TAKEX PASSIVE INFRARED SENSOR
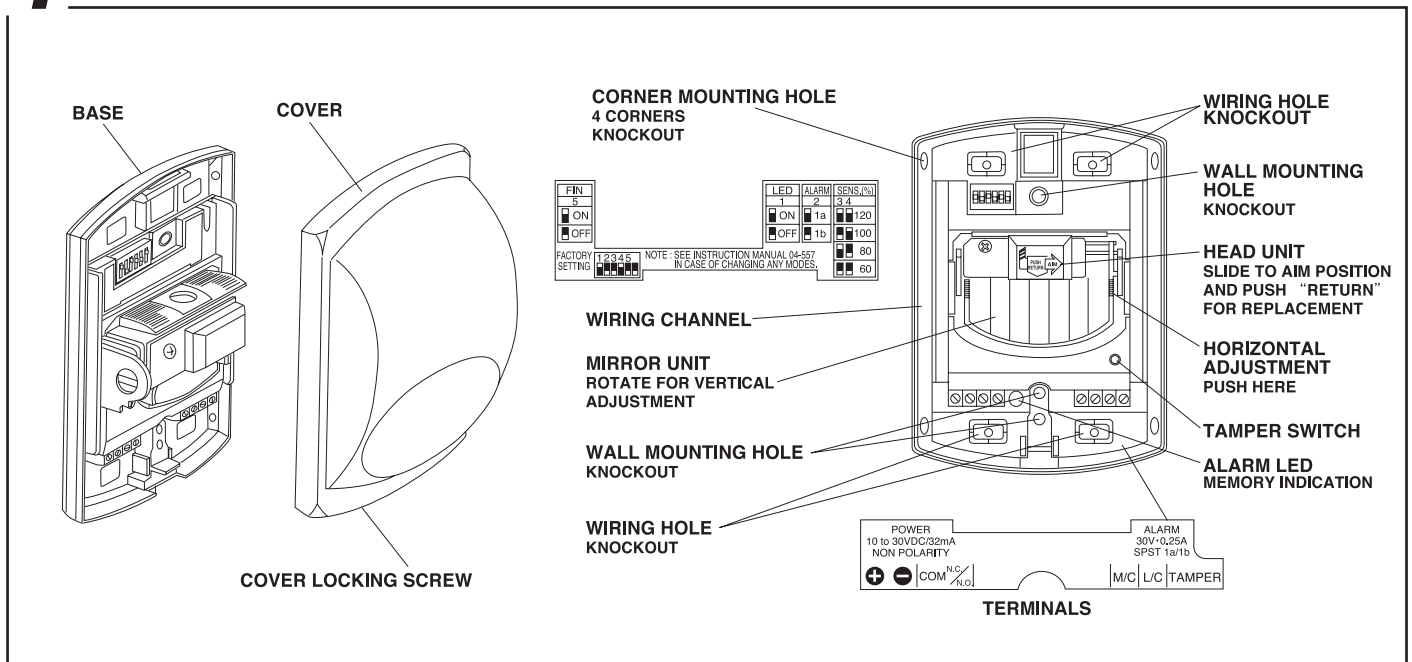
PA-4810 WIDE ANGLE
PA-4820 LONG RANGE

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.

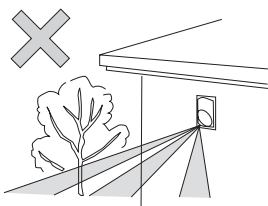**Please Note** : This sensor is designed to detect intrusion and to initiate an alarm ; it is not a burglary-preventing device. TAKEX is not responsible for damage, injury or losses caused by accident, theft, Acts of God (including inductive surge by lightning), abuse, misuse, abnormal usage, faulty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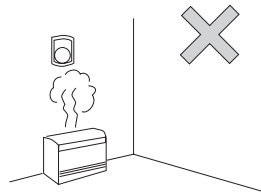
1 PARTS DESCRIPTION

BASE

COVER

CORNER MOUNTING HOLE
4 CORNERS
KNOCKOUT

WIRING HOLE
KNOCKOUT

WALL MOUNTING
HOLE
KNOCKOUT

HEAD UNIT
SLIDE TO AIM POSITION
AND PUSH "RETURN"
FOR REPLACEMENT

WIRING CHANNEL

MIRROR UNIT
ROTATE FOR VERTICAL
ADJUSTMENT

HORIZONTAL
ADJUSTMENT
PUSH HERE

WALL MOUNTING HOLE
KNOCKOUT

TAMPER SWITCH

ALARM LED
MEMORY INDICATION

WIRING HOLE
KNOCKOUT

COVER LOCKING SCREW

POWER 10 to 30VDC/32mA NON POLARITY		ALARM 30V·0.25A SPST 1a/1b

TERMINALS

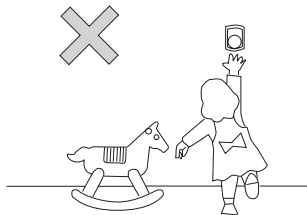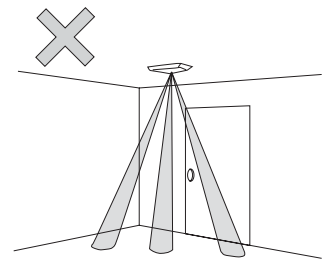# 2 CAUTIONS ON INSTALLATION

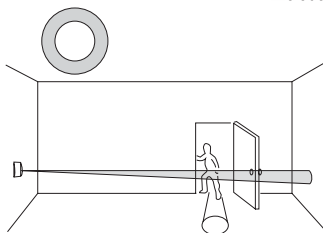## 1) DO'S AND DON'T'S

● Do not install outdoors.

● Do not install in a site which is subject to rapid temperature fluctuations.
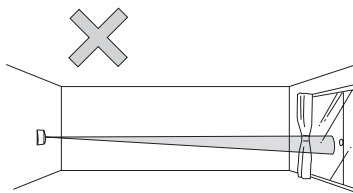
● Avoid installation at sites within the reach of vandals.

● Do not install the sensor directly on the ceiling (When installed on ceiling, use optional attachment BCW-401)

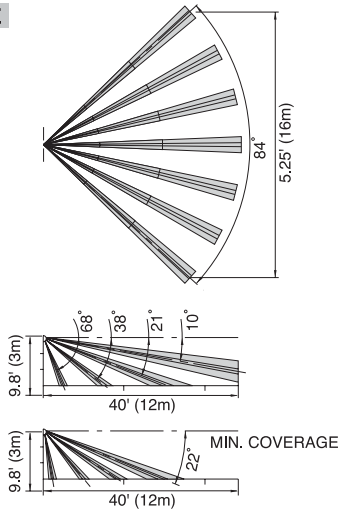● Install the sensor in a position where more likely to cross the protective zones.

● Do not position the sensor facing a window. Also avoid places likely to receive headlight beams, direct sunlight, intense reflections, electric noise and etc.
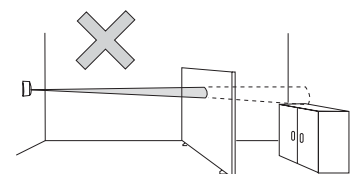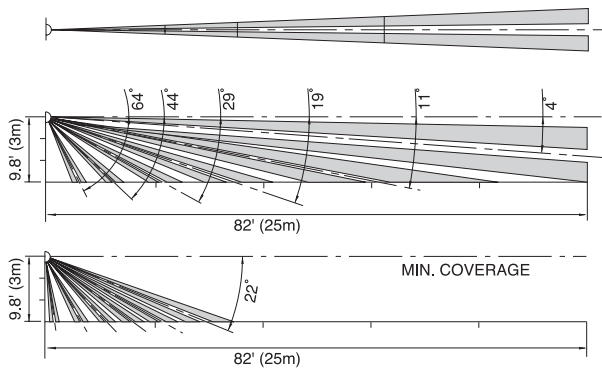
● Do not blind the sensor by placing any object (even a transparent body) in front of it.
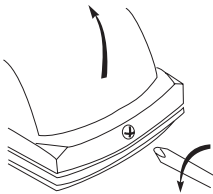
3 COVERAGE AND RANGE

WIDE ANGLE

84°
5.25' (16m)

68° 38° 21° 10°
9.8' (3m)
40' (12m)

9.8' (3m)
22°
40' (12m)
MIN. COVERAGE

LONG RANGE

64° 44° 29° 19° 11° 4°
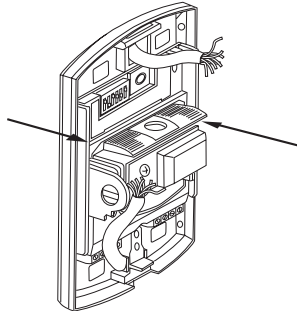9.8' (3m)
82' (25m)

9.8' (3m)
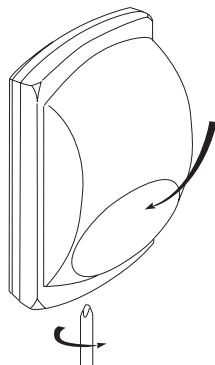22°
82' (25m)
MIN. COVERAGE

4 INSTALLATION

- Detach the cover. Loosen screw until cover slips.
  CAUTION : Do not remove screw from cover. This will prevent locking nut from falling out and becoming lost.

- Connect wires.
- *Break the knockout and pull in the wire through it.
  When using the upper wiring knockouts, route wires along wiring channel on either side (→portion) of plastic frame of P.C. Board.
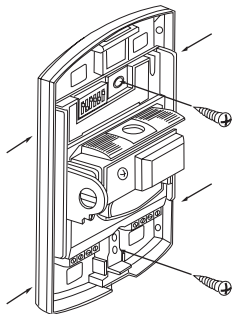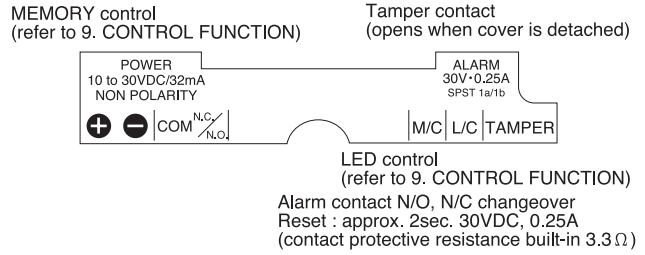
- Install the base on the wall.
  Knockout appropriate wiring and mounting screw holes. Feed wire through knockout.
- *Two mounting pitches are available for mounting to a single gang box.
- *When installed on wall corner, make use of 4 mounting knockouts on sides.
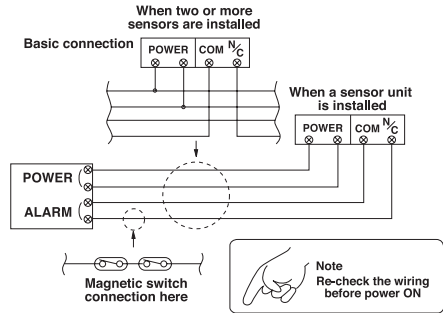
- Attach the cover, and check operation.

5 WIRING

MEMORY control
(refer to 9. CONTROL FUNCTION)

Tamper contact
(opens when cover is detached)

POWER
10 to 30VDC/32mA
NON POLARITY

ALARM
30V・0.25A
SPST 1a/1b

⊕ ⊖ | COM N.C./N.O. | M/C | L/C | TAMPER

LED control
(refer to 9. CONTROL FUNCTION)

Alarm contact N/O, N/C changeover
Reset : approx. 2sec. 30VDC, 0.25A
(contact protective resistance built-in 3.3 Ω)

POWER (non-polarity) 10 to 30VDC/32mA

When two or more sensors are installed
Basic connection | POWER | COM N/C

When a sensor unit is installed
POWER | COM N/C

POWER
ALARM

Magnetic switch connection here

Note
Re-check the wiring before power ON

Allow at least 1 minute warm-up time after power ON.
In the meantime the LED is flickering. The sensor unit comes to armed condition after the LED finishes flickering.

6 OPERATION

1) When installation is completed, walk test in the protected area to check if an alarm is initiated.
   Check LED and control panel for sensor operation.

2) After correct operation has been confirmed, use the MODE SELECTOR inside the sensor unit to turn off the LED, if required.
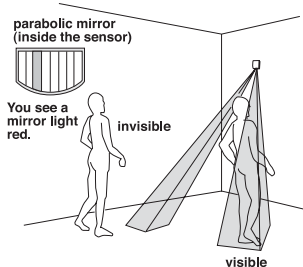
7 SET-UP

Adjust/check detection area visually in the following procedure when operation check shows improper area adjustment.
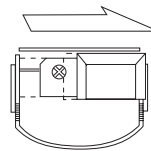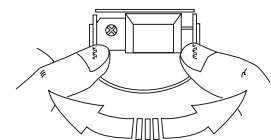

- To activate the pattern locator, slide head unit in the direction of arrow mark, and the unit will automatically lock at aim position.
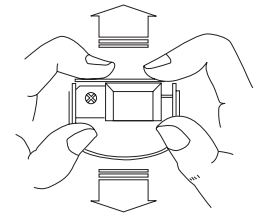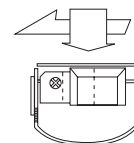
- Adjust with parabolic mirror rotating by hands. Do not touch the mirror surface.

parabolic mirror
(inside the sensor)

You see a mirror light red.
invisible
visible

- Hold parabolic mirror by hands and push for horizontal adjustment.

- Walk around within detected area while looking at sensor.
  When entering a "finger" the parabolic mirror reflects a bright red glow indicating a zone's location. Continue until all zones are located, if desired.
  To adjust pattern, rotate mirror vertically or horizontally to obtain desired pattern.
- *Adjust so that center of zone is at waist height at maximum protection distance from sensor.
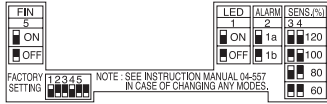
- After adjustment is completed, lightly push head unit to restore to armed condition.
- *While head unit is in the aim position, an alarm LED lights, alarm output continues output and trouble alarm condition holds automatically.

8 MODE SETTING

You can adjust sensor operation by mode selectors to suit its application / environments.

ALARM LED

After operation check is completed, disable the alarm LED with the mode selector, if desired.
When set at ON, the LED lights synchronized with alarm contact.
When set at OFF, the LED does not light even when an alarm is initiated.

Note : Memory indication lights regardless of whether LED has been disabled or not.

ALARM CONTACT CHANGEOVER

N/C for security use
Change to N/O contact when you use the sensor for applications other than security, such as light control etc.

SENSITIVITY ADJUSTMENT

When sensitivity is too high as a result of operation check, adjust sensitivity with mode selector and then check operation again. The sensitivity is selectable as follws.

FINE MOTION DETECTION

This function allows sensor to detect small movements of hands or body in a narrow range.
Note : This mode is quite sensitive to detect even slight movement. Its ability to descriminate against small animals such as rodents is low. Therefore this should be taken into consideration when selecting this function.

9 CONTROL FUNCTION

MEMORY CONTROL

Is a function that can confirm later which sensor triggered an alarm when two or more units are installed on the same alarm signal zone.

Wire terminal M/C (MEMORY CONTROL) and set up an external control contact swich, which will feed a positive voltage to the memory control contact.

NOTE : This needs to be connected only if the memory function is required.

OPERATION

1. Turn the SW to ON to activate memory control when the system is armed (When you intend to store alarm memory).
2. Turn the SW to OFF when disarming system.
   A sensor that has initiated an alarm in protection condition (SW-ON) lights its LED continuously when protection is released (SW-OFF).
3. When it returns to protection condition (SW-ON), memory is reset and LED goes out.

NOTE : Memory indication lights regardless of whether LED has been disabled or not.

LED CONTROL

The remote LED control function allows control of the LED from the control panel.
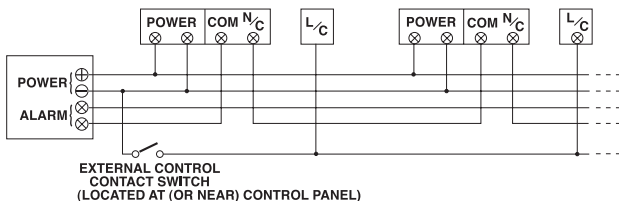
Wire terminal L/C (LED ONTROL) and set up an external control contact switch, which feed a negative voltage to the LED control contact.

OPERATION

Turn the LED disable switch OFF to disable the LED.
When external switch is turned ON, the LED lights at alarm.
When external switch is turned OFF, the LED does not light.

10 FEATURE DESCRIPTION

TROUBLE ALARM

This sensor monitors the following functions in accordance with its builtin program. When a trouble condition is detected, the alarm LED lights continually, and the alarm output relay latches in alarm condition.

1. UNIT TROUBLE

A trouble alarm triggers immediately when inner circuitry / wiring is damaged / broken. See troubleshooting and remedy it.

NOTE : The monitor functions regardless of mode setting but an alarm is not indicated when setting alarm LED at OFF position.

2. LOW POWER VOLTAGE

When sensor detects a drop in supply voltage, a trouble alarm (as described above) is triggered. This prevents the problem from going undetected which can lead to erratic operation during armed period, resulting in nuisance alarms. Follow the recommendations in section 13 "TROUBLESHOOTING" to correct voltage drop.
Upon correction, trouble condition resets automatically.

NOTE : When alarm LED is turned OFF (Mode selector switch 1), LED will not indicate a trouble condition. When the power is restored to normal level during the alarm atatus, the trouble alarm stops.

3. FAILURE TO REPLACE

When you set the sensor in right condition by operating the head unit, trouble alarm is initiated to prevent the head unit from not being replaced.
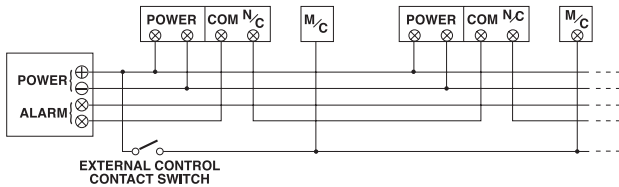An alarm stops when the sensor head unit is replaced to armed position.

NOTE : The monitor function regardless of mode setting but an alarm is not indicated when setting alarm LED at OFF position.

11 SPECIFICATIONS

MODEL	PA-4810	PA-4820
DETECTION	Passive infrared (Quad : Fuzzy logic)	
COVERAGE	WIDE ANGLE 40' Max (12m)	LONG RANGE 82' Max (25m)
NUMBER OF SENSITIVE ZONE	18 pairs (72)	6 pairs (24)
MOUNTING POSITION	Indoor wall / pillar	
SUPPLY VOLTAGE	10 to 30VDC (non-polarity)	
POWER CONSUMPTION	32mA Max	
ALARM OUTPUT	Dry contact relay (N/O, N/C selectable) Reset : approx. 2sec. 30V, 0.25A Max resistive load (protective resistance 3.3 Ω)	
TAMPER SIGNAL	Dry contact (N/C) Open when cover is detached 30V, 0.1A Max resistive load	
FINE MOTION DETECTION	36 pairs	12 pairs
ALARM LED	Red LED Warm up : flickering (every 0.5 sec.) Alarm : solid (approx. 2sec.) Memory : continuous solid Trouble alarm : continuous solid (LED disable)	
MEMORY CONTROL	Controls memory indication / reset with terminal M/C	
LED CONTROL	Controls alarm LED indication with terminal L/C	
TROUBLE ALARM	Unit monitors damage on inner circuitry / wiring Operate : initiate trouble alarm Low power voltage : monitors drop in power voltage Operate : initiate trouble alarm Failure to replace : monitors failure to replace head unit Operate : initiate trouble alarm	
AMBIENT TEMPRANGE	$+14°$ F to $+122°$ F $(-10℃$ to $+50℃)$ without condensation	
WIRING	Terminals	
WEIGHT	5.82oz. (165g)	
ADJUSTMENT	Vertically 20° Horizontally $\pm5°$	
ACCESSORY	Fixing screw : 4×30 2pcs.	

The specification are subject to change without notice.

12 EXTERNAL DIMENSIONS

3.54" (90mm)

5" (127mm)

2.36" (60mm)

P.C.D. 3.29" (83.5mm)

P.C.D. 3" (76mm)

MADE IN JAPAN
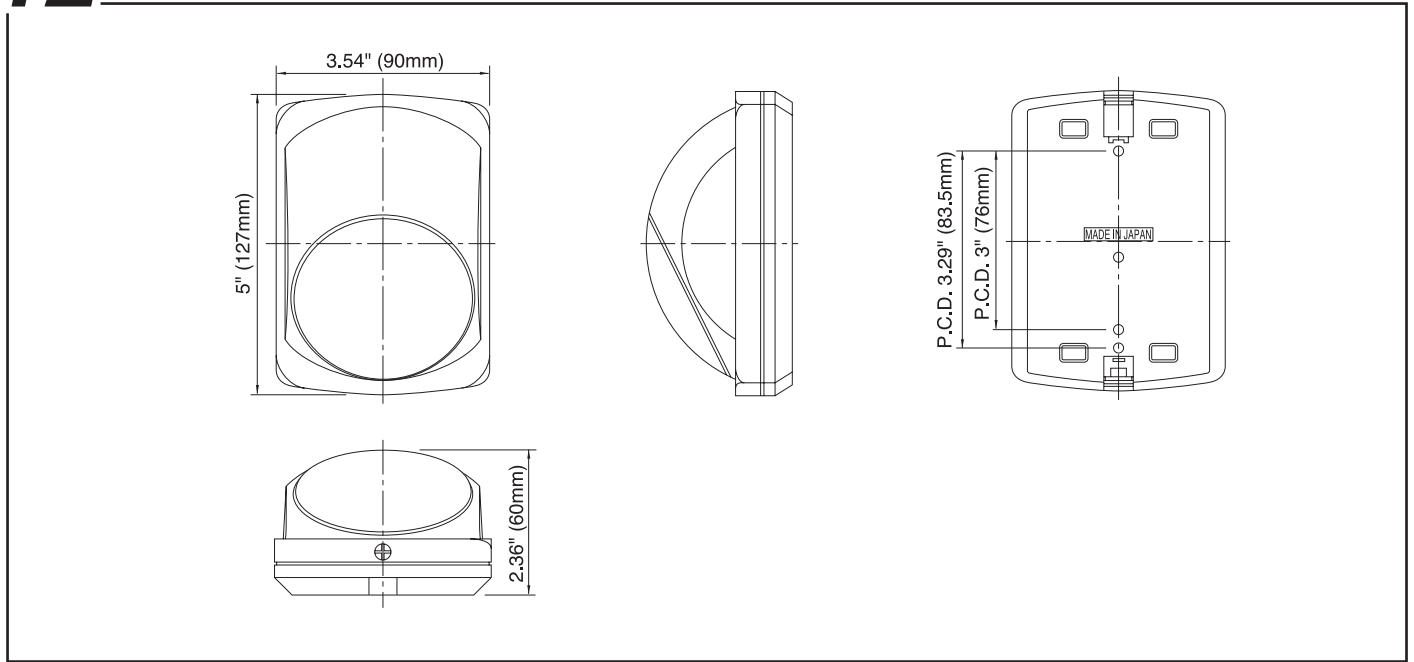
13 TROUBLESHOOTING

Analyze possible problems according to the following table. If normal operations cannot be restored by these means, contact either the dealer from whom you bought the unit or TAKEX.

Trouble	Check	Corrective Action
Does not operate at all. (Alarm indicator does not light.)	Either power is off (including broken cable) or power voltage is too low.	Check the power cable and adjust power voltage properly.
	Is there an obstacle in front of the detection area?	Remove the object.
	Is detection area adjustment correct?	Readjust the detection area setting.
Intermittent alarm.	Is detection area adjustment correct?	Readjust the detection area so that persons are detected in all areas.
	Is power voltage unstable?	Stabilize the power voltage.
	Does the detection range exceed. 82' (25m) (Long Range)? 40' (12m) (Wide Angle)?	Reposition so that the range is less than 82' (25m) (Long Range). 40' (12m) (Wide Angle).
False alarm.	Is there any moving object or a rapid temperature change source in the detection area?	Remove the object considered to be the cause.
	Is there a source of electrical noise (broadcasting station, amateur radio, etc.) nearby?	Change the installation location.
	Is there any strong reflection from a sunray or direct light hitting the unit?	Change the installation location. Shied sunrays with a blind.
	Is the detector reacting to passersby outside?	Readjust the detection area.
The Alarm indicator lights, but the controller does not operate.	Poor contact output connection, or broken wire or short circuit.	Check the wiring using a tester.
	Contact output is not working.	Check the contact output terminal using a tester.
	Is the controller operation nomal ?	Check the controller.
The alarm indicator keeps to light and the alarm output continues to be triggered (trouble alarm)	Is the head unit at aim position?	Replace it to armed position.
	Is power voltage too low?	Adjust power voltage properly.
	Is the unit going to trouble alarm again after power is reset and warm up time is over?	There is a possibility for broken wire or inner damage.

Limited Warranty :

TAKEX **TAKENAKA ENGINEERING CO., LTD.**

No.04-557 | 0409