PASSIVE INFRARED SENSOR

CE Ⓒ N1702 **PA-470L** (WIDE ANGLE / LONG RANGE)

CE Ⓒ N1702 **PA-480S** (SUPER WIDE ANGLE)

NEW GENERATION WALL MOUNT PASSIVE INFRARED SENSOR

PA-470L FEATURES

QUAD ELEMENT + NEW FUZZY LOGIC PROCESSING SYSTEM

"Fuzzy Logic" is the state-of-the-art processing system that simulates the human decision process as it compares various information such as size, temperature differential, etc. to determine the criteria for an alarm condition. This reduces false alarm while maintaining a high detection capability.

PATTERN SELECTABLE WITH INTERCHANGEABLE LENS

Wide angle / long range pattern is selectable during installation by convenient fresnel lens replacement. Spare long range lens is included in package. Zone changeover switch sets the detection pattern to match the lens pattern when lens is changed.

TROUBLE ALARM - LOW VOLTAGE -

When sensor detects a drop in supply voltage, the alarm relay and LED latches in alarm until voltage is restored to its proper level.

ALARM MEMORY

Units contain special circuitry to indicate an alarm has been activated during armed period. Especially useful when more than one unit is used per zone.

REMOTE LED CONTROL

Allows the LED to be enabled/disabled via the control panel.

*Alarm LED disable (ON / OFF)
*Alarm contact selectable (N.C. / N.O.)
*Sensitivity adjustment (60%, 80%, 100%, 120%)
*Zone changeover (Wide angle/long range)
*Anti-creep zone

PA-480S FEATURES

WALL MOUNT 180° COVERAGE

Two twin elements cover 90° each to create a full 180° pattern. Each 90° area can be vertically adjusted up or down to create the required coverage pattern.

TROUBLE ALARM - LOW VOLTAGE -

When sensor detects a drop in supply voltage, a trouble alarm is initiated.
*Alarm LED disable (ON / OFF)
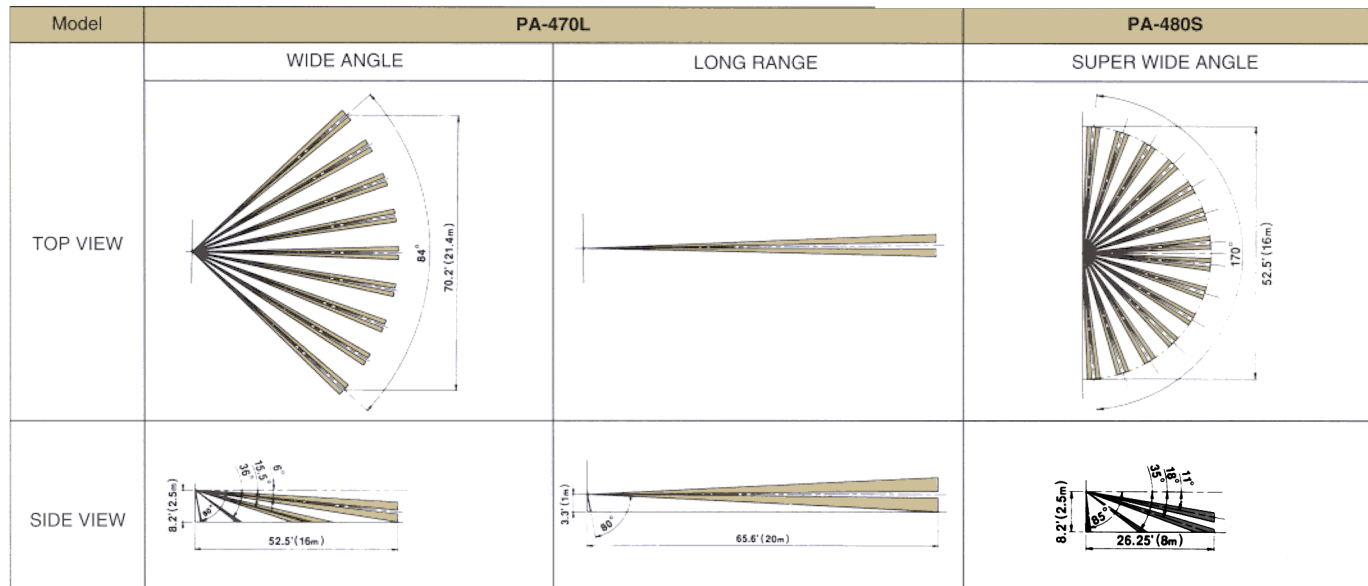*Signal count selectable (2 signals / 4 signals)
*Anti-creep zone

OPTIONAL ATTACHMENT BCW-401

One unit covers two units' area

Different coverage by 90° each

■COVERAGE

Model	PA-470L		PA-480S
	WIDE ANGLE	LONG RANGE	SUPER WIDE ANGLE
TOP VIEW	84° 70.2' (21.4m)		170° 52.5' (16m)
SIDE VIEW	30° 15.5° 9° 8.2'(2.5m) 52.5'(16m)	3.3'(1m) 80° 65.6'(20m)	11° 18.5° 55° 8.2'(2.5m) 80° 26.25'(8m)

■TERMINAL ARRANGEMENT

PA-470L WIDE / LONG
POWER 9 to 18VDC / 28mA NON POLARITY
⊕ ⊖ COM N/C N/o
ALARM 30V·0.25A N.C./N.O. CHANGEOVER
M/c L-/c TAMPER

PA-480S SUPER WIDE ANGLE
POWER 9 to 18VDC / 32mA NON POLARITY
⊕ ⊖ COM N.C.
ALARM 30V·0.1A N.C.
TAMPER

■EXTERNAL DIMENSIONS

3.54" (90mm)
5" (127mm)
2.43" (62.5mm)
P.C.D 3.29"
P.C.D 3"
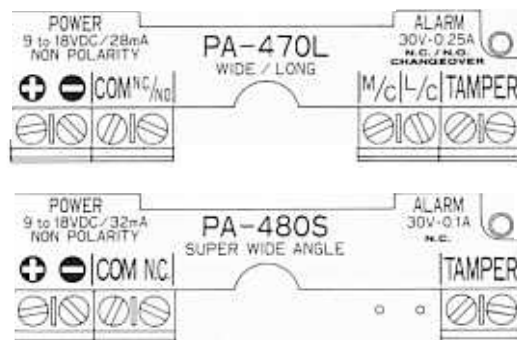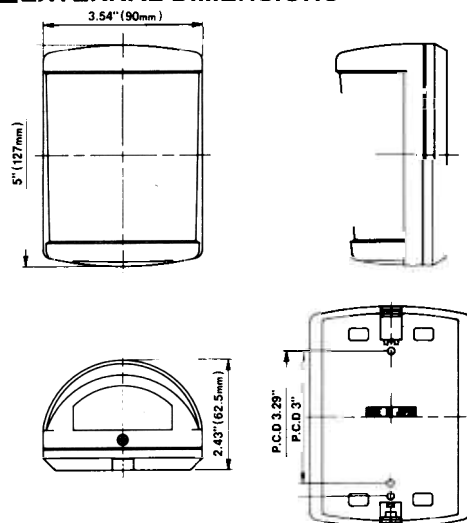
■SPECIFICATIONS The specifications are subject to change without notice.

Model	PA-470L		PA-480S
Detection	Passive infrared (Quad • Fuzzy logic)		Passive infrared (Twin element • pulse count)
Coverage	Wide angle 52.5'Max (16m)	Long range 66'Max (20m)	Super wide angle radius 26.3'Max (8m)
Number of sensitive zone	22 pairs (88)	2 pairs (8)	32 pairs (64)
Mounting positions	Indoor wall / pillar		
Supply voltage	9 to 18V DC (non-polarity)		
Power consumption	28mA Max		32mA Max
Alarm output	Dry contact relay (N.C. / N.O.selectable) Reset : approx. 2 sec 30V • 0.25A Max (protective resistance 3.3Ω built-in)		Dry contact relay (N.C.) Reset : approx. 2 sec 30V • 0.1A Max (protective resistance 3.3Ω built-in)
Temper signal	Dry contact (N.C.) Open when cover is detached 30V • 0.1A Max		
Alarm LED	Red LED Warm up : flickering (every 0.5 sec.) Alarm : solid (approx. 2 sec.) Memory : continuous solid Trouble alarm : continuous solid (LED disable)		Red LED(2) Warm up : flickering (every 0.5 sec.) Alarm : solid (approx. 2 sec.) 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	Low power voltage : monitors drop in power voltage Operate : initiate trouble alarm		
Ambient temp. range	+14˚F to +122˚F (-10˚C to +50˚C) without condensation		
Wiring	Terminals		
Area adjustment			Downward 5 positions
Weight	5.82 oz. (165g)		
Accessory	Fixing screw : 4 × 30 2pcs. Long range lens		Fixing screw : 4 × 30 2pcs. Area lock screw : 3 × 10 1pce.

The passive infrared sensor is designed to detect infrared energy variations caused by the presence of a human body.   Therefore, note that similar variations in conditions in protected area , due to other reasons, may cause the sensor to create an alarm as it is unable to distinguish between sources

TAKEX
PASSIVE INFRARED SENSOR
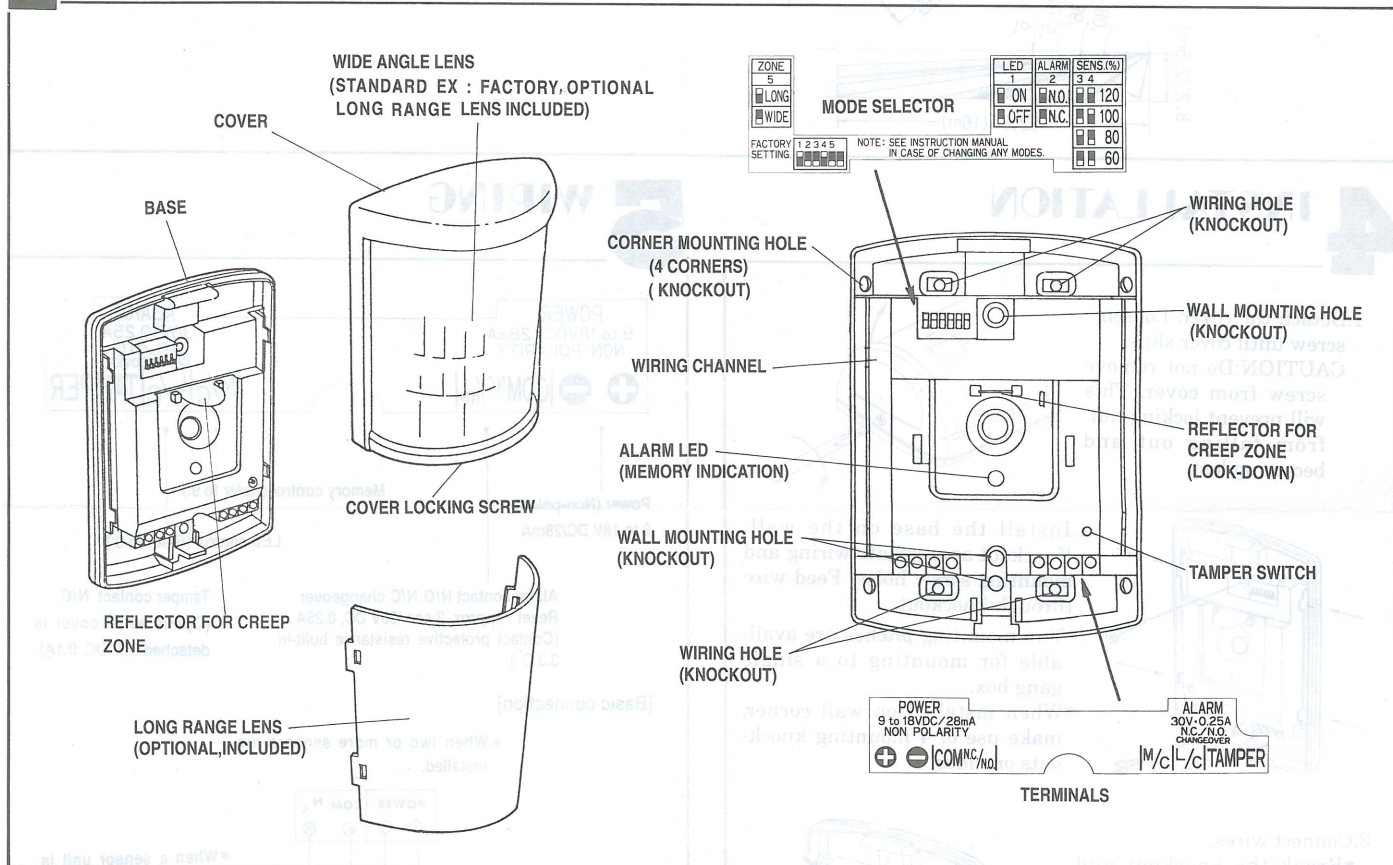## PA-470L
Instruction Manual

Thank you for purchasing this TAKEX product.
This sensor will provide long and dependable service when properly installed.
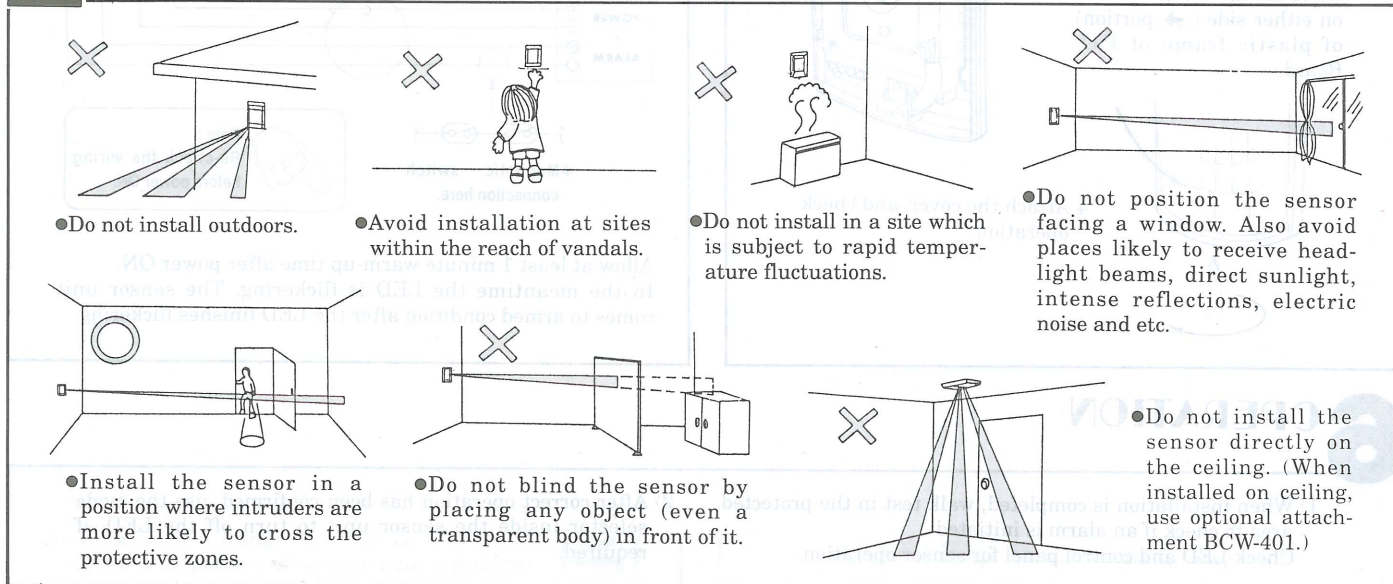Please read this Instruction Manual carefully for correct and effective use.
The passive infrared sensor is desibned to detect infrared energy variations caused by the presence of a human body.
therefore, note that similar variations in conditions in protected area, due to other reasons, may cause the sensor to create an alarm as it is unable to distinguish between sources.
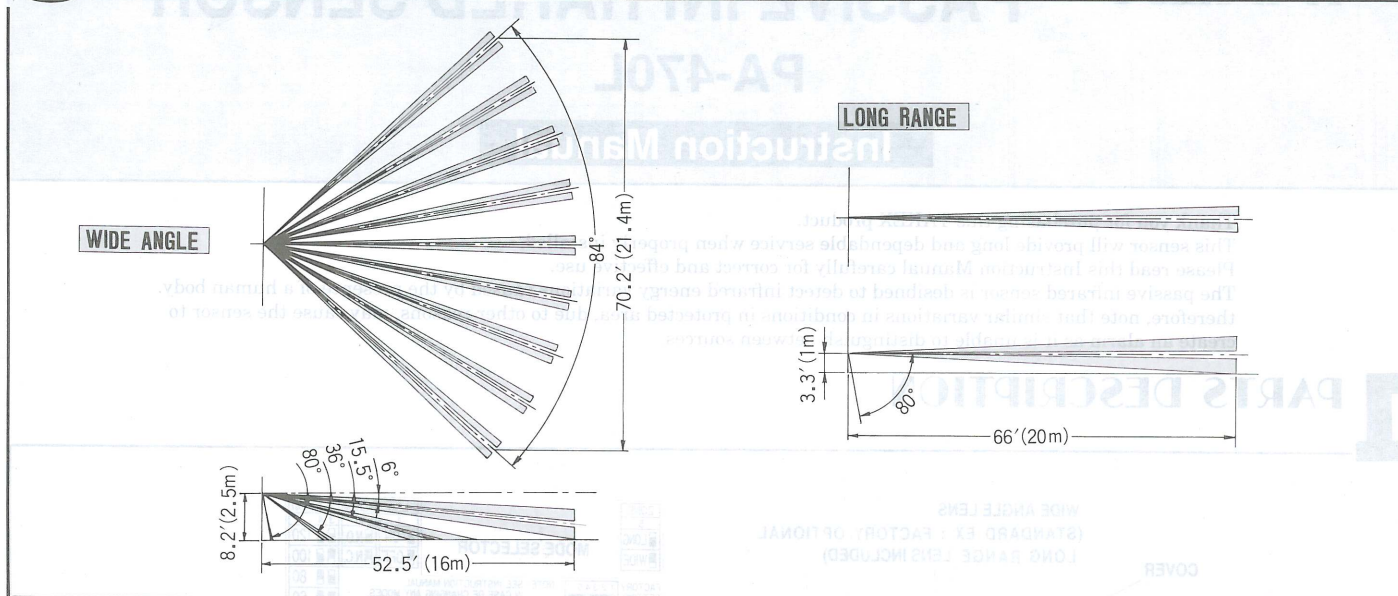
1 PARTS DESCRIPTION

WIDE ANGLE LENS
(STANDARD EX : FACTORY, OPTIONAL LONG RANGE LENS INCLUDED)

COVER

BASE

COVER LOCKING SCREW

REFLECTOR FOR CREEP ZONE

LONG RANGE LENS (OPTIONAL, INCLUDED)

ZONE 5 / LONG / WIDE

MODE SELECTOR

FACTORY SETTING 1 2 3 4 5

NOTE: SEE INSTRUCTION MANUAL IN CASE OF CHANGING ANY MODES.

LED	ALARM	SENS.(%)
1	2	3 4
ON	N.O.	120
OFF	N.C.	100
		80
		60

CORNER MOUNTING HOLE (4 CORNERS) (KNOCKOUT)

WIRING CHANNEL

ALARM LED (MEMORY INDICATION)

WALL MOUNTING HOLE (KNOCKOUT)

WIRING HOLE (KNOCKOUT)

WIRING HOLE (KNOCKOUT)

WALL MOUNTING HOLE (KNOCKOUT)

REFLECTOR FOR CREEP ZONE (LOOK-DOWN)

TAMPER SWITCH

POWER 9 to 18VDC/28mA NON POLARITY

COM N.C./N.O.

ALARM 30V·0.25A N.C./N.O. CHANGEOVER

M/c L-/c TAMPER

TERMINALS

2 DO'S AND DON'T'S

● Do not install outdoors.

● Avoid installation at sites within the reach of vandals.

● Do not install in a site which is subject to rapid temperature fluctuations.

● Do not position the sensor facing a window. Also avoid places likely to receive headlight beams, direct sunlight, intense reflections, electric noise and etc.

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

● Do not blind the sensor by placing any object (even a transparent body) in front of it.

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

3 COVERAGE AND RANGE

WIDE ANGLE

LONG RANGE

84°

70.2' (21.4m)

3.3' (1m)

80°

66' (20m)

15.5°
36°
80°
6°

8.2' (2.5m)

52.5' (16m)

4 INSTALLATION

1. 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.
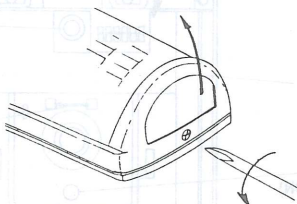
2. Install the base on the wall. Knockout appropriate wiring and mounting screw holes. Feed wire through knockout.
   *Two mounting pitches are available for mounting to a single gang box.
   *When installed on wall corner, make use of 4 mounting knockouts on sides.
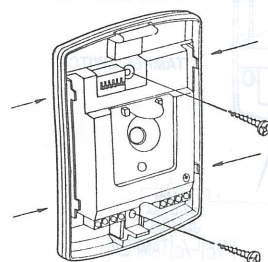
3. Connect wires.
   *Break the knockout and pull in the wire through it. When using the upper wiring knockouts, route wires along wiring channel on either side (➡ portion) of plastic frame of P.C. Board.
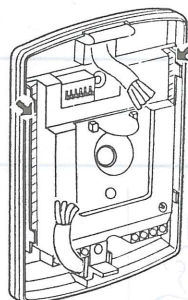
4. Attach the cover, and check operation.

5 WIRING

POWER 9 to 18VDC/28mA NON POLARITY				ALARM 30V・0.25A N.C./N.O. CHANGEOVER		
➕	➖	COM	N.C./N.O.	M/C	L/C	TAMPER
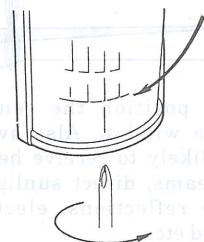
Power (Non-polarity) 9 to 18V DC/28mA

Memory control (Refer to 9.)

LED control (Refer to 9.)

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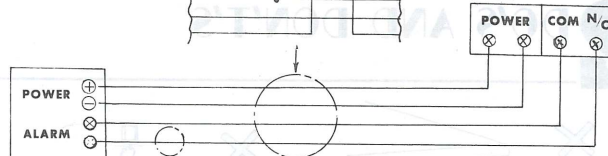Reset : approx. 2 sec. 30V DC, 0.25A
(Contact protective resistance built-in 3.3 Ω)

Tamper contact N/C
(Opens when cover is detached 30V DC, 0.1A)

[Basic connection]

*When two or more sensors are installed.

POWER		COM	N/C
⊗	⊗	⊗	⊗
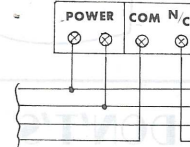
*When a sensor unit is installed.

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.
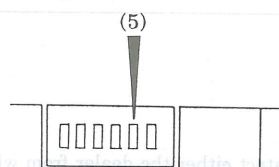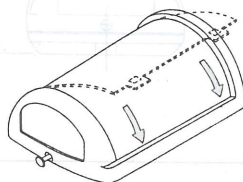
7 CHANGE LENS

1. To remove lens, pull lens tabs on inside of cover toward the center and push out.
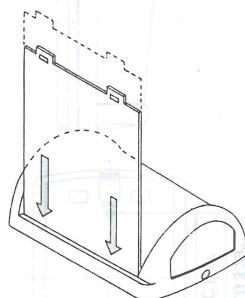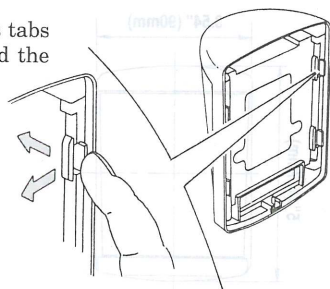
2. With smooth side of new lens facing out, insert one side of lens into slots on cover until tabs snap onto hooks.

3. Carefully bend the lens along edge of cover. Insert tabs into slots on other side and snap into place.

(5)

4. After lens replacement is completed, set dip switch (5) on mode selector to match lens pattern. (refer to section 8 "MODE SETTING")

8 MODE SETTING

ZONE			LED		ALARM		SENS.(%)
5			1		2		3 4
☐ LONG			☐ ON		☐ N.O.		☐☐ 120
☐ WIDE			☐ OFF		☐ N.C.		☐☐ 100
							☐☐ 80
							☐☐ 60

FACTORY SETTING. 1 2 3 4 5   NOTE : SEE INSTRUCTION MANUAL IN CASE OF CHANGING ANY MODES.

The built-in mode selector enables sensor operation suitable for the required application / environments.
Do not operate the switch "6".

ALARM LED

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

1 ON
1 OFF
(Factory setting)

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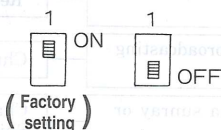
ALARM CONTACT CHANGEOVER

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.

2 ON
2 OFF
N/O   N/C
(Factory setting)
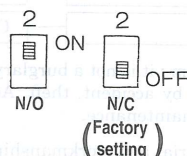
SENSITIVITY ADJUSTMENT

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 follows.

3 4   3 4   3 4   3 4   ON
OFF
120%   100%   80%   60%
(Factory setting)
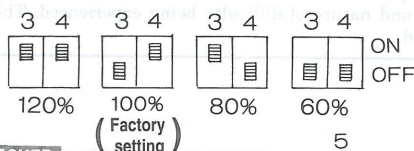
ZONE CHANGEOVER

Two protection patterns (long range & wide angle) are available by replacing lens. Change zone to fit required lens pattern whenever lens is replaced.

5 ON
5 OFF
LONG   WIDE
(Factory setting)
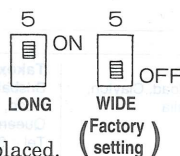
9 CONTROL FUNCTION

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.

POWER COM N/C M/C   POWER COM N/C M/C

POWER + −
ALARM

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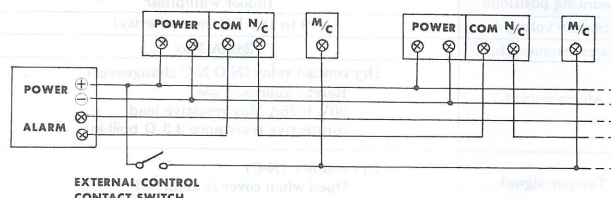
Wire terminal M/C(MEMORY CONTROL) and set up an external control contact switch, which will feed a positive voltage to the memory control contact.

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)
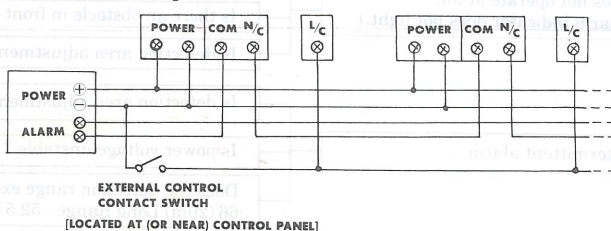
2. Turn the SW. to OFF when disarming system.

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.

POWER COM N/C L/C   POWER COM N/C L/C

POWER + −
ALARM

EXTERNAL CONTROL CONTACT SWITCH
[LOCATED AT (OR NEAR) CONTROL PANEL]

Wire terminal L/C(LED CONTROL) 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 built-in program. When a trouble condition is detected, the alarm LED lights continually, and the alarm output relay latches in alarm condition.

※ 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 "TROUBLE-SHOOTING" 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 status, the trouble alarm stops.

11 SPECIFICATIONS

Model	PA-470L	
Detection	Passive infrared (Quad・Fuzzy logic)	
Coverage	Wide angle 52.5'Max(16m)	Long range 66'Max(20m)
Number of sensitive zones	22 pairs (88)	2 pairs (8)
Mounting positions	Indoor wall/pillar	
Supply voltage	9 to 18V DC (non-polarity)	
Power consumption	28mA Max	
Alarm output	Dry contact relay (N.O.N/C changeover) Reset : approx. 2 sec. 30V, 0.25A Max resistive load (protective resistance 3.3 Ω built-in)	
Tamper signal	Dry contact (N/C) Open when cover is detached 30V, 0.1A Max resistive load	
Alarm LED	Red LED Warm up : flickering (every 0.5 sec.) 　　　　　Alarm : solid (approx. 2 sec.) 　　　　　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	Low power voltage : monitors drop in power voltage Operate initiate trouble alarm	
Ambient temp. range	+14˚F to +122˚F (-10˚C to +50˚C) without condensation	
Wiring	Terminals	
Weight	5.82oz. (165g)	
Accessory	(Fixing screw : 4×30 2pcs.) / (Long range lens)	

The specifications are subject to change without notice.

12 EXTERNAL DIMENSIONS
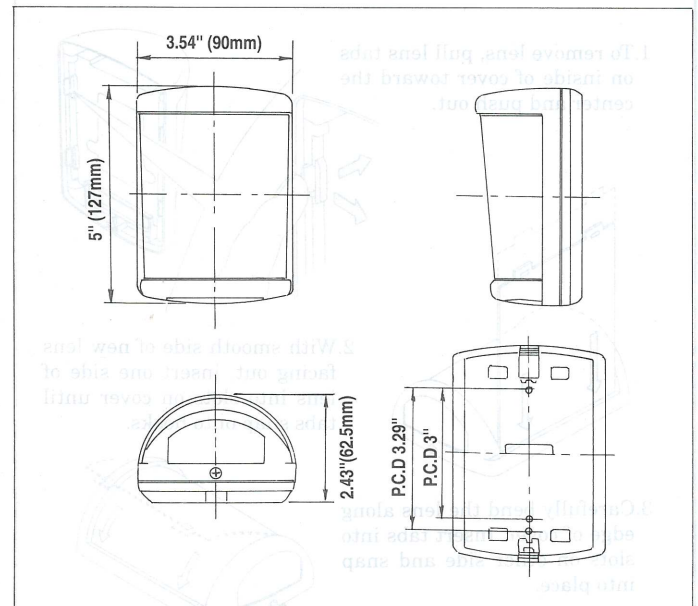

13 TROUBLE SHOOTING

Analyze possible problems according to the above table. If normal operation can not be restored by the 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 66'(20m) Long Range 52.5'(16m) Wide Angle ?	Reposition so that the range is less than 66'(20m) Long Range 52.5'(16m) 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 normal ?	Check the controller.

(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.

(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.