



INSTALLATION INSTRUCTIONS

No. 4196
PASSIVE INFRARED
MOTION DETECTOR/
TRANSPONDER
(FOR UL LISTED VECTOR SERIES
POINT ANNUNCIATOR SYSTEM)

MARGIN LINES INDICATE PRINCIPAL CHANGES IN THIS ISSUE

GENERAL INFORMATION:

The No. 4196 PIR/TRANSPONDER is designed for use only with the VECTOR series Point Annunciation Systems. It provides 12 zones of wide-angle coverage with a range of up to 40 feet (12.2m), or 11 zones of narrow coverage with a range of up to 70 feet and has the following important features:

- Quad element pyroelectric sensor providing the reliability of two completely separate dual detectors covering the same area.
- High precision, computer designed parabolic optical system.
- Low current drain which allows for direct powering from the multiplex polling loop.
- Preset zones for fast and easy installation.
- Wall/corner mounting plate.
- Dual channel and (optional) pulse count signal processing for reduced false alarms.
- Walk Test LED
- Two wire interface to control — power and signal on same wire pair.
- Auxiliary sensor loop permits interface of any other nearby alarm sensor (for example, reed contact).

The detector is designed to operate at all times. The LED on the unit will flash whenever motion is being detected.

PRINCIPLES OF OPERATION:

The optical system divides the area into a series of protected zones. A quad element sensor measures the level of infrared energy in each zone. When an intruder crosses or enters any zone, an alarm condition will be reported.

The detector is configured with a quad element sensor and two independent signal processing amplifiers. In effect, two passive infrared sensors are sharing a common optical system. Both sensors must detect motion at the same time for the PIR to report an alarm. In this way immunity is provided against false alarms attributed to channel noise and random detector disturbances, while "catch" performance is not compromised.

The sensor does not respond to visible light (e.g. headlights) or slow-changes in the background temperature of the area.

Passive infrared detectors employ no transmission of any kind, therefore any number of units may be used in the same area.

The VE2000 point protection systems with manufacturing code 1354 and higher and all VE3000 systems have been expanded to provide PIR pulse count signal processing for stability in adverse environments to minimize false alarms. The manufacturing code is located inside the VECTOR 2000 cabinet on the lower right side of the 4152 metal plate.

This feature is optional and up to 5 PIRs, in the address range of 01-15, can be assigned to receive this additional false alarm protection via pulse count logic.

As received from Ademco, pulse count is disabled. To enable this feature, please refer to the programming instructions included-with the VECTOR control panel.

For long range applications where the PIR motion detector is used to protect narrow corridors, or where single protective zones are directed through doorways or room openings, pulse count processing must remain disabled.

COVERAGE CONSIDERATIONS AND TYPICAL LAYOUTS:

The range will depend upon the mirror system in use. Protective patterns are shown in Diagrams 2 and 3. However, the unit may be mounted at other heights with modified range coverage as shown in Diagram 4.

"Dead Zone" Caution: Note in Diagrams 2 and 3 that for certain mounting heights "dead zones" are indicated within which a person could be moving and not be detected by any of the unit's protective zones. In general, the dead zones are apt to be present between the detector and the downward fields of view as the unit's mounting height is increased.

As shipped from Ademco PIR coverage is set for wide angle shorter range. **TO CHANGE TO LONG RANGE PROTECTION**, follow the mirror change instructions included under INSTALLATION.

SELECTING AN ID NUMBER:

Make all identification number selections by arranging the switches on the circuit board. The ID number is equal to the sum of the switch values in the "ON" position. Each switch has a different value and should be set according to the following table:

SWITCH NUMBER:	1	2	3	4	5	6	7	8		ID No.
SWITCH VALUE:	128	64	32	16	8	4	2	1		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	=	1
	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	=	2
	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	=	3
	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	=	4
	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	=	5
	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	=	6
	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	=	7
	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	=	8
	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	=	9
	OFF	OFF	OFF	OFF	ON	OFF	ON	ON	=	10
	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	=	11
	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	=	12
	OFF	OFF	OFF	OFF	ON	ON	ON	ON	=	13
	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	=	14
	OFF	OFF	OFF	OFF	ON	ON	ON	ON	=	15
	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	=	16
	OFF	OFF	OFF	ON	OFF	OFF	ON	ON	=	17
	OFF	OFF	OFF	ON	OFF	ON	OFF	ON	=	18
	OFF	OFF	OFF	ON	OFF	ON	ON	ON	=	19
	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	=	20
	OFF	OFF	OFF	ON	OFF	ON	ON	ON	=	21
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	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	=	35
	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	=	36
	OFF	OFF	ON	OFF	OFF	ON	ON	ON	=	37

SEE
DIAGRAM 6

SELECTING A MOUNTING LOCATION

The No. 4196 Passive Infrared Detector responds to changes in energy which occur when an intruder moves into or out of a protective zone. Best coverage will be obtained if the mounting site is selected such that the likely direction of intruder motion is ACROSS the pattern.

Passive I.R. units are remarkably resistant to false alarm hazards but the following recommendations should be observed:

Avoid locating unit where central heating radiators, flames, or heating outlet ducts are within the protective zones.

Avoid locating the unit in direct sunlight or directly above strong sources of heat.

Avoid locating unit on unstable surfaces.

Avoid running alarm wiring close to heavy duty electrical cables.

INSTALLATION AND WIRING:

LONG RANGE MIRROR INSTALLATION PROCEDURE (OPTIONAL)

The following procedure must be followed for applications which require long range protection coverage.

IMPORTANT!

DO NOT TOUCH THE MIRRORRED SURFACES! USE A SOFT CLOTH TO WIPE OFF ANY ACCIDENTAL SMEARS OR FINGERPRINTS IMMEDIATELY!

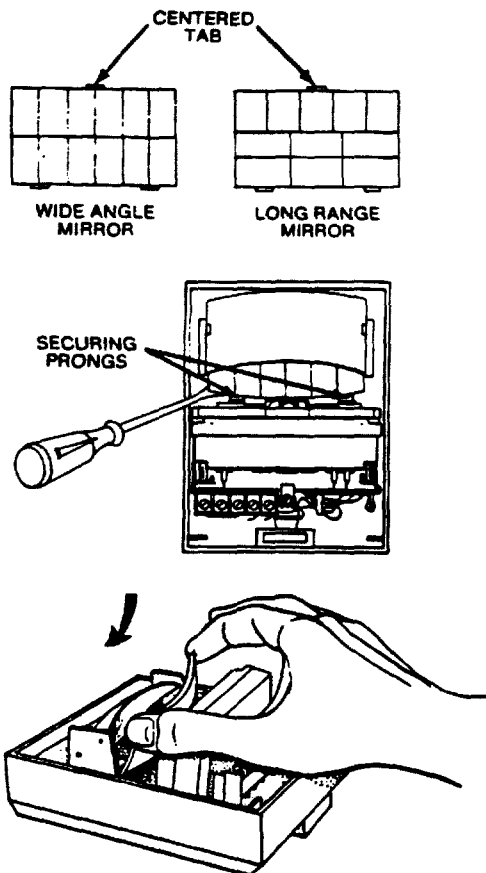


Diagram 1. MIRROR CHANGE PROCEDURES

1. Determine which mirror is appropriate for the intended application. The unit is delivered with the wide angle mirror installed.

2. If the long range mirror is required, remove the wide angle mirror as follows:

- Remove the unit's cover
- Place a small flat bladed screwdriver beneath a lower corner of the mirror.

Pull back the adjacent securing prong with your fingertip while prying the mirror outward with the screwdriver. (Pry from the corner edge to achieve best results.) Repeat this procedure at the other corner. Remove the mirror.

3. Holding the mirror between your thumb and forefinger, install the long range mirror by inserting the single centered tab on the mirror top into the housing. Release the mirror, and allow the bottom of the mirror to rest on the two securing prongs. Press down, with both forefingers, on the two tabs on the mirror bottom until the mirror is secured (with a click) by the two securing prongs.

Mounting:

1. Mount the wall plate to a firm vertical surface (flat on wall or in corner), as shown in Diagram 5, at the recommended height (see previous section). Orient the plate so that the rectangular cutout in the plate is at the bottom. If wiring is provided from a hole in the mounting surface, locate the mounting plate so that the wiring hole is centered horizontally within the rectangular cutout in the plate and the bottom edge of the plate is positioned in-line with the center of the wiring hole (see Diagram 5, Detail A). This will align the wiring hole with the wire entry in the case when the unit is secured.

Wiring holes should be no larger than 5/16" (9.2mm) in diameter.

2. Remove the front cover from the detector.
3. Using the wire entry access at the lower rear of the case, carefully feed the wires through the foam comb in the entry and along the underside of the terminal block. Wire length should be adequate for connection to the PIR terminal block, but unnecessary splices and loops within the unit are to be avoided. The foam should surround the wires and block drafts from entering the PIR enclosure.

4. Attach the unit to the wall plates as follows: Engage all four hooks on the wall plate into the slots on the rear of the case (see Diagram 5) and secure the unit to the wall plate by pressing downward.

NOTE: With front cover secured in place, unit is locked to wall mounting plate. To detach unit from wall plate, front cover must be removed first.

Wiring Connections:

See Diagram 6 for connections, which should be made as follows:

1. Polling Loop (+) and (-) terminals: Connect these terminals to the system polling loop. Observe polarity.
2. External sensor terminals: Connect these terminals to external sensors that can be assigned to any zone response provided by the system, independent of the zone response used by the PIR.

TESTING:

IMPORTANT: Wait at least two minutes after applying power before attempting to walk-test unit.

Testing of the detector should be conducted with the protected area cleared of all people. In some business establishments, it may be more convenient to do this after the business is closed. The system control should be disarmed during the procedure to prevent reporting unwanted alarms.

Walk-Test:

Replace the front cover and walk-test the unit. Test operation by walking through the protective zones and observing the walk-test LED. It will flash whenever motion is detected.

The absolute range of all Passive I.R. 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.

MAINTAINING PROPER OPERATION AND COVERAGE:

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. The system'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 of the alarm 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 at least weekly to confirm continued proper coverage by each detector.

TROUBLESHOOTING:

Trouble 1: UNIT GOES INTO ALARM INTERMITTENTLY FOR NO APPARENT REASON AND WALK-TEST LIGHT FLASHES WHEN ALARM CONDITION EXISTS.

CAUSE	REMEDY
A. Rapid change in IR level in a zone. Check for electric or gas heaters, open flames, electric arcs, or any object in a zone which can change temperature rapidly.	Identify source of IR or temperature change. Reposition unit so that source of problem is no longer in a zone.
B. Drafts are creating motion in drapes, display material or overhead lighting fixtures.	Locate source of motion. Eliminate same and walk-test unit after motion source is eliminated.

Trouble 2: DETECTOR OPERATES NORMALLY BUT WALK-TEST LIGHT DOES NOT OPERATE.

CAUSE	REMEDY
LED malfunction. Check for broken or shorted leads.	Return unit for service.

Trouble 3: AREA OF COVERAGE CHANGES.

CAUSE	REMEDY
A. Customer has repositioned furniture or equipment in premises.	Caution customer that changes in layout can affect coverage. Reposition the unit according to installation instructions. Be certain that unit has not been tampered with.
B. Mounting surface is unstable. A few degrees vertical shift can change range substantially.	Mount on secure surface.

Trouble 4: UNIT DOES NOT APPEAR TO BE OPERATING.

CAUSE	REMEDY
Unit is not receiving power.	Check for presence of 8-11V at terminals of unit. If too low, polling loop run to control may be excessive for the wire gauge used. Increase wire gauge or add No. 4197 Polling Loop Extender module to location in the loop where voltage boost is necessary and connect it to a power source. Alternatively, the detector can be tested using a 9-volt DC source (such as a 9-volt battery or a 9 volt power supply).

GENERAL SPECIFICATIONS:

Physical:	Width: 3 1/4" (8.3 cm)
	Height: 4 1/4" (10.8 cm)
	Depth: 2 1/4" (5.4 cm)
Electrical:	Voltage: 8-11V. at polling loop terminals.
	Current: Less than 1 mA

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.

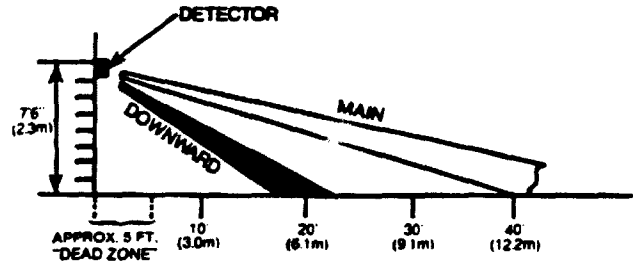
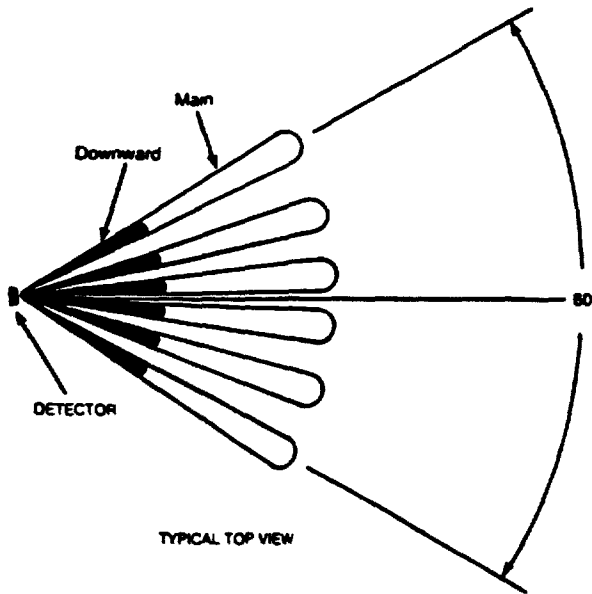


Diagram 2. WIDE ANGLE PROTECTION PATTERNS

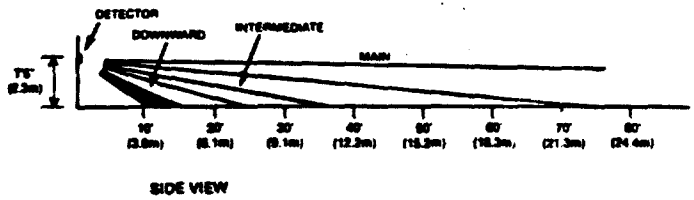
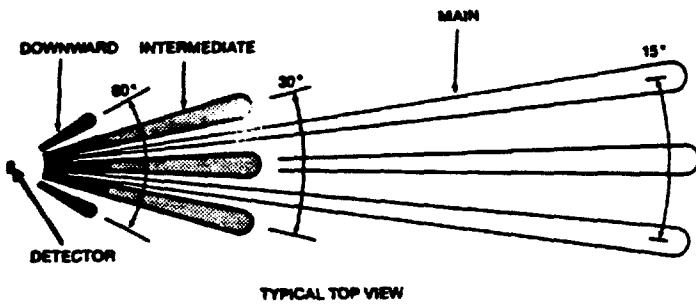


Diagram 3. LONG RANGE PROTECTION PATTERNS

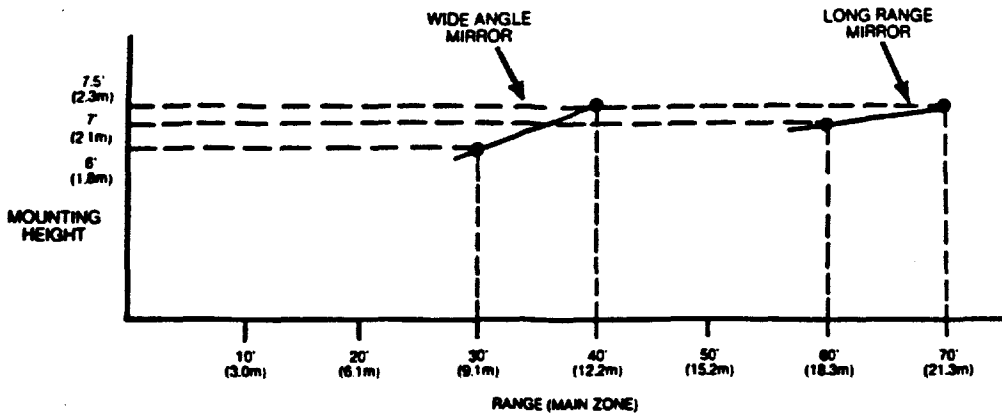


Diagram 4. MAIN ZONE RANGES AT VARIOUS MOUNTING HEIGHTS

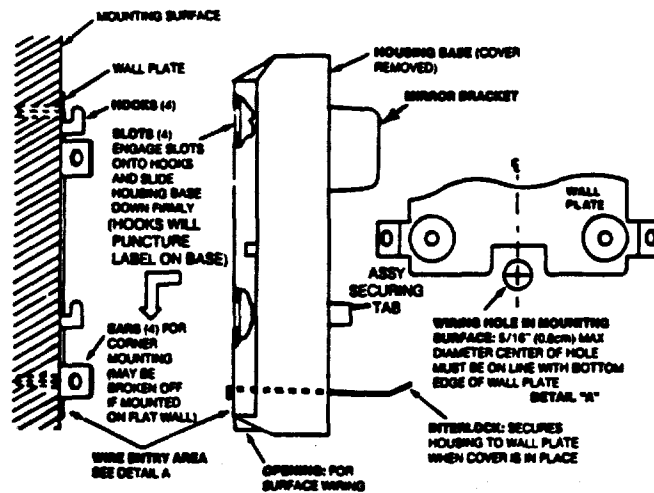


Diagram 5. MOUNTING DETAILS

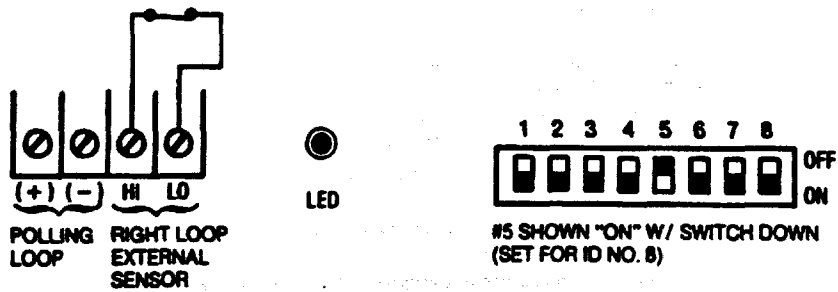


Diagram 6. CONNECTIONS, TERMINALS AND JUMPERS

ADEMCO ONE YEAR LIMITED WARRANTY

Alarm Device Manufacturing Company, a Division of Pittway Corporation ("Seller"), 165 Eileen Way, Syosset, New York 11791, warrants its security equipment (the "product") to be free from defects in materials and workmanship for one year from date of original purchase, under normal use and service. Seller's obligation is limited to repairing or replacing, at its option, free of charge for parts, labor, or transportation, any part proven to be defective in materials or workmanship under normal use and service. Seller shall have no obligation under this warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than the Seller. In case of defect, contact the security professional who installed and maintains your security system or the Seller for product repair.

This one year Limited Warranty is in lieu of all other express warranties, obligations or liabilities. THERE ARE NO EXPRESS WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF. ALL IMPLIED WARRANTIES, OBLIGATIONS OR LIABILITIES MADE BY SELLER IN CONNECTION WITH THIS PRODUCT, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE. ANY ACTION FOR BREACH OF ANY WARRANTY, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY, MUST BE BROUGHT WITHIN 18 MONTHS FROM DATE OF ORIGINAL PURCHASE. IN NO CASE SHALL SELLER BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, OR UPON ANY OTHER BASIS OF LIABILITY WHATSOEVER, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Seller does not represent that the product may not be compromised or circumvented; that the product will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the product will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained alarm may only reduce the risk of a burglary, robbery or fire occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. However, if Seller is held liable, whether directly or indirectly, for any loss or damage arising under this Limited Warranty or otherwise, regardless of cause or origin, Seller's maximum liability shall be the complete and exclusive remedy against Seller. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. No increase or alteration, written or verbal, to this warranty is authorized.

THE LIMITATIONS OF THIS PASSIVE INFRARED MOTION DETECTOR

While the Intrusion 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 detection, and intrusion can only be detected in unobstructed areas covered by those beams.
- Passive Infrared Detectors cannot detect motion or intrusion that takes place behind walls, ceilings, floors, closets, glass partitions, glass doors, or windows.
- Mechanical tampering, masking, painting or spraying of any material on the mirrors, 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, 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 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 one eligible for lower insurance rates, but an alarm system is not a substitute for insurance. Homeowners, property owners and renters should continue to insure their lives and property.

ADEMCO

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