

INSTALLATION INSTRUCTIONS

GENERAL INFORMATION

The No. 1876 PIR provides 12 zones of wide-angle coverage with a range of up to 40 feet (12.2m), or long range/curtain coverage with a range of up to 80 feet (24.4m) and has the following important features:

- Dual element pyroelectric sensor.
- Low current drain which allows for extended system power source battery life.
- Horizontally adjustable optical system for accurate aiming of protection pattern.
- Silent SPDT relay.
- Wall/corner mounting plate.
- 12VDC operation.

The optical system divides the area into a series of protected zones. A dual element sensor measures the level of infrared energy in each zone. When an intruder crosses or enters any zone, a signal will be generated in response to the change in infrared energy, and the LED on the unit will light.

The No. 1876 is designed to operate at all times and must be powered from a filtered 12VDC source that can provide at least 4 hours of standby power.

COVERAGE CONSIDERATIONS AND TYPICAL LAYOUTS

The range will depend upon the mirror system in use. Protective patterns are shown in Diagrams 1 and 2 for a normal mounting height of 7 ft (2.1m). The unit may be mounted higher for increased range but mounting above 8.5 ft (2.6m) is not recommended.

"Dead Zone" Caution: Note in Diagram 1 that a "dead zone" is indicated, within which a person could be moving and not be detected by any of the unit's protective zones. Other dead zones may occur between the detector and the downward fields of view as the unit's mounting height is increased.

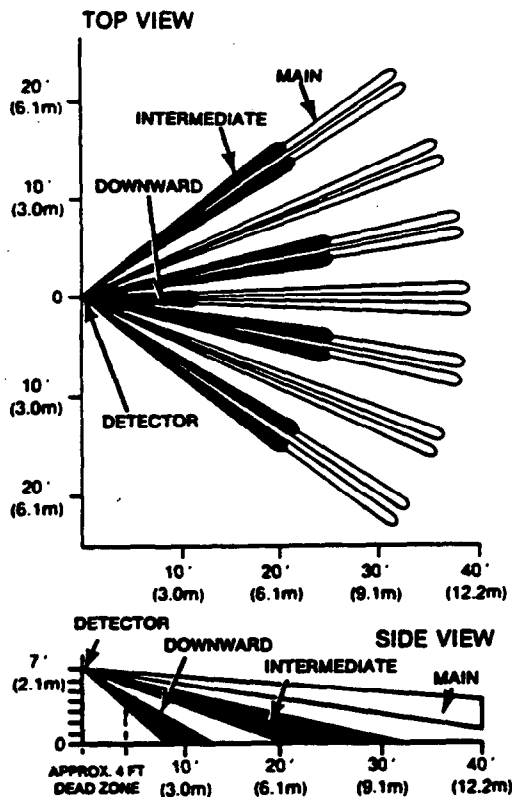


Diagram 1: WIDE ANGLE PROTECTION PATTERN

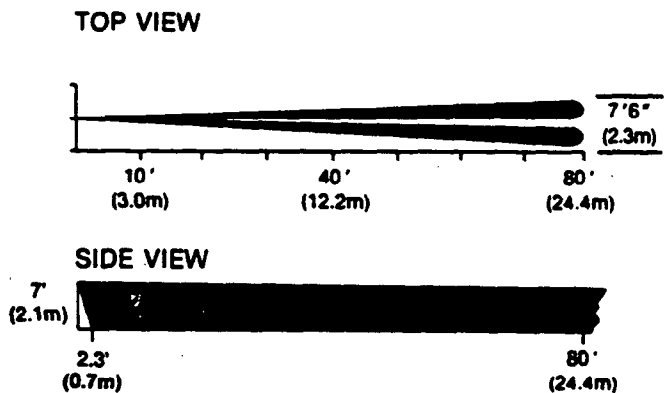


Diagram 2: LONG RANGE/CURTAIN MIRROR COVERAGE

F. Inverted Mounting:

If small pets have access to the area protected by the detector, this section pertains.

The detector may be installed approximately 3 to 3-1/2 ft (0.9 to 1.1m) from the floor, provided furniture or other objects do not obscure the pattern of protection.

The detector and wall plate must be mounted inverted (the PIR window at the top) with the wall plate tilted forward (downward). Four self-adhesive rubber spacers have been provided to aid in tilting the wall plate.

It must be noted that although this procedure adjusts the PIR zones so that small animals will not be detected, a crawling intruder will ALSO go undetected.

1. The spacers are to be used with the wall plate only when the wide angle mirror is in use

Mounting flat on a wall:

Stack two spacers between the wall and each of the two mounting bosses on the rear of the wall plate at the end opposite to the wiring entry.

Corner mounting:

Affix one of the spacers to the rear surface of each of the two corner mount tabs on the wall plate, on the end opposite to the wire entry access cutout.

2. Follow the "Normal Mounting" steps 2, 3 and 4 described previously, but orient the wall plate so that the wire entry access cutout in the wall plate is positioned at the bottom.
3. When the detector is mounted in an inverted position, those portions of the detector mirror which normally provide downward beams of protection will now provide beams that point upward. This will apply to both mirrors (long range and wide angle). If possible, install the detector so that these new upward-pointing beams are not directed at ceiling areas that include heating or air conditioning ducts and vents or light fixtures. If these IR sources cannot be avoided, the upward-pointing segment of the mirror should be masked to avoid the possibility of false alarms. See the section on Mirror Masking later in this document.

G. Zone Location:

A Zone Locator is included for use with the No. 1876 Passive Infrared Motion Detectors. It permits the actual zone coverage patterns provided by the detector to be accurately determined during installation or subsequent testing. (See Diagram 7)

Installation:

1. Remove the detector's cover
2. Install the zone locator as follows (refer to Diagram 8).
 - A. Locate the foam cushion at the rear of the detector element and rest the upper edge of the zone locator against its surface as shown in the diagram.
 - B. Pivot the zone locator into place. The upper (rubber bumper) portion should be flat against the foam cushion and the lower (red spot) portion should be flat against the detector element.

Use:

With the zone locator temporarily installed as described above, the image of the zone locator's reflective red spot (see Diagram 9) can be seen reflected in the various facets of the detector's mirror by a person looking back at the unit from the zones protection. When the red spot is visible in a particular portion of the mirror, the viewer is within that particular protection zone.

Note: In dimly lit areas, a flashlight aimed at the mirror from the viewer's position will make the red spot more visible

Remove the zone locator when testing is completed and replace the detector's cover.

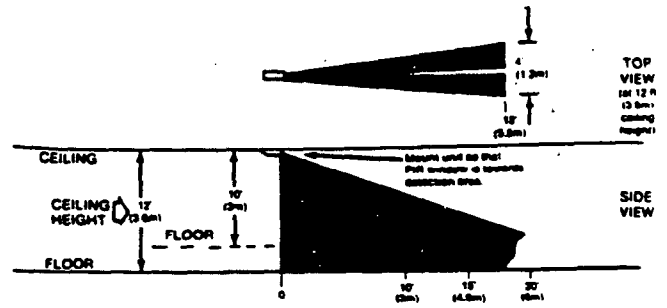


Diagram 6: CEILING MOUNTED UNIT USING LONG RANGE ("CURTAIN") MIRROR.

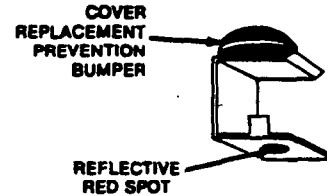


Diagram 7: ZONE LOCATOR

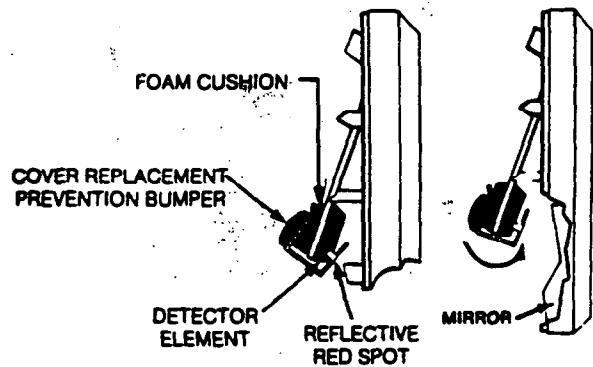


Diagram 8: INSTALLATION OF ZONE LOCATOR

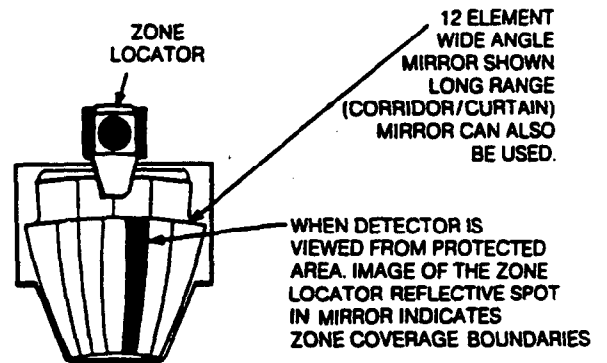


Diagram 9: TYPICAL REFLECTION

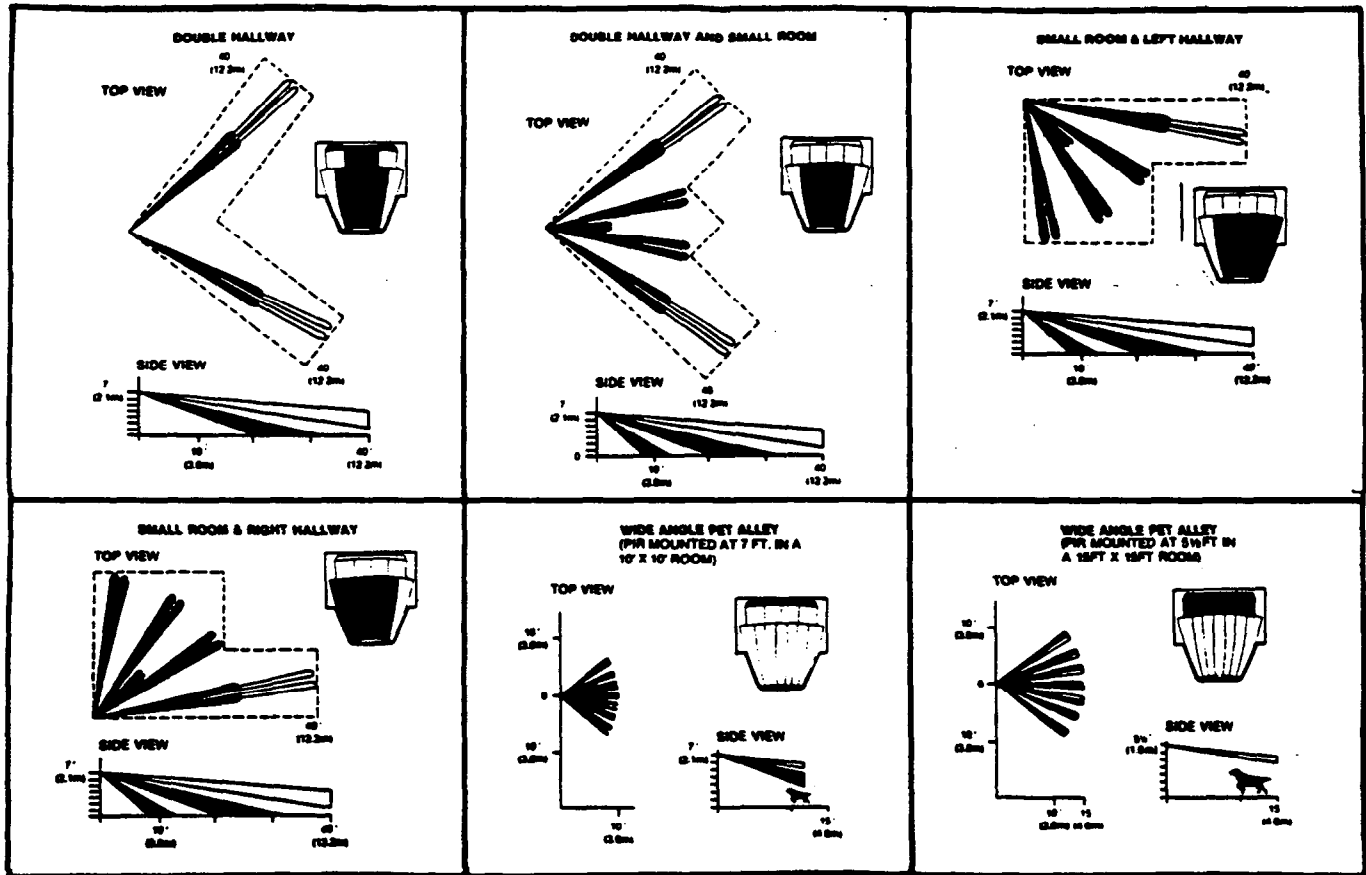
Note: The rubber bumper on the zone locator guards against replacement of the detector's cover with the zone locator still in place.

H. Mirror Masking:

The masking strips that have been supplied are designed for application to one or more mirror segments to produce a protection pattern that suits the particular requirements of the protected area. Simply peel off the appropriate pressure-sensitive adhesive strip(s) and apply over the desired mirror segment(s). Individual masking strips have been provided for each of the mirror segments on the wide-angle mirror. Two strips are provided for masking multiple segments of the long-range

(curtain) mirror. Each mirror segment that is masked results in the elimination of one zone of protection from the coverage pattern. By masking appropriate segments of a mirror, you can adjust the coverage to suit the area to be protected, or to 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). Some examples of mirror masking are shown in Diagram 10

IMPORTANT! When hallway pattern masking is used, be sure the No. 1876 is set for Instant Response Mode. Failure to do so may result in allowing an intruder to go undetected.



NOTE: If the hallway is less than 10 feet wide, the full 40 feet coverage will not be obtained, but will be slightly reduced. To minimize this effect, the mirror can be aimed left or right as described in the "Coverage Adjustment" section of this document.

The two mirrors included with the 1876 PIR, can be tailored to provide over six different coverage patterns as shown above, eliminating the need to purchase additional optics.

Diagram 10: PROTECTION PATTERNS WITH MASKING SEGMENTS

WIRING CONNECTIONS

Bring all wires in through the PIR's wiring entry near the terminal block and make connections as indicated in Diagram 11.

Power must be provided from a 12VDC filtered source with 22mA capability and at least 4 hours of standby battery capacity.

Signal Processing:

With the Mode Select Plug in the **NORMAL** position (see Diagram 11), the signal processing circuitry of the PIR provides maximum immunity against unwanted alarms caused by environmental disturbances, external electrical sources, heaters, etc. The detector will then normally signal an alarm within 3 to 4 steps, since the processing logic requires more complex motion than just a momentary event. When the detector verifies an intrusion, the alarm relay contacts will transfer for a few seconds. The LED operates independently of the processing circuitry and functions as a walk-test indicator. It will indicate any motion instantaneously.

With the Mode Select Plug in the **INSTANT RESPONSE** position, the delay involved in signal processing is eliminated. An instant alarm response (and lighting of the LED) is provided when an intruder enters any single protective zone. Use instant response mode when the long range mirror is installed, or where the detector is used to protect narrow corridors, or where single protective zones are directed through doorways or room openings.

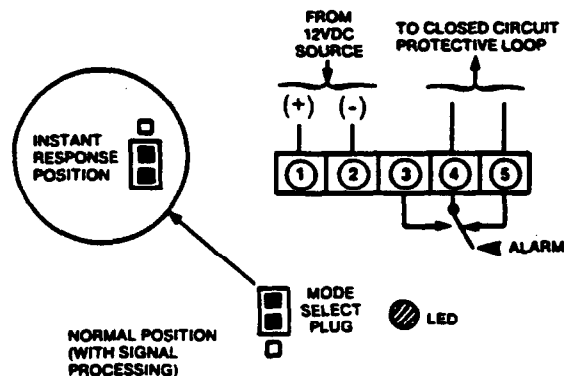


Diagram 11: WIRING CONNECTIONS

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 protective system's 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 light whenever motion is detected.

The absolute range of all Passive IR 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.

Walk-Test LED Disable:

In some installations it may be desirable to disable the walk-test LED after the initial tests at installation, in order to prevent potential intruders from determining the exact limits of the protected area. This is easily accomplished by applying a small mask behind the LED diffuser in the cover of the PIR (an LED masking segment is included with the unit's Mirror Masking Strips described earlier). Subsequently, all periodic walk-testing must be in conjunction with the indicators of the associated control panel.

TROUBLESHOOTING

PROBLEM	PROBLEM CAUSE	REMEDY
Intermittent Alarm (LED operative)	Rapid temperature change. Check for electric or gas heaters, open flames, electric arcs, etc.	Locate source and reposition detector. Adjust mirror position.
	Drafts causing drapes, light fixtures, display material to move.	Eliminate source of motion.
Intermittent or Continuous Alarm (LED inoperative)	DC voltage supplied to detector is inadequate, intermittent, or polarity reversed	Assure that proper polarity and adequate voltage is supplied and that wiring is intact (no opens or shorts) and connection secure.
	Protective loop is interrupted.	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 present, check protective loop wiring. If absent at detector terminals (and proper voltage is supplied to the detector), return unit for service.
LED Inoperative	LED masked	Remove mask
	LED malfunction. Check for broken/shorted leads	Return unit for service
Detection Area Changes	Mounting surface is unstable. A few degrees of vertical shift can change range substantially	Mount on secure surface.

MAINTAINING PROPER OPERATION

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

- 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 hrs of operation during emergencies.
- Units should never be re-armed or relocated without the advice or assistance of the alarm service company.
- 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.
- Walk-test should be conducted frequently (at least weekly) to confirm continued proper coverage by each detector.

SPECIFICATIONS

Detection Method:	Passive Infrared	Indicator:	Red LED
Coverage:	40 ft (12.2m) x 50 ft (15.2m) (wide angle mirror) 80 ft (24.4m) x 7.5 ft (2.3m) (long range/curtain mirror)	Alarm Relay Contacts:	SPDT, 28VDC, 1A max.
Detection Zones:	12 zones (7 main, 4 intermediate, 1 downward) (wide angle mirror) 1 zone, 7 tiers (long range/curtain mirror).	Input Voltage:	12VDC (voltage reversal makes PIR inoperative)
Operating Modes:	Signal Processing/Instant Response (Installer selectable)	Current Drain:	22 mA
Detectable Walk Rate:	0.5 - 5 ft/sec. (0.15-1.5 m/sec)	Standby Capability:	Power source should be capable of at least 4 hours of battery standby.
Mounting Height:	7 ft nominal (2.1m), wall mounting	Operating Temperature:	32°F to 122°F (0° to 50°C).
		Operating Humidity:	Up to 95% RH (max.), non-condensing
		Dimensions:	3-1/4" W x 4-1/4" H x 2" D (85mm x 120mm x 50mm)

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 proper operation at all times.

WARNING

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 protection, 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, closed doors, 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 (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 they are 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 act prudently in protecting themselves and continue to insure their lives and property.

ADEMCO ONE YEAR LIMITED WARRANTY

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