TAKEX PASSIVE INFRARED SENSOR

Wide angle protection : PIR-30WE
Vertical curtain protection : PIR-50NE

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.
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.
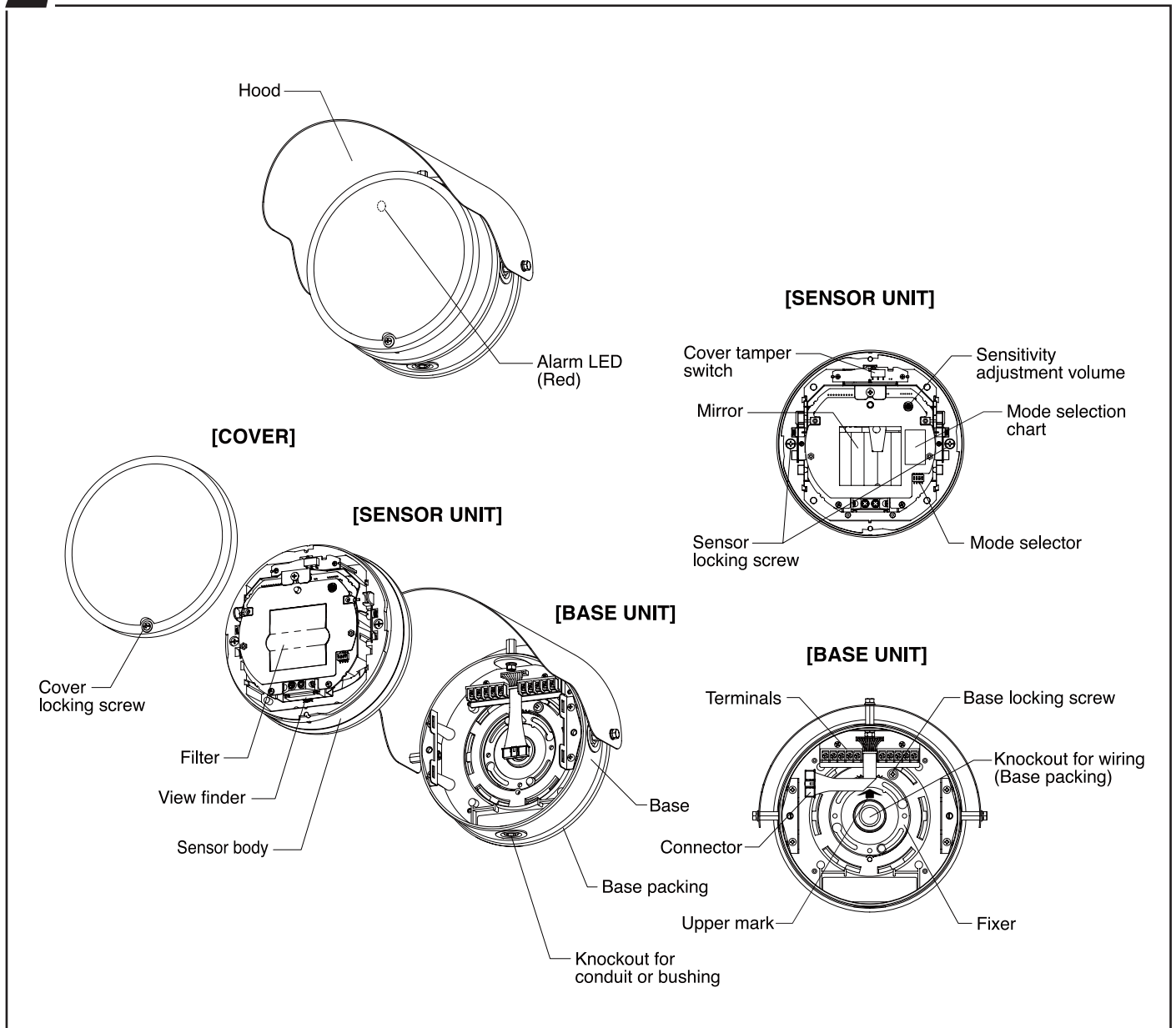
1 PRODUCT DESCRIPTION

PIR-30WE/PIR-50NE are passive infrared sensors which detect far-infrared rays emitted from a human body and issue an alarm signal.
With its unique detection area especially designed for long-distance protection and its housingcases strong enough to be used outside, the unit is suitable for outdoor long-distance protection as well as perimeter protection.
The unit equipped with N.C./N.O. output can also be used as a controller for lights or an activator for other equipments.

2 PARTS DESCRIPTION

Hood

Alarm LED (Red)

[SENSOR UNIT]

Cover tamper switch

Sensitivity adjustment volume

Mirror

Mode selection chart

Sensor locking screw

Mode selector

[COVER]

[SENSOR UNIT]

Cover locking screw

Filter

View finder

Sensor body

[BASE UNIT]

Base

Base packing

Knockout for conduit or bushing

[BASE UNIT]

Terminals

Base locking screw

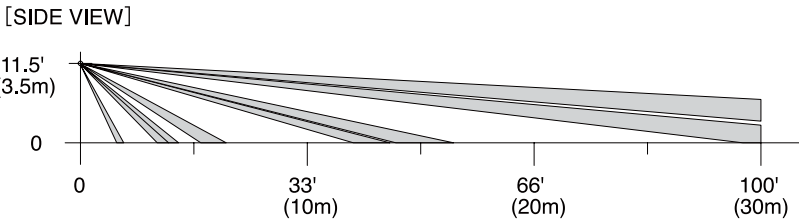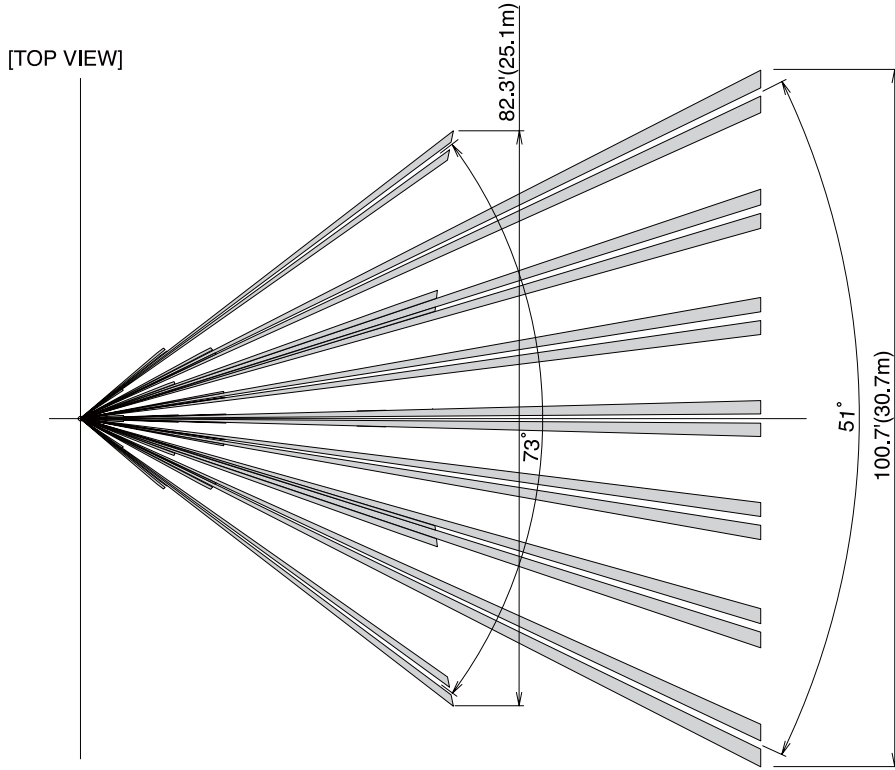Knockout for wiring (Base packing)

Connector
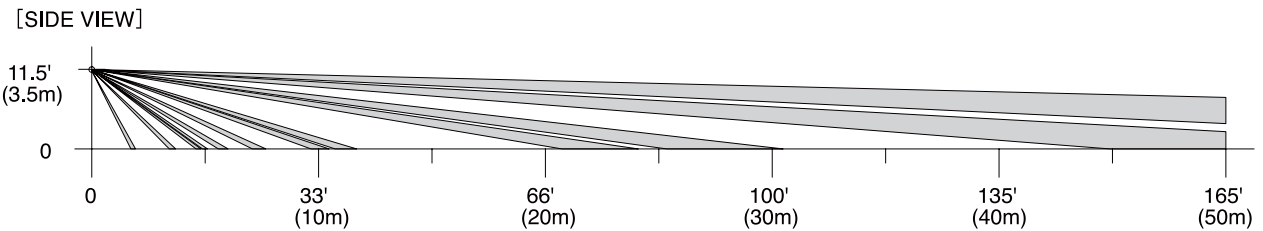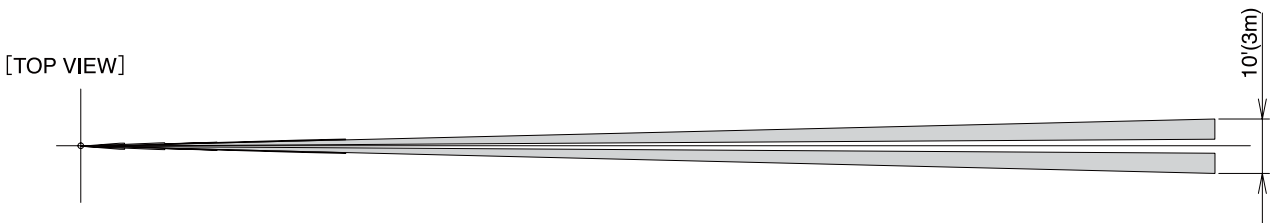
Upper mark

Fixer

3 DETECTION AREA

Install the unit at a height of 6.6'(2m) to 11.5'(3.5m) from the ground.
The protection area of this unit is especially designed for long-distance protection. Therefore, when the unit is installed in high places, it might be difficult for the unit to detect objects located near the sensor.

■Wide angle protection 〈PIR-30WE〉

[TOP VIEW]

82.3'(25.1m)

73°

51°

100.7'(30.7m)

[SIDE VIEW]

11.5'
(3.5m)

0

| 0 | 33'(10m) | 66'(20m) | 100'(30m) |

■Vertical curtain protection 〈PIR-50NE〉

[TOP VIEW]

10'(3m)

[SIDE VIEW]

11.5'
(3.5m)

0

| 0 | 33'(10m) | 66'(20m) | 100'(30m) | 135'(40m) | 165'(50m) |

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 wall mounting.
  For pole mounting, use attachment (Optional).
- Make sure that the unit is installed facing horizontally or a little downward.
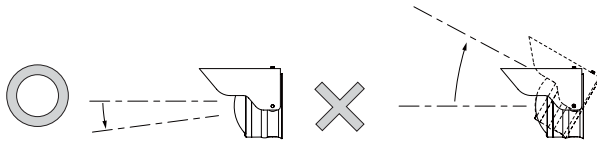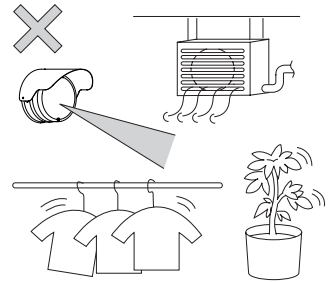
- Install the unit flatly.
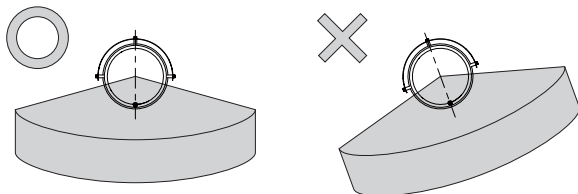
- Area setting should be done according to this instruction manual and ensure target to be protected is within specified protection area.
- Passive infrared sensor is designed to detect energy change of far-infrared caused by the movements of human beings. Therefore, similar changes caused by some other 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 energy change of far-infrared energy.
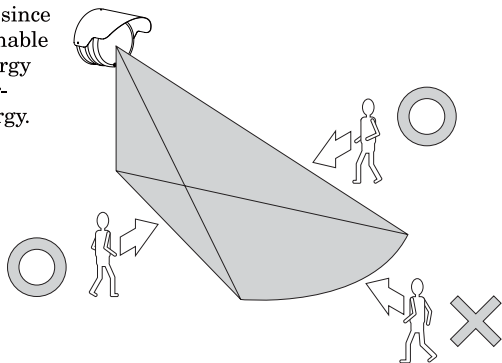
- After installing the unit, adjust protection area and check its operation.
- Do not install in an environment subject to electrical noise or intense vibration.
- Do not install in an environment subject to strong light such as sun light or spot light coming directly into the front face of the sensor.
- 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.
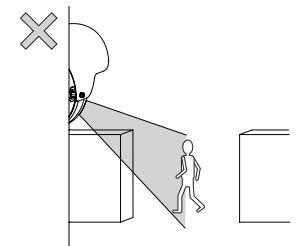
- Make sure that the sensor field of view is within the area to be protected.
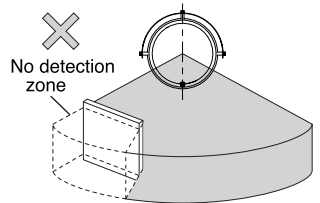
- Remove objects including clear glass which would block the infrared ray and create no detection zone.

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 benzin.
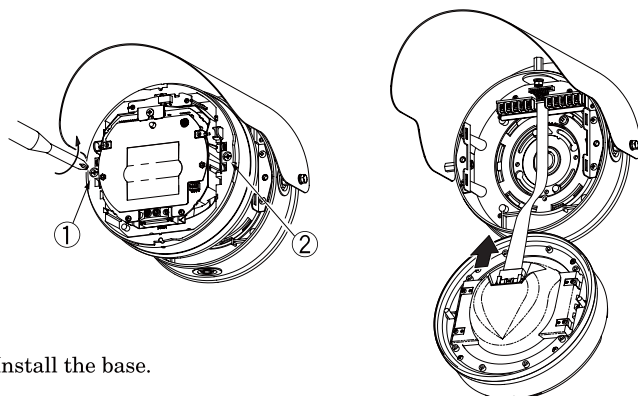- Please make operation check periodically, say once a week or so.

5 INSTALLATION

1. Loosen the cover locking screw and detach the cover by turning it counterclockwise.
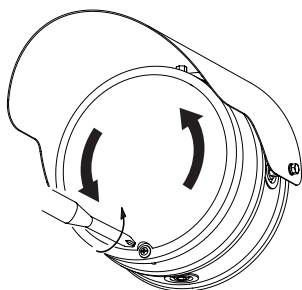
2. Loosen inside sensor locking screws (2pcs) and detach the base from the sensor body.
   Remove the connector from the sensor body.

   ① ②

3. Install the base.

Wall mounting

Use the base packing when the unit is installed on the wall. Place the base on the wall as a template for drilling and mark the screw holes. Make sure that the upper mark of the base points upward. For wooden wall, use tapping screws and for concrete wall, use plug etc.

● **Pre-drill on wall**

Concrete Wall: Refer to specifications of the securing plug used.
Wooden Wall: 0.12"(3mm) dia.

Outlet box and switch box are available for more stable installation.

Tapping screw

Securing plug

CONCRETE

φ 0.12"
(φ 3mm)

WOOD
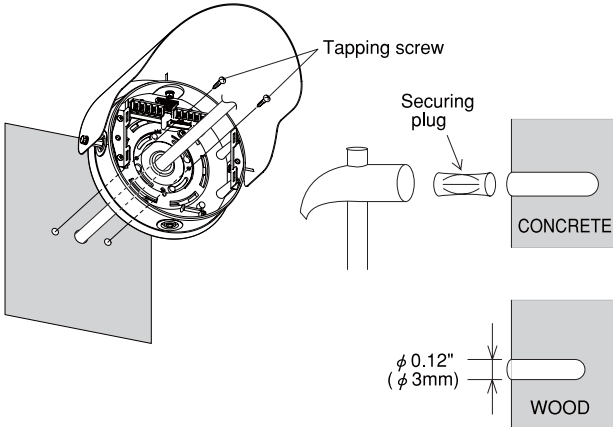
For wiring, put the wire through the wiring hole of the base center.
For exposed wiring, break the knockout placed bottom of the base and put the wire through the hole using water-proof bushing or conduit.

φ 0.79"(φ 20mm) Hole saw

Cable dia φ 0.26"(φ 6.5mm) to φ 0.39"(φ 10mm)
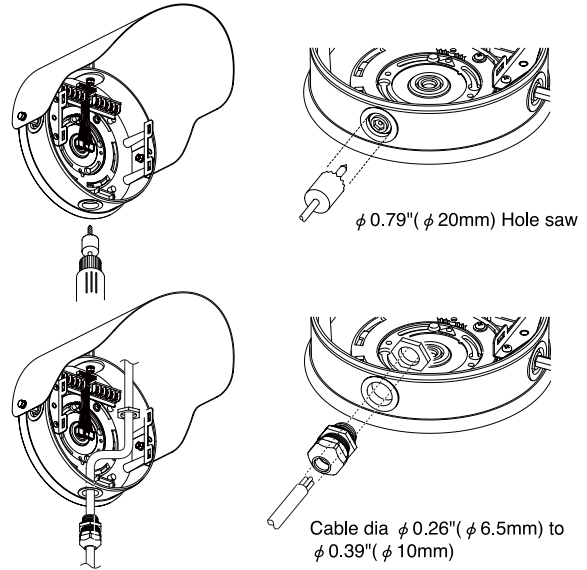
※Please apply sealing materials to the screws and wiring hole to prevent water from entering.

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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.

① ②
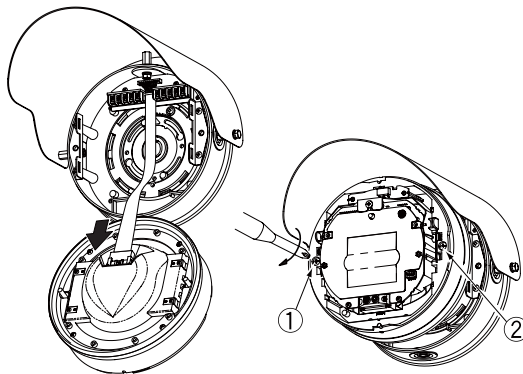
6. Adjust protection area and select mode settings. (Refer to section "7. AREA SETTING" & "10. FUNCTIONS".)
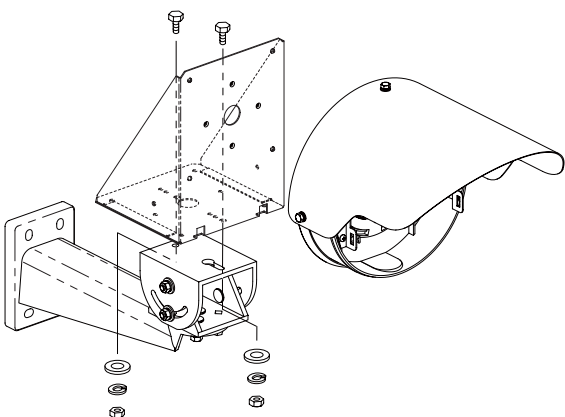
7. Attach the cover and fix it by tightening cover locking screw clockwise.
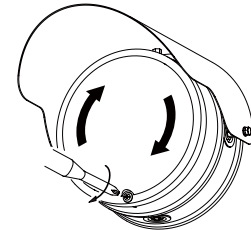
Wall mount
### (Wall bracket and wall attachment are sold separately.)

When using wall bracket or wall attachment (Optional: WO-2D, BL-8400), mount the bracket or 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.
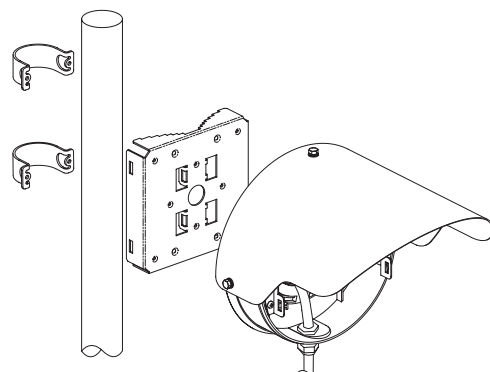
**1** **2** ● Power (non-polarity)
: 9 to 30V DC   35mA Max.

3 **4** **5** ● Alarm output
N.C. COM. N.O. : Dry contact (Semi-conductor) output (N.C./N.O.)
: Protective resistor 3.3 Ω
: One-shot output at detection (Approx. 2sec.)
: A series of continuous output when detecting low supply voltage
  (Until recovery)
: Rating: 24V (AC/DC) 0.25A (resistive load)

6 **7** ● Tamper output
: Real time output when the cover is detached from the unit.
: Off delay output (Min. 2sec.) when the sensor is tilted.
: Dry contact output (N.C.)
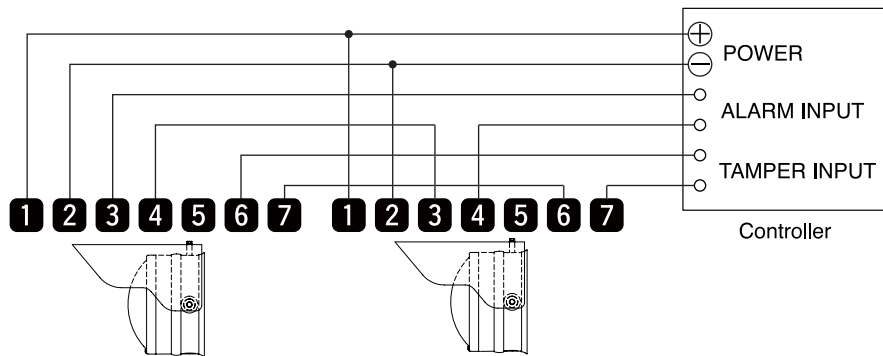: Rating: 24V (AC/DC) 0.1A (resistive load)

8 ● L / C (LED control) input
: Alarm LED lighting is controlled on the side of the input voltage (-).

9 **10** ● Vacant

● **Terminal configuration**

10 **9** **8** **7** **6** **5** **4** **3** **2** **1**
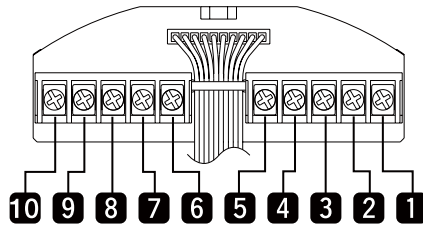
● **Standard connection [When two units are used.] When N.C. is selected.**

POWER

ALARM INPUT

TAMPER INPUT

1 **2** **3** **4** **5** **6** **7**   **1** **2** **3** **4** **5** **6** **7**

Controller

【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,
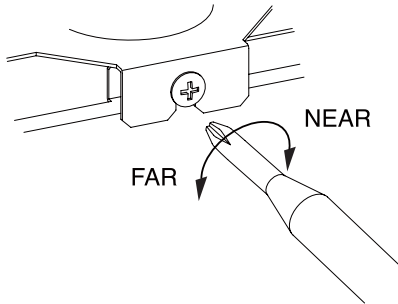is the above distance divided by the number of units.

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

7 AREA SETTING

During installing the base, make rough settings on detection direction or installment angle.
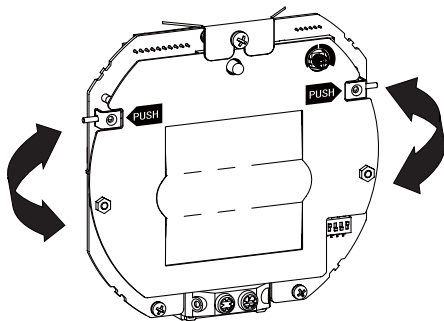Then make fine adjustment by rotating mirrors inside of the sensor.

Adjustment of detection distance (Vertical)

Adjust the detection distance by turning the adjustment screw placed above the mirror unit.
Turn it clockwise and the mirror unit turns downward, shortening the detection distance.

NEAR

FAR

Optical angle adjustment

The view finder is also available for fine adjustment. By seeing through the view finder, the furthest point protected by the sensor can be confirmed.
Look through the hole A of the view finder and the view to which the mirror unit points to can be seen.
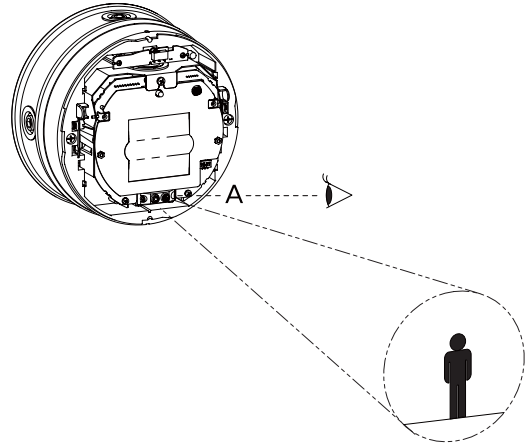
A

Adjustment of detection direction (Horizontal)

Push the triangle marks placed on both sides of the mirror unit and move the mirror right or left to adjust detection area horizontally.

PUSH   PUSH

Look through the view finder.
Then push the triangle marks and turn the adjustment scew and the view seen through the view finer moves.
By repeating this procedure, adjust the detection direction.
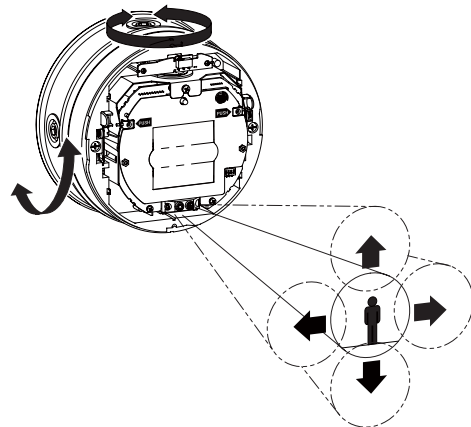
Fine adjustment of detection area

Detach the sensor body from the base.
Loosen the base locking screw on the fixer and the base can be turned right and left.
Fine adjust the detection direction by rotating the base right or left.
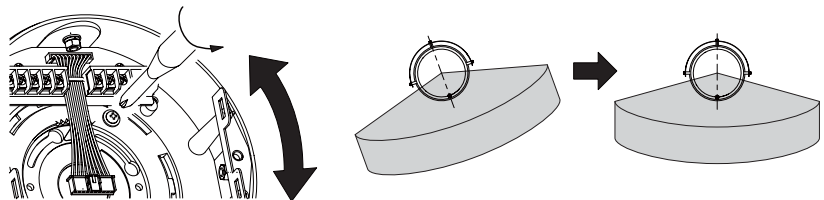
8 OPERATION CHECK

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 lights at detection.

3. Readjust the detection area or operation mode if they are inappropriate.
   After confirming the sensor works properly, put the unit into operation.
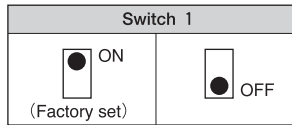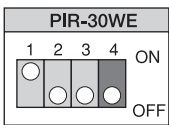
9 MODE SETTINGS

Alarm LED (Switch 1)

In the initial setting, alarm LED lights at detection.
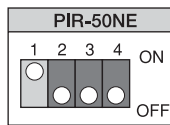Turn the switch OFF and the alarm LED is disabled.
Even when the switch is turned OFF, alarm LED can be enabled remotely by the alarm LED control terminal.

Switch 1
● ON (Factory set)   ● OFF

FACTORY SET AT

PIR-30WE	PIR-50NE
1 2 3 4 ON / OFF	1 2 3 4 ON / OFF
(Set switch 4 at OFF)	(Set switch 2,3 & 4 at OFF)

Pulse count (Switch 2 & 3)

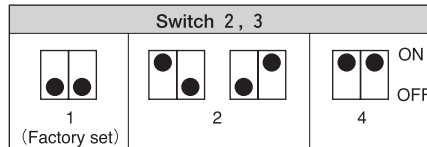Pulse count is selectable.
    [Initial setting: one]
1   : Nomal position
    (Factory set at this position).
2/4 : For use in harsh environments.

※Do not fail to check operation every time when pulse count is changed.
This setting is not availabe for PIR-50NE.

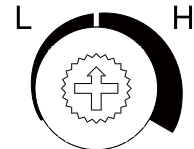| Switch 2 , 3			
1 (Factory set)	2		4 ON / OFF

Sensitivity adjustment

Sensitivity is adjustable between 30% and 170%. [Initial setting: 100%]
Select higher sensitivity where the background temperature of the protected area is high.
Select lower sensitivity in places that are more likely to be affected by natural environment such as wind or sunlight.

L   H

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 makes walk test easy when the unit is installed in high places.

1   ⊕ POWER
2   ⊖
8

POWER

Controller

Alarm LED lights at detection when turnd ON.

Alarm LED is turned OFF by the mode selector.
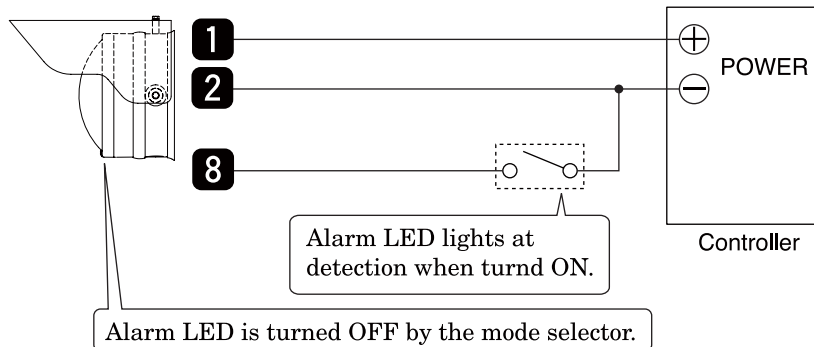
Tamper signal

1. Cover tamper output
   The unit issues tamper signal when the cover is removed or improperly attached.

2. Tilt swith output
   The unit issues tamper signal when the sensor is tilted more than $50°$.

The unit will stop issuing an alarm once the cover is attached correctly to the unit or the unit is returned to nomal position. Check operation of the sensor after the tamper signal is issued.

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 lights LED and issues alarm output continuously. When the supply voltage returns to normal, the alarm output stops automatically. Check the supply voltage immediately when the low supply voltage alarm is issued.
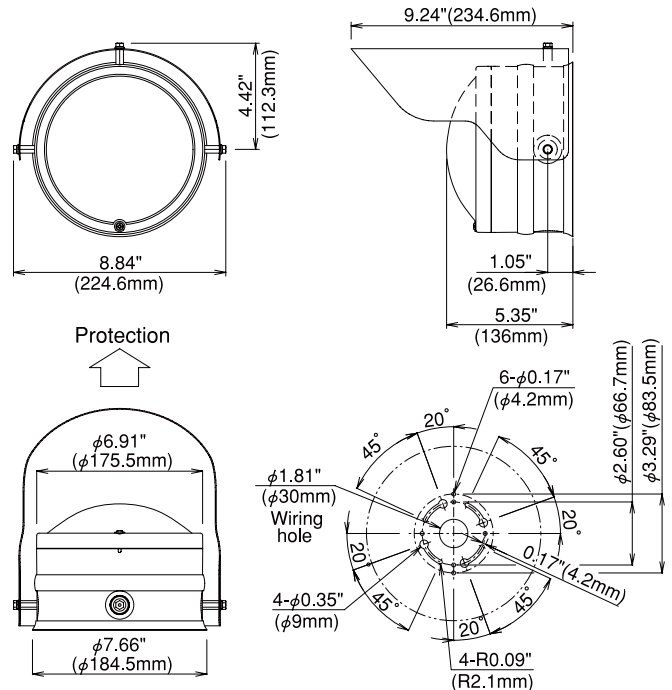
11 TROUBLESHOOTING

Trouble	Check	Corrective Action
Completely insctive	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 filckering).	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 insctive	Improper area adjustment (including distance).	Readjust the protection area setting.
	Cover face is soiled with dust or water drop.	Clearn 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. Readjust the sensitivity setting.
	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	PIR-30WE	PIR-50NE
Detction system	Passive infrared	
Coverage	Wide angle 100' (30m) Max. 39 zones（78 beams）	Vertical curtain 165' (50m) Max. 12 zones（24 beams）
Coverage adjustment	Vertical ：10° horizontal：±5°	
Mounting position	Indoor or outdoor wall	
Supply voltage	9 to 30V DC (non-polarity)	
Current consumption	35 mA Max.	
Alarm output	Dry contact (Semi-conductor) output : (N.C./N.O.) 24V (AC/DC) 0.25A (reseistive load) (Protective resistor 3.3Ω) Warm up : Approx. 1min. (No alarm condition) One-shot output at detection (Approx. 2sec.) Continuously output when detecting low supply voltage.	
Tamper output	Dry contact output : (N.C.) 24V (AC/DC) 0.1A (resistive load) Cover tamper output : Real time output Tilt switch output : Off delay output (Min. 2sec.)	
Alarm LED	Red LED Blinks during warm up (Approx. 1min.) One-shot lights (Approx. 2sec.) at detection Continuously lights when detecting low supply voltage.	
Functions	Low supply voltage alarm Tamper signal Cover tamper / Tilt switch LED control (L/C) Alarm LED (ON/OFF) Sensitivity adjustable between 30% and 170%	
Pulse count	1 / 2 / 4 selectable	
Ambient temperature range	+4°F to +122°F (-20℃ to +50℃) without condensation	
Wiring	Terminals	
Weight	56oz (1,600 g)	
Appearance	Body: AES resin, Cover: PE resin	
Accessories	Water-proof grommet: 1pce, tapping screw: 2pcs	

13 EXTERNAL DIMENSIONS

9.24"(234.6mm)

4.42" (112.3mm)

8.84" (224.6mm)

Protection

1.05" (26.6mm)

5.35" (136mm)

φ6.91" (φ175.5mm)

φ7.66" (φ184.5mm)

6-φ0.17" (φ4.2mm)

φ2.60"(φ66.7mm)
φ3.29"(φ83.5mm)

φ1.81" (φ30mm) Wiring hole

4-φ0.35" (φ9mm)

0.17"(4.2mm)

20°　45°　20°

4-R0.09" (R2.1mm)

■OPTIONAL: Wall attachment BL-8400
: Pole attachment BP-03
: Wall bracket WO-2D

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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