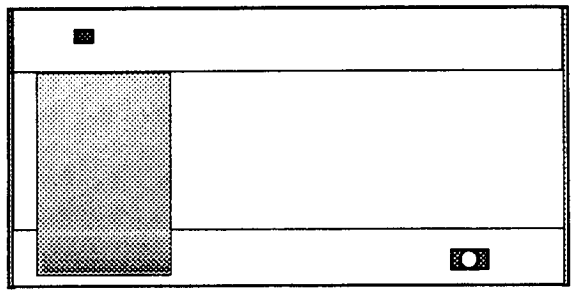
ITI Part #60-104

Note: Not to be used in Underwriters Laboratories Inc. installations.

Description and Applications

A **Passive Infrared (PIR) Sensor** is designed to detect movement in the interior of an enclosed structure. The 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.



The PIR has an output that will trip a special ITI transmitter already built into the unit. When motion is detected a "VIOLATION" signal is sent to the CPU whether the unit is armed or not. The PIR cannot prevent the system from arming.

Supervision.PIR transmitters are **Supervised**, that is, they send a check in signal to the CPU every 69 minutes just like the Door Window Sensor. Supervisory problems are announced as *"SENSOR nn FAILURE"* and reported to the Central Station.

Battery power. The PIR uses two 9 Volt **Alkaline** batteries for power. Under normal conditions these batteries will last 12 months or more. Leaving the PIR in "LED Mode" will dramatically shorten battery life, and is not recommended. When the batteries begin to get low the **Trouble Routine** will be initiated with *"SENSOR nn TROUBLE"* as the phone announcement message. The **Trouble Routine** can be terminated by correcting the problem and causing a normal transmission to be received by the CPU.

Temperature Range. 32°F to 110°F

Background Noise Voltage. Passive Infrared "noise" is caused by changes of temperature of solid objects viewed by the unit. The number of objects, size and closeness to the sensor, and amount of temperature change all determines the amount of noise which will be detected. This noise is changed into a voltage which can be read by a meter. The maximum allowable noise, with no motion, is 0.15 VDC.

Test Features. A fast-reset LED walk light is selected by moving a jumper on the circuit board to the LED Mode. When in this mode the PIR's LED indicates when the unit detects movement. When in the LED Mode the PIR will also transmit every time it is 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.

Installing PIR Motion Sensors

1. Installation Considerations.

- Mount the PIR so there is a solid **reference point** (wall) at the end of it's pattern.
- Mount these sensors so an **intruder** will most likely walk **across** the beams.
- **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.
- Mount at between **3 and 6 feet high** for best detection.

Note. When you study the patterns of the DS-984 Sensor that its detection pattern includes "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. If **pets** will be allowed in the PIR's field of view you must use the optional PIR lens for **Pet Patterns**. The down finger zones are eliminated, thus making it possible for **pets** to have access to the protected area without causing an alarm.

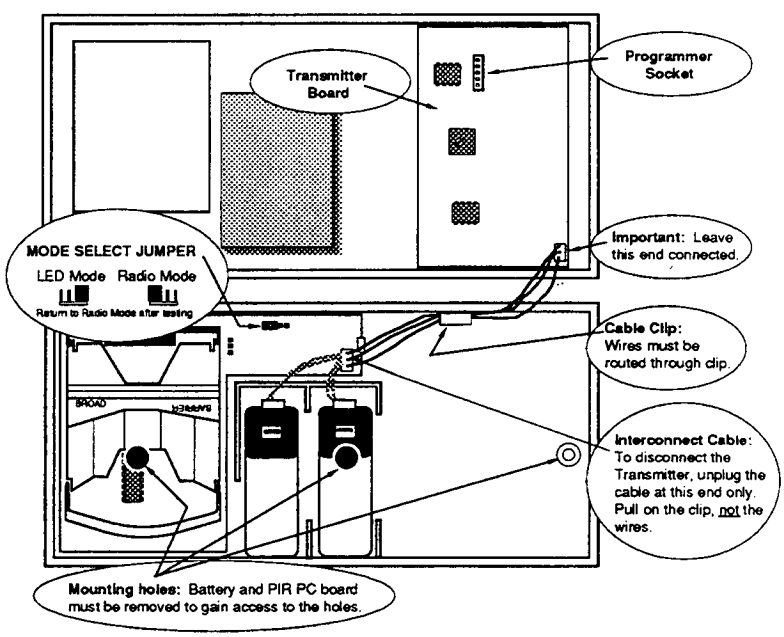
- Masking down looking zones should be avoided as those images will be present and will likely detect pets walking close to the sensor.
- Even though these PIR's are highly immune to false alarms you should follow these location guidelines.

Passive Infrared **locating guidelines**:

- **DO NOT** locate in direct sunlight.
- **DO NOT** aim at air conditioners, heat vents, wood stoves, fireplaces, etc.
- **DO NOT** aim at moving objects (curtains, handing displays, etc).
- **DO** attempt to mount on an outside wall facing in.
- **DO NOT** aim at solar heated walls or uninsulated metal walls.
- **DO** mount on a surface which is rigid and free from vibration.
- **DO NOT** mount on a metallic surface.

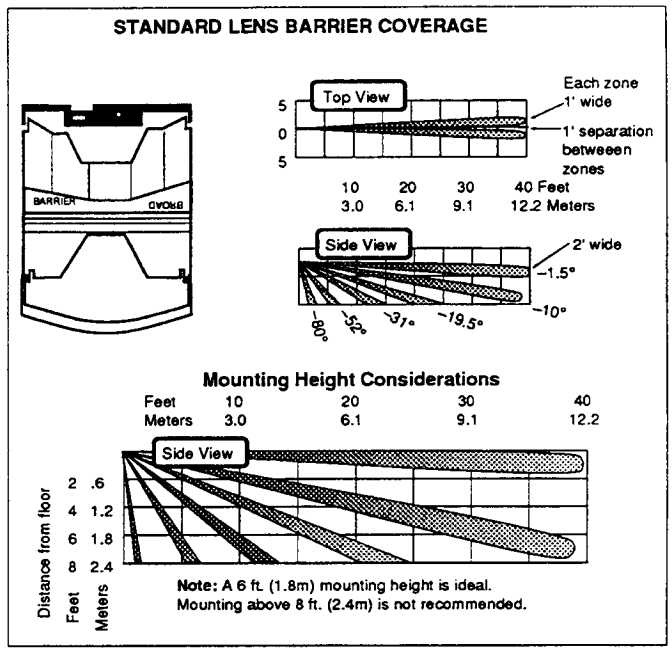
2. Preparation Before Installation.

Remove the PIR Sensor's front cover by applying pressure behind the front cover release tabs, (centrally located on the top & bottom of the front cover), and pulling the front cover towards you.

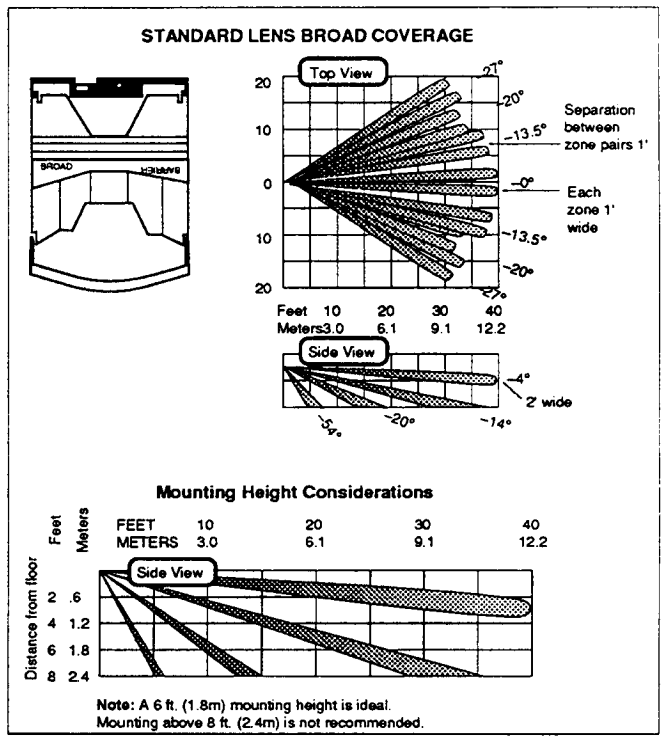


2.1 Selecting the Proper Lens. Determine the appropriate coverage pattern for the application, either barrier coverage or broad coverage. The standard lens can be "flipped" to select either barrier or wide angle coverage. These patterns are shipped with every PIR.

• **Standard Barrier Coverage.** Six pairs of zones oriented one above the other at varying degrees create a "curtain" of coverage extending out 40' feet.

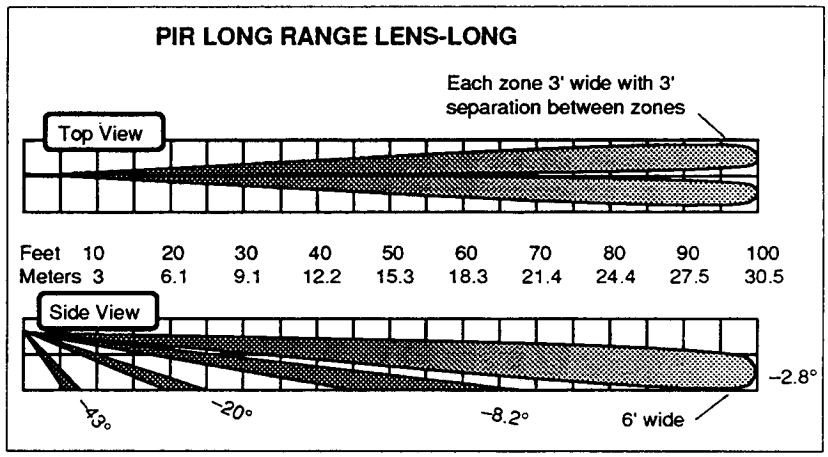


Standard Broad Coverage. Five pair of zones 40' feet wide at widest point and 40' feet out at center. Three pair of sabotage zones in lower field.

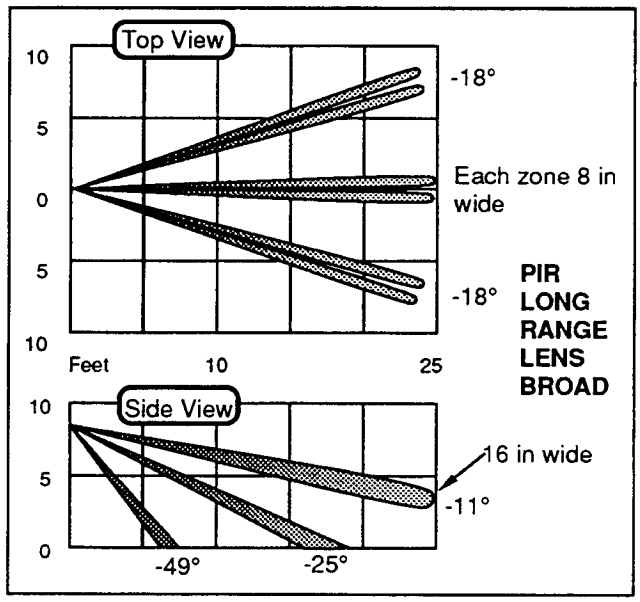


Optional Patterns Part #13-009. The following two optional patterns are available by purchasing an additional lens which contains both optional patterns. The optional lens can be "flipped" to select either barrier or wide angle coverage.

- **Optional Long Range Barrier Coverage.** Four pairs of zones oriented one above the other at varying degrees create a "curtain" of coverage extending out 100' feet.

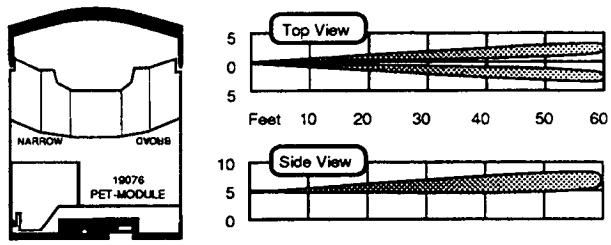


- **Optional Broad Angle Coverage.** Three pair of zones 20 feet wide at widest point and 25 feet out at center. Two layers of sabotage zones in lower field.

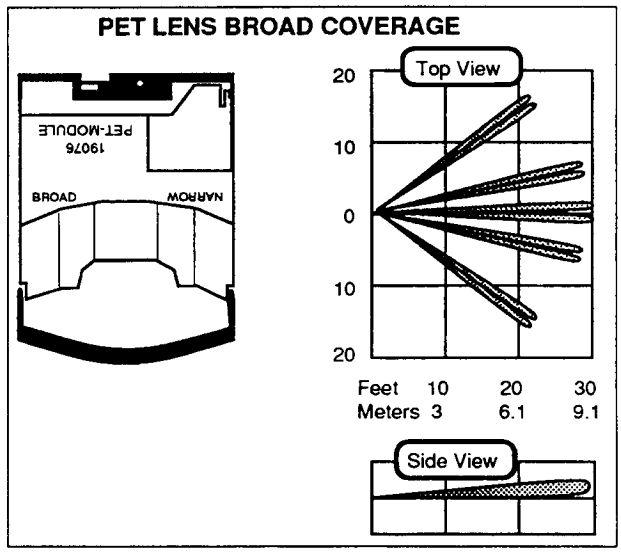


Pet Alley Patterns. The following two optional patterns are available by purchasing an additional lens which contains both optional patterns. The optional lens can be "flipped" to select either barrier or wide angle coverage.

- **Pet Alley Narrow Coverage.** One pair of zones approximately 10' wide at the furthest point (60 feet). No sabotage zones.



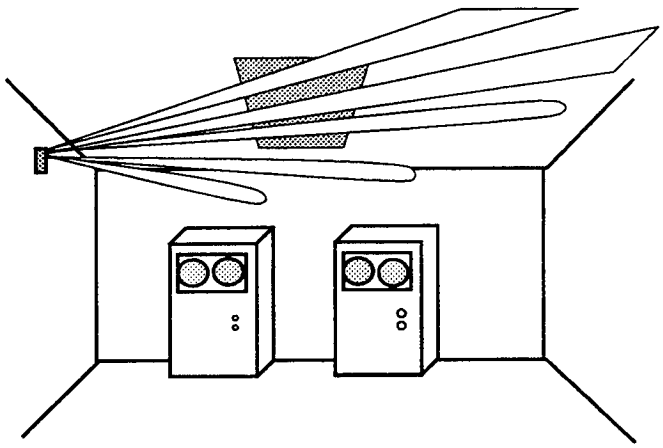
- **Pet Alley Broad Coverage.** Five pairs of zones approximately 40 feet wide at furthest point (30 feet). No sabotage zones.

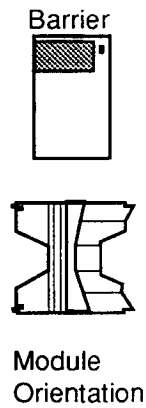


Note. When mounting unit for coverage in the presence of pets keep in mind the highest pets may be when they jump from furniture in the protection pattern.

Other Mounting Possibilities. The unit can be used to horizontally protect 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 position in direct or reflected sunlight.

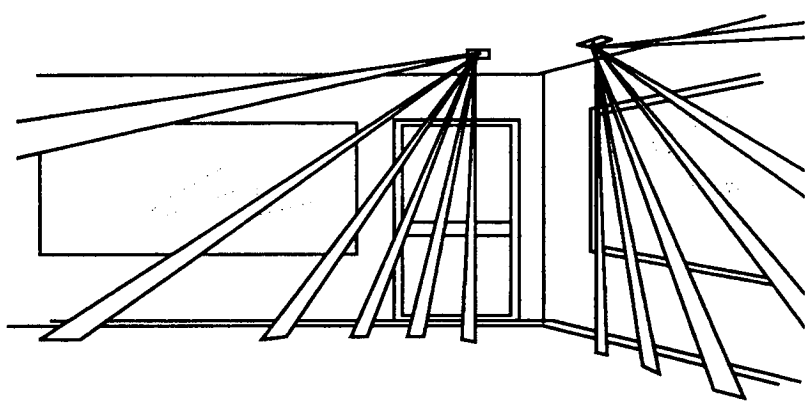
When wall mounting is difficult, you can mount the unit on the ceiling if the ceiling is very rigid and free from vibration. More than one unit can be located in the same general area without any worry about interference.



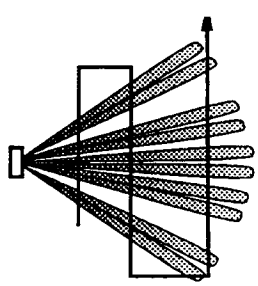


Permanent Mounting. Select a mounting height (between 3 and 6 feet) and location which avoids common sources of false alarms, yet maximizes detection potential.

- Remove the sensor circuit board assembly from the chassis by pulling back the retainer tab. One mounting hole is located under the board.
- Remove the two batteries. The second mounting hole is under the right battery.
- Use the chassis as a template and mark the location of the mounting holes.
- Level and mount the chassis using the screws and plastic anchors provided.
- Aiming is achieved by "shimming" the sensor housing if required.
- Replace the batteries and sensor circuit board in the chassis. Place the sensors left edge in first, then snap into place.



Testing PIRs. Walk test all PIRs across the pattern as shown at right to check for activation within the desired patterns.



Note. PIRs require a 3 minute settling time between activations. To completely test detectors, alert the Central Station if necessary.