

# Installation Instructions for the MX938i Ceiling Mount Multiplex PIR Intrusion Detector

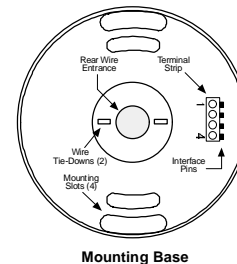
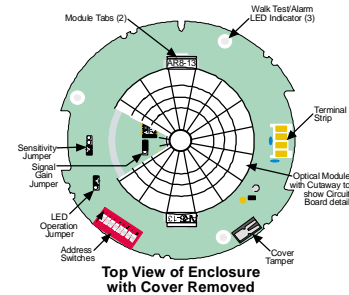
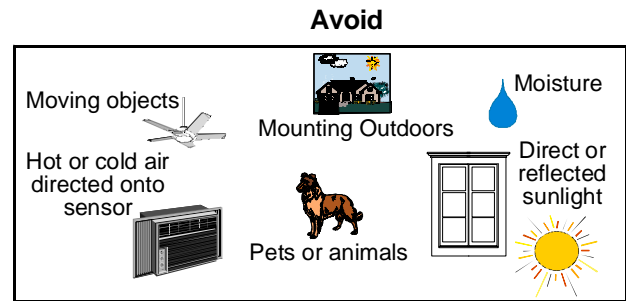
## 1.0 Specifications

- **Input Power:** Connects directly to the Multiplex Bus of the Control Panel and optionally to an auxiliary 12 VDC source.
- **Current Draw:**
  - 2-Wire:**
  - LED Off:** < 350  $\mu$ A draw on Mux Bus.
  - In Alarm; LED On:** 2 mA draw on Mux Bus.
  - 4-Wire:**
  - LED Off:** < 350  $\mu$ A draw on Mux Bus.; 0 mA draw on Aux. power.
  - In Alarm; LED On:** < 350  $\mu$ A draw on Mux Bus.; 3 mA draw on Aux. power.
- **Standby Power:** There is no internal standby battery. Connect to DC power sources capable of supplying standby power if primary power fails. For each hour of standby time needed, 350  $\mu$ Ah are required. *For UL Listed Requirements, four hours (1400  $\mu$ Ah) minimum are required.*
- **Coverage:** 360° by 60 ft. (18.3 m) diameter coverage when mounted on 8 to 18 ft. (2.4 to 5.5 m) high ceilings. Pattern consists of 64 zones grouped into 16 barriers, with one additional zone looking straight down from the unit (sabotage). Each barrier is 30 ft. (9.2 m) long and 4.4 ft. (1.3 m) wide at 30 ft. (9.2 m). Choice of two optical modules depending on ceiling height. *For UL Listed Requirements, the coverage is 360° by 54 ft. (16.5 m) when mounted 10 to 13 ft. (3.1 m to 4.0 m) using the AR8-13 array and when mounted from 15 to 18 ft. (4.6 m to 5.5 m) using the AR13-18 array.* Selectable for Standard, Intermediate or High. A tamper condition is signaled through the Multiplex Bus and displays at the system keypads.
- **Sensitivity:**
- **Tamper:**
- **Temperature:** The storage and operating temperature range is -20°F to +120°F (-29°C to +50°C). *For UL Listed Requirements, the temperature range is +32°F to +120°F (0°C to 50°C).*
- **Control Panel Requirements:** DS7400, DS7400X, or DS7400Xi control panel with a DS7430 or DS7436 multiplex expansion module. The DS7400 and DS7400X require ROM version 1.07 or greater. Radionics 9000 Series Control/Communicators with D8125MUX Module installed.
- **Patents:** This device is covered under one or more of the following U.S. patents: #4,764,755, #5,268,668, and #5,302,941.

## 2.0 Control Panel Programming

Refer to the multiplex programming section of your Control Panel Reference Guide for information on programming multiplex zones for this device.

## 3.0 Mounting



The mounting surface should be solid and vibration free (i.e., drop tiles should be secured if the area above the tiles is used as an air return for HVAC systems).

- Select a location that is most likely to intercept an intruder moving across the coverage pattern. The recommended mounting height range is 8 to 18 ft. (2.4 to 5.5 m).
- Remove the cover by turning counterclockwise.
- Remove the base from the enclosure by pressing the two enclosure release tabs inward while lifting the enclosure away from the base.
- Hint:** Slightly rock the enclosure side-to-side during removal, to overcome the friction caused by base-to-enclosure terminal pins.
- Route wiring as necessary to the rear of the base and through the center hole.




Be sure all wiring is unpowered (de-energized) before routing.

- Securely attach the base. Depending on local regulations, the base may be directly surface mounted using anchors, mollies or wing-nuts, or may be mounted to standard four-inch octagonal and square electrical boxes.
- NOTE:** The MX938i base will not completely cover a four-inch square box. Where aesthetics are important, a four-inch octagonal box is recommended.




**Hint:** Mounting to removable ceiling tiles is not recommended unless a sandwich is made of the base, ceiling tile and a back plate behind the tile. Covers used for four-inch octagonal and square boxes make a suitable back plate (when used with bolts and wing nuts, as an example).

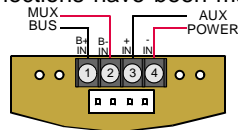
- Replace the enclosure on the base.
- Select an Optical Module (AR8-13 or AR13-18).
  - For ceilings between 8 and 13 ft. (2.4 m and 4.0 m) from the floor, use the optical module marked AR8-13. This marking can be found next to the two optical module tabs. For ceilings between 13 and 18 ft. (4.0 m and 5.5 m) high, use the optical module marked AR13-18.
  - To replace an optical module, push the optical module tabs toward the center until the module snaps free of the circuit board. Holding the new module by the tabs, snap the new module into place.

 **IMPORTANT** Avoid fingerprints on the mirrored surfaces. If the mirrored surfaces become soiled or otherwise marked, they can be cleaned using a **soft, clean cloth and any commonly available mild window cleaner.**

#### 4.0 Wiring

 **WARNING** Only apply power after all connections have been made and inspected.

- Connect wiring as shown.



**NOTE:** Do not coil excess wiring inside unit.

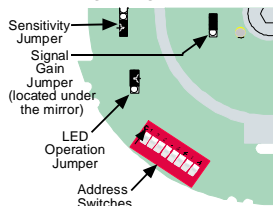
- Seal the Wire Entrance using the foam plug provided.

#### Terminal Descriptions

- **1 (B+) and 2 (B-):** Connect to the Multiplex Bus of the control panel. Use no smaller than #22 AWG (0.8 mm) wire between the detector and the control panel.
- **3 (+) and 4 (-):** Connect to the AUX Power of the control panel. This connection is only required if LED operation (other than during the walk test) is required. Use no smaller than #22 AWG (0.8 mm) wire between the detector and the control panel.


#### 5.0 Configuration Jumpers

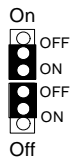
Configure the detector using the appropriate Configuration Jumper settings (refer to the following diagram for jumper locations).






#### 5.1 LED Operation Jumper

- **ON:** Allows the LED to operate when activated by alarm.
- **OFF:** The LED will not operate on alarm.

 **CAUTION** If the detector is powered by the MUX Bus only, the LED is for Walk Test purposes only. Disable the LED when Walk Testing is complete. To disable the LED, place the jumper in the OFF position. If the detector has AUX Power supplied, the LED operation may be left ON during normal use.





#### 5.2 Sensitivity Mode

- **Standard Sensitivity:** Recommended setting for maximum false alarm immunity. Tolerates environment extremes on this setting, but requires the largest amount of intruder motion to achieve an alarm. 
- **Intermediate Sensitivity:** Recommended setting for any location where an intruder is expected to cover only a small portion of the protected area. Tolerates normal environments on this setting. This setting will improve your intruder catch performance. 
- **High Sensitivity:** Fast response to intruder signals. For use in quiet environments where thermal and illumination transients are not anticipated. 

#### 5.3 Signal Gain


**NOTE:** The MX938i permits selection of the signal gain depending upon the environment to be protected. The gain select jumper is located under the optical module.

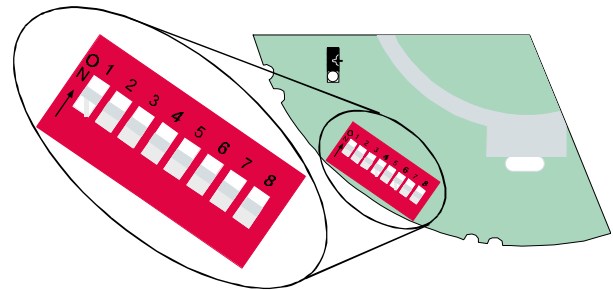
- **High Gain:** Recommended for large coverage applications up to 60 ft. (18.3 m) in diameter. The MX938i is shipped in this setting. If the gain jumper is missing, it will default to high gain. 
- **Low Gain:** Recommended for applications where the area to be covered is 40 ft. (12.2 m) or less in diameter and for applications where the High Gain setting may be too sensitive for environmental extremes. 

**NOTE:** Setting the MX938i for the LOW Signal Gain setting reduces the Coverage area to 40 ft. (12.2 m) in diameter.

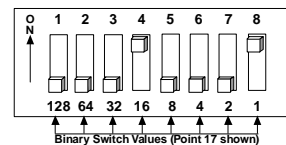
#### 6.0 Address Switch Settings


- Set the address switch settings (see page 3) before connecting the MX938i to the multiplex bus.

 **IMPORTANT** No two devices may be set to the same address. Having two or more units set to the same address may prevent fault detection or cause multiplex bus failure.



- You can find the Address Switch Settings using the chart on page 3, or by calculating the decimal number of the address.



 **IMPORTANT** Zone (Point) Addresses 001 through 008 are reserved for "on board" points on the DS7400(Xi) Series control panels. **Do not set any multiplex devices for Addresses 001-008 when using a DS7400(Xi) Series control panel.**



## 7.0 Setup and Walk Testing

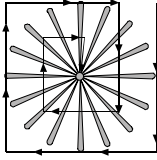


Before walk testing, the system should be fully wired, powered, and programmed.

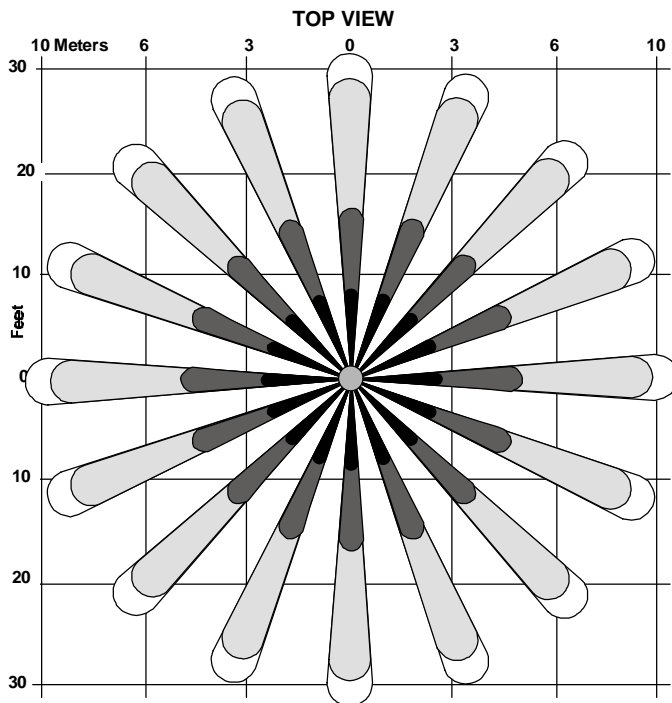
- Configure LED Configuration Switch (S1) to LED ON.
- Replace the front cover.

**NOTE:** All testing must be performed with the front cover in place.

- Wait at least 2 minutes (with no motion in the coverage area) for the detector to setup.
- Walk test **across** the coverage pattern.
- The edge of the coverage is determined by activation of the LED.
- Walk test the unit from both directions to determine the boundaries.



On 2-wire systems, configure the LED to OFF when finished with walk tests.



## 8.0 Maintenance

- The range and coverage should be checked in accordance with the Walk Testing section (6.0) on a regular basis.
- Consult the Control Panel's User's Guide for the procedure on performing a zone test. Performing a zone test on a regular basis assures an alarm output prior to arming the system.
- Excessive handling of the mirror surfaces may lead to performance degradation.

## 9.0 Coverage Patterns

- Refer to the mirror module and pattern drawings for masking information.
- Before masking, be sure the chosen mirror surface is the correct one. When removing masking, remember, many adhesives will either destroy the mirror's surface or leave residue behind to reduce coverage performance.

