MR-3000AP

Miniature Passive Infra-Red Detector

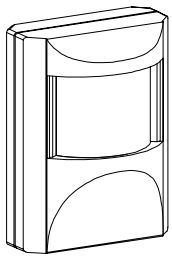
Visonic Ltd

Installation Instructions

1. INTRODUCTION

The MR-3000AP is a miniature Passive Infra-Red (PIR) detector ideal for residential applications. MR-3000AP can be surface, corner of flush mounted. An optional PIR mounting bracket (BR-1) is also available. A Programmable alternate polarity pulse counter gives additional protection against all types of environmental disturbances. User friendly design includes installation aids to enable the precise positioning at the height you want.

The MR-3000AP has a selection of 5 interchangeable lenses: wide angle, long range, triple curtain, ultra-wide angle and pet alley. The appropriate lens can be selected for each particular application and the specific area to be covered.



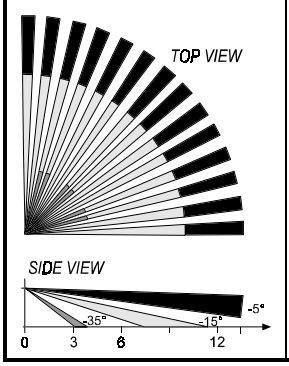
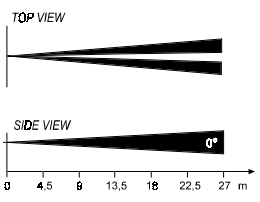
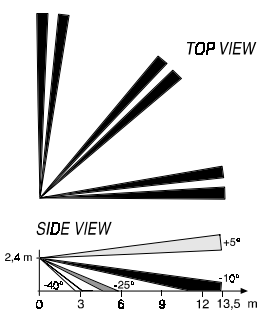
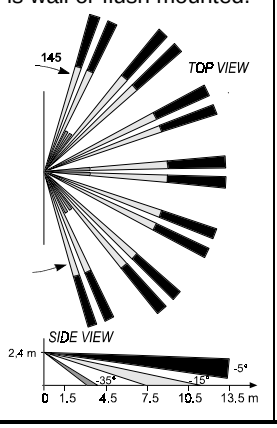
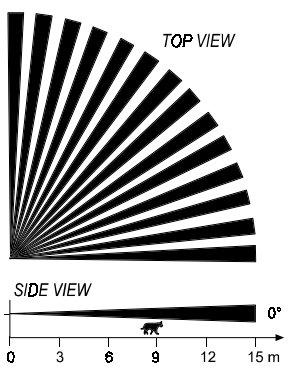
No. 1 Wide Angle	**No. 2** Long Angle	**No. 3** Triple Curtain	**No. 4** Ultra-Wide Angle	**No. 5** Pet Alley
Max. Range: 13.5X13.5m (45X45ft)	**Max. Range:** 3X27m (10X90ft)	**Max. Range:** 13.5X13.5m (45X45ft)/90°	**Max Range:** 13.5X24m (45X80ft)/145°	**Max. Range:** 15X15m/ (50X50ft)/90°
Application: general use, corner installation	**Application**: corridors and long walls	**Application**: 3 vertical curtains to cover 2 walls and a room barrier.	**Application**: widest coverage where the PIR is wall or flush mounted.	**Application**: pets move freely, under coverage pattern, undetected.
				

Figure 1. *MAGIC-RED Lens Selection*

Beam Splitting

A specially designed, high quality, ultra-low noise **Dual-Element Pyroelectric Detector** is employed for long term stability and maximum immunity to thermal disturbances.

"Optical splitting" by the dual-element detector creates two detection zones for each segment in the lens array, doubling the number of detecting beams in the coverage pattern.

2. SPECIFICATIONS

OPTICAL

Standard Lens: Lens No. 1, provides 42 beams in 3 layers, 90° wide, maximum coverage area of 13.5x13.5m (45x45 ft).

Interchangeable Lenses:

Lens No. 2 - Long Range 27.5 x 3 m (90 x 10 ft).

Lens No. 3 - 3 Curtains 13.5 x 13.5 m (45 x 45 ft).

Lens No 4 -Ultra-wide angle 145°,13.5 x 24 m (45 x 80 ft)

Lens No.5 -Pet alley 15 x 15 m (50 x 50 ft)

Adjustment: Vertical 0° to -12° calibrated scale. Horizontal 15°.

ELECTRICAL

Voltage: 9 to 16VDC.

Current: 20mA

Alarm Output: Normally closed (fail-safe) contacts 18Ω resistor in series with contacts.

Rating - 0.1A resistive/24VDC.

Tamper Output: Normally closed. Rating -0.5A resistive/24VDC.

Alarm Period: 2-3 seconds.

Pulse Counter: Selection of 1 or 2 pulses (alternate polarity).

LED: Walk Test enabled or disabled with internal link.

Detector: Dual-element low noise pyroelectric detector.

MOUNTING

Flush or corner mounting (no additional brackets required).

Mounting Height: Up to 3.6 m (12 ft).

ENVIRONMENTAL

Operating Temperature: -10°C to 50°C (14°F to 122°F).

Storage Temperature: -20°C to 60°C(-4°F to 140°F).

RFI Protection: Greater than 10V/m to 1000 MHz.

PHYSICAL

Dimensions : 64 x 112 x 35 mm (2.5 x 4.4 x 1.3 in.).

Weight: 95 g (3.3 oz).

Color: Soft White.

ACCESSORIES

MRF-301: Wall plate bracket.

MRB-303: Installation box.

MRK-302: Flush mounting kit including MRF-301+ MRB-303.

BR-1: PIR mounting bracket.

3. INSTALLATION

3.1 Changing Lenses

To change or adjust a lens, release and remove the lens-locking clips, located on both sides of the lens, by pushing them from the inside of the cover (Fig. 2). Insert new lens with the grooved surface outside and lens number held on the upper right corner. From inside the cover, carefully center the lens by sliding it to the right or left; the lens is centered when the distance from its side edge to the edge of the cover is the same on each side of the cover. Holding firmly in place, insert the lens locking clips from the outside (flanges pointed outward) and firmly push into place until a click is heard (Fig. 3)

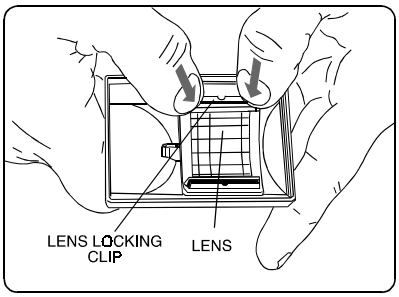


Figure 2. *Removing Lens Locking Clips*

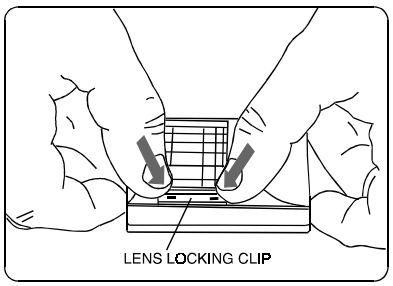


Figure 3. *Locking the Lens*

3.2 Selecting Mounting Location

MR-3000AP PIR detectors can be installed directly on the wall (surface mounted), in a corner, or flush-mounted inside the wall, using optional flush mounting kit MRK-302. Always mount the unit on a firm and stable surface.

A. Select the mounting location so that the expected motion of an intruder will cross the beams of the selected pattern.
NOTE: *PIR detectors are sensitive to changes in infrared energy caused by an object moving across the unit's field of view. Since the changes in infrared energy, detected by a PIR, depend on the amount of infrared energy transmitted by the moving object and the temperature difference between the object and the background, the PIR may fail to respond under certain temperature and background conditions, in which the temperature difference is too small. It is recommended that the PIR be aimed towards the coolest place it the protected area, in order to obtain the maximum sensitivity in installations when high ambient temperatures are expected.*

B. Select the most convenient mounting height.
NOTE: *Built-in installation aids enable you to mount the unit anywhere up to 4 m (12 ft.) A vertical adjustment table gives the recommended scale setting for combination of coverage range and mounting height (Table 1).*

C. Where pets are present, consider the use of lens No. 5, Pet Alley. Install the MR-3000AP at the lowest possible height that enables directing of the pattern above the level of the pets activity.

D. MR-3000AP is extremely immune to air turbulence and RFI interference. However, to minimize false alarms, it is highly recommended to avoid aiming the detector at heaters, sources of bright light, or windows subjected to direct sunlight. Also avoid running wiring close to high-power electrical cables.

3.3 Mounting

A. **To Open** the cover - Pry apart gently with fingers. The cover is easily removed.

B. **Mount** the base (equipped with the printed circuit board) in the location and height selected for optimum coverage.

C. For surface and corner mounting, use the two knockouts on the base (Fig. 8)

D. For flush mounting MR-3000AP offers 3 optional installation alternatives.

1) **Flush-mounting bracket** (model MRF-301). The arms of the wall plate bracket snap into the slots on the back of the detector unit (Fig. 4); attach bracket to the mounting surface with 2 screws at the desired location.

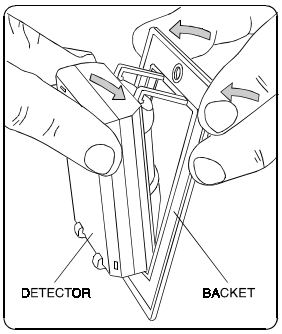


Figure 4. *Flush Mounting Brackets (MRF-301)*

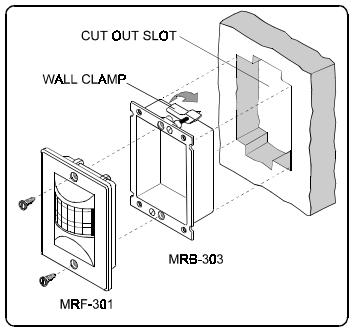


Figure 5. *MRK-302 Flush Mounting Kit Installation*

2) **Flush mount kit** (model MRK-302). The kit includes a wall plate bracket (model MRF-301) and installation box (model MRB-303). Using supplied drawing, carefully and accurately cut a slot in the wall to accommodate installation box. Assemble items per Figure 5. When the two screws are secured the two wall clamps on the MRB-303 rotate and lock the installation box in place. Mount detector unit on wall plate bracket (MRF-301) and attach bracket to installation box with 2 screws (supplied).

3) **BR-I PIR Mounting Bracket**

The BR-1 is a general purpose, adjustable mounting bracket which accommodates the MR-3000AP.

The BR-1 is installed on a wall. It is vertically 18 adjustable 30° downward and horizontally adjustable 45° left, 45° right (Fig. 6).

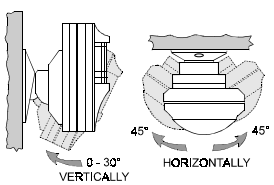


Figure 6 . *BR-1 Universal PIR Mounting Bracket*

Table 1-Vertical Adjustment

		COVERAGE RANGE											
ft ⇒		7	10	13	17	20	23	26	30	36	45	60	90
⇓	m	2	3	4	5	6	7	8	9	11	13.5	18	27
3	1	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
4	1.2	-8°	-6°	-5°	-4°	-3°	-2°	-2°	-2°	-1°	-1°	-1°	0°
5	1.5	–	-12°	-9°	-7°	-6°	-5°	-5°	-4°	-3°	-2°	-2°	-1°
6	1.8	–	–	–	-11°	-9°	-8°	-7°	-6°	-5°	-4°	-3°	-2°
7	2	–	–	–	–	-12°	-10°	-9°	-8°	-6°	-5°	-4°	-3°
8	2.5	–	–	–	–	–	–	-11°	-10°	-8°	-7°	-5°	-3°
10	3	–	–	–	–	–	–	–	–	-10°	-9°	-7°	-4°
12	3.6	–	–	–	–	–	–	–	–		-12°	-8°	-6°

Example: If you require coverage range of 30ft (9m) and wish to install the sensor at a height of 6ft (1.8m) from the ground, set the Vertical Adjustment Scale to -6°.

3.4 Wiring

A. Loosen the adjustment locking screw slightly and slide the P.C. board upward, in order to expose the wiring knockout (Fig. 8)

B. Using # 22 AWG or larger wires, connect wiring to the terminal block in the following order (Fig 7).

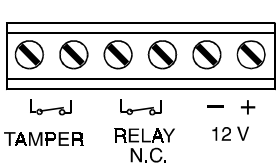


Figure 7. *Terminal Block Wiring*

C. Make no splices within the unit and avoid contact between uninsulated conductors and the printed circuit board.
The maximum wiring length between the unit and its power

source depends on the number of units connected in parallel and the wire gauge.
The following table provides the maximum wiring length for a single unit, using different gauge wire.

Wiring Gauge	22	20	18	16
Wiring length (m)	230	330	550	900
Wiring length (ft)	750	1100	1800	3000

If two or more units are connected in parallel, the maximum wiring length described in the table should be divided by the number of units.

- Connect **Tamper N.C.** terminals to a normally closed 24 hour protection zone of the control panel.
- Tamper contact will open when cover is removed.
- Connect **Relay N.C.** terminals to a normally closed burglar protection zone of the control panel.
- Relay contacts will open when motion is detected or during power loss.
- Connect the **I2VDC(+) and (-)** terminals to a power source 9 to 16 Volt DC, observing correct polarity. The power supply should have a back-up battery that is capable of supplying power for at least 4 hours of operation during power failure.
  Current drain of each sensor is approximately 20mA.

D. After wiring, pull any extra length of wire out of the unit and slide the p.c. board to desired position, as described in para. 3.5 and Table 1.

E. Seal all openings in the base with tape or RTV to prevent insects from entering the unit.

3.5 Adjusting The Coverage Area

MR-3000AP provides you with the most powerful tools for quick, easy and accurate pattern adjustments.

The dual-mode LED selector, horizontal adjustment, vertical calibrated scale, height selection table and BR-1 mounting bracket (optional), are all unique features which enable precise pinpointing of the pattern both vertically and horizontally.

Dual-Mode LED Selector

The LED selector consists of a 2-pin connector and a jumper, enabling 2 operational modes (Fig. 8).

A. ON -Jumper links the pins. This mode is used for walk-testing. The LED lights up for 2-3 seconds whenever motion is detected.

B. OFF - Jumper removed or installed on one pin. This mode can be used to disable the LED after all testing is completed to prevent unauthorized persons from tracing the coverage pattern.

Horizontal Adjustment

The coverage pattern can be adjusted horizontally approximately ± 7.5° by rotating the lens to the left or right. To adjust, remove the lens locking clips, rotate the lens to the desired position and lock the lens in place.

Vertical Adjusting Scale

The vertical adjusting scale (printed on the upper right corner of the p.c. board) and the plastic pointer on the base, indicate in degrees, the angle between the upper layer of the coverage pattern and the horizontal line of the unit.

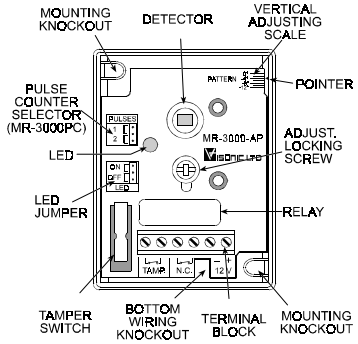


Figure 8. *Printed Circuit Board.*

Table 1 gives the recommended scale adjustment for combinations of mounting height and coverage distance.

The scale enables pattern adjustment from 0° to 12° downward according to the installation height and the required coverage range. All MR-3000AP sensors are factory pre-set to -4°.

To change the vertical pattern adjustment, loosen the screw which fastens the printed circuit to the base (Fig 8). Slide the p.c. board up or down to the desired angle and tighten the screw firmly.

3.6 Pulse Counter

Model MR-3000AP is equipped with a programmable pulse counter which can be set to count 1 or 2 pulses with alternate polarity, before activating the alarm relay. To set the pulse counter, place the jumper on the desired setting (1 or 2).

Two Pulses provides improved protection against false alarms caused by all types of environmental . Two pulses should only be used in temperature controlled locations (less than 30°C).

1 Pulse. This setting actually disables the pulse counter. It should be used when it is necessary to activate an alarm on the first detected pulse, or in high security installations, when fast 'catch' performance is of greatest importance.

3.7. Walk Testing

A. Apply 12 VDC power and allow five minutes for the unit to warm up and stabilize before testing.

B. Adjust the vertical pattern angle according to Table 1.

C. Set the pulse counter per para. 3.6 above.

D. Walk-test the range and coverage area by walking slowly across the field of view (in opposite directions) and observe the LED. The LED lights up whenever you enter or exit a sensitive beam. Allow 10 seconds between each test for the unit to stabilize.

E. After testing, the LED can be disabled to prevent unauthorized persons from tracing the coverage pattern. To disable the LED, remove the jumper marked LED. To avoid loosing the jumper, place it on one of the pins.
NOTE: *The range and coverage area should be checked at least once a year. To assure proper continuous functioning, the user should be instructed to perform a walk test at the far end of the coverage pattern to assure an alarm signal prior to each time the alarm system is armed.*

WARRANTY

Visonic Ltd. and/or its subsidiaries and its affiliates ("the Manufacturer") warrants its products hereinafter referred to as "the Product" or "Products" to be in conformance with its own plans and specifications and to be free of defects in materials and workmanship under normal use and service for a period of twelve months from the date of shipment by the Manufacturer. The Manufacturer's obligations shall be limited within the warranty period, at its option, to repair or replace the product or any part thereof. The Manufacturer shall not be responsible for dismantling and/or reinstallation charges. To exercise the warranty the product must be returned to the Manufacturer freight prepaid and insured.

This warranty does not apply in the following cases: *improper installation, misuse, failure to follow installation and operating instructions, alteration, abuse, accident or tampering, and repair by anyone other than the Manufacturer.*

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities, whether written, oral, express or implied, including any warranty of merchantability or fitness for a particular purpose, or otherwise. In no case shall the Manufacturer be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties whatsoever, as aforesaid.

This warranty shall not be modified, varied or extended, and the Manufacturer does not authorize any person to act on its behalf in the modification, variation or extension of this warranty. This warranty shall apply to the Product only. All products, accessories or attachments of others used in conjunction with the Product, including batteries, shall be covered solely by their own warranty, if any. The Manufacturer shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, caused by the malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Products.

The Manufacturer does not represent that its Product may not be compromised and/or circumvented, or that the Product will prevent any death, personal and/or bodily injury and/or damage to property resulting from burglary, robbery, fire or otherwise, or that the Product will in all cases provide adequate warning or protection. User understands that a properly installed and maintained alarm may only reduce the risk of events such as burglary, robbery, and fire without warning, but it is not insurance or a guarantee that such will not occur or that there will be no death, personal damage and/or damage to property as a result.

The Manufacturer shall have no liability for any death, personal and/or bodily injury and/or damage to property or other loss whether direct, indirect, incidental, consequential or otherwise, based on a claim that the Product failed to function. *However, if the Manufacturer is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, the Manufacturer's maximum liability shall not in any case exceed the purchase price of the Product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive remedy against the Manufacturer.*

Warning: *The user should follow the installation and operation instructions and among other things test the Product and the whole system at least once a week. For various reasons, including, but not limited to, changes in environmental conditions, electric or electronic disruptions and tampering, the Product may not perform as expected. The user is advised to take all necessary precautions for his /her safety and the protection of his/her property.*

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