

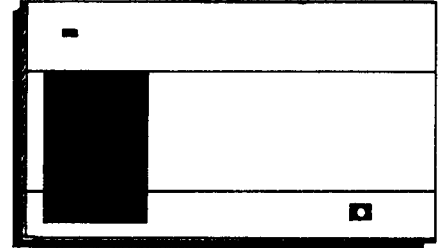
PASSIVE INFRARED MOTION SENSOR

Model # 60-047

The Passive Infrared Motion Sensor has not been investigated by Underwriters Laboratories.

OVERVIEW

A Passive Infrared (PIR) Sensor adapts to the environment in which it is placed and continually gathers information about that area. Any change in this stable environment caused by an object which emits a different degree of Infrared heat energy is sensed and an alarm is generated.



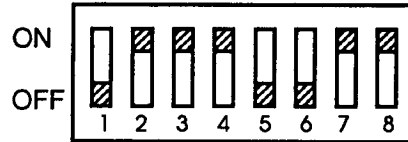
MOUNTING CONSIDERATIONS

- (1) If possible, mount the passive so there is a reference point (wall) at the end of its pattern.
- (2) Mount these sensors so an intruder will most likely walk **ACROSS** the beams.
- (3) Permanently mount the PIR. Do not simply set it on a shelf without screwing it down because the customer might move it and change its field of view.
- (4) Mount at between 3 and 6 feet high for best detection.
- (5) **PETS.** Notice when you study the patterns of the DS984 sensor that some of its detection patterns include "down fingers" or sabotage zones so that an intruder cannot sneak under the field of view. For installations having pets to contend with these must be taken into consideration. *Be sure to use the special lens pattern that does not have down fingers if pets will be on premise when the system is armed.*
- (6) **DO NOT ATTEMPT TO MASK OFF ZONES.** Masking down looking zones should be avoided as ghost images will be present and will likely detect pets walking close to the detector.
- (7) Even though these Passives are highly immune to false alarms you should follow these standard Passive Infrared locating guidelines:
 - * Don't locate in direct sunlight.
 - * Don't aim at air conditioners, heat vents, wood stoves, fireplaces, etc.
 - * Don't aim at moving objects (curtains, hanging displays, etc).
 - * Attempt to mount on an outside wall facing in.
 - * Do not aim at solar heated walls or uninsulated metal walls.
- (8) **NEVER AIM A PIR AT A WIRELESS TOUCHPAD** or at **ANY PROTECTED DOOR.** If your PIR were to transmit at the **EXACT** same moment as a Wireless Touchpad or a entry door transmitter a transmission could be missed.
- (9) As with any radio transmitter, avoid mounting on or near large metal objects such as a heat duct or foil wallpaper.

PROGRAMMING THE DS-984 PASSIVE INFRARED SENSORS

1. Remove the PIR front cover. This will expose both the detector and the transmitter.
2. Program each PIR's House Code and Sensor Number by properly setting the switches of the eight position dip switch or programming comb.

This eight position dip switch serves the same purpose as the 8 inner teeth of the Door/Window Sensor programming comb. Switches 1 & 2 set the House Code; 3-5 set the first digit of the Sensor Number; and, 6-8 set the second digit value of the Sensor Number.



PROGRAMMING SWITCHES

Example: House Code = 01, Sensor Number = 63

SELECTING THE "HOUSE CODE"

To select the correct HOUSE CODE you must correctly set switch 1 and switch 2 of the 8 position switch block as follows:

HOUSE CODE	SWITCH #	
	-1-	-2-
0	OFF	OFF
1	OFF	ON
2	ON	OFF
3	ON	ON

SELECTING THE 2 DIGIT SENSOR NUMBER

To select the correct 2 digit SENSOR NUMBER you must correctly set switches 3-5 for the first digit and 6-8 for the second digit.

SENSOR NUMBER	ARMED IN THESE LEVELS	1st DIGIT SWITCHES			2nd DIGIT SWITCHES		
		3	4	5	6	7	8
60	4,5,6,7	ON	ON	OFF	OFF	OFF	OFF
61	4,5,6,7	ON	ON	OFF	OFF	OFF	ON
62	4,5,6,7	ON	ON	OFF	OFF	ON	OFF
63	4,5,6,7	ON	ON	OFF	OFF	ON	ON
64	4,5	ON	ON	OFF	ON	OFF	OFF
65	4,5	ON	ON	OFF	ON	OFF	ON

The sensors below INITIATE an entry delay. The sensors above will honor a delay initiated by an entry door or sensor below, otherwise they will be instant.

66	4,5	ON	ON	OFF	ON	ON	OFF
67	4,5	ON	ON	OFF	ON	ON	ON

NOTE 1: The CPU does NOT require a "restore" signal from the above numbers. Thus they are not capable of preventing system arming.

NOTE 2: See page 47 for a Programming Hint.

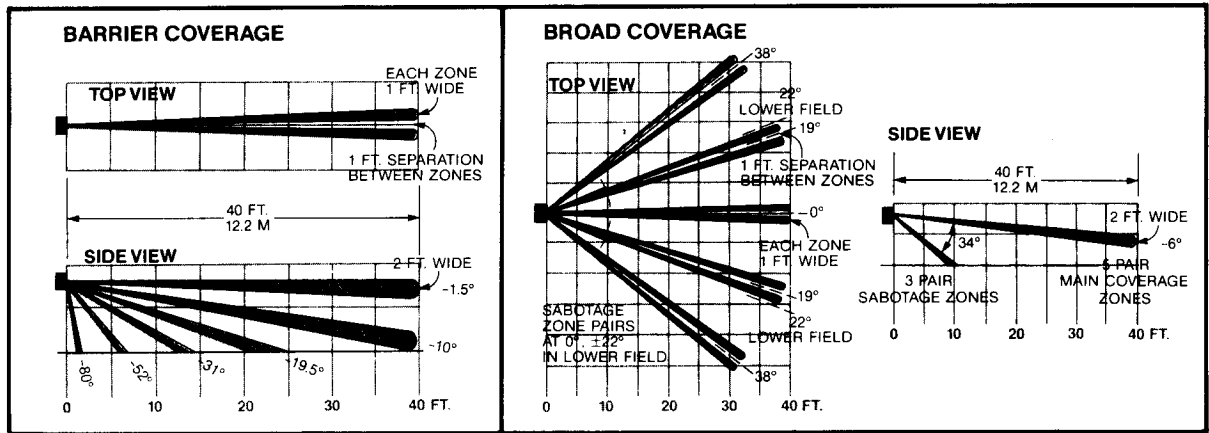
COVERAGE PATTERNS AVAILABLE

STANDARD PATTERNS: Determine the appropriate coverage pattern for the application, either barrier coverage or broad coverage. The standard lens can be "flipped" to select either barrier or wide angle coverage. These patterns are shipped with every PIR.

STANDARD BARRIER COVERAGE - 6 pairs of zones oriented one above the other at varying degrees create a "curtain" of coverage extending out 40' feet.

STANDARD WIDE ANGLE COVERAGE - 5 pair of zones 40' feet wide at widest point and 40' feet out at center. 3 pair sabotage zones in lower field.

STANDARD

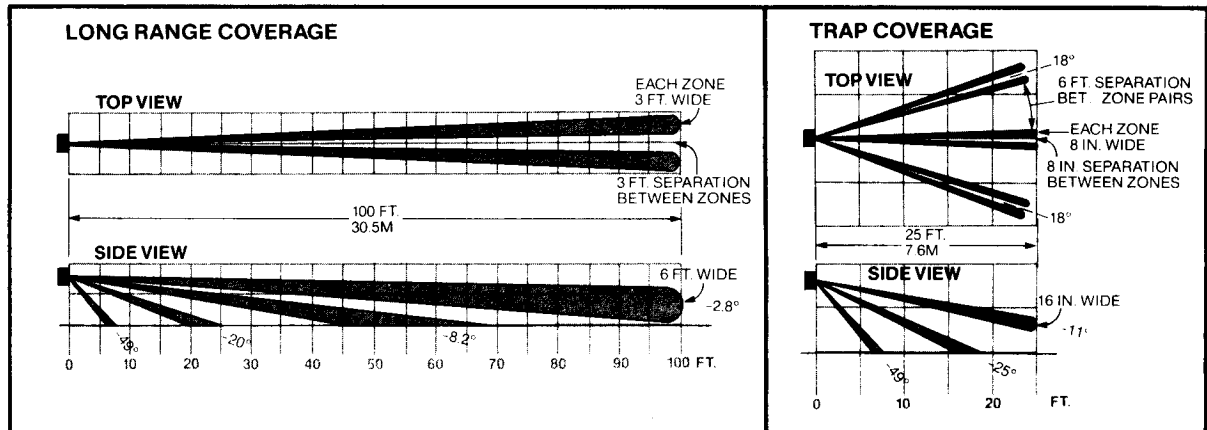


OPTIONAL PATTERNS: PART #13-009. The following two optional patterns are available by purchasing an additional lens which contains both optional patterns. The optional lens can be "flipped" to select either barrier or wide angle coverage.

OPTIONAL BARRIER COVERAGE - 4 pairs of zones oriented one above the other at varying degrees create a "curtain" of coverage extending out 100' feet.

OPTIONAL WIDE ANGLE COVERAGE - 3 pair of zones 20 feet wide at widest point and 25 feet out at center. 2 layers of sabotage zones in lower field.

OPTIONAL

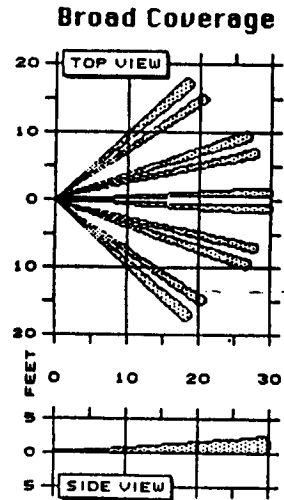
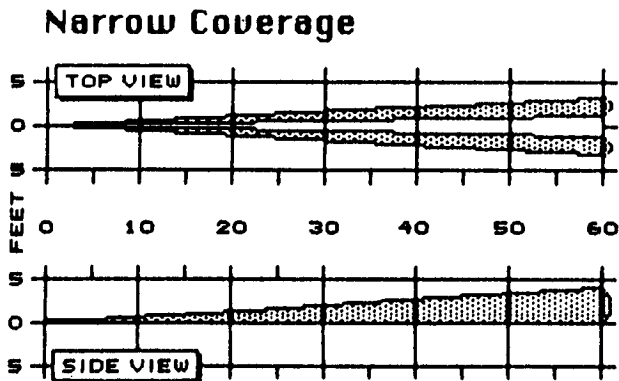


PET ALLEY PATTERNS: PART # 13-020. The following two optional patterns are available by purchasing an additional lens which contains both optional patterns. The optional lens can be "flipped" to select either barrier or wide angle coverage.

PET ALLEY BARRIER COVERAGE - One pair of zones approximately 10' wide at the widest point (60 feet). No sabotage zones.

PET ALLEY WIDE ANGLE COVERAGE - 5 pairs of zones approximately 40 feet wide at widest point (30 feet). No sabotage zones.

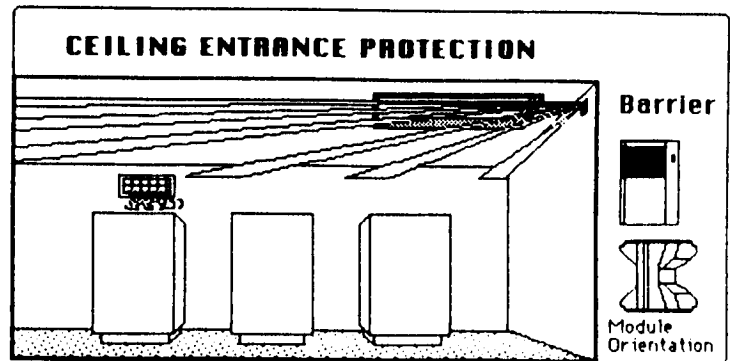
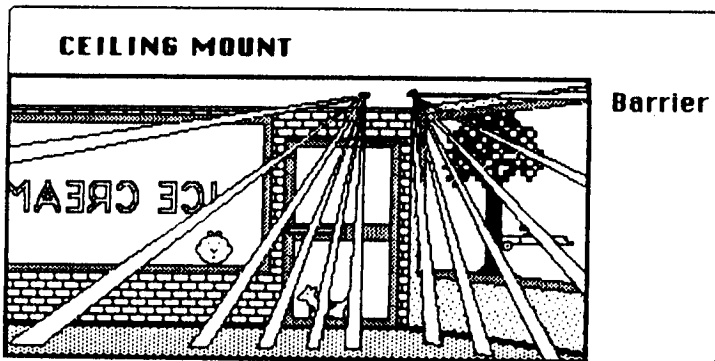
INSTALLATION CONSIDERATIONS - Install unit no lower than twice the height of the pet, maximum height 5 feet. Make sure the field of view is clear of all furniture or other object upon which the pet could climb *or jump* resulting in an unwanted alarm.



SPECIAL MOUNTING LOCATIONS:

The unit can be used to horizontally protect potential ceiling entrances, such as skylights, by rotating the unit one quarter-turn from normal. Mount the unit on the side wall close to the opening. Avoid positioning in direct or reflected sunlight.

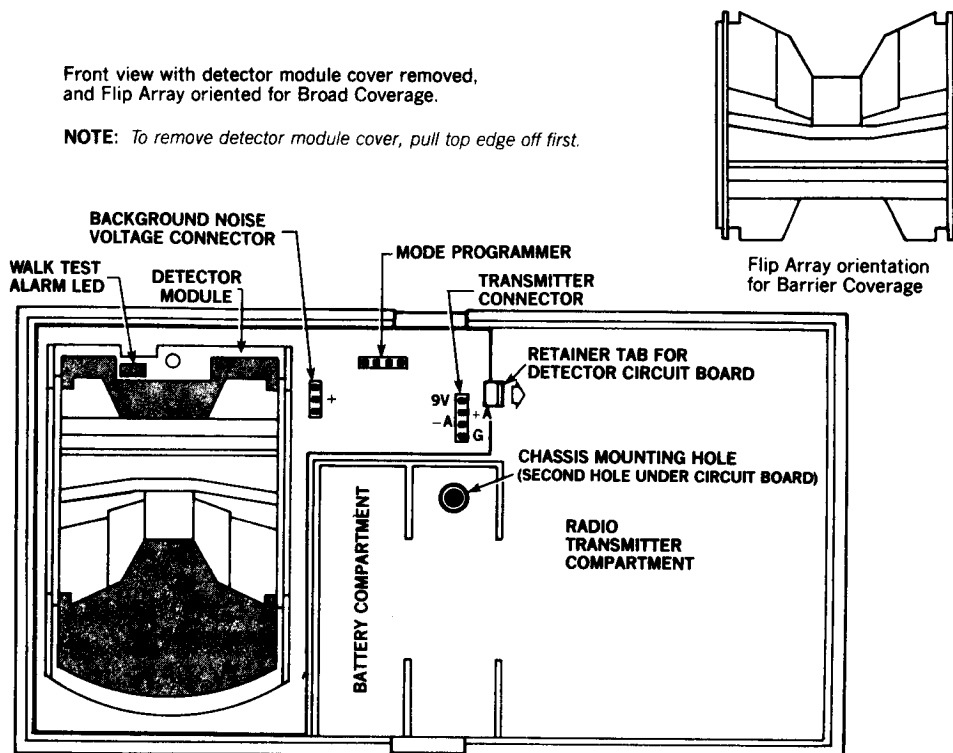
When wall mounting is difficult, you can mount the unit on the ceiling if the ceiling is very rigid and free from vibration. More than one unit can be located in the same general area without any worry about interference.



MOUNTING THE DS-984 PASSIVE INFRARED SENSOR

1. Select a mounting height (between 3 and 6 feet) and location which avoids common sources of false alarms, yet maximizes detection potential.

AVOID:
 - (1) Direct exposure to hot or cold drafts
 - (2) Direct exposure to sunlight
 - (3) Do not aim at windows or uninsulated walls
 - (4) Do not aim at air conditioning outlets, heat vents, radiators
 - (5) Avoid small animals
2. Remove the PIR cover by squeezing the top and bottom of the enclosure until the retaining tabs release.
3. Remove the detector circuit board assembly from the chassis by pulling back the retainer tab. One mounting hole is located under the board.
4. Remove the two batteries. The second mounting hole is under the right battery.
5. Use the the chassis as a template and mark the location of the mounting holes.
6. Level and mount the chassis using the screws and plastic anchors provided.
7. AIMABILITY - Achieved by "shimming" the detector housing if required.
8. Replace the batteries and detector circuit board in the chassis. Place the detectors left edge in first, then snap into place.



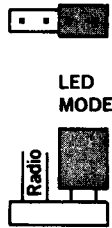
INSIDE THE DS-984 PASSIVE

INITIAL SETUP

- Connect a fresh 9V Alkaline battery to the detector mating connector, and insert into the battery compartment.

- Set Mode Programmer plug for LED operation.

NOTE: Use LED Mode during unit test, only. Repeated or prolonged usage of the detector in the LED Mode will reduce expected battery life.

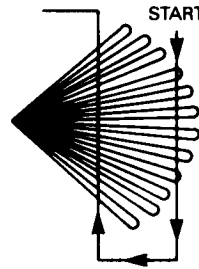


- Remove detector module cover (pull top edge first), and position Flip Array for broad or barrier coverage.

- Reattach detector module cover.

WALK TESTING

NOTE: Walk testing should be done across the field of view.



- Wait at least two minutes after applying power to start walk tests.

- The edge of the pattern is determined by the first flash of the Walk Test/Alarm LED.

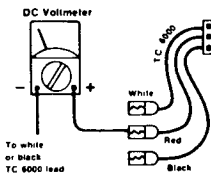
- Walk test the unit from the opposite direction to determine both boundaries.

HINT: Any standard 20,000 ohms/volt DC VOM connected to the Background Noise Voltage Connector can aid in alignment. Set for 3 VDC full scale.

- If rated range can not be achieved, try shimming the back of the unit up or down to assure the pattern is not aimed too low or too high due to an uneven mounting surface.

FINAL TESTS

NOTE: Meter readings are very important in determining background disturbance levels and catch margin sensitivity.



- Connect a 20,000 ohm/volt (or greater) DC VOM to the Background Noise Voltage pins as shown. Set meter scale for about 3 VDC.

- The base reference level for reading background noise or target voltages is approximately 1.5 VDC. Installations in quiet environments, therefore, will result in a steady meter reading between 1.4 VDC and 1.6 VDC.
- Again, walk test across farthest edge of coverage. Voltage changes greater than 1 VDC from the reference level are desirable. If changes are less than plus or minus 1 VDC, the device may fail to respond at this distance if the temperature difference between the intruder and the background is very small. Try adjusting the unit up or down to maximize the voltage change during walk test.
- Turn on all heating and cooling sources that would normally be in operation during times of protection. Stand away from the unit and outside the protection pattern, then monitor background noise for at least 3 minutes. Readings should not deviate more than .15 VDC from the reference level. If it does, eliminate the cause, or readjust the unit slightly.

FINAL SETUP

- Set detector Mode Programmer plug for radio operation when final testing is completed. This mode disables the LED.

NOTE 1: Repeated or prolonged usage of the detector in the LED Mode will reduce expected battery life.

NOTE 2: When in the Radio Mode, an alarm can be transmitted only after there has been three (3) continuous minutes of NO ACTIVITY in the detector's coverage patterns AFTER THE PREVIOUS ALARM.

- This completes testing of the detector. Please refer to any additional instructions that may concern testing of the radio transmitter.



BE SURE TO PUT THE MODE JUMPER BACK INTO THE "RADIO MODE" WHEN DONE TESTING.

POWER SOURCE: Two (2) 9 volt alkaline batteries

BATTERY LIFE: Twelve months or more in RADIO MODE. Continued operation in the LED MODE after initial installation will drastically reduce battery life.

BACKGROUND NOISE VOLTAGE: Passive Infrared "noise" is caused by changes of temperature of solid objects, size and closeness to the detector, and amount of temperature. This noise is changed into a voltage which can be read by a meter. The maximum allowed noise, with no motion, is 0.15V DC.

TEMPERATURE RANGE: +32°F TO +120°F (+0°C TO +49°C)

TEST FEATURES: Test voltage pins for visual (with meter) or audible (with sona) indication of pattern. May also be used for measuring background thermal disturbance. Fast-reset LED walk light indicates when unit alarms, the LED shows present disturbances. When in the LED mode the PIR will transmit every time tripped.

TRANSMITTER LOCKOUT: In the Radio Mode the transmitter will transmit once, then "lockout" (i.e., not transmit again) unless the detector sees no motion for at least 3 minutes. Any movement prior to 3 undisturbed minutes causes this timer to reset and another 3 undisturbed minutes would be required before the unit will transmit.

NOTES ON INTERFACING OTHER PASSIVES TO AN ITI TRANSMITTER

It is possible to interface one of our Door/Window Sensors to another manufacturers passive Infrared detector. There are, however, several things that must be taken into account.

- (1) Remember, with our passive we monitor both batteries, if you use someone else's, only our battery will be monitored, the battery that powers the passive will not report to the CPU when it is getting low.
- (2) Our transmitter does not detect its own low battery until it gets down to about 5.7 volts. Most passives will not work at this low a voltage. Many will false alarm between 6.5 and 7 volts. This would be several months before the battery in our transmitter would even report that its battery is getting low.
- (3) Our passive has a three minute lockout timer built in so it will not trip hundreds of times a day in a busy family room or retail store. Without this timer the battery life can be shortened dramatically. We have known batteries to drain in as few as 2 or 3 months. Be sure the passive you use has a 3 to 5 minute timer built-in.
- (4) In summary, it is best to use the PIR we supply, unless you can overcome all the problems outlined above.