Installation Guide

Avigilon™ HD Multisensor Dome Camera Models:

12W-H3-4MH-DO1 and 9W-H3-3MH-DO1

Important Safety Information

This manual provides installation and operation information and precautions for the use of this camera. 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 use.

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

The 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.

- Installation must be performed by qualified personnel only, and must conform to all local codes.
- This product is intended to be supplied by a UL Listed Power Unit marked "Class 2" or "LPS" or "Limited Power Source" with output rated 24 VAC +/- 10%, 37 VA min.; 24 VDC +/- 10%, 26 W min. or Power over Ethernet (PoE) IEEE802.3af Type 3 compliant Power Sourcing Equipment (PSE) rated 44-57 VDC, 13 W min. or Power over Ethernet (PoE) IEEE802.3at Type 2 compliant Power Sourcing Equipment (PSE) rated 50-57 VDC, 25.5 W min.
- Any external power supply connected to this product may only be connected to another Avigilon product of the same model series. External power connections must be properly insulated.
- Do not connect directly to mains power for any reason.

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

- Do not install near any heat sources such as radiators, heat registers, stoves, or other sources of heat.
- Do not subject the cables to excessive stress, heavy loads or pinching.
- Do not open or disassemble the device. There are no user serviceable parts.
- Refer all 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.

Regulatory Notices

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.

This Class B digital apparatus complies with Canadian ICES-003.

FCC Notice

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 the 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.

Changes or modifications made to this equipment not expressly approved by Avigilon Corporation or parties authorized by Avigilon Corporation could void the user's authority to operate this equipment.

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.

Legal Notices

Disclaimer

This document has been compiled and published covering the latest product descriptions and specifications. The contents of this document and the specifications of the products discussed herein are subject to change without notice. Neither Avigilon Corporation nor any of its affiliated companies guarantees the completeness or accuracy of the information contained in this document and is not responsible for your use of, or reliance on, the information. Avigilon Corporation shall not be responsible for any losses or damages (including consequential damages) caused by reliance on the information presented herein.

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http://www.avigilon.com

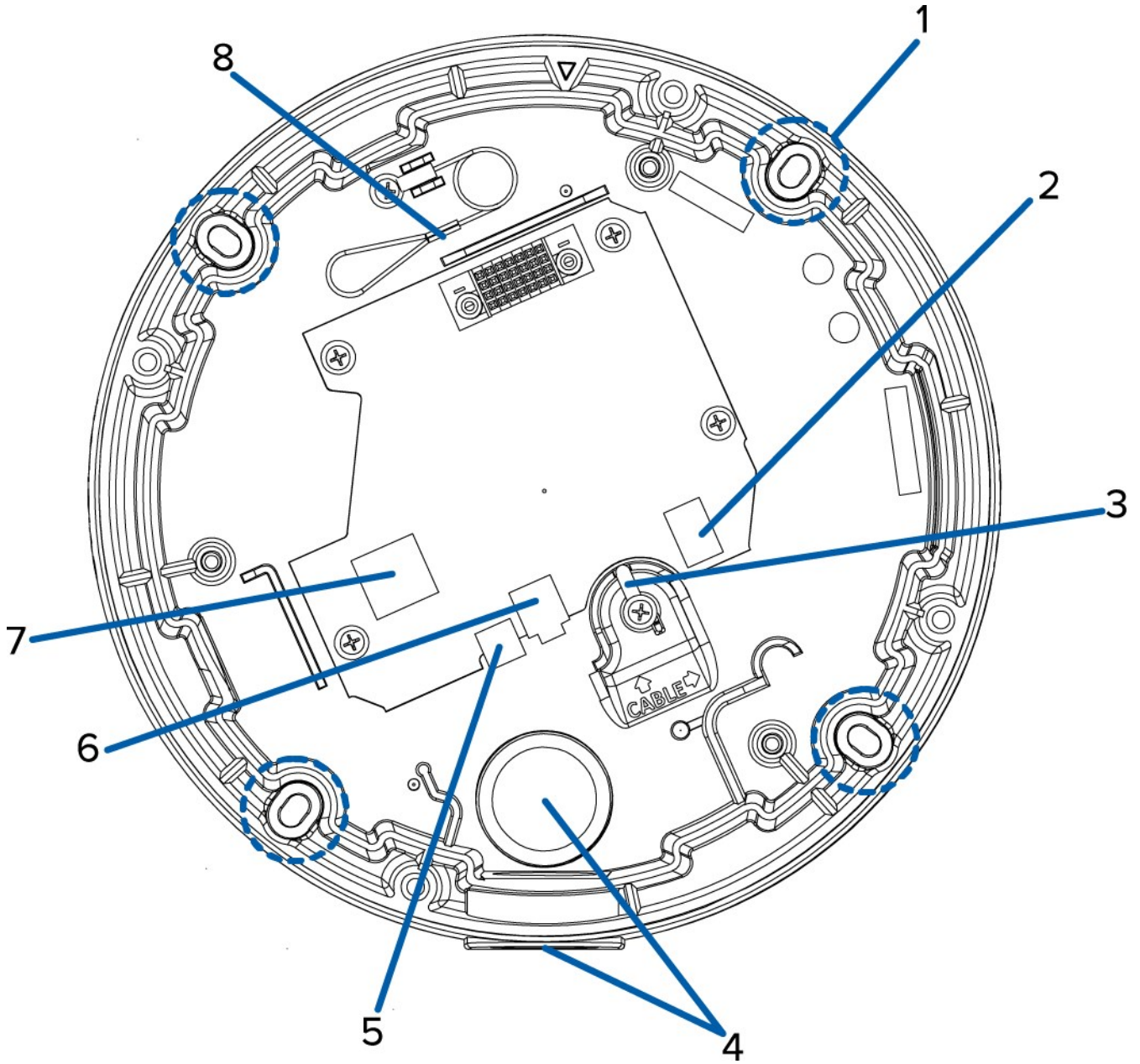PDF-H3-MH-DO-A

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Overview

Base View

1. **Mounting Holes**

   Mounting points for the camera.

2. **I/O Connector Block**

   Provides connections to external input/output devices.

3. **Cable Retaining Eyelet**

   Small tab to hold wrapped cables in place.

4. **Cable Entry Hole**

   An entry hole for network, power and I/O cables.

5. **Power Connector Block**

   Accepts a terminal block with either an AC or DC power connection. DC input can be either polarity. Only required when Power over Ethernet is not available.

6. **Audio I/O Connector**

   Accepts a mini-jack connector (3.5 mm).

7. **Ethernet Port**

   Accepts an Ethernet connection to a network. Server communication and image data transmission occurs over this connection. Also receives power when it is connected to a network that provides Power over Ethernet.

8. **Safety Lanyard**

   Connects to the anchor on the main camera module to help prevent the camera from falling after installation.

Camera View
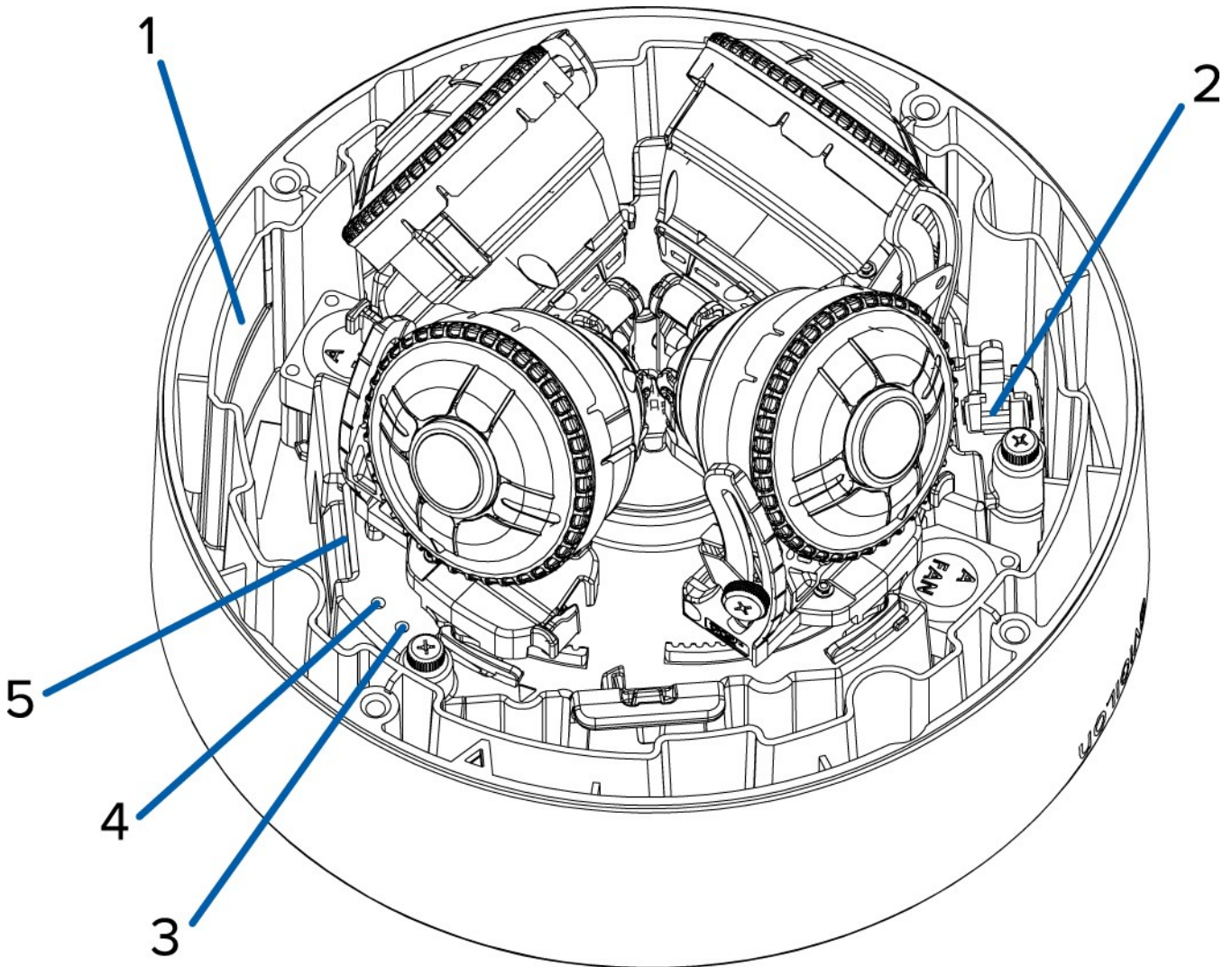
1. **Serial Number Tag**

   Product serial number and part number label.

2. **Configuration Ethernet Port**

   A secondary Ethernet port for configuring the camera. Does not accept PoE.

3. **Link LED**

   Indicates if there is an active connection in the Ethernet port.

4. **Connection Status LED**

   Provides information about device operation. For more information, see *LED Indicators* on page 15

5. **SD Card Slot**

   Accepts an SD card for onboard storage.

Installation

Camera Package Contents

Ensure the package contains the following:

- Avigilon™ HD Multisensor Dome Camera
- Terminal block
- T20 Torx key
- Drill template sticker
- 3/4" NPT Closure Plug with O-ring
- Teflon Sealing Tape
- Mounting screws
- Wall anchors

Precautions for Installing Near Salt Water

Salt environments are hard on camera paint and external appearances but the camera functionality will not be affected if the cameras are installed as described in this guide.

Follow these precautions to avoid camera issues when installing in a salt heavy environment:

- Use mounting accessories offered by Avigilon. All Avigilon accessories are tested to work with Avigilon cameras in the rated environments.
- If you use a third-party accessory, you *must* ensure that the material is compatible with the finish of the camera housing or galvanic corrosion may occur.
- Never pair steel mounting accessories with aluminum camera enclosures. Steel corrodes aluminum when salt is introduced. The corrosion is an electrochemical reaction and will cause the corrosion to spread across the entire camera body.
- Always insulate any camera surface that is in contact with another metal or conductive material. It is recommended that you always isolate the mounting screws from the mounting surface and camera housing with rubber or plastic shoulder washers.

Installation Steps

Complete the following steps to install the device:

> ⚠️ **CAUTION —** The dome camera must be mounted as instructed below or problems with moisture may arise and will not be covered by the dome camera warranty.

Preparing the Camera for Installation

NOTE: Be careful not to scratch the dome bubble.

1. Remove the dome cover by loosening the screws that fix the cover to the base. The Torx key included with the dome camera can be used to loosen the screws.

2. Determine where the cables will enter the camera. The camera has two cable entry holes: one on the side and one on the bottom of the dome camera.

   - Use the supplied 3/4" NPT closure plug to fill the unused cable entry hole.

   - When installing outdoors, wrap the thread of the plug with the supplied Teflon sealing tape to create a water tight seal.

3. If you are using the side cable entry hole, attach a conduit connector to the cable entry hole. Install the conduit and its fitting as instructed by the manufacturer.

   NOTE: Only use vandal resistant conduits. Vandal resistant conduits will protect the cables and compliment the dome camera's vandal resistant design.

   When installing the dome camera outdoors, ensure the conduit and its fitting are designed for outdoor use and have a suitable IP rating. Always apply silicone sealant to seal the cable entry hole and prevent excessive moisture from entering the dome.

Mounting the Base

1. Use the drill template to drill four mounting holes in the ceiling or wall. Note the direction of the camera heads on the template.

2. If installing outdoors on a vertical surface, the side cable entry hole and conduit connector must face downwards.

3. Pull the required cables through the cable entry hole in the camera base.

4. Apply silicone sealant around the edge of the camera that is screwed into the mounting surface.

Connecting Cables

Refer to the diagrams in the Overview section for the location of the different connectors.

To connect the cables required for proper operation, complete the following:

1. If an external microphone or speaker is required, connect the devices to the audio connector.

2. Connect a network cable to the camera's Ethernet Port (RJ-45 connector).

    a. Loosen the cable retaining eyelet and rotate it out of the cable track.

    b. Wrap the cable around the cable track to prevent the cable connector from becoming over-stressed and cause poor video performance.

    c. Once the cable is in place, move the cable retaining eyelet over the cable and tighten the eyelet into place.
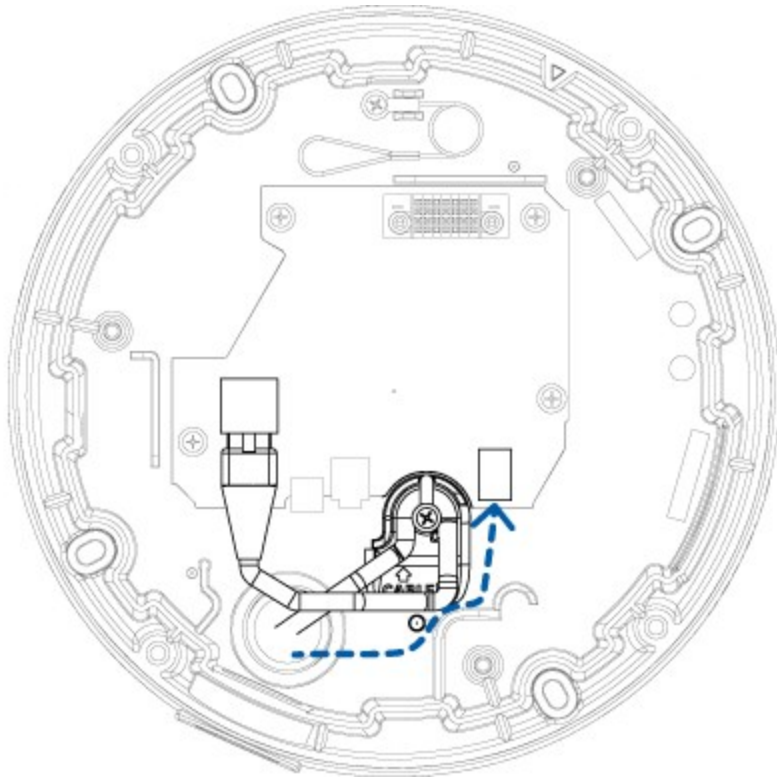
3. If external input or output devices are part of the installation (for example: door contacts,relays, etc), connect the devices to the I/O Terminals.

    Route the external power cable around the outside of the cable track to help avoid cable strain.

4. Connect power using one of the following methods:

    ○ Power over Ethernet (PoE) Class 3 or PoE Plus Class 4 — Connect a PoE compliant injector or switch to the Ethernet network cable.

    ○ External Power — Connect an external "Class 2" or "LPS" or "Limited Power Source" with output rated 24 VAC +/- 10%, 37 VA minimum or 24 VDC +/- 10%, 26 W minimum.

    Tip: When installing in cold environments, use PoE Plus Class 4 or external power to defrost or defog the dome bubble more quickly.

5. If you are using the bottom cable entry hole, cover the opening with silicone sealant after the cable connections have been made. This will help prevent excessive moisture from entering the camera.

(Optional) Configuring Onboard Storage

To use the camera's onboard storage feature, you must insert an SD card into the SD card slot.

It is recommended that the SD card have a capacity of 8GB or more, and a write speed of class 6 or better. If the SD card does not meet the recommended capacity or write speed, the performance of the onboard storage may suffer and result in the loss of frames or footage.

1. Insert an SD card into the camera.

    ⚠ **CAUTION —** Do not force the SD card into the camera or you may damage the card and the camera. The SD card can only be inserted in the orientation shown on the camera.

2. Access the camera's web interface to enable the onboard storage feature. For more information, see the *Avigilon High Definition H.264 Camera Web Interface User Guide*.

Installing the Camera Module

1. Attach the safety lanyard from the base to the anchor on the camera module.
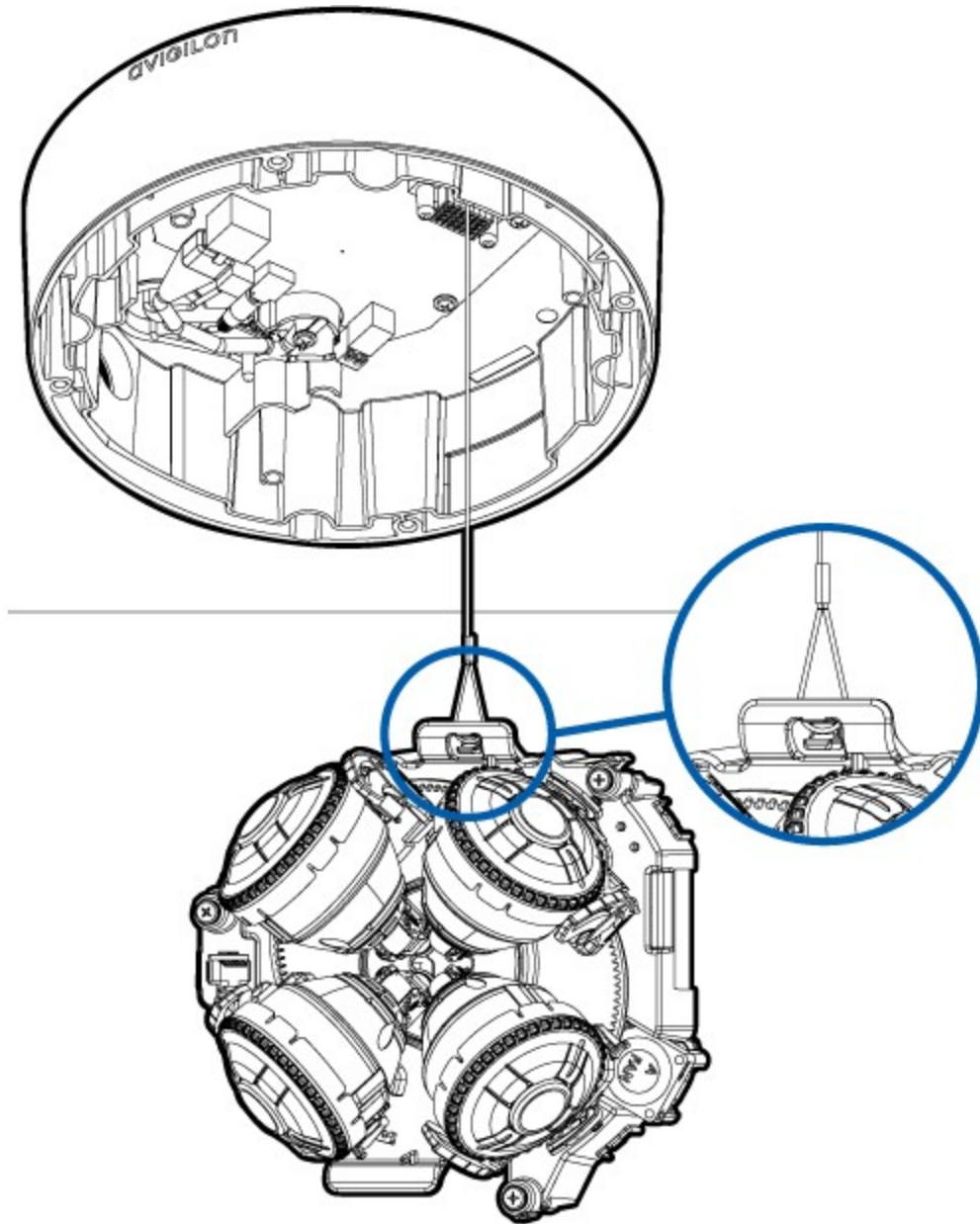
2. Align the arrow on the base with the arrow on the camera module. The arrows must be aligned or the camera will not fit properly into the base.

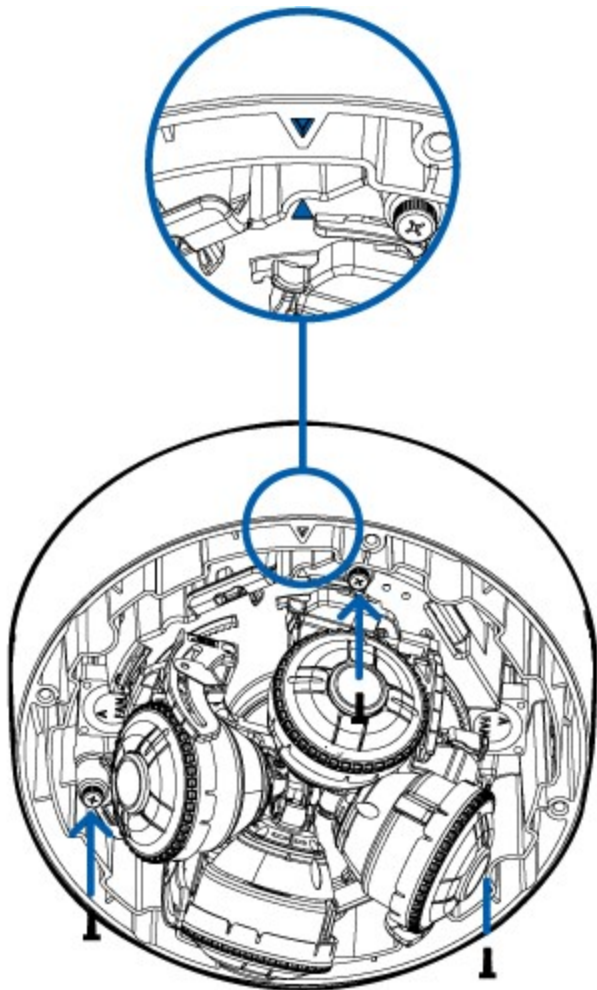3. Push the camera into the base. The Connection Status LED should turn on if there is power going to the camera.

   If the Connection Status LED does not turn on, remove the camera module and check the connections on the base.

4. Tighten the screws on the camera module to fix it to the base.

Assigning an IP Address

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

NOTE: If the camera 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:

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

NOTE: The default camera username is `admin` and the default password is `admin`.

Accessing the Live Video Stream

Live video stream can be viewed using one of the following methods:

- Web browser interface: http://<IP address>/
- Network Video Management software application (for example, the Avigilon Control Center software).

NOTE: The default camera username is `admin` and the default camera password is `admin`.

Aiming the Dome Camera

1. (Optional) To help you aim the dome camera, you can connect an Ethernet cable to the Configuration Ethernet Port.
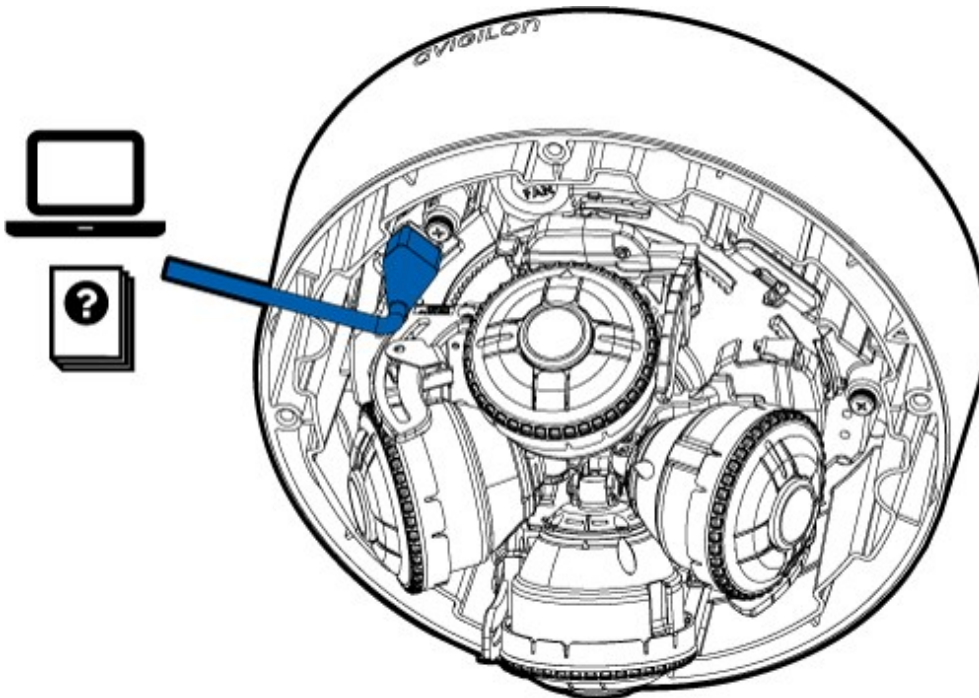
Be aware that while the Configuration Ethernet Port is in use, the primary Ethernet port will only be used for PoE.

Important: While the Configuration Ethernet Port is in use, the camera will only stream video and accept commands from the Configuration Ethernet Port. Also, the Indicator LEDs will only show the connection status for this Ethernet port.

2. To aim the camera, adjust each of the available camera heads as required:
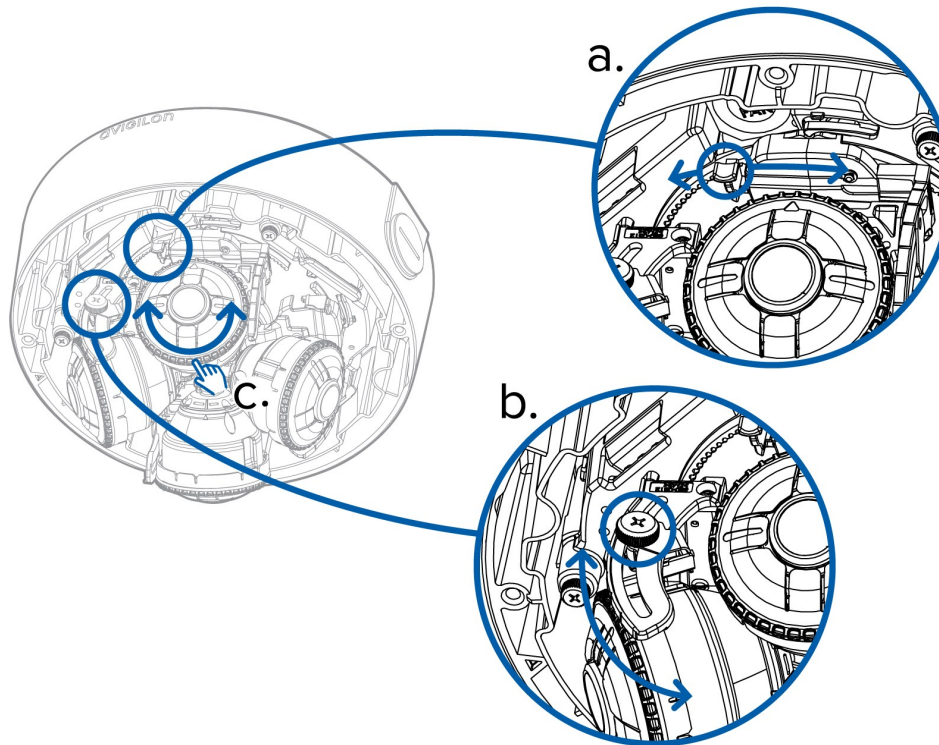
a. Press the rail release tab to move the camera head side to side.

b. Loosen the tilt lock screws to tilt each camera head up and down. Lock the screws when the camera is tilted in the correct angle.

c. Rotate the azimuth control ring to set the image in the correct rotation.

3. In the camera web browser interface, adjust the camera's Image and Display settings to achieve the desired zoom position.

Installing the Dome Cover

1. Attach the dome cover to the base by tightening the screws with the provided Torx key.
2. Remove the plastic cover on the dome bubble.

For More Information

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

- *Avigilon™ Control Center Client User Guide*
- *Avigilon™ High Definition H.264 Web Interface User Guide*

The manuals are available on the Avigilon website: **http://avigilon.com/support-and-downloads**

Cable Connections

Connecting External Power

NOTE: Do not perform this procedure if Power over Ethernet (POE) is used.

If PoE is not available, the device needs to be powered through the removable power connector block. Refer to the diagrams in this guide for the location of the power connector block.

The device can be powered from 24 V DC or 24 V AC. The power consumption information is listed in the product specifications.

To connect power to the power connector block, complete the following steps:

1. Remove the power connector block from the device.
2. Remove the insulation from ¼" (6 mm) of the power wires. Do not nick or damage the wires.
3. Insert the two power wires into the two terminals on the power connector block. The connection can be made with either polarity.

   Use a small slotted (5/64" or 2 mm blade width) screwdriver to loosen and tighten the terminals.
4. Attach the power connector block back into the receptacle on the device.

> **WARNING —** This product is intended to be supplied by a UL Listed Power Unit marked "Class 2" or "LPS" or "Limited Power Source" with output rated 24 V AC +/- 10%, 37 VA min. or 24 V DC +/- 10%, 26 W min.

Connecting to External Devices

External devices are connected to the device through the I/O terminal. The pinout for the I/O terminal is shown in the following diagram:
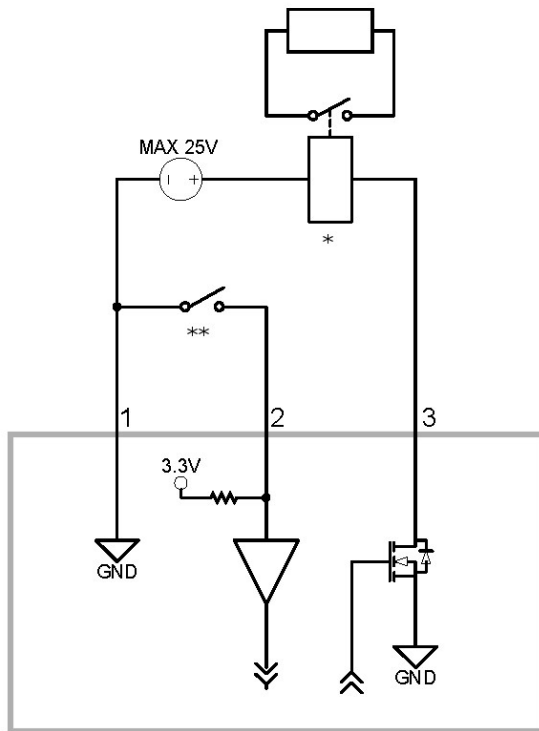
1. Ground
2. Input — To activate, connect the Input to the Ground pin. To deactivate, leave disconnected or apply between 3-15 V.
3. Output — When active, Output is internally connected with the Ground pin. Circuit is open when inactive. Maximum load is 25 VDC, 120 mA.
4. * — Relay
5. ** — Switch

Connecting to Microphone and Speakers

The camera can be connected to an external microphone and speaker through the audio connector. The connector is a mini-jack (3.5 mm), and the pinout for it is shown in the following diagram.

NOTE: The camera only supports line level mono audio input.
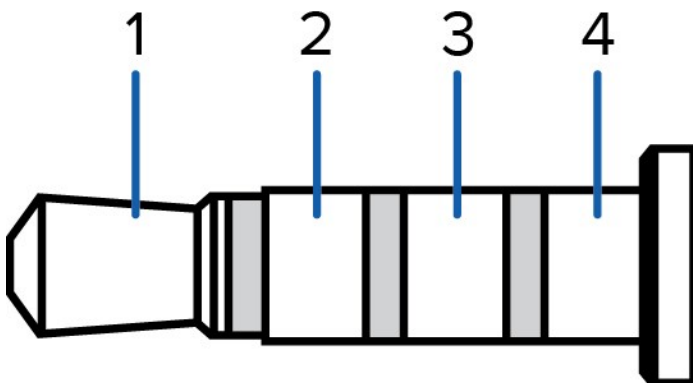
1. Audio IN
2. Audio OUT
3. GND
4. GND

Connecting to Microphone and Speakers

LED Indicators

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

The following table describes what the LEDs indicate:

Connection State	Connection Status LED	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.

Resetting to Factory Default Settings

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

Use the firmware revert button to reset the camera.

NOTE: Be careful not to scratch the dome bubble.
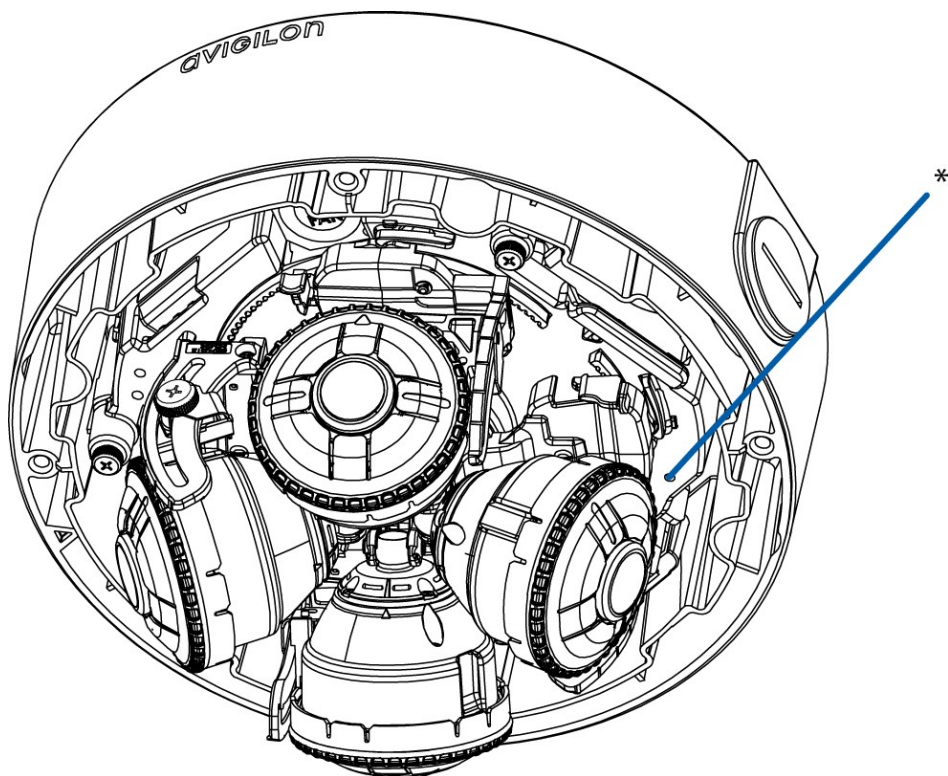
Figure 1: The firmware revert button.

1. Ensure the camera is powered on.
2. Remove the dome cover by loosening the screws that fix the cover to the base. The Torx key included with the dome camera can be used to loosen the screws
3. Using a straightened paperclip or similar tool, gently press and hold the firmware revert button for two seconds.
4. Re-install the dome cover.

> ⚠ **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:

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 -l 123 -t` *<New Camera IP Address>*

    For example: `ping -l 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>*`: ...`

Cleaning

Dome Bubble

If the video image becomes blurry or smudged in areas, it may be because the dome bubble requires cleaning.

To clean the dome bubble:

- Use hand soap or a non-abrasive detergent to wash off dirt or finger prints
- Use a microfiber cloth or non-abrasive fabric to dry the dome bubble.

Important: Failure to use the recommended cleaning materials may result in a damaged or scratched dome bubble that will negatively impact image quality and result in unwanted IR light reflecting into the lens.

Body

- Use a dry or lightly dampened cloth to clean the camera body.

    Do not use strong or abrasive detergents.

Specifications

Camera

Lens	12W-H3-4MH-DO1 – 4 x 3MP 2.8-8 mm, F1.3, P-iris 9W-H3-3MH-DO1 – 3 x 3MP 2.8-8 mm, F1.3, P-iris
Audio Input/Output	Line level input and output
Onboard Storage	SD/SDHC/SDXC slot – minimum class 4; class 6 or better recommended

Network

Network	100Base-TX
Cabling Type	CAT5
Connector	RJ-45
ONVIF	ONVIF compliance version 1.02, 2.00, Profile S (www.onvif.org)
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log
Streaming Protocols	IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP, LLDP, RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP

Mechanical

Dimensions Ø x H	213 mm x 159.2 mm (8.4" x 6.3")
Weight	3.3 kg (7.3 lbs)
Dome Bubble	Polycarbonate, clear
Body	Aluminum
Housing	Surface mount
Finish	Powder coat, cool gray 2
Tilt	+10° to +67° (depending on position of each camera head)
Pan	+/-12° to +/-30° (depending on position of each camera head)
Azimuth	+/- 180°

Electrical

Power Consumption	26 W with external power or IEEE 802.3at Type 2 PoE Plus 13 W with IEEE 802.3af Class 3 power
Power Source	VDC: 24 V +/- 10%, 26 W min. VAC: 24 V +/- 10%, 37 VA min. PoE: IEEE 802.3af Class 3 or IEEE 802.3at Type 2 compliant
Power Connector	2-pin terminal block
RTC Backup Battery	3V Manganese Lithium

Environmental

Operating Temperature	-40 °C to +50 °C (-40 °F to 122 °F) with external power or IEEE 802.3at Type 2 PoE Plus -20 °C to +50 °C (-4 °F to 122 °F) with IEEE 802.3af Class 3 PoE power
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)
Humidity	0-95% non-condensing

Certifications

Certifications	UL cUL CE ROHS WEEE RCM EAC
Safety	UL 60950-1 CSA 60950-1 IEC/EN 60950-1
Environmental	IK10 Impact Rating Meets IP66 Weather Rating
Electromagnetic Emissions	FCC Part 15 Subpart B Class B IC ICES-003 Class B EN 55022 Class B EN 61000-6-3 EN 61000-3-2 EN 61000-3-3
Electromagnetic Immunity	EN 55024 EN 61000-6-1

Limited Warranty & Technical Support

Avigilon warrants to the original consumer purchaser, that this product will be free of defects in material and workmanship for a period of 3 years from date of purchase.

The manufacturer's liability hereunder is limited to replacement of the product, repair of the product or replacement of the product with repaired product at the discretion of the manufacturer. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other causes not arising from defects in material or workmanship. This warranty extends to the original consumer purchaser of the product only.

AVIGILON DISCLAIMS ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXCEPT TO THE EXTENT THAT ANY WARRANTIES IMPLIED BY LAW CANNOT BE VALIDLY WAIVED.

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In no event shall Avigilon be liable for any indirect, incidental, special, consequential, exemplary, or punitive damages whatsoever (including but not limited to, damages for loss of profits or confidential or other information, for business interruption, for personal injury, for loss of privacy, for failure to meet any duty including of good faith or of reasonable care, for negligence, and for any other pecuniary or other loss whatsoever) arising from the use of or inability to use the product, even if advised of the possibility of such damages. Since some jurisdictions do not allow the above limitation of liability, such limitation may not apply to you.

This Limited Warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Warranty service and technical support can be obtained by contacting Avigilon Technical Support by phone at 1.888.281.5182 or via email at support@avigilon.com.