



Installation Guide

Avigilon Presence Detector (APD) Sensor with Ceiling or Wall Mount Adapters

APD-S1-D and APD-MT-WALL1 (optional)

Important Safety Information

This manual provides installation and operation information and precautions for the use of this sensor. Incorrect installation could cause an unexpected fault. Before installing this equipment read this manual carefully. Please provide this manual to the owner of the equipment for future reference.



This Warning symbol indicates the presence of dangerous voltage within and outside the product enclosure that may result in a risk of electric shock, serious injury or death to persons if proper precautions are not followed.

This Caution symbol alerts the user to the presence of hazards that may cause minor or moderate injury to persons, damage to property or damage to the product itself if proper precautions are not followed.

WARNING — Failure to observe the following instructions may result in severe injury or death.

• Do not connect directly to mains power for any reason.

CAUTION — Failure to observe the following instructions may result in injury to persons or damage to the device.

- Do not expose the device directly to high levels of x-ray, laser, or UV radiation. Direct exposure may cause permanent damage to the sensor.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other sources of heat.
- Do not subject the device cables to excessive stress, heavy loads or pinching.
- Do not open or disassemble the device. There are no user serviceable parts.
- Refer all device servicing to qualified personnel. Servicing may be required when the device has been damaged (such as from a liquid spill or fallen objects), has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not use strong or abrasive detergents when cleaning the device body.
- Use only accessories recommended by Avigilon.
- This product should be installed in restricted access locations.

Regulatory Notices

- Installation must be performed by qualified personnel only, and must conform to all local codes.
- This product is intended to be supplied by Power over Ethernet (PoE) that is a "Limited Power Source" or "LPS" rated 48 VDC, 3W.
- This product is intended to be used in a Network Environment 0 per IEC TR62101. The device is to be connected only to PoE networks that comply with IEEE 802.3af without routing to the outside plants.
- Do not connect directly to mains power for any reason.

FCC/ISED Notices

- FCC ID: 2ANC5-APDS1D
- This equipment may only be operated indoors. Operation outdoors is in violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties.
- This equipment complies with the FCC and ISED Canada radiation exposure limits. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.
- This device complies with part 15 of the FCC Rules. 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 undesired operation.
- NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- IC ID: 23071-APDS1D
- This Class B digital apparatus complies with Canadian ICES-003 (B)/NMB-3(B)
- This Device complies with Industry Canada License-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.

Disposal and Recycling Information

When this product has reached the end of its useful life, please dispose of it according to your local environmental laws and guidelines.

Risk of fire, explosion, and burns. Do not disassemble, crush, heat above 100 °C (212 °F), or incinerate.

European Union:



This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

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Overview

The APD device uses a short-range radar sensor to detect motion in small indoor areas. It is designed to detect the presence of people and it is capable of detecting fine motion, such as respiration. The device is used to detect people who enter its range and linger for extended periods of time, and can detect people who are standing still or sleeping, and then send notifications to ACC[™] servers connected to the device. It detects whether a person is present or not but cannot quantify the number of people in range. It can be used independently when privacy is desired or linked to a camera view for video verification.

Typically, it is configured to send notifications after it has detected that:

- A person has moved into range and lingered for a specified period of time.
- There is no longer a person in range after a specified period of time.
- A person is present.
- A person is not present.

The notifications received by the ACC server can be used to trigger alarms using the Rules functionality in the ACC software. These alarms can then be monitored in the ACC Client or ACC Mobile applications and then acted upon.

The configurable settings for the device allow you to specify:

- The range for the device, which must be set so that unwanted motion is not detected, such as people walking along a hallway on the other side of an enclosed area being monitored.
- The dwell time for a detected object, which is the amount of time that a person or persons are detected in range before a notification is sent out.
- The sensitivity of the sensor to fine motion.

Configuration can be completed using the APD Web User Interface (WebUI) when the device is installed and connected to the network. After the device is also connected to an ACC server, configuration changes can be made using either the WebUI or the ACC Client Software. For more information, see the *Web Interface User Guide* for the APD device and *Avigilon Control Center Client User Guide*.

The device requires two minutes to learn the environment that is in range any time that it is powered on, or after the range is reset. During this time, its status appears as "Initializing".

While the device is learning its environment (that is, detecting and recording the normal fixed objects in range), no people or moving objects should be present within range of the device.

Device Attached to the Ceiling Bracket



1. APD device body

The main body of the APD device.

2. Ceiling Bracket

Used to mount the APD device to the ceiling, with the device pointing directly downwards.

The ceiling bracket is included in the package with the APD device.

Device Attached to Wall or Corner Bracket



1. APD device body

The main body of the APD device.

2. Wall or Corner Bracket

Used to mount the APD device to a wall or corner, with the device angled 30° downwards.

NOTE: The bracket for mounting the APD device on a wall or in a corner is an optional accessory that must be ordered separately from the device.

LED Indicators



1. Connection status LED indicator

Provides information about device operation. For more information, see *Connection Status LED Indicator* on page 14.

2. Presence detection LED indicator

A blue LED indicator displays the status of the device. The blue LED blinks while the device is initializing. After initialization, the status LED is lit when presence is detected. It turns off when presence is absent.

Back of Device



1. Ethernet port

Accepts power and Ethernet connection to the network.

The device can only be powered by Power over Ethernet (PoE). Server communication and data transmission also occur over this connection.

2. Serial number tag

Contains the serial number and MAC address of the device. Copy down this information for later use if you plan to configure a static IP address for this device. For more information, see *Setting the IP Address Using the ARP/Ping Method* on page 17.

Positioning the APD[™] Device

The APD device is extremely sensitive to motion and needs to be mounted on a stable surface. It is designed to be mounted with either a ceiling or wall mount adapter. It is packaged with a ceiling mount adapter. A wall or corner mount adapter is also available as an optional accessory.

When the device is mounted to the ceiling it detects presence inside a cone projected down from the sensor. Fine motion, such as respiration and heartbeat, is detected within a smaller diameter cone than that in which larger movement is detected.

The wall or corner mounting adapter points downward at a fixed 30° angle. This allows for a roughly oval-shaped detection zone on the floor that tapers towards the wall upwards to the sensor. As with the ceiling mount, fine motion, such as respiration, is detected within a smaller oval area than that in which larger movement is detected.

You must determine the exact location for the APD device before you install it as the device detects only within a specific range.

Use the diagrams in *Top-down View of Ceiling Mount* on the next page and *Side View of Ceiling Mount* on the next page to determine the best placement of the device to detect respiration and to detect larger-motion-only for a ceiling mounted device.

Pendant mounting is not recommended but if it is the only option then ensure that the pendant is rigidly attached to the ceiling, preferably at two locations, and not using cables, to reduce swings and rotations.

The radar in the APD device will detect motion up to 1-2 meters behind the device, so it is important to be aware of the radar-permeating nature of the wall or ceiling on which it is mounted. Most ceilings in commercial buildings are concrete re-inforced and will block the radar signal, however if the APD device is mounted on an internal wall the following is suggested:

- When installing in an office setting such as a conference room that is likely only drywall, install the APD device in the center of the room and limit the range setting to prevent detecting presence in adjacent rooms. Note the coverage area will be circular so corners of the room will be out of the detection area. For rectangular rooms two APD devices may be necessary or the APD device can be placed in the center of the ceiling in the busier area of the room.
- If an interior wall must be made to block the radar signal, metallic wall paper, or metal-backed drywall can be used.

Use the diagrams in *Top-down View of Ceiling Mount* on the next page*Positioning the APD[™] Device* above, and *Side View of Wall Mount* on page 7 to determine the best placement of the device to detect respiration and motion and motion only for a wall mounted device.

NOTE: The ranges shown in the diagrams below can vary slightly with environmental conditions.

Top-down View of Ceiling Mount Ceiling Mount at 3m, Range Set to 9m



Range (on floor) at Different Mounting Heights for Ceiling Mount

Mounting Height	motion only: Coverage Radius	motion & respiration: Coverage Radius
2.4m	7.5m	4.0m
3.0m	7.6m	4.1m
4.0m	7.7m	4.3m

Figure 1: Top-down View of Ceiling Mount

Side View of Ceiling Mount Ceiling Mount at 3m, Range Set to 9m



Range (On Floor) at Different Mounting Heights for Ceiling Mount

Mounting Height	motion only: Coverage Radius	motion & respiration: Coverage Radius
2.4m	7.5m	4.0m
3.0m	7.6m	4.1m
4.0m	7.7 m	4.3m

Figure 2: Side View of Ceiling Mount

Top-down View of Wall Mount Angle Mount (30 degrees), Range Set to 9m



Range (On Floor) at Different Mounting Heights for 30 Degree Wall Mount

	motion only			motion & respiration		
Mounting Height	Range at 0° from sensor	Range at 45° from sensor	Range at 90° from sensor	Range at 0° from sensor	Range at 45° from sensor	Range at 90° from sensor
2.4m	8.6m	8.6m	6.5m	8.6m	6.0m	2.6m
3.0m	8.4m	8.4m	6.5m	8.4m	5.9m	2.4m
4.0m	8.0m	8.0m	6.4m	8.0m	5.5m	1.5m

Figure 3: Top-down View of Wall Mount

Side View of Wall Mount Angle Mount (30 degrees), Range Set to 9m



Range (On Floor) at Different Mounting Heights for 30 Degree Wall Mount

Mounting Height	motion only			motion & respiration		
	Range at 0° from sensor	Range at 45° from sensor	Range at 90° from sensor	Range at 0° from sensor	Range at 45° from sensor	Range at 90° from sensor
	8.6m	8.6m	6.5m	8.6m	6.0m	2.6m
3.0m	8.4m	8.4m	6.5m	8.4m	5.9m	2.4m
4.0m	8.0m	8.0m	6.4m	8.0m	5.5m	1.5m

Figure 4: Side View of Wall Mount

Installation

Required Tools and Materials

The following tools are required to complete the installation but are not included in the package:

• No. 2 Phillips screwdriver — for attaching the device to the mounting surface.

Device Package Contents

Ensure the package contains the following:

- Avigilon Presence Detector (APD) Sensor
 - 4 screws and anchors for solid walls
 - Surface mount adapter

Installation Steps

Complete the following sections to install the device.

Mounting the APD Sensor With the Surface Mount Adapter

The Avigilon Presence Detector^M device is provided with a surface mount adapter that can be mounted to a ceiling. If the APD device needs to be installed on a wall or in a corner, use the wall or corner mounting adapter, which are optional accessories. See *Positioning the APD^M Device* on page 4 for more information.

The APD device should be installed on a surface that can be easily drilled into. It is connected to a previously installed Ethernet cable coming from inside the mounting surface and the mounting adapter is attached over the cable hole. The cable hole should be positioned on the ceiling or wall to provide optimal coverage.

Perform the following steps to mount the appropriate adapter to a ceiling or wall:

1. Use the mounting adapter as a template to mark the position of the four mounting screws into the mounting surface.



2. Drill the holes for the screws into the mounting surface.



3. Insert the anchor plugs for the screws and then drive the four screws to fasten the mounting adapter to the ceiling or wall.



Installing the Device in the Mounting Adapter

After you install the mounting adapter, mount the APD device to the adapter using the following steps:

1. Connect the Ethernet port attached to the device to the Ethernet cable that was pulled through the cable entry hole.

The connection status LED indicator will turn on once a network link has been established.

2. Align the housing clips on the device base to the attachment retainers on the mounting adapter. Press the

device base into the mounting adapter. The base clicks into place and is held securely.



Assigning an IP Address

The device automatically obtains an IP address when it is connected to a network.

NOTE: If the device cannot obtain an IP address from a DHCP server, it will use Zero Configuration Networking (Zeroconf) to choose an IP address. When set using Zeroconf, the IP address is in the 169.254.0.0/16 subnet.

The IP address settings can be changed using one of the following methods:

- Device's web browser interface: http://<camera IP address>/.
- Network Video Management software application (for example, the Avigilon Control Center[™] software).
- ARP/Ping method. For more information, see *Setting the IP Address Using the ARP/Ping Method* on page 17.

NOTE: The default device username is administrator with no password.

Configuring the APD Device

Configure the APD device for the first time after it is installed with the APD web user interface (WebUI) to configure the device.

Log in to the APD WebUI in a web browser, using the IP address of the device. Navigate to the Setup page, then to the Presence Detection tab. See the *Web Interface User Guide* for the APD device for more information.

There are three settings that can be configured in the WebUI:

• Dwell: the number of minutes that a person(s) needs to be present before an event is triggered.

The default setting is 10 minutes.

- Range: The line of sight from the sensor to the outer edge of the floor area for which you want detection to occur.
- Sensitivity: The threshold for the amount of change from the background model needed to determine presence.

The higher the sensitivity the less movement needed to activate the sensor. In general, increasing sensitivity will lead to more detections but may lead to increased number of false positives. Decreasing sensitivity can reduce the number of false positives but may lead to a false negatives.

It is unlikely you will need to change sensitivity.

After the APD device is configured, initialized, and the range has been set for the first time, you can use one of the following methods to reconfigure the device:

- If the device is connected to your network, you can use the APD web user interface to configure the device. See the *APD Web Interface User Guide* for more information.
- If the device is connected to the Avigilon Control Center system, you can use the client software to configure the device. See the Avigilon Control Center Client User Guide for more information.

Initializing the APD Device and Setting the Range

The APD device takes two minutes to learn the background and initialize after it is powered on or the detection range is reset. It is strongly recommended that no people are in range of the device during the initialization as this may affect sensitivity.

While the device is initializing, the LED light on the front of the device will blink. As soon as it is initialized, the LED light will stop blinking.

After initialization is complete, the sensor will detect a person in 2-3 seconds and the blue LED will go on (and a presence-signal will be sent by the device). When there is no presence detected the blue LED will go off (and a no-presence signal will be sent). Normally when a person is no longer detected it takes the sensor 1 minute to verify this. However to facilitate installation only, a range test mode is available.

Range-Test Mode

In Range-Test Mode, when a person is detected, the sensor will still activate in 2-3 seconds, but when a person is not detected the sensors will deactivate in less than 5 seconds, providing almost immediate feedback to the installer. When a change is made to the range while in range-test mode initialization is reduced to 30 seconds, instead of the 2 minute initialization required in normal mode. Use range-test mode to test the outer range of the detection area (the area for larger movement).

NOTE: Range-Test Mode is not as sensitive to fine movement, such as respiration, as is the normal mode and it should only be used for installation purposes.

Using the Range-Test Mode Step-by-Step

Range-Test Mode can be enabled and disabled in the APD WebUI.

To set the range of the APD device, use the following procedure:

- 1. Use a remote workstation on your network to connect to the APD WebUI and navigate to the Presence Detection page of the Setup tab.
- 2. Click the Enter button to enable Range-Test Mode.
- 3. Use the diagrams *Positioning the APD[™] Device* on page 4 as a general guideline to choosing an initial setting on the Detection Range slider.
- 4. Test the actual range being detected by doing a walk-test to different areas of the room and determine if you are being detected or not. Testing the actual range detected in your environment is important to correctly setting up the sensor.
- 5. Depending on your results, either skip to step 8 or adjust the Detection Range setting again.

When you change the Detection Range setting in range-test mode the sensor re-initializes. In Range-Test Mode this initialization is reduced to 30 seconds.

6. Test the detection range again by continuing your walk-test. If the results of your walk-test are not satisfactory continue the walk-test and adjust the range.

- 7. When the results of your walk-test show detection where you want it, click the **Exit** button to disable Range Test Mode.
- 8. As a final check, walk-test the room checking the detection range in normal mode. In normal mode you will get feedback in 2-3 seconds as to whether you are being detected but you will need to wait 1 minute to get feedback on non-presence. If a change is made to the range setting, then the sensor will re-initialize for 2-minutes.

When the detection range is satisfactory in normal mode, you have completed installation.

Connection Status LED Indicator

Once connected to the network, the Connection Status LED indicator will display the progress in connecting to the Network Video Management software.

The following table describes what the LED indicator shows:

Connection State	Connection Status LED Indicator	Description
Obtaining IP Address	One short flash every second	Attempting to obtain an IP address.
Discoverable	Two short flashes every second	Obtained an IP address but is not connected to the Network Video Management software.
Upgrading Firmware	Two short flashes and one long flash every second	Updating the firmware.
Connected	On	Connected to the Network Video Management software or an ACC Server. The default setting can be changed to "Off" using the camera's web user interface. For more information see the <i>Web Interface User Guide - H4 HD</i> .

Removing the APD Device from the Mounting Adapter

1. Apply force to slightly open the plastic tab on one side of the mounting adapter to release the APD device from the adapter. Pull the APD device from the mounting adapter. You may want to use a tool with a flat edge such as a small screwdriver or a letter opener.



2. Pull the APD device out of the mounting adapter.



3. Detach the APD device from the network cable.

Resetting to Factory Default Settings

If the APD device no longer functions as expected, you can choose to reset the device to its factory default settings.

Use the firmware revert button to reset the device. The firmware revert button is shown in the following diagram:



- 1. Ensure the device is powered on.
- 2. Using a straightened paperclip or similar tool, gently press and hold the firmware revert button.
- 3. Release the button after three seconds.

CAUTION — Do not apply excessive force. Inserting the tool too far will damage the device.

Setting the IP Address Using the ARP/Ping Method

Complete the following steps to configure the camera to use a specific IP address:

NOTE: The ARP/Ping Method will not work if the **Disable setting static IP address through ARP/Ping method** check box is selected in the camera's web browser interface. For more information, see the *Web User Interface Guide - Avigilon High Definition H.264 IP Camera Models*.

- 1. Locate and copy down the MAC Address (MAC) listed on the Serial Number Tag for reference.
- 2. Open a Command Prompt window and enter the following commands:
 - a. arp -s <New Camera IP Address> <Camera MAC Address>

For example: arp -s 192.168.1.10 00-18-85-12-45-78

b. ping -1 123 -t <New Camera IP Address>

For example: ping -1 123 -t 192.168.1.10

- 3. Reboot the camera.
- 4. Close the Command prompt window when you see the following message:

Reply from <New Camera IP Address>: ...

Specifications

Radar

Kauai					
	Ultra Wide Band Pulsed Radar				
	Frequency Band 6.0 – 8.5 GHz with 7.2GHz center frequency				
Network					
Network	100Base-TX				
Cabling Type	CAT5				
Connector	RJ-45				
API	ONVIF® compatible (www.onvif.org)				
Device Management Protocols	SNMP v2c SNMP v3				
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication				
Protocols	IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP				
Streaming	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP				
Mechanical					
Dimensions	Wall Mount: 91mm x 60mm 75mm (3.58" x 2.36" x 2.95")				
L×W×H	In-ceiling Mount: 91mm x 60mm 39mm (3.58" x 2.36 x 1.52")				
Weight with Mounting	Wall Mount: 124g, 0.28 lbs				
Bracket	In-ceiling Mount: 108g, 0.24 lbs				
Camera Weight with	H4M-D1 - 152 g, 0.34 lbs				
In-ceiling Mounting Bracket	H4M-D1-IR - 154g, 0.34 lbs				
Body	High impact plastic (PC)				
Housing	Vandal resistant				
Finish	Cool grey				
Electrical					
Power Consumption	3W max				
Power Source	PoE: IEEE802.3af Class 1 compliant				
Environmental (for ind	loor use only)				
Temperature Rating	0 °C to 50 °C (32 °F to 122 °F) limit				
Storage Temperature	-30 °C to 70 °C (-22 °F to 158 °F)				
Ingress Protection	IP3x				
Digital I/O	Digital output rating (open drain, 25V max, 100mA sink)				
Certifications	·				

Certifications	UL, FCC, CE
Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1, IEC 62471
Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3
Electromagnetic Immunity	EN 55024, EN 61000-6-1, EN 50130-4

Specifications

For More Information

Additional information about setting up and using the device is available in the following guides:

- Avigilon Control Center Client User Guide
- Web Interface User Guide Avigilon Presence Detector™ Device
- Avigilon Camera Configuration Tool User Guide

These guides are available on the Avigilon website: avigilon.com/support-and-downloads.

Limited Warranty and Technical Support

Avigilon warranty terms for this product are provided at avigilon.com/warranty.

Warranty service and technical support can be obtained by contacting Avigilon Technical Support: **avigilon.com/contact-us/**.