



INSTALLATION INSTRUCTIONS

No. 995
PASSIVE INFRARED
MOTION DETECTOR

MARGIN LINES INDICATE PRINCIPAL CHANGES IN THIS ISSUE

GENERAL INFORMATION

This passive infrared motion detector is a versatile recess-mounted unit employing a wide angle Fresnel lens* and offering an efficient protection pattern for commercial and residential applications. The detector senses sudden and slight changes in temperature within the area of detection; thus, when an intruder crosses or enters any zone, the resulting change in infrared energy is detected for alarm reporting. Best coverage will be obtained if mounting is selected such that the likely direction of intruder motion is across the pattern.

The Detector features installer-selectable Alternate Polarity Pulse Count, which provides protection against false alarms.

* Optional long range and pet alley lenses are available.

SPECIFICATIONS

Detection Method:	Passive Infrared.
Coverage:	With standard wide angle lens: 40 ft x 56 ft (12.2m x 17m) With optional long range lens (995LR): 70 ft x 8.4 ft (21.3m x 2.6m) With optional pet alley lens (995PA): 40 ft x 56 ft (12.2m x 17m)
Pulse Count:	1- or 2-event, installer-selectable
Detectable Walk Rate:	0.5 - 5ft/sec (.15 - 1.5m/sec).
Indicator:	Red LED with enable/disable feature.
Mounting Height:	7ft nominal (2.1m)
Input Voltage:	12 VDC nominal (voltage reversal makes PIR inoperative).
Alarm Relay:	Form A, N.C., 0.13A max. contact rating @ 28V DC. 15-ohm internal resistor in series.
Current Drain:	15 mA.
Standby Capability:	Power source should be capable of at least 4 hours of battery standby.
Operating Temp.:	32 F - 122 F (0 F - 50 C)
Operating Humidity:	Up to 95% RH (max), non-condensing.
Dimensions:	2.75" W x 4.53" H x 0.8" D* (70 mm x 115 mm x 20 mm*) * External projection.

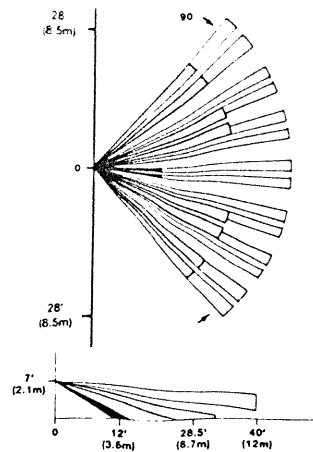
INSTALLATION HINTS:

- Do not install where the detector is exposed to direct sunlight or directly above strong sources of heat.
- Make sure the detection area does not have obstructions (curtains, screens, large pieces of furniture, plants, etc.) which may block the pattern of coverage.
- Avoid locating a detector in areas which contain objects likely to produce a rapid change in temperature, such as central heating, radiators or ducts (or heaters of any kind), air conditioners, open flame, etc.
- Do not mount on an unstable surface.

Important: Avoid running alarm wiring close to heavy-duty electrical power cables.

PROTECTION PATTERNS

The PIR's protection pattern can be modified to suit the needs of a particular area by selective use of the masking strips supplied. Two interchangeable optional lenses are available for use with the 995 - a long-range lens (995LR), and a pet alley lens (995PA). See *Interchangeable Optional Lenses*.



DETECTION AREA - STANDARD (WIDE-ANGLE) LENS

ACCESSING THE PC BOARD

To enable or disable the Alarm LED, or to change the Pulse Count, you will need to access the PC board located in the base of the PIR.

Separate the base from the mounting plate as follows:

Holding the base with one hand, bend the upper left-hand edge of the mounting plate downward with the thumb and forefinger of the other hand to separate the base from the mounting plate in that area. See Figure 1. Do the same for the lower left-hand edge, and then detach the base.

The PC board is located in the base (see Fig 2).

To re-attach the base, first insert side of base beneath the "lip" on the right-hand side of the mounting plate, then press down firmly on the left-hand side of the base to "snap" that side securely into position. Make sure the base is properly secured to the mounting plate, but able to slide up or down to possible future vertical adjustment.

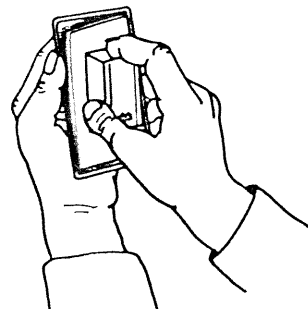


Figure 1.
Detaching the Base

LED ENABLE/DISABLE

The detector is shipped with the Alarm LED disabled (LED enable/disable plug in place). The LED should be enabled (for the walk-test to follow) by removing the LED enable/disable plug (see Fig. 2 for location). To prevent the loss of the plug, we suggest you install it on one pin when the plug is not in use. When the walk-test is completed, the LED may be disabled, if desired (plug in place).

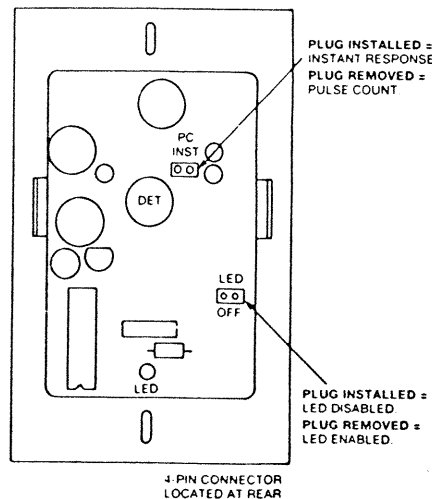


Figure 2. PC Board (in base of PIR)

PULSE COUNT OPTION

Each detector includes Pulse Count circuitry that is designed to provide stability in adverse environments to minimize false alarms. 1-event pulse count (instant response) is provided by positioning the jumper plug across the pulse count pins (see Fig. 2 for location). To select 2-event pulse count, remove the jumper plug. When programmed for 2-event pulse count, the detector will signal an alarm within 3 or 4 steps, since the processing logic requires more complex motion than just a momentary event. When the detector verifies an intrusion, the LED will light and the alarm relay contacts will transfer, both conditions lasting for approximately 1 to 3 seconds (dependent upon signal strength). To prevent the loss of the plug, we suggest you install it on one pin when the plug is not in use.

INSTALLING THE PIR

The wall in which the PIR is to be mounted must be firm and vibration-free. The PIR is designed for installation in a standard single-gang 2-1/2" deep recessed electrical box.

1. Select a location that will provide the coverage desired from the lens in use, and install the electrical box there.
2. Wiring (from the control, etc.) must be brought into the electrical box and spliced to the leads on the connector that has been supplied, as shown in Figure 3.
3. Attach the connector to the PIR.
4. Mount the PIR to the electrical box using the two screws supplied, as shown in Figure 4.

Important: Do not, under any circumstances, drill holes or make any openings in the PIR's base which is of a sealed design to prevent the entry of debris, insects, etc.

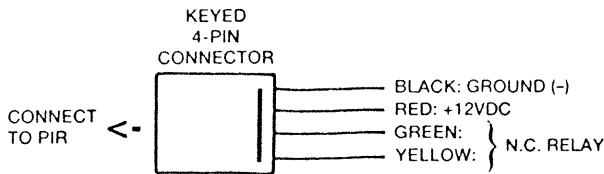


Figure 3. Keyed 4-pin Wiring Connector

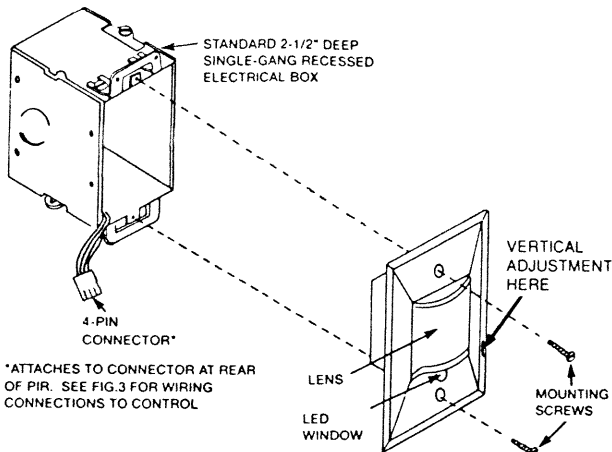


Figure 4. Installation in Recessed Electrical Box

VERTICAL PATTERN ADJUSTMENT

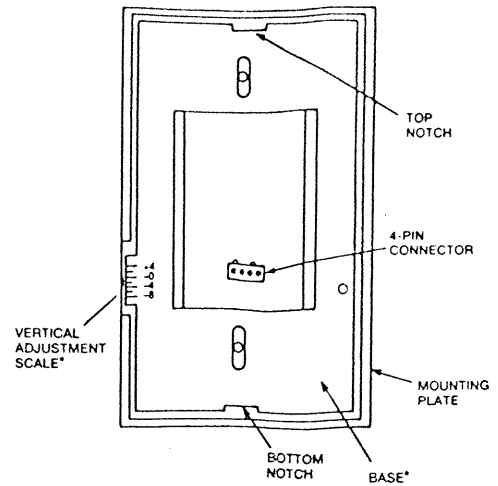
The protection pattern provided by the lens in use can be raised or lowered before the PIR is mounted in the wall by sliding the base up or down (relative to the mounting plate). Use the calibrated scale provided on the PIR (see Fig. 5). The pattern may be raised by as much as +4 degrees or lowered by as much as -6 degrees.

To Adjust the Pattern after the PIR is Mounted:

If a vertical pattern adjustment is required after the PIR has been mounted, do the following:

1. Loosen (but do not remove) the two screws that secure the PIR to the wall.
2. Using the blade of a screwdriver, slide the tab in the notch on the right-hand side of the PIR's mounting plate upward (to lower the pattern) or downward (to raise the pattern). See Figure 4.
3. After the adjustment, secure the PIR in the wall by tightening the screws previously loosened.

Important: Always conduct a walk test after any adjustment.



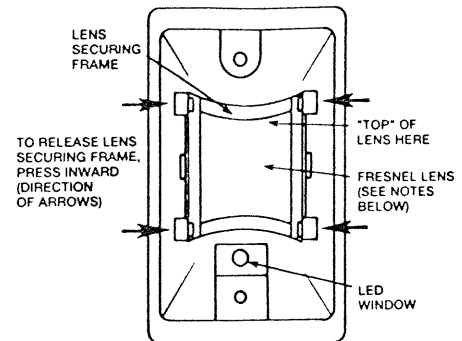
***TO ADJUST:**
PLACE SCREWDRIVER BLADE IN NOTCH AT TOP AND TWIST TO SLIDE BASE DOWNWARD (RAISES PATTERN); USE BOTTOM NOTCH TO SLIDE BASE UPWARD (LOWERS PATTERN).

Figure 5. Rear View of PIR

HORIZONTAL PATTERN ADJUSTMENT

The protection pattern may adjusted in a horizontal direction (± 3.5).

1. Separate the base from the mounting plate, as shown in Figure 1.
2. Release the lens securing frame in the mounting plate by applying pressure on each side of the flexible frame. See Figure 6. Remove the frame temporarily.
3. Slide the lens to the right or left, as needed (only a small amount of movement is possible).
4. Re-install the securing frame by squeezing on each side and then pushing down to lock into position.
5. Press the base onto the mounting plate – it should "snap" into place securely.
6. After any adjustment, a walk-test *must* be performed.



NOTES:

1. LENS ALWAYS INSTALLED WITH SMOOTH SIDE FACING OUTWARD AND ORIENTED CORRECTLY (NOTE THE WORD "TOP" MOLDED INTO LENS).
2. HORIZONTAL ADJUSTMENT OF ± 3.5 POSSIBLE BY SLIDING LENS TO LEFT OR RIGHT (WITH FRAME REMOVED)

Figure 6. Rear View of mounting Plate (base removed)

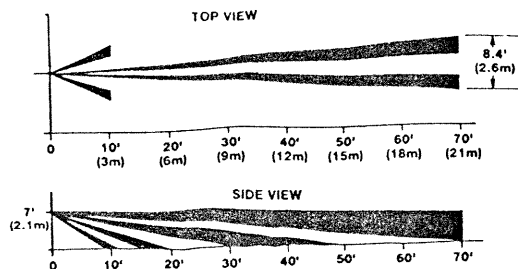
LENS MASKING:

The masking strips that have been supplied are designed for application to one or more lens segments to produce a protection pattern that suits the particular requirements of the protected area. Individual masking strips have been provided for each of the lens segments on the standard lens supplied with the PIR. Simply peel off the appropriate pressure-sensitive adhesive strip(s) and apply over the desired lens segment(s). Be sure to affix the masking strips to the *inside* of the lens (not the outer, smooth side). Each lens segment that is masked results in the elimination of one zone of protection from the coverage pattern. By masking segments of the lens, you can adjust the coverage to suit the area to be protected, or eliminate coverage from areas where you anticipate environmental disturbances that might reduce the PIR's stability (a heater or other heat-producing object for example).

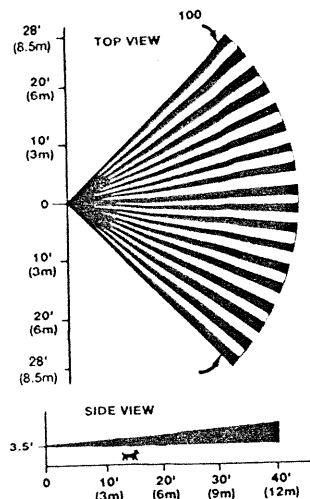
INTERCHANGEABLE OPTIONAL LENSES

In addition to the standard lens supplied with the No. 995 PIR, two optional lenses are available which may be used to provide long-range or pet alley protection patterns. Protection patterns for these optional lenses are provided below. Refer to *Changing Lenses* in this document if one of the optional lenses is being installed in place of the standard lens.

No. 995LR – LONG-RANGE LENS



No. 995PA – PET ALLEY LENS



Changing Lenses

1. Separate the base from the mounting plate, as shown in Figure 1.
2. Release the lens securing frame in the mounting plate by applying pressure on each side of the flexible frame. See Figure 6. Remove the frame temporarily.
3. Remove the existing lens carefully.
4. Insert the new lens into the area occupied by the previous lens. Make sure that the smooth side faces outward (away from you), and that the word TOP molded into the lens and its identifying number are at the top, as indicated in Figure 6.
5. Re-install the securing frame by squeezing on each side and then pushing down to lock into position.
6. Press the base onto the mounting plate – it should “snap” into place securely.
7. After changing lenses, a walk-test *must* be performed.

TEST PROCEDURES

Important: Two-minute warm-up time is required after applying power. Testing should be conducted with the protected area cleared of all people. Disarm the protective system's control during the test procedure to prevent reporting of unwanted alarms.

Walk-Test:

1. The Pulse Count jumper plug in the PIR must be in the single-event (instant response) mode (plug installed). The Alarm LED must be enabled at this time (LED enable/disable plug removed).
2. Walk through protective zones, observing that the PIR's LED lights whenever motion is detected (the LED serves as a Walk-Test indicator during this procedure).

Note: In the single-event (instant) pulse mode, the LED stays lit (and the alarm relay contacts remain open) for approximately 1 to 3 seconds after detecting motion.

3. If pulse count is to be used in this application, remove the pulse count jumper plug from the pulse count pins, and repeat the walk test procedure. In the pulse count mode, the LED serves as an alarm indicator.

The absolute range of all PIR units is subject to variation because of different types of clothing, backgrounds and ambient temperature. For this reason, ensure that the most likely intruder routes are well within the PIR's protective zones and that walk-testing is carried out along these routes.

After the initial walk test, we recommend the following to verify proper aiming of the PIR:

Repeat the walk test in a *semi-crouching position* (kneeling with top of head approximately 3 feet from the ground – 4-1/2 feet if using the Pet Alley lens), at the rated maximum range of 40 feet (or at the maximum range possible if less than 40 feet). If performance degrades under these conditions, the pattern must be lowered for proper aiming. See “Vertical Pattern Adjustment”.

After the “Walk-Test” is complete, the LED may be disabled (LED enable/disable plug installed).

MAINTAINING PROPER OPERATION:

In order to maintain the detector in proper working condition, it is important that the following be observed by the user.

1. **Power should be provided at all times.** Loss of power to the unit will result in the alarm contacts reverting to an alarm state. The unit's DC source should have standby power available for at least 4 hours of operation during emergencies.
2. **Units should never be re-aimed or relocated** without the advice or assistance of the alarm service company.
3. **The physical surroundings of the protected area should not be changed.** If furniture or stock is moved, or air-conditioning or additional heating is installed, the system may have to be readjusted by the alarm service company.
4. **Walk-tests should be conducted frequently (at least weekly)** to confirm continued proper coverage by each detector.

TROUBLESHOOTING

INTERMITTENT ALARM (LED OPERATIVE)

Probable Causes:

- A. Rapid temperature change. Check for electric or gas heaters, open flames, electric arcs, etc..
Remedy: Locate source and reposition detector if necessary.
- B. Drafts causing drapes, light fixtures, display material to move.
Remedy: Eliminate source of motion.

INTERMITTENT OR CONTINUOUS ALARM

Probable Causes:

- A. DC voltage supplied to detector is inadequate, intermittent, or polarity reversed.
Remedy: Ensure that proper polarity and adequate voltage is supplied and that wiring is intact (no opens or shorts) and connections secure.
- B. Protective loop is interrupted (open).
Remedy: Determine whether interruption is in protective loop wiring or at detector's alarm relay contacts. Disconnect protective loop at detector relay contact terminals and check continuity across terminals. If absent at detector terminals (and proper voltage is supplied to the detector), return unit for service. If present, check protective loop wiring.

LED INOPERATIVE

Probable Causes:

- A. LED enable/disable plug is installed.
Remedy: Remove LED enable/disable plug.
- B. LED malfunction. Check for broken/shorted leads.
Remedy: Return unit for service.

NO ALARM WHEN MOTION TAKES PLACE IN THE PROTECTED AREA (LED DOES NOT LIGHT)

Probable Causes:

- A. Detection area has changed. Possibly due to repositioned furniture or equipment in the protected area.
Remedy: Caution customer about layout changes. Vertical or horizontal pattern adjustment of the PIR may be necessary.

CONTROL PANEL INDICATES CONTINUOUS FAULT IN ZONE OF PROTECTION CONTAINING PIRs. (PIR'S ALARM LED NOT LIT)

Probable Cause:

Too many detectors being used in the zone. Each detector adds 15 ohms of series resistance and the zone's allowable loop resistance is being exceeded.

Remedy: Reduce the number of detectors used in the zone until the series resistance is within the allowable loop resistance permitted by the control.

TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any alarm system.

The installer should assume the responsibility of developing and offering a regular maintenance program to the user, as well as acquainting the user with the proper operation and limitations of the alarm system and its component parts. Recommendations must be included for a specific program of frequent testing (at least weekly) to insure the system's operation at all times.

THE LIMITATIONS OF YOUR PASSIVE INFRARED MOTION DETECTOR

While the Passive Infrared Motion Detector is a highly reliable intrusion detection device, it does not offer guaranteed protection against burglary. Any intrusion detection device is subject to compromise or failure to warn for a variety of reasons:

- Passive Infrared Motion Detectors can only detect intrusion within the designed ranges as diagrammed in this installation manual.
- Passive Infrared Motion Detectors do not provide volumetric area protection. They do create multiple beams of protection, and intrusion can only be detected in unobstructed areas covered by those beams.
- Passive Infrared Detectors can not detect motion or intrusion that takes place behind walls, ceilings, floors, closed doors, glass partitions, glass doors, or windows.
- Mechanical tampering, masking, painting or spraying of any material on the lenses, windows or any part of the optical system can reduce the detection ability of the Passive Infrared Motion Detector.
- Passive Infrared Detectors sense changes in temperature; however, as the ambient temperature of the protected area approaches the temperature range of 90° to 105°F (32° to 40°C), the detection performance can decrease.
- This Passive Infrared Detector will not operate without appropriate DC power connected to it, or if the DC power is improperly connected (i.e., reversed polarity connections).
- Passive Infrared Detectors, like other electrical devices, are subject to component failure. Even though this equipment is designed to last as long as 10 years, the electronic components in it could fail at any time.

We have cited some of the most common reasons that a Passive Infrared Motion Detector can fail to catch intrusion. However, this does not imply that these are the only reasons, and therefore it is recommended that weekly testing of this type of unit, in conjunction with weekly testing of the entire alarm system, be performed to ensure that the detectors are working properly.

Installing an alarm system may make the owner eligible for a lower insurance rate, but an alarm system is not a substitute for insurance. Homeowners, property owners and renters should continue to act prudently in protecting themselves and continue to insure their lives and property.

We continue to develop new and improved protection devices. Users of alarm systems owe it to themselves and their loved ones to learn about these developments.

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