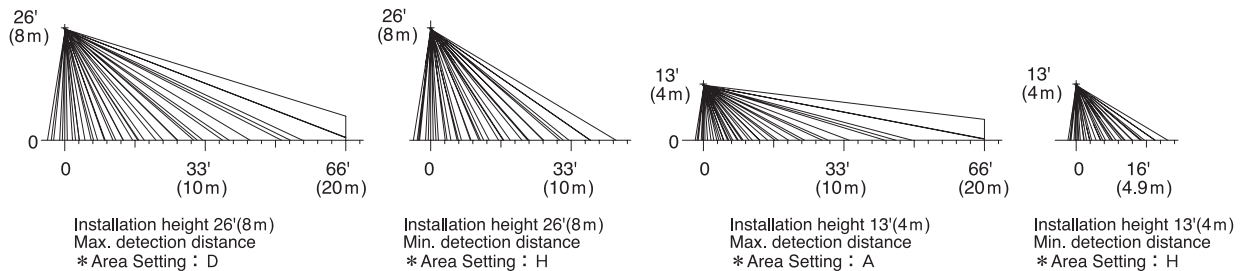


Vertical curtain protection <PA-8420E>

[TOP VIEW]

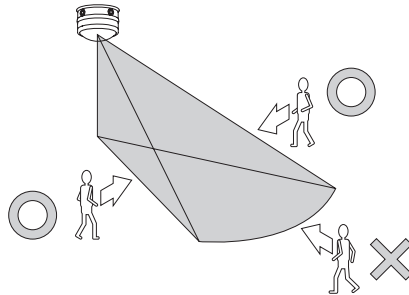


[SIDE VIEW]



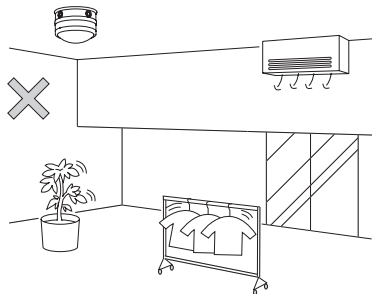
4 PRECAUTIONS

- Do not install the unit in a location subject to excessive humidity or splashing water.
- Do not pour water directly on this unit as it is designed to be rainproof, not waterproof.
- Install the unit in such a direction that people are more likely to cross the protection area.
- The unit is designed for ceiling mounting. For wall mounting, use attachment (Optional).
- Area setting should be done according to this instruction manual and ensure target to be protected is within specified protection area.
- Passive infrared sensor is designed to detect far-infrared energy changes caused by the movements of human beings. Therefore, similar changes caused by some other factors in the protection area could trigger an alarm.

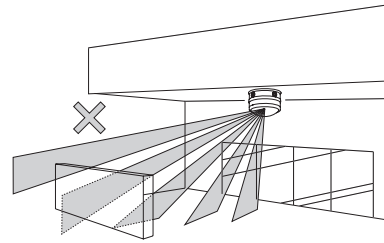


- When the target to be protected approaches toward the sensor, sensitivity could be deteriorated since the unit is unable to detect the changes in the far-infrared energy.

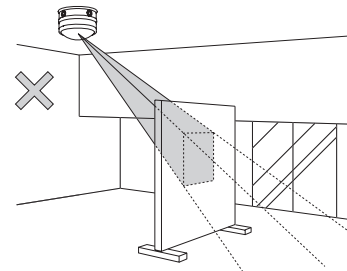
- After installing the unit, adjust protection area and check its operation.
- Do not install in an environment subject to electrical noise or intense vibration.
- Do not install in an environment subject to strong light such as sun light or spot light coming directly into the cover face of the sensor.
- Do not install in an environment subject to excessive temperature fluctuations.
- Do not install in an environment subject to the movement of heavy vegetation such as large bushes, trees etc. which could trigger detection if they are in the sensor field of view.






- Make sure that the sensor field of view is within the area to be protected.



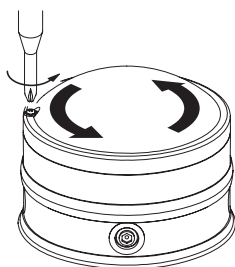
- Remove objects including clear glass which would block the infrared ray and create no detection zone.



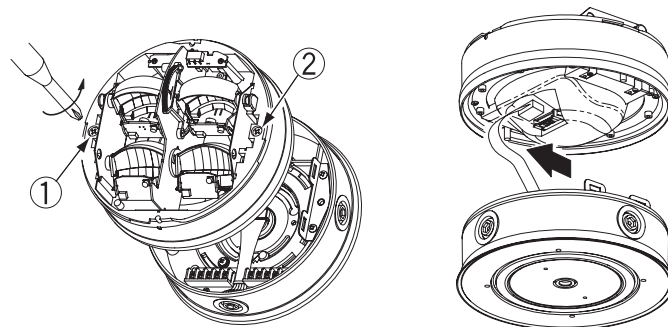
- Do not install in a place where people can easily reach the sensor.
- Use of equipment exceeding contact capacity specified for this unit may result in fire. 
- Use of input voltage exceeding specifications (9 to 30V DC) may result in fire or electric shock. 
- The unit should not be disassembled or modified due to risk of electric shock or fire hazard. 
- Do not drop the unit, or subject to hard knocks.
- When the unit is soiled, wipe it with a soft cloth. Do not use chemicals such as thinner or benzine.
- Please make operation check periodically, say once a week or so.

5 INSTALLATION

1. Loosen the cover locking screw and detach the cover by turning it counterclockwise.



2. Loosen inside sensor locking screws (2pcs) and detach the base from the sensor body. Remove the connector from the sensor body.



3. Install the base.

Indoor ceiling mounting

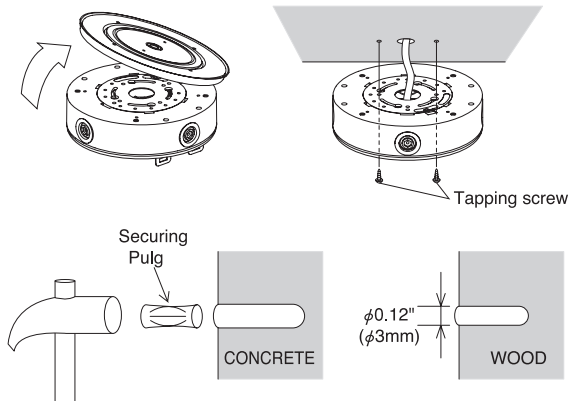
Remove the base packing and fix the unit using the screw holes on the fixer. Place the base on the ceiling as a template for drilling and mark the screw holes. Make sure that the front mark on the base points to the area to be protected. For wooden ceiling, use tapping screws and for concrete ceiling, use plug etc.

• Pre-drill on ceiling

Concrete ceiling: Refer to specifications of the securing plug used.

Wooden ceiling: 0.12"(3mm) dia.

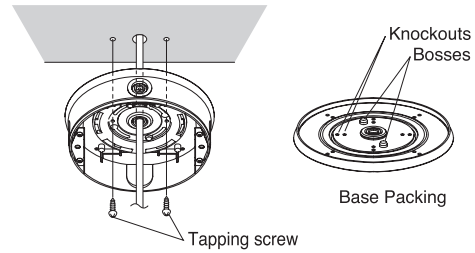
Outlet box and switch box may be suitable for more stable installation.



Outdoor ceiling mounting

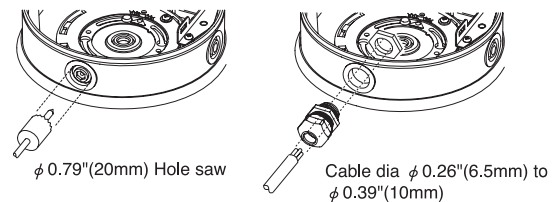
Use the base packing when installing the unit outside. When using the long holes on the fixer to fix the base, cut off the bosses on the base packing and make sure to use knockouts to screw the unit.

Pre-drill the ceiling in the same way that the unit is installed inside.



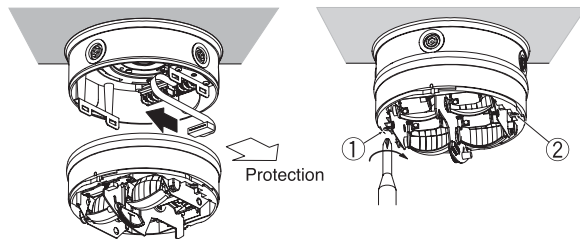
For mounted wiring, put the wire through the wiring hole placed on the center of the base.

For exposed wiring, break the knockout on the side of the base and put the wire through the hole using water-proof using or conduit.

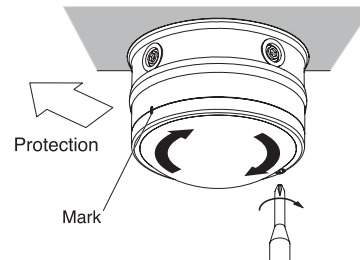


※Please apply sealing materials to the screws and wiring hole to prevent water from entering.

4. After installing the base, connect terminals.
(Refer to section "6. WIRING".)
5. Connect the connector to the sensor body and attach the sensor body to the base.
Then tighten the sensor locking screws and fix the unit.



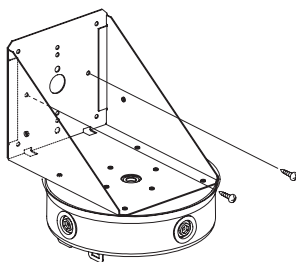
6. Adjust protection area and select mode settings.
(Refer to section "7. PATTERN SETTING" & "10. FUNCTIONS".)
7. Attach cover and tighten the cover locking screw clockwise.



Wall mount (Wall attachment is sold separately.)

For wall mount, use wall attachment (Optional: BL-8400).

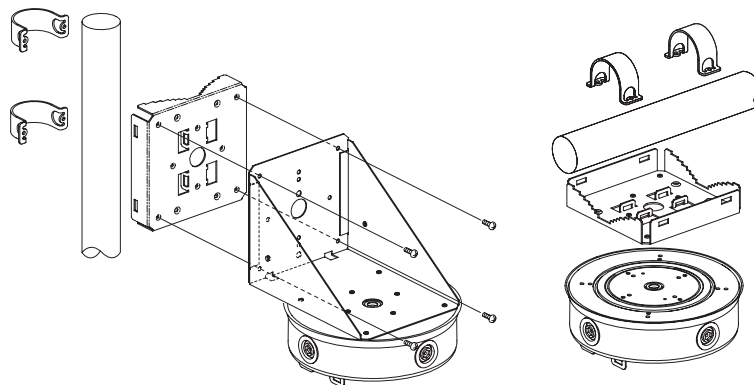
Mount the wall attachment as following picture before installing the base.



Pole mount (Pole attachment is sold separately.)

For pole mount, use pole attachment (Optional: BP-03).

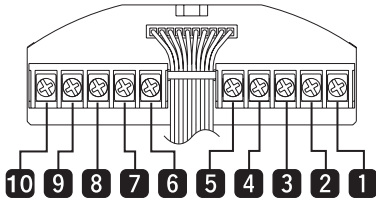
Mount the pole attachment as following picture before installing the base.



When installing the unit to the pole which is placed in parallel with the ground, mount the pole attachment to the pole before installing the base to it.

6 WIRING

Terminal configuration



Allowable wiring distance between sensor and power source

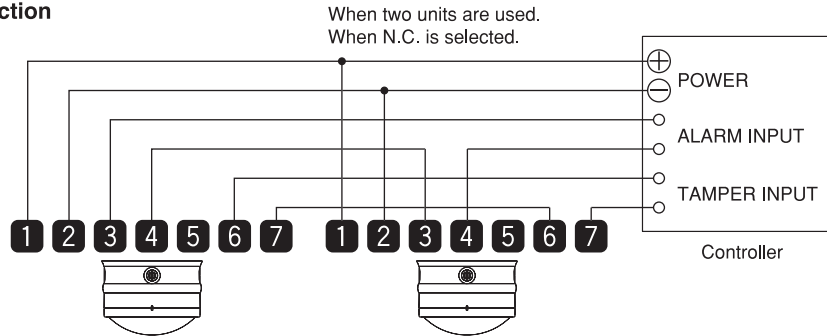
size of wire used	Distance at 12VDC
AWG 22 (Dia. 0.65mm)	830 ft.(250m)
AWG 20 (Dia. 0.80mm)	1460 ft.(450m)
AWG 18 (Dia. 1.00mm)	2300 ft.(700m)

Note 1) The maximum wire length, when two or more units are connected, is the above distance divided by the number of units.

2) The protection circuit can be wired to a distance of 3,280 ft.(1000m) with AWG 22 (0.65mm dia.) wire.

- 1** **2** ●Power (non-polarity)
: 9 to 30V DC 30mA Max.
- 3** **4** **5** ●Alarm
N.C. COM. N.O.
: Dry contact (Semi-conductor) output (N.C./N.O.)
: Protective resistor 3.3Ω
: One-shot output at detection (Approx. 2sec.)
: A series of continuous output when detecting functional troubles (Until recovery)
: A series of continuous output when detecting low supply voltage (Until recovery)
: Rating: 24V (AC/DC) 0.25A (resistive load)
- 6** **7** ●Tamper output
: Dry contact output (N.C.)
: Real time output when the cover is detached from the unit.
: Rating: 30V (AC/DC) 0.1A (resistive load)
- 8** ●L/C (LED control) input
: Alarm LED lighting is controlled on the side of the input voltage (-).
- 9** ●A/C (Area control)-1 input
: Protection area 1 is enabled or disabled on the side of input voltage (-).
- 10** ●A/C (Area control)-2 input
: Protection area 2 is enabled or disabled on the side of input voltage (-).

Standard connection



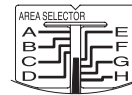
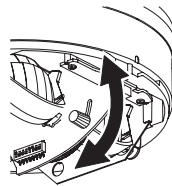
7 PATTERN SETTING

Adjustment of detection distance

4 mirrors are equipped inside the sensor. 2 front mirrors are fixed and designed to create the fixed protection area near the sensor. 2 back mirrors are movable.

By rotating them, the Max. detection distance can be adjusted. Loosen the lock knob and move the area selector backward or frontward.

Select the most suitable detection distance (A to H), referring to the indicator placed on the area selector.

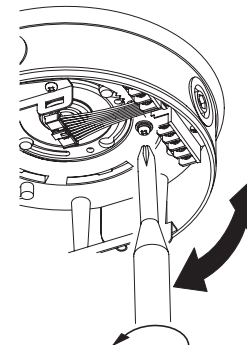


Area Setting E

[i.e.] When PA-8410E is to protect on area 33' (10m) at 23' (7m) height, turn the area selector such that the indicator shows "E".

Adjustment of detection direction

Detach the sensor body from the base. Loosen the base locking screw on the fixer and the base can be turned right or left. Adjust the most suitable detection direction by rotating the base.



PA-8410E

AREA SELECTABLE	MAX. DETECTION DISTANCE(ft.) (m)							
	13 4.0	16 4.9	20 6.0	23 7.0	26 8.0	30 9.1	33 10.0	
INSTALLATION HEIGHT (ft.)	13 4.0	G	E	C	B	B	A	A
	16 4.9	G	F	E	D	C	C	B
	20 6.0	H	F	G	F	E	D	C
	23 7.0	—	H	F	H	G	F	E
	26 8.0	—	—	G	F	H	G	F

PA-8420E

AREA SELECTABLE	MAX. DETECTION DISTANCE(ft.) (m)							
	26 8.0	33 10.0	40 12.0	46 14.0	49 15.0	59 18.0	66 20.0	
INSTALLATION HEIGHT (ft.)	13 4.0	E	D	C	B	B	A	A
	16 4.9	F	E	D	C	C	B	B
	20 6.0	H	F	E	D	D	C	C
	23 7.0	G	H	F	E	E	D	D
	26 8.0	H	F	G	F	F	E	D

When the area marked with is selected, use A/C-1.

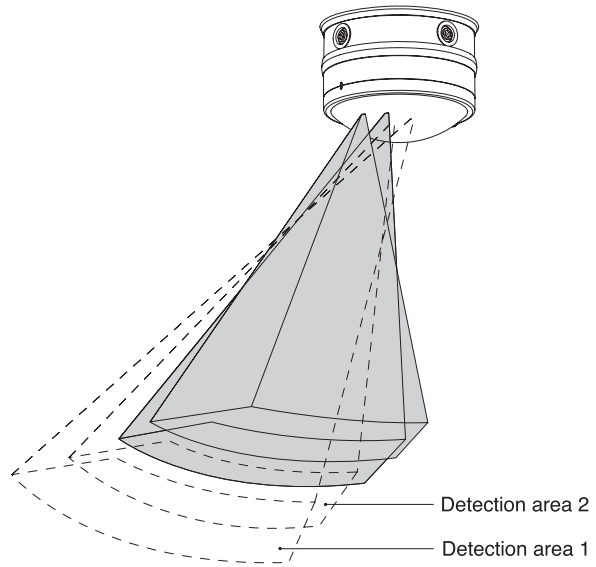
Area masking

Detection area created by each 2 back mirrors can be masked by the area control terminals. (A/C-1 and A/C-2)
(Refer to section "10. FUNCTIONS".)

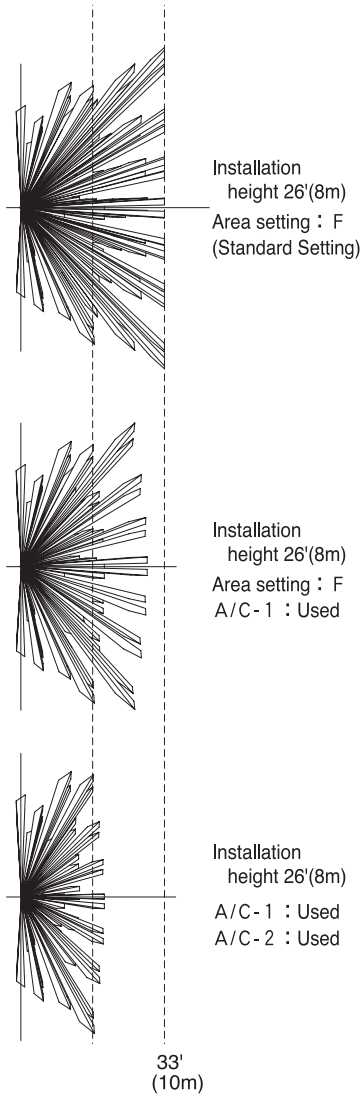
Max.detection distance when A/C-1 and A/C-2 are used.

		MAX.DETECTION DISTANCE	
		PA-8410E	PA-8420E
INSTALLATION HEIGHT	13'(4.0m)	6.6'(2.0m)	11.5'(3.5m)
	16'(4.9m)	8.2'(2.5m)	14.8'(4.5m)
	20'(6.0m)	11.5'(3.5m)	18'(5.5m)
	23'(7.0m)	13'(4.0m)	21.3'(6.5m)
	26'(8.0m)	14.8'(4.5m)	24.8'(7.5m)

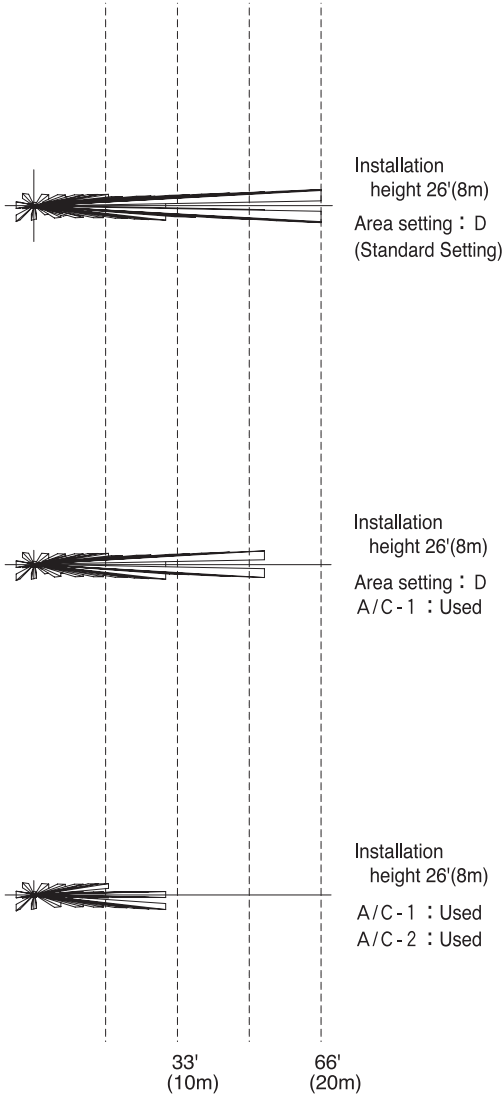
※When A/C-1 and A/C-2 are used, detection area 1 and 2 are masked.
Therefore Max.detection distance can not be adjusted by the area selector.
Max.detection distance depends on the installation height of the unit.



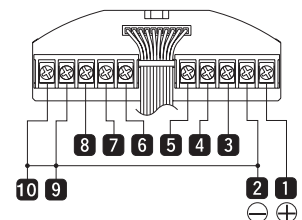
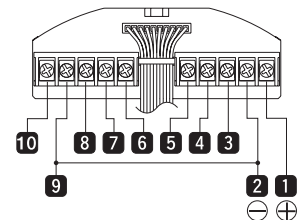
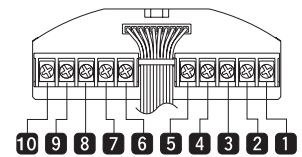
Wide angle protection (PA-8410E)



Vertical curtain protection (PA-8420E)



Terminal arrangement



8 OPERATION CHECK

1. Alarm LED (Red) blinks for about 1 min. after supplying power. The unit does not operate during this warming up period.
2. After the alarm LED stops blinking, walk across the detection area and make sure that the alarm signal is issued. Check operation on both sides of sensor and controller. Alarm LED lighting is synchronized with alarm output.
3. Readjust the detection area or operation mode if they are inappropriate. After confirming the sensor works without any problem, start operation.

9 MODE SETTINGS

MODE SELECTOR								
1 LED	2	3	4/5 SENS. (%)	6/7 COUNT	8			
<input type="checkbox"/> ON			<input type="checkbox"/> 120	<input type="checkbox"/> 80	<input type="checkbox"/> 1	<input type="checkbox"/> 3		
<input type="checkbox"/> OFF			<input type="checkbox"/> 100	<input type="checkbox"/> 60	<input type="checkbox"/> 2	<input type="checkbox"/> 4		

Pulse count is not selectable for PA-8420E.

Alarm LED (Switch 1)

In the initial setting, alarm LED is ON; lighting is synchronized with alarm output. The alarm LED is disabled by turning it OFF. Alarm LED can be remotely enabled by the alarm LED control terminal even when the switch is turned OFF.

Sensitivity adjustment (Switch 4 & 5)

Sensitivity is adjustable for 60%, 80%, 100% and 120%. [Initial setting: 100%]
Select high sensitivity when the temperature of the protected wall or floor is high.

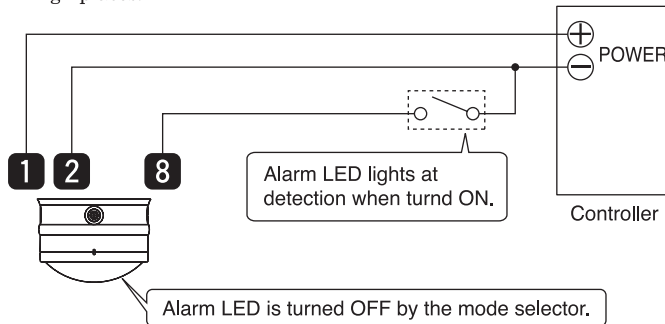
Pulse count selectable (Switch 6 & 7)

Pulse count is selectable for one, two, three and four counts. [Initial setting: two counts]
Select four counts in the places where small animals are likely to cross or something which could result in heat source is placed.
Note: This setting is only available for PA-8410E.

10 FUNCTIONS

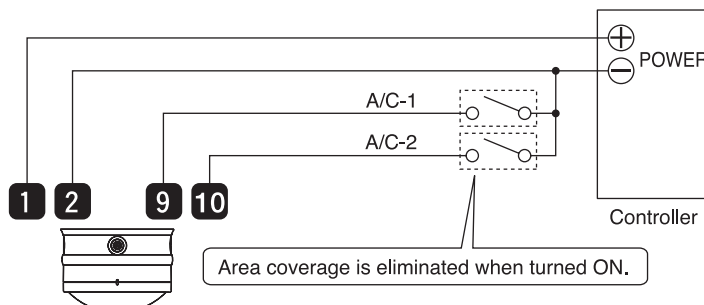
LED control function (L/C)

Even when the alarm LED is turned OFF by the mode selector, the LED can be enabled by closing L/C 8 (Alarm LED control) terminal and power (-). LED control function enables simple walk test functionality when the unit is installed in high places.



Area control function (A/C)

Area coverage can be remotely eliminated by closing area control terminals (A/C-1 9 and A/C-2 10) and power terminal (-).



Tamper signal

The unit issues tamper signal when the cover is removed or its installation is unstable. It will stop issuing an alarm once the cover is attached correctly to the unit. Check operation of the sensor after the tamper signal is issued.

Trouble alarm

The unit issues a series of continuous LED lighting and alarm output when it suffers functional problems such as circuit failure or wire disconnection. It stops issuing the alarm when resetting the power. After 1min sensor stabilizing period, the unit starts monitoring troubles again. When the trouble alarm is issued, check operation of the sensor immediately.

Low supply voltage alarm

When the supply voltage of the sensor drops to less than 8V, the unit issues low supply voltage alarm. In this case, the unit issues continuous LED lighting and alarm output. When the supply voltage returns to normal, the alarm output stops automatically. When the low supply voltage alarm is issued, check the supply voltage immediately.

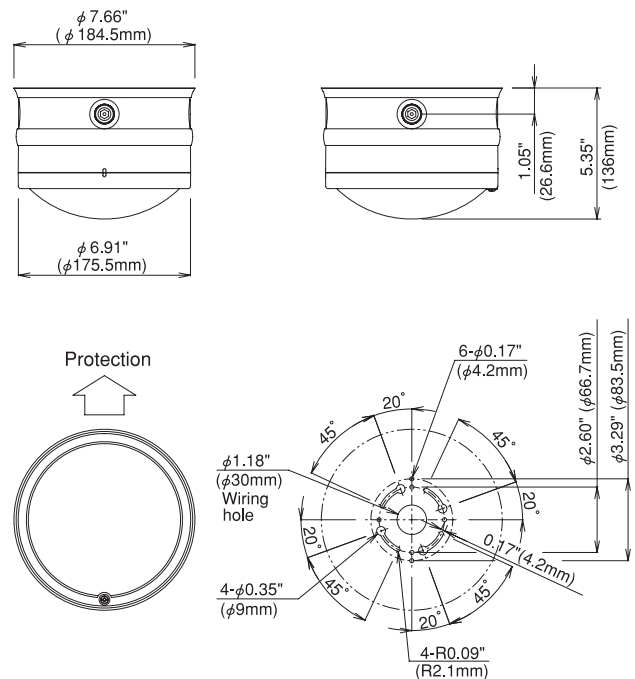
11 TROUBLESHOOTING

Trouble	Check	Corrective Action
Completely inactive	No power supply, broken wire or improper voltage.	Correct power supply or replace broken wire.
	Not yet 1 minute after power turned on (Alarm LED is flickering).	Allow for warming up time (about 1 min.)
	Cover Shielded by substances (including glass).	Remove the substances.
	Improper area adjustment(including distance).	Readjust the protection area setting.
	Improper operation mode setup (including distance).	Reinstall the operation mode setting.
Sometimes inactive	Improper area adjustment(including distance).	Readjust the protection area setting.
	Cover face is soiled with dust or water drop.	Clean the cover with soft cloth.(Do not use chemicals such as thinners or alcohol.)
Activated when no person has passed	Unstable power voltage.	Stabilise the power voltage.
	Something moving in protected area or too rapid temperature variations.	Remove the cause.Set the sensitivity setting for lower.
	Large electrical noise source such as power machine nearby or its wiring close to that of sensor.	Relocate device..
	Intense reflection of sun light or head light shining on the sensor.	Relocate device.Shield with a blind.
	Is the sensor reacting to passersby outside ?	Readjust the protection area setting.
	Any animals like cats or dogs coming into detection area?	Prevent them coming in.

12 SPECIFICATIONS

Model	PA-8410E	PA-8420E
Detection system	Passive infrared	
Coverage	Wide angle 33' (10m) Max. 56 Zones (112 beams)	Vertical curtain 66' (20m) Max. 30 zones (60 beams)
Coverage adjustment	Vertical : 24° Horizontal : ±15°	
Mounting position	Indoor or outdoor ceiling	
Installation height	13' (4m) ~ 26' (8m)	
Supply Voltage	9 to 30V DC (non-polarity)	
Current consumption	30mA Max.	
Alarm output	Dry contact (Semi-conductor) output (N.C./N.O.) 24V(AC/DC) 0.25A(resistive load) (Protective resistor 3.3 Ω) Warm up : Appox. 1min. (No alarm condition) One-shot output at detection (Appox. 2sec.) Continuously output when detecting functional troubles. Continuously output when detecting low supply voltage.	
Tamper output	Dry contact output : (N.C.) 30V(AC/DC) 0.1A(resistive load) Tamper output : Real time output	
Alarm LED	Red LED Blinks during warm up (Approx. 1min.) One shot lights (Approx. 2sec.) at detection Continuously lights when detecting functional troubles. Continuously lights when detecting low supply voltage.	
Functions	Trouble alarm Low supply voltage alarm Tamper signal LED control (L/C) Area control (A/C) Alarm LED (ON/OFF) Sensitivity adjustable for 60/80/100/120% Pulse count selectable for 1/2/3/4	
Ambient temperature range	+4°F to +122°F (-20°C to +50°C) without condensation	
Wiring	Terminals	
Weight	33.25oz (950g)	
Appearance	Body: AES resin, Cover: PE resin	
Accessories	Water-proof grommet: 1pc, tapping screw: 2pcs	

13 EXTERNAL DIMENSIONS



■ OPTIONAL: Wall attachment BL-8400
: Pole attachment BP-03

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, 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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