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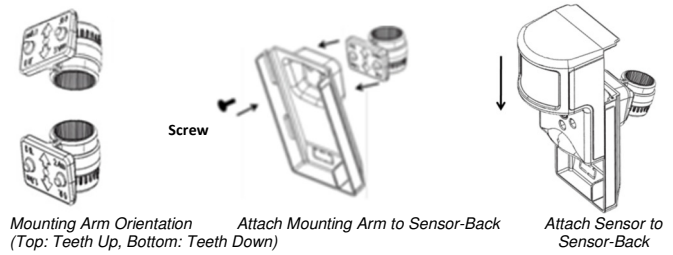
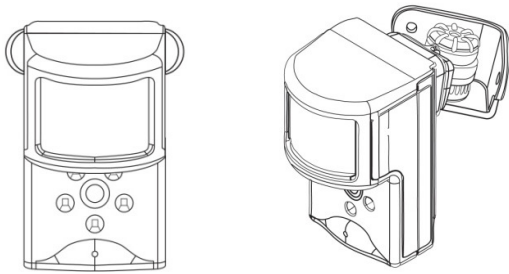
Client: Alarm.com
Model: ADC-IS-220-LP
Standards: FCC 15.249/IC RSS-210
IDs: YL6-143IS22/9111A-143IS22
Report #: 2014202

Appendix K: Manual

Please refer to the following pages.

Alarm.com Image Sensor

Installation Guide



PRODUCT SUMMARY

The Image Sensor is a pet immune PIR (passive infrared) motion detector with a built-in camera. The sensor is designed to capture images during alarm or non-alarm events when motion is detected. Users can also initiate image capture on-demand to *Peek-In* on their property. Images are stored locally and uploaded either automatically when motion is captured during alarm events or manually when requested by the user. Once uploaded, images are available for viewing on the Alarm.com Website or an Alarm.com Smart phone app. The sensor is battery powered, all wireless and simple to install and operate. Both an Alarm.com module and a subscription to an Alarm.com service plan are required.

Highlighted Features

- Battery operated
- Communicates wirelessly to the security control panel
- 35 feet by 40 feet detection coverage area
- Configurable PIR sensitivity and pet immunity settings
- Image: QVGA 320x240 pixels
- Color Images (except in night vision)
- Night vision image capture with infrared flash (black & white)
- Tamper detection, walk test mode, supervision

Service Plan Options

Image capture features require either an Alarm.com Basic or Advanced Interactive Service Plan and one of the following Image Sensor add-ons:

- **Image Sensor Alarms**- Includes upload of images from alarm events only.
- **Image Sensor Plus**- Includes upload of images from alarm events *and* non-alarm events. Users can configure *Daily View* schedules to receive images automatically each day or *Peek-In* to initiate an on-demand image capture immediately, or when the next motion occurs. Users can also request images that are captured automatically while the system is *Armed Away* or following a *Disarm* from an *Armed Away* state. Up to 40 captured events can be uploaded per month. Additional image uploads may be added in increments of 20 at an additional charge.

HARDWARE COMPATIBILITY

- **Security Control Panel:** Interlogix Simon XT v1.3 or higher or XTi v 1.0 or higher
- **Alarm.com Module:** Simon XT Module with firmware 146 or higher (XTi requires module with firmware 151 or higher)
- **Required Daughterboard:** Image Sensor daughterboard (attached to compatible Alarm.com module)
- **Available Zones:** One zone per Image Sensor installed. On the Simon XT only, one additional zone is required for the required daughterboard. Up to three Image Sensors may be added per system. (*Note: The Alarm.com GSM Module V4 is required to use both Image Sensor and emPower™.*)

HARDWARE INSTALLATION

1. Choose Sensor Location and Mount

- Determine sensor mounting location** based on installation scenario and criteria noted in the "Installation Guidelines." For best image capture, the target capture areas should be centered in the frame. (e.g. If customer wants to capture people coming through door, the doorway should be centered in camera/PIR view.)
- Verify RF communication prior to mounting**-To verify RF signal strength, tamper sensor and place near mounting location. Activate PIR for 2 minutes. On a Simon XT, check signal strength report at panel under "System Programming" → "Interactive Services" → "Image Sensor Setup" → "Image Sensor Settings" → "Image Sensor #[X]" → [signal information]. On the XTi, check signal strength under "Programming" → "Interactive Services" → "Image Sensor" → "Image Sensor Status" → "[X][Sensor Name]" Signal Strength.

The sensor performs best when the signal strength is above 40%. The signal strength must be greater than 30% for sensor to function properly. Signal strength can fluctuate depending on environmental conditions and interference, so be sure that the signal is consistently in range.

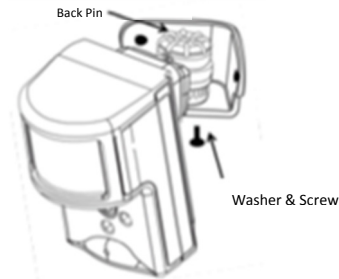
- Determine desired mounting angle** for customer scenario; attach mounting arm to sensor-back and re-attach sensor to sensor-back. The mounting arm attaches to the back of the sensor enabling the sensor angle to vary based on the application. To obtain the full 35' x 40' coverage area, the sensor should be mount the sensor at a 6° downward angle. This corresponds to a "teeth up" orientation of the mounting arm. For most smaller areas in residential installations, mount the arm with the "teeth down" for a deeper angle (18°). Secure the back of the sensor to the mounting arm with the provided screw. If the camera will be mounted perpendicular to the wall, mount the sensor without the mounting arm/bracket directly on the wall, at a 12° angle.

- Choose applicable mounting bracket** for customer scenario. The sensor hardware packet contains 2 mounting brackets for different mounting scenarios. Use the provided large screws and anchors to attach the bracket to the wall.



Mark location of bracket holes on mounting surface at a height of 8 feet for maximum coverage area. (Leave at least 3 inches of clearance above the sensor to allow for battery replacement without uninstalling the mounting bracket.)

- Place sensor with arm on mounting bracket.** Adjust the horizontal positioning of the sensor to point towards the desired coverage area. To adjust positioning, lift the mounting arm at least 1/3 of the way off the bracket and rotate the arm.
- Secure the mounting arm location** by sliding lock pin into the hole. Use the washer and remaining small screw to secure the lock pin by screwing upwards through the bottom of the hole in the mounting bracket. (*Note: To make it easier to adjust PIR/camera field of view in step 10, complete this step after horizontal sensor positioning is finalized.*)



9. Complete PIR Testing & Verify RF Coverage

Verify that PIR coverage adequately covers area by performing a walk test. (See "Programming" section for more details.) Verify that the sensor signal strength is strong while mounted. **The signal strength must be above 30% for the sensor to function properly.**

PIR Lens and Camera Coverage Diagrams

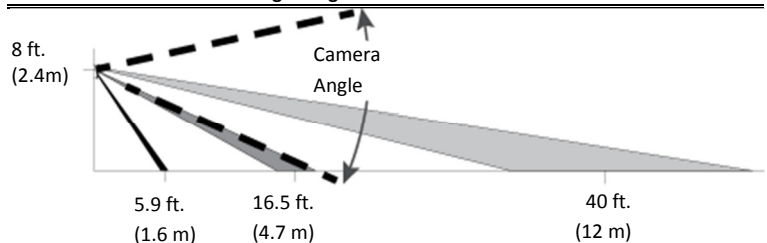


Figure 1. Side View: PIR Lens Coverage

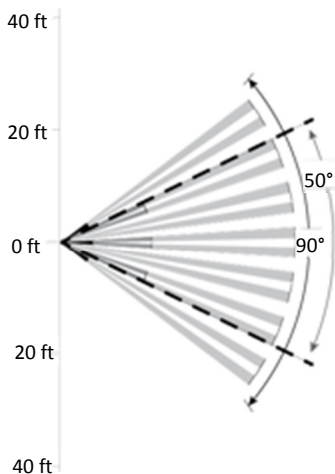


Figure 2. Top View: PIR Lens Coverage

As indicated in Figure 2, the camera coverage area is narrower than the PIR coverage area. When installing, mount sensor where subjects are likely to be centered in or across PIR and camera field of view.

INSTALLATION GUIDELINES

Before permanently mounting the Image Sensor, evaluate potential locations and consider the following factors to ensure optimal performance and false alarm protection:

Range- Is the location close enough to the security panel to ensure adequate signal strength?

False Alarm Immunity- Is installation location false alarm prone? Reduce the risk of motion-triggered false alarms by making sure the location is free of vibration and the device does not face a local heat source, window, or areas with high pet activity. (Also, make sure area is free of elevated surfaces where pets may climb.)

Capture Orientation- Is the location ideally suited for detecting motion and capturing images when there is an intruder or activity? Consider where the subject is likely to enter the area and whether or not they will be facing the sensor.

Lighting Conditions- How good is the artificial and natural light? Will daytime and nighttime lighting conditions ensure adequate image quality?

- If possible, locate sensor within 100 ft of the panel especially if there are many walls between the sensor & panel, or if the panel and sensor are located on different floors. While the transmitter may have an open air range of 400 ft, installation site conditions can reduce range considerably.
- Avoid facing the sensor toward or close to areas that may affect communication such as metallic objects or electronics likely to produce interference. Verify sensor RF communication at panel, even if within recommended distance.
- For optimal detection capabilities, mount the sensor where someone will most likely walk across the sensor coverage area as opposed to directly towards the sensor.
- By default, the Image Sensor is set to "Normal" sensitivity. A more sensitive motion profile ("High") and a less sensitive profile providing pet immunity for pets up to 40 lbs ("Low") can be selected at the control panel or through the Alarm.com Dealer Website.
- The Image Sensor is designed for indoor use only and should not be installed outdoors. For proper operation in pet immune applications, the room should be kept between 60° and 110° F.
- To maximize night vision image quality, do not orient sensor towards surfaces that will create glare when infrared flash occurs. Avoid orienting the sensor such that the ceiling or adjacent walls are in the camera field of view.
- The sensor must be mounted on a flat wall surface (do not set on shelf) free of vibrations.

A. PIR Sensitivity Settings

By default, the Image Sensor is configured with a standard motion sensitivity profile ("Normal"). The sensor can also be set to a more sensitive motion profile ("High") and a less sensitive profile with pet immunity for pets up to 40 lbs ("Low"). The sensitivity can be configured through the control panel or Alarm.com Dealer Website.

(Note: Using the high sensitivity profile increases the risk of false alarms, especially if the sensor is facing windows or sources of heat. When mounting the sensor near windows or heat sources use caution and select the "Low" PIR sensitivity setting.)

B. PIR Activation and Test Mode

During normal operation, the PIR can be activated at most once every three minutes while the system is disarmed. There is a 30-second delay after powering before PIR detection is active. For the first 3 minutes after a sensor is enrolled in a network, the sensor will enter PIR test mode and the sensor LED will illuminate for 3 seconds upon each motion activation (at most every 8 seconds). For additional testing time, put the sensor into test mode via the control panel or by tampering the sensor.

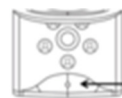
D. Sensor LED

By default, the image sensor LED does not illuminate when activated by motion unless the sensor is in test mode. The LED can be enabled via the Alarm.com Dealer Website for each Image Sensor on a customer's account. When enabled, the LED illuminates for 3 seconds upon motion activations (at most every 3 minutes while disarmed).

SENSOR RESET BUTTON

Insert a paperclip into the hole on the front of the sensor to access the reset button. Press and hold for 3 seconds to power cycle the sensor. Press and hold a full 10 seconds until the sensor LED flashes rapidly to reset the sensor and clear it from its network. The sensor must be reset prior to enrolling in a new network.

(Note: The sensor can only be cleared from its network using the reset button if it is currently not communicating with its network. If the sensor is still communicating with its network, clear sensor by deleting it from the system it is enrolled in.)



Insert Paperclip to access reset button

Figure 3. Sensor Reset Button

BATTERY REPLACEMENT

When a sensor's batteries are low, the panel will display a low battery alert for the sensor (unless this trouble condition has been disabled for the panel display). Notifications are also issued via the Alarm.com platform if the customer has subscribed to this notification type.

(Note: Low battery messages are only active at the panel between 7:00am and 10:00pm.)

To replace the sensor batteries, slide the front of the sensor up off the sensor-back. (No need to remove or un-mount entire sensor-back and mounting arm.) To maximize battery life, replace the sensor batteries with 2 AA 1.5v Energizer Ultimate Lithium batteries. Dispose of used batteries according to the battery manufacturer instructions and following local regulations.

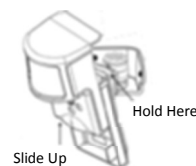


Figure 4. Removing Sensor for Battery Replacement

(Note: The operation of the sensor with alkaline batteries has not been verified for compliance with UL standards.)

TECHNICAL SPECIFICATIONS

Alarm.com Model Number: ADC-IS-200-LP

Interlogix Part Numbers: Image Sensor: 600-9400-IMAG
Image Sensor Kit (Image Sensor w/ daughterboard): 600-9400-IMAG-KIT

Power Source: Optimal: 2 AA 1.5v Energizer Ultimate Lithium Batteries. Acceptable: 2 AA 1.5v alkaline batteries (battery life may be reduced significantly).

Expected Battery Life: Approximately 2 years for lithium batteries. Battery life varies by use case depending on certain factors such as weak signal strength and frequency of motion activations, image captures, and IR flashes.

Voltage Thresholds: With lithium batteries, low battery alerts are issued at 3.05V. The sensor cannot operate when the voltage reads below 1.95V.

Operating Temperature Range: 32° to 110°F for non-pet applications, 60° to 110°F for pet applications. Alkaline batteries are not suitable for temperatures below 50° F.

Weight: 3.1 oz. (with batteries, without mounting accessories)

Dimensions: 3.1" h x 1.8" w x 2.3" d

Supervisory Interval: 100 minutes (sensor), 3 hours (alarm hardware)

Wireless Signal Range: Greater than 400 ft open air

Color: White

Recommended Mounting Height: 8 ft

Recommended Mounting Angle: 6° for large coverage area and rooms greater than 30 ft ("teeth up" on mounting arm); 18° for rooms less than 30 ft ("teeth down" on mounting arm)

Motion Profiles & Sensor Range: Normal (up to 30 ft, default), High (up to 35 ft), Low (up to 25 ft)

REGULATORY INFORMATION

Changes or modifications not expressly approved by Alarm.com can void the user's authority to operate the equipment.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions.

1. this device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.