



R_X360SN

Ceiling Mount Multiplex Passive Infrared Intrusion Detector with Self-Test

Specifications

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.

NOTE: For U. L. Listed Requirements, the coverage is 360° by 54 ft. (16.5 m) when mounted from 10 to 13 ft. (3.1 to 4.0 m) using the AR8-13 Array and when mounted from 15 to 18 ft. (4.6 to 5.5 m) using the AR13-18 Array.

Input Power: Supplied by polling loop.

Sensitivity: Field selectable for Standard or Intermediate.

Temperature: The storage and operating range is -20° to +120°F (-29° to +50°C). For U. L. Listed Requirements, the range is +32° to +120°F (0° to +50°C).

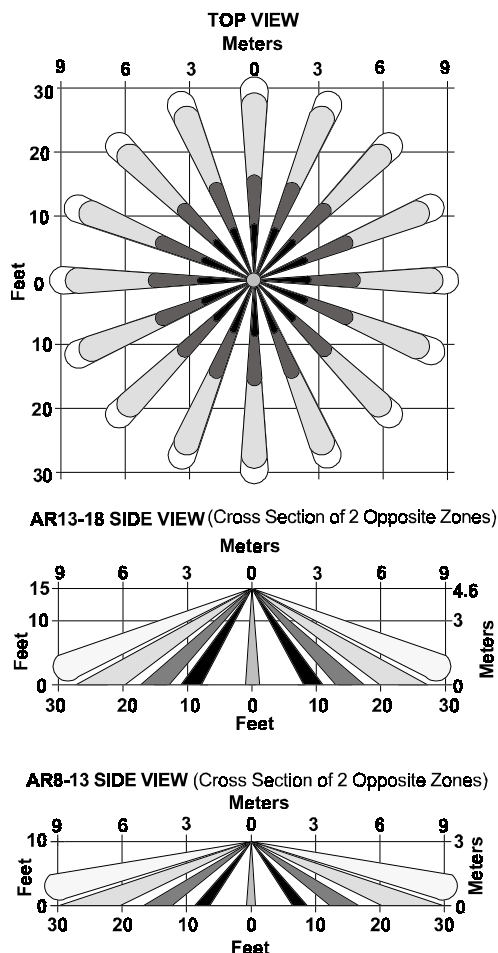


Figure 1. Coverage Pattern

Mounting

Select a location likely to intercept an intruder moving *across* the coverage pattern. See *Typical Placements to Achieve Coverage*. The recommended mounting height is 8 to 18 ft. (2.4 to 5.5 m).

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

- Do not mount near air handling system outlets, or in areas of extreme drafts.
- Remove the cover by turning it 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 the base-to-enclosure terminal pins.

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

NOTE: Be sure all wiring is unpowered (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, or may be mounted to standard four-inch octagonal or square electrical boxes.

NOTE: The R_X360SN 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).

Selecting the Optical Module (AR8-13 or AR13-18)

- Replace the enclosure onto the base.
- For ceilings between 8 and 13 ft. (2.4 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 and 5.5 m) high, use the optical module marked AR13-18.
- To replace an optical module, push the optical module tabs towards the center until the module snaps free of the circuit board. Holding the new module by the tabs, snap the new module into place.
- Avoid fingerprints on the mirrored surfaces. Should the mirrored surfaces become soiled or otherwise marked, they can be cleaned using a soft, clean cloth and any commonly available, mild window cleaner.

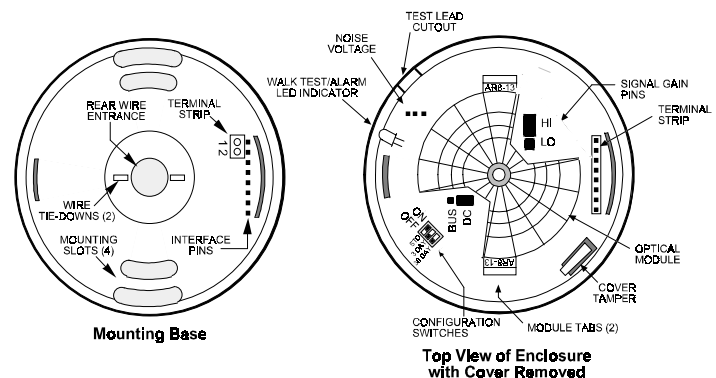


Figure 2. Internal View

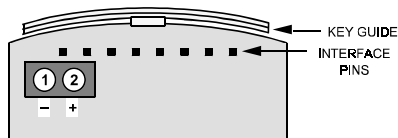
Wiring



ONLY APPLY POWER AFTER ALL CONNECTIONS HAVE BEEN MADE AND INSPECTED.

NOTE: Do not coil excess wiring inside unit.

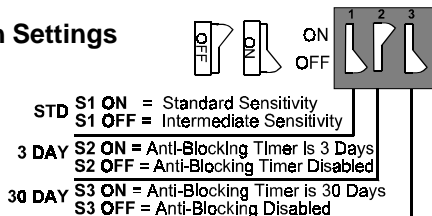
- **Terminals 1 (-) & 2 (+):** Connect the detector to the multiplex bus (wire the detector's T-strip as shown above).



NOTE: Polarity must be observed. Improper connection may cause the multiplex bus to malfunction.

Configuration Switch Settings

The R_x360SN has several features that are controlled using the configuration switches.



Sensitivity Mode (S1)

Sensitivity modes depend on the type of coverage desired and the installation environment.

- **Standard Sensitivity:** Tolerates environment extremes on this setting, but requires the largest amount of intruder motion to achieve an alarm. The detector is shipped in Standard Sensitivity mode.
- **Intermediate Sensitivity:** The recommended setting for most installations. Use in locations where an intruder is expected to cover only a small portion of the protected area. Tolerates normal environments on this setting

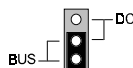
NOTE: Although the sensitivity modes provide different degrees of tolerance to environmentally caused alarms, the installer should assure peak background noise voltage readings do not exceed ± 0.15 VDC.

Anti-Blocking Timer (S2 and S3)

Set switches S2 and S3 for the desired anti-blocking timer time. To select 3 or 30 days, put its switch in the ON position. If both switches are OFF, the anti-blocking timer defaults to 30 days. **The detector is shipped with the anti-blocking timer disabled.**

Bus/DC Jumper

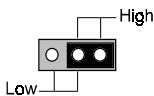
The detector is shipped with this jumper in the "BUS" position.



- During normal operation, this jumper should be in the "BUS" operation.
- For walk testing or location testing, the detector can be temporarily operated on 6 to 15VDC source. When operating from a DC source, the jumper should be in the "DC" position. This will cause the LED to follow the detector alarm state.

Signal Gain

The R_x360SN 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 R_x360SN is shipped in this setting. If the gain select jumper is missing, the unit 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 High Gain may be too sensitive for environmental extremes.

NOTE: Setting the R_x360SN for Low Gain reduces the coverage area to 40 ft. (12.2 m) in diameter.

Serial No. ID

This unit does not utilize DIP switches to set its zone number (ID). Each unit has a unique factory-assigned serial number which must be "learned" by the control panel during the zone programming procedure. Therefore, this PIR can be used only with a control panel that supports serial number devices.

Note that this PIR's unique factory-assigned serial number can be found on the bar code label on the left-hand corner of the PC board.

The PIR's serial number can be entered by one of the following methods:

1. Downloading (Zone Definition screen of V-Link software). Recommended for large installations and installations where foot traffic cannot be controlled.
2. Entered in manually at the "learn" prompt during manual zone programming (see *Important* below).
3. "Learned" by faulting the detector twice while at the "learn" prompt during manual zone programming.

If programmed manually, be sure that other polling loop sensors are not activated so that they cannot send a signal to the control while this PIR is being programmed (mask PIRs, don't open/close doors, etc.).

IMPORTANT: To be sure that other polling loop devices are not activated when entering serial numbers manually, power the system down, disconnect the polling loop at the control, power back up again, and immediately enter the program mode. Then proceed to Step 1 (below). Remember to reconnect the polling loop when programming is complete, powering the system down first.

To either manually enter or "learn" the unit's serial number:

1. Enter *93 Zone Programming mode.
2. Enter the Response Type and other zone information for the PIR, pressing [*] to advance from prompt to prompt.
3. At the "Input Type" prompt, enter "6" for SL (Serial Polling Device) and press [*].
4. At the "Learn S/N?" prompt, enter (Y)es.
5. At the "Input S/N" prompt, either enter the serial number manually (and a "1" for the loop number), or fault the PIR being learned (the keypad will "beep" to confirm signal). Wait three to six seconds and fault the PIR again (the keypad should beep again to confirm). The PIR should now be learned. A "1" should appear under the "L" on the zone summary screen. (If an "N" is displayed, the PIR has not been learned.)
6. Press [*] to continue programming zones.

For more information, see the Zone Programming section of the control panel installation instructions.

Setup and Walk Testing

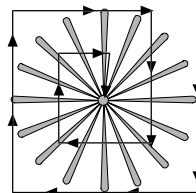
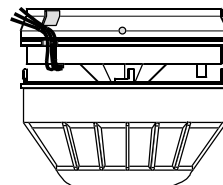
- Attach test leads to the Noise Voltage terminals. The outside terminals are common, and the center terminal is positive.
- **Place the cover on the unit**, and twist-lock it clockwise into place.

NOTE: Be sure the test leads are dressed through the cutout.

- 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 as shown.

- The edge of the coverage pattern is determined when the Alarm/Test LED indicator first turns on.
- Walk test the unit from all directions to determine the boundaries.

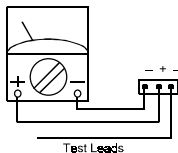


Final Tests

Noise Measurement

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 Noise Voltage connector using the test leads as shown. Set meter scale for about 3.0 VDC.
- The base reference level for reading background noise or target voltages is approximately 2.0 VDC. Installations in quiet environments, therefore, will result in a steady meter reading between 1.9 and 2.1 VDC. Look for areas and sources of thermal disturbances if the meter fluctuates greatly.



False Alarm Prevention

- 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 for at least **three minutes**.

Readings should not deviate from the reference level more than ± 0.15 VDC. For readings outside these limits; eliminate the cause, rotate the unit slightly, or mask out the mirror segment(s) looking down at the thermal disturbance.

Coverage Margin

- Again walk across the farthest edge of required coverage.

A minimum voltage change of 1.0 VDC from the reference level is required in the wintertime when the background temperature is cool. This will make up for summertime, when the background is warmer. If testing in the summertime, the minimum recommended voltage change is 0.75 VDC.

- When testing is completed, remove the test leads, and twist-lock the cover into place.

Supervision Features

The R_x360SN performs several supervision features that, combined with the advanced motion detection capabilities of the detector, provide an extremely high level of security. A supervision trouble condition is indicated at the detector by the Alarm/Test LED (see the Supervision Display Chart).

- The LED indicates the cause of the supervision trouble using coded pulses.

Supervision Display Chart

LED	CAUSE
ON	Unit Alarm
2 Flashes	Anti-Blocking Timer Timeout
4 Flashes	PIR Self-test Failure

The supervision features function as follows:

- PIR:** The operation of the PIR is electronically checked approximately every 12 hours, even without motion. The test may also be initiated by the multiplex control. If the PIR fails, the Alarm/Test LED will flash four times per second and a trouble signal will be sent to the multiplex control.
- Anti-Blocking Timer Supervision:** This feature verifies that the detector has a clear view of the detection area and has not been blocked. A trouble condition will be indicated if the detector has not alarmed at least once during the selected time period.

Refer to *Configuration Switch Settings* for proper switch settings.

If the time period selected has elapsed from the last alarm and no motion has been sensed by the detector, the LED will flash two times per second and a trouble signal will be sent to the multiplex control.

The anti-blocking timer time period may be set for 3 to 30 days. This feature may also be disabled by setting the anti-blocking timer configuration switches S2 and S3 in the OFF position.

Other Information

Anti-vandal Tie-down

- After the cover has been installed and twisted into place, the entire assembly can be secured together using the supplied anti-vandal screws. There are two of them; one for each side.

Optical Module Masking

- Peel-off masks are provided with the unit for each segment of the optical module to allow for customized coverage, or to block out areas of objects that may cause thermal disturbances. The mask is self-adhesive and pre-cut in the shape of the optical module.
- To block out a particular zone or group of zones, peel off a section of the mask that corresponds to the appropriate zone, and stick it on the mirror segment. See *Mirror Module to Pattern Reference* to identify mirror segments and zones.

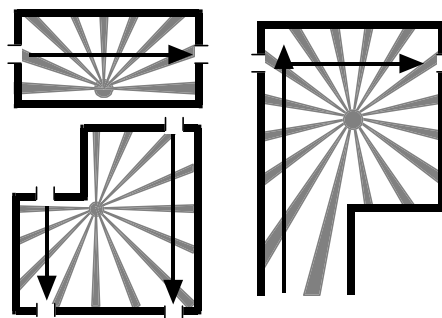
Maintenance

- At least once a year, the range and coverage should be checked according to *Setup and Walk Testing* and *Final Tests* above.
- To ensure continued daily operation, the end user should be instructed to daily walk through the far end of the coverage pattern. This assures an alarm output prior to arming the system.

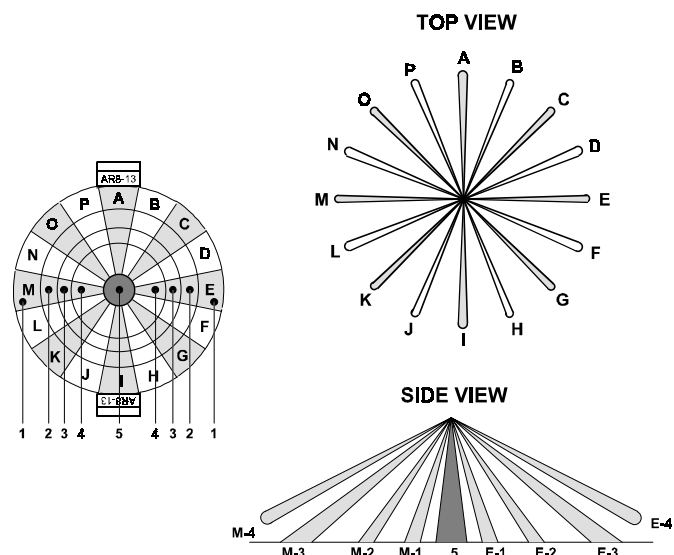
U. S. Patent Numbers

- The R_x360SN is protected by the following U. S. patents: #4,764,755, #5,083,106, and #5,670,943.

Typical Placements to Achieve Coverage



Mirror Module to Pattern Reference



TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to the continuous satisfactory operation of any alarm system.

The installer should assume the responsibility of developing and offering a repair 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 systems operation at all times.

WARNING! **THE LIMITATIONS OF YOUR** **PASSIVE MOTION DETECTOR**

While this Intrusion Detector is a highly reliable intrusion 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. For example:

- These Motion Detectors can only detect intrusion within the designated ranges as diagrammed in this installation manual.
- The passive infrared sensor in this Motion Detector does not provide volumetric area protection. It does 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.

- Metal objects (or other reflectors, such as foil faced insulation or water in bottles) can alter the microwave sensor's protection pattern.
- Mechanical tampering, masking, painting or spraying of any material on the lenses, 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.
- The detector will not operate without appropriate DC power connected to it, or if the DC power is improperly connected (i.e., reversed polarity connections).
- These Detectors, like other electrical devices, are subject to component failure. Even though this equipment is 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 this 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 the owner eligible for a lower insurance rate, 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.

We continue to develop new and improved protection devices. Users of alarm systems owe it to themselves and their loved ones to learn about these developments.

ADEMCO SIX YEAR LIMITED WARRANTY

Alarm Device Manufacturing Company, a Division of Pittway Corporation, and its divisions, subsidiaries and affiliates ("Seller"), 165 Eileen Way, Syosset, New York, 11791, warrants this PIR/Microwave Detector to be in conformance with its own plans and specifications and to be free from defects in materials and workmanship under normal use and service for 72 months from the date stamp control on the product. Seller's obligation shall be limited to replacing, at its option, free of charge for materials and labor, a detector which is proved not in compliance with Seller's specifications or proves defective in materials or workmanship under normal use and service. Seller shall have no obligation under this Limited Warranty or otherwise if the detector is altered or improperly repaired or serviced by anyone other than Ademco factory service. In case of defect, return the detector to Ademco Distribution, Inc. or an authorized Ademco distributor for an immediate replacement.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH SHALL EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO CASE SHALL THE SELLER BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, OR UPON ANY OTHER BASIS OF LIABILITY WHATSOEVER, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

Seller does not represent that its detector may not be compromised or circumvented; that the detector will prevent any personal injury or property loss by burglary, robbery, fire or that the detector will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained alarm may only reduce the risk of a burglary, robbery, fire or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THAT THE DETECTOR FAILED TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE DETECTOR, WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER. This warranty replaces any previous warranties and is the only warranty made by the Seller on this detector. No increase or alteration, written or verbal, of the obligations of this Limited Warranty is authorized.



ALARM DEVICE MANUFACTURING COMPANY

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