

# **Installation Instructions** **DS936 Ceiling Mount Passive Infrared** **Intrusion Detection**

## **1.0 General Information**

The DS936 is a Low Profile Ceiling Mount Passive Infrared Intrusion Detector, which uses alternate polarity pulse count. It uses a pointable Fresnel lens to provide up to 24 ft (7.2 m) of coverage and may be mounted on the surface, or semi-flush directly to a ceiling or a standard octagonal electrical box.

**INPUT POWER:** 10 to 15 VDC non polarized; 15 mA @ 12 VDC.

**STANDBY POWER:** No internal standby battery. Unit is intended to be connected to DC power sources capable of supplying standby power in the event primary power fails. 15 mA-H required for each hour of standby time needed.

**MOUNTING HEIGHT:** 7 to 12 ft. (2.1 to 3.7 m) on ceiling.

**COVERAGE:** Provides 360° coverage pattern. (Coverage is approximately 2 times the mounting height, see pattern drawing on page 2.)

**SENSITIVITY:** Adjustable for Standard, Intermediate, or High.

**POINTABILITY:** ±15° rotationally by moving lens.

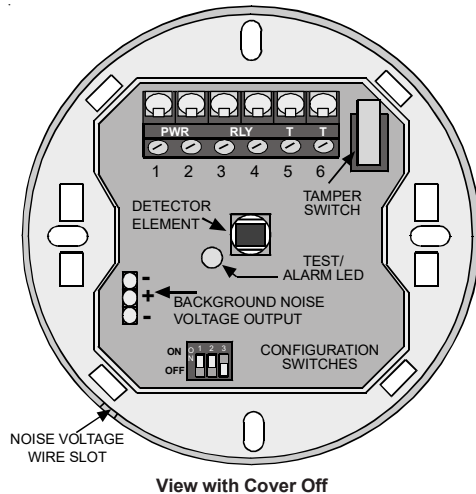
**ALARM RELAY:** Normally Closed operation and protected by a 4.7 ohm resistor in series with the relay contact. Reed relay with contacts rated at 28 VDC, 125 mA maximum for DC resistive loads.

**TAMPER:** Normally Closed tamper switch rated at 28 VDC, 125 mA.

**LED OPERATION:** Dip Switch On/Off Selectable.

**TEMPERATURE:** The storage and operating temperature range is -20°F to +120°F (-29°C to +49°C). For UL Listed Requirements, the temperature range is +32° to +120°F (0° to +49°C).

**OPTIONS:** TC6000 Test Cord.



## **2.0 Mounting**

### **THINGS TO AVOID/REMEMBER**

#### **AVOID**

- Direct hot and/or cold drafts • Windows • Small Animals
- Air Conditioning Outlets • Heat Sources • Direct Sunlight

#### **REMEMBER**

- Won't detect through glass
- Best catch performance is across the pattern
- When using two or more detectors, cross the patterns for best coverage

The DS936 is designed to be surface mounted directly on the ceiling or recess mounted to any 3 1/2 inch (88.9 mm) standard octagonal box.

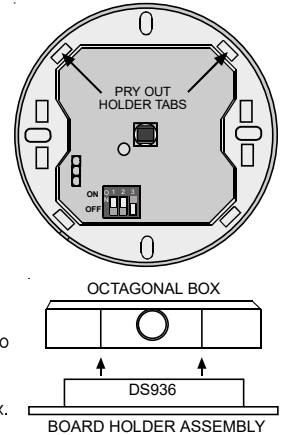
- Select a location that is most likely to intercept an intruder moving beneath and across the coverage pattern. Recommended mounting height is 7 ft. to 12 ft. (2.1 m to 3.7 m).

**NOTE:** Mounting surface should be solid and vibration free (e.g., Drop tiles should be secured if drop ceiling is used as an air return system for HVAC systems).

- Remove the top cover by gently prying it from the base with the blade of a screw driver.
- Route wiring through the wire entrance located near the terminal strip.
- Using the enclosure as a template, mark the location for the mounting screws, and prestart the mounting screws.
- Firmly mount the detector to the mounting surface.

### **Recess Mounting With Octagonal Box:**

- To mount the DS936 to a 3 1/2 inch (89 mm) standard octagonal box, remove the circuit board holder from the base by prying holder tabs out with your thumbs and pushing the board holder assembly out with your index fingers.



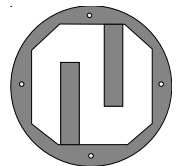
The base may be discarded or saved for possible future use.

- Route wiring as necessary through the box and into the wire entrance.
- Mount the circuit board holder assembly to the box.

### **Recess Mounting Without Electrical Box:**

The DS936 may be recess mounted without the use of an octagonal box by using the supplied flush mount ring.

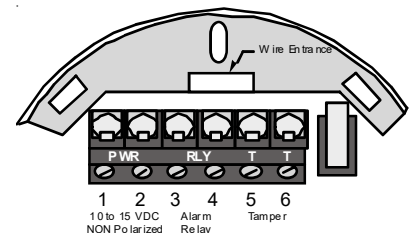
- Remove the board holder assembly from the base by prying holder tabs out with your thumbs and push the board holder assembly out with your index fingers.
- Using the inside cutout of the flush ring as a template, prepare an opening 2-3/4" by 2-5/8" (70 x 67 mm) wide in the mounting surface.
- Route wiring through opening and flush mount ring.
- Place the flush mount ring over the opening and bend the support tabs into the opening and around the mounting surface so that the ring fits snug against the surface.
- Route wiring through the wire entrance.
- Mount the detector to the ring using the supplied screws.



## **3.0 Wiring**

- Connect wiring as shown:

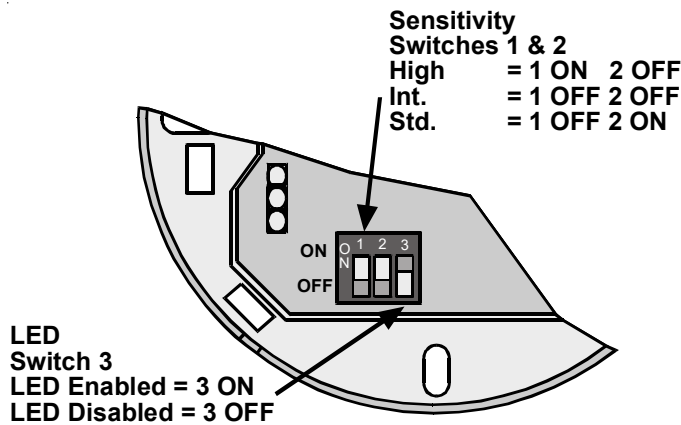
**CAUTION:** APPLY POWER AFTER ALL CONNECTIONS HAVE BEEN MADE AND INSPECTED.



- Terminal 1 & 2 power limits are 10 to 15 VDC measured at the terminals. Use no smaller than #22 AWG (0.8 mm) wire pair between the unit and the power source.
- Connect a Normally Closed burglar alarm loop to terminals 3 & 4.
- Connect a Normally Closed Tamper circuit to terminals 5 and 6. Tamper contacts rated at 28 VDC, 0.125 amps.

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

## 4.0 Configuration Switch Settings



### Sensitivity:

The DS936 permits selection of response sensitivity modes depending on the type of coverage desired and the installation environment.

- **Standard (STD):** Least sensitive setting to environmental extremes, but requires the largest amount of intruder motion to achieve an alarm.
- **Intermediate (INT):** Recommended setting for most installations. Use in locations where an intruder is only expected to cover a small portion of the protected area. Tolerates normal environments on this setting.
- **High:** Fast response to intruder signals. For use only in quiet environments where thermal and illumination transients are not anticipated. If both switches 1 and 2 are ON, the detector defaults to High Sensitivity.

**NOTE:** Although the sensitivity modes provide different degrees of tolerance to environmentally caused alarms, the installer should assure peak background noise voltage readings do not exceed  $\pm 0.2$  VDC.

### LED Operation:

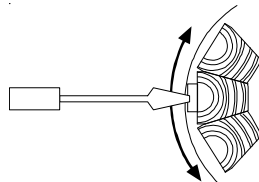
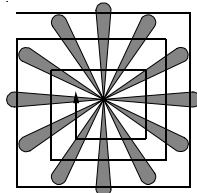
If viewing of the walk test/alarm LED is not desired after the initial installation, the LED may be disabled by placing configuration switch 3 in the OFF position.

## 5.0 Set Up And Walk Testing

- Apply power to the unit.
- Wait at least two minutes, after applying power, to start walk tests.

**NOTE:** Walk testing should be done across the coverage pattern.

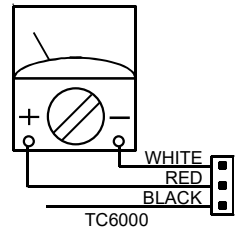
- The edge of the coverage is determined by activation of the alarm LED. This will change depending upon the sensitivity switch settings.
- Walk test the unit from all directions to determine the boundaries.
- The pattern may be adjusted  $\pm 15^\circ$  by rotating the lens. Insert the blade of a small screwdriver into the slot on the lens and gently slide the lens in the desired direction.



## 6.0 Final Test

**NOTE:** Meter readings are very important in determining background disturbance levels and catch margin sensitivity.

- Connect a 20,000 ohm/volt (or greater) DC VOM to the Background Noise Voltage connector pins as shown. Set meter scale for about 5 VDC. Route meter wiring through the slot in the base. (Use of the TC6000 is recommended, but is not essential for meter use.)



- Replace the cover assembly.
- The base reference level for reading background noise or target voltages is approximately 2 VDC. Installations in quiet environments, therefore, will result in a steady meter reading between 1.8 and 2.2 VDC.

Voltage changes greater than 0.75 VDC from the reference level are desirable for good catch performance. If changes are less than plus or minus 0.75 VDC, the device may fail to respond at this distance if the temperature difference between the intruder and the background is very small.

- Turn on all heating and cooling sources that would normally be in operation during times of protection. Stand away from the unit and outside the coverage pattern, then monitor the background noise voltage for at least **three minutes**.

DS936 readings should not deviate from the reference level more than  $\pm 0.2$  VDC. For readings outside these limits, eliminate the cause, re-point the unit slightly, or mask off the effected zones.

## 7.0 Other Information

### Maintenance:

At least once a year the range and coverage should be checked in accordance with Section 5.0 - Setup and Walk Testing.

To ensure continued daily operation, the end user should be instructed to walk through the outer edge of the coverage pattern. This ensures an alarm output prior to arming the system.

## 8.0 Coverage

