

DS9370 TriTech Ceiling Mount PIR/ Microwave Intrusion Detector

1.0 Specifications

- **Dimensions (HxDia):** 3.5 in. x 7 in. (8.9 cm x 17.8 cm)
- **Coverage:** 360° by 70 ft. (21.3 m) diameter coverage when mounted on 12 to 25 ft. (3.7 to 7.6 m) high ceilings. A coverage area of 40 ft. (12.2 m) is available when mounted at 8 ft. (2.4 m) and a coverage of 50 ft. (15.2 m) is available when mounted at 10 ft. (3 m). The pattern consists of 69 zones grouped into 21 barriers. Each barrier is 35 ft. (10.7 m) long and 5 ft. (1.5 m) wide at 35 ft. (10.7 m). The barriers are divided into 3 groups of 7 barriers, each of which has a vertical adjustment for custom coverage.
- **Input Power:** 9.0 to 15.0 VDC; 29 mA standby, 39 mA in alarm with LEDs enabled, and 49 mA max current. Use only an Approved Limited Power Source.
- **Standby Power:** There is no internal standby battery. 29 mAh is required for each hour of standby time needed. *For UL Listed Requirements, four hours of standby current (116 mAh) is required.* Standby power must be provided by an Approved Limited Power Source.
- **Sensitivity:** Low/High settings.
- **Alarm Relay:** Silent-operating Form "C" relay. Contacts rated 125 mA, 28 VDC, 3 watts maximum for DC resistive loads. The contacts transfer on alarm for a period of 4 seconds. Some countries require the relay to be connected to a SELV (Safety Extra-Low Voltage) circuit only. Do **not** use with capacitive or inductive loads.
- **Tamper:** Normally Closed (with cover in place) tamper switch. A wall (base) tamper is included. Contacts rated at 28 VDC, 125 mA, 3 watts maximum. Some countries require the switch to be connected to a SELV (Safety Extra-Low Voltage) circuit only. Connect tamper circuit to a 24-hour protection circuit.
- **Temperature Range:** The storage and operating range is -40° to +120°F (-40° to +49°C). *For UL Listed Requirements, the range is +32° to +120°F (0° to +49°C).*
- **Microwave Frequencies:**
 - DS9370:** 10.525 GHz
 - DS9370-C:** 10.588 GHz (Export only. Not UL Listed)
- **Countries of Intended Use:** These products are intended for use in the following countries within the European Union and in other countries outside of the European Union:
 - **DS9370:** Austria, Belgium, Denmark, Finland, Greece, Luxembourg, Netherlands, Norway, Spain, Sweden.
 - **DS9370-C:** United Kingdom, Ireland, France.

- **US Patent Numbers:** This detector is protected by one or more of the following: #4,660,024; 4,764,755; 5,077,548; 5,208,567; 5,262,783; and 5,450,062. Other patents pending.
- **Compliance:** This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry and Science Canada. Operation is subject to the following two conditions:
 - (1) this device may not cause harmful interference, and
 - (2) this device must accept any interference received, including interference that may cause undesirable operation.

Changes or modifications not expressly approved by Detection Systems, Inc. can void the user's authority to operate the equipment.

2.0 Installation Considerations

- **Never** install the detector in an environment that causes an alarm condition in one technology. Good installations start with the LED **OFF** when there is no target motion. It should never be left to operate with the tri-color LED in a constant or intermittent green, yellow, or red condition.

NOTE: Microwave energy will pass through glass and most common non-metallic construction walls.

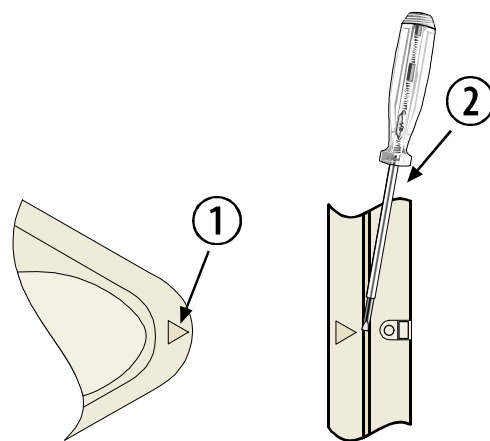
- Avoid installations where rotating machines (e.g. ceiling fans) are normally in operation within the coverage pattern. Point the unit away from glass exposed to the outdoors and objects that may change temperature rapidly. Avoid mounting the unit within 1 ft. (0.3 m) of any fluorescent light fixture.

Note: The PIR detector will react to objects rapidly changing temperature within its field-of-view.

- Eliminate interference from nearby outside sources.

3.0 Mounting

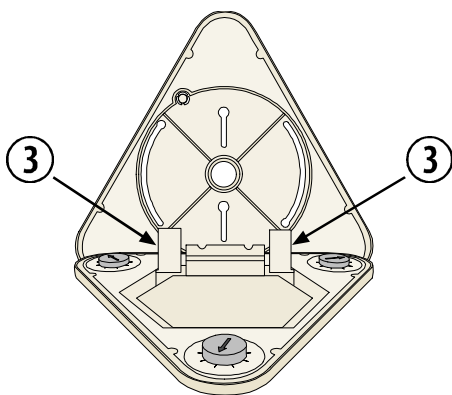
- Select a location likely to intercept an intruder moving across the coverage pattern. Recommended mounting height range is 12 to 25 feet (3.7 to 7.6 m). A coverage area of 40-70 ft. (12.2-21.3 m) is available when mounted between 8-12 ft. (2.4-3.7 m).
- The surface should be solid and vibration-free. (i.e. drop tiles should be secured if the area above the tiles is used as an air return for HVAC systems).
- To open the detector, locate the arrow on the cover of the detector ①. Turn a screwdriver in the recess between the cover and the base ②. One side of the cover will remain attached to the base of the detector.



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- If necessary, you may remove the base from the cover by pressing the two cover release tabs (3) inward while lifting the base away from the cover.

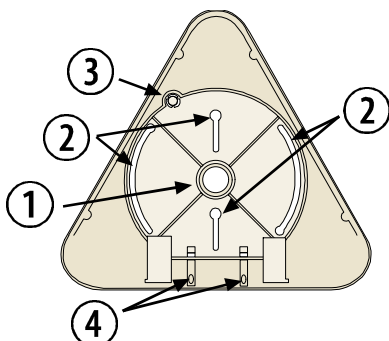


- Route wiring as necessary to the rear of the base and through the center hole.

Note: Be sure all wiring is de-energized before routing.

- Firmly mount the base. Depending on local regulations, the base may be directly surface mounted using anchors, mollies, or wing-nuts. It may also be mounted to standard 3.5 in. octagonal electrical box. The detector may also be connected directly to short lengths (short enough to avoid movement of the detector) of ½ in. (1.27 cm) EMT.

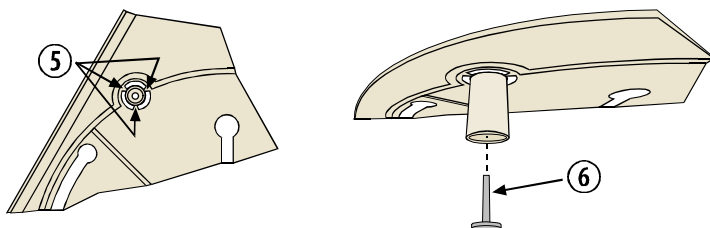
Hint: Mounting to removable ceiling tiles is not recommended unless a sandwich is made of the base, ceiling tile, and a back plate behind the tile.



Mounting Base

- ① Wire entrance and/or EMT Mounting.
- ② Mounting holes.
- ③ Tamper Post.
- ④ Wire entrance for surface mounting.

- If ceiling tamper is desired, loosen the tamper post by cutting the 3 tabs (5) and mount the post to the ceiling using a #8 screw (6).

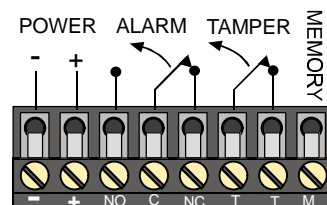


5.0 Wiring



Only apply power after all connections have been made and inspected. Do not coil excess wiring inside detector.

Note: Input power must use only an Approved Limited Power Source. Some countries require that the Alarm and Tamper Contacts be connected to a SELV (Safety Extra-Low Voltage) circuit only.



- Terminals 1 (-) & 2 (+):** Power limits are 9 to 15 VDC. Use no smaller than #22 AWG (0.8 mm) wire pair between the unit and the power source.
- Terminals 3 (NO), 4 (C), & 5 (NC):** Alarm relay contacts rated 125 mA, 28 VDC maximum for DC resistive loads. Use terminals 4 & 5 for Normally Closed circuits. Do not use with capacitive or inductive loads.
- Terminals 6 (T) & 7 (T):** Normally Closed tamper contacts rated at 28 VDC, 125 mA.
- Terminal 8 (M):** The memory mode requires a supply voltage on Terminal 8 to be activated. See Section 9.1 for operation and wiring information.

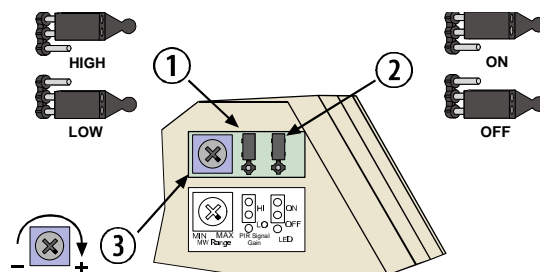
6.0 LED Operation

The detector uses a tri-color LED to indicate the various alarm and supervision trouble conditions that may exist. See chart below.

LED	Cause
Steady red	Unit alarm
Steady yellow	Microwave activation (walk test)
Steady green	PIR activation (walk test)
Flashing red	Warmup period after power-up

Note: During walk testing, the LED will light for the first technology (microwave or PIR) and then light red to indicate a detector alarm. The LED will not indicate activation of the second technology by lighting its color.

7.0 Feature Selection



7.1 PIR Sensitivity Selection Pins ①

For selection, place the plug across the appropriate pins.

- Low Sensitivity (LO):** The recommended setting for most installations. This setting tolerates environment extremes. **The detector is shipped in Low Sensitivity mode.**
- High Sensitivity (HI):** Use in locations where adequate catch performance is not achieved in the Low Sensitivity mode. This setting tolerates only minor environmental changes.

7.2 LED On/Off Pins ②

The ON position allows operation of the tri-color LED. If LED indication is not desired after setup and walk tests are completed, place in the OFF position.

7.3 Microwave Adjustment ③

Note: It is important to wait 1 minute after removing/replacing the cover so the microwave portion of the detector can settle, and to wait at least 5 seconds between the following walk testing procedures.

- The tri-color LED should be OFF before walk testing.
- Walk test **across** the pattern at the intended coverage's **farthest** end. Start walking from outside the intended protection area and observe the tri-color LED. The edge of the microwave pattern is determined by the first yellow microwave activation of the LED (or the first red activation if the green PIR LED activates first).
- If adequate range can not be reached, increase the Microwave Range Adjust **slightly**. Continue walk testing (waiting 1 minute after removing/replacing the cover) and adjusting the range until the farthest edge of desired coverage has been accurately placed.

Do not adjust the microwave range higher than required.

- Walk test the unit from all directions to determine all the detection pattern boundaries.

8.0 Supervision Features

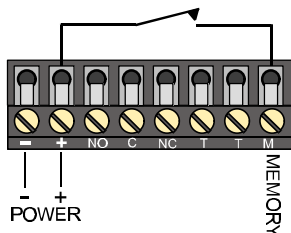
The supervision features function as follows:

- **Microwave:** The complete circuit operation of this subsystem is checked approximately every 4 hours.
- **Default:** The detector will default to PIR technology protection if the microwave subsystem fails. The detector will indicate alarm using green LED only and alarm relay will activate.

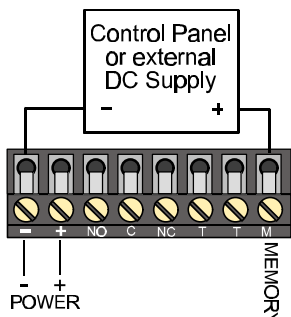
9.0 Other Information

9.1 Memory, Day Mode, Night Mode and Walk Test

Note: Memory, Night Mode and Walk Test require a supply voltage on Terminal 8 to activate these features. This supply voltage must be between 6 and 18 VDC. You may use a switch as shown below:



Or use an external power supply as shown below:



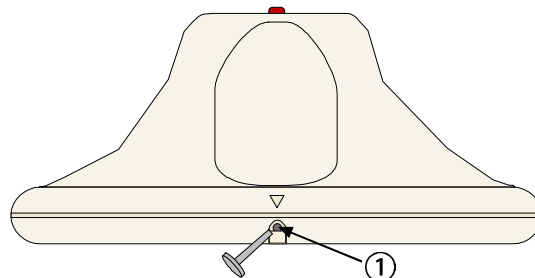
Note: Control voltage: +6 to +18 VDC = ON (Switch Closed)
0 VDC = OFF (Switch Open)

- **Day Mode:** The Day Mode disables the alarm memory and allows the LED (if activated) to operate normally.
- **Memory:** When the DS9370 is in the Night Mode the memory is activated. This allows the detector to store an alarm for display at a later time.
- **Night Mode:** The Night Mode enables the alarm memory and disables the LED operation.
- **Walk Test:** When the DS9370 is in the Walk Test mode, the LED will indicate the current alarm status regardless of the setting of the LED ON/OFF switch (Switch 1).

Desired Action	Control Voltage (Terminal M)
Turn ON Night Mode/Reset Stored Alarm	ON (for more than 20 seconds)
Turn OFF Night Mode/Display Stored Alarm	OFF
Turn ON Walk Test (if OFF)	ON (for more than 5 seconds but less than 20 seconds)
Turn OFF Walk Test (if ON)	ON (for more than 1 second but less than 20 seconds)

9.2 Anti-Vandal Screw

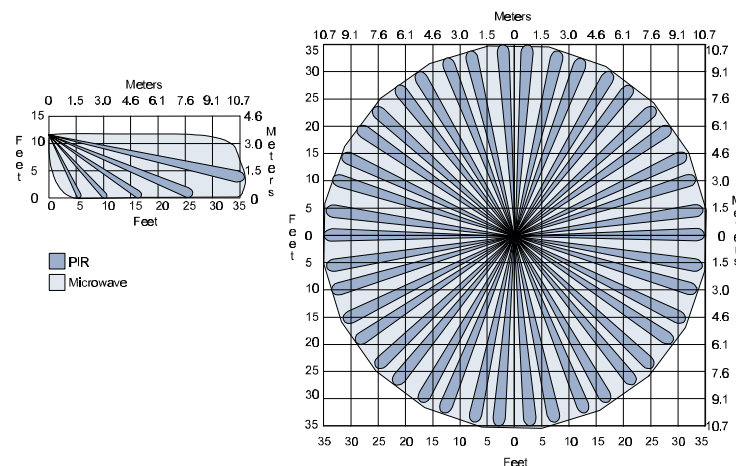
- After the cover has been closed, the entire assembly can be secured together using the supplied anti-vandal screw ①.



9.3 Maintenance

At least once a year, the range and coverage should be verified. To ensure continual daily operation, the end user should be instructed to walk through the far end of the coverage pattern. This ensures an alarm output prior to arming the system.

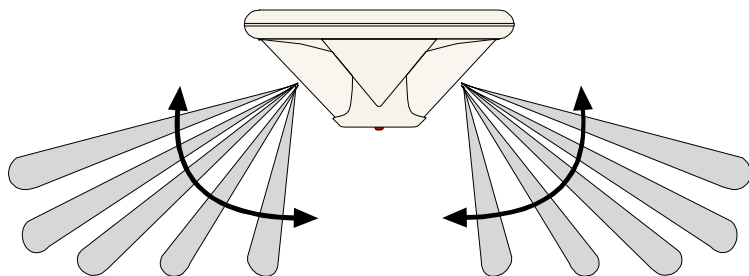
10.0 Coverage Pattern



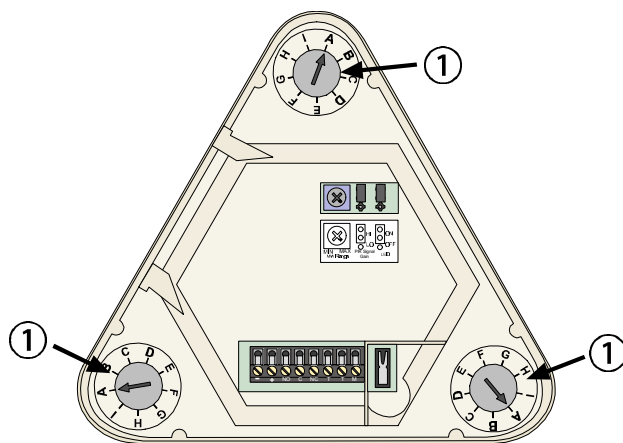
Coverage shown at 12 ft. (3.7 m) mounting height.

11.0 Optical Module Adjustment

- The PIR zones of the DS9370 are divided into three groups. Each of these 3 groups can be independently adjusted vertically to provide the best coverage within a room.



Only two coverage patterns are shown for clarity.

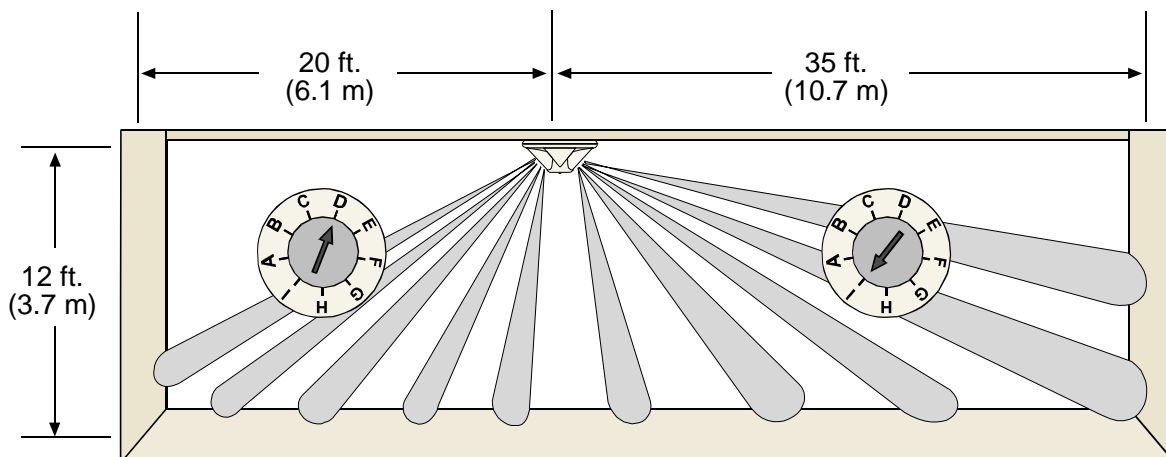


PIR vertical adjustment knobs ①

- Use the following chart to adjust the optical modules based on the mounting height of the detector. The range shown is the distance from the detector to the outside edge of the coverage pattern.

Maximum Range Feet (Meters)	Mounting Height Feet (Meters)										
	8 (2.4)	10 (3)	12 (3.7)	14 (4.3)	15 (4.6)	16 (4.9)	18 (5.5)	20 (6.1)	22 (6.7)	24 (7.3)	25 (7.6)
10 (3)	C	A									
15 (4.6)	G	D	A	A							
20 (6.1)	I	G	D	B	A	A					
25 (7.6)		I	F	E	D	C	A	A			
30 (9.1)			H	F	E	E	C	B	A		
35 (10.7)			I	G	G	F	E	C	B	A	A

- In installations where a targeted coverage is required for part of the area, the optical modules must be adjusted for the correct coverage. In the example below, the detector is mounted 12 ft. (3.7 m) above the floor. The distance to one wall is 20 ft. (6.1 m) and 35 ft. (10.7 m) to the opposite wall. Using the chart above, the optical module for the 20 ft. (6.1 m) range was set to "D" and the optical module for the 35 ft. (10.7 m) was set to "I".



Only two coverage patterns are shown for clarity.