

Installation Guide

Avigilon™ High Definition IP Bullet Camera Models:

1.0W-H3-BO1-IR, 1.0W-H3A-BO1-IR, 1.0W-H3-BO2-IR, 1.0W-H3A-BO2-IR, 2.0W-H3-BO1-IR, 2.0W-H3A-BO1-IR, 2.0W-H3-BO2-IR, 2.0W-H3A-BO2-IR, 3.0W-H3-BO1-IR, 3.0W-H3A-BO1-IR, 3.0W-H3-BO2-IR, 3.0W-H3A-BO2-IR, 5.0-H3-BO1-IR and 5.0-H3-BO2-IR

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 12 VDC or 24 VAC, 22 W min. or Power over Ethernet (PoE), rated 48 VDC, 22 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.

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Disclaimer

This manual has been compiled and published covering the latest product descriptions and specifications. The contents of this manual and the specifications of this product are subject to change without notice. Avigilon reserves the right to make changes without notice in the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented, including but not limited to typographical and other errors relating to the publication.

Avigilon Corporation
<http://www.avigilon.com>

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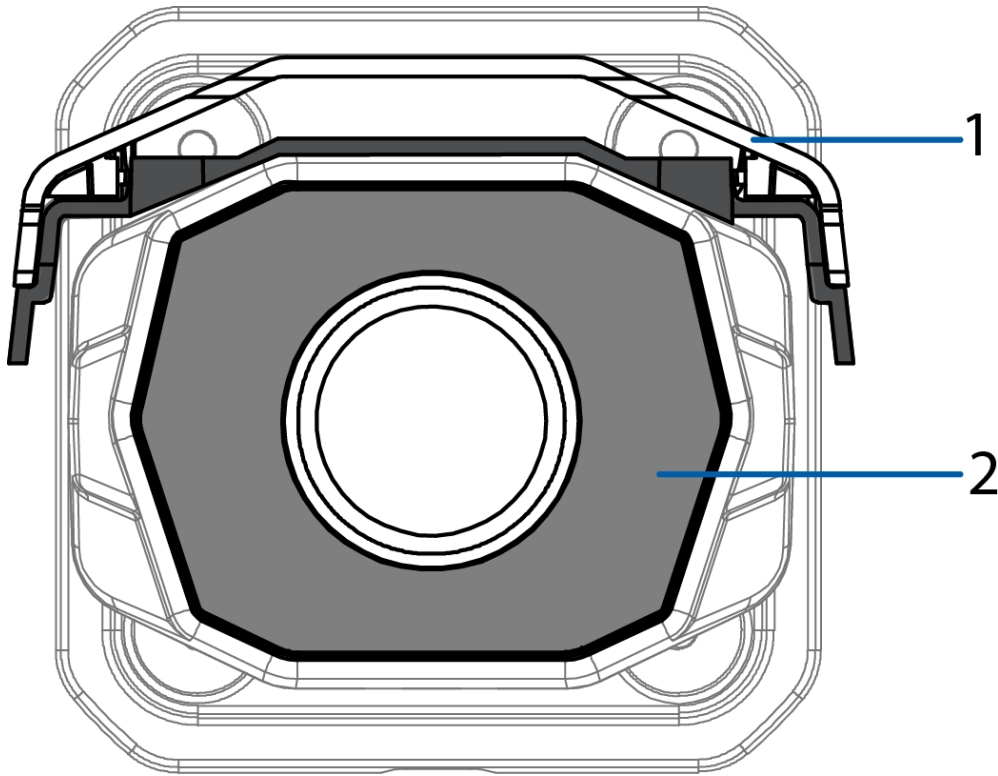
Table of Contents

Overview	1
Front View	1
Bottom View	2
Side View	3
Installation	4
Camera Package Contents	4
Precautions for Installing Near Salt Water	4
Installation Steps	4
Adding the Mounting Holes	5
Connecting Cables	5
Mounting and Aiming Video Analytics Cameras	5
Mounting the Camera	5
Assigning an IP Address	6
Accessing the Live Video Stream	6
Aiming the Camera	6
Focusing the Camera	7
(Optional) Configuring Onboard Storage	7
For More Information	7
Connecting to External Devices	8
LED Indicators	9
Removing the Sun Shroud	10
Reinstalling the Sun Shroud	10
Resetting to Factory Default Settings	11
Setting the IP Address Using the ARP/Ping Method	12
Specifications	13
Limited Warranty & Technical Support	15



Overview

Front View



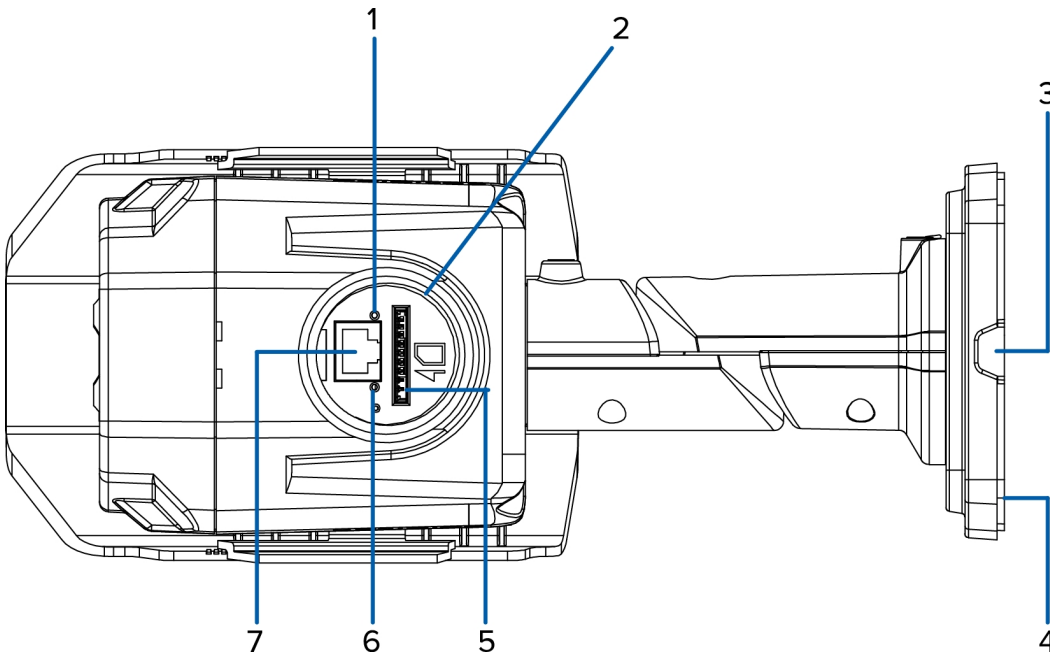
1. **Sun Shroud**

An adjustable cover to help protect the lens against glare from the sun.

2. **IR Illuminator**

Provides scene illumination in the IR spectrum.

Bottom View



1. **Connection Status LED**

Provides information about device operation. For more information, see *LED Indicators* on page 9

2. **Configuration Panel**

Quick access port for configuring the camera during installation. To access the Configuration Panel, remove the plug with the supplied opening tool.

3. **Cable Entry Notch**

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

4. **Serial Number Tag**

Product serial number and part number label.

5. **SD Card Slot**

Accepts an SD card for onboard storage.

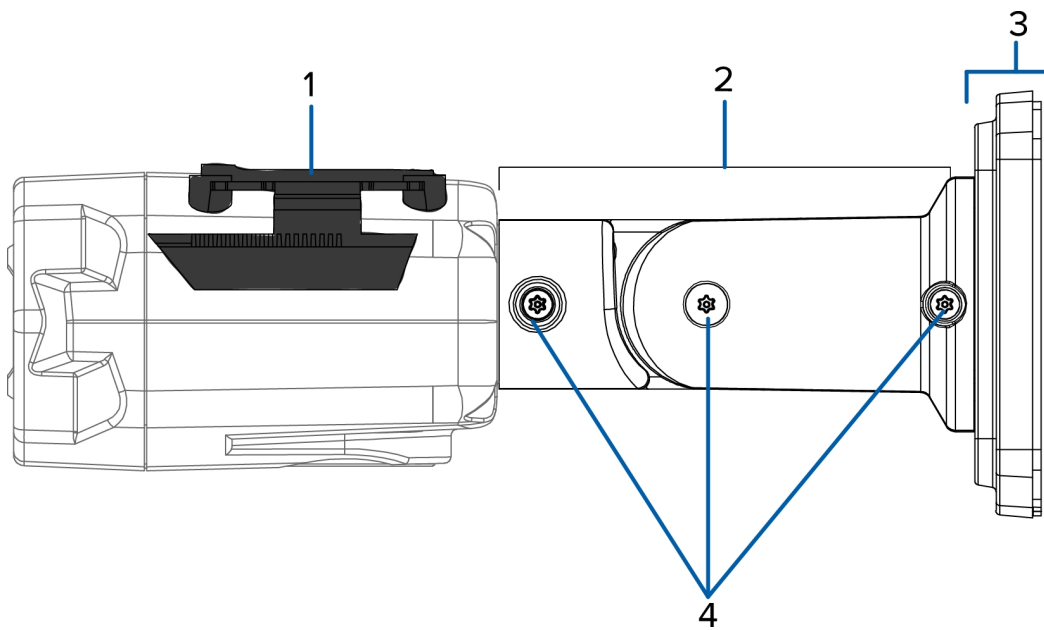
6. **Link LED**

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

7. **Configuration Ethernet Port**

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

Side View



1. **Sun Shroud Mount**

Mounting bracket for the sun shroud.

2. **Mount Arm**

Adjustable mount arm for positioning the camera.

3. **Mounting Bracket**

Allows the camera to be flush mounted or surface mounted.

4. **Adjustment Screws**

Provides a locking mechanism for the mount arm.

Installation

Camera Package Contents

- Avigilon™ High Definition IP Bullet Camera
- T20 Torx key
- 4 screws and anchors for solid walls
- Drill template sticker
- Configuration Panel opening tool

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:

<i>Adding the Mounting Holes</i>	5
<i>Connecting Cables</i>	5
<i>Mounting and Aiming Video Analytics Cameras</i>	5
<i>Mounting the Camera</i>	5
<i>Assigning an IP Address</i>	6
<i>Accessing the Live Video Stream</i>	6
<i>Aiming the Camera</i>	6

<i>Focusing the Camera</i>	7
<i>(Optional) Configuring Onboard Storage</i>	7

Adding the Mounting Holes

- Use the drill template to drill four mounting holes in the ceiling or wall.

Only drill the optional center hole if you are flush mounting the camera. Once the center cable hole has been drilled, pull the required cables through.

Connecting Cables

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

1. 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's I/O connector cable.

NOTE: You are using the +12 V output for relay drive, you must power the camera using PoE Plus or auxiliary power.

2. Connect power using one of the following methods:
 - Power over Ethernet (PoE) Class 3 or PoE Plus Class 4— If PoE is available, the camera LEDs will turn on.
 - External Power — Connect an external 12 VDC or 24 VAC power source through the auxiliary power cables.

3. Connect a network cable to the Ethernet Port (RJ-45 connector).

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

4. Check that the Connection Status LED indicates the correct state. For more information, see *LED Indicators* on page 9.

Mounting and Aiming Video Analytics Cameras

If you are installing an Avigilon™ video analytics camera, follow the listed mounting and aiming recommendations to maximize the camera's analytics capabilities:

- The camera should be installed above 274 cm (9').
- The camera should tilt downwards no more than 45 degrees.
- The camera image should be level with the horizon line.
- The camera should be mounted to a stable surface to minimize the physical movement of the camera after installation.

For more details, see *Designing a Site for Video Analytics*. The document is available in the eDocs app and on the Avigilon website.

Mounting the Camera

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

1. Tuck the extra lengths of cables away:
 - If you are flush mounting the camera, push the extra lengths of cable through the cable hole in the wall or ceiling.
 - If you are surface mounting the camera, remove the mounting gasket and tuck the connected cables to one side through the cable entry notch in the mounting bracket. When installed outdoors, the cable entry notch must face downwards.
2. Ensure the mounting gasket is used when flush mounting the camera.

The gasket is required to maintain the mounting bracket's water resistance when installed outdoors.
3. Drive the provided screws into the mounting holes and tighten the camera bracket to the mounting surface.

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 12
- 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 Camera

1. (Optional) To help you aim the camera, you can connect an Ethernet cable to the secondary Ethernet port in the Configuration Panel.
 - a. Use the opening tool to unscrew the plug from the Configuration Panel at the bottom of the camera.
 - b. When you remove the plug, be aware that there is a desiccant pack stored inside the plug. If the desiccant pack falls out, put it back inside the plug before you screw it back over the Configuration Panel.

Be aware that while the Configuration Ethernet Port is in use, the primary Ethernet port at the back of the camera 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, loosen the adjustment screws on the camera mount arm.

Only loosen the screws that can be rotated by the supplied Torx key.

3. Rotate and move the camera and mount arm as required. Review the camera's live video stream to help aim the camera correctly.
4. Slide the sun shroud forward or back to protect the camera against glare from the sun. In outdoor installations, the sun shroud should be set as far forward as possible without intruding on the video image.
 - To move the sun shroud, hold down the black tabs on either side of the camera then slide the sun shroud forward or back.
5. Once satisfied, tighten the adjustment screws on the mount arm to secure the camera's position.
6. In the Avigilon Camera Installation Tool or camera web browser interface, adjust the camera's Image and Display settings to achieve the desired zoom position.

Focusing the Camera

- In the Avigilon Camera Installation Tool or camera web browser interface, use the camera's Image and Display settings to focus the camera lens.

- a. In the Image and Display settings page, use the **Auto Focus** button to focus the lens.

If the desired focus position was not achieved, use the focus near and far buttons to adjust the focus.

(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*.

For More Information

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

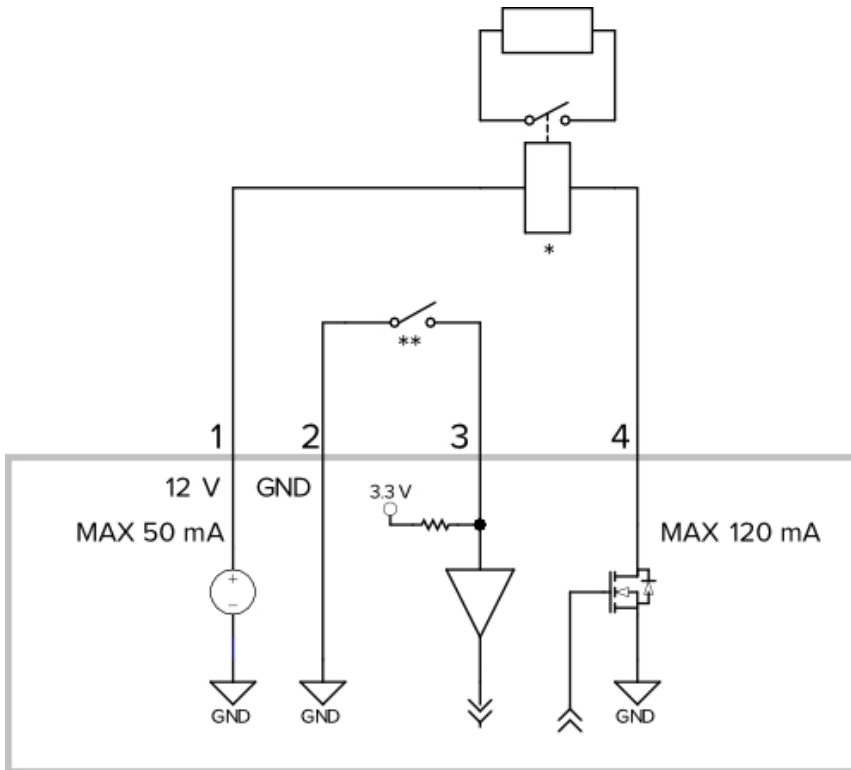
- *Avigilon™ Control Center Client User Guide*
- *Avigilon™ High Definition H.264 Web Interface User Guide*

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

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:

NOTE: The camera can be connected to an external microphone and speaker through the I/O connector.



1. Purple — +12 V output for relay drive

NOTE: If you are using this relay output, the camera must be powered using PoE+ or the auxiliary power cables.

2. Grey — Relay ground return
 3. Red — Relay input 1
 4. Pink — Relay output 1
 5. * — Relay
 6. ** — Switch
- Yellow — Audio ground return
 - Brown — Audio input
 - Green — Audio output

NOTE: The 12 V connection can be used to energize a relay coil with up to 50 mA. If more than 50 mA is required, an external power supply up to 25 VDC at 120 mA can be used.

LED Indicators

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

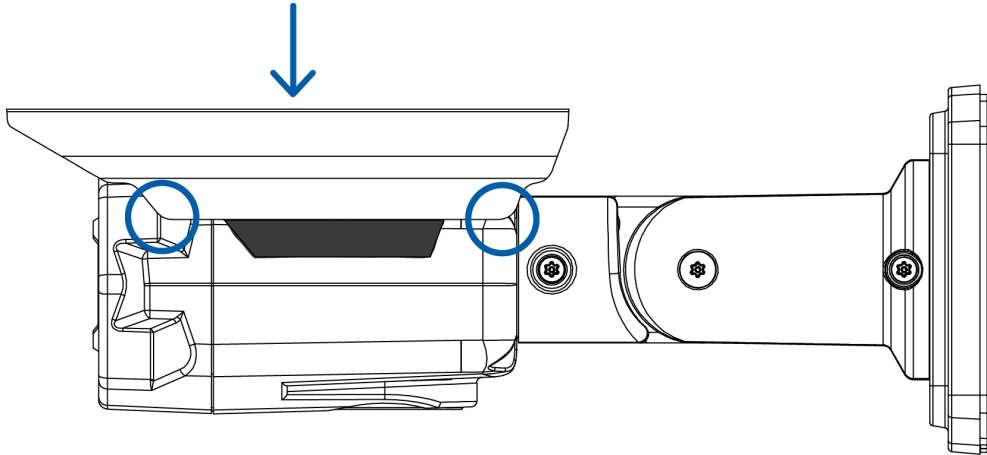
The following table describes what the LEDs indicate:

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.

Removing the Sun Shroud

The sun shroud is not required when the camera is installed indoors.

1. As you press down on the center of the sun shroud, pull up the corners of the shroud from one side of the camera. Avoid the black tab on the sun shroud mount.



The sun shroud should lift off the camera.

2. Use a 2 mm or 5/64" hex driver to unscrew and remove the sun shroud mount from the camera.

Reinstalling the Sun Shroud

1. Use a 2 mm or 5/64" hex driver to screw on the sun shroud mount.
2. Align one side of the sun shroud on to the mount.
3. Press down on the center of the sun shroud until it clicks into place.

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.

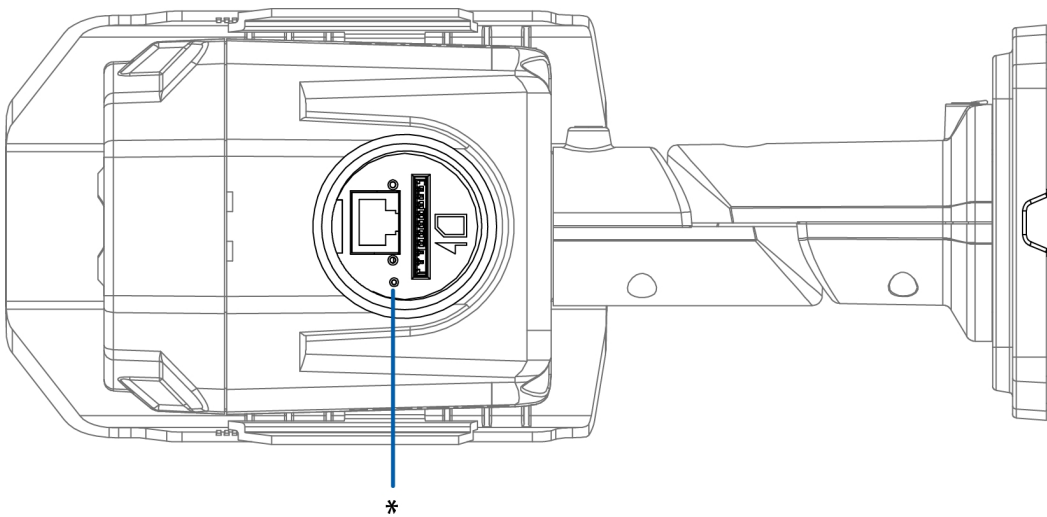


Figure 1: The firmware revert button in the Configuration Panel.

1. Ensure the camera is powered on.
2. Unscrew the Configuration Panel Plug at the bottom of the camera with the supplied opening tool.
3. Using a straightened paperclip or similar tool, gently press and hold the firmware revert button for 2 seconds.
4. Screw the Configuration Panel Plug back into place.



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>: ...`



Specifications

Camera

Audio Input/Output	Line level input and output
Lens	H3-BO1-IR: 3-9mm, F1.2, P-iris H3-BO2-IR: 9-22mm, F1.6, P-Iris
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). H3A models are also compliant with version 2.4.2 of the Analytics Service Specification (bounding boxes and scene descriptions not available with third-party VMS)
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication.
Streaming Protocols	IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP

Mechanical

Dimensions L x W x H	241.7 mm x 94.9 mm x 70 mm (9.5" x 3.7" x 2.8")
Weight	1.15 kg (2.5 lbs)
Body	Aluminum
Housing	Surface mount, vandal resistant
Finish	Powder coat, cool gray 2
Adjustment Range	±175° pan, -45° to +90° tilt, ±175° azimuth
Cable Length	45 cm (17.72")

Electrical

Power Consumption	22 W with external power or IEEE802.3at Class 4 PoE Plus 12.95 W with IEEE 802.3af Class 3 PoE
Power Source	VDC: 12 V +/- 10%, 22 W min VAC: 24 V +/- 10%, 28 VA min PoE+: IEEE802.3at Class 4 PoE Plus PoE: IEEE802.3af Class 3 compliant (Do not use PoE if connecting to +12 V output relay)
RTC Backup Battery	3V Manganese Lithium

(models with onboard storage only)

Environmental

Operating Temperature	-40°C to +50°C (-40°F to 122°F)
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)
Humidity	0-95% non-condensing

Certifications

Safety	UL 60950 CSA 60950 CB Scheme UVV CE ROHS WEEE RCM
Environmental	IK10 Impact Rating Meets IP66 Weather Rating
Electromagnetic Emissions	FCC Part 15 Subpart B Class B EN 55022 Class B IC ICES-003 Class B
Electromagnetic Immunity	EN 55024 Class B EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-11



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.

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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.