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Installation Guide

Avigilon™ HD Multisensor Dome Camera Models:

12W-H3-4MH-DP1, 12W-H3-4MH-DP1-B, 9W-H3-3MH-DP1 and 9W-H3-3MH-DP1-B

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 device.

- 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.
- This product should be installed by a trained professional and should beinstalled in restricted access locations.

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

Table of Contents

Overview

Front View

NOTE: There may be three or four camera heads depending on your camera model.

1. **Configuration ethernet port**

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

2. **Serial number tag**

   Device information, product serial number and part number label.

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 *Connection Status LED Indicators* on page 18.

5. **SD card slot**

   Accepts an SD card for onboard storage.

Top View
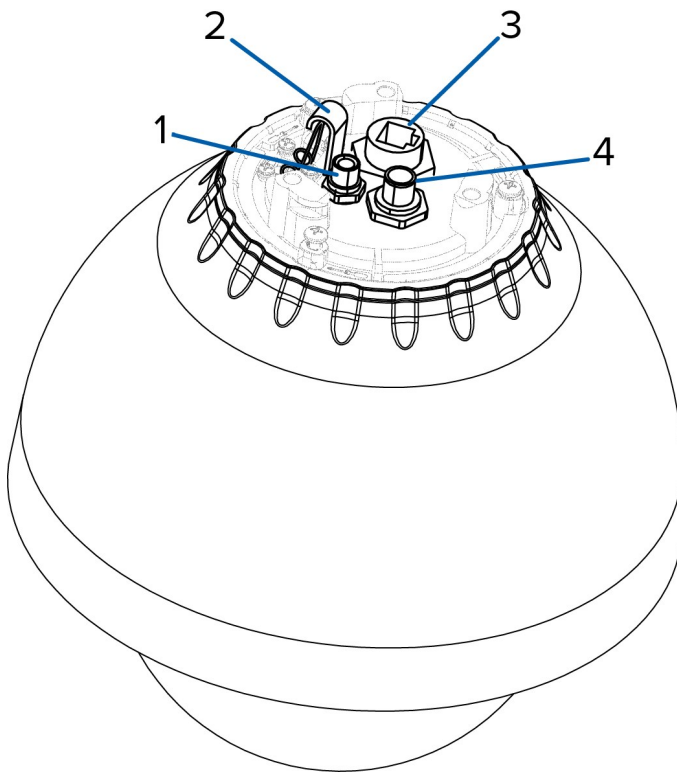
1. **External power**

    Accepts an external power connection when Power over Ethernet is not available.

2. **Lanyard anchor**

    The safety lanyard attaches to the anchor to prevent the camera from falling during installation.

3. **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.

4. **External I/O**

    Provides connections to external input/output and audio devices.

Female NPT Adapter

For 12W-H3-4MH-DP1 and 9W-H3-3MH-DP1
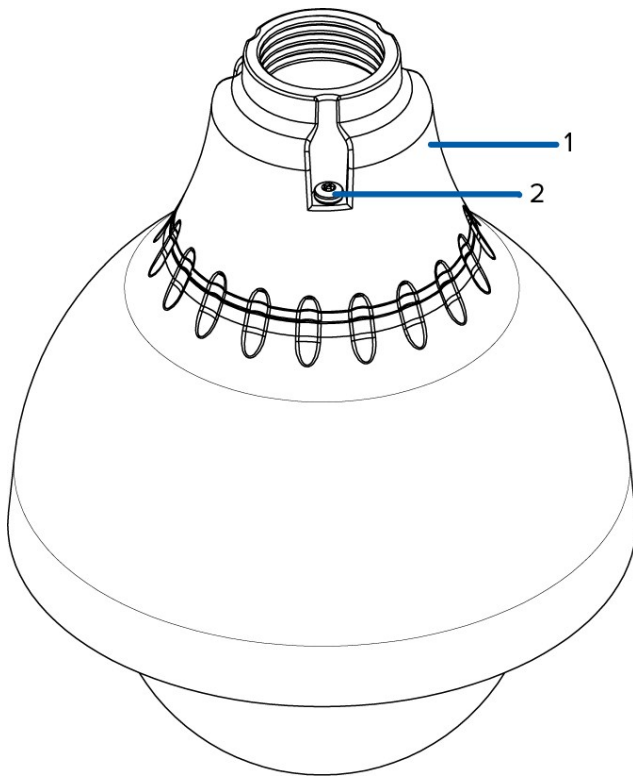
1. **1-1/2" NPT mount adapter**

   Standard 1-1/2" female NPT adapter for mounting the dome camera to a pendant mount bracket.

2. **Tamper resistant screws**

   Torx captive screws to fix the dome camera to the mounting adapter.

Male NPT Adapter

For 12W-H3-4MH-DP1-B and 9W-H3-3MH-DP1-B
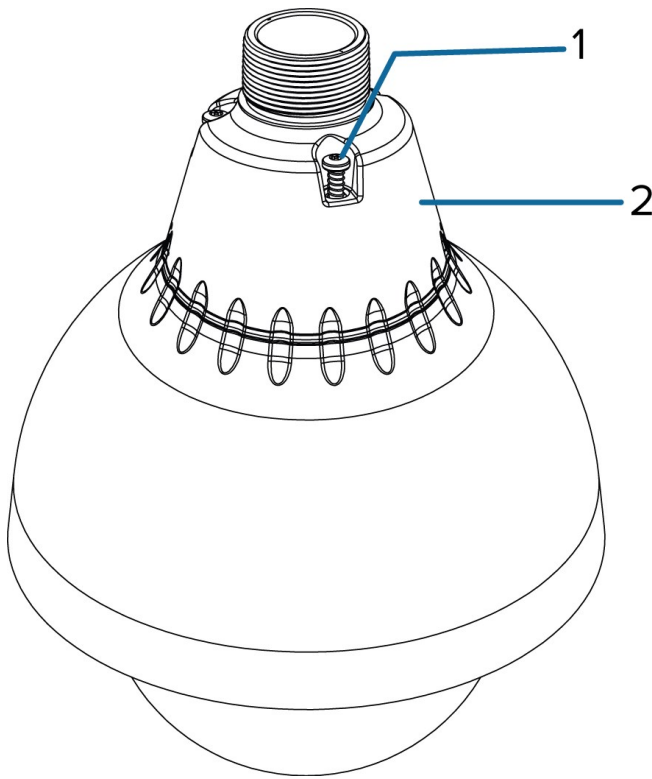
1. **Tamper resistant screws**

   Torx captive screws to fix the dome camera to the mounting adapter.

2. **1-1/2" NPT mount adapter**

   Standard 1-1/2" male NPT adapter for mounting the dome camera to a pendant mount bracket.

Installation

Camera Package Contents

Depending on when you ordered the HD Multisensor Dome Camera, you may receive one of the following packages. Ensure the package contains the camera and the expected accessories:

A. Avigilon HD Multisensor Dome Camera (12W-H3-4MH-DP1 and 9W-H3-3MH-DP1)

- H3-MH-NPTA1 kit:
  - 1 ½" NPT locking nut
  - 1 ½" female NPT adapter
- CAM-ACCS-H3PTZ kit :
  - T20 Torx key
  - Teflon Sealing Tape
  - RJ-45 crimp-on plug and weather-resistant housing
  - External Power wiring harness
  - External I/O wiring harness

B. Avigilon HD Multisensor Dome Camera (12W-H3-4MH-DP1-B and 9W-H3-3MH-DP1-B)

- PTZMH-MT-NPTA1 kit:
  - 1 ½" male NPT adapter
- PTZMH-ACCS-CABL1 kit:
  - 1 ½" NPT locking nut
  - T20 Torx key
  - Teflon Sealing Tape
  - RJ-45 crimp-on plug and weather-resistant housing
  - External Power wiring harness
  - External I/O wiring harness

If you will be installing the male NPT adapter (-*B*) version of the camera with the pendant wall mount (CM-MT-WALL1), ensure the wall mount package contains the following:

- Pendant wall mount
- Mounting template sticker
- T20 Pin-In Torx driver
- 4 concrete anchors (#8-10)
- 4 screws (#8 x 1.25)
- RJ-45 grommet piercing cap
- Teflon sealing tape

Installation Steps

Complete the following sections to install the camera.

Removing the Dome Cover

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.

NOTE: Be careful not to scratch or touch the dome bubble. The resulting marks or fingerprints may affect the overall image quality. Keep the protective covers on the outside of the dome bubble until the installation is complete.

(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. Loosen the screws that secure the camera module to the base.
2. Lift the camera module out of the base until the SD card slot is exposed. The camera module will only lift up about 2cm or about 1" off the base because it is anchored behind the camera module. Do not pull too hard.
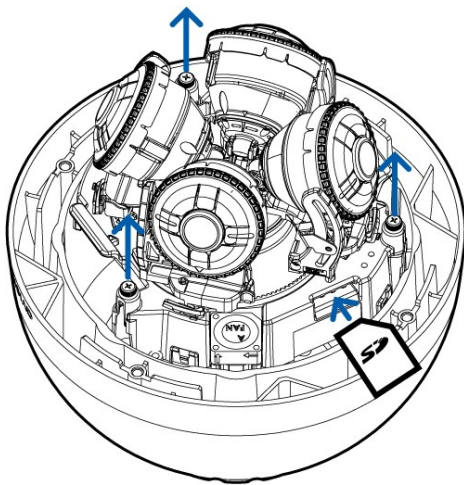
3. Insert an SD card into the camera.

   ⚠ **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.

4. Push the camera module back into the base and tighten the screws
5. 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 Female NPT Mount Adapter

⚠️ **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.
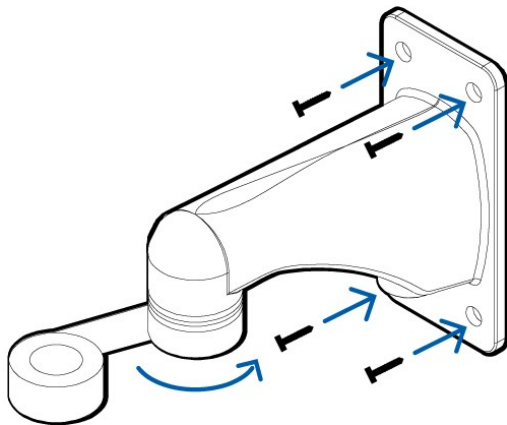
If you are installing the camera that is provided with a female NPT adapter (12W-H3-4MH-DP1 or 9W-H3-3MH-DP1), the dome camera must be mounted on a 1-1/2" NPT male threaded wall (MNT-PEND-WALL) or ceiling mounting bracket. The mounting bracket is not included in the camera package.

If you are installing the camera that is provided with a male NPT adapter, see *Installing the Male NPT Mount Adapter* on the next page.

1. Wrap the thread of the mounting bracket with the supplied Teflon sealing tape to create a water tight seal around the camera connection. There should be three to five turns around the entire threaded surface.

   When applying the Teflon sealing tape, be sure to wrap in the same direction that the mount will be tightened. This will ensure the tape does not unravel when installing the mating parts together.

   Tip: Always apply Teflon tape to threaded mounts to help prevent the threads from binding.

3 – 5x

2. Pull the required cables through the mounting bracket then thread the 1 1/2" NPT locking nut onto the mounting adapter.
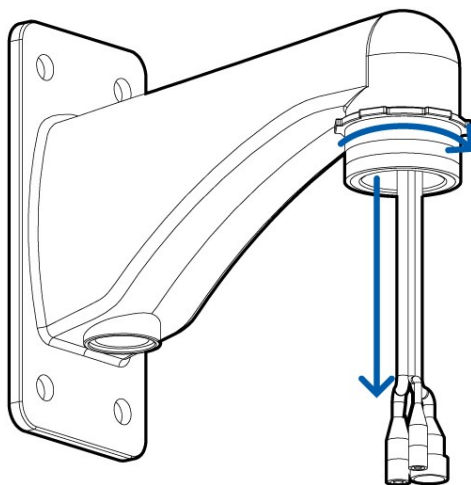
3. Install the supplied connectors and wire assemblies to the cables.

4. Install the 1 1/2" NPT mount adapter below the locking nut.
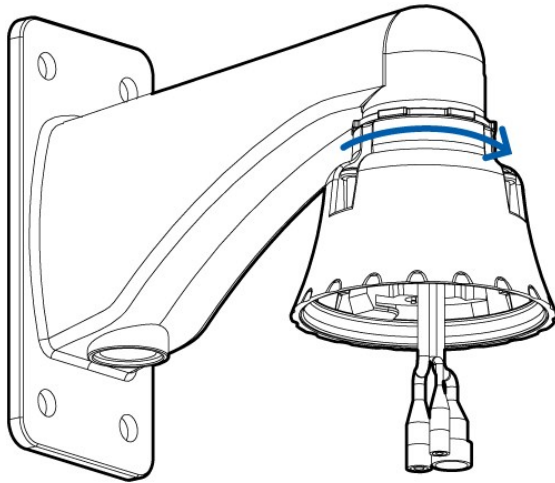
5. Connect the safety lanyard from inside the NPT mount adapter to the anchor on the dome camera.
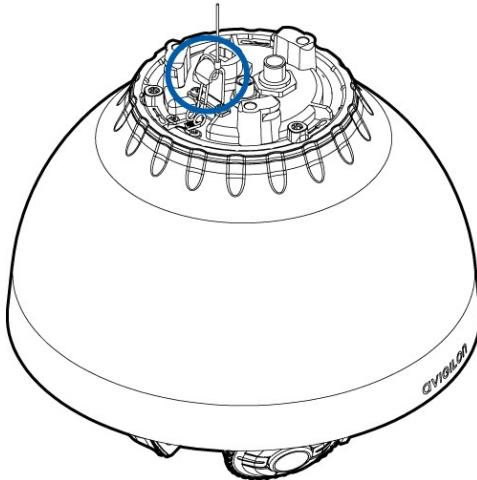
Installing the Male NPT Mount Adapter

⚠️ **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.

If you are installing the camera that is provided with a male NPT adapter (12W-H3-4MH-DP1-*B* or 9W-H3-3MH-DP1-*B*), the dome camera must be mounted on a 1-1/2" NPT female threaded wall (CM-MT-WALL) or ceiling mounting bracket. The mounting bracket is not included in the camera package.

If you are installing the camera that is provided with a female NPT adapter, see *Installing the Female NPT Mount Adapter* on the previous page.

1. Determine where the cable will enter the pendant wall mount.
    - If the cable will be pulled from inside the mounting surface, use the cable entry hole at the rear of the pendant wall mount.
    - If the cable will be coming out of an external conduit pipe, use the 3/4" NPT pipe entry hole on the bottom of the pendant wall mount.
2. Use the provided mounting template to drill four mounting holes into the mounting surface.
    - If you are using the rear cable entry hole, also drill the cable entry hole into the mounting surface.
3. Fasten the pendant wall mount bracket to the mounting surface.
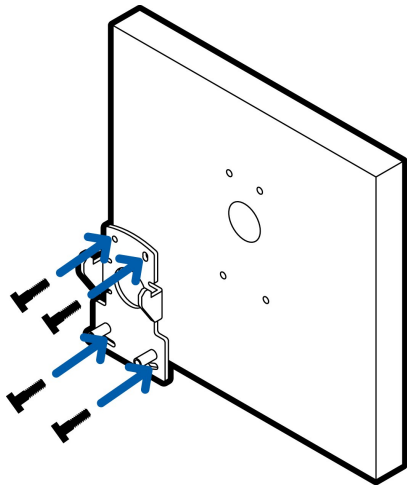
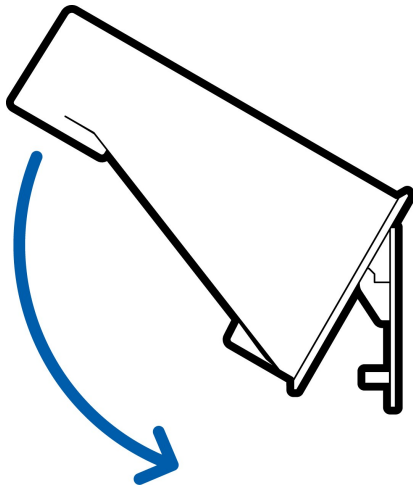4. Insert the pendant wall mount over the bracket mounting tabs.

5. Pull the required cables through the preferred cable entry hole on the pendant wall mount:
    - If you are using the pipe entry hole, pull the cables through the pipe conduit then the wall mount. Next, apply thread seal tape to the pipe conduit and screw it into the pipe entry hole.
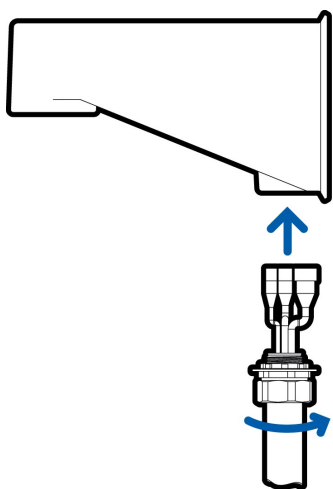
6. Tighten the wall mount screws to secure the wall mount to the bracket. Use the T20 Torx key provided in the camera package.
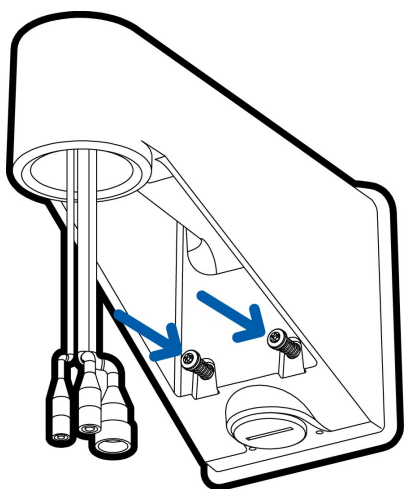
7. Wrap the thread of the NPT adapter with the supplied Teflon sealing tape to create a water tight seal around the camera connection. There should be three to five turns around the entire threaded surface.

    When applying the Teflon sealing tape, wrap the tape clockwise.
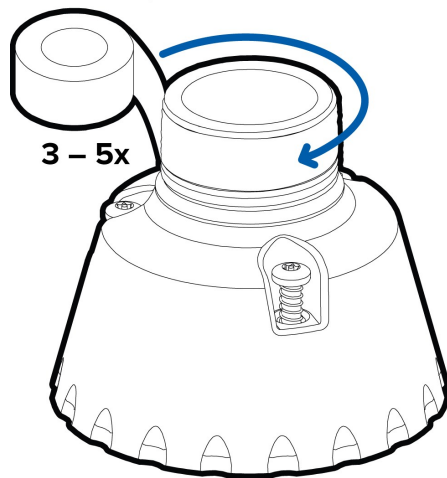
3 – 5x

This will ensure the tape does not unravel when installing the mating parts together.

Tip: Always apply Teflon tape to threaded mounts to help prevent the threads from binding.

8. Loosely thread the lock nut onto the NPT adapter, then secure the NPT adapter into the pendant wall mount.
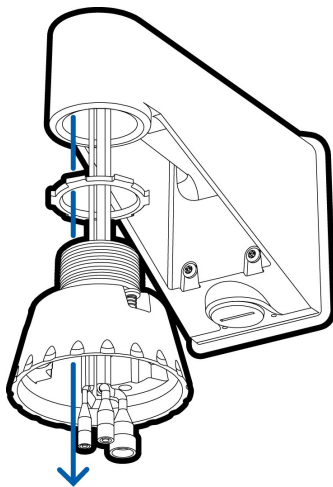
9. Connect the safety lanyard from inside the NPT mount adapter to the anchor on the dome camera.
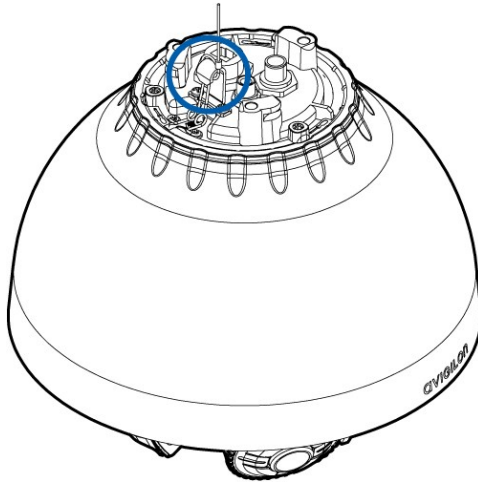
Connecting Cables

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. Make sure the safety lanyard is connected to the dome camera.
2. If there are external input or output devices that need to be connected to the camera (for example: door contacts, relays, speakers, etc), connect the devices to the camera I/O connector cable.
3. 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.

      For more information, see *Connecting External Power* on page 16.

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

4. Connect a network cable to the Ethernet port (RJ-45 connector).

   The Link LED will turn on once a network link has been established.

5. Check that the Connection Status LED indicates the correct state. For more information, see *Connection Status LED Indicators* on page 18.

Securing the Dome Camera

After the cable connections have been made, secure the dome camera to the mount.

1. Push the dome camera into the 1 1/2" NPT mount adapter then twist until it locks into place.

   NOTE: Be careful not to trap any cables between the dome camera housing and the mount adapter.
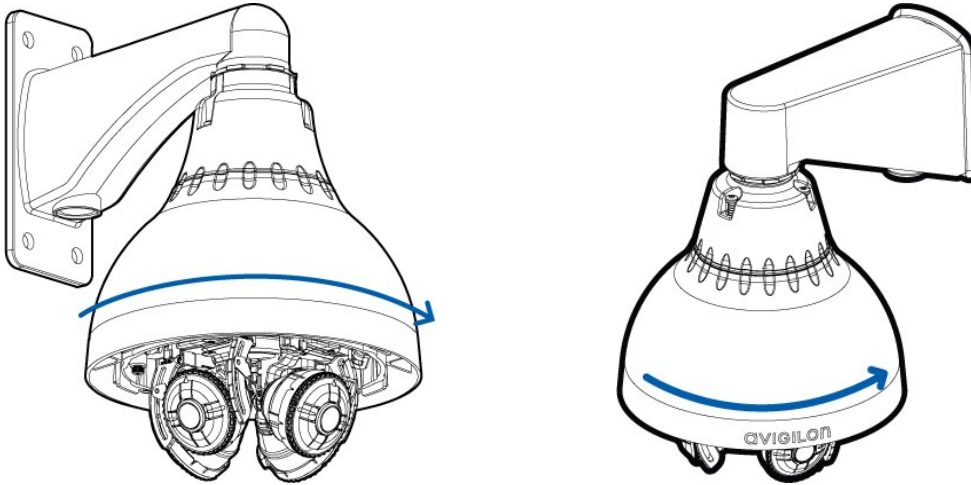
2. Use the Torx key included with the dome camera to tighten the three screws in the mount adapter.

3. Turn the dome camera and mount adapter until the camera heads are facing the right directions.
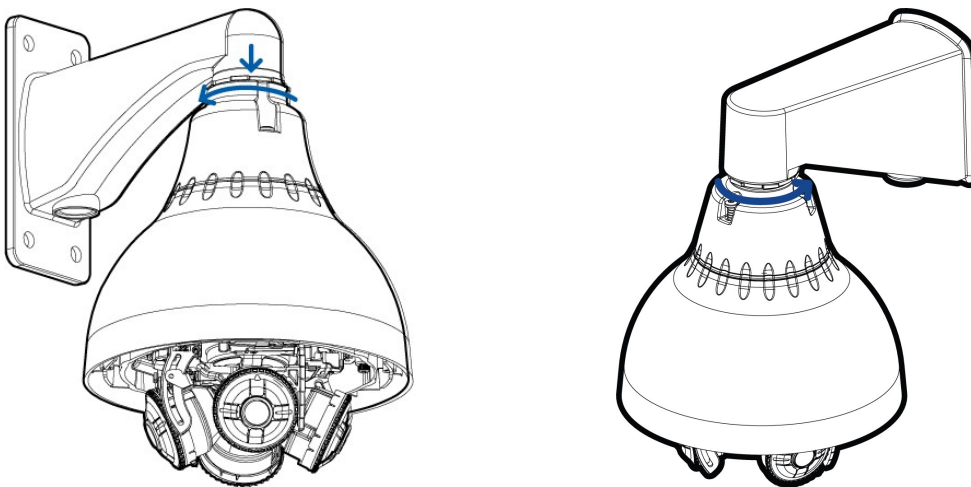
4. Use the locking nut to lock the dome camera in to place.

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*>/
- Network video management software application (for example, Avigilon Control Center (ACC)™ software).
- ARP/Ping method. For more information, see *Setting the IP Address Using the ARP/Ping Method* on page 20.

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

NOTE: The default camera username is `administrator` with no password.

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`.

NOTE: The default camera username is `administrator` with no password.

Aiming the Dome Camera

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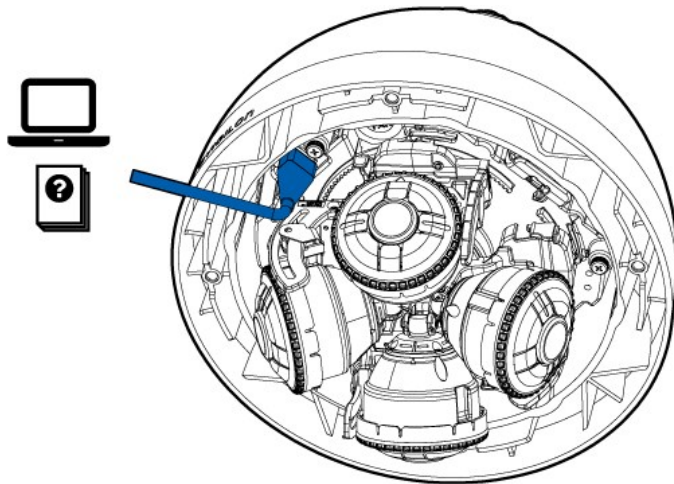
   Be aware that while the Configuration Ethernet Port is in use, the primary Ethernet port will only be used for PoE.

   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:
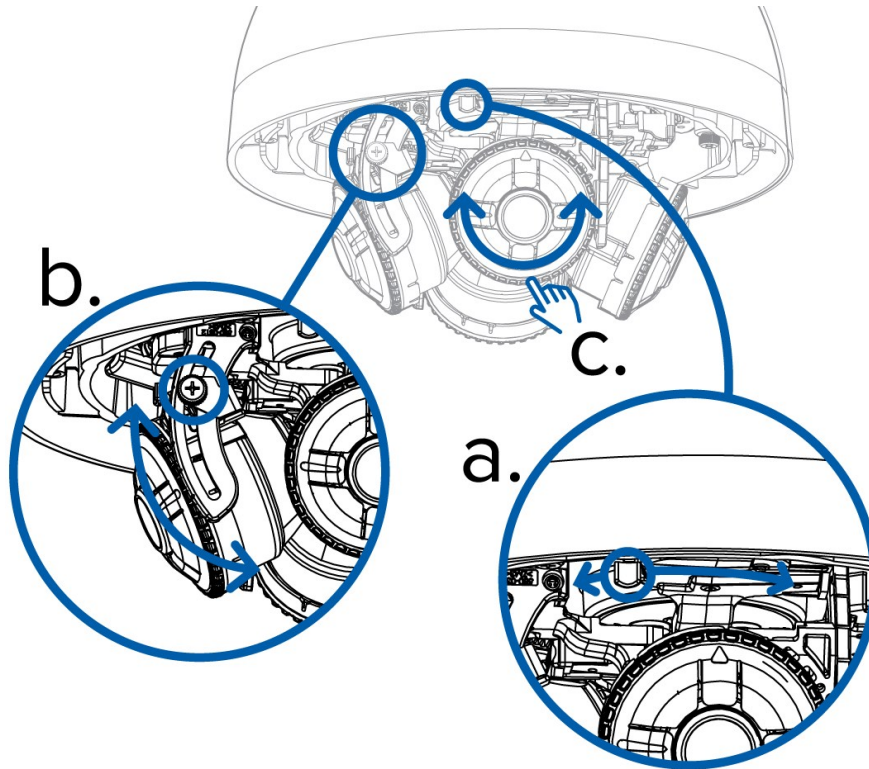
    a. Press the rail release tab to move the camera head side to side.

    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*
- *Avigilon Camera Configuration Tool User Guide*

The manuals are available on the Avigilon website: 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 dome camera can be powered with 24 V AC or 24 V DC through the removable power connector:

1. Remove as much insulation as required to splice the supplied power connector to the power adapter wires (not included).

    Do not nick or damage the wires.

2. Remove the dummy plug from the power receptacle on the camera. See *Top View* on page 2 for the location of the external power receptacle.

3. Attach the power connector to the receptacle on the camera.

The power connector pin details are:

1. Brown — Power, accepts either polarity

2. Not used

3. Blue — Power, accepts either polarity

> ⚡ **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, including audio and video devices, are connected to the camera through the I/O cable. The pinout for the I/O connector is shown here:
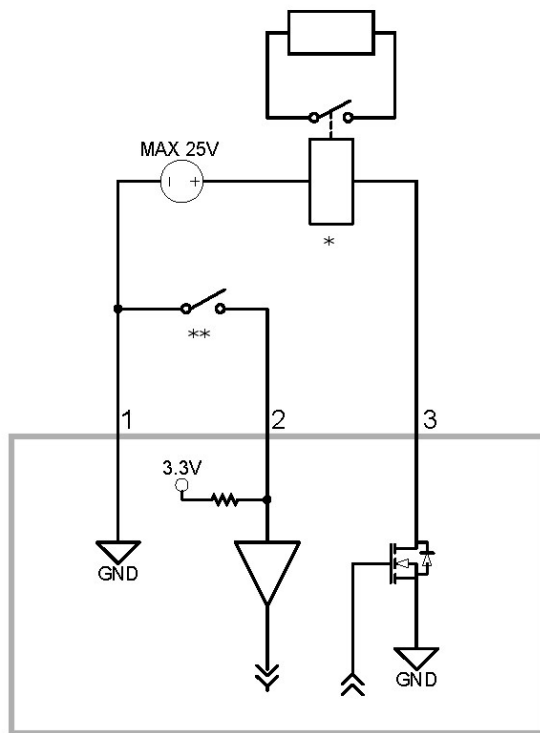
Figure 1: Example application.

1. Grey — Relay ground return
2. Red — Relay input: To activate, connect the Input to the Ground pin. To deactivate, leave disconnected or apply between 3-15 V.
3. Pink — Relay output: When active, Output is internally connected with the Ground pin. Circuit is open when inactive. Maximum load is 25 VDC, 120 mA.

- * — Relay
- ** — Switch
- White — Analog audio ground return
- Brown — Analog audio input
- Green — Analog audio output
- Not connected:
    - Yellow
    - Black
    - Purple
    - Orange
    - Blue
    - Dark Red

The camera can be connected to an external microphone and speaker through the I/O connector. The camera only supports line level mono audio input.

Connection Status 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 or an ACC™ Server. The default setting can be changed to "Off" using the camera's web user interface. For more information see the *Web User Interface Guide*.

Resetting to Factory Default Settings

If the camera no longer functions as expected or if you are unable to focus the camera heads, you can choose to reset the camera to its factory default settings.

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

NOTE: Be careful not to scratch the dome bubble.

*
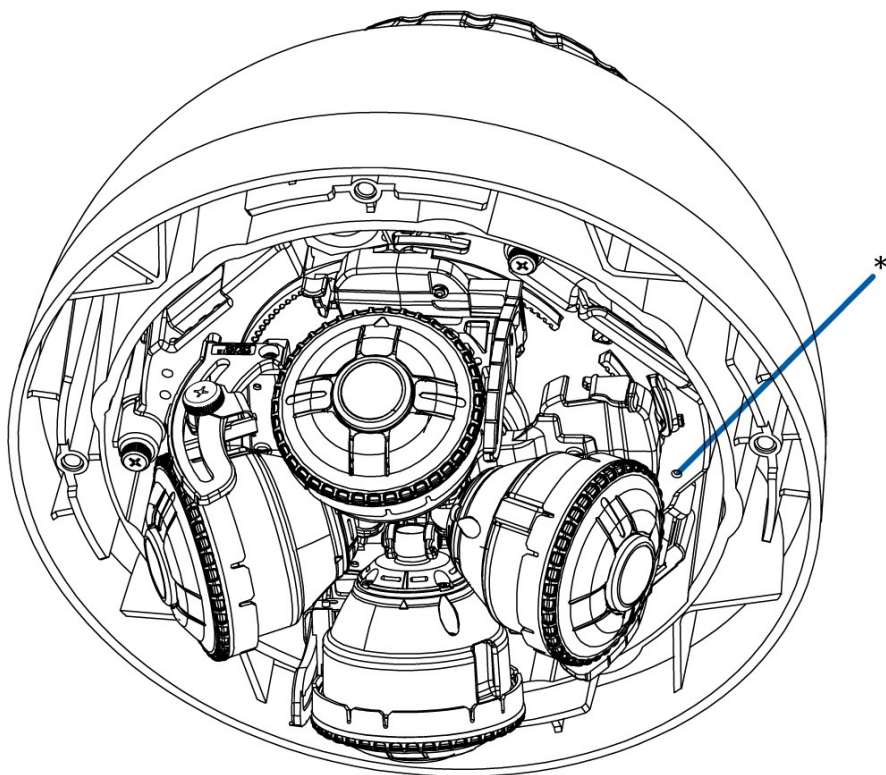
Figure 2: The firmware revert button.

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 camera.

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 fingerprints.
- 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. A damaged dome bubble may negatively impact image quality and cause 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-DP1 and 12W-H3-4MH-DP1-B – 4 x 3MP 2.8-8 mm, F1.3, P-iris 9W-H3-3MH-DP1 and 9W-H3-3MH-DP1-B – 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	226 mm x 299.77 mm (8.9" x 11.8")
Weight	3.9 kg (8.6 lbs)
Dome Bubble	12W-H3-4MH-DP1 and 9W-H3-3MH-DP1 — Polycarbonate, clear 12W-H3-4MH-DP1-B and 9W-H3-3MH-DP1-B — Nylon, clear
Body	Aluminum
Housing	Pendant mount
Finish	12W-H3-4MH-DP1 and 9W-H3-3MH-DP1 — Powder coat, cool gray 2 12W-H3-4MH-DP1-B and 9W-H3-3MH-DP1-B — Powder coat, RAL 9003
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

Power Connector	Waterproof 2-pin connector
RTC Backup Battery	3V Manganese Lithium

Environmental

Operating Temperature	-40 °C to +50 °C (-22 °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 KC
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 55032 Class B EN 61000-6-3 EN 61000-3-2 EN 61000-3-3
Electromagnetic Immunity	EN 55024 EN 61000-6-1

Limited Warranty and Technical Support

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

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