



Quasar™ Fixed Box Camera with Edge AI Analytics

Installation and User Guide



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Photographs and images appearing in this manual may have been modified for illustrative purposes using commercial image editing software and may not always reflect an actual product configuration. The contents of this document are subject to change without notice.

Important Instructions and Notices to the User:

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.

Modification of this device without the express authorization of Teledyne FLIR LLC may void the user's authority under FCC rules to operate this device.

Proper Disposal of Electrical and Electronic Equipment (EEE)



The European Union (EU) has enacted Waste Electrical and Electronic Equipment Directive 2012/19/EU (WEEE), which aims to prevent EEE waste from arising; to encourage reuse, recycling, and recovery of EEE waste; and to promote environmental responsibility.

In accordance with these regulations, all EEE products labeled with the “crossed out wheeled bin” either on the product itself or in the product literature must not be disposed of in regular rubbish bins, mixed with regular household or other commercial waste, or by other regular municipal waste collection means. Instead, and in order to prevent possible harm to the environment or human health, all EEE products (including any cables that came with the product) should be responsibly discarded or recycled.

To identify a responsible disposal method nearby, please contact the local waste collection or recycling service, the original place of purchase or product supplier, or the responsible government authority in the area. Business users should contact their supplier or refer to their purchase contract.

Document History

Revision	Date	Comment
100	June 2024	Initial Teledyne FLIR release
110	December 2024	Improved video analytics and new settings

Product Registration and Warranty Information

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1 Document Scope and Purpose

This document provides installation, operation, and configuration instructions for the Quasar Premium Fixed Box Camera with Edge AI Analytics.



Note

This document is intended for use by technical users who have a basic understanding of CCTV camera/video equipment and LAN/WAN network connections.



Warning

Installation must follow safety, standards, and electrical codes as well as the laws that apply where the units are being installed.

Disclaimer

Users of Teledyne FLIR products accept full responsibility for ensuring the suitability and considering the role of the product detection capabilities and their limitation as they apply to their unique site requirements.

Teledyne FLIR LLC and its agents make no guarantees or warranties to the suitability for the users' intended use. Teledyne FLIR LLC accepts no responsibility for improper use or incomplete security and safety measures.

Failure in part or in whole of the installer, owner, or user in any way to follow the prescribed procedures or to heed WARNINGS and CAUTIONS shall absolve Teledyne FLIR and its agents from any resulting liability.

Specifications and information in this guide are subject to change without notice.

General Cautions and Warnings

This section contains information that indicates a procedure or condition where there are potential hazards.

SAVE ALL SAFETY AND OPERATING INSTRUCTIONS FOR FUTURE USE.

Although the unit is designed and manufactured in compliance with all applicable safety standards, certain hazards are present during the installation of this equipment.

To help ensure safety and to help reduce risk of injury or damage, observe the following:



Caution

- The unit's cover is an essential part of the product. Do not open or remove it.
- Never operate the unit without the cover in place. Operating the unit without the cover poses a risk of fire and shock hazards.
- Do not disassemble the unit or remove screws. There are no user serviceable parts inside the unit.
- Only qualified trained personnel should service and repair this equipment.
- Observe local codes and laws and ensure that installation and operation are in accordance with fire, security and safety standards.



A **Warning** is a precautionary message that indicates a procedure or condition where there are potential hazards of personal injury or death.



A **Caution** is a precautionary message that indicates a procedure or condition where there are potential hazards of permanent damage to the equipment and or loss of data.



A **Note** is useful information to prevent problems, help with successful installation, or to provide additional understanding of the products and installation.



A **Tip** is information and best practices that are useful or provide some benefit for installation and use of Teledyne FLIR products.

2 Camera Overview

The Quasar Premium Fixed Box Camera with Edge AI Analytics provides 4K UHD real-time video, up to 25 / 30 frames per second (fps).

The camera's onboard artificial intelligence (AI)-enhanced video analytics (VA) provide rules for abandoned objects, intrusion detection, camera sabotage, tripwire detection, loitering detection, object counting, object removal, stopped vehicles, and face detection.

The camera supports up to four simultaneous video streams using H.265, H.264, or MJPEG compression, providing an ideal solution when differing levels of image quality are required. The camera can increase frame rate and level of detail when events are triggered. In addition, FLIR's adaptive streaming algorithms provide the highest image quality with the lowest bandwidth and storage requirements.

When the camera is connected to an IP network, it functions as a server, providing services such as camera control, video streaming, and network communications.

If help is needed during the installation process, contact the local Teledyne FLIR service representative or call the Support number

For safety, and to achieve the highest levels of performance from the camera system, always follow the warnings and cautions in this manual when handling and operating the camera.

Related Documentation

- *Quasar Premium Fixed Box Camera with Edge AI Analytics Quick Install Guide*
- *FLIR Security Edge Devices Accessory Guide*
- *DNA User Guide* (see [Accessing Product Information from the Teledyne FLIR Website](#))

2.1 Features

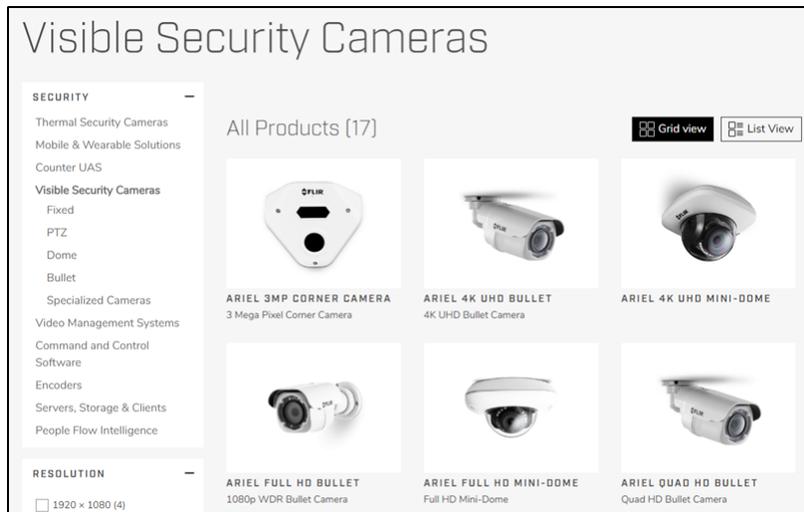
- 1 / 1.8" progressive CMOS sensor and up to 4K (3840 x 2160) resolution at 25 / 30fps
- Shutter (True) WDR
- 3DNR image noise reduction
- Configurable white balance
- Backlight compensation
- True day / night (ICR)
- IP66 enclosure with IK10 vandal-proof protection
- Powered by IEEE 802.3af, class 0 PoE; 24V AC; or 12V DC
- Audio line-in / line-out
- Built-in web server supports the latest version of Google Chrome® and other popular web browsers
- up to 20 users
- microSD card slot supports cards up to 1 TB
- ONVIF© Profile S / G / T
- 802.1X and SSL / TLS security protocols
- H.265, H.264, and MJPEG compression
- HTTP streaming MJPEG
- UPnP support
- Onboard video analytics event-driven alarms for:
 - Motion Detection
 - Tampering Detection
 - Intrusion Detection
 - Loitering Detection
 - Object Counting
 - Stopped Vehicle
 - Face Detection
- Up to five privacy zones
- Alarm in / out
- SNMP v1 / v2 / v3 and SNMP traps

2.3 Accessing Product Information from the Teledyne FLIR Website

Up-to-date resources for the camera, including the camera's specifications, the Teledyne FLIR Discovery Network Assistant (DNA) software tool, and this guide, are available on [the Teledyne FLIR website](https://www.flir.com/browse/security/visible-security-cameras/).

To access product information from the Teledyne FLIR website:

1. Open <https://www.flir.com/browse/security/visible-security-cameras/>.



Visible Security Cameras Page on the Teledyne FLIR Website

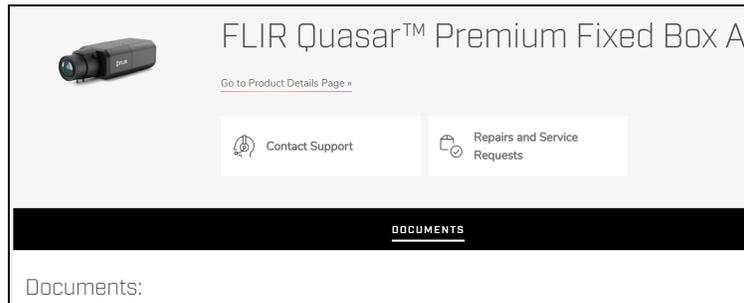
2. Find and click the camera. The camera's product details page appears.



Product Details Page (Example)

To see the camera's specifications and related content, scroll down.

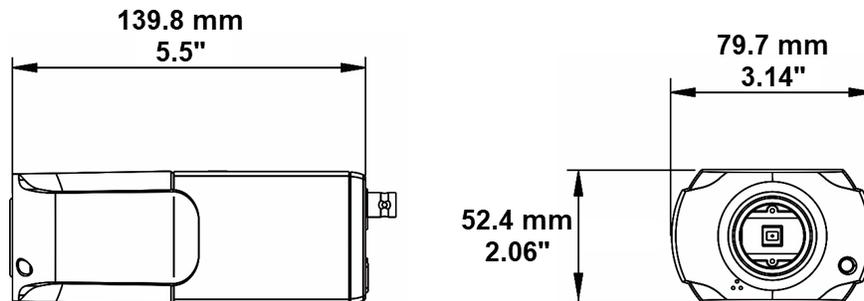
3. Click **Go to Product Support**. The camera's support page appears.
4. Download product documentation from the Documents tab.



Product Support Page Documents Tab (Example)

5. Download the DNA tool from the Downloads tab.

2.4 Camera Dimensions



3 Installation

Caution

- Except as described in this manual, do not open the camera for any reason. Damage to the camera can occur as the result of careless handling or electrostatic discharge (ESD). Always handle the camera with care to avoid damage to electrostatic-sensitive components.
- Prior to making any connections, ensure the power supply or circuit breaker is switched off.
- Operating the camera outside of the specified input voltage range or the specified operating temperature range can cause permanent damage.

Before installing the camera, thoroughly read the instructions in this chapter.

This chapter includes information about:

- [Supplied Components](#)
- [Site Preparation - General](#)
- [Indoor Mounting](#)
- [Outdoor Mounting](#)
- [Pre-Installation Checklist](#)
- [Video Analytics Scene Requirements](#)
- [Supplying Power to the Camera](#)
- [Attach the Lens](#)

To install the camera, Teledyne FLIR recommends connecting the camera on a bench or in a lab and configuring it for networking before mounting and aiming it:

1. [Connect the Camera](#)
2. [Configure for Networking](#)
3. [Change Video Format \(Optional\)](#)
4. [Mount and Connect the Camera](#)
5. [Additional Configuration Steps](#)
6. [Attach the Camera to a Supported VMS](#)

However, circumstances can dictate adjusting the sequence of the steps. For example, you can mount the camera before configuring it for networking.

3.1 Site Preparation - General

There are several requirements that should be properly addressed prior to installation at the site.

The following specifications are requirements for proper installation and operation of the unit:

- **Ambient Environment Conditions:** Avoid positioning the unit near heaters or heating system outputs. Avoid exposure to direct sunlight. Use proper maintenance to ensure that the unit is free from dust, dirt, smoke, particles, chemicals, smoke, water or water condensation, and exposure to EMI.
- **Accessibility:** The location used should allow easy access to unit connections and cables.

- **Safety:** Cables and electrical cords should be routed in a manner that prevents safety hazards, such as from tripping, wire fraying, overheating, etc. Ensure that nothing rests on the unit's cables or power cords.
- **Ample Air Circulation:** Leave enough space around the unit to allow free air circulation.
- **Cabling Considerations:** Units should be placed in locations that are optimal for the type of video cabling used between the unit and the cameras and external devices. Using a cable longer than the manufacturer's specifications for optimal video signal may result in degradation of color and video parameters.
- **Physical Security:** The unit provides threat detection for physical security systems. In order to ensure that the unit cannot be disabled or tampered with, the system should be installed with security measures regarding physical access by trusted and un-trusted parties.
- **Network Security:** The unit transmits over IP to security personnel for video surveillance. Proper network security measures should be in place to assure networks remain operating and free from malicious interference. Install the unit on the backbone of a trusted network.
- **Electrostatic Safeguards:** The unit and other equipment connected to it (relay outputs, alarm inputs, racks, carpeting, etc.) shall be properly grounded to prevent electrostatic discharge.

 **Warning**

Before drilling into surfaces for camera mounting, verify that electrical or other utility service lines are not present. Serious injury or death may result from failure to heed this warning.

The physical installation of the unit is the first phase of making the unit operational in a security plan. The goal is to physically place the unit, connect it to other devices in the system, and to establish network connectivity. When finished with the physical installation, complete the second phase of installation, which is the setup and configuration of the unit.

3.2 Supplied Components

The Quasar Premium Fixed Box Camera with Edge AI Analytics kit includes these items:

*Camera Body
(with Lens Attached)*



*4-Pin Power Terminal
Connector*

Items Included in Kit (images not to scale)

3.3 Indoor Mounting

When installing the camera indoors:

- There must be a fuse or circuit breaker at the starting point of the electrical wiring infrastructure.
- The camera must be protected from hostile external elements such as: a corrosive environment, metallic dust, extreme temperatures, soot, over spray, and so on.
- Do not place the camera on or near radiators and heat sources.
- All electrical work must be performed in accordance with local regulatory requirements.

3.4 Outdoor Mounting

When installing the camera outdoors, consider the following:

- For outside wiring installation, always use weatherproof equipment, such as boxes, receptacles, connectors, and so on.
- For electrical wiring, use the properly rated sheathed cables for conditions to which the cable will be exposed; for example, moisture, heat, UV, physical requirements, and so on.
- Plan ahead to determine where to install infrastructure weatherproof equipment. Whenever possible, ground components to an outdoor ground.
- Use best security practices to design and maintain secured camera access, communications infrastructure, tamper-proof outdoor boxes, and so on.
- All electrical work must be performed in accordance with local regulatory requirements.

3.5 Pre-Installation Checklist

Before installing the unit, make sure that:

- Instructions in the [Document Scope and Purpose](#) section are followed.
- All related equipment is powered off during the installation.
- Use best security practices to design and maintain secured camera access, communications infrastructure, tamper-proof outdoor boxes, and so on.



To avoid damage from overheating or unit failure, assure that there is sufficient temperature regulation to support the unit's requirements (cooling/heating). The camera's operating temperature range is -30° C to 55° C (-22° F to 130° F), with no more than 90% non-condensing humidity. A heater is not required.

3.6 Video Analytics Scene Requirements

To ensure the camera's video analytics (VA) perform properly, mount the camera so that it can accurately detect objects.

In addition to rule-specific mounting and scene considerations outlined in the [Video Analytics Page](#) section, consider the following:

- Keep the camera lens clean and free from rain and water drops. Prevent condensation from forming on the camera.
- Position the camera so that the scene is mostly non-reflective.
- To make sure the camera is stable and does not shake or vibrate, mount it in a sturdy and secured location; for example, on a pole. Unstable installation can cause poor VA performance.
- Make sure the camera can clearly distinguish target objects from the scene background; for example, target objects should not camouflage themselves with similar color and texture to the background.
- Proper VA performance requires a steady and sufficient illumination source. For low-light conditions, you can use external illuminators. The camera can detect target objects under both natural and artificial lighting. When planning illumination, keep the effects of shadows in mind. Also, the camera's VA performs better with white light than with IR illumination.

- Avoid back-lit scenes and prevent unexpected light sources from projecting into the detection zone; for example, vehicles and street lights.
- Make sure that the camera has a clear line of sight to the detection zone and that there are no occlusions; for example, trees, pillars, buildings, and furniture.
- Clouds, fog, or other moving objects that appear similar appearance to target objects in the detection zone can cause poor VA performance.
- Certain weather conditions can affect and reduce detection range and accuracy; for example, heavy rain, fog, or snow.
- When the scene consists of high dynamic range, Teledyne FLIR recommends enabling the camera's WDR capabilities to ensure a sufficient amount of image detail.
- To improve VA performance by reducing flickering noise and artifacts, enable noise reduction.

3.7 Supplying Power to the Camera

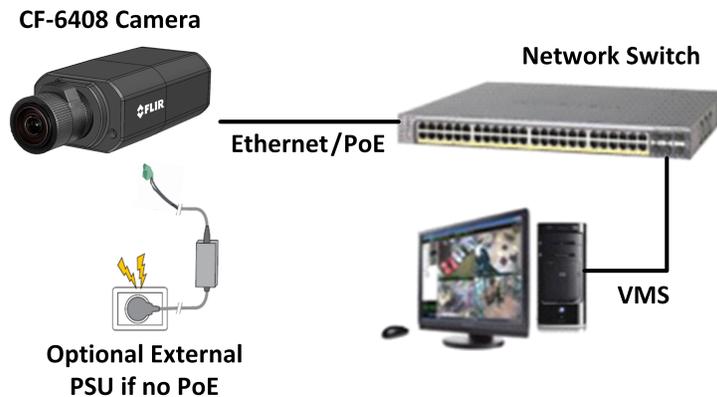


Warning

All electrical work must be performed by a qualified service person in accordance with local regulatory requirements.

The camera can be powered by:

Source		Max. Power Consumption
UL-listed L.P.S. (Limited Power Supply) unit, rated to a maximum temperature of 60° C	12V DC	10.78 W
	24V AC	11.66 W
IEEE 802.3af, class 0 PoE (Power over Ethernet)	48V DC	12.95 W



For assistance with purchasing a power supply, contact your Teledyne FLIR representative.

3.8 Attach the Lens

Before viewing video from the camera, attach a supported lens.

The camera kit does not include a lens, which must be purchased separately.

The camera has a CS lens mount. It does not support i-CS lenses.

For information about supported lenses available from Teledyne FLIR, see [Accessories](#).

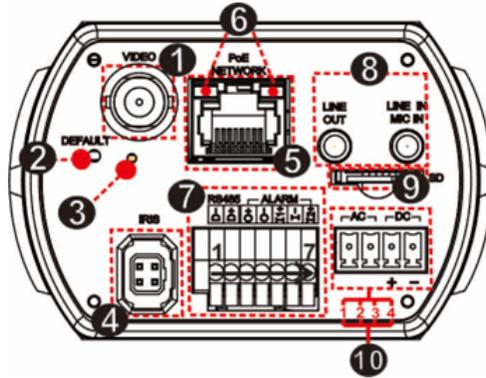
To attach a supported lens:

1. Remove the plastic insert covering the threaded camera lens mount. Do not touch the sensor or allow dust to accumulate in the lens mount.
2. Align the lens thread with the lens mount. Then, using a minimal amount of force to prevent cracking the lens body - especially when attaching the longer, larger CF-L408-21-1 9.0-50mm lens - carefully screw the lens onto the mount.
3. Plug the auto iris cable from the lens assembly into the IRIS port of the camera.

3.9 Connect the Camera

Warning

This product contains a battery that is soldered to the PCB. There is a risk of explosion if the battery is replaced by an incorrect type. **Do not replace the battery.** The battery should be disposed of in accordance with the battery manufacturer's instructions.



Connections

Connector		Connection		
1	VIDEO 	BNC connector for analog video output.		
2	DEFAULT Button	To restore the camera to its factory defaults, use a proper tool to press the default button for at least 20 seconds.		
3	Power LED	The green power LED indicates power is being supplied to the camera.		
4	IRIS	Auto iris lens connection.		
5	PoE NETWORK 	Attach a Cat 6 cable from the network switch to the RJ-45 connector for a 10/100/1000 Mbps Ethernet and IEEE 802.3af class 0 PoE connection. Ethernet is required for streaming video and for configuring the camera. The green link LED indicates a good network connection. The orange activity LED flashes to indicate network activity.		
6	Network LEDs			
7	Seven-pin I/O terminal block	1	D -	RS-485 connection
		2	D +	
		3	Alarm Out +	Attach wires from external devices to the terminal block connector for alarm in/out according to the pin assignment shown.
		4	Alarm Out -	
		5	Alarm 1 In +	

Connector		Connection				
		6	Alarm In -			
		7	Alarm 2 In +			
		 Warning Do not connect an external power supply to the seven-pin I/O terminal block.				
8	LINE OUT	Line-level audio output				
	LINE IN MIC IN	Line-level audio input (mic-level audio input not supported)				
9	microSD Card Slot	For video clip and snapshot recording and file storage, insert a microSD / SDHC / SDXC card (up to 1 TB) in the card slot. When the camera is powered on, do not remove the microSD card.				
10	Four-pin power terminal block	1	24VAC 1	2	24VAC 2	If using a 24V AC or 12V DC power supply, connect the wires to the power terminal block connector according to the pin assignment shown.
		3	12VDC -	4	12VDC +	



Warning

- The power cord to the 12V DC or 24V AC power supply unit must be connected to a socket outlet with an earthing connector.
- The PoE unit and all interconnected equipment must be installed indoors within the same building, including all PoE-powered network connections, as described by Environment A of the IEEE 802.3af standard.
- All electrical work must be performed by a qualified service person in accordance with local regulatory requirements.

3.10 Configure for Networking

You can configure the camera using the FLIR Discovery Network Assistant (DNA) software tool, the camera's web page, or a supported VMS.

Task	DNA tool	Camera's web page
Discover camera IP address	•	
Configure IP address, mask, and gateway	•	•
Change user credentials	•	•
Configure DNS settings, MTU, and Ethernet speed		•
Change video format	•	•
Configure more than one camera at the same time	•	

Note

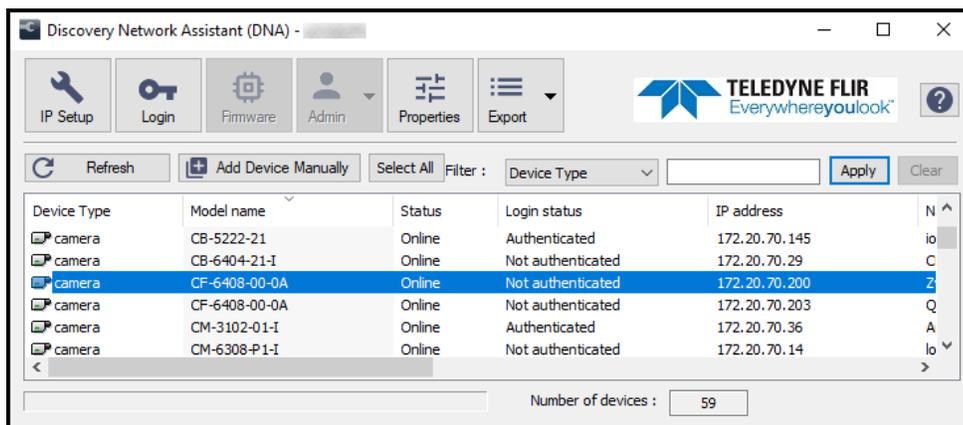
- Teledyne FLIR recommends using the DNA tool to discover the camera on the network. It does not require a license to use and is [a free download from Teledyne FLIR](#). For more information about using the DNA tool, including how to configure more than one camera at the same time, see the *DNA User Guide*. While the software is open, click the Help icon .
- For more information about using a supported VMS to configure one or more cameras at the same time, see the VMS documentation.

By default, DHCP is enabled on the camera and a DHCP server on the network assigns the camera an IP address. If the camera cannot connect to a DHCP server, the camera's default IP address is 192.168.0.250.

- If the camera is managed by FLIR Horizon or Meridian VMS and the VMS is configured as a DHCP server, the VMS automatically assigns the camera an IP address.
- If the camera is managed by FLIR Latitude VMS or is on a network with static IP addressing, you can manually specify the camera's IP address using the DNA tool or the camera's web page.

To manually specify the camera's IP address using the DNA tool:

1. Make sure the camera and the PC are on the same LAN segment.
2. Run the DNA tool (DNA.exe) by double-clicking . The Discover List appears, showing compatible devices on the VLAN and their current IP addresses.

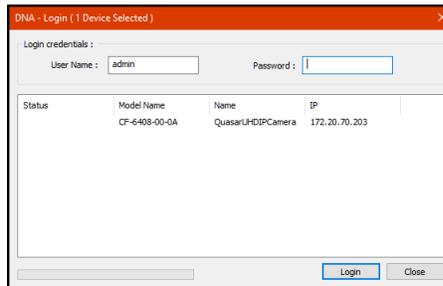


In the DNA Discover List, verify that the camera's status is *Online*.

If this is the first time you are configuring the camera or if it is the first time after resetting the camera to its factory defaults, DNA automatically logs in to the camera with user name *admin* and its default password (*admin*).

If the *admin* user's password is not the default password, you need to authenticate the camera.

- In the DNA Discover List, select the camera and then click **Login**.
- In the **DNA - Login** window, type *admin* or another name for a user assigned the Admin role and the password. If you do not know this information, contact the person who configured the camera's users and passwords.
- Click **Login**, wait for  Ok status to appear, and then click **Close**.



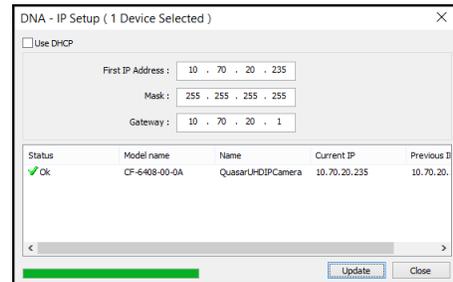
DNA - Login Window

In the DNA Discover List, verify that the camera's status is *Authenticated*.

- Change the camera's IP address.

Right-click the camera and select **IP Setup**.

In the **DNA - IP Setup** window, clear *Use DHCP* and specify the camera's *IP address*. You can also specify the *Mask* (default: 255.255.255.0) and *Gateway*. Then, click **Update**, wait for  Ok status to appear, and then click **Close**.



DNA - IP Setup Window

To manually specify the camera's IP address using the camera's web page:

- [Access the camera's web page](#) with a user assigned the Admin or Expert role; for example, the default *admin* user.
- On the [View Settings Home Page](#), click **System Setting**, and make sure the [Network Page](#) appears.
- Click **Static** IP addressing and then manually specify the camera's *Hostname*, *IP address*, *Netmask*, and *Gateway*.

You can also specify the *DNS Mode*, *Name Servers*, *MTU* (maximum transmission unit), and *Ethernet Speed*.

- Click **Save**. Applying any changes on the Network page requires rebooting the camera.

Using DNA to Configure the Camera

DNA is a user-friendly utility that easily discovers and configures FLIR Security edge devices on a network. It does not require a license to use and is [a free download from Teledyne FLIR](#).

DNA provides a central location for listing all the supported FLIR Security camera models accessible over the network. Once listed, each camera can be right-clicked to access and change the network settings. If

the network settings are changed for some reason, a new search will relist the units. The units can then be configured via the camera's web page.

The camera must be made accessible for setting network addresses.

To configure the camera via a LAN, you must attach the camera via the network switch or router to the same network segment or VLAN as the computer that manages the unit. If the PC is on a different subnet than the camera, you will not be able to access the camera via a web browser.

If there is a DHCP server on the network, Teledyne FLIR recommends using the DNA tool to discover the camera and change its IP address.

If FLIR's Latitude VMS is being used, configure the unit with a static IP address rather than with DHCP. This ensures that the IP address will not automatically change in the future and interfere with configurations and communication.

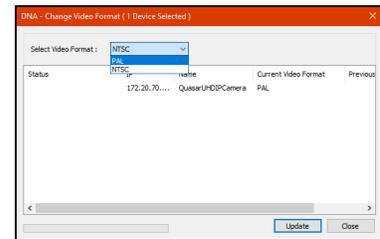
For more information about using the DNA tool, see the *DNA User Guide*. While the software is open, click the Help icon .

3.11 Change Video Format (Optional)

By default, Shutter WDR 30 FPS NTSC is the camera's video format. To change the format, you can use the DNA tool or the camera web page. Note, though, it is not possible to use DNA to change the video format between Shutter and Linear. For example, if Shutter WDR 30 FPS NTSC is the camera's current video format and you use DNA to change the video format from NTSC to PAL, the video format changes to Shutter WDR 25 FPS PAL. To change the video format between Shutter and Linear, [use the camera web page](#).

To change the camera's video format using the DNA tool:

1. In the DNA Discover List, right-click the camera and select **Change Video Format**.
2. In the **Change Video Format** window, select PAL. This changes the camera's video format to Shutter WDR 25 FPS PAL.
3. Click **Update**, wait for  **Ok** status to appear, and then click **Close**.

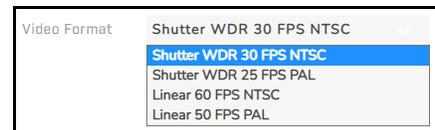


DNA - Change Video Format Window

To change the camera's video format using the camera's web page:

On the [Firmware & Info Page](#), for Video Format, select another format.

To apply a video format change, the camera needs to reboot.



3.12 Mount and Connect the Camera

For information about the Teledyne FLIR mounting accessories that support the camera, see [Accessories](#).

According to the installation instructions for the hardware and according to the instructions in [Connect the Camera](#):

- Attach the mounting hardware to the mounting surface.
- Attach the camera to the mounting hardware.
- Route the Ethernet and any other cables from the mounting surface to the camera.
- Connect the camera.

The sequence of these steps depends on how you are mounting the camera and the mounting hardware involved.

3.13 Additional Configuration Steps

To complete camera setup, you need to [access the camera's web page](#) with the default *admin* user or with another user assigned the Admin or Expert role. The camera web page supports the latest version of Google Chrome® and other popular web browsers.

Depending on installation and use, completing camera setup can also consist of:

- [formatting the microSD card](#)
- [adjusting the camera's zoom and focus](#), including physically adjusting and configuring the camera lens—for example, you might need to configure the iris size
- [configuring the camera's video analytics](#)
- [configuring or modifying the default video stream settings](#)
- [configuring or modifying exposure, white balance, WDR, and other picture settings](#)
- [configuring or modifying security, advanced networking, alarms, and other system settings](#)
- [configuring handoff from the camera to a Quasar Premium PTZ AI Camera \(CP-640x-x1-xA\)](#)

Many configuration steps can be performed before or after mounting the camera. However, some of them can or should only be performed after mounting the camera. For example, configure the camera's video analytics after mounting the camera.

3.14 Attach the Camera to a Supported VMS

After you have mounted the camera and discovered or defined its IP address, use VMS Discovery/Attach procedures to attach the camera to a supported VMS.

4 Operation

This chapter includes information about how to [access the camera](#) and how to operate it using the camera's web page.

4.1 Accessing the Camera's Web Page

To operate the camera, you need to access it and log in its web page. The camera's web page supports the latest version of Google Chrome and other popular web browsers.

To log in to the camera's web page:

1. Do one of the following:
 - In the Teledyne FLIR Discovery Network Assistant (DNA) tool, double-click the camera in the Discover List.

The DNA tool does not require a license to use and is [a free download from Teledyne FLIR](#).

Download the DNA tool; unzip the file; and then double-click  to run the tool (DNA.exe). The Discover List appears, showing compatible devices on the VLAN.
 - Type the camera's IP address in a browser's address bar (when the PC and the camera are on the same network). If you do not know the camera's IP address, you can use the DNA tool to discover it.
2. On the login screen, enter a user name and the password. Passwords are case-sensitive. If you do not know a user name or password, contact the person who configured the camera's users and passwords.

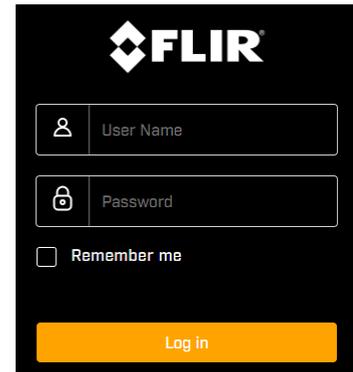
When logging in to the camera for the first time or for the first time after resetting the camera to its factory defaults:

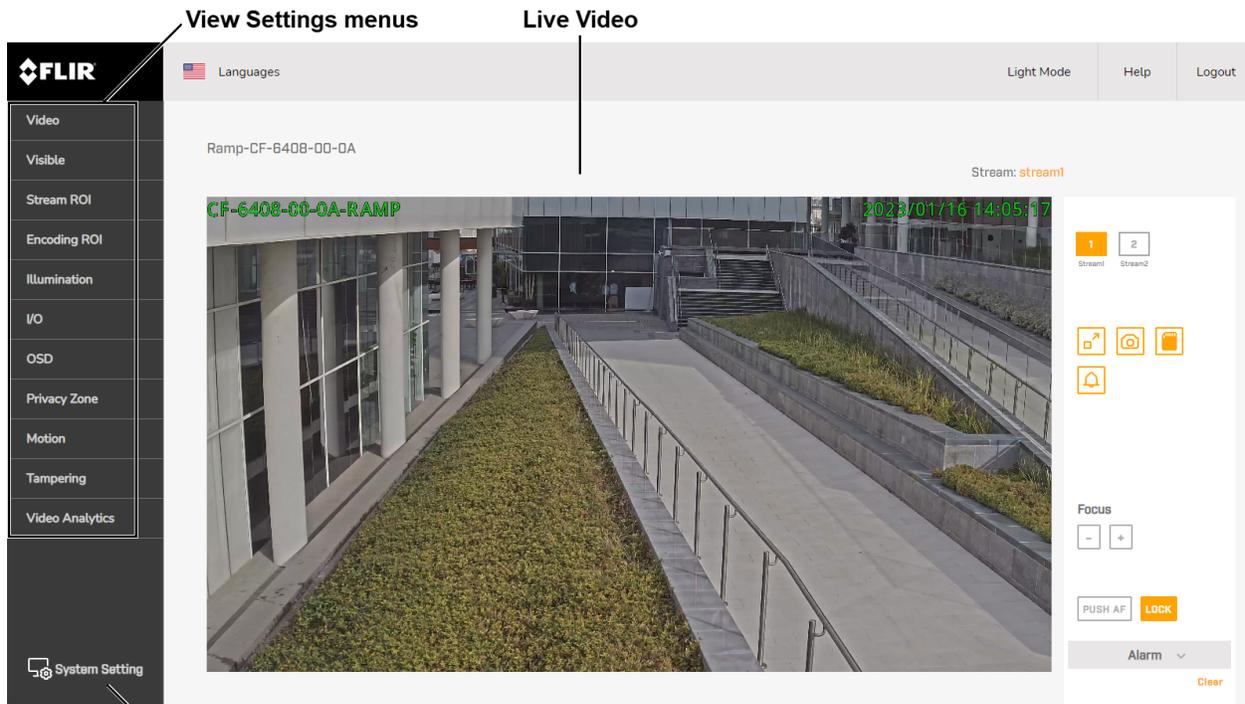
- a. Log in with user name *admin* and the default password, *admin*.
- b. Specify a new password for *admin*:
 - must be 8-64 characters
 - can include the following special characters: @#~!\$&<>+_-.,*?
 - cannot include four-digit sequences (for example, 1234)
 - cannot include four repeating characters (for example, aaaa)
- a. Log back in using the new password.

The camera's [View Settings Home Page](#) opens.

4.2 View Settings Home Page

On the View Settings page, a navigation menu, live video images, and camera controls appear. Camera configuration and [the role assigned to the user](#) accessing the camera determines which settings and controls are available.





System Settings

ViewSettings Page - Light Mode - Two Video Streams Enabled

Above the live video, the following appear:

- **Languages**—The language for the camera's web page: English (default), Czech, Simplified Chinese, Traditional Chinese, French, German, Hungarian, Italian, Japanese, Polish, Portuguese, Russian, and Spanish.
- **Theme**—Dark Mode (default) or Light Mode; affects all users.
- **Help**—Opens <https://www.flir.com/support/> in a new browser window.
- **Logout**—Logs out of the camera's web page.
- **Camera Name**—As specified on the [Firmware & Info Page](#).
- **Stream**—Video stream providing current live video images.



Note

The live video on the camera's web page is not one of the camera's configurable video streams. Changes to video stream settings might not affect the live video.

To the left of the live video, the View Settings menu appears:

- **Video**—Opens the Video settings page.
- **Visible**—Opens the Visible settings page.
- **Stream ROI**—Opens the Stream ROI settings page.
- **Encoding ROI**—Opens the Encoding ROI settings page.
- **Illumination**—Opens the Illumination settings page.
- **I/O**—Opens the I/O settings page.

- [OSD](#)—Opens the OSD (on-screen display) settings page.
- [Privacy Zone](#)—Opens the Privacy Zone settings page.
- [Motion](#)—Opens the Motion settings page.
- [Tampering](#)—Opens the Tampering settings page.
- [Video Analytics](#)—Opens the Video Analytics settings page.

Below the View Settings menu, users assigned the Admin or Expert role can click **System Setting** to access system settings pages and configure the camera. For more information, see [Configuration](#).

To the right of the live video, up to four enabled stream buttons appear. To see live video images from one of the enabled streams, click one of the buttons.

Camera Controls

When no settings page is open, the following can appear to the right of the live video:

	Full Screen Button	Maximizes live video in the computer display. To exit full-screen video, use the browser control. For example, on Google Chrome, you can press ESC or F11 .
	Snapshot Button	Takes a snapshot of the live video. At least one video stream must be encoded in MJPEG.
	SD Card Recording Button	Initiates / stops SD card video recording.  indicates the camera is currently recording video to the SD card.
	Manual Trigger Button	Triggers a camera alarm.

Focus

	Manual focus out / in buttons.
	Triggers a one-time auto focus.
	Locks the focus.



Notes

- The settings available might be different depending on the type of lens installed. If you are not sure how to configure the lens installed, contact Teledyne FLIR Support.
- In extreme cases, after adjusting the focus settings, it might be necessary to manually re-zoom the camera and focus it again.
- See also the digital zoom setting on the [Visible Page](#).

To focus a new camera:

1. Manually adjust the lens to an approximate zoom and focus position.
2. Click **Push AF**. The camera performs a one-time auto-focus.
3. Click **Lock**. The camera locks focus.

You can also use this procedure to re-focus a camera after it has been moved or its focus has been accidentally changed by a VMS or network video recorder (NVR). **Alarm**

If the camera is currently triggering any alarms, they appear here.

4.3 Making Changes to Settings

The camera's configuration files store the following sets of settings:

- **Factory default settings**—The settings when you first connect the camera to power, and when resetting the camera to its factory default settings (see [Firmware & Info Page](#)). A partial factory reset restores all factory default settings except the settings on the [Network Page](#).
- **Saved settings**—The settings you save as you operate and configure the camera. When the camera reboots, it restores these settings. Changes made to any setting since saving changes are lost.



Tip

Whenever possible, Teledyne FLIR recommends testing new settings before saving them because saving changes overwrites the previously saved settings.

View Settings

On View Settings pages, when an account assigned the Admin or Expert role makes a change to a setting, the camera does one of the following:



- immediately applies the change, but does not save it
- immediately applies and saves the change
- does not apply the change until you save it

On most View Settings pages, **Reset** and **Save** are available and when you make a change, they become enabled. To restore the previously saved settings for the current page, click **Reset**. Regardless of whether the camera has already applied changes, to save all changes made to settings on the current page since the last time the page's settings were saved, click **Save**. This can include changes made earlier that were not saved.

If the camera immediately applies and saves changes, a **Save** button does not appear and clicking **Reset** restores the previously saved settings for the current page. For example, on the [Visible Page](#).

System Setting

When Administrators make a change to most system settings, the **Discard Changes** link and the **Save** button become enabled. On some System Setting pages, the camera immediately applies the changes, but does not save them. On others, the camera does not apply changes until you save them.



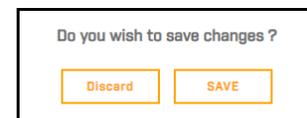
Regardless of whether the camera has already applied changes, to save changes, click **Save**. To discard changes and restore previously saved settings or the factory default settings, click **Discard Changes**.

Changes to some system settings require the camera to reboot and a confirmation message appears.



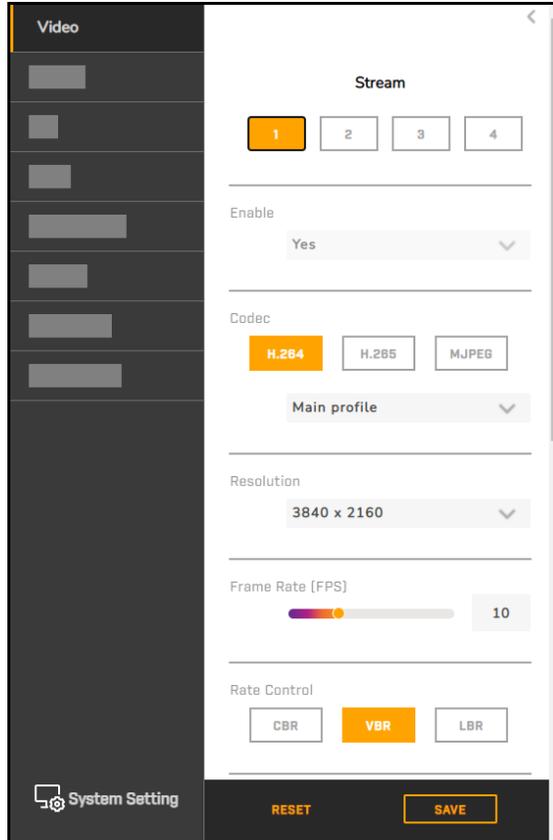
Tip

If you try to navigate away from a System Setting page before saving changes, a confirmation message appears. You can discard the changes or save them.



4.4 Video Page

On the Video page, users assigned the Admin or Expert role can configure the camera's four video streams for optimum quality and bandwidth.



Stream

Select one of the camera's four video streams, which you can enable or disable. For each enabled stream, you can specify:

- **Codec**—H.265, H.264 (default), or MJPEG, based on required image quality and storage space.

Notes

For the camera to be able to send images by FTP or email, MJPEG must be selected as the Codec for one of the streams.
When all enabled streams are set to H.265, the camera reduces the frame rate of the live video in the camera web page.

- **Resolution and Frame Rate**—For information about the camera's supported video resolutions and maximum frame rates, see [FLIR Quasar Fixed Box AI Camera Video Resolutions](#).

The other available stream settings depend on the codec selected.

H.265 and H.264 settings

- **Profile**—Each profile targets specific classes of applications.

High Profile	The primary profile for HD broadcast applications, providing the best trade-off between storage space required and video latency. High Profile can require 10-30% less storage space compared to Main Profile. However, depending on the stream structure, it can have higher video latency.
Main Profile (default)	The default setting. For SD broadcast applications, provides improved picture quality at reduced bandwidth and storage space required over Baseline Profile.

• **Rate Control**

CBR (Constant Bit Rate)	The camera constantly streams video at the specified bit rate, regardless of video content. CBR is not optimal for storage or quality; it does not stream enough data for complex video (which can result in poor video quality), and consumes too much storage space for simple video. Choosing a higher bit rate results in better quality, but requires more storage space.
VBR (Variable Bit Rate)	Varies the amount of data per time segment, up to the specified bit rate. VBR enables a higher bit rate (and therefore requires more storage space) for more complex video or audio, while a lower bit rate and less storage space is allocated to less complex media. VBR files can take longer to encode and be more problematic for streaming when the maximum bit rate is not set high enough for high instantaneous bit rates. Specify: <ul style="list-style-type: none"> • Encoding Priority—Adjusts the quality of the picture along a single axis, between 1 (low bit rate) and 10 (high picture quality). The default setting is 7.
LBR (Low Bit Rate)	Used primarily for speech at rates below 4kbps, the camera does not encode the entire audible frequency range. LBR consumes less storage space than CBR or VBR. Specify: <ul style="list-style-type: none"> • Compression—Hi (default), Mid, or Low. Low produces the highest image quality and requires the most storage space. High produces the lowest image quality and requires the least storage space. • Dynamic GOV—Enabled or Disabled (default). When enabled, specify: <ul style="list-style-type: none"> ○ Max. GOV—Between the I-frame Interval value and 4094. The default is 255.

- **Bit Rate (Kbps)**—The higher the bit rate, the better the image quality. Set the maximum bit rate high enough to allow for a high instantaneous bit rate for more complex video. A higher bit rate consumes more storage space. Specify between 64 and 20480 kbps. The default is 8000.
- **I-frame Interval**—The number of P-frames the camera streams between I-frames; I-frames are full frames of video and P-frames contain the changes in the image since the last I-frame. Reducing the I-Frame Interval requires more stream bandwidth, because the camera streams more full frames, and improves video quality. Increasing the I-Frame Interval requires less bandwidth, but can degrade video quality. Specify a value between 1-4094. The default is 50 (PAL) or 60 (NTSC); that is, by default, the camera streams one I-Frame every second.

MJPEG setting

- **Q Factor**—Higher values imply higher bit rates and higher video quality, between 1 and 70. The default is 35.

Multicast

For each video stream, specify:

- **Address (224.0.0.0-239.255.255.255)**—A valid multicast address.
- **Port (0, 1024-65535, even)**—The port the camera uses for multicast video streaming.
- **TTL (1-255)**—Time to live, the maximum number of network hops before routers discard the camera's data packets. Each time one router forwards the datagram to another router, it subtracts 1 (one) from the packet's TTL. If the TTL of a packet reaches zero (0), a router discards the packet. Teledyne FLIR recommends setting TTL at 64.
- **Always Multicast**—Yes or No.

The screenshot shows a configuration window titled "Multicast". It contains the following fields and options:

- Address** (range: 224.0.0.0-239.255.255.255): Input field with value "0.0.0.0".
- Port** (range: 0, 1024-65535, even): Input field with value "0".
- TTL** (range: 1-255): Input field with value "1".
- Always Multicast**: Two radio buttons, "Yes" and "No". The "No" button is selected.

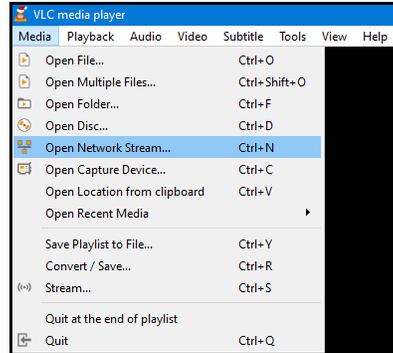
4.5 Viewing Live Video Using a Media Player

You can monitor any of the camera's enabled video streams with a media player that supports streaming; for example, VLC (download from <http://www.videolan.org/vlc/index.html>).

To view a video stream using VLC:

1. Open VLC.
2. In the navigation menu, click **Media** and then select **Open Network Stream**.

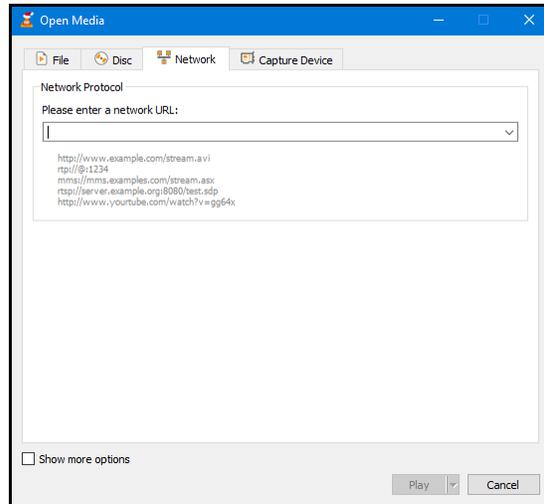
The Open Media screen appears.



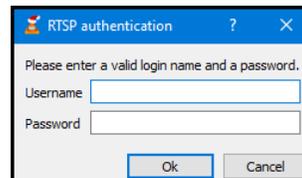
3. On the Network tab, specify the network URL for the camera's video stream. The network URL syntax is:
`rtsp://(camera IP address):(camera RTSP port)/(stream)`. Using the camera's default IP address (192.168.0.250) and default RTSP port (554), the default network URLs are:

- **Stream 1**—`rtsp://192.168.0.250:554/stream1`
- **Stream 2**—`rtsp://192.168.0.250:554/stream2`
- **Stream 3**—`rtsp://192.168.0.250:554/stream3`
- **Stream 4**—`rtsp://192.168.0.250:554/stream4`

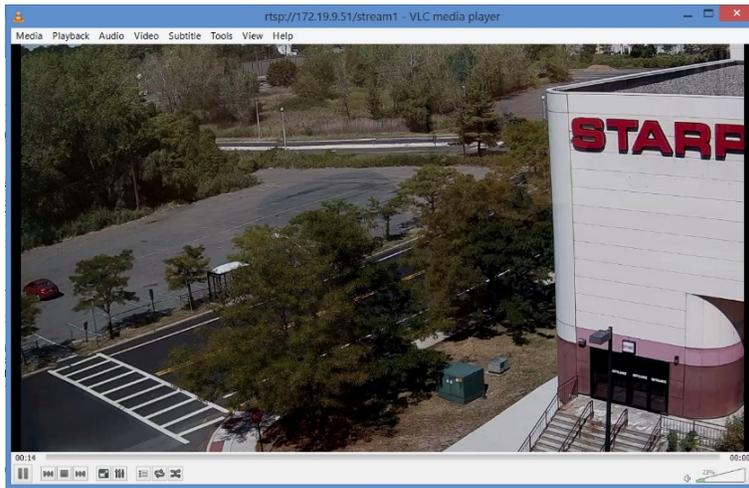
4. Click **Play**.



If RTSP authentication has been enabled in the [Services section of the Cyber page](#), provide the user name and password for any of the camera's configured users.

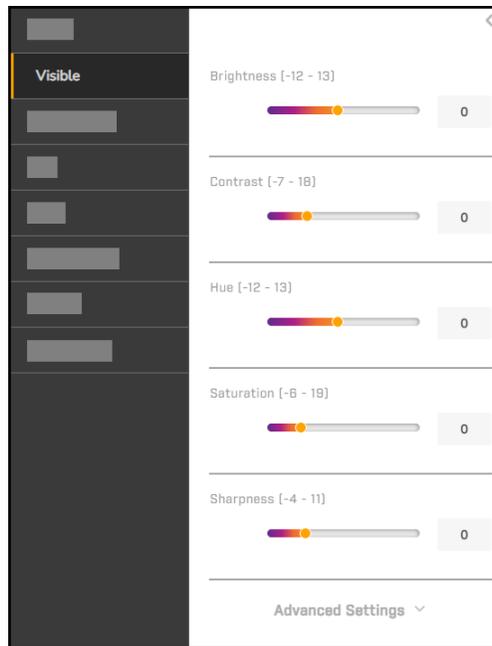


The video stream appears in the media player. If available, audio is also streamed.



4.6 Visible Page

Accounts assigned the Admin or Expert role can access and change the settings on the Visible page.



You can adjust:

Setting	Range
Brightness	Between -12 and +13
Contrast	Between -7 and +18
Hue	Between -12 and +13
Saturation	Between -6 and +19
Sharpness	Between -4 and +11

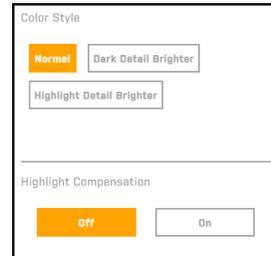
Zero (0) is the default for these settings.

Advanced Settings

Available settings depend on the current video format specified on the [Firmware & Info Page](#). For example:

Video Format	Low Light Performance	Night Mode Priority	BLC
Linear	-	-	•
Shutter WDR	•	•	-

- **Color Style**—Normal, Dark Detail Brighter, or Highlight Detail Brighter. The default is Normal.
- **Highlight Compensation (HLC)**—Detects areas of the image overexposed by bright light sources such as headlights or spotlights and reduces image exposure only in these areas to enhance overall image quality. The default is Off.

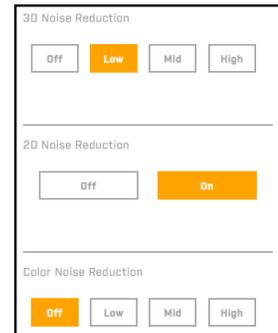


Noise Reduction Settings

You can use the camera's noise reduction settings to reduce or eliminate artifacts that can limit the ability to positively identify an object. There are two types of noise: luminance and color (chroma) noise.

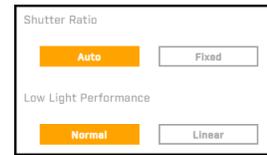
3DNR (three-dimensional noise reduction) and 2DNR (two-dimensional noise reduction) reduce luminance noise, which is composed of dots of various brightness levels (black, white and gray) luminance noise contains dots of varying brightness levels (black, white, and gray).

Teledyne FLIR recommends against completely eliminating luminance noise; doing so can result in unnatural images. We recommend adjusting ColorNR before configuring 3DNR and 2DNR.



Setting	Description	Valid Values	Default
3D Noise Reduction	Provides superior noise reduction and is recommended for use in extra low-light conditions. It is especially useful for reducing blur with moving objects. The 3DNR function reduces image noise/snow in low-light conditions by comparing adjacent frames. A higher level of 3DNR generates relatively enhanced noise reduction, although it creates more motion blur than 2DNR on moving objects.	Off Low Mid High	Low
2D Noise Reduction	Analyzes individual frames pixel by pixel and frame by frame to eliminate environmental noise and deliver optimized image quality, especially in low-light conditions. 2DNR tends to produce superior results for moving objects when applied to areas in the field of view where movement is present. However, it is less precise than 3DNR.	On Off	On
Color Noise Reduction	Controls noise that appears as red, green, and blue dots visible at edges between light and dark areas. Color High maximizes the blending of the color noise with the image, effectively removing the dots. Color Low minimizes the blending.	Off Low Mid High	Mid

- **Shutter Ratio**—For scenes in which the amount of light changes dynamically, set to Auto (default). The camera automatically adjusts the ratio of the longest exposure to the shortest exposure. For scenes in which the amount of light remains constant, you can set it to Fixed. The camera does not automatically adjust the ratio. Available only for Shutter WDR video formats.



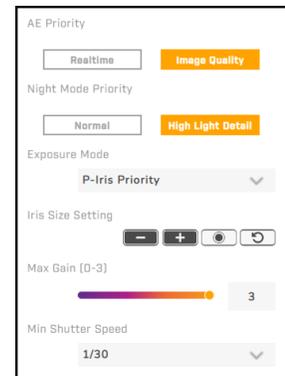
- **Low Light Performance**—For well-lit scenes, set to Normal (default). For dimly-lit scenes, set to Linear. When increasing gain to compensate for low light level, image noise increases. When set to Linear, the camera reduces that image noise. Available only for Shutter WDR video formats.

Exposure Settings

- **AE Priority**—By default (Image Quality), the camera simultaneously adjusts gain and shutter speed to achieve the highest possible image quality; therefore, the camera cannot guarantee real-time frame rates. When set to Realtime, maintaining real-time streaming is the camera's highest priority. It increases gain to its maximum level before adjusting shutter speed.
- **Night Mode Priority**—When set to High Light Detail, in Night Mode, the camera detects well-lit objects in the scene, and decreases overall exposure to increase detail visibility for those objects. At the same time, darker areas of the scene appear even darker. By default (Normal), the camera does not decrease exposure to increase detail visibility for well-lit objects.

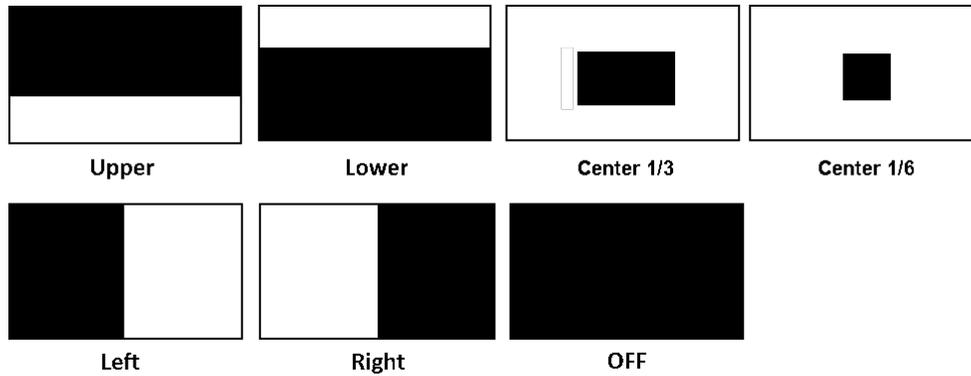
- **Max Gain**—When not Off (no gain), determines the maximum allowed increase in image sensor sensitivity. Increasing gain brightens the image, and adds details. It also increases the level of noise in the image. Select between Off-, in 3db increments; the default is . Available in P-Iris Priority exposure mode.

- **Exposure Mode**—The amount of time the camera shutter is open (shutter speed) and other exposure settings determine the amount of light the image sensor receives; that is, its exposure. The camera can use a programmed algorithm to automatically select an exposure level or you can manually configure exposure settings. Available settings depend on the selected exposure mode. Available exposure modes and the default exposure mode depend on the lens attached.



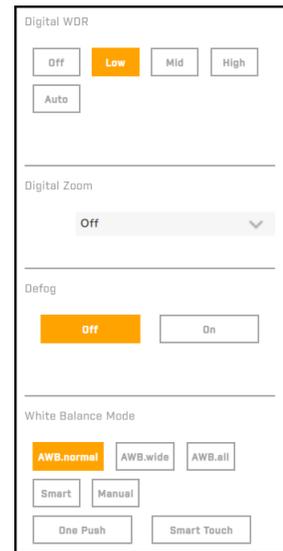
- [Auto Iris Mode](#)
- [Auto Shutter Mode](#)
- [Shutter Priority Mode](#)
- [P-Iris Priority Mode](#)
- [Manual Mode](#)

- **Backlight Compensation (BLC)**—When a bright light source puts the region of interest (ROI) in shadow or silhouette, enabling BLC can improve the image. By default, BLC is disabled and the camera's auto exposure algorithm considers the entire image. With BLC enabled, the algorithm considers only the selected ROI.



- Digital WDR (dWDR)**—Digitally enhances the details in each frame to improve image quality and the amount of detail in high contrast scenes. That is, scenes consisting of areas with different lighting conditions; some areas are bright and others are dark. Without dWDR, either the bright areas would be too bright (overexposed) or the darker areas would be completely dark (underexposed). dWDR can produce more detail in both the dark and the bright areas of the image. You can increase the dWDR setting as the level of scene contrast increases. Select Off, Low (default), Mid, High, or Auto.

The camera also supports Shutter WDR (see [the Video Format setting on the Firmware & Info Page](#)). Digital WDR is available with all of the camera's video formats.



- Image Stabilizer**—Select Off (default) or On. You can specify the Stabilizer Factor between 20-450. To provide acceptable image stabilization under certain conditions such as blowing wind, higher zoom lenses might require a higher Stabilizer Factor.
- Auto Calibration**—Select Off (default) or On, for ongoing automatic image stabilizer calibration.
- Calibrate**—To manually trigger a one-time image stabilizer calibration, click .
- Defog**—Select Off (default) or On.
- White Balance Mode**—The camera needs a reference color temperature of the ambient light source to calculate all other colors. The unit for measuring this ratio is in Kelvin (°K) degrees. The table shows the color temperature of some light sources for reference.

Light Source	Color Temperature in K°
Cloudy sky	6,000 to 8,000
Noon sun and clear sky	6,500
Household lighting	2,500 to 3,000
75-watt bulb	2,820
Candle flame	1,200 to 1,500

- AWB (Automatic White Balance) modes**—If the light source color temperature changes, AWB modes automatically adjust the white balance.

Mode	AWB.normal (default)	AWB.wide	AWB.all
Suitable light source color temperature range in K°	2,700 to 7,800K	2,500 to 10,000K	below 2,500 or over 10,000K

- **Smart**—Suitable for environments with a single background color that is strongly saturated; for example, in a forest.
- **Manual**—Specify the Rgain and Bgain to define the red and blue luminance, respectively. Might not be ideal for every lighting environment. Specify 0-249.
- **One Push**—When you click , the camera adjusts and fixes the white balance according to the scene at that moment. Works best with minimal scene changes and continuous lighting. Suitable for light sources at any color temperature.



Note

The camera's white balance is fixed and does not change as the scene or the light source varies. You might have to re-adjust the white balance by clicking the  button again when needed.

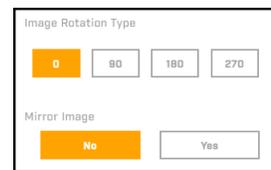
- **Smart Touch**—Camera uses the specified portion of the scene as the white balance reference. Move and resize the reference area by clicking and dragging the area or its borders. Make sure that the background color of the selected area is white. Then, click . Suitable for environments in which the brightness level does not change.

Default reference area



Image Orientation

- **Image Rotation Type**—Select 0, 90, 180, or 270 (degrees clockwise), where 0 (zero) does not rotate the image. If the video analytics metadata overlay is enabled on the [OSD Page](#), rotating the image 90 or 270 degrees disables the VA metadata OSD.
- **Mirror Image**—Yes flips the image along its vertical axis.



Mirror Image Disabled



Mirror Image Enabled

4.6.1 Auto Iris Mode

In Auto Iris mode, based on the amount of light in the scene, speed of moving objects, and noise, specify the minimum shutter speed, the camera's slowest shutter speed. Reducing the shutter speed - that is, keeping the shutter open longer - can cause moving objects to be blurred. To achieve a consistent

exposure level, the camera adjusts the iris size and other exposure settings. The video format determines the valid values, as shown, in fractions of a second.

Min Shutter Speed - Auto Iris Mode					
PAL			NTSC		
1/25	1/6	1/1.5	1/30	1/8	1/2
1/12	1/3	-	1/15	1/4	1

4.6.2 Auto Shutter Mode

In Auto Shutter mode, the camera fully opens the iris. Based on the amount of light in the scene, speed of moving objects, and noise, specify the slowest shutter speed. Reducing the shutter speed - that is, keeping the shutter open longer - can cause moving objects to be blurred. To achieve a consistent exposure level, the camera adjusts other exposure settings, including the automatic gain control (AGC), and prioritizes the fully open iris.

Teledyne FLIR recommends Auto Shutter mode for indoor environments involving mixed lighting sources, where the main source is fluorescent lighting combined with natural light that enters the scene through windows and other exposed areas.

The video format determines the valid values, as shown, in fractions of a second:

Min Shutter Speed - Auto Shutter Mode									
PAL					NTSC				
1/425	1/150	1/75	1/12	1/1.5	1/500	1/180	1/90	1/15	1/2
1/300	1/120	1/50	1/6	-	1/350	1/120	1/60	1/8	1
1/215	1/100	1/25	1/3	-	1/250	1/100	1/30	1/4	-

4.6.3 Shutter Priority Mode

In Shutter Priority mode, based on the amount of light in the scene, speed of moving objects, and noise, specify the fixed shutter speed. Reducing the shutter speed - that is, keeping the shutter open longer - can cause moving objects to be blurred. To achieve a consistent exposure level, the camera adjusts other exposure settings.

The video format determines the valid values, as shown, in fractions of a second.

Fixed Shutter Speed - Shutter Priority Mode					
PAL			NTSC		
1/425	1/150	1/75	1/500	1/180	1/90
1/300	1/120	1/50	1/350	1/120	1/60
1/215	1/100	1/25	1/250	1/100	1/30

4.6.4 P-Iris Priority Mode

In P-iris Priority mode, adjust the iris size, which then remains fixed, and the minimum shutter speed. To achieve a consistent exposure level, the camera adjusts the other exposure settings. However, if the amount of light entering the camera lens drops below the exposure level required, the camera automatically fully opens the iris.

- **Min Shutter Speed**—Based on the amount of light in the scene, speed of moving objects, and noise, specify the slowest shutter speed. Reducing the shutter speed - that is, keeping the shutter open longer - can cause moving objects to be blurred. The video format determines the valid values, as shown, in fractions of a second:

Min Shutter Speed - P-Iris Priority Mode					
PAL			NTSC		
1/425	1/100	1/6	1/500	1/100	1/8
1/300	1/75	1/3	1/350	1/90	1/4
1/215	1/50	1/1.5	1/250	1/60	1/2
1/150	1/25	-	1/180	1/30	1
1/120	1/12	-	1/120	1/15	-

- **Iris Size Setting Mode**—Click **Show** and then select one of the following:
 - **Auto Detect**—Initiates a one-time automatic iris size setting.
 - **Manual**—



closes the iris



opens the iris

Increasing the iris size increases the amount of light reaching the camera sensor when the shutter is open; therefore, to maintain a consistent exposure level, increase the minimum shutter speed.

4.6.5 Manual Mode

Teledyne FLIR recommends Manual mode for scenes with fixed light levels and fixed lighting contrast such as indoor scenes; when requiring a consistent, precise exposure level; and the camera is not providing the desired exposure using other modes.

- **Shutter Speed**—Based on the amount of light in the scene, speed of moving objects, and noise, specify the fixed shutter speed. Reducing the shutter speed - that is, keeping the shutter open longer - can cause moving objects to be blurred. The video format determines the valid values, as shown, in fractions of a second.

Shutter Speed - Manual Mode							
PAL				NTSC			
1/32000	1/600	1/120	1/12	1/32000	1/725	1/120	1/15
1/10000	1/425	1/100	1/6	1/10000	1/500	1/100	1/8
1/3500	1/300	1/75	1/3	1/3000	1/350	1/90	1/4
1/2500	1/215	1/50	1/1.5	1/2000	1/250	1/60	1/2
1/1250	1/150	1/25	-	1/1000	1/180	1/30	1

- **Iris Size (0-10)**

Increasing the iris size increases the amount of light reaching the camera sensor when the shutter is open and therefore, the faster the minimum shutter speed should be.

Manually adjust the iris size:

closes the iris.

stops the iris.

opens the iris.

resets the iris.

- **Gain**—When not Off (no gain), increases the image sensor sensitivity. Increasing gain brightens the image, and adds details. It also increases the level of noise in the image. Select Off or between 3-48db, in 3db increments; the default is Off.

4.7 Stream ROI Page

On the Stream ROI page, users assigned the Admin or Expert role can enable and define video stream regions of interest (ROI). The camera streams the defined ROI.

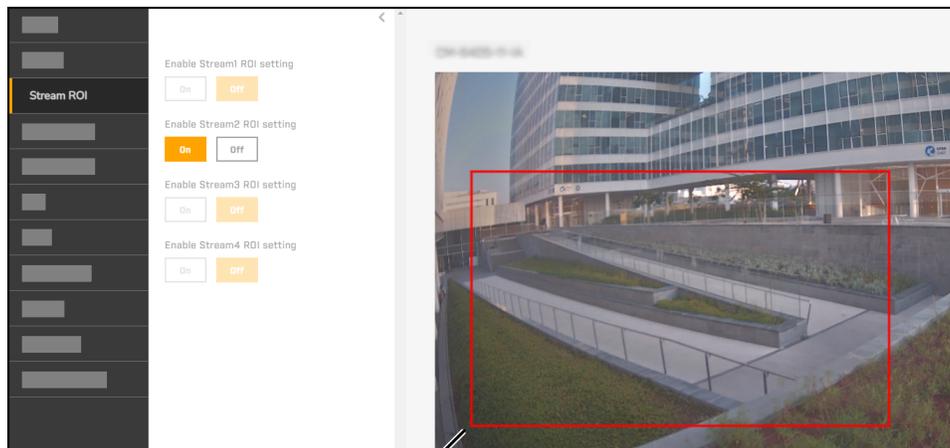
You can enable and define an ROI for an enabled video stream:

- when at least two video streams are enabled
- when the resolution for each stream is different
- when the stream's resolution is not the highest among the enabled streams
- when the stream's resolution is 1080p or lower

If two streams are set to the same resolution, ROI is available on one of the streams. If four streams are enabled, ROI is not available on the stream with the lowest resolution.

To move an ROI, click inside the red ROI box, drag, and then release the mouse. To change the size of an ROI, click a border or a corner of the ROI, drag, and then release the mouse.

To apply changes, click **Save**.



ROI
ROI Enabled on Stream 2



Stream 2

4.8 Encoding ROI Page

On the Encoding ROI page, users assigned the Admin or Expert role can enable and define up to three encoding regions of interest (ROIs) for each enabled H.264 or H.265 video stream. ROI encoding is not available with MJPEG encoding. Within an encoding ROI, the camera increases the bit rate, providing higher quality. Outside the encoding ROI, the camera decreases the bit rate.

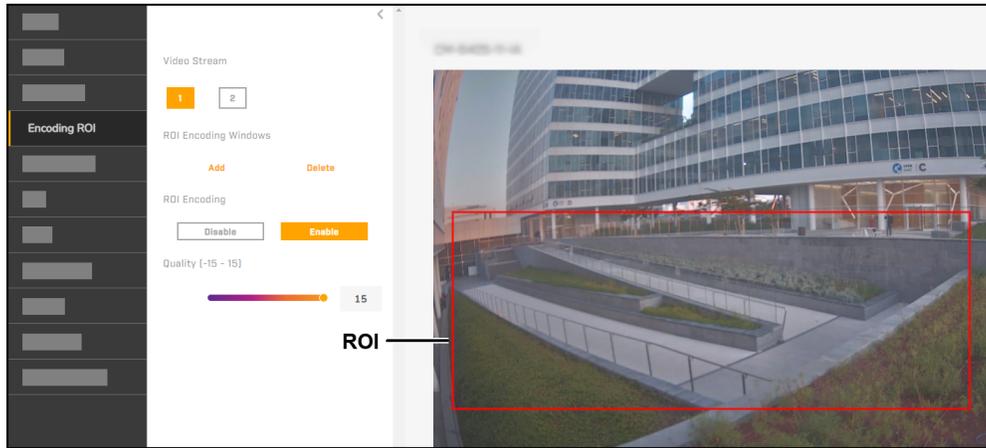


Tip

You can combine encoding ROIs with [stream ROI settings](#). If an ROI has been defined for a video stream, the stream ROI appears on the ROI Encoding page and you can define up to three encoding ROIs within the stream ROI. The total area of the three encoding ROIs cannot exceed half the area of the stream ROI.

To enable and define an encoding ROI:

1. Select one of the enabled video streams.
2. Click **Add**. A red ROI box appears in the live video.
3. Define the ROI. To move the ROI, click inside the ROI, drag, and then release the mouse. To change the size of the ROI, click a border or a corner of the ROI, drag, and then release the mouse.
4. Specify the encoding ROI quality between -15 and 15. The default is 0.
5. Click **Save**.

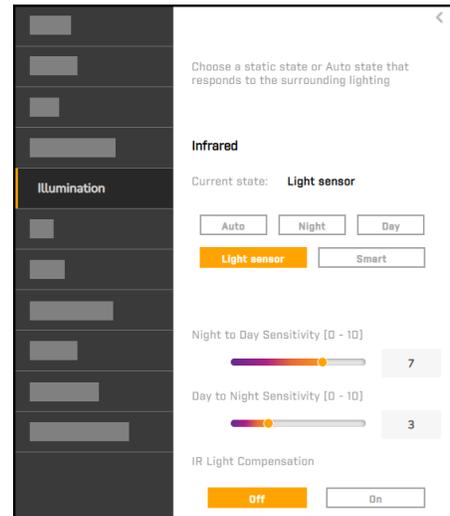


Two Streams Enabled - Defining an Encoding ROI on Stream 1

4.9 Illumination Page

On the Illumination page, users assigned the Admin or Expert role can enable and configure settings that control the camera's IR Cut (IRC) filter, which improves the camera's color video quality by filtering out IR light.

Select an Infrared state.



IR Mode	Video	IRC filter	Use
Auto	The ambient light level detected by the camera's image sensor determines when the camera switches: <ul style="list-style-type: none"> video between color and monochrome the IRC filter on and off 		When the ambient light level changes throughout the day
Night	Monochrome	Disabled	When the ambient light level is permanently low
Day	Color	Enabled	Daytime outdoors when the IRC filter is desired
Light Sensor (default)	The ambient light level detected by the camera's light and image sensors determines when the camera switches: <ul style="list-style-type: none"> video between color and monochrome the IRC filter on and off 		Most situations

IR Mode	Video	IRC filter	Use
Smart	Improves monochrome video stability and prevents the camera from switching back and forth between monochrome and color video. When the image sensor detects that the main light source is IR illumination - that is, when the camera is providing monochrome video in night mode - it keeps the IRC filter enabled.		

Night to Day / Day to Night Sensitivity—Thresholds at which the video switches from monochrome to color (Night to Day Sensitivity) and vice versa (Day to Night Sensitivity). Select 0-10, where 0 switches the video at a lower light level (darker) and 10 switches the video at a higher light level (brighter). The default Night to Day Sensitivity setting is 7 and the default Day to Night Sensitivity setting is 3.

 **Note**

During day-night transitions, video can appear off-color. Within a few seconds, as the level of light decreases or increases, and depending on the time of day, accurate color reproduction should return.

IR Light Compensation—When an external IR LED illuminator is on, prevents objects close to the camera in the center of the field of view from being too bright. Off by default.

Autofocus on Change—When set to On (enabled), the camera performs a one-time autofocus when the camera switches from day mode to night mode, and vice versa.

4.10 I/O Page

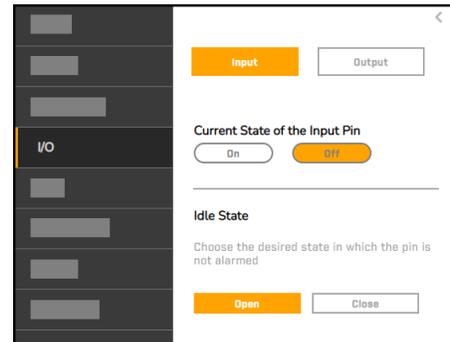
On the I/O (input / output) page, users assigned the Admin or Expert role can see the current state of the input and output pins (On = open; Off = closed), and can specify whether they are normally open or normally closed.

Select **Input** or **Output**.

Idle State—To specify normally open (default), click Open. To specify normally closed, click Close.

For the output pin, specify the Reset Interval between 0-120 seconds. After the specified amount of time, the output pin automatically resets its idle state. To disable this automatic reset, specify 0 (zero).

For information about how to configure a change in the state of the input pin as an alarm trigger or how to configure changing the output state of the output pin as an alarm action, see [Alarm Page](#).



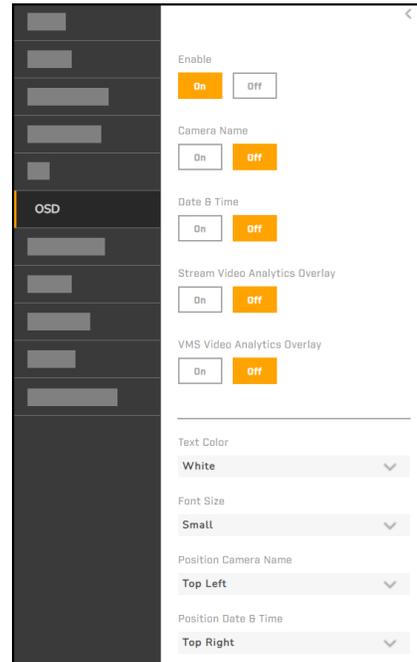
I/O Page > Input Pin Settings

4.11 OSD Page

On the OSD page, users assigned the Admin or Expert role can:

- Enable or disable the on-screen display (OSD) for all video streams.
- Enable or disable the camera name appearing in the OSD.
- Enable or disable the date & time appearing in the OSD.
- Enable or disable video analytics (VA) overlay in all video streams. Green boxes indicate detected objects, which are labeled Person or Vehicle. Red boxes indicate objects triggering alarms. If the image is rotated 90 or 270 degrees, it is not possible to enable the stream VA overlay. You can change the image rotation on the [Visible Page](#).
- Enable or disable VMS VA overlay—When enabled, the camera provides VA metadata that the VMS uses to draw detection zones and detected object boxes; supported in FLIR UVMS version 9.2.3 and higher.

Teledyne FLIR recommends enabling VMS Video Analytics Overlay or Stream Video Analytics Overlay, but not both at the same time.



You can also specify:

- **Text Color**—black, white (default), yellow, red, green, blue, cyan, or magenta; does not apply to stream VA overlay box labels
- **Font Size**—small (default), medium, or large
- **Position Camera Name**—top (default) or bottom; left (default), center, or right
- **Position Date & Time**—top (default) or bottom; left, center, or right (default)
- **Position VA Status**—top (default) or bottom; left, center, or right (default)

4.12 Privacy Zone Page

On the Privacy Zone page, users assigned the Admin or Expert role can enable and configure up to five privacy zones. Privacy zones conceal sensitive portions of the scene to avoid intrusive monitoring.

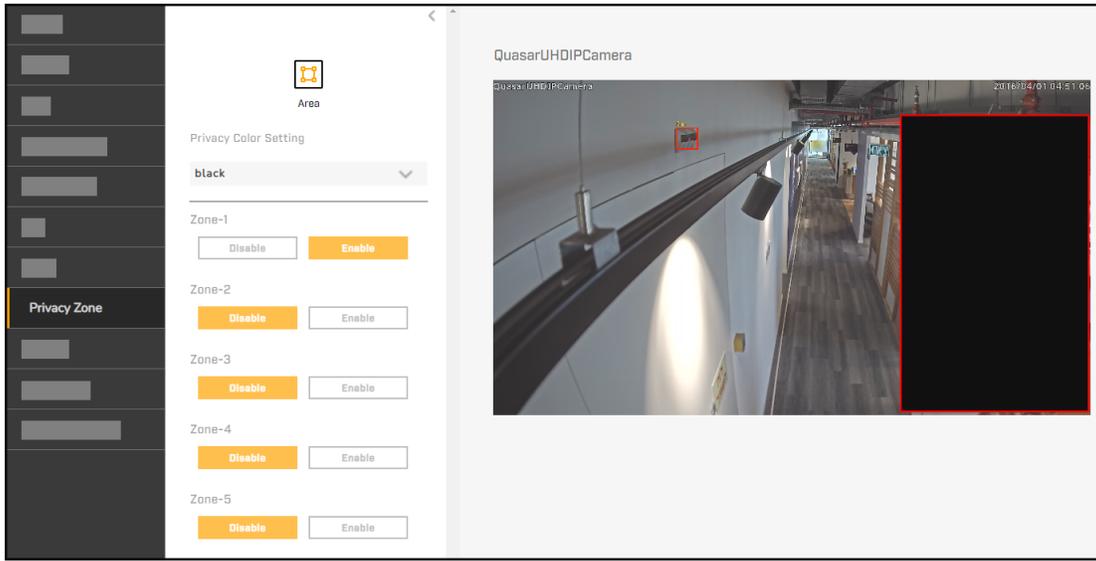
- **Privacy Color Setting**—Select the color that fills the zones: black (default), white, yellow, red, green, blue, cyan, or magenta.

When you enable a zone, the borders of the zone area appear in the live video. Red borders indicate the zone you are currently editing.

To change the size of the zone, click a side or corner and drag it.

To move the zone, click inside the zone and drag it.

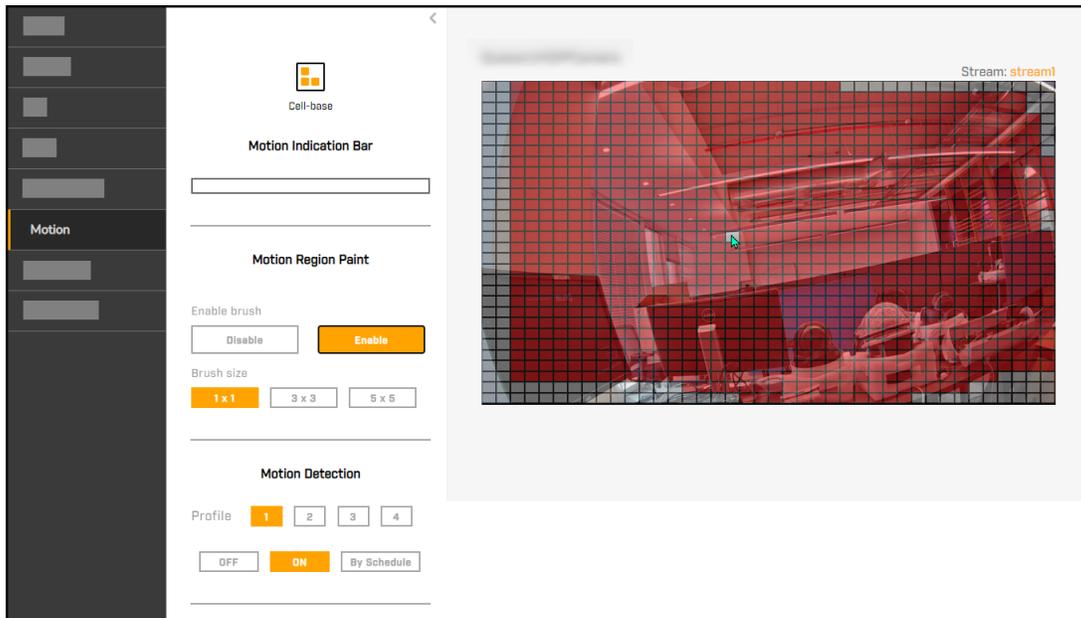
Enabled zones appear in the live video.



Privacy Zone Page - Zone 1 Enabled

4.13 Motion Page

On the Motion page, users assigned the Admin or Expert role can enable and configure up to four motion detection profiles. On the Alarm page, Administrators can select one of the four profiles as a trigger. For more information, see [Defining an Alarm Trigger](#).



Motion Page - Brush and Profile 1 Enabled

By default, motion detection is disabled. When enabled, motion in the detected region that reaches or exceeds the specified detection and threshold sensitivity levels triggers alarms. If the camera is connected to FLIR UVMS, Teledyne FLIR recommends using AdminCenter to configure motion detection.

Detected motion appears in the 10-step Motion Indication Bar. Green indicates detected motion below the specified detection and threshold sensitivity levels; alarm not triggered. Red indicates motion exceeding those levels; triggers alarm.

Motion Region Paint

To draw the motion detection region for the profile selected:

1. Enable the brush.
2. Select the brush size to draw the region, in cells (1 x 1, 3 x 3, or 5 x 5).
3. To draw or erase cells, click and drag or click and release on the cell grid overlay. Each mouse click on the cell grid toggles between drawing and erasing.

Motion Detection

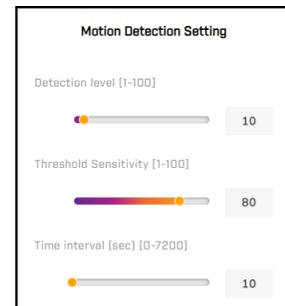
Select the profile and then specify:

- **Off**—The motion alarm for the selected profile is permanently disabled (default).
- **On**—The motion alarm for the selected profile is permanently enabled.
- **By Schedule**—The motion alarm for the selection profile is enabled and disabled according to the selected schedule(s). Select up to 10 schedules. You can configure schedules on the [Schedule Page](#).

You can also enable and disable motion alarms, or specify motion alarm schedules, on the [Alarm Page](#).

Motion Detection Setting

- **Detection level (1-100)**—Specify the difference between two sampling pixels the camera accepts. Lowering the detection level means the camera detects smaller motion, but can increase false alarms. Increasing it means the camera detects larger motion, but can increase missed detections. The default is 10.
- **Threshold Sensitivity (1-100)**—Specify the percentage of sampling pixels the camera detects differently to determine whether motion has been detected. Increasing the value increases the sensitivity, but can also increase false alarms. Decreasing the value decreases the sensitivity, but can also increase missed detections. The default is 80; that is, when 20% or more sampling pixels are detected differently, the camera detects motion.
- **Time interval (sec) (0-7200)**—Specify the minimum amount of time, in seconds, between motion detection alarms. The default is 10.



4.14 Tampering Page

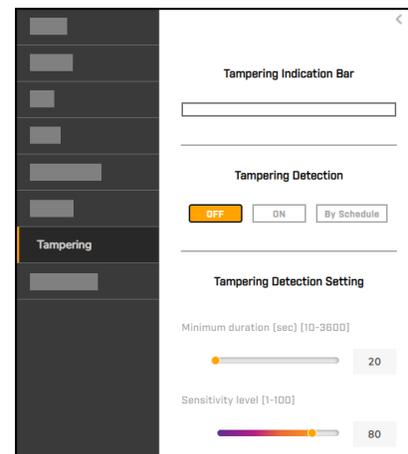
On the Tampering page, users assigned the Admin or Expert role can enable and configure the camera's tampering detection feature. On the Alarm page, users assigned the Admin or Expert role can select Tampering as a trigger. For more information, see [Defining an Alarm Trigger](#).

When enabled, tampering with the camera that reaches or exceeds the specified sensitivity threshold triggers alarms. By default, tampering detection is disabled.

Detected tampering appears in the 10-step Tampering Indication Bar; each step represents a sensitivity level. When tampering exceeds the specified sensitivity threshold, the bar turns from green to red.

Tampering Detection

- **Off**—The tampering alarm is permanently disabled (default).



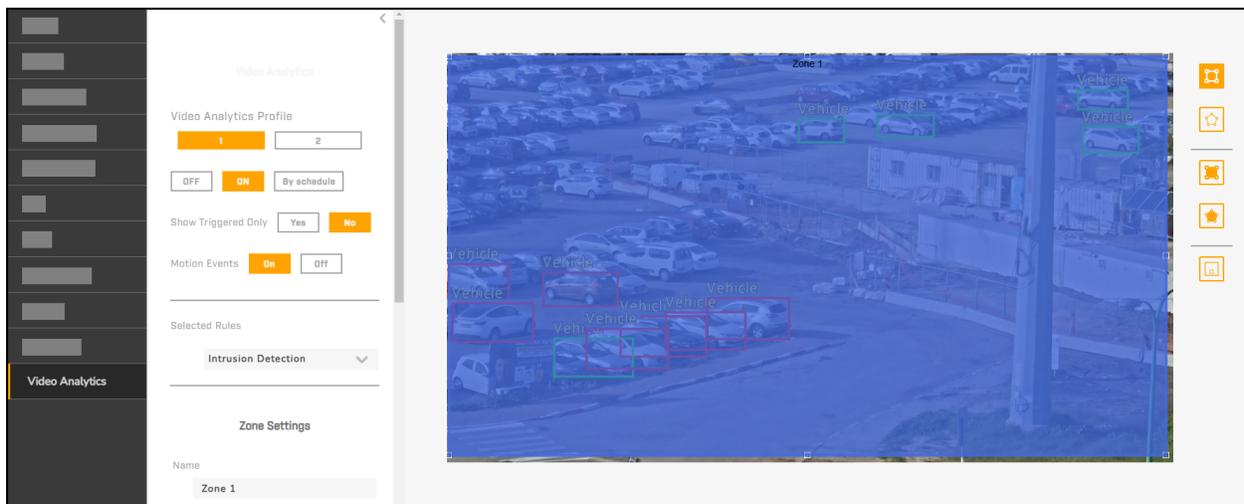
- **On**—The tampering alarm is permanently enabled.
- **By Schedule**—The tampering alarm is enabled and disabled according to the selected schedule(s). Select up to 10 schedules. You can configure schedules on the [Schedule Page](#).

You can also enable and disable the tampering alarm, or specify the tampering alarm schedule, on the [Alarm Page](#).

Tampering Detection Setting

- **Minimum duration (sec) (1-3600)**—Amount of time, in seconds, tampering must occur before the camera triggers an alarm. The default is 20.
- **Sensitivity level (1-100)**—Level of tampering - that is, the amount of camera movement - that triggers an alarm. Increasing the value increases detection sensitivity, and higher levels appear in the Tampering Indication Bar. The default is 80.

4.15 Video Analytics Page



Video Analytics Page - VA Profile 1 - Intrusion Detection

On the Video Analytics page, users assigned the Admin or Expert role can:

- Enable, schedule, and configure two video analytics (VA) profiles; that is, two VA rules can be simultaneously active. When [Defining an Alarm Trigger](#), you can select a VA profile. To enable one or more of the schedules configured on the [Schedule Page](#), select **By schedule**.

During a preset tour, when the camera is stationary on a preset and a VA profile has been defined for that preset, that preset profile is active. If a VA profile has not been defined for that preset, the default profile is active.

Regardless of whether VA is enabled on this page, VA is temporarily disabled when the camera is moving; that is, when an operator is manually panning, tilting, or zooming the camera, or when the camera is running a cruise, an auto pan path, or moving from one preset to another during a tour.

You can also enable and disable VA alarms, or specify VA alarm schedules, on the [Alarm Page](#).

- Enable, for each profile:
 - **Show Triggered Only**—Only detected objects that are triggering alarms appear in the display and in video streams. When set to No (default), all detected objects appear. Only available when the Stream Video Analytics Overlay setting on the [OSD Page](#) is On.
 - **Motion Events**—Determines whether the rule selected for the profile generates motion events in addition to VA events. The default is On.

- Select and configure the analytics rule appropriate for the physical scene according to the main objective in securing the area.

Rule	Purpose	Examples
Abandoned Object	Detect objects placed in the scene that remain stationary for longer than a specified amount of time	Securing public areas, such as transportation hubs, against suspicious objects
Intrusion Detection	Detect people or vehicles coming into the scene	Secure a courtyard from trespassing or a no parking area
Camera Sabotage	Detect significant changes in the camera's field of view, unauthorized repositioning, or lens obstruction	Bank robbers use spray paint on the camera lens to obscure their robbery
Tripwire Detection	Detect people or vehicles entering the scene from a particular direction	Airport intrusion detection
Loitering Detection	Detect encroachment and trespassing based on the time spent in the scene	Monitoring an ATM or school grounds
Object Counting	Count the number of objects entering the scene	Counting customers entering a store
Object Removal	Detect objects being removed from the scene	Monitoring shoplifting
Stopped Vehicle	Detect vehicles that remain stationary in the scene for longer than a specified amount of time	Parking enforcement
Face Detection	Target marketing by detecting and identifying people in the scene by gender and approximate age range	Merchandising and campaign evaluation

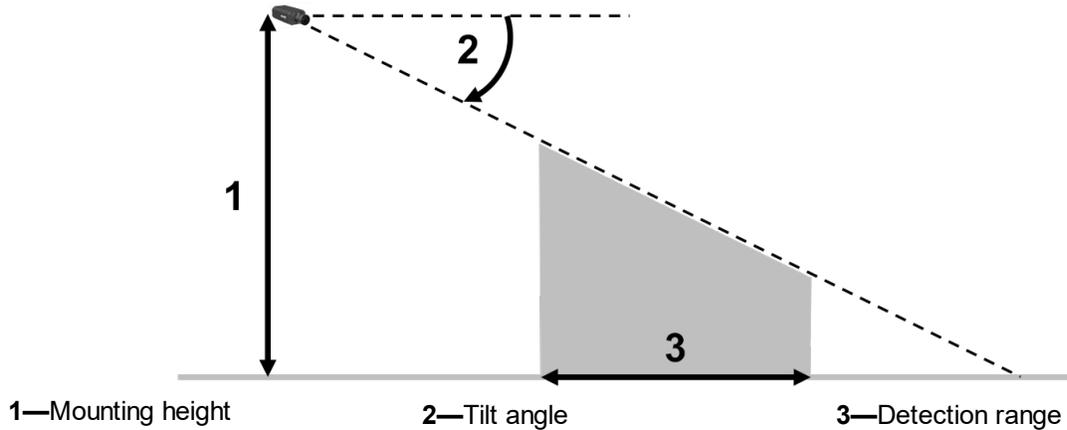
Show Ruled Area—Enables a VA overlay that includes detection zones and an object counter, if relevant.

4.15.1 Mounting and Scene Considerations

For the Intrusion Detection, Loitering Detection, Object Counting, and Stopped Vehicle rules, consider the information in this topic when mounting and aiming the camera. For other rules, see the relevant rule topic:

- [Abandoned Object](#)
- [Camera Sabotage](#)
- [Wrong Direction](#)
- [Object Removal](#)
- [Face Detection](#)

Refer to the following diagram.



Mounting Considerations—Intrusion Detection / Loitering Detection / Object Counting / Stopped Vehicle

Minimum target size (pixels)	Person: 50 x 135 (@1080p) Vehicle: 70 x 70 (@1080p)
Recommended environment illumination	Optimal performance requires stable and adequate lighting. Teledyne FLIR recommends a minimum of 300 lux.

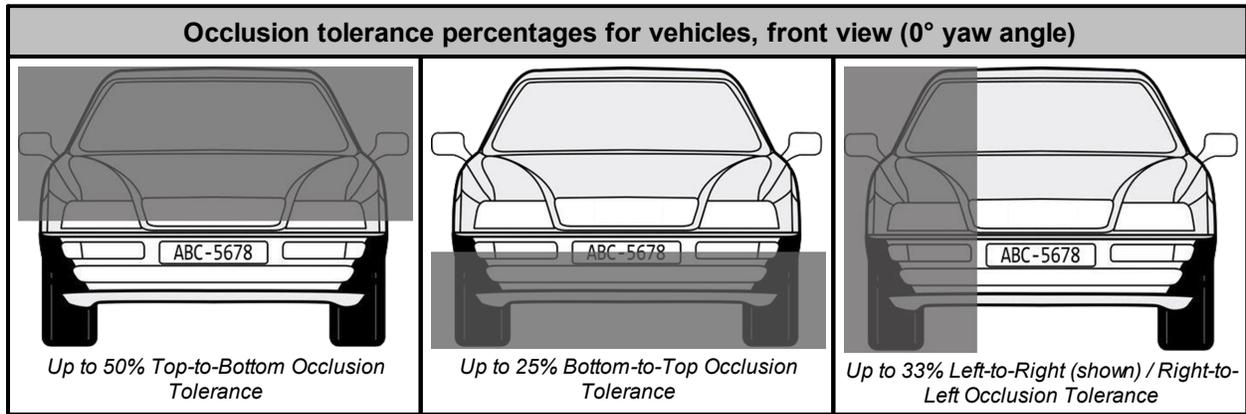
Considerations for 1080p video and 3.6 mm lens focal length - adjust as required	
Camera mounting height	Teledyne FLIR recommends 3 to 5 m. Actual height depends on the size of the object.
Camera tilt angle	30°
Yaw angle	Person The camera's analytics detect persons at any angle; front (0°), side (90° / 270°), and rear (180°). However, detection distances are shorter from the side.
	Vehicle The camera's analytics detect vehicles at any angle; front (0°), side (45° / 90°), and rear (180°). However, detection distances are shorter when the yaw angle is not 0° (front).
Detection range	Make sure the object size is within the acceptable target size range. Actual detection range depends on the sensor's dimensions, object size, and lens focal length.

Scene Considerations—Intrusion Detection / Loitering Detection / Object Counting / Stopped Vehicle

- Make sure objects to be detected stand out from the background. The objects need to be sufficiently different than the scene.
- Postures other than standing upright reduce the accuracy of human detection. For example, if a person is crawling or crouching.
- Prevent objects in the scene from overlapping. Overlapping objects can cause tracking issues and reduce accuracy.

- Object occlusion reduces detection accuracy. The following table provides a reference for object occlusion tolerance:

Conditions	1080p video - full wide zoom (3.6 mm lens focal length) - mounted on a three-meter-high wall - 30° tilt angle				
Object	Person	Vehicle			
Detection distance	3.2 meters	5.9 meters			
View	Front		Side		Rear
Yaw angle	0°		45°	90°	180°
Top to bottom	up to 15% (head is occluded)	up to 50%	N/A	up to 33%	up to 33%
Bottom to top	up to 50%	up to 25%		up to 33%	up to 33%
Side (left to right / right to left)	up to 25%	up to 33%		N/A	up to 33%
Side (from car head)	N/A		up to 33%	up to 33%	N/A



4.15.1.1 Abandoned Object

Mounting Considerations

Recommended target size (pixels)	50 x 50 ~ 500 x 500 (@ 1080p)
Camera mounting height	Teledyne FLIR recommends 3 to 5 m. Actual height depends on the size of the object.
Detection range	Make sure the object size is within the acceptable target size range. Actual detection range depends on the sensor's dimensions, object size, and lens focal length.
Recommended environment illumination	Optimal performance requires stable and adequate lighting. Teledyne FLIR recommends a minimum of 300 lux.

Scene Considerations

- Make sure stationary or slow-moving objects that the camera should not detect as abandoned objects do not remain in the scene for a long time.
- The background should be simple and plain.
- If the background is dynamic, define detection zones in relatively stable areas.
- Swinging objects or distractions that cause continuous image pixel modification in the detection zones can negatively affect analytics performance. For example, tall grass and tree leaves blowing in the wind, sliding doors, and so on.
- Severe illumination changes or camera tampering can trigger false alarms. For example, turning scene lighting on or off.

4.15.1.2 Camera Sabotage

Mounting Considerations

Recommended target size (pixels)	N/A
Camera mounting height	Detection is not related to mounting height
Minimum environment illumination	10 lux

Scene Considerations

- Obvious changes before and after tampering with the camera increase detection accuracy.
- Sudden illumination changes can trigger false alarms.
- Constant scene changes can trigger false alarms.

4.15.1.3 Wrong Direction

Mounting Considerations

Recommended target size (pixels)	500 x 500 ~ 1440 x 810 (@ 1080p)
Camera mounting height	Teledyne FLIR recommends 3 to 5 m. Actual height depends on the size of the object.
Detection range	Make sure the object size is within the acceptable target size range. Actual detection range depends on the sensor's dimensions, object size, and lens focal length.
Object speed (pixels / second)	Approximately 270 ~ 1080 (@1080p)
Recommended environment illumination	Optimal performance requires stable and adequate lighting. Teledyne FLIR recommends a minimum of 300 lux.

Scene Considerations

- Make sure monitored objects occupy at least 500 x 500 pixels of the camera scene.
- Clear features on target objects improve detection accuracy. For example, the analytics are more likely to detect people wearing striped or polka dot shirts than people wearing single-color shirts.
- The camera's analytics detect motion when objects move across at least 500 x 500 pixels within one second.

4.15.1.4 Object Removal

Mounting Considerations

Recommended target size (pixels)	500 x 500 ~ 1440 x 810 (@ 1080p)
Camera mounting height	Teledyne FLIR recommends 3 to 5 m. Actual height depends on the size of the object.
Detection range	Make sure the object size is within the acceptable target size range. Actual detection range depends on the sensor's dimensions, object size, and lens focal length.
Object speed (pixels / second)	Approximately 270 ~ 1080 (@1080p)
Recommended environment illumination	Optimal performance requires stable and adequate lighting. Teledyne FLIR recommends a minimum of 300 lux.

Scene Considerations

- Make sure monitored objects occupy at least 500 x 500 pixels of the camera scene.
- Make sure the detection zone is the same size as the target object.
- The analytics detect the removal of three-dimensional objects and objects that provide stereoscopic vision better than visually flat objects. For example, a painting or a sculpture, as opposed to plain paper.
- Objects passing in front of the target trigger false alarms.
- Camera tampering and severe illumination changes can trigger false alarms. For example, if a well-lit room becomes completely dark.

4.15.1.5 Face Detection

Mounting Considerations

Recommended target size (pixels)	60 x 60 ~ 1080 x 1080 (@1080p)
Recommended environment illumination	Optimal performance requires stable and adequate lighting. Teledyne FLIR recommends a minimum of 300 lux.

Detection with 1080p video for two common mounting options		
Camera mounting height	1.5m	3m
Camera installation tilt angle	0°	30°
Yaw angle	Under both mounting options, the camera can detect faces at 0°, 45°, and 90° yaw angles. Increasing yaw angle reduces detection range.	
Detection range	Up to 6m	Up to 5m

Scene Considerations

- Mount and aim the camera for a front or side view of the persons to detect. Front view provides the best results. Side view reduces detection range.
- To detect age and gender, facial features cannot be occluded; that is, both eyes, mouth, and nose.
- Partially occluded faces can reduce accuracy. In our testing, the camera detects people wearing hats, face masks, and a helmet with a front glass cover, and people wearing helmets and face masks. For the best results, such conditions require a larger target size and reduce the detection range.

- Challenging lighting conditions can blur facial details; for example, back lighting or low light. Such conditions require enabling lighting compensation or WDR.

4.15.2 Rule Configuration

Except for Camera Sabotage, configuring a video analytics rule consists of:

- [Configuring Detection Zones](#)
- [Modifying the Minimum and Maximum Object Sizes](#)

For certain rules, you can [configure VA masking zones](#).

4.15.2.1 Configuring Detection Zones

Accounts assigned the Admin or Expert role can configure up to eight detection zones (square, polygon, or line).

To configure a detection zone:

1. To the right of the video window, click one of the detection zone icons: square , polygon , or line . The rule you are configuring determines the detection zone icons that are available.
2. On the live video, draw one or more detection zones. When the mouse cursor appears as a crosshair, you can begin drawing a detection zone.

When you begin creating a detection zone, the settings available for the zone appear.

To define a square zone: Click, drag, and release the mouse.



To define a polygon zone: Define the first border by clicking, dragging, and releasing the mouse. Define at least one more point by clicking and releasing the mouse. Do not click and drag. To close the zone, click the first point. For each polygon zone, you can draw up to five points.



To define a single line: Click, drag, and release the mouse. To add additional points and lines to the zone, continue clicking points. For information about line direction detection, see [below](#).



Multi-Point Line Zone Defined

After you have drawn a detection zone, you can move it or adjust the point locations.

3. Configure the zone settings. The rule you are configuring determines the settings available.

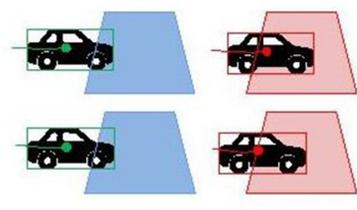
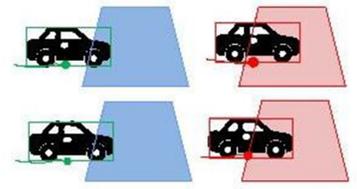
Rule	Settings available
Abandoned Object	Name, Dwell time, Delay before alarm
Intrusion Detection	Name, Directions, Dwell time, Detect item, Sensitivity (for each Detect item selected), Movement Threshold, Trigger type
Tripwire Detection	Name, Directions, Dwell time, Detect item, Sensitivity (for each Detect item selected), Movement Threshold, Trigger type
Loitering Detection	Name, Dwell time, Delay before alarm, Detect item, Sensitivity (for each Detect item selected), Trigger type
Object Counting	Name, Directions, Alarm at, Dwell time, Reset counter on alarm, Detect item, Sensitivity (for each Detect item selected), Movement Threshold, Trigger type
Object Removal	Name, Dwell time, Delay before alarm
Stopped Vehicle	Name, Dwell time, Delay before alarm, Vehicle Detection Sensitivity, Trigger type
Face Detection	Face Detection Item, Name, Dwell time, Face Detection Sensitivity

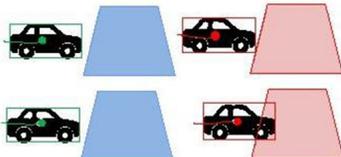
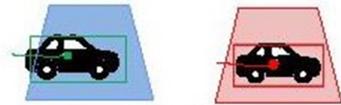
 **Tip**

For optimum video analytics performance in most conditions, Teledyne FLIR recommends using the default settings for:

- **Person / Vehicle / Object / Face Detection Sensitivity**—Overall probability of detection (0-100). For persons, vehicles, and face detection, the default is 50; for objects, it is 20. Increasing sensitivity can increase false alarms.
- **Movement Threshold**—Specify the amount of movement that triggers an alarm, in the multiple of the minimum object pixel size (0-10.0x, with 0 being the most sensitive setting.). The default is 2; the camera triggers an alarm when the camera detects an object moving more than 2x the width of the minimum object pixel size. Decreasing the threshold can increase false alarms.
- [Minimum and Maximum Object Sizes](#)

- **Name**—Meaningful name for the zone.
- **Face Detection Item**—Select whether the camera's VA subjects are wearing a mask / facial covering.
- **Directions**—Motion that triggers an alarm. By default, except for Tripwire Detection, all directions trigger an alarm (ALL).
- **Alarm at (objects)**—Number of counted objects that triggers an alarm (1-1000). The default is 1.
- **Dwell time (sec)**—Maximum amount of time, in seconds, the camera triggers an alarm (1-1000), which can affect auto tracking if enabled. The default is 5. Intrusion Detection example: When a detected object meets the Intrusion Detection alarm trigger settings – for example, the Person Detection Sensitivity setting – the camera triggers an alarm for up to one second.
- **Detect item**—Trigger an alarm when VA detects people, vehicles, objects, or all (default).
- **Delay before alarm (sec)**—Amount of time, in seconds, object must remain in a detection zone to trigger an alarm. For Abandoned Object and Object Removal, the range is 5-1800 seconds and the default is 5. For Camera Sabotage, the range is 1 - 60 seconds and the default is 5. For Loitering Detection, the range is 1 - 1800 seconds and the default is 10. For Stopped Vehicle, the range is 20 - 1800 seconds and the default is 30.
- **Reset counter on alarm**—Alarms reset the object counter to zero (0).
- **Trigger type**—

Setting	Description	Vehicle example
Center	Trigger an alarm when the center point of the detected object box touches or is within the detection zone.	 The diagram shows two detection zones: a blue trapezoid on the left and a red trapezoid on the right. In the top row, a car is positioned such that its center point (indicated by a green dot) is within the blue zone, and another car's center point (indicated by a red dot) is within the red zone. In the bottom row, the cars are shifted horizontally, but their center points remain within their respective zones.
Bottom center (default)	Trigger an alarm when the bottom-center point of the detected object box touches or is within the detection zone.	 The diagram shows two detection zones: a blue trapezoid on the left and a red trapezoid on the right. In the top row, a car is positioned such that its bottom-center point (indicated by a green dot) is within the blue zone, and another car's bottom-center point (indicated by a red dot) is within the red zone. In the bottom row, the cars are shifted horizontally, but their bottom-center points remain within their respective zones.

Setting	Description	Vehicle example
Edge	Trigger an alarm when an edge of the detected object box touches or is within the detection zone.	
Fully inside	Trigger an alarm when the detected object box is fully within the detection zone.	
Fully cover	Trigger an alarm when the detected object box fully covers the detection zone.	

4. Click **Save**.

To configure an exclusion zone:

- To the right of the video window, click an exclusion zone icon: square  or polygon .
- On the live video, draw the exclusion zone. When the mouse cursor appears as a crosshair, you can begin drawing an exclusion zone.

To define a square zone: Click, drag, and release the mouse.

To define a polygon zone: Define the first border by clicking, dragging, and releasing the mouse. Define at least one more point by clicking and releasing the mouse. Do not click and drag. To close the zone, click the first point. For each polygon zone, you can draw up to five points.

After you have drawn an exclusion zone, you can move it or adjust the point locations.

3. Click **Save**.

In masking or exclusion zones, VA is disabled. For example, use exclusion zones to disable VA so that trees or bushes moving in the wind do not generate events and alarms. You can draw up to eight masking areas or exclusion zones.

Line Direction Detection

By default, line detection is bidirectional. However, you can configure it to be unidirectional. When configured as unidirectional, the direction selection arrows refer to the direction of movement over the line as seen from the first line point created.



At left, the first point of a line has been defined and the line is being drawn from top to bottom.

Below, the line has been completed and the *left-to-right* direction button has been selected. Because detection direction relates to the first line point created, the direction arrow in the video is *right to left* and the camera triggers alarms when it detects movement over the line in that direction.



4.15.2.2 Configuring VA Masking Zones

For certain rules, accounts assigned the Admin or Expert role can configure VA masking zones; that is, portions of the video image in which analytics are disabled and the camera does not generate alarms. However, these are not privacy masking zones and the zones themselves appear in the video image.

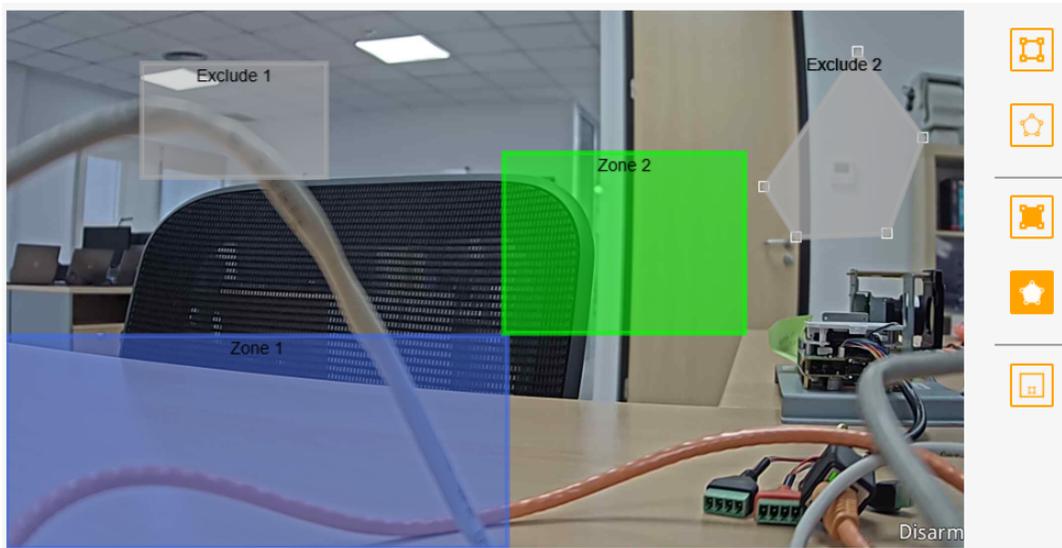
For example, you can configure VA masking zones to eliminate alarms from trees or bushes moving in the wind. You can configure privacy masking zones — that is, zones that do *not* appear in the video image, or are entirely blackened out on the video stream — on the [Privacy Zone Page](#).

To configure a VA masking zone:

1. To the right of the video window, click one of the VA masking icons: square  or polygon . The rule you are configuring determines the detection zone icons that are available.
2. On the live video, draw the masking zone.

To define a square zone: Click, drag, and release the mouse.

To define a polygon zone: Define the first border by clicking, dragging, and releasing the mouse. Define at least one more point by clicking and releasing the mouse. Do not click and drag. To close the zone, double-click the mouse. You can add points and adjust point locations.



Square and Polygon Masking Zones (Exclusion 1 and 2)

4.15.2.3 Configuring the Maximum and Minimum Object Sizes

 **Tip**

For optimum video analytics performance in most conditions, Teledyne FLIR recommends using the default minimum and maximum object size settings. Under certain conditions, modifying these settings can improve VA performance.

To modify the minimum and maximum size of the objects the VA detects:

1. Click the object size  icon. Minimum and maximum object size boxes appear in the live video.

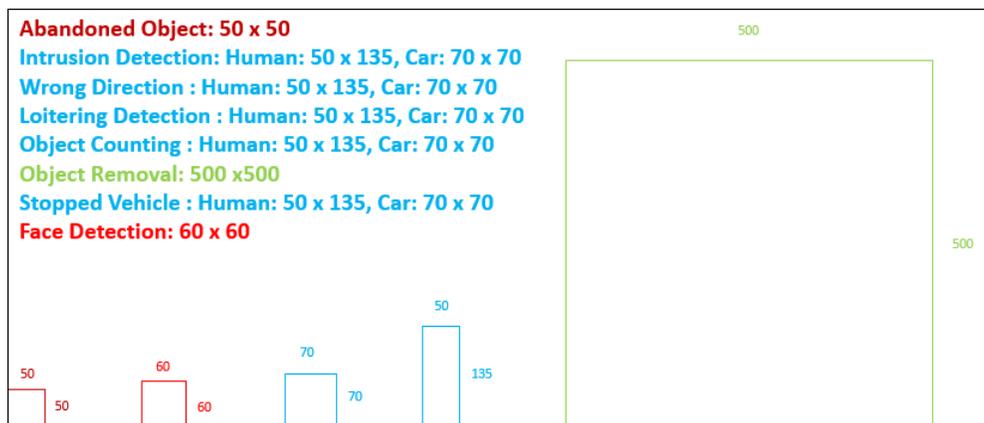


2. Move or adjust the size of the boxes. You can:

- o Click and drag the boxes.
- o Click and drag the corners of the boxes.

The location of the boxes in the live video is not important. However, the following are important:

- The object sizes should reflect potential objects in the scene and their correct proportions.
- The object size shapes should be consistent for best results.
- The short side of the maximum object size must be longer than any side of the minimum object size.
- The minimum target size for the selected rule.



For example, 50 x 135 pixels is the minimum human target size VA detects for the intrusion detection, loitering detection, object counting, and stopped vehicle rules; at 1080p resolution; and with other [mounting and scene considerations](#) being met. Therefore, specify a minimum object size larger than 50 x 135 pixels.

5 Configuration

Users assigned the Admin or Expert role can click **System Setting** on the [View Settings page](#) to access the following configuration pages:

- [Network Page](#)
- [Date & Time Page](#)
- [Users Page](#)
- [SD Card Page](#)
- [Alarm Page](#)
- [Schedule Page](#)
- [Audio Page](#)
- [Recording Page](#)
- [Email Page](#)
- [FTP Page](#)
- [HTTP Page](#)
- [Cyber Page](#)
- [Firmware & Info Page](#)

For information about making, apply, and saving changes on System Setting pages, see [Making Changes to Settings](#).

5.1 Network Page

When you click **System Setting**, by default, the Network page appears.

If you do not know how to configure these settings, contact your network administrator.

Specify the camera's IP addressing mode:

- **DHCP (default)**—Dynamic Host Configuration Protocol server on the network assigns the camera its IP addresses, and determines the IPv4 Netmask and Gateway. The information appears in these fields, which you cannot modify. If the IP addressing mode is set to DHCP but a DHCP server is not available on the network, the camera's default IP address is 192.168.0.250.
- **Static**—Specify:
 - **IPv4 IP**—Camera's IPv4 address.

Caution

After changing the camera's IPv4 address, the PC you are using to access the camera's web page might no longer be on the same network as the camera and can no longer access the camera's web page. To access the camera web page again, change the PC's IPv4 address to be on the same network as the camera.

- **IPv4 Netmask**—Determines whether devices are on the same subnet. The default value is 255.255.255.0.
- **IPv4 Gateway**—IP address of the server that passes data between devices on different subnets. An invalid gateway setting causes communication between the camera and devices on other subnets to fail.
- **Primary DNS**—IP address of the domain name server that translates host names into IP addresses.
- **Secondary DNS**—IP address of the domain name server that backs up the primary DNS.

- **PPPoE**—Camera connects to the network using Point-to-Point Protocol over Ethernet and is assigned an IP address. Specify the User Name and Password for the PPPoE account. Then, click **Save**. If the PPPoE connection is successful, the camera's assigned IPv4 address appears.



Tips

- You can also use the DNA tool to specify the IP addressing mode as DHCP or Static for one or more of the same camera model. For more information, see [Configure for Networking](#).
- For future reference, record the camera's MAC address, which is found on the camera label.

- **Enable IPv6**—When IPv6 is enabled and the IP addressing mode is Static, specify the camera's IPv6 address. By default, IPv6 is disabled.

- **Enable DDNS**—The Dynamic Domain Name System (DDNS), which allows a static device host name to be constantly synchronized with its dynamic IP address. This allows access to the device using the static host name. By default, DDNS is disabled. When enabled, specify:

- **Type**—DDNS host provider. DynDNS.org (Dynamic) is the default.
- **Host Name**—Name that identifies the camera for DDNS.
- **User Name**—User name required by the DDNS provider for authentication.
- **Password**—Password required by the DDNS provider for authentication.

- **Maximum Transmission Unit (MTU) (1052-1500)**—Largest amount of data the camera can transmit in one physical frame on the network. For Ethernet, the MTU is 1500 bytes (default). For PPPoE, the MTU is 1492.

- **Speed & Duplex**—Select:

- **100 Mbps Full Duplex**—Camera supports 100 Mbps Ethernet and can simultaneously transmit and receive data.
- **100 Mbps Half Duplex**—Camera supports 100 Mbps Ethernet, but cannot transmit and receive data at the same time.
- **Auto**—Camera supports and automatically detects 10 / 100 / 1000 Mbps Ethernet.

QoS

QoS (quality of service) provides differentiated service levels for different types of traffic packets and guarantees delivery of priority services during periods of network congestion. Adapting the Differentiated Services (DiffServ) model, traffic flows are classified and marked with DSCP (DiffServ Code Point) values, and as a result receive the corresponding forwarding treatment from DiffServ-capable routers.

Specify values (0 to 63) for:

- **Management DSCP**—Class of service for camera management via HTTP.

And for each of the camera's four streams:

- **Video DSCP**—Class of service for the stream's video.

- **Audio DSCP**—Class of service for the stream's audio.

By default, DSCP disabled; that is, the value for each service class is 0 (zero).



Note

Before assigning DSCP values, make sure the switches / routers on the network support QoS.

5.2 Date & Time Page

On the Date & Time page, users assigned the Admin or Expert role can select **NTP** (default) or **Manual**.

NTP—Camera synchronizes its date and time with an NTP server. Specify:

- **Server Address**—IP address of the NTP server or URL of an NTP service (default: time.nist.gov)
- **Update Interval**—every hour (default), every day, or every week

NTP Date & Time Configuration

Manual—Manually configure the camera's date and time. Click **Copy PC Time** or manually specify the hour, minute, second, AM or PM, and date.

Manual Date & Time Configuration

In either NTP or manual configuration, specify:

- **Time Zone**
- **Daylight Saving**—By default, the camera time does not change according to daylight saving time (Off).

If you enable Daylight Saving (On), specify:

- **Time Offset**—Number of hours, minutes, and seconds between daylight saving time and standard time. The time offset format is hh:mm:ss. 1:00:00, or one hour, is the default.
- **Start Date, Start Time, End Date, and End Time**—Select the date and time specified by law. For example, in most places in the US, specify 2 AM on the second Sunday in March and 2 AM on the first Sunday in November, respectively:

US Daylight Saving Time Settings

5.3 Users Page

On the Users page, users assigned the Admin role can add and remove users, and can change or set passwords.

User Name	Privileges	Actions
admin	Admin	

To prevent unauthorized access to the camera:

- Make sure the default password for the admin user has been changed.
- Add users for each required login account, up to a maximum of 20 users.

To add a new user:

1. Click **Add User**. The Add User screen appears.

2. Assign one of the following roles (Privileges), according to the access the user requires:

Role	Access
User	<p>Can:</p> <ul style="list-style-type: none"> • Select a different web page language • View live video images from any enabled video stream • View live video in a full-screen browser window • Take a snapshot • View alarms • Toggle the web page between Light Mode and Dark Mode • View the Help page • Log out
Expert	<p>Cannot manage users:</p> <ul style="list-style-type: none"> • Cannot add/edit/delete users • Cannot change passwords <p>Can access and use all other View Settings and System Settings pages, menus, controls, and settings</p>
Admin, including the default <i>admin</i> user	<p>Can access and use all of the camera's web pages, including adding/editing/deleting users (but cannot delete the default admin user), and setting all passwords</p>
<p>All roles can access the camera's video streams, which require authentication. You can use the name and password for any of the camera's users.</p>	

3. Specify a user name and password, and then confirm the password, according to the following requirements:

- User names and passwords are case-sensitive.
- User names are limited to 29 characters and can only include alphanumeric characters A-Z, a-z, 0-9.
- Use strong passwords consisting of 8-64 characters. Passwords can include special characters @#~!\$%<>+ _-,*?. Passwords cannot contain four-digit sequences (for example, 1234). They also cannot contain four repeating characters (for example, aaaa).

Managing Existing Users

To change the password for a user, click the edit icon  for the user, change the password, and then confirm the change. To delete a user, click the trash icon  for the user, and then confirm deleting the user. The admin user cannot be deleted.

5.4 SD Card Page

With a microSD card properly installed, the camera can locally record video clips and snapshots, up to 1 TB. For information about how to install a microSD card (not included in the camera kit), see .

On the SD Card page, users assigned the Admin or Expert role can format the microSD card, configure its settings, and view its properties.

Overwrite—When a microSD card is properly installed, the camera automatically enables Overwrite. Specify the amount of time the camera retains recorded files, in days or weeks, and when the camera begins removing the oldest recorded files, in percentage the disk is full (1-99%).

Recording file size (15-600 MB)—Specify the maximum file size. The default is 200 MB.

SD Card Information

When a microSD card is properly installed:

- Inserted appears as the Status.
- Capacity information appears, in KB.

SD Format

Before using a properly installed microSD card for the first time or when the card has been previously used on a different camera, format it.

When a microSD card is properly installed, you can select the format: vfat (default) or ext4 (recommended). Then, click **Format**. The camera formats the card.

The screenshot shows the 'SD CARD' configuration interface. At the top, there's a title 'SD CARD'. Below it, the 'Overwrite' section has a 'Yes' button selected. The 'Remove recordings older than:' is set to '1' day(s). The 'Remove oldest recordings when disk is:' is set to '85' % full (1-99%). The 'Recording file size (15-600 MB):' is set to '200' MB. The 'SD Card Information' section shows: Status: Inserted, Device type: ext4, Free space: 11644408 KB, Total size: 60282900 KB, Full: No. At the bottom, the 'SD Format' section shows 'ext4 (recommended)' selected and a 'Format' button.

microSD Card Properly Installed

5.5 Alarm Page

On the Alarm page, users assigned the Admin or Expert role can configure alarms for the following triggers:

- a change in the state of the alarm input pin
- each motion detection profile
- network failure
- tampering detection
- a predefined periodic interval
- audio input
- manual alarm trigger
- each VA profile

For most triggers, you can specify whether the alarm is enabled all the time or according to one of the schedules defined on the [Schedule Page](#).

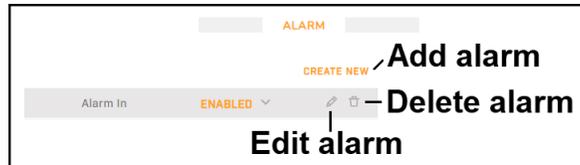
Depending on the alarm trigger, you can specify one or more of the following actions:

- change the state of the alarm output pin
- toggle the IR Cut (IRC) filter
- send message by FTP
- send notification email
- upload snapshot image(s) by FTP
- upload snapshot image(s) by email

- record image(s) to microSD card
- send HTTP notification
- record video clip to microSD card or to a NAS (network attached storage) server

By default, the following alarm is defined:

- **Alarm In**—A change in the state of the alarm input pin triggers a change in the state of the alarm output pin. You cannot modify the trigger for this alarm. You can configure the idle state of the alarm input pin on the [I/O Page](#).



When you define or enable a motion detection profile or when you enable a VA profile, the camera automatically creates an alarm. For example:

- **Video Analytics 1**—The rule specified for Video Analytics Profile 1 on the [Video Analytics Page](#) triggers this alarm. However, by default, no action is enabled.

To add an alarm, click **Create New**. The alarm Trigger screen appears. Continue with [Defining an Alarm Trigger](#).

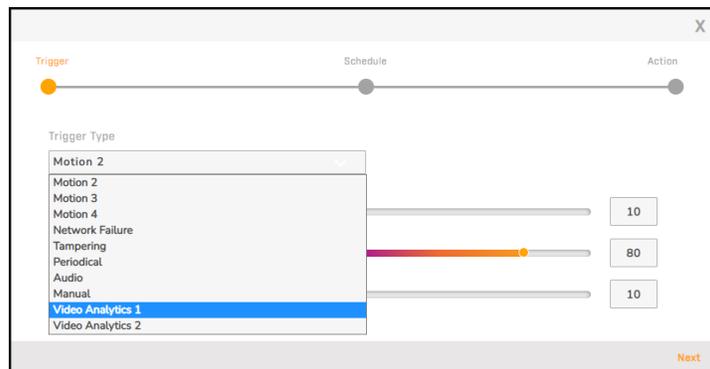
To modify an existing alarm, click the edit icon for the alarm. The alarm Trigger screen appears. Continue with [Defining an Alarm Trigger](#).

To delete an alarm, click the trash icon for the alarm, and then confirm deleting the alarm.

5.5.1 Modifying or Defining an Alarm Trigger

When creating a new alarm, on the Trigger screen, users assigned the Admin or Expert role can select a trigger and configure its alarm settings.

If you are modifying an existing alarm, click **Next**. If the alarm Schedule screen appears, continue with [Specifying an Alarm Schedule](#). If the alarm Action screen appears, continue with [Modifying or Defining Alarm Actions](#). It is not possible to modify the trigger for an existing alarm.



Trigger Screen - Video Analytics 1 Profile Selected

Trigger Type—Select:

- A **Motion Detection Profile (Motion 1 / 2 / 3 / 4)**—Specify:
 - **Detection level (1-100)**—Sensitivity for each sampled pixel. Lowering the value increases detection sensitivity and vice versa. The default is 10.

- **Sensitivity level (1-100)**—Camera's overall motion detection sensitivity. The default is 80; if 20% or more of the sample pixels are detected as being different, the camera detects motion. Increasing the value increases detection sensitivity.
- **Time interval (sec) (0-7200)**—Minimum amount of time, in seconds, between motion detection alarms. The default is 10.
- **Network Failure**—Camera periodically pings another IP device on the network to confirm network connectivity. For example, the camera can ping the NAS server specified on the [Recording Page](#). If the camera detects that it cannot connect to the server, you can configure the alarm to trigger local recording on a properly installed microSD card, as a backup until network connectivity is restored. Specify the Ping IP address and the Time interval (min) (1-99) between pings.
- **Tampering**—Specify:
 - **Minimum duration (sec) (1-3600)**—Amount of time, in seconds, tampering must occur before the camera triggers an alarm. The default is 20.
 - **Sensitivity level (1-100)**—Amount of tampering - that is, moving the camera - that triggers an alarm. Increasing the value increases detection sensitivity. The default is 80.
- **Periodical**—Camera triggers an alarm at the specified Minimum interval (sec) (60-3600). The default is 60; that is, the camera triggers an alarm every minute.
- **Audio**—Camera triggers an alarm when audio input reaches or exceeds the specified Detection Level (1-100). The appropriate setting depends on a number of factors, including the equipment connected to the audio input, how that equipment is configured, and the overall noise level of the scene whose audio being monitored. For example, if the camera's audio input is connected to an external microphone that is monitoring a relatively quiet scene, it might be appropriate to lower the Detection Level. On the other hand, if the microphone is monitoring a noisy scene, it might be appropriate to increase the Detection Level.

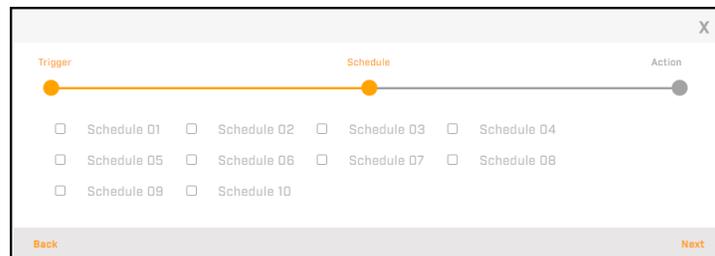
You can also specify the Time interval (sec) (0-7200), the minimum amount of time between each audio detected event, in seconds. The default is 10.

- **Manual**—Camera triggers an alarm when a user clicks the manual trigger button on the View Settings page.
- **An Enabled [Video Analytics Profile \(Video Analytics 1 / 2\)](#)**—Camera triggers an alarm according to the settings for the rule selected for the profile on the [Video Analytics Page](#).

Click **Next**. If the alarm Schedule screen appears, continue with [Specifying an Alarm Schedule](#). If the alarm Action screen appears, continue with [Modifying or Defining Alarm Actions](#).

5.5.2 Specifying an Alarm Schedule

On the Schedule screen, users assigned the Admin or Expert role can specify one or more schedules for an alarm. You can configure up to 10 schedules on the [Schedule Page](#).



Click **Next**. The alarm Action screen appears. Continue with [Modifying or Defining Alarm Actions](#).

5.5.3 Modifying or Defining Alarm Actions

On the Action screen, users assigned the Admin or Expert role can:

- Enable and configure the actions for an alarm.
- Enable the schedule(s) selected on [the alarm Schedule screen](#).

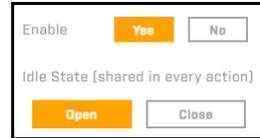
For VA alarm triggers, you can enable and configure actions for each defined detection zone.



Video Analytics 2 Alarm Trigger - 2 Detection Zones Defined

You can individually enable and configure the following alarm actions. Not all actions are available for all alarm triggers.

- **Alarm Out**—Changes the state of the alarm output pin until the camera resets it according to the specified Reset Interval setting on the [I/O Page](#). Specify:



- **Idle State**—To specify normally open (default), click Open. To specify normally closed, click Close. Changing this setting affects all alarms for which the Alarm Out action is enabled.

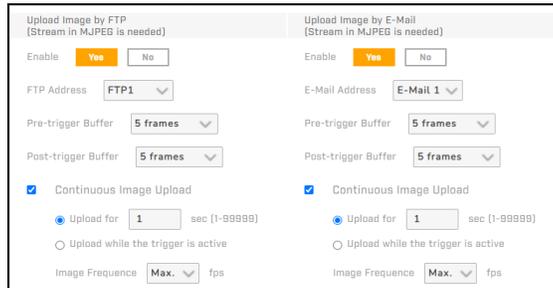
- **Send Message by FTP / E-mail**—Sends a message by FTP / email, according to the settings on the [FTP Page](#) / [Email Page](#).



- **Upload Image by FTP / E-mail**—Uploads images to an FTP server or by email, according to the settings on the FTP / Email page. At least one video stream must be encoded in MJPEG. You can configure the video stream settings on the [Visible Page](#).

Specify:

- **FTP / E-mail Address**—Select one of the FTP / email addresses defined on the FTP / Email page.
- **Pre- / Post-trigger Buffer**—Select the number of frames before / after the trigger (1-20 frames). The default is five frames.
- **Continuous Image Upload**—When enabled, select whether the camera uploads images for a specified period of time (1-99,999 seconds), or while the trigger is active. Specify the Image Frequency, or frame rate (1-15, Max fps).



- **Send HTTP Notification**—Sends a notification to an HTTP notification server or hands off the event to a supported PTZ camera.

Specify:

- **HTTP Address**—Select HTTP server 1 or 2. You can configure the HTTP notification servers on the [HTTP Page](#).
- **Custom parameters**—Specify parameters the camera adds to the HTTP notification server address. For example, if you have configured an HTTP notification server address as *http://192.168.0.100/admin.php* and you specify the custom parameters as *action=1&group=2*, when the alarm is triggered, the camera sends: *http://192.168.0.100/admin.php/action=1&group=2*.

- **Record Video Clip**—Records a video clip to a local microSD or to a NAS, according to the settings on the [SD Card](#) or [Recording](#) page. Make sure that a microSD card is properly installed, formatted, and active; or that the NAS is properly configured. Specify:

- **Pre- / Post-trigger Buffer**—Number of seconds before / after the trigger (1-3 seconds). The default is one second.
- Whether the camera records images for a specified period of time (1-99,999 seconds), or while the trigger is active.

File Name Settings

File Name—Specify the generic name for image files the camera stores or uploads. *image.jpg* is the default.

Select one of the following suffixes the camera adds to the file names to identify individual images:

- **Add date / time suffix (default)**

File name format: *imageYYMMDD_HHNNSS_XX.jpg*

Y: year, M: month, D: day

H: hour, N: minutes, S: seconds

XX: sequence number

- **Add sequence number suffix (no maximum value)**

File name format: *imageXX.jpg*

XX: sequence number

- **Add sequence number suffix up to <specify maximum sequence number> and then start over**

The file names end at the specified maximum number. For example, if *image.jpg* is the specified File Name and 10 is the specified maximum sequence number, file names start at *image00.jpg*, end at *image10.jpg*, and then start over again.

File name format: *imageXX.jpg*

XX: sequence number

- **Overwrite**—New images replace old images. The file name is static; the camera does not add any suffixes.

Click **Done**. The alarm appears in the list of alarms.

5.6 Schedule Page

On the Schedule page, users assigned the Admin or Expert role can define up to 10 schedules that can be assigned to alarms. For example, you can define a schedule that starts when a facility closes for the night or for the weekend and ends when it opens, and then apply that schedule to a motion detection alarm.



Note

The schedules and settings on the Schedule page do not apply to live video recording. Accounts assigned the Admin or Expert role can configure live video recording settings on the [Recording Page](#).

To define or modify a schedule:

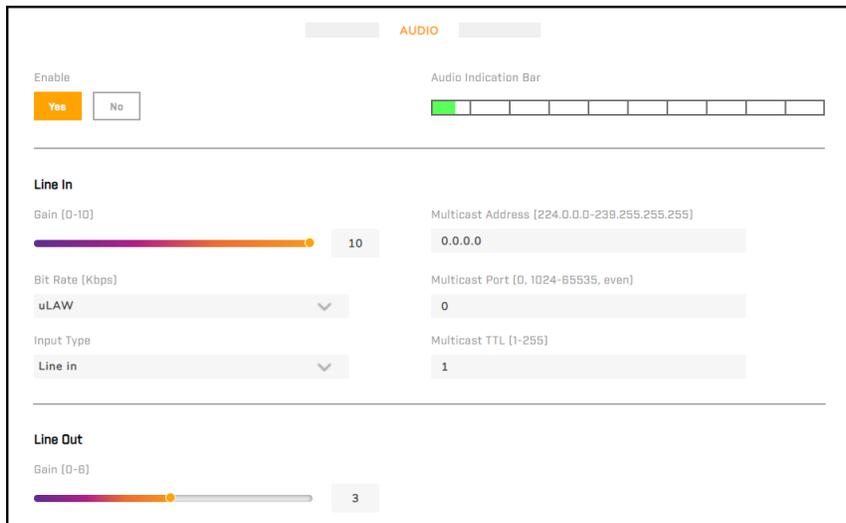
1. From the list of schedules on the left, select a schedule.
2. Select one or more days of the week the schedule applies.
3. Select which of the following determines the schedule start time:
 - **Day**—Schedule starts when night turns to day and ends when day turns to night.
 - **Night**—Schedule starts when day turns to night and ends when night turns to day.
 - **Time**—Define the specific Start time for the schedule, in 24-hour format (for example, 09:00), and the Duration (for example, 4:00 hours).
4. Click **Save**. The schedule settings appear in the list of schedules and the **Delete** button becomes available for the schedule.

To delete a schedule, select the schedule and click **Delete**. The schedule's settings are cleared.

5.7 Audio Page

On the Audio page, users assigned the Admin or Expert role can enable and configure the camera's audio features.

When audio is enabled on this page and the Audio alarm trigger has been enabled on the [Alarm Page](#), the audio input level appears on the Audio Indication Bar.



Alarm with Audio Trigger Enabled

Line In

- **Gain (0-10)**—The default is 3.
- **Bit Rate (Kbps)**—Select 40 kbps (G.726), 32 kbps (G.726), 24 kbps (G.726), 16 kbps (G.726), uLAW (G.711), ALAW (G.711), AAC, PCM (128 Kbps), PCM (256 Kbps), PCM (384 Kbps), or PCM (768 Kbps). The bit rate for uLAW and ALAW is 64 kbps, but using different compression formats. A higher bit rate can provide higher audio quality, but requires more bandwidth. uLAW is the default.



Note

Latitude / UVMS does not support G.726.

- **Input Type**—Select Line in or Built-in Mic.
- **Multicast Address (224.0.0.0-239.255.255.255)**—A valid multicast address in the specified range.
- **Multicast Port (0, 1024-65535, even)**—The port the camera uses for multicast audio streaming.
- **Multicast TTL (1-255)**—Time to live, the maximum number of network hops before routers discard the camera's data packets. Each time one router forwards a datagram to another router, it subtracts 1 (one) from the packet's TTL. If the TTL reaches zero (0), a router discards the packet. Teledyne FLIR recommends setting TTL at 64.

Line Out

- **Gain (0-6)**—The default is 4.

5.8 Recording Page

On the Recording page, users assigned the Admin or Expert role can configure the camera's audio and video recording settings.

Record Settings

- **Record Type**—Select Audio and Video or Video (default).
- **Recording Filename Format**—Select Start time only (default) or Start time + end time.
- **Clip Size (15-600 MB)**—Maximum clip file size. The default is 200 MB.
- **Stream**—Specify the video stream the camera records. Stream 1 is the default.

Recording Schedule

By default, recording is disabled. To permanently enable recording, click **Always**. You can configure up to 10 schedules; that is, times during the week recording is enabled.

To define or modify a recording schedule:

1. Click **Only during time frame**.
2. From the list of schedule numbers on the left, select a number.
3. Select one or more days of the week the schedule applies.
4. Define the Start time, in 24-hour format (for example, 00:00 = midnight).
5. Define the Duration (for example, 24:00 hours).
6. Click **Save**. The schedule settings appear and the **Delete** button becomes available for the schedule.

	Weekday	Start time	Duration
1	0 0 0 0 0 0	00:00	24:00
2	- 0 - - 0 - -	00:00	24:00
3	- - - - -	----	----
4	- - - - -	----	----
5	- - - - -	----	----
6	- - - - -	----	----
7	- - - - -	----	----
8	- - - - -	----	----
9	- - - - -	----	----
10	- - - - -	----	----

Schedule for recording all day Monday and Thursday

The example at right shows a recording schedule for all day Monday and Thursday.

SD Card Files

A list of the files recorded on the card, if any exist.

The screenshot shows the 'SD Card Files' interface. At the top, there are search filters: 'From' and 'to' both set to '2022-08-16', with a 'Search' button. Below the filters, there are radio buttons for 'Video' (selected) and 'JPEG'. A table lists the files with columns for 'File Name' and 'Size'. At the bottom, there are buttons for 'Delete', 'Sort', and 'Download'.

File Name	Size
O1_20220816_001721_20220816_003700.avi	608009KB
O1_20220816_003700_20220816_005636.avi	607197KB
O1_20220816_005636_20220816_011614.avi	607821KB
O1_20220816_011614_20220816_013553.avi	608427KB
O1_20220816_013553_20220816_015533.avi	609200KB
O1_20220816_015533_20220816_021512.avi	608607KB
O1_20220816_021512_20220816_023453.avi	608897KB
O1_20220816_023453_20220816_025434.avi	609059KB

By default, files recorded today appear in the list (if any exist). To see other files, specify start and end dates using the format yyyy-mm-dd, and then click **Search**.

Uppercase letters at the beginning of the file names indicate the recording trigger:

- R—regular (always or schedule)
- N—network failure
- M—motion (M0 indicates the first motion trigger)
- A—alarm (A0 indicates the first alarm input trigger)
- T—tampering
- O—manual SD card video recording (see [View Settings Home Page](#))

You can:

- Filter the list to show video clips (default) or snapshots (JPEG).
- Delete one or more files.
- Sort the list by file name, trigger type, or date.
- Download up to 50 files / up to 300 MB, as a ZIP file.

To select more than one file, use the CTRL and SHIFT keys.

5.9 Email Page

On the Email page, users assigned the Admin or Expert role can configure the settings of two servers the camera can use for sending alarm notification messages or uploading images by email.

Email servers use Simple Mail Transfer Protocol (SMTP) to send and receive email. If you do not know how to configure these settings, contact your email service provider.

Select Mail 1 (primary server) or Mail 2 and then configure:

- **From Address**—Email address that appears as the sender on notification emails the camera sends.
- **Server IP Address**—IP address of the server.
- **Server SMTP Port (25, 1-65535)**—Port the server uses for SMTP communication. The default is 25.
- **User Name**—User name of the account on the server.

- **Password**—Password for the account on the server.
- **SMTP SSL**—To enable SSL (Secure Socket Layers) for communication with the selected SMTP server, click **On**.

EMAIL

Mail 1 Mail 2

From Address

Server IP Address User Name

Server SMTP Port (25, 1-65535) Password

25

SMTP SSL

On Off

Test the connection to the Email server Test

To test the connection with the selected SMTP server using the specified values, click **Test**.

5.10 FTP Page

On the FTP page, users assigned the Admin or Expert role can configure the settings of two File Transfer Protocol servers to which the camera can upload images or send alarm notifications.

FTP

FTP 1 FTP 2

Server IP Address User Name

Server SMTP Port (21, 1025-65535) Password

21

FTP Mode Remote Folder Path

Active Passive

Test the connection to the FTP server Test

Select FTP 1 or FTP 2 and then configure:

- **Server IP Address**—IP address of the FTP server.
- **Server FTP Port (21, 1025-65535)**—Port the server uses for FTP communication. The default is 21.
- **User Name**—User name of the account on the FTP server.
- **Password**—Password for the account on the FTP server.
- **FTP Mode**—Click **Active** (default) or **Passive**.

In passive mode, the client - in this case, the camera - initiates the connections both to and from the FTP server, which addresses the issue of the client-side firewall blocking incoming data from the server.

To support passive mode on the server side, the following communication channels must be open:

- FTP server port 21 from anywhere (client initiates connection)
- FTP server port 21 to ports > 1023 (server responds to client's control port)
- FTP server ports > 1023 from anywhere (client initiates data connection to random port specified by server)
- FTP server ports > 1023 to remote ports > 1023 (server sends ACKs and data to client's data port)
- **Remote Folder Path**—Path of the file folder on the FTP server to which the camera uploads images.

To test the connection with the selected FTP server using the specified values, click **Test**.

5.11 HTTP Page

On the HTTP page, users assigned the Admin or Expert role can configure the settings of two HTTP servers to which the camera can send alarm notifications.

The screenshot shows a web interface for configuring HTTP servers. At the top, there is a tab labeled 'HTTP' with two sub-tabs: 'HTTP 1' (which is highlighted in orange) and 'HTTP 2'. Below the tabs, there are three input fields: 'HTTP Server Address', 'User Name', and 'Password'. Each field has a corresponding label to its left.

Select HTTP 1 or HTTP 2 and then configure:

- **HTTP Server Address**—IP address of the HTTP server.
- **User Name**—User name of the account on the HTTP server.
- **Password**—Password for the account on the HTTP server.

You can use these settings to configure the camera to hand off alarms to a Quasar Premium PTZ AI Camera (CP-640x-x1-xA). For more information, see [PTZ Handoff Configuration](#).

5.12 Cyber Page

On the Cyber page, users assigned the Admin or Expert role can enable and configure the following cybersecurity settings:

- [Certificates](#)
- [802.1X](#)
- [TLS / HTTPS](#)
- [Services](#)
- [IP Filter](#)
- [SNMP](#)

If you do not know how to configure these settings, contact your network administrator.

5.12.1 Certificates

Before you can enable TLS/HTTPS or 802.1X, you need to install a certificate on the camera.

In the Certificates section, you can:

- generate a self-signed certificate
- upload a self-signed certificate
- upload a certificate issued by a certificate authority (CA)



Note

CA-issued certificates are publicly recognized and provide a higher level of security than self-signed certificates. For example, browsers do not trust self-signed certificates.

To generate a self-signed certificate:

1. On the [Date & Time Page](#), make sure the camera's date and time is the current date and time. Synchronize the camera's time with an NTP server or copy the PC's time.
2. Under Method, select **Self-Signed**.
3. Enter information such as country code, city name, common name, and organization name. For the common name, you can specify the name of the person or other entity the certificate identifies; for example, it can identify the website.
4. Click **Create Certificate**.

After the camera generates the certificate, the certificate information appears.

Certificate Area

Country Code US	Province Name FL
City Name Miami	Common Name Camera
Organization Name Factory	Organization Unit Name PerimeterSecurity
Valid Days [1-9999] 365	

[Download Certificate](#)

Certificate Information

Common Name Camera	Organization Factory
Issuer Factory	
Country US	Locality Miami, FL
Validity From Apr 1 14:17:13 2016 GMT	To Apr 1 14:17:13 2017 GMT

You can now enable TLS/HTTPS and 802.1X; download the certificate as a PEM file; or delete the certificate.

To upload a certificate:

1. Under Method, select **Upload Certificate**.
2. Under **Upload Private Key**, and then under **Upload Certificate**:
 - a. Click .
 - b. Browse for and select the appropriate file.
 - c. Click **Upload**. The camera uploads and installs the key and the certificate.

Method

Upload Private Key

Upload Certificate

5.12.2 802.1X

In the 802.1X section, users assigned the Admin or Expert role can enable and configure the camera to access a network protected by 802.1X / EAPOL (Extensible Authentication Protocol over LAN). To obtain certificates, user IDs, passwords, and other information, contact the network administrator.

Enable 802.1X; select the Protocol (EAP-MD5, EAP-TLS, EAP-TTLS, or EAP-PEAP); and then specify the information the protocol requires. You can use the following special characters: `_ . / \ ~ ! @ # $ % ^ & + - * .`

EAP-MD5

- **User Name**
- **Password**

EAP-TLS

- **User Name**—User name associated with the certificate, up to 16 characters.
- **Private Key Password**—Password for the private key, up to 16 characters.
- **CA Certificate / Client Certificate**—Click **Upload file**, and then browse for and select the certificate file.
- **Private Key**—Click **Upload file**, and then browse for and select the key file.



802.1X Enabled - EAP-MD5 Selected

EAP-TTLS

- **Inner Auth**—Select the inner tunnel authentication method (CHAP, EAP-MSCHAPV2, EAP-MD5, MSCHAP, MSCHAPV2, or PAP).
- **User Name**—User name associated with the certificate, up to 16 characters.
- **Password**—Password for the user, up to 16 characters.
- **Anonymous ID**—Anonymous ID for the user, up to 16 characters.
- **CA Certificate**—Click **Upload file**, and then browse for and select the CA-issued certificate file.

EAP-PEAP

- **User Name**—User name associated with the certificate, up to 16 characters.
- **Password**—Password for the user, up to 16 characters.
- **CA Certificate**—Click **Upload file**, and then browse for and select the CA-issued certificate file.

Fields with red borders are required.

To save any changes to the IEEE 802.1X settings and to upload files, click **Save**.

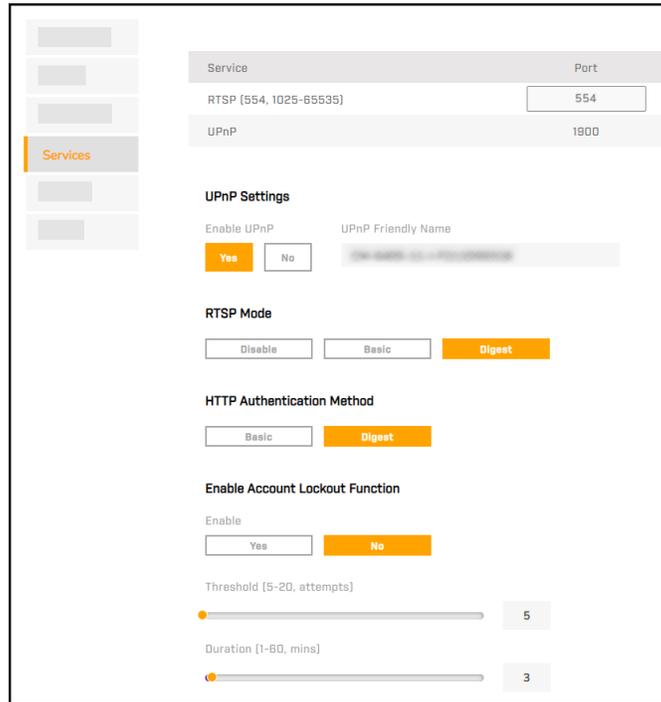
5.12.3 TLS / HTTPS

In the TLS / HTTPS section, users assigned the Admin or Expert role can enable camera control using Transport Layer Security (TLS) / secure HTTP (HTTPS), which secures communication between the camera and web browser.

Enabling control requires generating a self-signed certificate or uploading a CA-signed certificate in the [Certificates](#) section. When control is enabled, you can enable HTTPS redirect.



5.12.4 Services



In the Services section, users assigned the Admin or Expert role can:

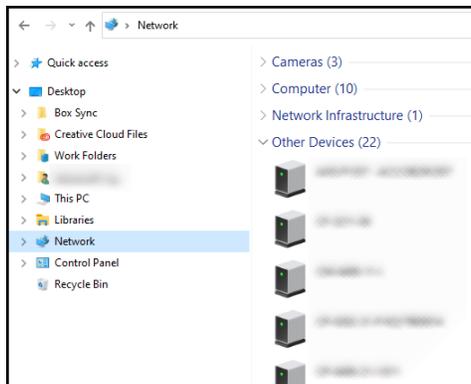
- Specify the RTSP port (554, 1025-65535). The default is 554.
- **Enable UPnP**—By default, UPnP is enabled. Windows computers and other compliant devices can discover the camera on the LAN. In Windows, the connected camera appears as a Network device.



Note

To use UPnP on a computer, make sure UPnP is installed on the computer. For information about how to install UPnP components on a Windows computer, see [Installing UPnP Components](#).

- **UPnP Friendly Name**—Name that identifies the camera on UPnP devices.

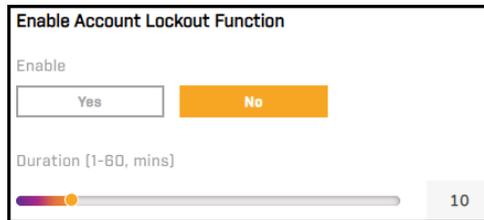


Cameras with UPnP Enabled - Windows File Explorer

- Enable RTSP basic or digest authentication for accessing the camera's video streams:
 - **Disable**—Accessing the camera's video streams does not require authentication. By default, RTSP authentication is disabled.
 - **Basic**—Uses unencrypted base64 encoding. Teledyne FLIR recommends enabling basic authentication only when TLS / HTTPS is enabled.
 - **Digest**—Encrypts the credentials when transmitted.

When RTSP authentication is enabled, accessing the camera's video streams requires providing the name and password for a camera user. All camera users have access to the camera's video streams.

- Configure the HTTP Authentication Method for accessing the camera's web page. Select Basic (default) or Digest.
- Enable and configure account lockout. When enabled, if a user unsuccessfully attempts to log in exceeding the specified duration, the account is locked. By default, account lockout is disabled.



- **Duration (1-60, mins)**—The default is 3 minutes.

5.12.5 IP Filter

In the IP Filter section, users assigned the Admin or Expert role can enable and configure the camera's IP filter.

Select the IP filter mode:

- **Allow**—Allows access to the camera only from the specified IP addresses.
- **Deny**—Denies access to the camera from the specified IP addresses.



To add an IP address to the list, in the text field under the Mode selection buttons, specify an IPv4 address and then click **Add**. You can specify up to 256 IP addresses.

To remove an IP address from the list, click the corresponding trash icon .

5.12.6 SNMP

In the SNMP section, users assigned the Admin or Expert role can enable and configure SNMP (Simple Network Management Protocol). SNMP allows network management systems to monitor and to remotely manage the camera. By default, all SNMP features are disabled.



SNMP v1—Enable SNMP v1.

Trap

The camera uses traps to send messages to the network management system for important events or status changes.

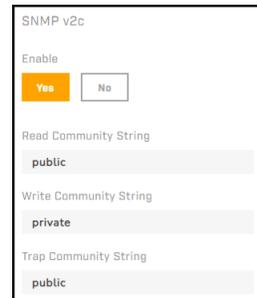
After enabling traps, specify:

- **Target IP**—IP address of the network management system server.
- **Warm Start**—Enables traps that indicate when the camera is rebooting, but configuration data or MIB variable values have not changed.

SNMP v2

After enabling SNMP v2, specify:

- **Read Community String**—Name of community that has read-only access to all supported SNMP objects. The default value is *public*.
- **Write Community String**—Name of community that has read/write access to all supported SNMP objects (except read-only objects). The default value is *private*.
- **Trap Community String**—Name of community camera uses when sending traps to the network management system. The default value is *public*.



Important

For cybersecurity reasons, change the default community strings.

SNMP v3

SNMP v3 provides security features including:

- **Confidentiality**—Packet encryption prevents snooping by unauthorized sources.
- **Message Integrity**—Ensures that packets have not been tampered with in transit, including an optional packet replay protection mechanism.
- **Authentication**—Verifies the message is from a valid source.

After enabling SNMP v3, specify:

- **User Name**—Name of user on network management system using SNMP v3.
- **Authentication Mode**—Select MD5 (default) or SHA.
- **Authentication Password**—Password for authentication on network management system.
- **Privacy Mode**—Select DES (default) or AES.
- **Privacy Password**—Password for privacy on network management system.

5.13 Firmware & Info Page

On the Firmware & Info page, users assigned the Admin or Expert role can:

- See the currently installed firmware version and other information about the camera
- Specify a unique name for the camera
- Upgrade the camera's firmware
- Reset the camera's settings to their factory defaults
- Reboot the camera
- Download or upload a configuration backup file
- Download system information
- Configure the camera's video format, including enabling a Shutter WDR format

Device Name

Specify a unique, friendly name for the camera, using only alphanumeric characters.

Firmware Upload

To upgrade the camera's firmware:

1. Under Firmware Upload, click **Find file**.
2. Select the Binary File Type. For example, **ulmage+userland.img**.
3. On your computer or network, browse to and select the firmware file.



Notes

- Do not change the firmware file name. If you change the file name, the system fails to find the file.
- Firmware can also be upgraded via DNA version 2.3.0.31 or higher.



Caution:

Do not unplug power or change the screen while upgrading software.

Attention:

Ne débranchez pas l'alimentation pendant la mise à niveau du logiciel.

4. Click **Upgrade**. The system verifies that the upgrade file exists and begins to upload the file. An upgrade status bar appears. When the camera completes the upgrade, the View Settings page appears.

Reset factory default and reboot

Full Reset—Reboots the camera and restores factory default settings, including its networking settings; for example, the camera's IP addressing mode and its IP address. To discover the camera again and reconfigure its network configuration, use the DNA tool. For more information, see [Configure for Networking](#).

Partial Reset—Reboots the camera and restores factory default settings, except its current networking and video format settings.

Reboot Camera—Reboots the camera without changing its current settings.



Tip

You can also reboot and reset the camera to its factory default settings by pressing the camera's physical Default button for at least 20 seconds; for example, if you are unable to access the camera via its web page or other communication method. The Default / Reset button is located on [the camera's connection panel](#).

Configuration Backup

You can back up the camera's current settings or upload a configuration backup file; for example, when you replace a camera.

To upload a configuration backup file:

1. Click **Find file**.

2. On your computer or network, browse to and select the configuration backup file (**config_file.bin**).

 **Caution**

Make sure to upload a configuration backup file that was downloaded from another camera that is the exact same model.

3. To retain the camera's current VA settings, make sure **Maintain current Video Analytics setting** is selected.

To overwrite the camera's current VA settings with the VA settings in the configuration backup file, make sure **Maintain current Video Analytics setting** is not selected.

4. Click **Upload**.

The camera uploads the backup file and reboots.

To download the camera's saved settings:

1. Click **Download**.
2. On your computer or network, browse to and select the location where you want to save the backup file.

config_file.bin is the backup file name. Do not change the file name.

Support Package

To download the camera's log file, click **Download**. Teledyne FLIR Support can use this file to help resolve issues.

Video Format

Select Shutter WDR 60 FPS NTSC (default), Shutter WDR 50 FPS PAL, Linear 60 FPS NTSC, or Linear 50 FPS PAL. When a Shutter WDR format is selected:

- The camera analyzes the exposure and level of detail in two frames taken at different exposure settings and shutter speeds, uses an algorithm to determine the optimal combination of regions within the scene, and generates a single, composite frame with wide dynamic range.
- The maximum frame rate of the camera's video output is 30 / 25 (NTSC / PAL).

When a Shutter WDR is not selected, the camera operates in linear mode; that is, the camera streams every frame it takes. In scenes with high contrast or changing light issues, bright areas can be overexposed and dark areas can be underexposed.



Shutter WDR Format Selected



Shutter WDR Format Not Selected



Tips

- For most lighting conditions, to achieve video with a consistent exposure level regardless of changing contrast or lighting conditions, Teledyne FLIR recommends selecting a Shutter WDR format.
- When the frequency of a light source around the camera (including reflected light) is closely synced with the Shutter WDR operation, a pixelization effect can appear. Under these conditions, Teledyne FLIR recommends selecting a linear format; that is, 60 FPS NTSC or 50 FPS PAL.
- For more information about video resolutions and frame rates supported in linear and shutter modes, see [Video Page](#).

After changing the Video Format, the camera reboots. If the camera is attached to a VMS, after it reboots, you need to [re-attach the camera to the VMS](#).

6 Appendices

- [Technical Specifications](#)
- [PTZ Handoff Configuration](#)
- [Installing UPnP Components](#)
- [Connecting Leads to a Spring Clamp](#)
- [Troubleshooting](#)
- [Accessories](#)

6.1 Technical Specifications

Up-to-date resources for the camera, including the camera's specifications, are available from the camera's product information and support pages on [the Teledyne FLIR website](#). See [Accessing Product Information from the Teledyne FLIR Website](#).

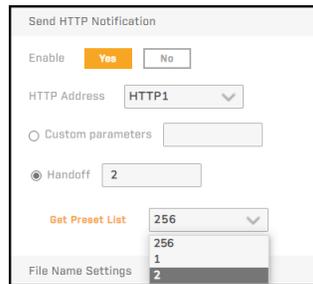
6.2 PTZ Handoff Configuration

A Quasar Premium Fixed Box Camera with Edge AI Analytics (CF-6408-00-0A) can hand off alarms to a Quasar Premium PTZ AI Camera (CP-640x-x1-xA), which moves to a specified preset and tracks the detected objects. The handoff requires configuring a video analytics alarm on the fixed box camera with an HTTP action that moves the PTZ camera to the preset.

To configure PTZ handoff:

1. With a user assigned the Admin or Expert role, access the PTZ camera and log in to its web page.
2. On the PTZ View Settings page, define a preset larger than the fixed box camera's field of view.
3. With a user assigned the Admin or Expert role, access the Quasar Premium Fixed Box Camera with Edge AI Analytics and log in to its web page.
4. On the [HTTP Page](#), configure an HTTP server (HTTP1 or HTTP2) with:
 - the IP address of the PTZ camera
 - the user name and password for a PTZ camera user assigned the Admin or Expert roleClick **Save**.
5. On the [Alarm Page](#), configure a video analytics alarm to trigger the HTTP action.
 - a. For a video analytics alarm, click the edit icon . Then, click **Next** twice to see the Action screen.
 - b. Enable Send HTTP Notification.
 - c. Select the HTTP server you configured with the IP address of the PTZ camera (HTTP1 or HTTP2).
 - d. Select **Handoff**.
 - e. Click **Get Preset List**.
 - f. Select the preset you defined on the PTZ View Settings page.

The following image shows the HTTP action enabled, the HTTP1 server selected, and preset 2 selected.



g. Click **Done**.

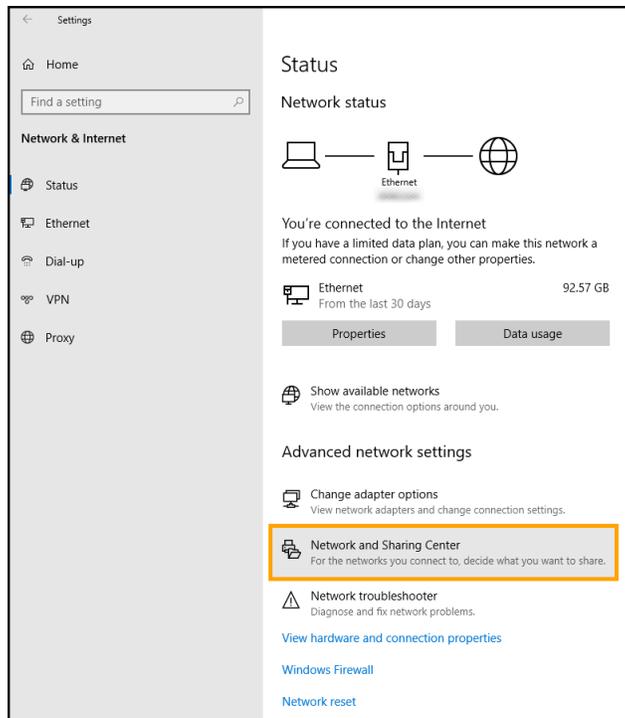
6.3 Install UPnP Components

Windows PCs can discover the camera on the network when network discovery is enabled, and the UPnP (Universal Plug and Play) Device Host service is running.

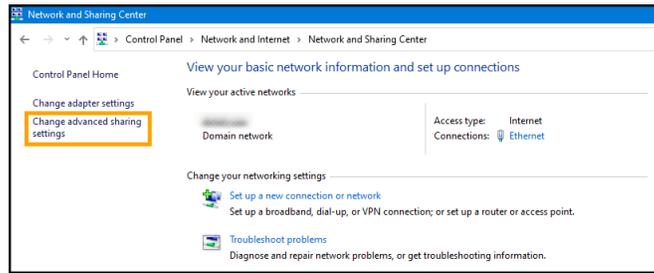
To enable network discovery:

1. Using an Administrator account, log in to Windows.
2. Open the Windows Network and Sharing Center.

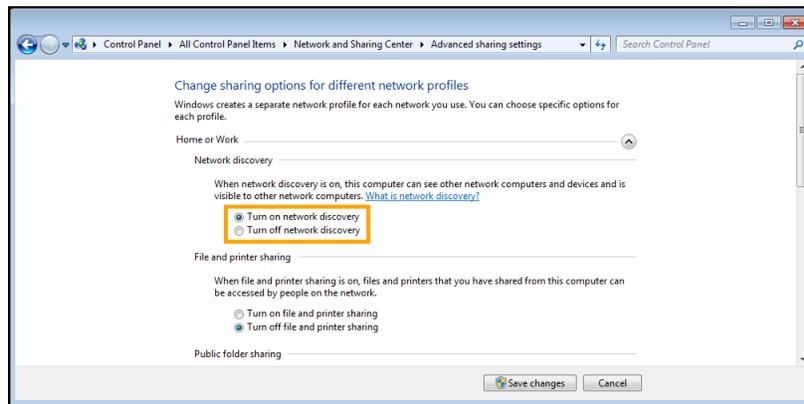
In Windows 10, you can click **Start**  > **Settings**. Then, click **Network & Internet**. In the Advanced network settings section, click **Network and Sharing Center**.



3. Click **Change advanced sharing settings**.



4. Expand the Home or Work section. Then, under **Network discovery**, select **Turn on network discovery**.



5. Click **Save Changes**.



Note

Network discovery requires that the DNS Client, Function Discovery Resource Publication, SSDP Discovery, and UPnP Device Host services are started, that network discovery is allowed to communicate through Windows Firewall, and that other firewalls are not interfering with network discovery.

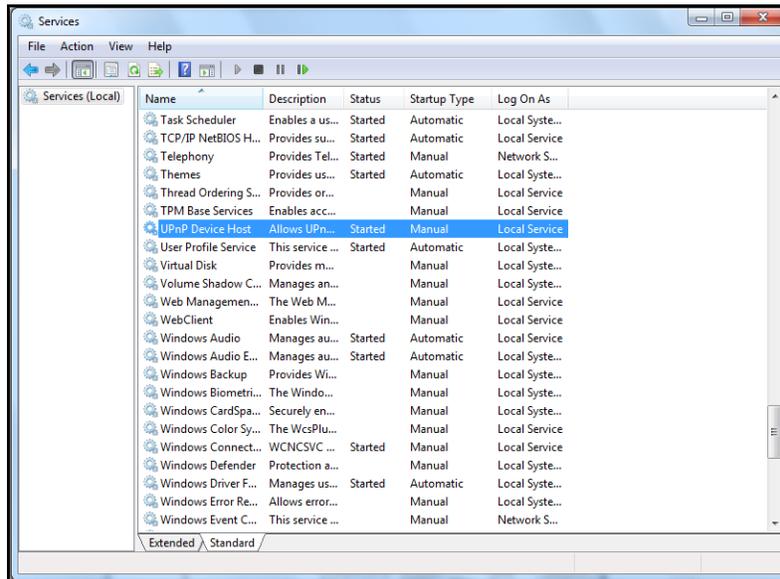
To check that the UPnP Device Host services are running:

1. Run the Windows *Services* app.

In Windows 10, you can click **Start** ; search for *services*; and then click *Services* app



2. Scroll down the list to *UPnP Device Host* and verify that the status is *Started*.

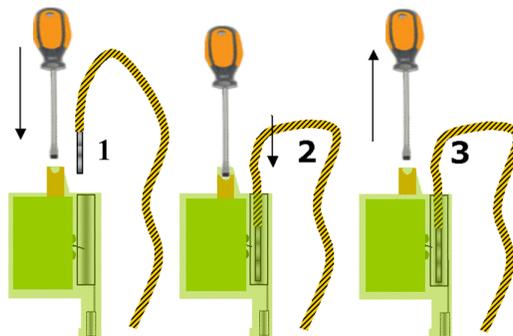


If the status is not *Started*, right-click and select *Start*.

6.4 Connecting Leads to a Spring Clamp Terminal Block

To connect a wire to the spring clamp:

1. Strip the insulation from the end of each wire that is to be connected to the spring clamp. Approximately 1 cm (2.54”) of wire should be exposed.
2. With a small screwdriver, press in and hold the orange spring clamp button next to the female outlet where the wire will be inserted.
3. Insert the stripped end of the wire into the female outlet.
4. Release the orange spring clamp button.



Connecting a Wire to a Spring Clamp

6.5 Troubleshooting

This section provides useful information and remedies for common situations.

Problem	Possible Solution
No network connection	<p>Hardware issues:</p> <ul style="list-style-type: none"> • Check that the network is working and the unit is powered on.

Problem	Possible Solution
	<ul style="list-style-type: none"> • Check that the network (Ethernet) cable is properly attached to the unit. • Confirm that the network cables are not damaged and replace if necessary. <p>IP address issues:</p> <ul style="list-style-type: none"> • Change the default IP address/addresses of the unit. • From the PC running the web browser, ping the unit IP address and confirm that it can be reached. • Confirm that the network settings/firewalls are set according to the requirements. • The camera might be located on a different subnet. Contact your IT administrator to get the IP address of the camera.
<p>How do I find the IP address of my unit?</p>	<ul style="list-style-type: none"> • Check the network DHCP server IP address assignments and lease. • Alternatively, move the camera to an isolated network and make sure camera gets DHCP address and is accessible. Move the camera back to the network and test it. If you still have issues, reset the camera physically by pressing the reset button on the rear of the camera and test the camera again. This will ensure the camera releases the IP address.
<p>The IP address responds to a ping on the network from the workstation but does not show in the Discovery List</p>	<ul style="list-style-type: none"> • Disconnect the Ethernet cable from the camera's RJ-45 connector or turn the unit off. Then, ping the IP address again. If the IP address responds, there is another device using the IP address. Consult with your network administrator to resolve the conflict. • Check the network port and ensure that it is working OK. • Ensure that the switch ports provide the necessary power.
<p>The unit IP address is in use by another computer (collision)</p>	<ul style="list-style-type: none"> • Check the DHCP settings. Obtain a new IP address using DHCP. Ensure this is a unique IP address. • Alternatively, change the unit IP address after connecting to it directly (not through the system network).
<p>Cannot log in to the camera</p>	<ul style="list-style-type: none"> • Check the login user ID of the user or admin. • Check the login password of the user or admin.

Problem	Possible Solution
No video image displayed on the camera's web page	<ul style="list-style-type: none"> Reset the browser security settings to the default value. Check that the correct port was configured. The default port is 554.
Poor video quality	<ul style="list-style-type: none"> Check that the network cable is connected securely. Check that the camera settings are correct on the camera and in the unit. Check that the camera lens is clean and unobstructed. Check that the cable length is within specification.
Streaming video image is hanging (stopped)	<ul style="list-style-type: none"> Confirm the unit's video streaming settings. Refresh your browser screen (F5). Check that the bandwidth and bit rate settings of the network are set properly. Check that other processes and applications are not causing undue latency. Check that the firewall analysis or blocking is not interfering with the video stream and supports the required ports and communication protocols.
Bluish picture in an indoor scene (possibly mixing indoor and outdoor lighting)	Change the white balance setting to <i>Auto</i> . If the lighting in the scene is fixed, manually adjust the white balance to an acceptable image.
Reddish picture and incorrect colors in the image	Check the PoE power supply and associated network cables. Connect directly to the PoE and compare the images. If the problem persists, contact Support.
IR LEDs do not function	<p>The camera has a circuit protection mechanism that activates if the cover is removed while the IR LEDs are on.</p> <ul style="list-style-type: none"> Power cycle the camera.

6.6 Accessories

The following accessories are available from Teledyne FLIR for the Quasar Premium Fixed Box Camera with Edge AI Analytics (CF-6408-00-0A).

Part number / item code	Description	Images (not to scale)
CF-ENCL-64-0 CF-ENCL-64-I3 CF-ENCL-64-I5	Outdoor mounting kits, including: <ul style="list-style-type: none"> • Enclosure with fan, heater, and sunshield • CF-ENCL-64-Ix models include IR LED illumination <ul style="list-style-type: none"> ○ CF-ENCL-64-I3: Over 35 meters ○ CF-ENCL-64-I5: Over 50 meters • Wall mount arm • Pole mount adapter • Pole mount rings (pole diameter range \varnothing 2.5-8") 	 <p>CF-ENCL-64-0 enclosure with sunshield</p>
CF-L408-11-0	1/1.8" 4.0-10mm F0.9 IR Vari-focal Stepping Motor Iris Lens with P-Iris	
CF-L408-11-1	1/1.8" 3.9-10mm F1.5 IR Vari-focal Stepping Motor Iris Lens with P-Iris	
CF-L408-21-1	1/1.8" 9.0-50mm F1.5 IR Vari-focal Stepping Motor Iris Lens with P-Iris	

For more information about accessories, including specifications such as dimensions and weights, see the *FLIR Security Edge Devices Accessory Guide*, contact your Teledyne FLIR sales representative, or visit <https://support.flir.com/> to request details on where to get the accessory.



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