

TruVision IP Thermal Camera Configuration Manual

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Introduction

This is the user manual for the following TruVision IP thermal camera models:

- TVB-5701 (IP Thermal Bullet Camera, 384x288, 15mm)
- TVB-5702 (IP Thermal Bullet Camera, 384x288, 35mm)
- TVB-5706 (IP Thermal Bullet Camera, 640x512, 15mm)
- TVB-5707 (IP Thermal Bullet Camera, 640x512, 25mm)

Network access

This manual explains how to configure the camera over the network with a web browser.

TruVision IP cameras can be configured and controlled using Microsoft Internet Explorer (IE) and other browsers. The procedures described use Microsoft Internet Explorer (IE) web browser.

Checking your web browser security level

When using the web browser interface, you can install ActiveX controls to connect and view video using Internet Explorer. However, you cannot download data, such as video and images, due to the increased security measure. Consequently you should check the security level of your PC so that you are able to interact with the cameras over the web and, if necessary, modify the Active X settings.

Configuring IE ActiveX controls

You should confirm the ActiveX settings of your web browser.

To change the web browser's security level:

1. In Internet Explorer, click **Internet Options** on the **Tools** menu.
2. On the Security tab, click the zone to which you want to assign a web site under "Select a web content zone to specify its security settings".
3. Click **Custom Level**.
4. Change the **ActiveX controls and plug-ins** options that are signed or marked as safe to **enable**. Change the **ActiveX controls and plug-ins** options that are unsigned to **Prompt** or **Disable**. Click **OK**.

- Or -

Under **Reset Custom Settings**, click the security level for the whole zone in the Reset To box, and select **Medium**. Click **Reset**.

Then click **OK** to the Internet Options Security tab window.

5. Click **Apply** in the **Internet Options** Security tab window.

Windows Internet Explorer

Internet Explorer operating systems have increased security measures to protect your PC from any malicious software being installed.

To have complete functionality of the web browser interface with Windows 7, 8, and 10, do the following:

- Run the browser interface as an administrator in your workstation
- Add the camera's IP address to your browser's list of trusted sites

To add the camera's IP address to Internet Explorer's list of trusted sites:

1. Open *Internet Explorer*.
2. Click **Tools**, and then **Internet Options**.
3. Click the **Security** tab, and then select the trusted sites icon.
4. Click the **Sites** button.
5. Clear the "Require server verification (https :) for all sites in this zone box.
6. Enter the IP address in the "Add this website to the zone" field.
7. Click **Add**, and then click **Close**.
8. Click **OK** in the Internet Options dialog window.
9. Connect to the camera for full browser functionality.

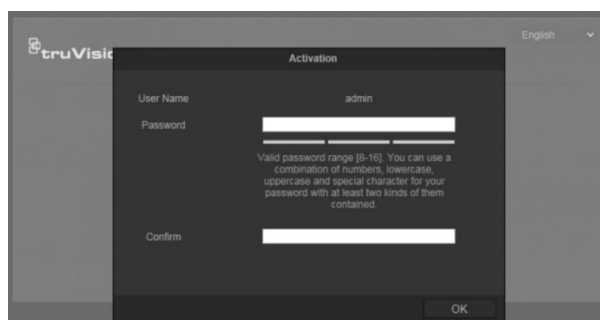
Activating the camera

When you first start up the camera, the Activation window appears. You must define a high-security admin password before you can access the camera. There is no default password provided.

You can activate a password by using a web browser and by TruVision Device Manager (included on the CD to find the IP address of the camera).

Activation via the web browser:

1. Power on the camera and connect the camera to the network.
2. Input the IP address into the address bar of the web browser, and click **Enter** to enter the activation interface.



Note:

- The default IP address of the camera is 192.168.1.70.
 - For the camera to enable DHCP by default, you must activate the camera via *TruVision Device Manager*. Please refer to the following section, "Activation via TruVision Device Manager".
3. Enter the password in the password field.

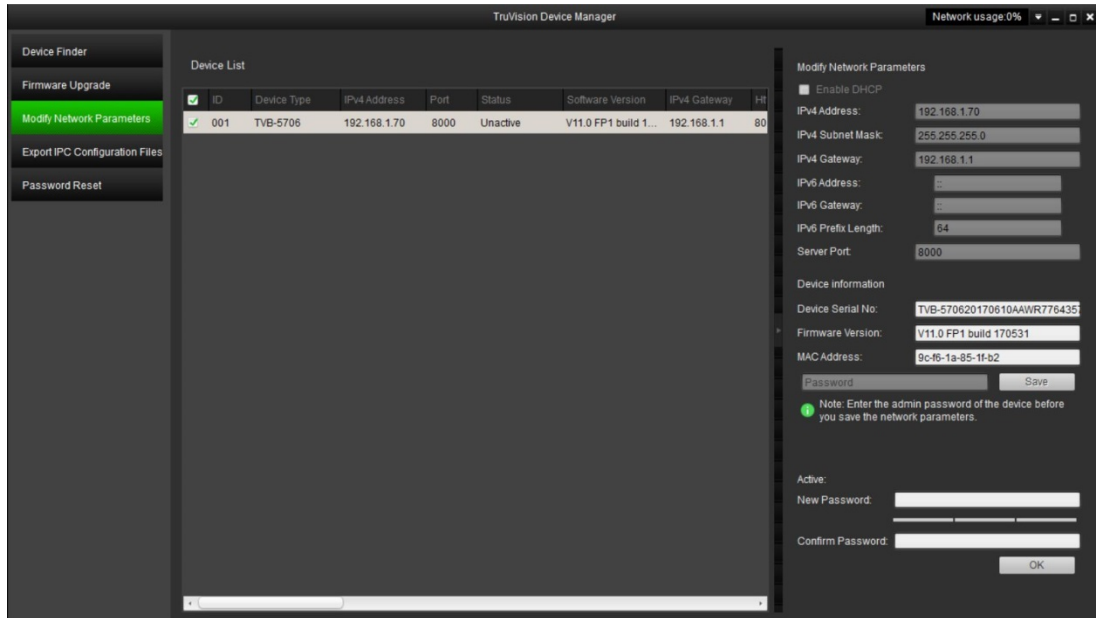
Note: A valid password range must be between 8 and 16 characters. You can use a combination of numbers, lower and upper case letters, and special characters: `_ - , * & @ / $?` Space. The password must contain characters from at least two of these groups. We also recommend that you reset your password regularly. For high

security systems, it is particularly recommended to reset the password monthly or weekly for better protection.

4. Confirm the password.
5. Click **OK** to save the password and enter the live view interface.

Activation via *TruVision Device Manager*:

1. Run the *TruVision Device Manager* to search for online devices.
2. Select the device status from the device list, and select the inactive device.



3. Enter the password in the password field, and confirm it.

Note: A valid password range must be between 8 and 16 characters. You can use a combination of numbers, lower and upper case letters, and special characters: `_ - , * & @ / $?` Space. The password must contain characters from at least two of these groups. We also recommend that you reset your password regularly. For high security systems, it is particularly recommended to reset the password monthly or weekly for better protection.

4. Click **OK** to save the password.

A pop-up window appears to confirm activation. If activation fails, confirm that the password meets the requirements and try again.

5. Change the device IP address to the same subnet with your computer by either modifying the IP address manually or selecting the check box of Enable DHCP.

Modify Network Parameters

Enable DHCP

IPv4 Address:

IPv4 Subnet Mask:

IPv4 Gateway:

IPv6 Address:

IPv6 Gateway:

IPv6 Prefix Length:

Server Port:

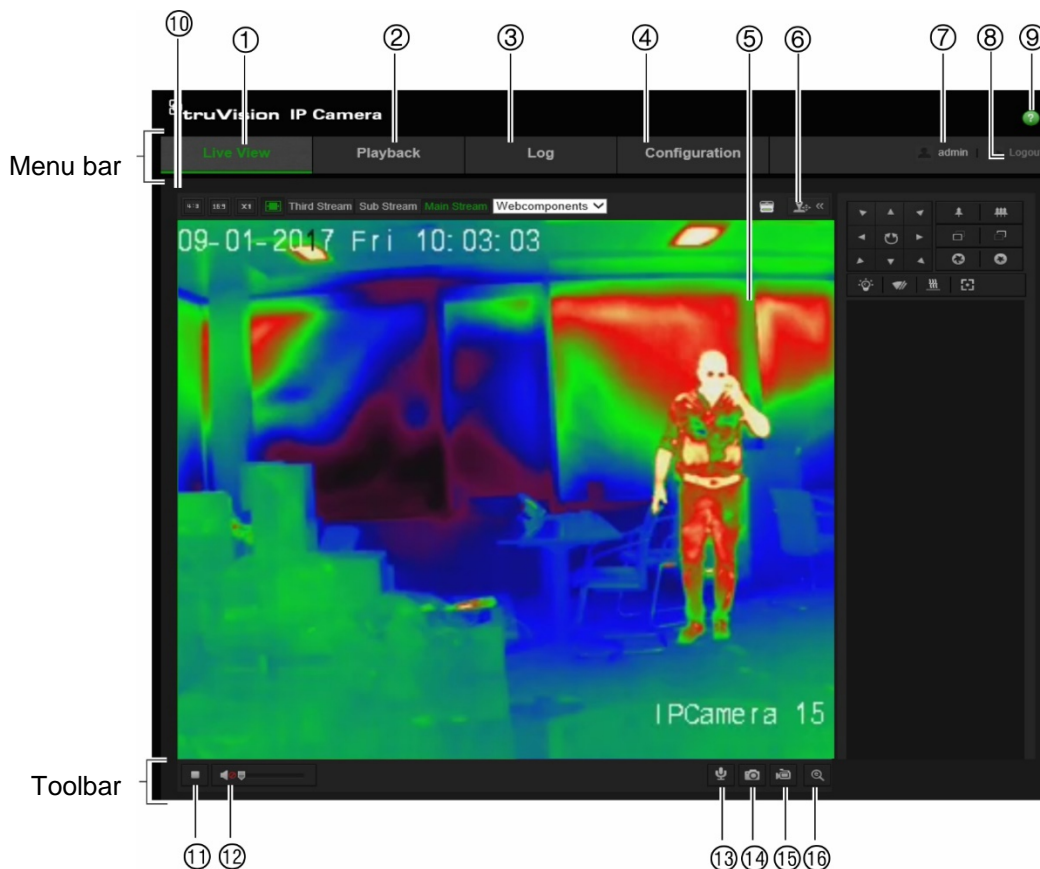
6. Enter the password and click the **Save** button to activate your IP address modification.

Overview of the camera web browser
















The camera web browser lets you view, record, and play back recorded videos as well as manage the camera from any PC with Internet access. The browser's easy-to-use controls give you quick access to all camera functions. See Figure 1.

If there is more than one camera connected over the network, open a separate web browser window for each individual camera.

Figure 1: Web browser interface (Live view shown)



Name	Description
1. Live view	Click to view live video.
2. Playback	Click to play back video.
3. Log	Click to search for event logs. There are three main types: Alarm, Exception and Operation.

Name	Description
4. Configuration	Click to display the configuration window for setting up the camera.
5. Viewer	View live video. Time, date and camera name are displayed here.
6. PTZ controls	 <p>Most of the PTZ functions are deactivated as the camera does not support PTZ control. The de-icing option is the only function available. Select it to warm the camera to prevent freezing.</p>
7. Current user	Displays current user logged on.
8. Logout	Click to log out from the system. This can be done at any time.
9. Help	Online Help.
10. Display control	<p>Click each tab to adjust the layout and the stream type of the live view. You can also click the drop-down menu to select the plug-in.</p> <p>For IE (internet explorer) users, web components and quick time are selectable. For non-IE users, web components, quick time, VLC or MJPEG are selectable if they are supported by the web browser.</p> <p> The window size is 4:3.</p> <p> The window size is 16:9.</p> <p> The original window size.</p> <p> Self-adaptive window size.</p> <p> Live view with main stream.</p> <p> Live view with substream.</p> <p> Live view with third stream.</p> <p> Click to select the third-party plug-in. Select <i>Webcomponents</i> or <i>QuickTime</i>.</p>
11. Start/stop live view	 Click to start/stop live view.
12. Audio	 Click to turn audio on/off. Also use the scroll bar to adjust the volume.
13. Bi-directional audio	 Turn on/off the microphone for bidirectional audio.
14. Capture	 Click to capture a snapshot of the video. The snapshot will be saved to the default folder in JPEG or BMP format.
15. Start/stop recording	 Click to manually start/stop recording of live video.
16. Digital zoom	 Click to enable digital zoom.

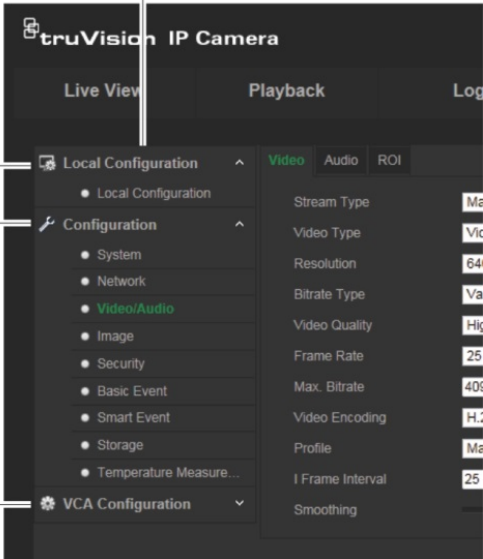
Camera configuration overview

Once the camera hardware has been installed, configure the camera's settings through the web browser. You must have administrator rights to configure the cameras over the internet.

The camera web browser lets you configure the camera remotely using your PC. Web browser options may vary depending on the camera model.

There are three main menus in the configuration panel:

Configuration panel



The screenshot shows the configuration panel for a truVision IP Camera. It features a dark theme with a sidebar on the left and a main content area on the right. The sidebar contains three main menu items: 'Local Configuration', 'Configuration', and 'VCA Configuration'. The 'Local Configuration' menu is expanded, showing sub-items like 'Local Configuration', 'System', 'Network', 'Video/Audio', 'Image', 'Security', 'Basic Event', 'Smart Event', 'Storage', and 'Temperature Measure...'. The 'Configuration' menu is also expanded, showing sub-items like 'System', 'Network', 'Video/Audio', 'Image', 'Security', 'Basic Event', 'Smart Event', 'Storage', and 'Temperature Measure...'. The 'VCA Configuration' menu is expanded, showing sub-items like 'VCA Configuration'. The main content area displays the 'Video' settings, including 'Stream Type', 'Video Type', 'Resolution', 'Bitrate Type', 'Video Quality', 'Frame Rate', 'Max. Bitrate', 'Video Encoding', 'Profile', 'I Frame Interval', and 'Smoothing'. The 'Local Configuration' menu is highlighted with a red box, and the 'Configuration' menu is highlighted with a red box. The 'VCA Configuration' menu is highlighted with a red box.

Local configuration. See below for more information.

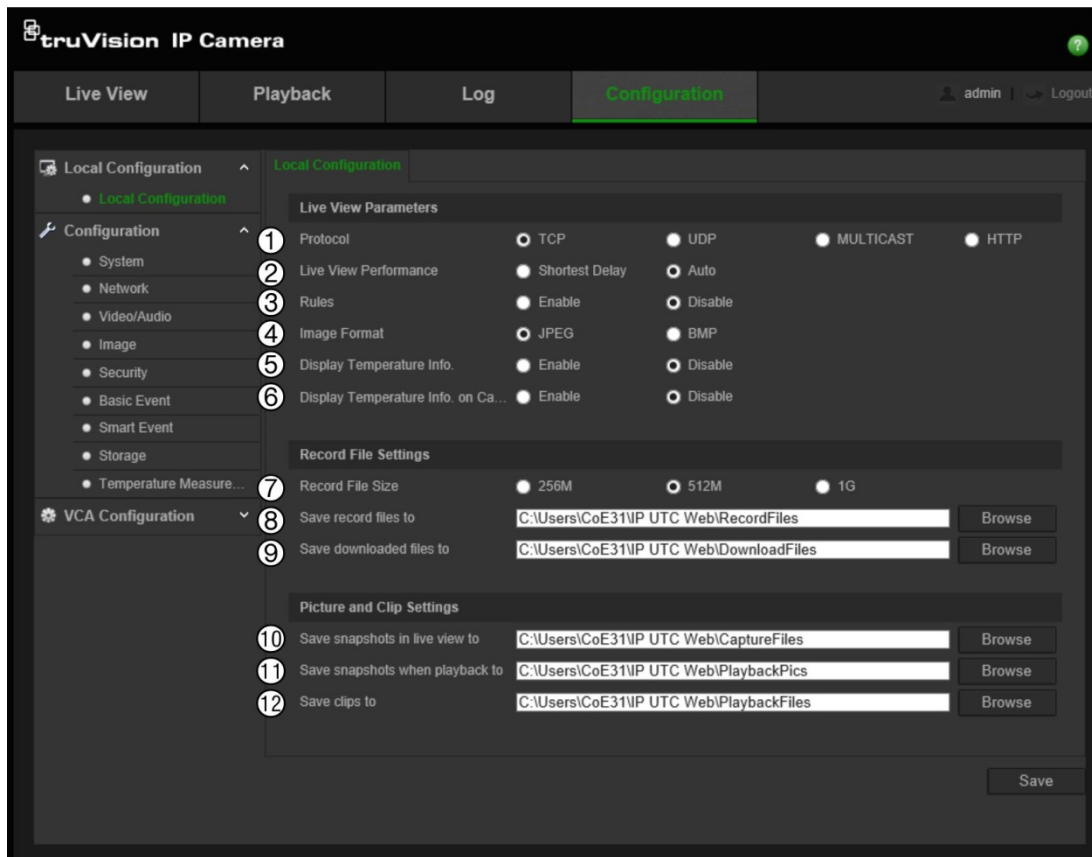
Configuration. See “Configuration menu” on page 11 for more information.

VCA configuration. See “VCA configuration” on page 12 for more information.

Local configuration menu

Use the Local configuration menu to manage the protocol type, live view parameters and local storage paths. In the Configuration panel, click **Local Configuration** to display the local configuration window. See Figure 2 below for descriptions of the different menu parameters.

Figure 2: Local configuration window



Description

Live View Parameters

1.	Protocol	Specifies the network protocol used. Select TCP, UDP, MULTICAST, or HTTP.
2.	Live View Performance	Specifies the transmission speed. Select Shortest Delay or Auto.
3.	Rules	These are the rules on your local browser. Specifies whether or not to display the colored marks when motion detection, face detection, and intrusion detection are triggered. For example, when the rules option is enabled and a face is detected, the face will be marked with a green rectangle in live view.
4.	Image Format	Choose the image format for a snapshot: JPEG or BMP.
5.	Display Temperature info	Specifies whether or not to display the temperature information on Live View. Select Enable or Disable.
6.	Display Temperature info on Capture	Specifies whether or not to display the temperature info on the Captured image. Select Enable or Disable.

Record File Settings

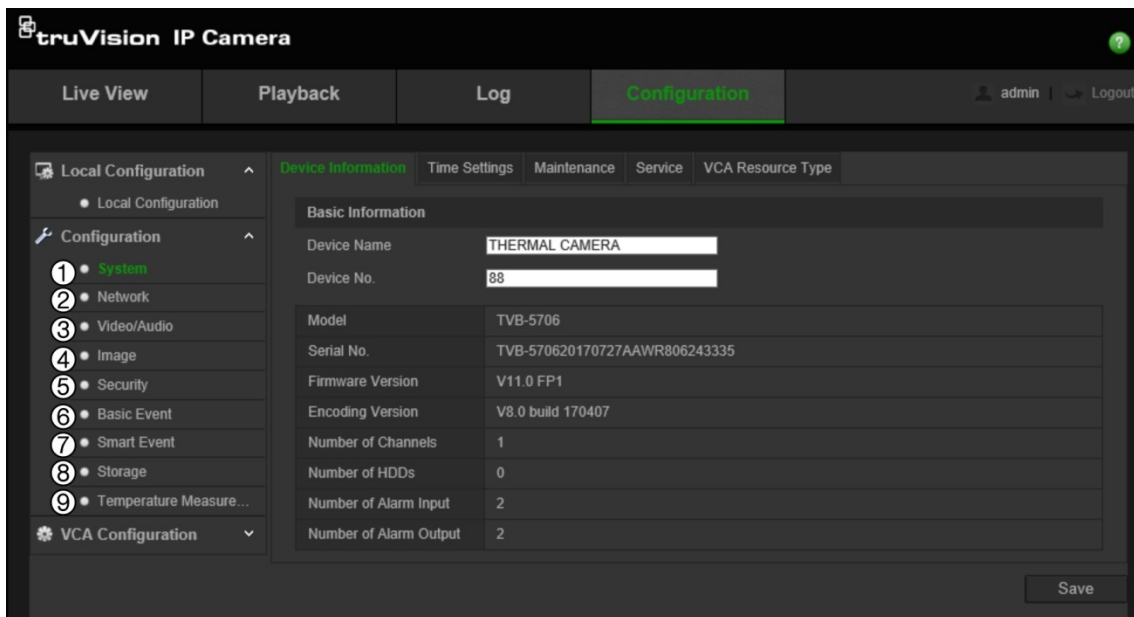
7.	Record File Size	Specifies the maximum file size. Select 256 MB, 512 MB, or 1G.
8.	Save Record Files to	Specifies the directory for recorded files.

	Description
9. Save Downloaded Files to	Specifies the directory for downloaded files.
Snapshot and Clip Settings	
10. Save Snapshots In Live View To	Specifies the directory for saving snapshots in live view mode.
11. Save Snapshots When Playback To	Specifies the directory for saving snapshots in playback mode.
12. Save Clips To	Specifies the directory for saving video clips in playback mode.

Configuration menu

Use the Configuration panel to configure the server, network, camera, alarms, users, transactions and other parameters such as upgrading the firmware. See Figure 3 below for descriptions of the configuration menus available.

Figure 3: Configuration window ('System > Device Information' shown)



Configuration menus	Description
1. System	Defines device basic information including SN and the current firmware version, time settings, maintenance, serial port parameters, and VCA resource type. See "System time configuration" on page 12 for further information on time parameters.
2. Network	Defines the network parameters required to access the camera over the internet. See "Network configuration" on page 14 for further information.
3. Video/Audio	Defines recording parameters. See "Video and audio" on page 22 for further information.
4. Image	Defines the image parameters, OSD settings, overlay text, privacy masking, picture overlay, and defective pixel correction. See "Image" on page 25, "OSD" on page 27, "Overlay text" on page 28, "Privacy mask" on page 29, "Picture overlay" on page 30, and "Defective pixel correction" on page 30 for further information.

Configuration menus	Description
5. Security	Defines who can use the camera, their passwords and access privileges, RTSP authentication, IP address filter, SSH access, restoring default settings, firmware upgrade. See “User management” on page 71, “RTSP authentication” on page 74, “IP address filter” on page 75, “Defining the security service” on page 75, and “Restore default settings” on page 76 for further information.
6. Basic Event	Defines motion detection, video tampering, alarm input/output, and exception. You can also import/export configuration files. See “Motion detection alarms” on page 30, “Video tampering alarms” on page 38, “Alarm inputs and outputs” on page 39, “Exception alarms” on page 40, and “Import/export a configuration file” on page 77 for further information.
7. Smart Event	Defines audio exception detection, scene change detection, and fire source detection. See “Audio exception detection” on page 41” on page 40, “Scene change detection” on page 42, and “Fire source detection” on page 43 for further information.
8. Storage	Defines recording schedule, storage management, NAS configuration, and snapshot parameters. See “Snapshot parameters” on page 54, “NAS settings” on page 67, “Storage ” on page 68, and “Recording schedule” on page 69 for further information.
9. Temperature Measurement	Defines temperature measurement and temperature measurement and alarm. See “Temperature measurement” on page 46 for further information.

VCA configuration menu

Use the VCA Configuration panel to configure how target and rule information is displayed on a snapshot and in a video stream, the snapshot quality and resolution, as well as set up the response to suspicious behavior. See “VCA information” on page 54 and “Behavior analysis” on page 56 for more information.

Device information

You can quickly see the information about the camera as well as change the camera name and device number. See Figure 3 on page 11 for descriptions of the configuration menus available.

To display the camera device information:

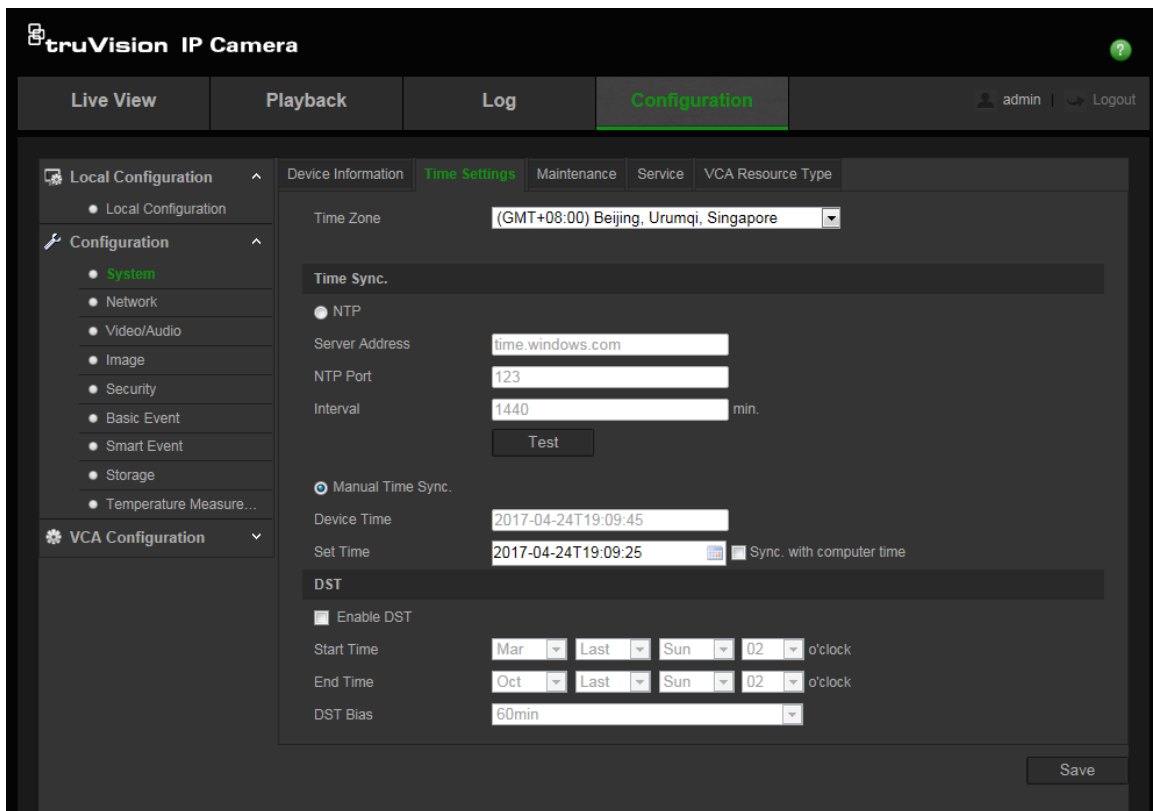
1. From the Configuration panel, click **Configuration > System > Device Information**.
2. If desired, you can change the camera name and device number.
3. Click **Save** to save changes.


System time configuration

NTP (Network Time Protocol) is a protocol for synchronizing the clocks of network devices, such as IP cameras and computers. Connecting network devices to a dedicated NTP time server ensures that they are all synchronized.

To define the system time and date:

1. From the Configuration panel, click **Configuration > System > Time Settings**.



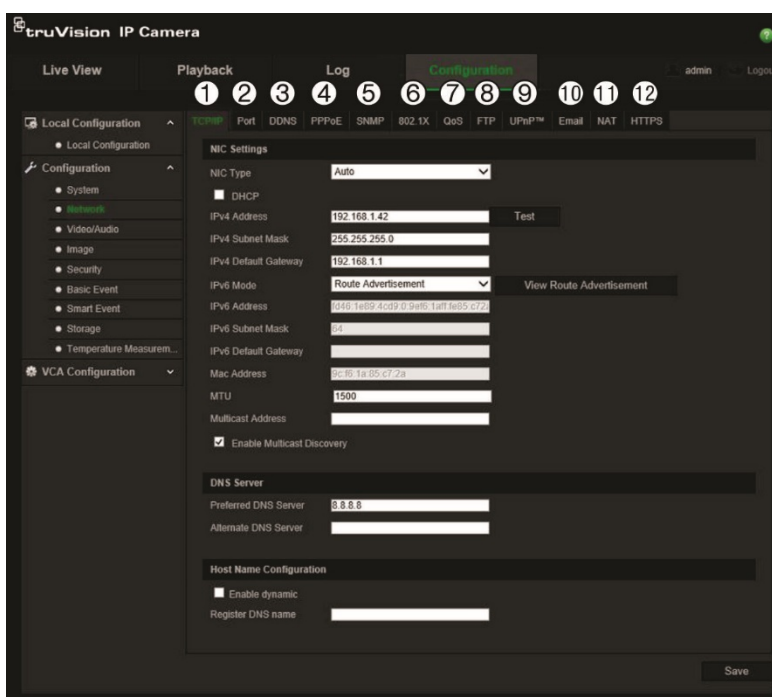
2. From the **Time Zone** drop-down menu, select the time zone that is the closest to the camera's location.
3. Under **Time Sync**, select one of the options for setting the time and date:
Synchronize with an NTP server: Select the **NTP** enable box and enter the server NTP address. The time interval can be set from 1 to 10080 minutes.
- Or -
Set manually: Enable the **Manual Time Sync** function and then click  to set the system time from the pop-up calendar.
Note: You can also select the **Sync with computer time** check box to synchronize the time of the camera with the time of your computer.
4. Select **Enable DST** to enable the DST (Daylight Savings Time) function, and set the date of the DST period.
5. Click **Save** to save changes.

Network configuration

You need to define the network settings to be able to access the camera through a network. Use the “Network” menu to define the network settings. See Figure 4 below for further information.

Caution: We strongly recommend that you use a strong password for all functions and network devices in order to protect your privacy and to protect your system against security risks. A valid password range must be at least eight characters. You can use a combination of numbers, lower and upper case letters, and special characters. The installer and/or end user are responsible for password management.

Figure 4: Network window (TCP/IP tab shown)



Menu tabs	Description
1. TCP/IP	<p>NIC Type: Enter the NIC type. Default is Auto. Other options include: 10M Half-dup, 10M Full-dup, 100M Half-dup and 100M Full-dup.</p> <p>DHCP: Enable in order to automatically obtain an IP address and other network settings from that server.</p> <p>IPv4 Address: Enter the IPv4 address of the camera.</p> <p>IPv4 Subnet Mask: Enter the IPv4 subnet mask.</p> <p>IPv4 Default Gateway: Enter the IPv4 gateway IP address.</p> <p>IPv6 Mode: Enter the IPv6 mode: Manual, DHCP, or Route Advertisement.</p> <p>IPv6 Address: Enter the IPv6 address of the camera.</p> <p>IPv6 Subnet Prefix Length: Enter the IPv6 prefix length.</p> <p>IPv6 Default Gateway: Enter the IPv6 gateway IP address.</p> <p>Mac Address: Enter the MAC address of the devices.</p> <p>MTU: Enter the valid value range of MTU. Default is 1500.</p>

Menu tabs	Description
	<p>Multicast Address: Enter a D-class IP address between 224.0.0.0 to 239.255.255.255. Only specify this option if you are using the multicast function. Some routers prohibit the use of multicast function in case of a network storm.</p> <p>Enable Multicast Discovery: Select to enable the automatic detection of the online network camera via private multicast protocol in the LAN.</p> <p>DNS server: Enter the DNS server address for your network.</p> <p>Host Name Configuration: Assign a hostname to recorder to be used to identify it over the network. Select “Enable dynamic” and enter your DNS name for the system. The DNS name must be unique and can contain letters, numbers and hyphens.</p>
2. Port	<p>HTTP Port: Use the HTTP port to remotely access the internet browser. Enter the port used for the Internet Explorer (IE) browser. Default value is 80.</p> <p>RTSP Port: RTSP (Real Time Streaming Protocol) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers. Enter the RTSP port value. The default port number is 554.</p> <p>HTTPS Port: HTTPS (Hyper Text Transfer Protocol Secure) allows video to be securely viewed when using a browser. Enter the HTTPS port, value. The default port number is 443.</p> <p>Server Port: This is used for remote client software access. Enter the server port value. The default port number is 8000.</p> <p>Alarm Server IP: Specifies the IP address of the alarm host.</p> <p>Alarm Server Port: Specifies the port of the alarm host.</p> <p>See page 17 for setup information.</p>
3. DDNS	<p>DDNS is a service that maps Internet domain names to IP addresses. It is designed to support dynamic IP addresses, such as those assigned by a DHCP server.</p> <p>Specify DynDNS or ezDDNS.</p> <p>DynDNS: Use Dynamic DNS to manually create your own host name. You will first need to create a user account using the hosting web site, DynDDNS.org.</p> <p>ezDDNS: Activate the DDNS auto-detection function to set up a dynamic IP address. The server is set up to assign an available host name to your recorder.</p> <p>See page 17 for setup information.</p>
4. PPPoE	Retrieves a dynamic IP address. See page 17 for setup information.
5. SNMP	SNMP is a protocol for managing devices on networks. Enable the SNMP check box to get camera status and parameter related information. See page 17 for setup information.
6. 802.1.X	When the feature is enabled, the camera data is secured and user authentication is needed when connecting the camera to the network. See page 18 for setup information.
7. QoS	<p>QoS (Quality of Service) can help solve the network delay and network congestion by configuring the priority of data sending.</p> <p>Enable the option to solve network delay and network congestion by configuring the priority of data sending.</p> <p>See page 18 for setup information.</p>
8. FTP	Enter the FTP address and folder to which snapshots of the camera can be uploaded. See page 18 for setup information.

Menu tabs	Description
9. UPnP	The UPnP (Universal Plug and Play) protocol allows devices to connect seamlessly and to simplify the implementation of networks in the home and corporate environments. With the function enabled, you do not need to configure the port mapping for each port, and the camera is connected to the Wide Area Network (WAN) via the router. Enable and set the friendly name detected. See page 18 for setup information.
10. Email	Enter the email address to which messages are sent when an alarm occurs. See page 18 for setup information.
11. NAT	A NAT (Network Address Translation) is used for network connection. Select the port mapping mode: auto or manual. See page 20 for setup information.
12. HTTPS	Specifies authentication of the web site and its associated web server, which protects against Man-in-the-middle attacks.

To define the TCP/IP parameters:

1. From the Configuration panel, click **Configuration > Network > TCP/IP**.
2. Configure the NIC settings, including the NIC Type, IPv4 settings, IPv6 settings, MTU settings, and Multicast Address.
3. If the DHCP server is available, select **DHCP**.
4. If the DNS server settings are required for some applications (e.g., sending email), you should configure the **Preferred DNS Server or Alternate DNS Server**.
5. To be able to automatically detect the network camera by client software, select **Enable Multicast Discovery**. This step is optional.
6. Click **Save** to save changes.

To define the port parameters:

1. From the Configuration panel, click **Configuration > Network > Port**.
2. Set the HTTP port, RTSP port, HTTPS port and server port of the camera.

HTTP Port: The default port number is 80, and it can be changed to any port No. which is not occupied.

RTSP Port: The default port number is 554. It can be changed to any port number in the range from 1 to 65535.

HTTPS Port: The default port number is 443. It can be changed to any port number that is not occupied.

Server Port: The default server port number is 8000. It can be changed to any port number in the range from 2000 to 65535.

3. Enter the IP address and port if you want to upload the alarm information to the remote alarm host. Also select the **Notify Alarm Recipient** option in the normal Linkage of each event page.
4. Click **Save** to save changes.

To define the DDNS parameters:

If the camera is set up to use PPPoE as its default network connection, you can use Dynamic DNS (DDNS) for network access. You need to register on the DDNS server before you can configure the settings.

1. From the Configuration panel, click **Configuration > Network > DDNS**.
2. Select **Enable DDNS** to enable this feature.
3. Select the **DDNS Type**. There are two options available: DynDNS and ezDDNS.
 - **DynDNS:** Enter the DDNS server address, members.ddns.org (which is used to notify DDNS about changes to your IP address), the host name for your camera, the port number (443 (HTTPS)), and your user name and password used to log into your DDNS account. The domain name displayed under “Host Name” is that which you created on the DynDNS web site.
 - **ezDDNS:** Enter the desired host name under “Host Name”. The default host name is utc-serial number. The new host name is registered when you click Save.

Note: The default server address is www.tvr-ddns.net, which cannot be changed.

4. Click **Save** to save changes.

To define the PPPoE parameters:

1. From the Configuration panel, click **Configuration > Network > PPPoE**.
2. Select **Enable PPPoE** to enable this feature.
3. Enter the user name, password, and confirm the password for PPPoE access.
4. Click **Save** to save changes.

To define the SNMP parameters:

1. From the Configuration panel, click **Configuration > Network > SNMP**.
2. Select the corresponding version of SNMP: v1, v2c or v3.
3. Configure the SNMP settings. The configuration of the SNMP software should be the same as the settings you configure here.
4. Click **Save** to save changes.

Note: Before setting the SNMP, please download the SNMP software to receive the camera information via the SNMP port. By setting the trap address, the camera can send the alarm event and exception messages to the surveillance center. The SNMP version you select should be the same as that of the SNMP software. The security level of the software depends on its version. SNMP v1 has no security. SNMP v2 requires a password for access. SNMP v3 provides encryption. If you use SNMP v3, you must enable HTTPS.

To define the 802.1x parameters:

1. From the Configuration panel, click **Configuration > Network > 802.1X**.
2. Select **Enable IEEE 802.1X** to enable the feature.
3. Configure the 802.1X settings, including EAPOL version, user name, and password. The EAPOL version must be identical with that of the router or the switch.
4. Click **Save** to save changes.

Note: The switch or router to which the camera is connected must also support the IEEE 802.1X standard, and a server must be configured. Please apply and register a user name and password for 802.1X in the server.

To define the QoS parameters:

1. From the Configuration panel, click **Configuration > Network > QoS**.
2. Configure the QoS settings, including Video / Audio DSCP, Event / Alarm DSCP and Management DSCP. The valid value range of the DSCP is 0 to 63. The larger the DSCP value, the higher the priority.
3. Click **Save** to save changes.

Note: The system needs to be rebooted in order for the changes to take effect.

To define the FTP parameters:

1. From the Configuration panel, click **Configuration > Network > FTP**.
2. Configure the FTP settings, including server address, port, user name, password, directory, and upload type.

Anonymous: Select the check box to enable the anonymous access to the FTP server.

Directory: In the *Directory Structure* field, select the root directory, main directory and subdirectory. When the Main directory is selected, select the Device Name, Device Number or Device IP for the name of the directory. When the Subdirectory is selected, select the Camera Name or Camera No. as the name of the directory.

Upload Type: To enable snapshots to be uploaded to the FTP server.

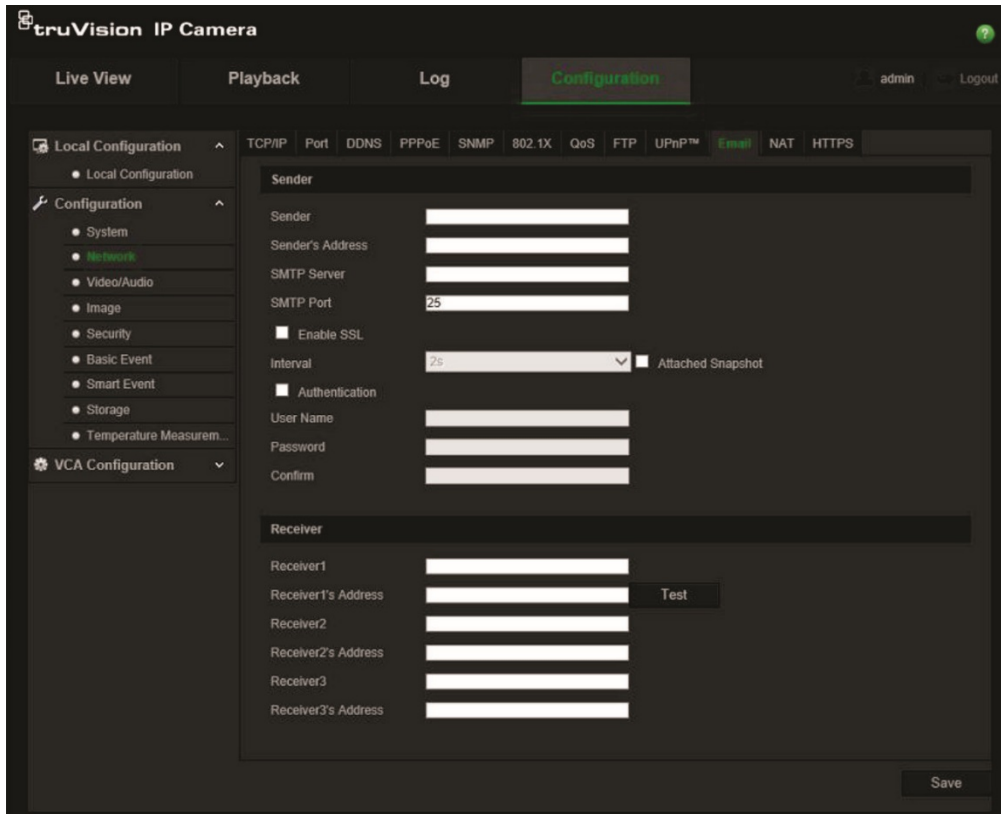
3. Click **Save** to save changes.

To define the UPnP parameters:

1. Click **Configuration > Network > UPnP**.
2. Select the check box to enable the UPnP function. The name of the detected device appears under "Friendly name". It can be edited.
3. Click **Save** to save changes.

To set up the email parameters:

1. From the Configuration panel, click **Configuration > Network > Email**.



2. Configure the following settings:

Sender: The name of the email sender.

Sender's Address: The email address of the sender.

SMTP Server: The SMTP Server, IP address or host name.

SMTP Port: The SMTP port. The default is 25.

Enable SSL: Select the check box to enable SSL if it is required by the SMTP server.

Interval: This is the time between two actions to send attached snapshots.

Attached Snapshot: Select the **Attached Snapshot** check box if you want to send emails with attached alarm images.

Authentication: If your email server requires authentication, select this check box to use authentication to log in to this server. Enter the login user name and password.

User Name: The user name to log in to the server where the images are uploaded.

Password: Enter the password.

Confirm: Confirm the password.

Receiver1: The name of the first user to be notified.

Receiver's Address1: The email address of the user to be notified. Click Test to test the address.

Receiver2: The name of the second user to be notified.

Receiver's Address2: The email address of the user to be notified.

Receiver3: The name of the third user to be notified.

Receiver's Address3: The email address of the user to be notified.

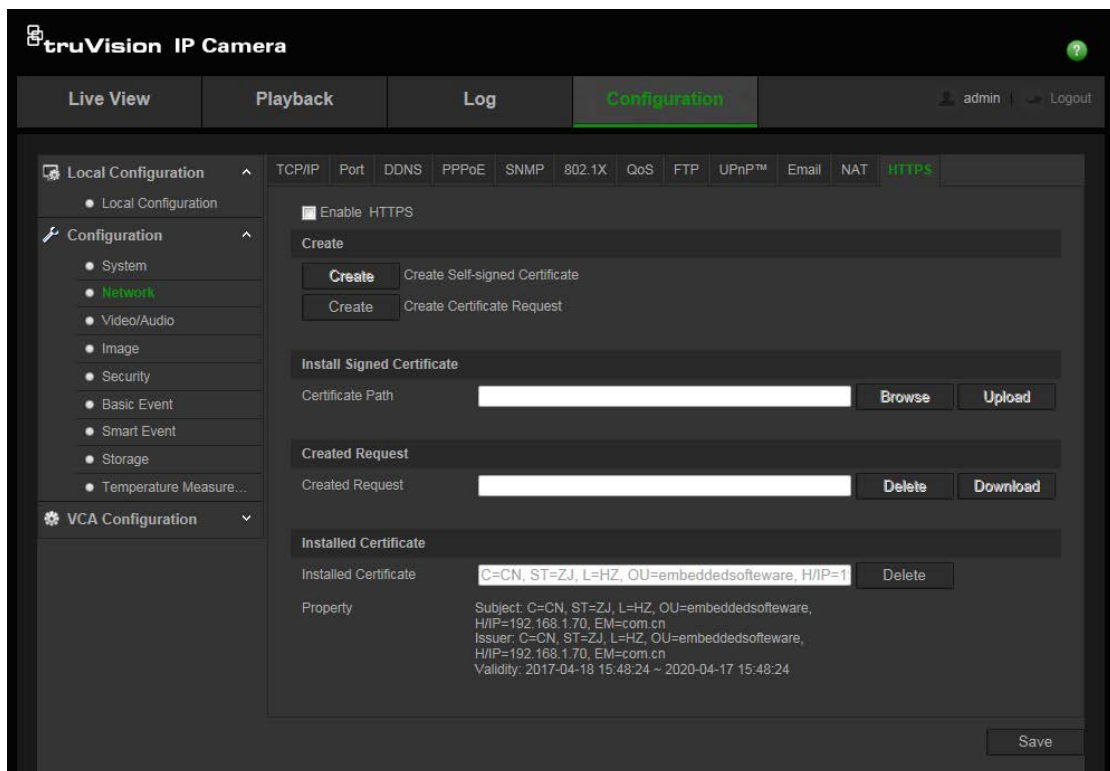
3. Click **Test** to test the email parameters set up.
4. Click **Save** to save changes.

To set up the NAT parameters:

1. From the Configuration panel, click **Configuration > Network > NAT**.
2. Select the check box to enable the NAT function.
3. Select **Port Mapping Mode** to be Auto or Manual. When you select **Manual** mode, you can set any desired external port.
4. Click **Save** to save changes.

To set up the HTTPS parameters:

1. From the Configuration panel, click **Configuration > Network > HTTPS**.



2. Create a self-signed certificate:

Click the **Create** button beside “Create Self-signed Certificate”. Enter the country, host name/IP, validity and the other information requested.

A screenshot of a configuration dialog box with a dark background. It contains the following fields and labels:

- Country: * example:CN
- Hostname/IP: *
- Validity: day * range :1-5000
- Password:
- State or province:
- Locality:
- Organization:
- Organizational Unit:
- Email:

At the bottom right, there are two buttons: "OK" and "Cancel".

Click **OK** to save the settings.

-Or-

Create a certificate request:

Click the **Create** button beside “Create Certificate Request”. Enter the country, host name/IP, and the other information requested.

A screenshot of a configuration dialog box, identical in layout to the one above. It contains the same fields and labels:

- Country: * example:CN
- Hostname/IP: *
- Validity: day * range :1-5000
- Password:
- State or province:
- Locality:
- Organization:
- Organizational Unit:
- Email:

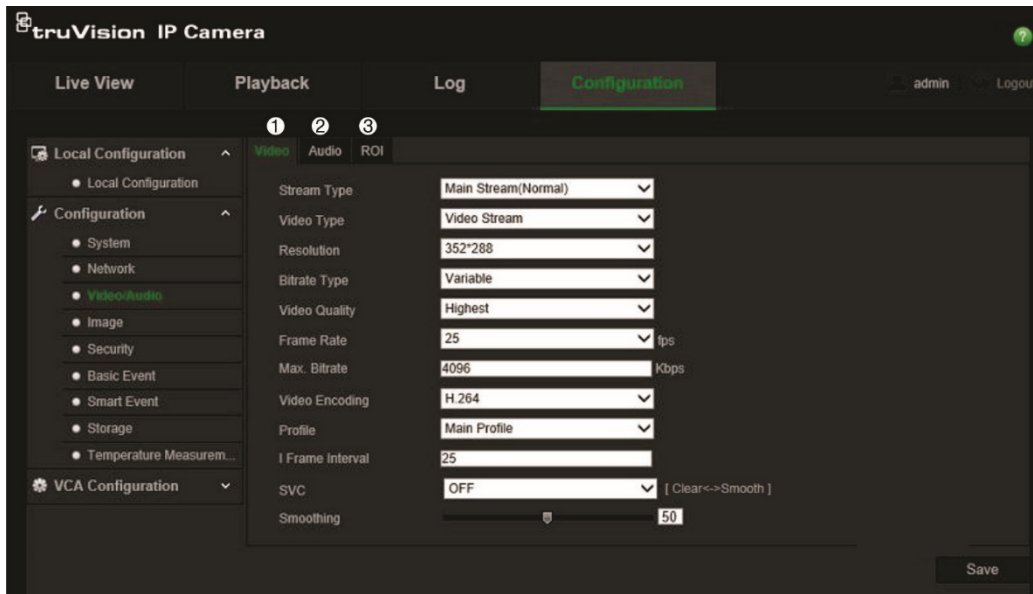
At the bottom right, there are two buttons: "OK" and "Cancel".

3. Click **OK** to save the settings. Download the certificate request and submit it to the trusted certificate authority for signature, such as Symantec or RSA. After receiving the signed valid certificate, upload the certificate to the device

Video and audio configuration

You can adjust the video and audio recording parameters to obtain the picture quality and file size best suited to your needs. Figure 5 below list the video and audio recording options you can configure for the camera.

Figure 5: Video/Audio Settings menu (Video tab shown)

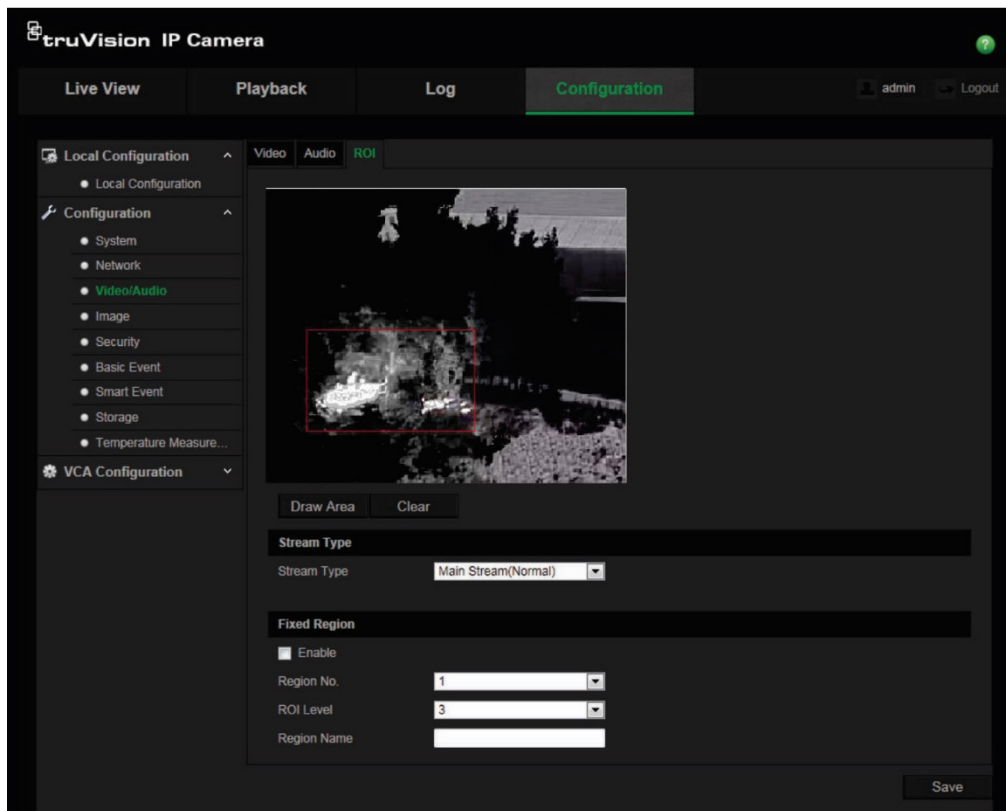


Tab	Parameter descriptions
1. Video	<p>Stream Type: Specifies the streaming method used. Options include: Main Stream (Normal), Substream, and Third stream.</p> <hr/> <p>Video Type: Specifies the stream type you wish to record. Select Video Stream to record video stream only. Select Video&Audio to record both video and audio streams.</p> <p>Note: Video&Audio is only available for those camera models that support audio.</p> <hr/> <p>Resolution: Specifies the recording resolution. A higher image resolution provides a higher image quality but also requires a higher bit rate. The resolution options listed depend on the type of camera and on whether main or sub stream is being used.</p> <p>Note: Resolutions can vary depending on the camera model.</p> <hr/> <p>Bitrate Type: Specifies whether variable or fixed bit rate is used. Variable produces higher quality results suitable for video downloads and streaming. Default is Constant.</p> <hr/> <p>Video Quality: Specifies the quality level of the image. It can be set when variable bit rate is selected. Options include: Lowest, Lower, Medium, Higher, and Highest.</p>

Tab	Parameter descriptions
	<p>Frame Rate: Specifies the frame rate for the selected resolution. The frame rate is the number of video frames that are shown or sent per second.</p> <p>Note: The maximum frame rate depends on the camera model and selected resolution. Please select the camera specifications in its datasheet.</p> <p>Max bit rate: Specifies the maximum allowed bit rate. A high image resolution requires that a high bit rate must also be selected.</p> <p>Video Encoding: Specifies the video encoder used.</p> <p>Profile: Different profile indicates different tools and technologies used in compression. Options include: High Profile, Main Profile, and Basic Profile.</p> <p>I-Frame Interval: A video compression method. It is strongly recommended not to change the default value 50.</p> <p>SVC: The scalable video coding feature standardizes the encoding of a high-quality video bit stream that contains one or more subset bit streams. Select On, Off, or Auto.</p> <p>Smoothing: Adjust the smoothness of the stream.</p>
2. Audio	<p>Audio Encoding: G.722.1, G.711ulaw, G.711alaw, MP2L2, G.726, and PCM are optional.</p> <p>Audio Input: Only "Linein" is available for the pickup microphone.</p> <p>Input Volume: Specifies the volume from 0 to 100.</p> <p>Environmental Noise Filter: Set it as OFF or ON. When you set the function on the noise detected can be filtered.</p>
3. ROI	<p>This function lets you assign more encoding resources to the region of interest (RoI) in order to increase the image quality of the RoI compared to that of background. The RoI image then appears more focused than that of the background. See page 57 for setup information</p>

To configure ROI settings:

1. From the Configuration panel, click **Configuration > Video/Audio > ROI**.



2. Select the desired channel from the drop-down list.
3. Draw the region of interest on the image. Up to four regions can be drawn.
4. Choose the stream type to set the ROI encoding.
5. Enable **Fixed Region** to manually configure the area.
 - Region No.:** Select the region.
 - ROI Level:** Choose the image quality enhancing level.
 - Region Name:** Set the desired region name.
6. Enable **Dynamic Region** for face detection.
 - ROI Level:** Choose the image quality enhancing level.
7. Click **Save** to save changes.

Image display configuration

You may need to adjust the camera image depending on the camera model or location background to get the best image quality. You can adjust the brightness, contrast, saturation, hue, and sharpness. See Figure 6 below.

Use this menu to also adjust camera behavior parameters such as exposure time, iris mode, video standard, day/night mode, image flip, WDR, digital noise reduction, white balance, and indoor/outdoor mode. All changes are automatically saved.

Figure 6: Image > Display Settings window



Parameter	Description
1. Image Adjustment	
Brightness, Contrast	Modifies the different elements of the picture quality by adjusting the position of the values for each of parameter.
FFC (Flat Field Correction)	This improves the quality of the digital image. It removes non-uniformities in the image caused by different sensitivities of the pixels and by distortions caused by optics. Select Scheduled, Temperature, or OFF. Scheduled: Select the refresh interval to remove non-uniformities: 10, 20, 30, 40, 50, 60, 120, 180, or 240 minutes. Temperature: Camera adjusts the live view image according to its temperature. OFF: Disable this function.
Interval	Specifies the interval time between checking live view images. Select one of the options: 10, 20, 30, 40, 50, 60, 120, 180, or 240 minutes.
Background Correction	Fully cover the lens with an object (a lens cover is recommended) and click the “Correct” button. The camera then adjusts the image according to the current environment.

Parameter	Description
Manual Correction	Click the “Correct” button. The camera then adjusts the image according to the temperature of the camera itself.
Thermal AGC	Select the desired AGC mode to balance and improve the image quality depending on the scene. Histogram: Select when there is an obvious WDR and high temperature difference in the scene to improve image contrast and enhancement. It is used when the image contains both indoor and outdoor scenes. Linear: Select when there is a low temperature difference between the target and the scene. When enabled, it improves image contrast and enhancement. It is used, for example, when the field of view is a bird in a tree. Self-Adaptive: Select to have the AGC mode adapt automatically to the current scene.
2. Image Enhancement	
Digital Noise Reduction	Digital noise reduction (DNR) reduces noise, especially in low light conditions, to improve image performance. Select Normal Mode, Expert Mode, or OFF. Default is Normal Mode.
Noise Reduction Level	Only available when DNR is set to <i>Normal Mode</i> . Set the level of noise reduction in Normal Mode. The higher value, the stronger the noise reduction. Default is 50.
Palettes	Select the desired colors for the thermal view. Select White Hot, Black Hot, Fusion 1, Rainbow, Fusion 2, Ironbow 1, Ironbow 2, Sepia, Color 1, Color 2, Ice Fire, Rain, Red Hot, Green Hot, or Dark Blue. Default is White Hot.
DDE	DDE (Digital Detail Enhancement) optimizes the image contrast. Select OFF or Normal Mode.
DDE Level	(Only works with Behavior Analysis VCA Resource) When the brightness of target and the background is hugely different (the temperature difference of target and background is huge), the system reduces the difference for viewing.
Brightness Sudden Change	Enable this function when there is a significant temperature difference between the target and the background. The system will reduce the brightness difference to facilitate viewing.
Regional Image Enhancement	Select a desired area in the image to see it in greater detail and more clearly. Select where on screen you want the image enhanced from the drop-down list of options. The red rectangle will appear in a set area on screen if you click up, down, left, right, center_50%, or center_75%. Select “Custom Area” from the drop-down list to a draw the desired area as a customized size anywhere on screen.
3. Video Adjustment	
Mirror	It mirrors the image so you can see it inversed. Select Center or OFF. Default is OFF.
Video Standard	Select the video standard: 50 Hz or 60 Hz. 50 Hz for PAL standard and 60 Hz for NTSC standard.
Capture Mode	Set the desired frame rate to meet the different demands of field of view and resolution. A higher frame rate may be required in a location with a lot of movement (such as a money depot).
Digital Zoom	Set the digital zoom ratio. Select 2x, 4x, or OFF. Default is OFF.
4. Other	
Local Output	Select ON or OFF to enable or disable the BNC output. Default is ON.

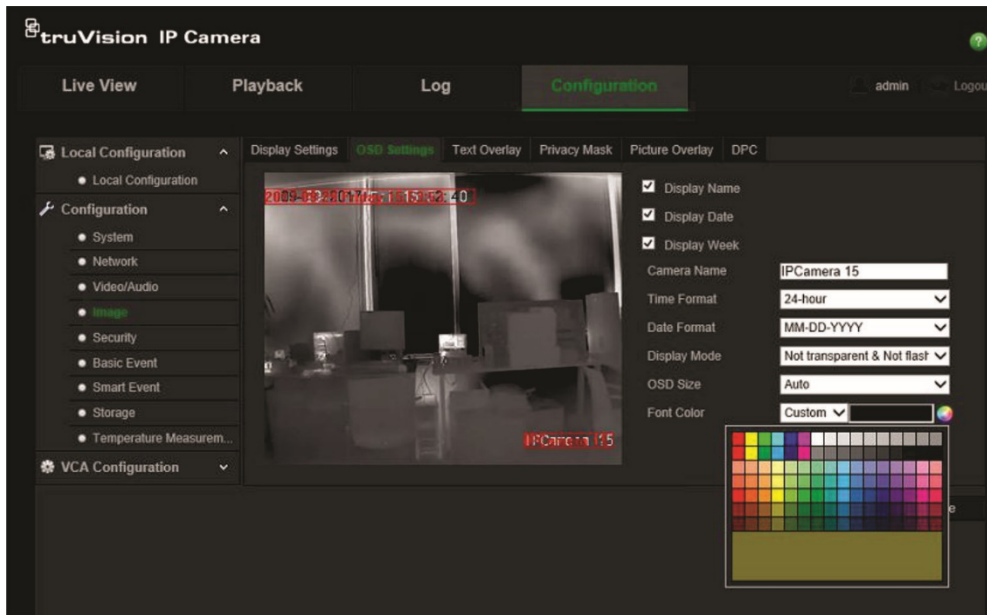
Note: Click the **Default** button to return all the image settings to default.

OSD

Use the onscreen display (OSD) function to display the camera name as well as the system date and time on screen. You can also define how the text appears on screen.

To position the date/time and name on screen:

1. From the Configuration panel, click **Configuration > Image > OSD Settings**.



2. Select the **Display Name** box to display the camera's name on screen.
3. Select the **Display Date** box to display the date/time on screen.
4. Select the **Display Week** box to include the day of the week in the on-screen display.
5. In the **Camera Name** box, enter the camera name.
6. Select the time and date formats from the **Time format** and **Date format** list boxes.
7. Select a display mode for the camera from the **Display Mode** list box. Display modes include:
 - **Transparent & Not flashing.** The image appears through the text.
 - **Transparent & Flashing.** The image appears through the text. The text flashes on and off.
 - **Not transparent & Not flashing.** The image is behind the text. This is default.
 - **Not transparent & Flashing.** The image is behind the text. The text flashes on and off.
8. Select the desired OSD size.
9. Select the desired font color: Black&White Self-adaptive or Custom. The Custom option lets you select a specific color from the palette displayed (see the figure above). Default is Black&White Self-adaptive.

10. Use the mouse to click and drag the camera time/date and name frames in the live view window to the desired positions.

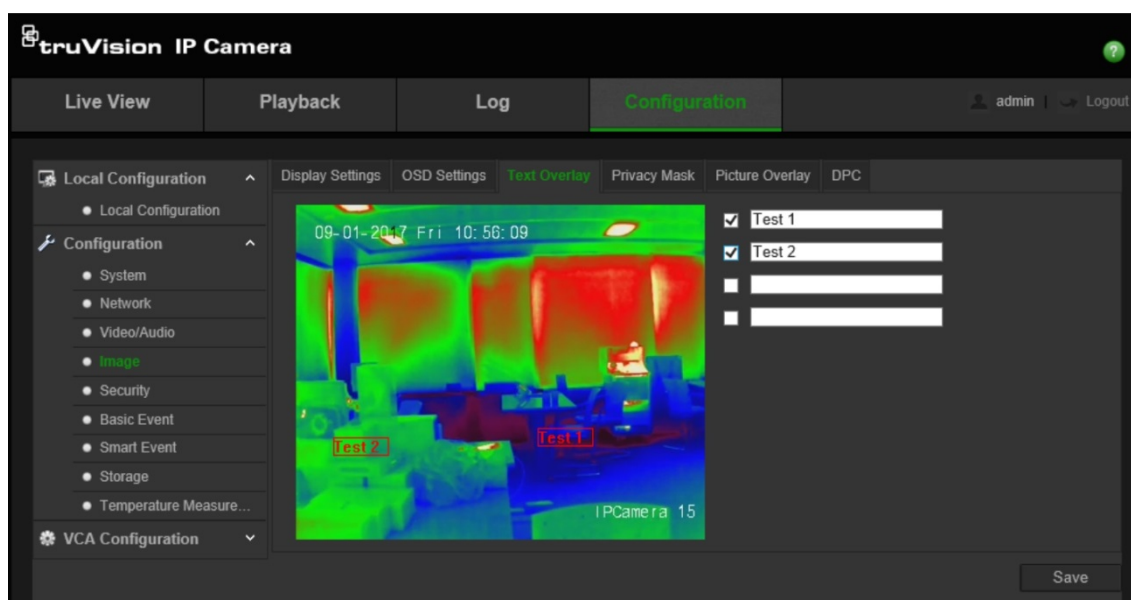
11. Click **Save** to save changes.

Note: If you set the display mode as transparent, the text varies according the background. With some backgrounds, the text may be not easily readable.

Overlay text

You can add up to four lines of text on screen. This option can be used, for example, to display emergency contact details. Each text line can be positioned anywhere on screen. See Figure 7 below.

Figure 7: Text overlay menu



To add on-screen text:

1. From the Configuration panel, click **Configuration > Image > Text Overlay**.
2. Select the box for the first line of text.
3. Enter the text in the text box.
4. Use the mouse to click and drag the red text frame in the live view window to the desired position.
5. Repeat steps 2 to 4 for each extra line of text.

Note: Remove an overlay text on the OSD by deselecting its text line.

6. Click **Save** to save changes.

Privacy mask

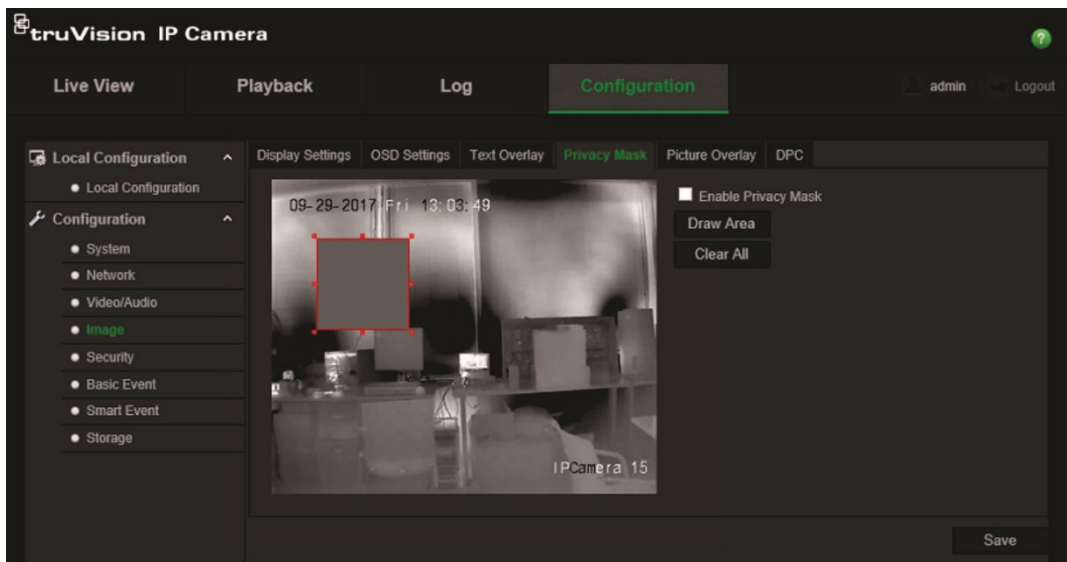
Privacy masks let you conceal sensitive areas (such as neighboring windows) to protect them from being viewed in live view and in recorded video. The masking appears as a blank area on screen. You can create up to four privacy masks per camera.

Note: There may be a small difference in size of the privacy mask area depending on whether local output or the web browser is used.

To add privacy mask area:

1. From the Configuration panel, click **Configuration > Image > Privacy Mask**.
2. Select the **Enable Privacy Mask** box.
3. Click **Draw Area**.
4. Click and drag the mouse in the live video window to draw the area to mask.

Note: You can draw up to four areas on the same image.



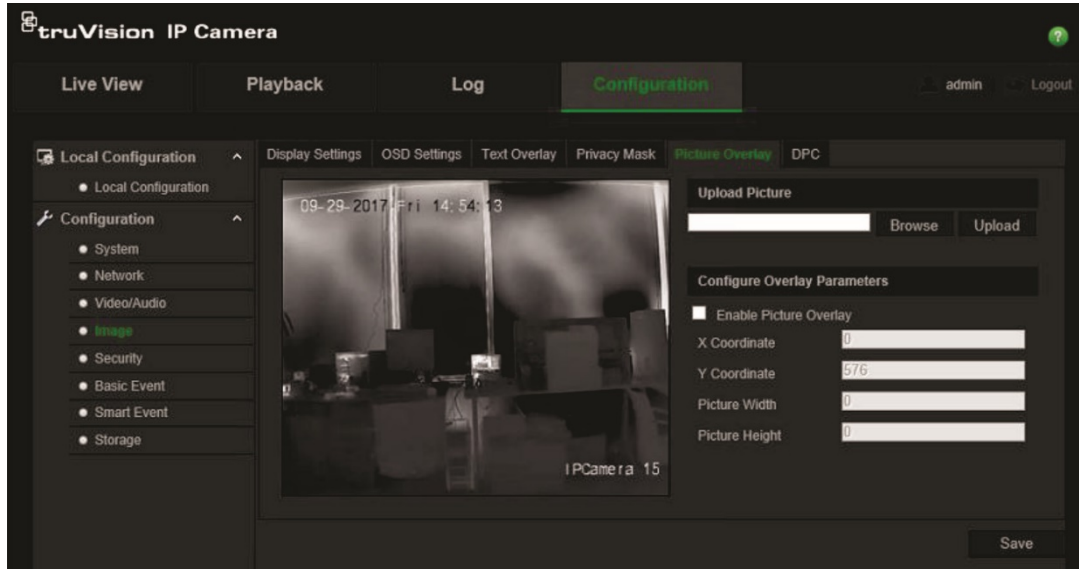
5. Click **Stop Drawing** to finish drawing, or click **Clear All** to clear all of the areas you set without saving them.
6. Click **Save** to save changes.

Picture overlay

This function lets you overlay a picture on the image, such as a company logo for example. The picture must be in RGB24 bmp format and the maximum permitted size is 128*128.

To add a picture:

1. From the Configuration panel, click **Configuration > Image > Picture Overlay**.



2. Under “Upload Picture”, click **Browse** to select a picture file and **Upload** to upload it.
3. Select **Enable Picture Overlay** check box to enable the function.

Note: The X and Y coordinate values show the location of the picture on the image. Picture width and height shows the size of the picture.

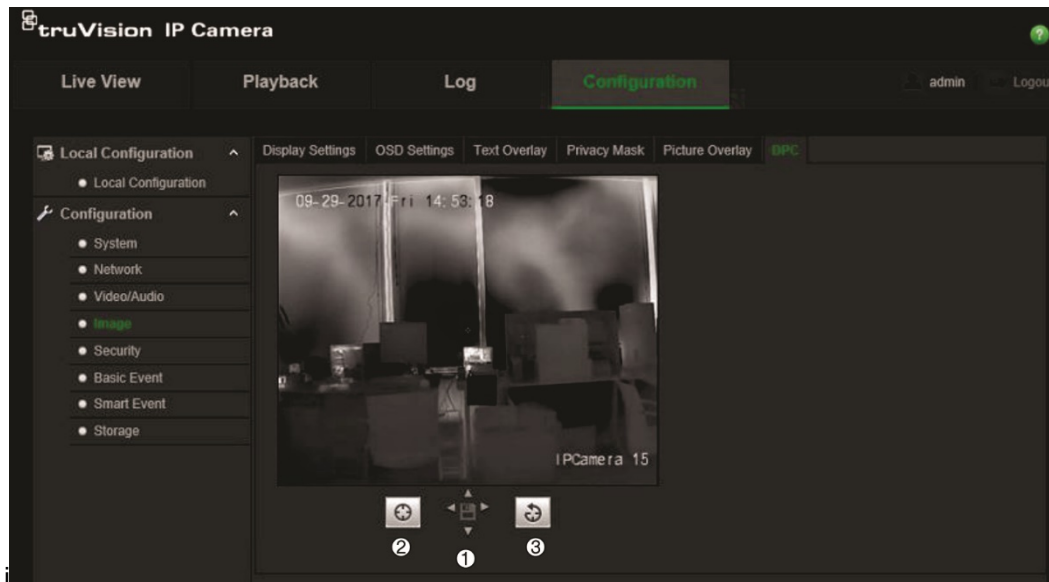
Defective pixel correction

A CCD or CMOS image sensor in a digital camera may have defective pixels, which can fail to sense light levels correctly. The DPC (Defective Pixel Correction) function allows the camera to correct defective pixels.

Note: This function is only available for certain camera models.

To set DPC:

1. From the Configuration panel, click **Configuration > Image > DPC**.



2. Click the desired area of the image to select the defective pixel. The cursor on the image will move to the clicked position. If required, click ① to slightly adjust the cursor position.
3. Click ② to start the correction.
4. If required, click ③ to cancel the correction.

Alarm configuration

You can configure the camera to identify many different types of alarm events, such as motion detection, video tampering, alarm inputs and outputs, audio exception, intrusion detection, and fire source detection.

Motion detection alarms

A motion detection alarm refers to an alarm triggered when the camera detects motion. However, the motion alarm is only triggered if it occurs during a programmed time schedule.

Select the level of sensitivity to motion as well as the target size so that only objects that could be of interest can trigger a motion recording. For example, the motion recording is triggered by the movement of a person but not that of a cat.

You can define the area on screen where the motion is detected, the level of sensitivity to motion, the schedule when the camera is sensitive to detecting motion as well as which methods are used to alert you to a motion detection alarm.

You can also enable dynamic analysis for motion. When there is motion, the area will be highlighted as green frames.

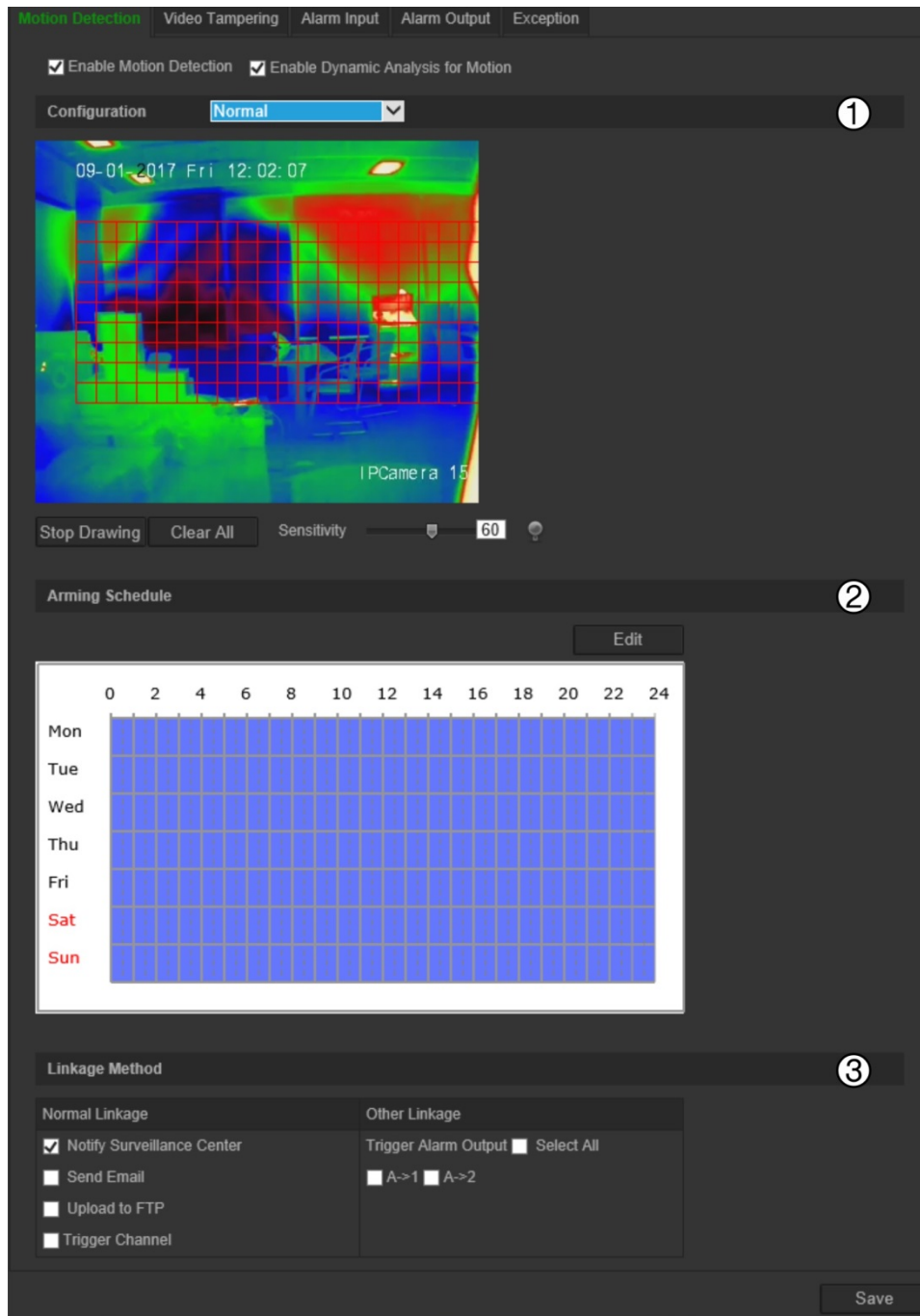
Normal and expert configuration

There are two types of motion detection configuration. This allows you to set the motion detection parameters depending on the motion detection environment and thereby help to reduce false alarms.

Normal configuration mode allows you to set the sensitivity level of the motion detection. It applies to both day and night mode.

Expert configuration mode gives you much more control over how motion is detected. It lets you set the sensitivity level as well as to define the percentage of the motion detection area that the object must occupy in the image, select day or night mode, and set up eight differently configured defined areas. See Figure 8, item 1.

Figure 8: Motion detection window with a motion sensitive grid shown



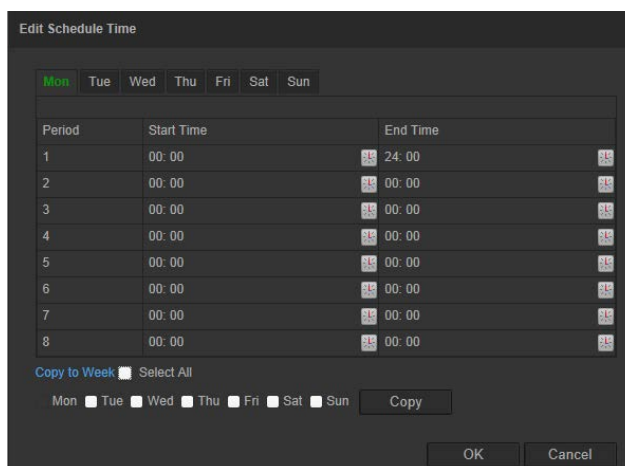
Defining a motion detection alarm requires the following tasks to be done:


- **Area settings:** Define the on-screen area that can trigger a motion detection alarm and the detection sensitivity level (see Figure 8, item 1).
- **Arming schedule:** Define the schedule during which the system detects motion (see Figure 8, item 2).
- **Recording schedule:** Define the schedule during which motion detection can be recorded. See “Recording schedule” on page 69 for further information.
- **Linkage:** Specify the method of response to the alarm (see Figure 8, item 3).

To set up motion detection in normal mode:

1. From the Configuration panel, click **Configuration > Basic Event > Motion Detection**.
2. Set the motion detection area.
 - a) Select the **Enable Motion Detection** box. Select **Enable Dynamic Analysis for Motion** if you want to see real-time motion events.

Note: Select **Disable** under Rules in the *Local Configuration* menu if you do not want the detected object displayed in green frames.
 - b) Select **Normal** mode from the drop-down menu.
 - c) Click **Draw Area**. Click and drag the mouse on the live video image to draw an area sensitive to motion detection.
 - d) Click **Stop Drawing** to finish drawing. Click **Clear All** to delete all areas marked and restart drawing.
 - e) Move the **Sensitivity** slider to set the sensitivity of the detection. All areas will have the same sensitivity level.
3. Set the arming schedule.
 - a) Click **Edit** to edit the arming schedule. The “Edit Schedule Time” pop-up window appears.



- b) Select the day of the week and click  to set the detailed time period. You can copy the schedule to other days of the week by selecting the check boxes for the desired days of the week and clicking **Copy**.
 - c) Click **OK** to save changes and to return to the motion detection window.
4. Specify the linkage method for when an event occurs.

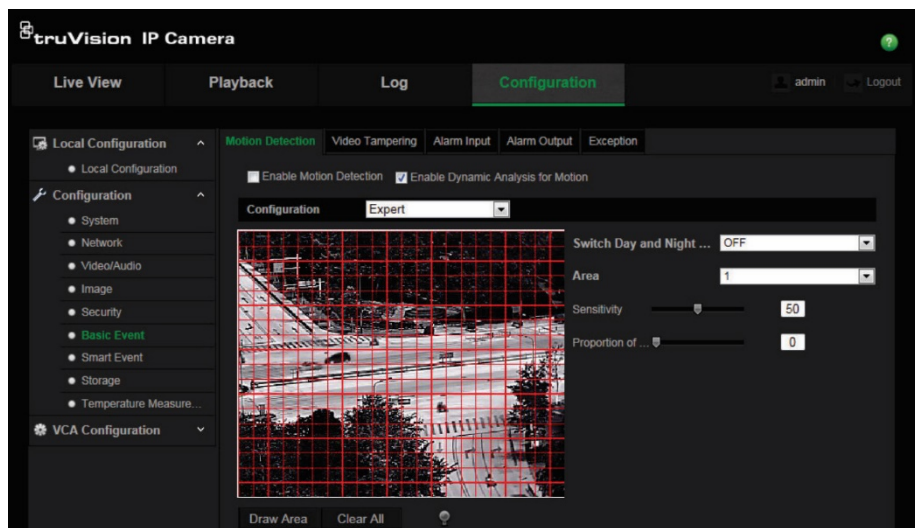
Select one or more response methods for the system when a motion detection alarm is triggered.

Notify Surveillance Center	Send an exception or alarm signal to remote management software when an event occurs.
Send Email	Sends an email to a specified address when there is a motion detection alarm. Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 18 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Upload to FTP	Captures the image when an alarm is triggered and uploads the snapshot to an FTP server. Note: To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 18 for further information. Enable the Upload Type option. To upload the snapshot to FTP when motion detection or an alarm input is triggered, you must also select the Enable Event-triggered Snapshot check box in the snapshot parameters. See “Snapshot parameters” on page 54 for further information.
Trigger Channel	Triggers the recording to start in the camera.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or individual alarm outputs. Note: This option is only supported by cameras that support alarm output.

5. Click **Save** to save changes.

To set up motion detection in expert mode:

1. From the Configuration panel, click **Configuration > Basic Event > Motion Detection**.
2. Set the motion detection area.
 - a) Select the **Enable Motion Detection** box. Select **Enable Dynamic Analysis for Motion** if you want to see real-time motion events.
Note: Select **Disable** under Rules in the “Local Configuration” menu if you do not want the detected object displayed in green frames.
 - b) Select **Expert** mode from the drop-down menu.



- c) Under **Switch Day and Night Settings**, select OFF, Auto-switch, or Scheduled-switch. Default is OFF.

OFF	No day/night switching.
Auto-switch	Defines the different settings for day and night.
Scheduled switch	Defines the different settings for day and night as well as when day/night starts and ends.

- d) Under **Area**, select the desired area number and then click **Draw Area**. Click and drag the mouse on the live video image to draw an area sensitive to motion detection.

Note: You can draw up to eight motion detection areas on the same live view image.

- e) Set the sensitivity of the selected area to motion detection.

Move the **Sensitivity** slider to set the sensitivity of the detection for the selected area.

- f) Set the proportion of the object that must be in the selected area to trigger an alarm.

If **OFF** selected: Move the **Proportion of Object on Area** slider to set the proportion of the object that must occupy the defined area to trigger an alarm.

– Or –

If **Auto-Switch**: Move the **Proportion of Object on Area** slider to set the proportion of the object that must occupy the defined area to trigger an alarm.

– Or –

If **Scheduled Switch** selected: Move the **Proportion of Object on Area** slider to set the proportion of the object that must occupy the defined area to trigger an alarm. Also set when the day starts and ends.

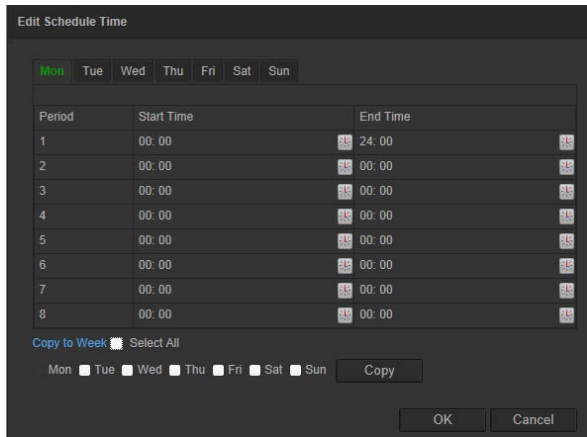
- g) Click **Stop Drawing** to finish drawing. Click **Clear All** to delete all areas marked and restart drawing.


- h) Click **Save** to save the changes for that area.

- i) Repeat steps (d) to (h) for each area to be defined.

3. Set the arming schedule.

- a) Click **Edit** to edit the arming schedule. The “Edit Schedule Time” window appears.



- b) Select the day and click  to set the detailed time period.
 - c) Click **OK** to save changes.
4. Specify the linkage method for when an event occurs.

Select one or more response methods for the system when a motion detection alarm is triggered.

Notify Surveillance Center Send an exception or alarm signal to remote management software when an event occurs.

Send Email Sends an email to a specified address when there is a motion detection alarm.

Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 18 for further information. If you want to send the event snapshot together with the email, select the “Attached Snapshot” option.

Upload to FTP Captures the image when an alarm is triggered and uploads the snapshot to an FTP server.

Note: To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 18 for further information. Enable the **Upload Type** option.

To upload the snapshot to FTP when motion detection or an alarm input is triggered, you must also select the **Enable Event-triggered Snapshot check box** in the snapshot parameters. See “Snapshot parameters” on page 54 for further information.

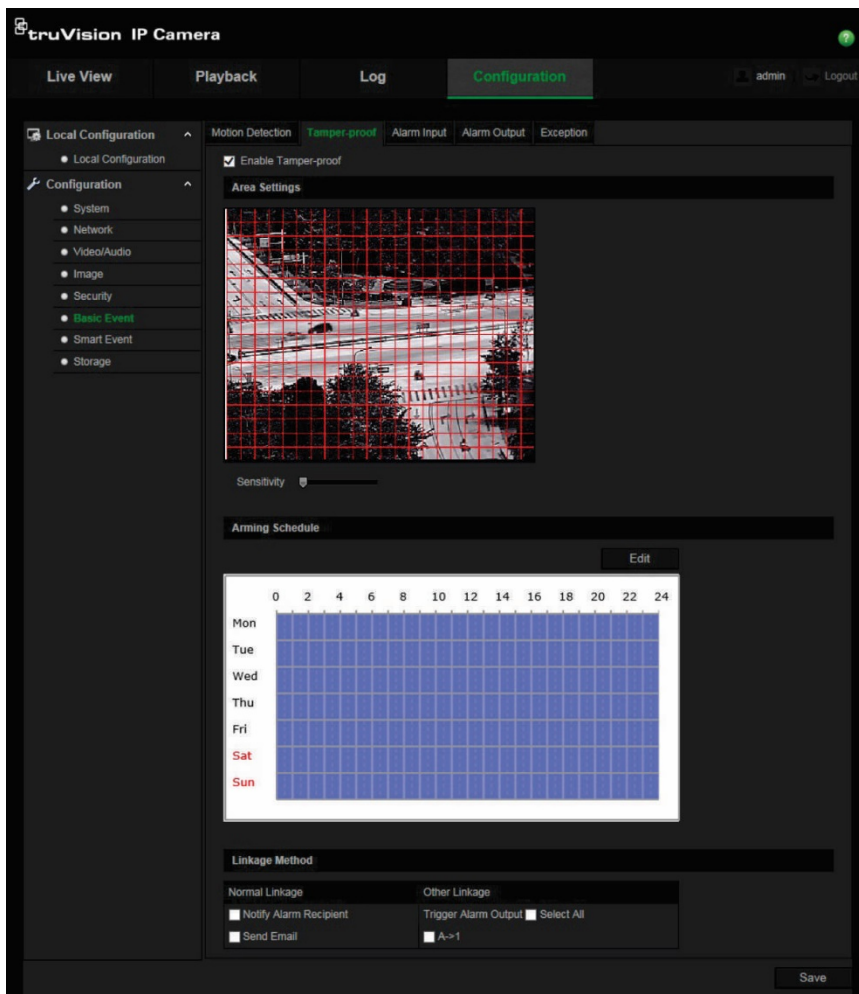
Trigger Channel Triggers the recording to start in the camera.

5. If required, select another day of the week to set a different schedule, or copy the same schedule to other days of the week.
6. Click **Save** to save changes.

Video tampering alarms

You can configure the camera to trigger an alarm when the lens is covered and to take an alarm response action.

Figure 9: Tamper-proof alarm window



To set up video tampering alarms:

1. From the Configuration panel, click **Configuration > Basic Event > Video Tampering**.
2. Select the **Enable Video Tampering** check box.
3. Move the **Sensitivity** slider to set the detection sensitivity. The sensitivity applies to the whole screen.
4. Click **Edit** to edit the arming schedule. The arming schedule configuration is the same as that for motion detection. See “Set the rules” on page 58 for more information.
5. Specify the linkage method when an event occurs. Select one or more response methods for the system when a tamper-proof alarm is triggered.

Notify Surveillance Center Send an exception or alarm signal to remote management software when an event occurs.

Send Email	Sends an email to a specified address when there is an alarm triggered. Note: You must configure email settings before enabling this option. See "To set up the email parameters" on page 18 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select "Select All" or individual alarm outputs. Note: This option is only supported by cameras that support alarm output.

6. Click **Save** to save changes.

Alarm inputs and outputs

To define the external alarm input:

1. From the Configuration panel, click **Configuration > Basic Event > Alarm Input**.
2. Choose the **Alarm Input No.** and the **Alarm Type**. The alarm type can be NO (Normally Open) or NC (Normally Closed). Enter a name for the alarm input, if desired.
3. Click **Edit** to set the arming schedule for the alarm input. The arming schedule configuration is the same as that for motion detection. See "Set the rules" on page 58 for more information.
4. Specify the linkage method. Select one or more response methods for the system when an alarm input is triggered.

Notify Surveillance Center	Send an exception or alarm signal to remote management software when an event occurs.
Send Email	Sends an email to a specified address when there is an alarm input or output alarm. Note: You must configure email settings before enabling this option. See "To set up the email parameters" on page 18 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select "Select All" or individual alarm outputs. Note: This option is only supported by cameras that support alarm output.

5. Click **Save** to save changes.

To define alarm output:

1. From the Configuration panel, click **Configuration > Basic Event > Alarm Output**.
2. Select one alarm output channel from the **Alarm Output** drop-down list. You can also set a name for the alarm output.
3. The delay time can be set to 5 s, 10 s, 30 s, 1 min, 2 min, 5 min, or 10 min. The delay time refers to the time duration that the alarm output remains in effect after the alarm occurs.

4. Click **Edit** to set the arming schedule. The arming schedule configuration is the same as that for motion detection. See “Set the rules” on page 58 for more information.
5. If required, select another day of the week to set a different schedule for alarm outputs, or copy the same schedule to other days of the week.
6. Click **Save** to save changes.

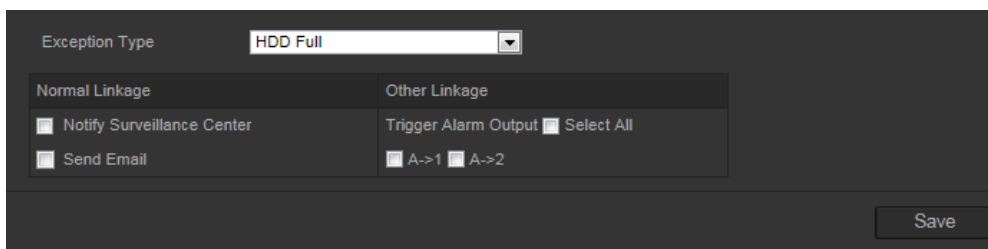
Exception alarms

You can set up the camera to notify you when unexpected events occur and how you should be notified. These exception alarms include:

- **HDD Full:** All recording space on the NAS is full.
- **HDD Error:** Errors occurred while files were being written to the storage, no storage or storage had failed to initialize.
- **Network Disconnected:** Disconnected network cable.
- **IP Address Conflicted:** Conflict in IP address setting.
- **Illegal Login:** Wrong user ID or password used to login to the cameras.

To define exception alarms:

1. From the Configuration panel, click **Configuration > Basic Event > Exception**.
2. Under **Exception Type**, select an exception type from the drop-down list.



3. Specify the linkage method for when an event occurs. Select one or more response methods for the system when an exception alarm is triggered.

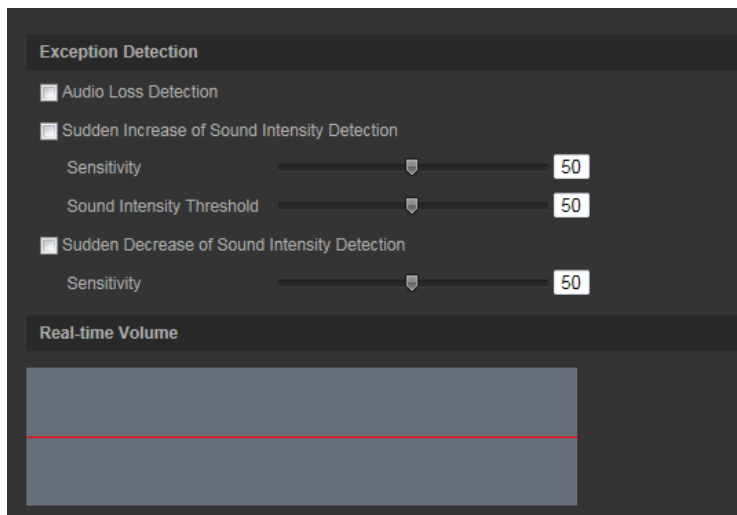
Notify Surveillance Center	Send an exception or alarm signal to remote management software when an event occurs.
Send Email	Sends an email to a specified address when there is an exception alarm. Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 18 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Check “Select All” or individual alarm outputs. Note: This option is only supported by cameras that support alarm output.

4. Click **Save** to save changes.

Audio exception detection

The “Audio Exception Detection” function detects sounds that are above a selected threshold.

Figure 10: Audio exception detection window



To define audio exception detection:

1. From the Configuration panel, click **Configuration > Smart Event > Audio Exception Detection**.
2. Select Audio Loss Exception to activate the function.
3. Select Sudden Increase of Sound Intensity Detection to detect if there is a sudden increase in sound in the surveillance scene. Also set the detection sensitivity and threshold for sudden increases in sound.

Sensitivity: The smaller the value, the larger the change required to trigger detection. The range is between 1 and 100.

Sound Intensity Threshold: This option filters the sound in the environment. The louder the environmental sound, the higher the value. Adjust it according to the actual environment. The range is between 1 and 100.

4. Select the check box of Sudden Decrease of Sound Intensity Detection to detect the sound sudden drop in sound in the surveillance scene. You can set the detection sensitivity and threshold for sudden decreases in sound.

Sensitivity: The smaller the value, the larger the change should be to trigger the detection. The range is between 1 and 100.

Sound Intensity Threshold: This option filters the sound in the environment. The louder the environmental sound, the higher the value. Adjust it according to the actual environment. The range is between 1 and 100.

5. Click **Edit** to set the arming schedule. The arming schedule configuration is the same as that for motion detection. See “Set the rules” on page 58 for more information.

- Specify the linkage method. Select one or more response methods for the system when an audio exception alarm is triggered.

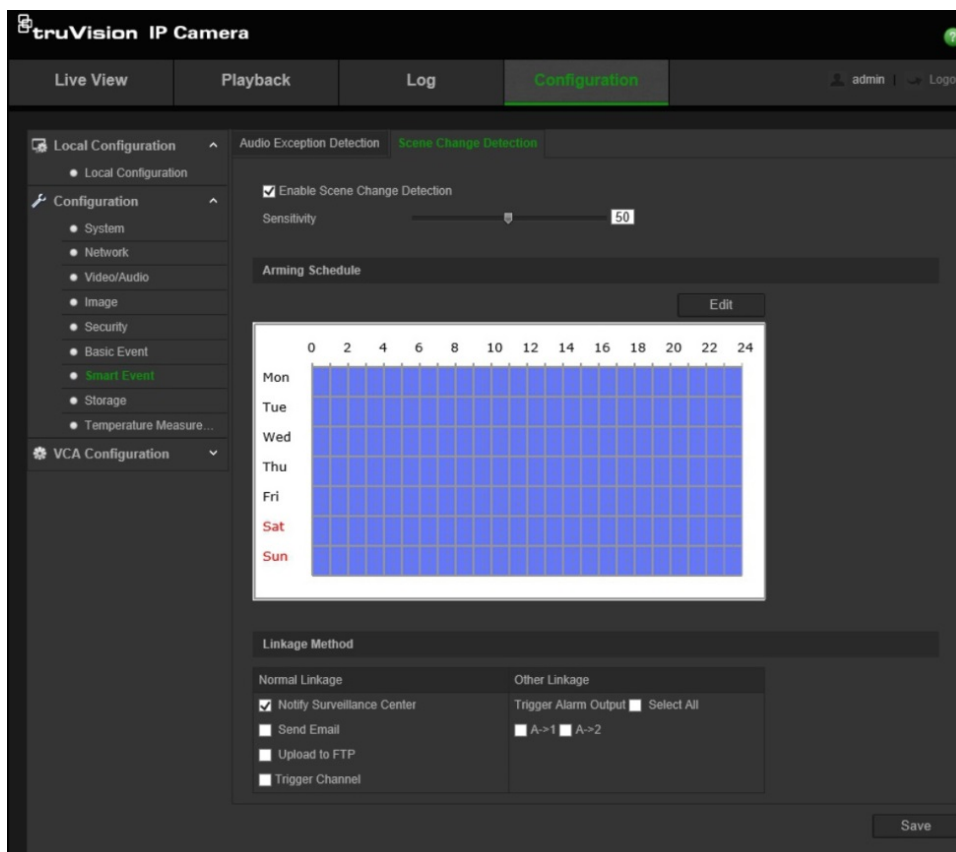
Notify Surveillance Center	Send an exception or alarm signal to remote management software when an event occurs.
Send Email	Sends an email to a specified address when there is a motion detection alarm. Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 18 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Trigger Channel	Triggers the recording to start in the camera.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or individual alarm outputs. Note: This option is only supported by cameras that support alarm output.

- Click **Save** to save changes.

Scene change detection

You can configure the camera to trigger an alarm when the camera detects a change in the scene caused by an intentional rotation of the camera.

Figure 11: Scene change detection window



To define scene change detection:

1. From the Configuration panel, click **Configuration > Smart Event > Scene Change Detection**.
2. Select the Enable Scene Change Detection check box to enable the function.
3. Configure the sensitivity ranging from 1 to 100. The higher the sensitivity, the easier the change of scene can trigger an alarm.
3. Click **Edit** to set the arming schedule for the alarm input. See “Set the rules” on page 58 for more information.
4. Specify the linkage for method when an event occurs. Select one or more response methods for the system when a scene change detection alarm is triggered.

Notify Surveillance Center	Sends an exception or alarm signal to remote management software when an event occurs.
Send Email	<p>Sends an email to a specified address when there is a scene change detection alarm.</p> <p>Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 17 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option</p>
Upload to FTP	<p>Captures the image when an alarm is triggered and uploads the snapshot to an FTP server.</p> <p>Note: To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 18 for further information. Enable the Upload Type option.</p> <p>To upload the snapshot to FTP when motion detection or an alarm input is triggered, you must also select the Enable Event-triggered Snapshot check box in the snapshot parameters. See “Snapshot parameters” on page 54 for further information.</p>
Trigger Channel	Triggers the recording to start in the camera.
Trigger Alarm Output	<p>Triggers external alarm outputs when an event occurs. Select Select All or individual alarm outputs.</p> <p>Note: This option is only supported by cameras that support alarm output.</p>

5. Click **Save** to save changes.

Fire source detection

You can configure the camera to trigger an alarm when the camera detects a fire source.

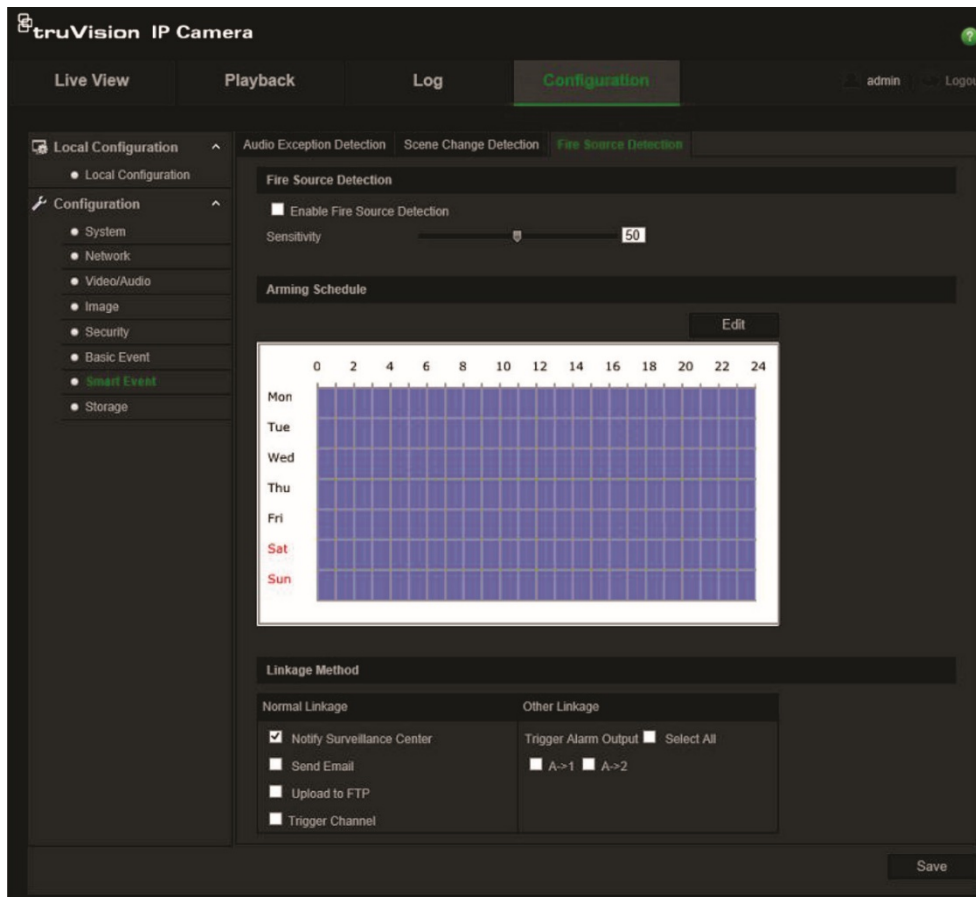


IMPORTANT NOTICE: This fire detection feature is not a substitute for a certified fire detection system.

Note: This function is only available when **Fire Source Detection** has been enabled under the menu **Configuration > System > VCA Resource Type**. See “VCA resource type” on page 54 for more information.

To define the fire source detection:

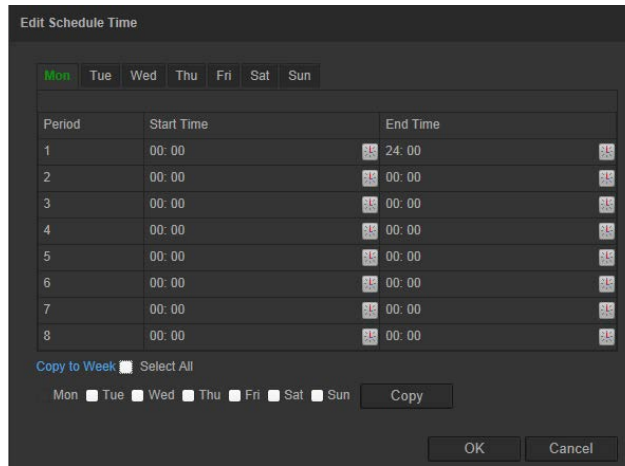
1. From the Configuration panel, click **Configuration > Smart Event > Fire Source Detection**.




2. Select the **Enable Fire Source Detection** check box to enable the function. When a fire source is detected, a red frame appears around the source in the live view image.

Note: When **Enable Fire Source Detection** is enabled, an extra function appears under the *Local Configuration* window that allows you to enable how the fire information is displayed on the camera. See the instructions on page 18 for further information.

3. Slide the sensitivity cursor to adjust the sensitivity level of the fire source detection from 1 to 100. The larger the number, the higher the detection sensitivity level. Default is 50.
4. Set the arming schedule.
 - a) Click **Edit** to edit the arming schedule. The “Edit Schedule Time” window appears.



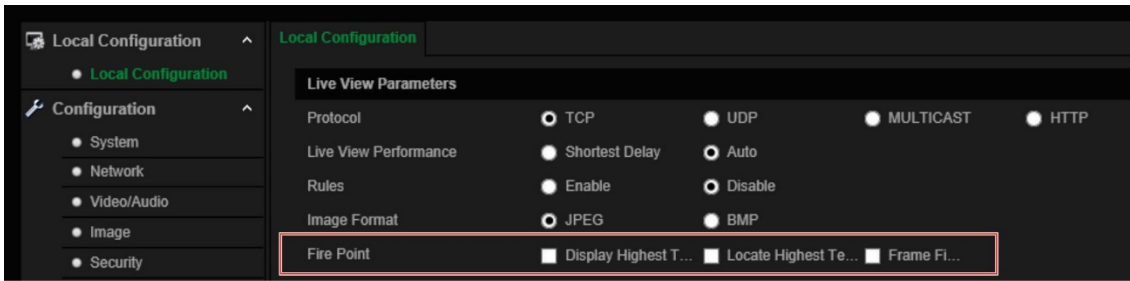
- b) Select the desired day and click  to set the detailed time period. You can copy the schedule to other days. Default is one period of 24 hours per day.
 - c) Click **OK** to save changes.
5. Specify the linkage method when an event occurs. Select one or more response methods for the system when a fire source detection alarm is triggered.

Notify Surveillance Center	Sends an exception or alarm signal to remote management software when an event occurs.
Send Email	Sends an email to a specified address when there is a scene change detection alarm. Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 17 for further information. If you want to send the event snapshot together with the email, select the “Attached Snapshot” option
Upload to FTP	Captures the image when an alarm is triggered and uploads the snapshot to an FTP server. Note: To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 18 for further information. Enable the Upload Type option. To upload the snapshot to FTP when motion detection or an alarm input is triggered, you must also select the Enable Event-triggered Snapshot check box in the snapshot parameters. See “Snapshot parameters” on page 54 for further information.
Trigger Channel	Triggers the recording to start in the camera.
Trigger Alarm Output	Triggers external alarm outputs when an event occurs. Select “Select All” or individual alarm outputs. Note: This option is only supported by cameras that support alarm output.

6. Click **Save** to save changes.

To display fire source information in live view:

1. From the Configuration panel, click **Local Configuration**.
2. Under **Fire Point**, select one or more options on how to display the fire information.



Display Highest Temperature	Display the highest temperature.
<hr/>	
Locate Highest Temperature Point	Specify where the fire is located.
<hr/>	
Frame Fire Point	Display a red frame around the fire source during video streaming when a fire is detected.

The option is disabled by default.

3. Click **Save** to save changes.

Temperature measurement

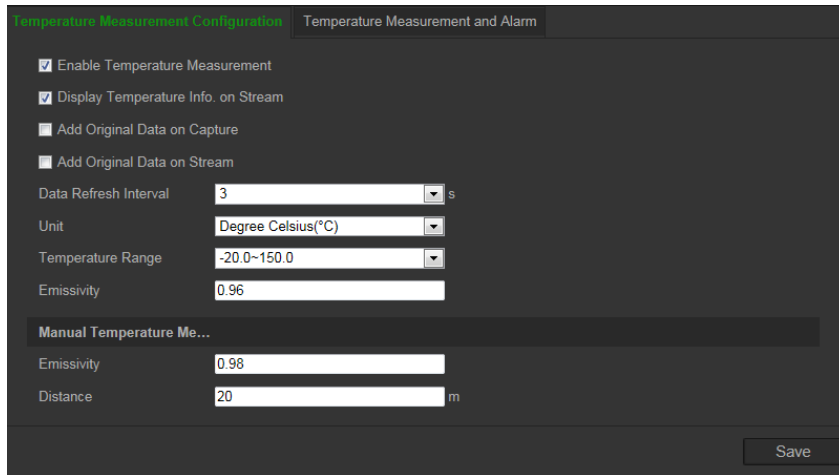
The camera can measure the actual temperature of a point/line/frame being monitored. The camera triggers an alarm when the temperature exceeds the defined temperature threshold value.

Notes:

- This function is only available when **Temperature Measurement + Behavior Analysis + Standard VCA Functions** has been enabled under the menu **Configuration > System > VCA Resource Type**. See “VCA resource type” on page 54 for more information.
- When **Temperature Measurement + Behavior Analysis + Standard VCA Functions** is enabled, an extra function appears in the “Local Configuration” window that allows you to select if the fire information is displayed on the live view image.

To set the temperature measurement:

1. From the Configuration panel, click **Configuration > Temperature Measurement > Temperature Measurement Configuration**.

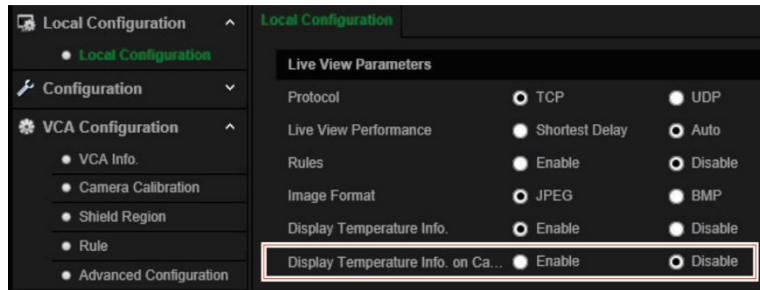


2. Select the check boxes of the interface to set the temperature measurement configurations.

- **Enable Temperature Measurement:** Select the check box to enable temperature measurement function.
- **Display Temperature Info. on Stream:** Select the check box to display temperature information in live view.
- **Add Original Data on Capture:** Select the check box to add original data on capture.
- **Add Original Data on Stream:** Select the check box to add original data on stream.
- **Data Refresh Interval:** Select the data refresh interval from 1s to 5s.
- **Unit:** Display temperature in Degree Celsius, Degree Fahrenheit, or Degree Kelvin.
- **Temperature Range:** Select the temperature range: -20 to 150 °C, -4 to 302 °F, or 253 to 423 K.
- **Emissivity:** Set the emissivity (ability to emit infrared energy) of your target. Values range from 0 (completely reflective target) to 1 (object emitting no infrared energy).
Note: The emissivity of each object is different.
- **Distance:** Manually enter the straight-line distance between the target and the device.

3. Click **Save** to save the settings.

4. From the Local Configuration panel, click **Local Configuration** and enable **Display Temperature Info. on Camera**. The option is disabled by default.



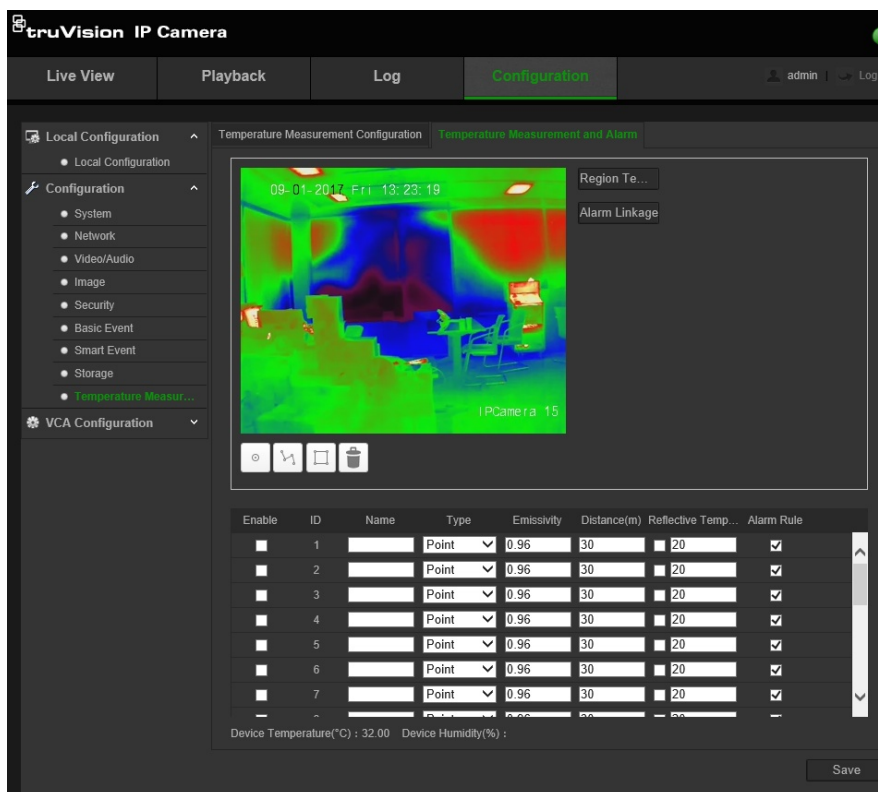
Click **Save** to save the setting.

Note: This option is not available if **Temperature Measurement + Behavior Analysis + Standard VCA Functions** is disabled in the **Configuration > System > VCA Resource Type** menu.

To set the temperature measurement and alarm:

Use this function to measure the temperature of the selected point/line/frame. The device compares temperature of selected regions and alarms.

1. From the Configuration panel, click **Configuration > Temperature Measurement > Temperature Measurement and Alarm**.



2. Draw the desired point, line or frame where you want to monitor a location on the live view image. Each point, line, and frame must be created individually and the rules associated with it configured before you can create the next point/line/frame.



Click the Point icon and then click the spot on the image where you want to monitor a specific point.



Click the Line icon and then left- click where you want the line to start and end on the image. Right-click to finish drawing the area.



Click the Frame icon and then left- click where you want the line to start and end on the image. Right-click to finish drawing the area.



Delete all points, lines, and frames on the image.

Note: You can draw up to a total of 10 points, 1 line, and 10 frames.

Enable	ID	Name	Type	Emissivity	Distance(m)	Reflective Temp...	Alarm Rule
<input type="checkbox"/>	1		Frame	0.96	30	<input type="checkbox"/> 20	<input checked="" type="checkbox"/>
<input type="checkbox"/>	2		Point	0.96	30	<input type="checkbox"/> 20	<input checked="" type="checkbox"/>
<input type="checkbox"/>	3		Point	0.96	30	<input type="checkbox"/> 20	<input checked="" type="checkbox"/>
<input type="checkbox"/>	4		Point	0.96	30	<input type="checkbox"/> 20	<input checked="" type="checkbox"/>


3. Set the temperature measurement rules for the point/line/frame just created.

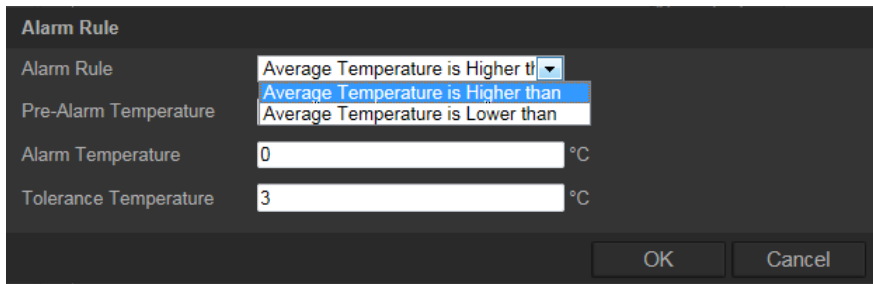
Select the check box of the first rule and enter the following information about this rule. You can set up to up to 21 rules (10 points, 1 line, and 10 frames).

- **Name:** Enter the desired name for the rule.
- **Type:** Select Point, Line, or Frame as the rule type.
 - Point:* This is the temperature of the point you inserted in the live view image.
 - Line:* This is the temperature of the line you drew in the live view image.
 - Frame:* This is the temperature of the area you drew in the live view image.
- **Emissivity:** Set the emissivity (ability to emit infrared energy) of your target. Values range from 0 (completely reflective target) to 1 (object emitting no infrared energy).
- **Distance (m):** Enter the straight-line distance between the target and the device.
- **Reflective Temperature:** If there are any targets with high emissivity in the scene, select the check box and set the reflective temperature to correct the temperature. Default is unchecked.

4. Set the alarm rules for the point/line/frame just created.

Point rule:

- a) Click  to display the “Alarm Rule” setup window.



- b) From the drop-down list, select one of the “Alarm Rule” options: Average Temperature is Higher than, or Average Temperature is Lower than.

For example, select “Alarm Rule” as **Average Temperature is Higher than**, and set the “Alarm Temperature” to 50 °C (122 F°). The device triggers an alarm when its average temperature is higher than 50 °C.

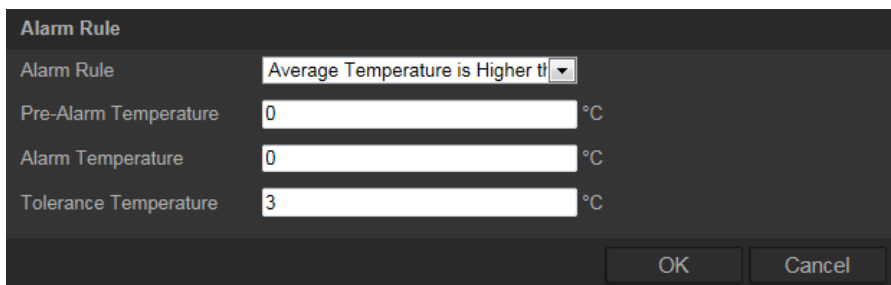
- c) Enter the temperature values of the **Alarm Pre-Alarm Temperature, Alarm Temperature, and Tolerance Temperature**.

For “Tolerance Temperature”, the triggered alarm stops when the device temperature/temperature difference is less than the rule temperature by the set tolerance temperature. For example, set the tolerance temperature to 3 °C (37.4 °F), set alarm temperature to 55 °C (131 °F), and set pre-alarm temperature to 50 °C (122 °F). The device sends a pre-alarm when its temperature reaches 50 °C (122 °F) and it triggers an alarm when its temperature reaches 55 °C (131 °F). Only when the device temperature is lower than 52 °C will the alarm be cancelled.

- d) Click **OK** to save the changes.

Line rule:

- a) Click  to show the *Alarm Rule* setup window.



- b) Set the alarm rule. Select one of the six options:

Max. temperature is higher than, Max. temperature is lower than, Min. temperature is higher than, Min. temperature is lower than, Average temperature is higher than, or Average temperature is lower than.

- c) Enter the values of the Alarm Pre-Alarm Temperature, Alarm Temperature, and Tolerance Temperature.

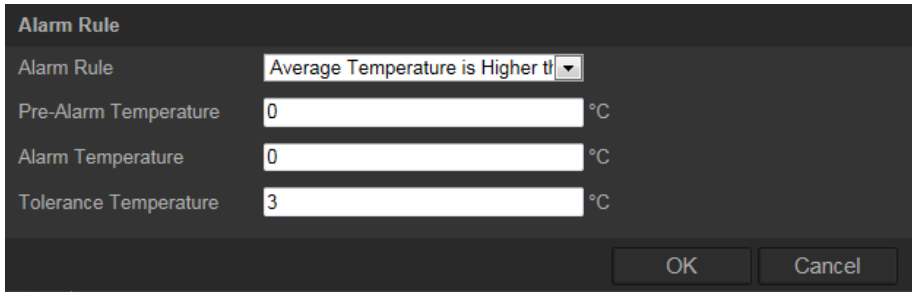
For example, for “Alarm Rule” select **Min. Temperature is Lower than**, and set the “Alarm Temperature” to 40 °C (104 F°). The device triggers an alarm when the minimum temperature is lower than 40 °C.

d) Click **OK** to save the changes.

Frame rule:

- **Single frame**

a) Click  to show the *Alarm Rule* setup window.



b) Set the alarm rule. Select one of the options from the drop-down list:

Max. temperature is higher than, Max. temperature is lower than, Min. temperature is higher than, Min. temperature is lower than, Average temperature is higher than, Average temperature is lower than, Temperature difference is higher than, or Temperature difference is lower than.

c) Enter the temperature values of the **Alarm Pre-Alarm Temperature**, **Alarm Temperature**, and **Tolerance Temperature**.

For example, select “Alarm Rule” as **Temperature Difference is Higher than**, and set the “Alarm Temperature” to 10 °C (50 F°). The device triggers an alarm when the difference between the minimum temperature and the maximum temperature of the region is higher than 10 °C.

d) Click **OK** to save the changes.

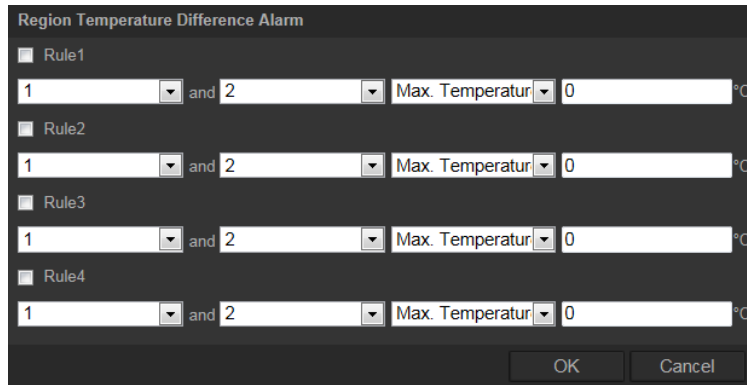
- Or -

- **Two or more frames**

When using two or more alarm frames, set the alarm for the region temperature difference between two frames.

a) In the **Temperature Measurement and Alarm** window, enable the frames alarm rules that you want to include in the region temperature difference.

b) Click the **Region Temperature Difference Alarm** button to display the “Region Temperature Difference Alarm” window.



c) Select the **Rule 1** check box and select two frame rules from the drop-down lists to compare the saved regions.

d) Set the alarm rules and the temperature.

For example, for *Rule 1* select **Temperature Difference is Higher than**, and enter 10 °C (50 F°). An alarm is triggered when the difference between the minimum and the maximum region temperatures is greater than 10 °C.

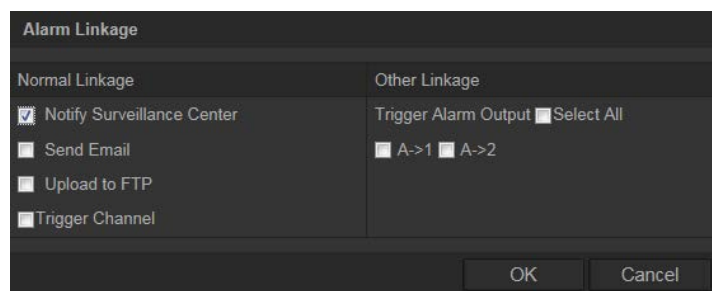
Note: The **Region Temperature Difference Alarm** only applies to the targets set by the frames.

e) To compare other pairs of frame rules, click the next rule check box and repeat the instructions described in steps c and d.

f) Click **OK** to save the changes.

5. Set the alarm linkage.

Click the **Alarm Linkage** button to enter the alarm linkage window and select the desired linkage methods. The linkage methods selected apply to all region temperature difference alarms.



Notify Surveillance Center Send an exception or alarm signal to remote management software when an event occurs.

Send Email Send an email to a specified address when there is an alarm input or output alarm.

Note: You must configure email settings before enabling this option. See “To set up the email parameters” on page 18 for further information. If you want to send the event snapshot together with the email, select the **Attached Snapshot** option.

Upload to FTP	<p>Capture the image when an alarm is triggered and upload the snapshot to an FTP server.</p> <p>Note: To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 18 for further information. Enable the Upload Type option.</p> <p>To upload the snapshot to an FTP when motion detection or an alarm input is triggered, you must also select the Enable Event-triggered Snapshot check box in the snapshot parameters. See “Snapshot parameters” on page 45 for further information.</p>
Trigger Channel	Triggers the recording to start in the camera.
Trigger Alarm Output	<p>Trigger external alarm outputs when an event occurs. Select Select All or each individual alarm output.</p> <p>Note: This option is only supported by cameras that support an alarm output.</p>

Click **OK** to save the changes.

6. If required, create another new point, line, or frame and set up the rules associated with it. Repeat steps 2 to 5.
7. Click **Save** to save the settings.

VCA configuration

The camera can do video content analysis (VCA) and send the video analytics results (metadata) to an NVR or other platforms to generate a VCA alarm.

VCA resource type

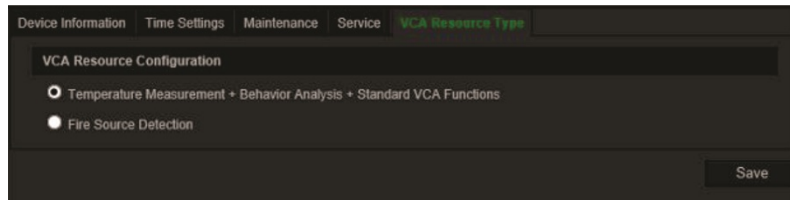
You need to specify which type of VCA resource is to be used.

To select the VCA resource type:

1. From the Configuration panel, click **Configuration > System > VCA Resource Type**.
2. Select one of the options:

Measurement + Behavior Analysis + Standard VCA Functions: When enabled, this lets you configure the parameters to measure temperature, display VCA information and behavioral analysis. See “VCA information” below and “Behavior analysis” on page 56 for more information.

Fire Source Detection: When enabled, this lets you configure the parameters to trigger an alarm when the camera detects a fire source. See “Fire source detection” on page 43 for further information.



3. Click **Save** to save the settings.

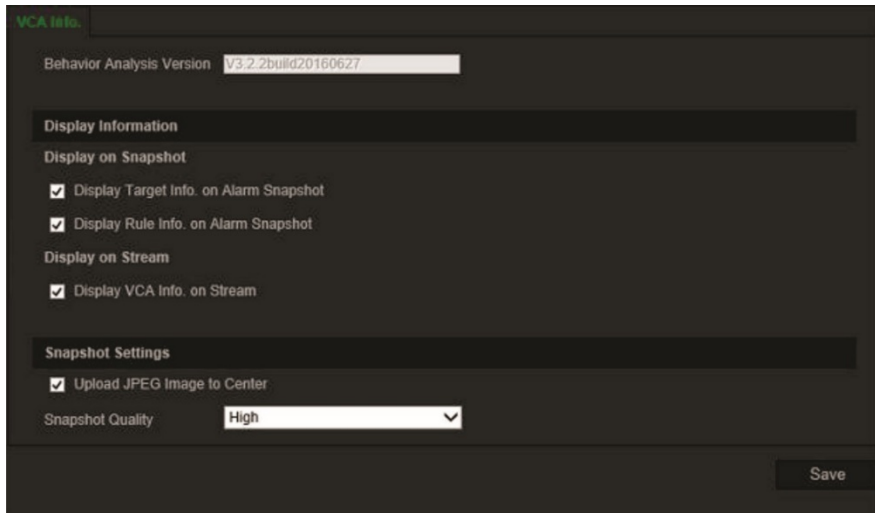
VCA information

You can set up the camera to display information on the target and alarm rules in the video image. You can also configure the quality and resolution of snapshots and streamed images. This function also displays the version of the algorithm library used.

Note: This function is only available when **Temperature Measurement + Behavior Analysis + Standard VCA Functions** has been enabled under the menu **Configuration > System > VCA Resource Type**. See the section “VCA resource type” above.

To set up VCA information:

1. From the Configuration panel, click **VCA Configuration > VCA Info**
2. Select the check boxes for the desired display information and snapshot settings.



Behavior Analysis Version	Displays the version of the algorithms library.
Display Information	<p>Displays the target information on the alarm snapshot and video stream. Select the check boxes to enable the desired display method.</p> <p>Display Target info. on Alarm Snapshot: When enabled, a frame of the target information is displayed on the uploaded alarm snapshot.</p> <p>Display Rule info. on Alarm Snapshot: When enabled, a frame of the information about the captured target and the configured area is displayed on the uploaded alarm snapshot.</p> <p>Display VCA info. on Stream: A green frame is displayed on the target when in live view or playback.</p> <p>Note: “Rules” must be enabled in your local settings. Go to Configuration > Local Configuration > Rules to enable the option.</p>
Snapshot Settings	<p>Set the quality and resolution for the captured snapshot.</p> <p>Upload JPEG Image to Center: Select the check box to upload the captured image to the surveillance center when a VCA alarm occurs.</p> <p>Snapshot Quality: Select High, Medium, or Low from the drop-down list.</p>

3. Click **Save** to save the settings.

Behavior analysis

The camera can analyze video data from real-time behavior and smart filters to help detect unwanted events. When an alarm is triggered, pre-defined linkage methods are then activated.

Note: This function is only available when **Temperature Measurement + Behavior Analysis + Standard VCA Functions** has been enabled under the menu **Configuration > System > VCA Resource Type**.

To set up behavior analysis:

1. From the Configuration panel, click **VCA Configuration > VCA Info** and enable the display information and snapshot settings (see “VCA information” on page 54).
2. Perform the following steps to three-dimensionally measure and quantize the image from the camera, and then to calculate the size of every target. The VCA detection will be more accurate if the camera is correctly calibrated. Make sure that you know the actual height of the person in the scene.
 - a) From the Configuration panel, click **VCA Configuration > Camera Calibration**.
 - b) Set the Auto Calibration.
 - i) Select the **Camera Calibration** check box to enable the option.
 - ii) Make sure only one person appears in the live view, and input the person's height in the **Target Height** text field.
 - iii) Click ► to start auto calibration.

Notes:

- Make sure there are no moving objects in the field of view except for the person.
 - The auto calibration starts when the person is totally seen in the camera's view, and ends when the person is in the endpoint (furthest away from the camera). The endpoint-to-camera distance (m) equals four times the lens focal length (mm). For example, for a 7 mm lens, the recommended endpoint is 28 m (7*4).
 - Once auto calibration has started, the person should walk in a zigzag path while staying within the camera's field of view.
 - Make sure the walking route covers the left, middle, and right of the image (FOV).
 - The auto calibration duration should not be shorter than 10 s, and no longer than 10 min. It should be theoretically enough to walk a double Z zigzag.
 - For leaf/tree interference in the live view, it is recommended to use shield settings.
- c) When the person exits, click to stop auto calibration.




The blue quadrilateral shape marks the designated detection area. See “Set the rules” on page 58 for further information on how to set it up.



Composite figure

At the end of the auto calibration, the camera shows four detection points by default, which are in this example each 1.7 m high.


Verification:

- i) Click  to start the verification process
- ii) Click the **Vertical Verify**  button, and drag a vertical line in the view.
- ii) Click the **Calibration**  button to calculate the length.
- iv) Compare the calculated line length to the actual length to verify the calibration settings.

Notes:

- It is recommended to verify several different target objects that appear in the field of view, such as more than one person, a car, a street lamp, etc.
 - The verifying result value is only the height of the line. The horizontal width is not measured.
 - If the Auto Calibration continues to fail, you need to manually calibrate.
- d) Set the Manual Calibration (Optional).

Note: The manual calibration process can only be started after auto calibration has failed or has been interrupted.

- i) Select the **Manual Calibration** check box to enable the option.
- ii) Under “Composite figure”, click Figure 1.
- iii) Click  and drag the vertical line until it fits the target.



- iv) Input the actual length of the vertical calibration line.
- v) Repeat the three previous steps for Figures 2, 3 and 4.

Note: Click to delete a calibration line.

- vi) After Figures 1 to 4 are calibrated, click **Save**.

Notes:

- In each of the four figures, draw the vertical lines across the left, middle and right of the image respectively and at different field depths.
- Ideally a different calibration object should be chosen in each figure.
- If manual calibration fails, reconfigure the calibration objects for Figures 1 to 4. You may need to use other objects for your calibration.

Verification:

- Refer to the verification procedure for *Auto Calibration* on page 57.

3. Draw the shield region.

The shield region is a specified region in the live view image where behavior analysis will not be carried out. You can set up to four shield regions.

- a) From the Configuration panel, click **VCA Configuration > VCA Configuration > Shield Region**.
- b) Click **Draw Area**. In the live view window, draw the desired area by left-clicking the end-points. Right-click the mouse to finish drawing the area.

Notes:



- You can draw a polygon area with up to 10 sides.
- Click **Delete** to delete all drawn areas.
- If live view stops, you cannot draw a shield region.

- c) Click **Save** to save the settings.

4. Set the rules.

You can set rules to identify different behavioral types, including cross line detection, intrusion detection, region entry detection, and region exit detection, as well as to filter objects that fit within a defined size.

Note: The rule types available depend on the camera model.

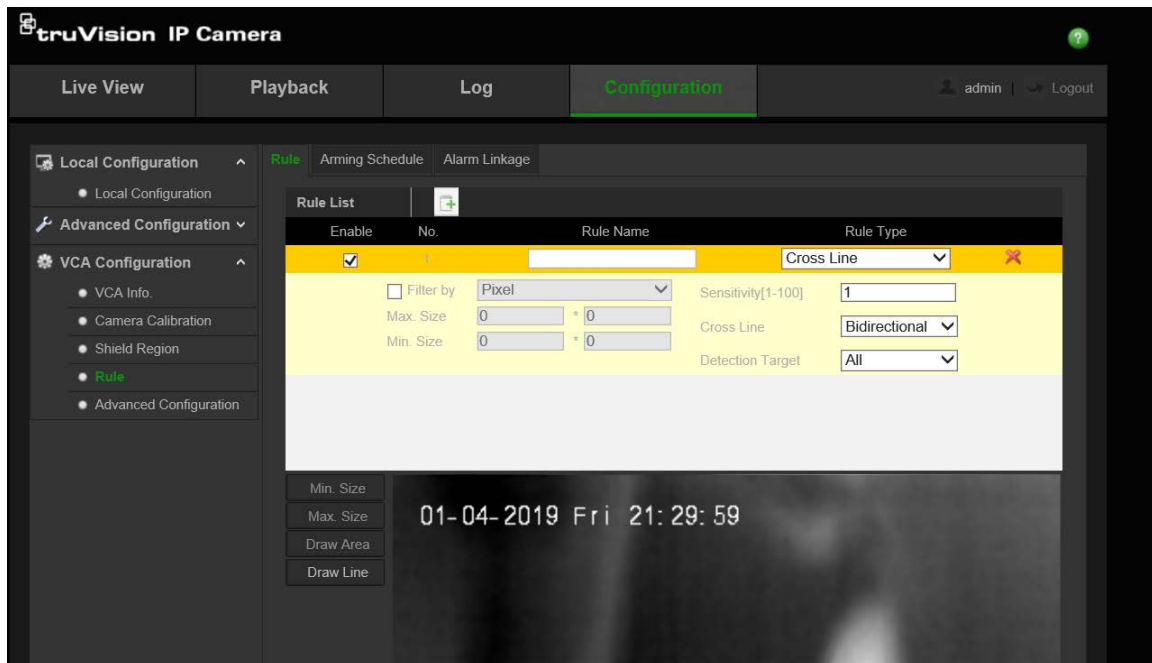
- a) From the Configuration panel, click Configuration > VCA Configuration > Rule.
- b) Click  to add a new rule. Click  to delete a rule.
- c) Select the check box of the desired rule to enable behavior analysis.
- d) Enter the name of the rule.
- e) Select the rule type. The rule types are:
 - **None.** The rule is ignored.
 - **Cross Line** detects people, vehicles, or other objects that cross a pre-defined virtual line. When enabled, you must select the crossing direction before drawing a line. Select bidirectional, A-to-B, or B-to-A.
 - **Intrusion** detects people, vehicles, or other objects that enter and loiter in a pre-defined virtual area. When enabled, you must set the duration time for intrusion. The duration range is from 1 to 100 s.
 - **Region Entrance** detects people, vehicles, or other objects that enter a pre-defined virtual area.
 - **Region Exit** detects people, vehicles, or other objects that exit a pre-defined virtual area.
- f) Select the filter type. You can set the system to detect an object that is within a defined size range.

Under “Filter by”, select **Actual Size** or **Pixel**.

Actual Size: Enter the length and width in meters of both the maximum and minimum sizes. Only a target whose size is between the minimum and maximum values will trigger an alarm. If you select the actual size option, you must configure the camera calibration.

Pixel: Click the **Min. Size** button and draw a minimum size rectangle on the live view image. Click the **Max. Size** button and draw a maximum size rectangle on the live view image. A target that is smaller than the minimum size or larger than the maximum size will be filtered. To delete the minimum and maximum size filter, click the buttons again.

Note: The drawn area is converted into pixels by the background algorithm.



Note: The drawn area is converted into pixels by the background algorithm.

- The maximum length and width sizes must be greater than the minimum length and width sizes.
- If live view stops, you cannot draw the detection area/line nor set any rules.
- If an object fits within the defined size range but it then changes size while in the area so that it then becomes larger than the maximum size or smaller than the minimum size (for example, a person in the area extends their arms so that they are now larger than the maximum size), an alarm will not be triggered.

g) Draw the line/area on the live video image.

For cross line detection, draw a line and select the crossing direction, which is bidirectional, A-to-B, or B-to-A.

For other events such as intrusion, region entrance, and region exiting, left-click the live video image to set the end points of the area and right-click to finish the area drawing. Click **Draw Area/Draw Line** again to delete the drawn area/line.

Set the sensitivity. The higher the value is, the more likely to trigger the alarm.

Set the **Detection Target** as Human, Vehicle, or Human & Vehicle. Only a target of the selected type will trigger an alarm.

Note: If live view stops, you cannot draw the detection area/line nor set any rules. If you want to detect a human whose size is 0.5 m wide, 1.8 m high, for example, the recommend settings are shown below.

Min. Size: 0.4*0.8 (m)

Max. Size: 1.5*2.5 (m)

Detection Target: Human.

Draw the line on the live video and select the crossing direction.

Up to eight single rules are supported.

h) Click **Save** to save the settings.

5. Set the arming schedule.

Click the **Arming Schedule** tab. Click **Edit** to set the schedule time for each alarm rule. Click **Save** to save the settings.

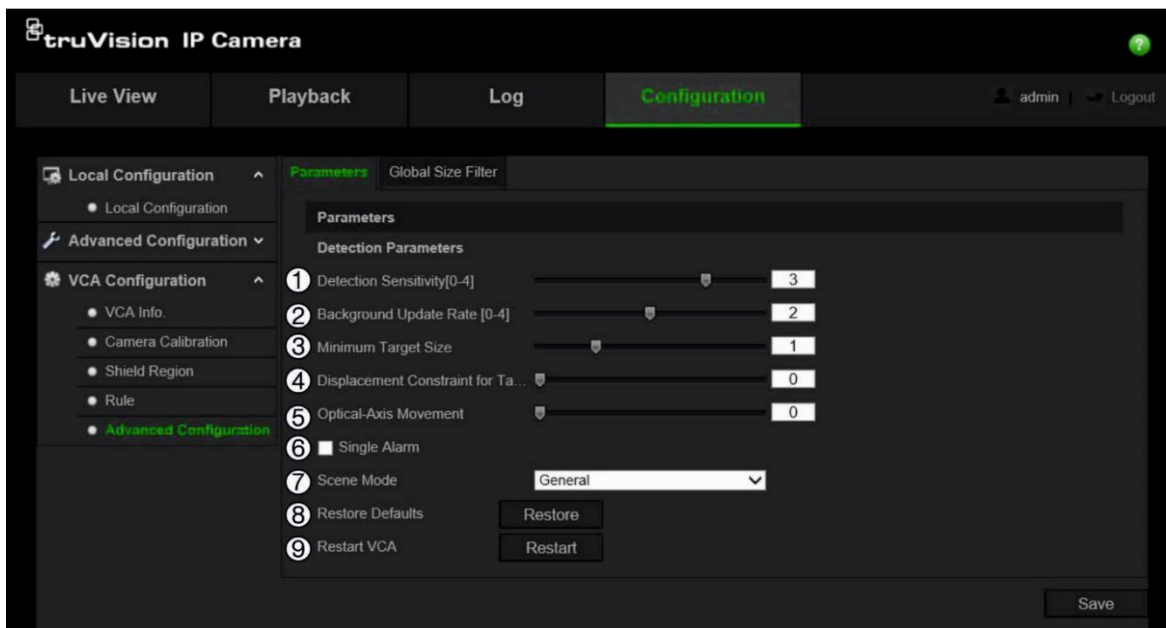
6. Set the alarm linkage.

Click the **Alarm Linkage** tab. Select the check box of the desired linkage methods for each rule. Click **Save** to save the settings. See page 34 for further information on linkage methods.

7. Set the VCA parameters.

From the Configuration panel, click **VCA Configuration > Advanced Configuration > Parameters**.

Enter the desired parameters:



Parameter	Description
1. Detection Sensitivity [0~4]	This is the camera's sensitivity to detect a target. The higher the value, the easier a target is to recognize and the higher the misinformation. Default value is 3.
2. Background Update Rate [0~4]	This is the speed at which a new scene replaces the previous scene. Default value is 2.
3. Minimum Target Size [0~4]	When the target size is smaller than the value entered, the behavior analysis algorithm will detect an object but the object will not appear in a green rectangle and trigger an alarm. This function can reduce the impact of leaves and other small objects, for example, that may produce interference. The default value of 1 is recommended.

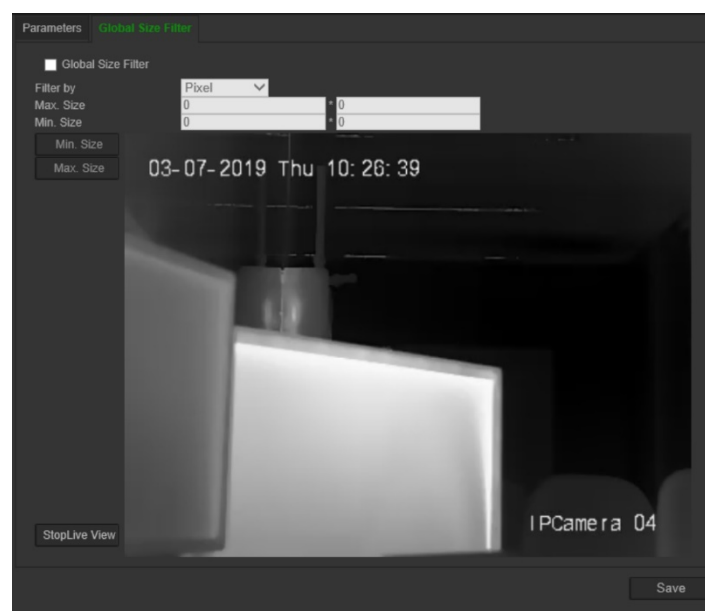
Parameter	Description
4 Displacement Constraint for Target Generation [0~4]	Target generation is the behavioral analysis of a moving target. The higher the value selected, the more accurately and more slowly a moving target is analyzed. For example, for small moving objects such as fluttering leaves that are difficult to model, it is recommended to select the maximum value 4 to improve accuracy although modeling will be slower than if analyzing larger objects.
5 Optical-Axis Movement	If the target moves in the direction of the camera's optical axis, set the sensitivity of the optical axis to movement. The lower the value, the more accurate the target analysis is and the more slowly the target analysis is calculated.
6 Single Alarm	If this is selected, the target in the configured area will trigger the alarm only once. If the option is disabled, the same target will cause a continuous alarm in the same configured area.
7 Scene Mode	General: Behavior analysis works normally. Default option. Distant View: Select when the camera is installed in an outdoor environment. Leaves Interfered View: Select when the camera is installed where the trees or leaves may interfere with the view.
8. Restore Default	Click to restore the configured parameters to default.
9. Restart VCA	Restart the algorithms library of the behavior analysis.

8. Set a global size filter. This step is optional.

An individual rule lets you filter for an object whose size is smaller than the minimum size or larger than the maximum size. However, the global size filter applies to all rules. You do not need to set individual size filters for each rule.

- a) From the Configuration panel, click **VCA Configuration > Advanced Configuration > Global Size Filter**.
- b) Select the **Global Size Filter** check box to enable the option.

Note: You can delete a defined global size filter by deselecting this check box.



c) Select the type of rule filter. Under “Filter by”, select **Actual Size** or **Pixel**.

Actual Size: Enter the length and width in meters of both the maximum and minimum sizes. Only a target whose size is between the minimum and maximum values will trigger an alarm.

Notes:

- If you select the actual size option, you must configure the camera calibration.
- The maximum length and width sizes must be greater than the minimum length and width sizes.

Pixel: Click the **Min. Size** button and draw a minimum size rectangle on the live view image. Click the **Max. Size** button and draw a maximum size rectangle on the live view image. A target that is smaller than the minimum size or larger than the maximum size will be filtered. To delete the minimum and maximum size filter, click the buttons again.

Notes:

- The drawn area is converted into pixels by the background algorithm.
- If live view stops, you cannot configure the global size filter.
- The maximum length and width sizes must be greater than the minimum length and width sizes.

9. Click **Save** to save the settings.

Storage configuration

Use the storage management window to display the capacity, free space available, and the working status of the HDD of the NAS and the SD card in the camera. You can also format these storage devices. The storage devices must be added to the system before they can be managed.

Before formatting a storage device, stop all recording. Once formatting is completed, reboot the camera as otherwise the device will not function properly.

If **Overwrite** is enabled, the oldest files are overwritten when the storage device becomes full.

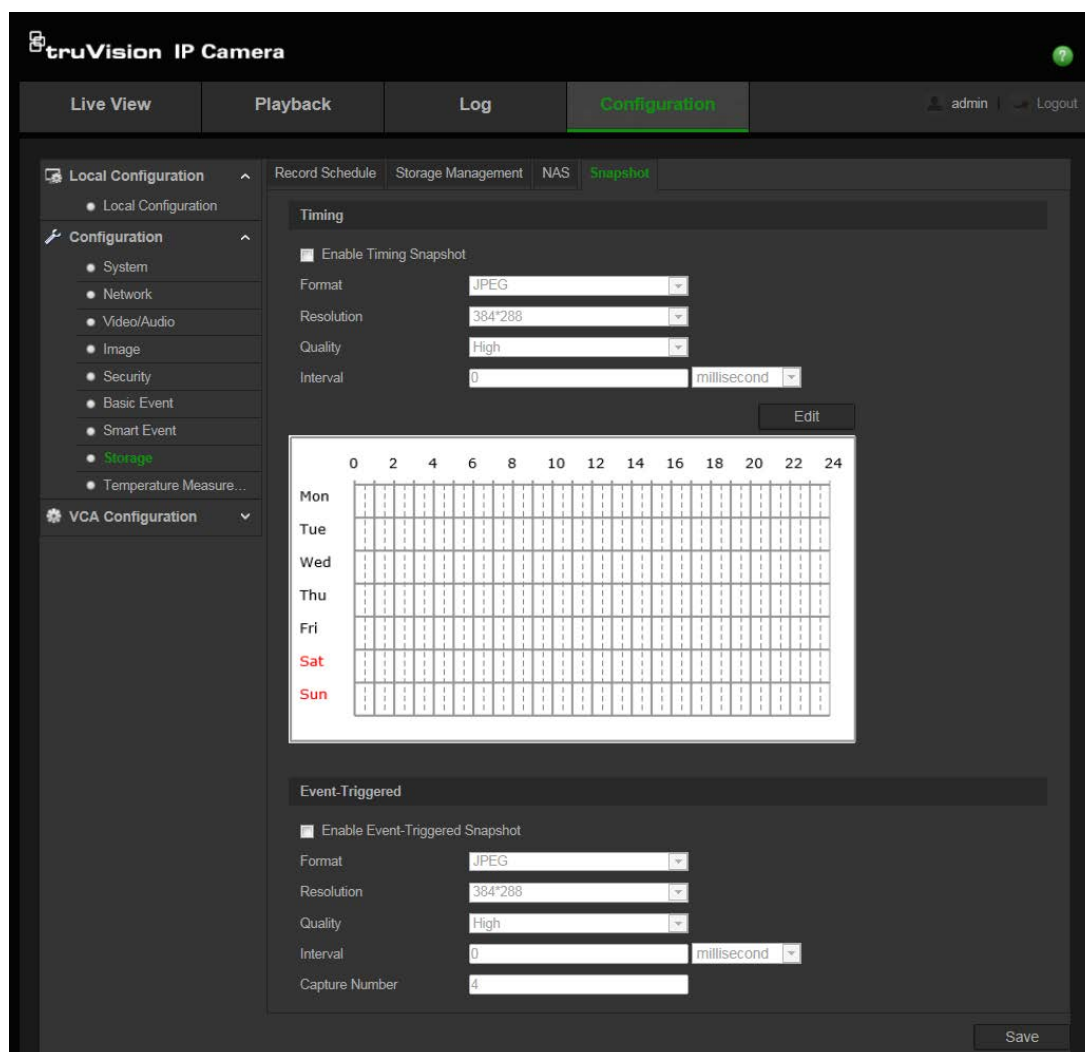
Snapshot parameters

You can configure continuous snapshots and event-triggered snapshots. The captured snapshots can be stored in the SD card (if supported) or on a NAS. You can also upload the snapshots to an FTP server.

You can set up the format, resolution, and quality of the snapshots.

To set up continuous snapshots:

1. From the Configuration panel, click **Configuration > Storage > Snapshot**.



2. Select the **Enable Timing Snapshot** check box to enable continuous snapshots.
3. Select the desired format of the snapshot, such as JPEG.
4. Select the desired resolution and quality of the snapshot. The quality can be low, medium, or high.
5. Enter the time interval between two snapshots. Select the unit of time from the drop-down list: milliseconds, seconds, minutes, hour, or day.
6. Set the schedule for when you want snapshots to be taken. Click **Edit** and enter the desired schedule for each day of the week.
7. Click **Save** to save changes.

To set up event-triggered snapshots:

1. From the Configuration panel, click **Configuration > Storage > Snapshot**.
2. Select the **Enable Event-triggered Snapshot** check box to enable event-triggered snapshots.

The screenshot shows the 'Event-Triggered' configuration interface. At the top, there is a checkbox labeled 'Enable Event-Triggered Snapshot' which is checked. Below this are several configuration options, each with a text input field and a dropdown menu:

- Format:** The dropdown menu is set to 'JPEG'.
- Resolution:** The dropdown menu is set to '384*288'.
- Quality:** The dropdown menu is set to 'High'.
- Interval:** The text input field contains '0' and the dropdown menu is set to 'millisecond'.
- Capture Number:** The text input field contains '4'.

3. Select the desired format of the snapshot, such as JPEG.
4. Select the desired resolution and quality of the snapshot.
5. Enter the time interval between two snapshots. Select the unit of time from the drop-down list: milliseconds or seconds.
6. Under **Capture Number**, enter the total number of snapshots that can be taken.
7. Click **Save** to save changes.

To upload snapshots to an FTP:

1. From the Configuration panel, click **Configuration > Network > FTP**.
2. Configure the FTP settings and select **Upload Type**. See page 18 for further information. Click **Save** to save changes.
3. To upload continuous snapshots to an FTP:

From the Configuration panel, click **Configuration > Storage > Snapshot**. Enable the option **Enable Timing Snapshot** if you want continuous snapshots to be uploaded to the FTP. Click **Save** to save changes.
4. To upload event-triggered snapshots to an FTP:
 - a) **Motion detection event:** From the Configuration panel, click **Configuration > Basic Event > Motion Detection**. Specify the linkage method as **Load to FTP**. See page 34 or 35 for further information.

Scene change detection event: From the Configuration panel, click **Configuration > Smart Event > Scene Change Detection**. Specify the linkage method as **Load to FTP**. See page 42 for further information.

Fire detection event: From the Configuration panel, click **Configuration > Smart Event > Fire Source Detection**. Specify the linkage method as **Load to FTP**. See page 43 for further information.

Temperature measurement event: From the Configuration panel, click **Configuration > Temperature Measurement > Temperature Measurement Configuration**. Specify the linkage method as **Load to FTP**. See page 46 for further information.
 - b) From the Configuration panel, click **Configuration > Storage > Snapshot**. Enable the option **Enable Event-Triggered Snapshot**. Click **Save** to save changes.

NAS settings

You can use a network storage system (NAS) to remotely store recordings.

To configure recording settings, ensure that you have the network storage device set up within the network. The NAS disk should be available within the network and correctly configured to store the recorded files, log files, etc.

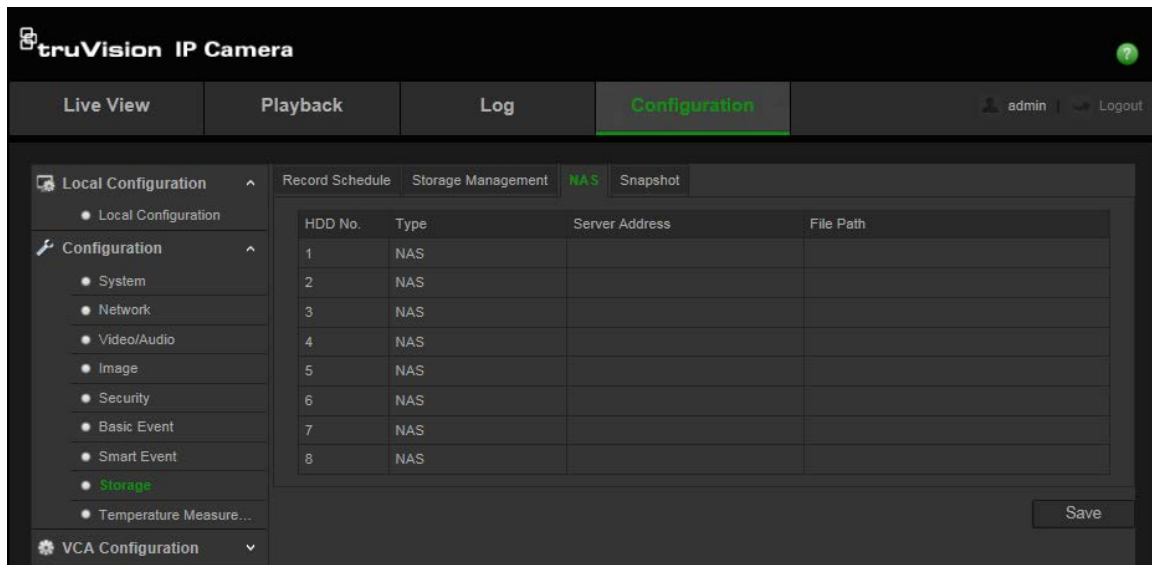
Notes:

- Up to eight NAS disks can be connected to a camera.
- The recommended capacity of NAS is between 9G and 2T as otherwise it may cause formatting failure.
- After inserting the SC card into the camera, follow the initialization instructions as for NAS below.

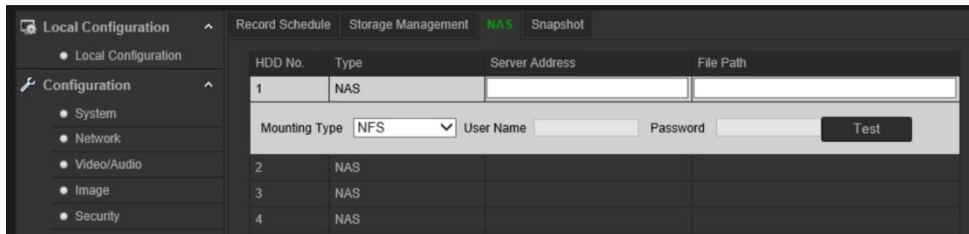
Caution: We strongly recommend that you use a strong password for all functions and network devices in order to protect your privacy and to protect your system against security risks. A valid password range must be at least eight characters. You can use a combination of numbers, lower and upper case letters, and special characters. The installer and/or end user are responsible for password management.

To set up a NAS system:

1. Add the network disk.
 - a) From the Configuration panel, click **Configuration > Storage > NAS**.



- b) Enter the server address of the network disk and the NAS file path for each NAS to be configured.
- c) Select the mounting type: NFS or SMB/CIFS. If SMB/CIFS is selected, set the user name and password to ensure security.



Note: Please refer to the NAS user manual for information on setting the file path.

- d) Click **Save** to add the disk.
2. Initialize the disk that has been added.
 - a) From the Configuration panel, click **Configuration > Storage > Storage Management**. See page 17 below for further information.

Storage management

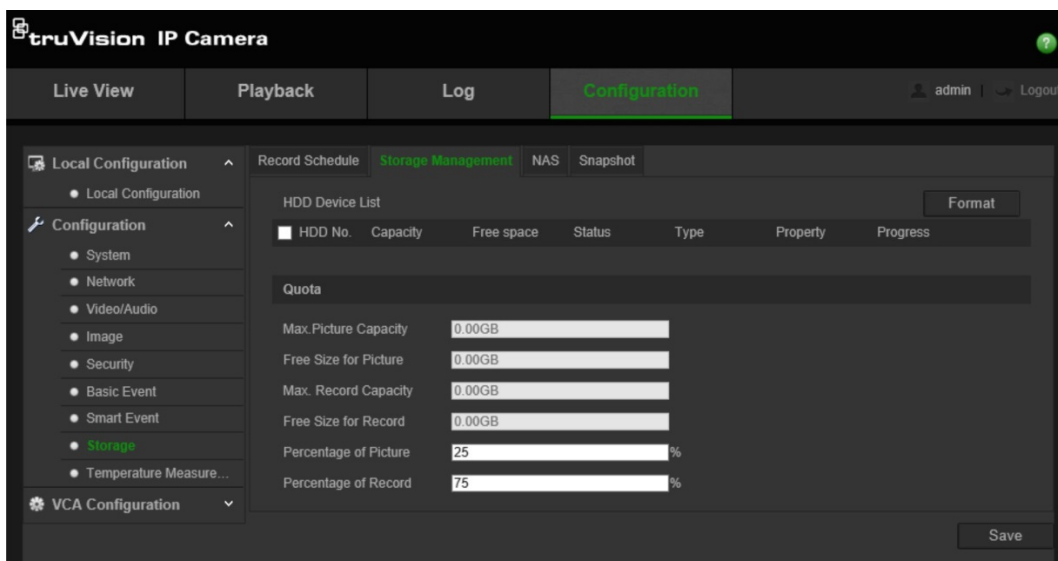
Use the “Storage Management” window to display the capacity, free space available, and the working status of the HDD of the NAS and the SD card in the camera. You can also format these storage devices. The storage devices must be added to the system before they can be managed.

Before formatting a storage device, stop all recording. Once formatting is completed, reboot the camera as otherwise the device will not function properly.

If **Overwrite** has been enabled, the oldest files are overwritten when the storage device becomes full.

To format a storage device:

1. From the Configuration panel, click **Configuration > Storage > Storage Management**.



2. Select the **HDD No.** check box of the desired storage device.
Select the check box of the uninitialized disk and click the **Format** button to start initialization. When completed, the status changes to “Normal”.

3. Enter the quota percentage for snapshots and recordings. Modify the values for each in **Percentage of Snapshot** and **Percentage of Record**.
4. Enter the quota percentage for snapshots and recording to allocate the storage capacities to the camera.
5. Click **Save** to save changes.

Recording schedule

You can define a recording schedule for the camera in the “Record Schedule” window. The recording is saved on the SD card in the camera or on a NAS. The camera’s SD card provides a backup in case of network failure. The SD card is not provided with the camera.

The recording schedule applies to all alarm types.

Pre-record time

The pre-record time is set to start recording before the scheduled time or event. For example, if an alarm triggers recording at 10:00, and the pre-record time is set as 5 seconds, the camera starts to record at 9:59:55. The pre-record time can be configured as No Pre-record, 5 s, 10 s, 15 s, 20 s, 25 s, 30 s, or Not Limited.

Post-record time

The post-record time is set to stop recording after the scheduled time or the event. For example, if an alarm triggered recording ends at 11:00, and the post-record time is set as 5 seconds, the camera records until 11:00:05. The post-record time can be configured as 5 s, 10 s, 30 s, 1 min, 2 min, 5 min, or 10 min.

To set up a recording schedule:

1. From the Configuration panel, click **Configuration > Storage > Record Schedule**.
2. Click the **Enable Record Schedule** box to enable recording.

Note: To disable recording, deselect the option.

3. Click **Edit** to edit the recording schedule. The following window appears:

The screenshot shows the 'Edit Schedule' window with the following details:

- Days: Mon (selected), Tue, Wed, Thu, Fri, Sat, Sun
- Options: All Day (Continuous), Customize
- Table with 4 columns: Period, Start Time, End Time, Record Type
- Table content:

Period	Start Time	End Time	Record Type
1	00:00	24:00	Continuous
2	00:00	00:00	Continuous
3	00:00	00:00	Continuous
4	00:00	00:00	Continuous
5	00:00	00:00	Continuous
6	00:00	00:00	Continuous
7	00:00	00:00	Continuous
8	00:00	00:00	Continuous
- Buttons: Copy to Week, Select All, Copy, OK, Cancel

4. Select whether the recording will be for the whole week (**All Day** recording) or for specific days of the week.

If you have selected “All Day”, select one of the record types to record from the drop-down list box:

- **Continuous:** This is continuous recording.
- **Motion detection:** Video is recorded when the motion is detected.
- **Alarm:** Video is recorded when the alarm is triggered via the external alarm input.
- **Motion | Alarm:** Video is recorded when the external alarm is triggered or motion is detected.
- **Motion & Alarm:** Video is recorded when motion and alarms are triggered at the same time.
- **Audio Exception Detection:** Video is recorded when audio exception is triggered.
- **Scene Change detection:** Video is recorded when a change in the camera scene is detected. See “Scene change detection” on page 42 for more information.
- **VCA Recording:** Video is recorded when a VCA event is triggered.
- **Fire Source Detection:** Video is recorded when a fire source is detected.
- **Temperature Measurement Alarm:** Video is recorded when the temperature measurement alarm is triggered.
- **Temperature Measurement Pre-alarm:** Video is recorded when the temperature measurement pre-alarm is triggered.
- **Temperature Difference Alarm:** Video is recorded when the temperature difference alarm is triggered.
- **All Events:** Video is recorded when any of the above-mentioned events happens.

5. If you enable “Customize”, click the day of the week required. For period 1, set the start and end times during which you want the camera to begin and end recording.

From the drop-down list box, select one of the record types to record (see the list above).

Repeat for additional periods in the day. Up to eight time periods can be selected.

Note: The eight time periods cannot overlap.

6. Set the recording periods for the other days of the week if required.

Click **Copy** to copy the recording periods to another day of the week.

7. Click **OK** and **Save** to save changes.

Note: If you set the record type to “Motion detection” or “Alarm”, you must also define the arming schedule to trigger motion detection or alarm input recording.

Camera management

This chapter describes how to use the camera once it is installed and configured. The camera is accessed through a web browser.

User management

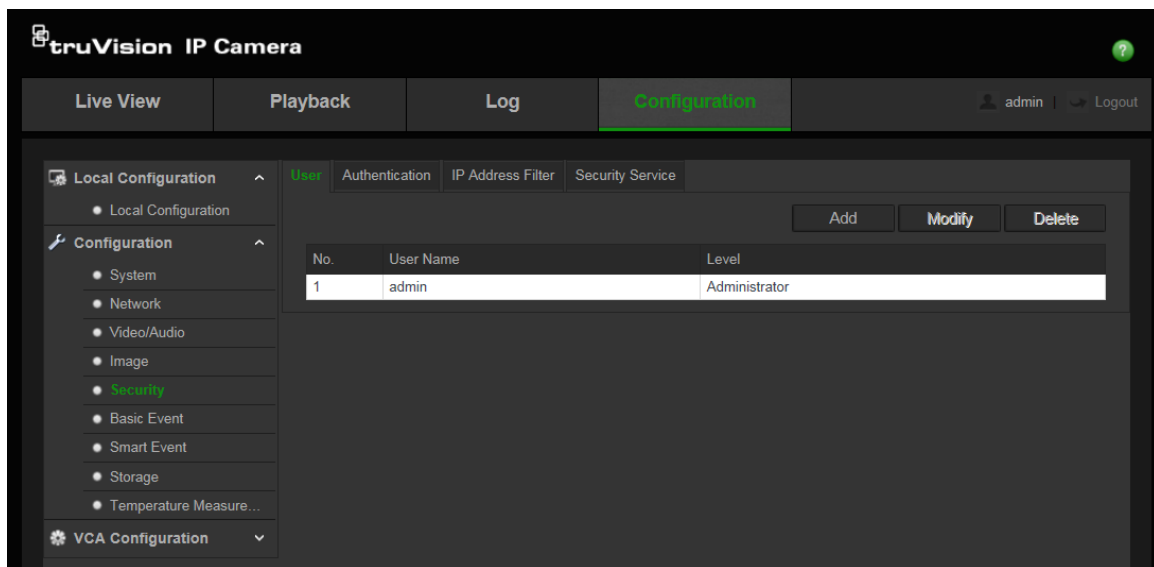
This section describes how to manage users. You can:

- Add or delete users
- Modify permission
- Modify passwords

Only the administrator can manage users. The administrator can create up to 31 individual users for the cameras listed in this manual.

When new users are added to the list, the administrator can modify permissions and password of each user. See Figure 12 below.

Figure 12: User management window



Passwords limit access to the camera and the same password can be used by several users. When creating a new user, you must give the user a password. There is no default password provided for all users. Users can modify their passwords.

Note: Keep the admin password in a safe place. If you forget it, please contact technical support.

Types of users

A user's access privileges to the system are automatically defined by their user type. There are three types of user:

- **Admin:** This is the system administrator. The administrator can configure all settings. Only the administrator can create and delete user accounts. Admin cannot be deleted.
- **Operator:** This user can only change the configuration of his/her own account. An operator cannot create or delete other users.
- **Viewer:** This user has the permission of live view, playback and log search. However, they cannot change any configuration settings.

Add and delete users

The administrator can create up to 31 users. Only the system administrator can create or delete users.

To add a user:

1. From the Configuration panel, click **Configuration > Security > User**.
2. Select the **Add** button. The user management window appears.

3. Enter a user name.
4. Assign the user a password. Passwords can have up to 16 alphanumeric characters.
5. Select the type of user from the drop-down list. The options are Viewer and Operator.
6. Assign permissions to the user. Select the desired options:

Basic Permissions	Camera Configuration
Remote: Parameters Settings	Remote: Live View
Remote: Log Search/Interrogate Working Status	Remote: PTZ Control
Remote: Upgrade/Format	Remote: Manual Record
Remote: Bidirectional Audio	Remote: Playback

Basic Permissions	Camera Configuration
Remote: Shutdown/Reboot	
Remote: Notify Alarm Recipient/Trigger Alarm Output	
Remote: Video Output Control	
Remote: Serial Port Control	

7. Click **OK** to save the settings.

To delete a user:

1. Select the desired user in the **User** tab.
2. Click the **Delete** button. A message box appears.

Note: Only the administrator can delete a user.

3. Click **Save** to save the changes.

Modify user information

You can easily change the information about a user such as their name, password and permissions.

To modify user information:

1. Select the desired user in the **User** tab.
2. Click the **Modify** button. The user management window appears
3. Change the information required.

Note: The user “Admin” can only be changed by entering the admin password.

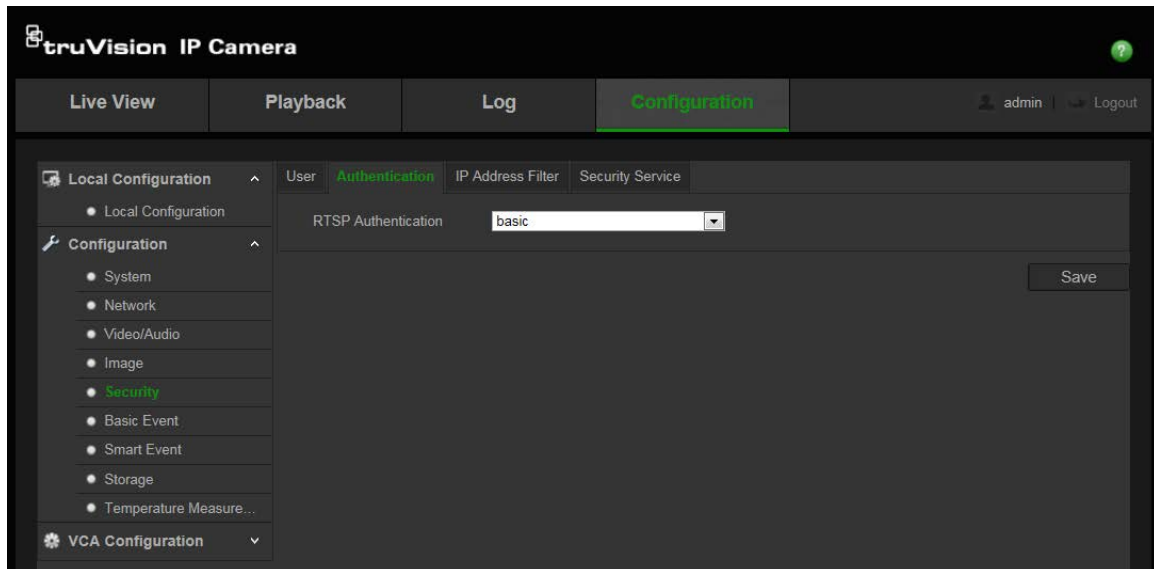
4. Click **Save** to save the changes.

RTSP authentication

You can specifically secure the stream data of live view.

To define RTSP authentication:

1. From the Configuration panel, click **Configuration > Security > RTSP Authentication**.



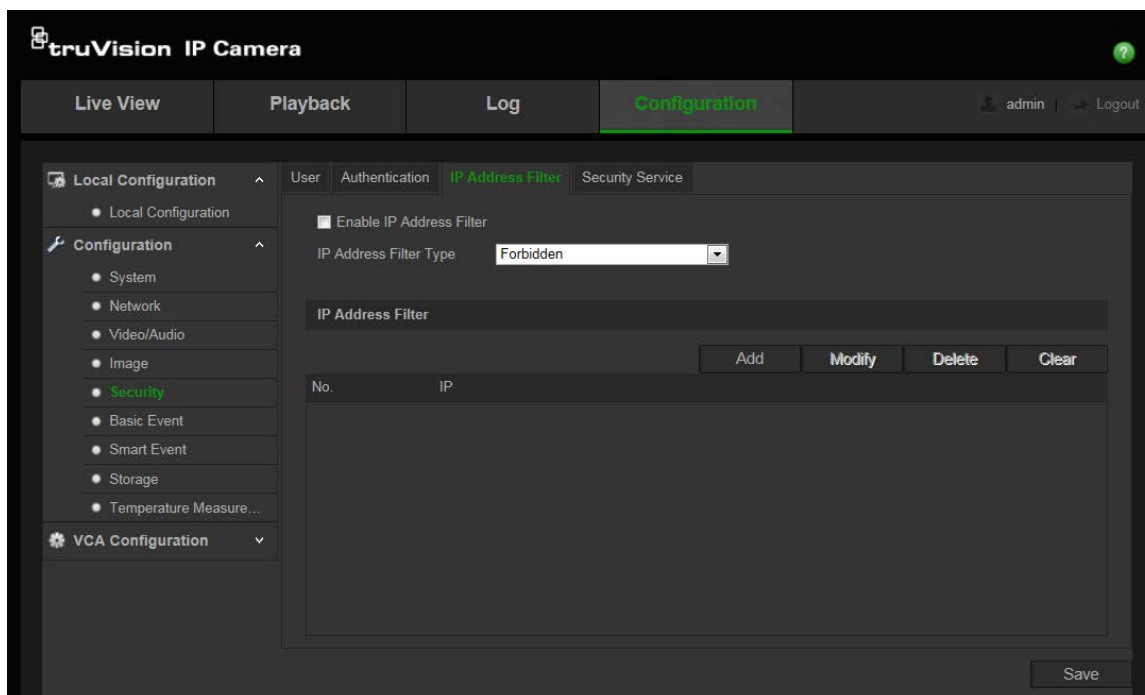
2. Select the **Authentication** type **Enable** or **Disable** in the drop-down list to enable or disable the RTSP authentication.
3. Click **Save** to save the changes.

IP address filter

This function allows you to give or deny access rights to defined IP addresses. For example, the camera is configured so that only the IP address of the server hosting the video management software is allowed to be accessed.

To define IP Address Filter:

1. From the Configuration panel, click **Configuration > Security > IP Address Filter**.



2. Select the check box of **Enable IP Address Filter**.
3. Select the type of IP Address Filter in the drop-down list: Forbidden or Allowed.
4. Click **Add** to add an IP address.
5. Click **Modify** or **Delete** to modify or delete the selected IP address.
6. Click **Clear** to delete all the IP addresses.
7. Click **Save** to save the changes.

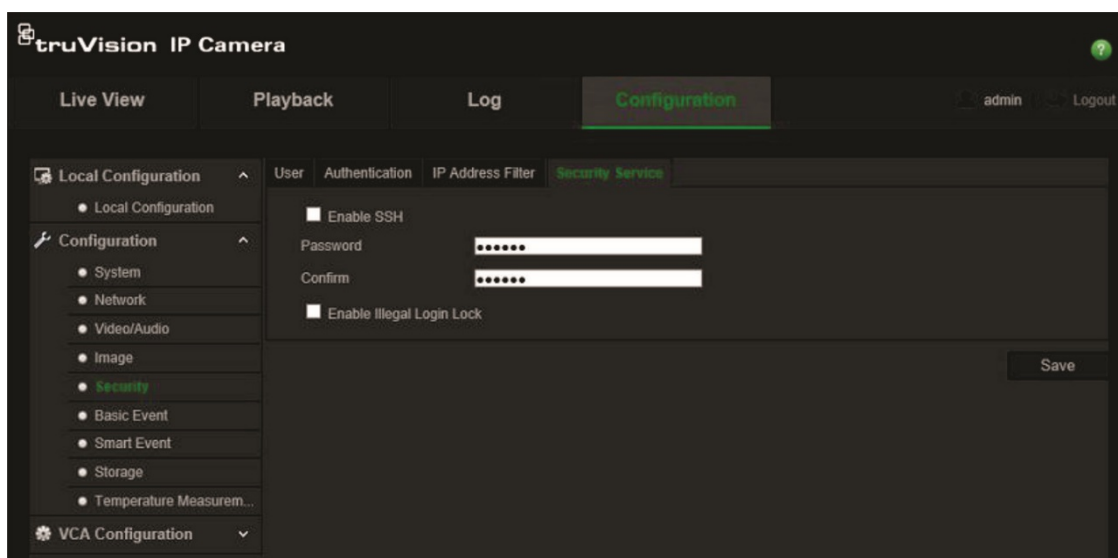
Defining the security service

This function enables SSH (Secure Shell), which is a cryptographic network protocol. You can define its password. It is only used by Technical Support.

You can also set up the system so that the camera is locked if someone incorrectly enters the user name or password after five consecutive attempts. When the IP address is locked, you must wait ten minutes to log into the camera again.

To enable the illegal login lock:

1. From the Configuration panel, click **Configuration > Security > Security Service**.



2. Select the **Enable Illegal Login Lock** check box.
3. Click **Save** to save the changes.

To define SSH:

1. From the Configuration panel, click **Configuration > Security > Security Service**.
2. Select the **Enable SSH** check box.
3. Click **Save** to save the changes.

To lock the system against illegal logins:

1. From the Configuration panel, click **Configuration > Security > Security Service**.
2. Select the **Enable Illegal Login Lock** check box.
3. Click **Save** to save the changes.

Restore default settings

Use the Default menu to restore default settings to the camera. There are two options available:

- **Restore:** Restore all the parameters, except the IP parameters, to the default settings.
- **Default:** Restore all the parameters to the default settings.

Note: If the video standard is changed, it will not be restored to its original setting when Restore or Default is used.

To restore default settings:

1. From the Configuration panel, click **Configuration > Security > Maintenance**.
2. Click either **Restore** or **Default**. A window showing user authentication appears.

3. Enter the admin password and click OK.
4. Click **OK** in the pop-up message box to confirm restoring operation.

Import/export a configuration file

The administrator can export and import configuration settings from the camera. This is useful if you want to copy the configuration settings to another camera, or if you want to make a backup of the settings.

Note: Only the administrator can import/export configuration files.

To import/export configuration file:

1. From the Configuration panel, click **Configuration > Security > Maintenance**.
2. Click **Browse** to select the local configuration file and then click **Import** to start importing configuration file.
3. Click **Export** and set the saving path to save the configuration file.

Upgrade firmware

The camera firmware is stored in the flash memory. Use the upgrade function to write the firmware file into the flash memory.

You need to upgrade firmware when it has become outdated. When you upgrade the firmware, all existing settings are unchanged. Only the new features are added with their default settings.

The camera will select the corresponding firmware file automatically. Cookies and data in the web browser are automatically deleted when the firmware is updated.

To upgrade the firmware version:

1. Download on to your computer the latest firmware from our web site.
2. When the firmware file is downloaded to your computer, extract the file to the desired destination.

Note: Do not save the file on your desktop.

3. From the Configuration panel, click **Configuration > Security > Maintenance**. Select the **Firmware** or **Firmware Directory** option. Then click the **Browse** button to locate latest firmware file on your computer.

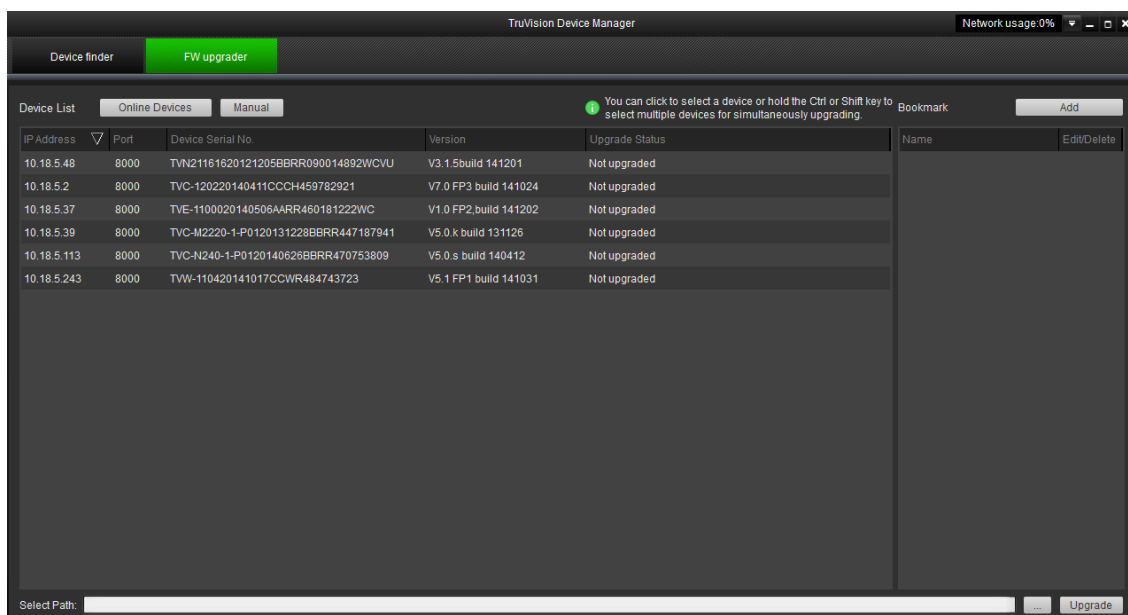
- **Firmware directory** – Locate the upgrading folder of Firmware files. The camera will choose the corresponding firmware file automatically.
- **Firmware** – Locate the firmware file manually for the camera.

Note: Please select `Interlogix_Gen_3_ipc.dav` for camera models listed in the “Introduction” on page 3.

4. Click **Update**. You will receive a prompt asking you to reboot the camera.
5. When the upgrade is finished, the device will reboot automatically. The browser will also be refreshed.

To upgrade the firmware via TruVision Device Manager:

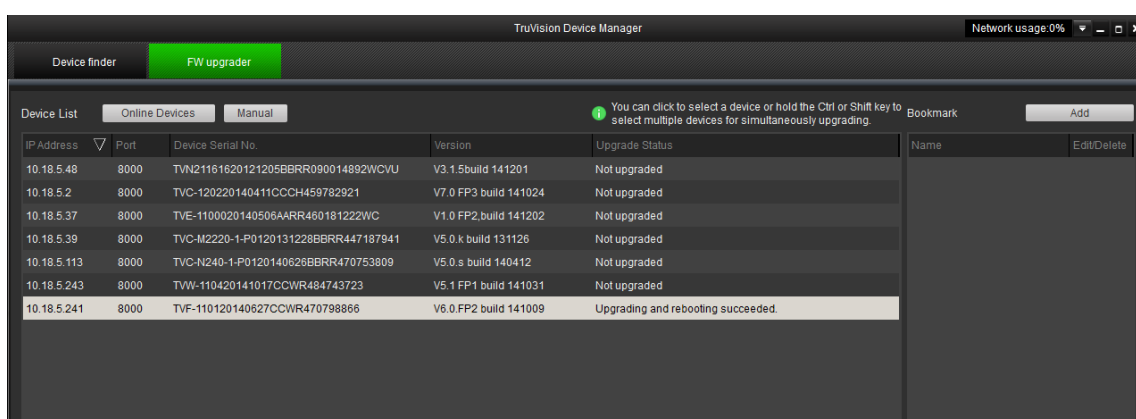
1. In the **FW upgrader** panel, select a device or hold the Ctrl or Shift key to select multiple devices for simultaneous upgrading.



2. Click the browse button  to locate the firmware file to use.

If you want the device to automatically reboot after the upgrade, select the **Reboot the device after upgrading** check box. When enabled, it will also display **Restore default settings** option. Check it if you want to restore all parameters.

3. Click **Upgrade**.
4. When the upgrading is completed, the updated version information on the devices is listed.



Reboot the camera

The camera can be easily rebooted remotely.

To reboot the camera through the web browser:

1. From the Configuration panel, click **Configuration > System > Maintenance**.
2. Click the **Reboot** button to reboot the device.

3. Click **OK** in the pop-up message box to confirm reboot operation.

Camera operation

This chapter describes how to use the camera once it is installed and configured.

Logging on and off

You can easily log out of the camera browser window by clicking the **Logout** button on the Configuration panel. You will be asked each time to enter your user name and password when logging in.

You can change the language of the interface from the drop-down menu in the top right corner of the window.

Live view mode

Once logged in, click “Live View” on the Configuration panel to access live view mode. See Figure 1 on page 7 for the description of the interface.



Start/stop live view: You can stop and start live view by clicking the Start/stop live view button on the bottom of the window.



Record: You can record live video and stored it in the directory you have configured. In the live view window, click the **Record** button at the bottom of the window. To stop recording, click the button again.



Take a snapshot: You can take a snapshot of a scene when in live view. Simply click the **Capture** button located at the bottom of the window to save an image. The image is in JPEG format. Snapshots are saved on the hard drive.

Playing back recorded video







You can easily search and play back recorded video in the playback interface.


Note: You must configure the NAS or insert an SD card in the dome camera to be able to use the playback functions. See “Storage management” on page 68 for more information.

To search recorded video stored on the camera’s storage device for playback, click **Playback** on the Configuration panel. The Playback window appears. See Figure 13 on page 81.

Figure 13: Playback window




Name	Description
1. Playback button	Click to open the Playback window.
2. Search calendar	Click the day required to search.
3. Search	Start search.
4. Set playback time	Input the time and click  to locate the playback point.
5. Download functions	 Download video files.  Download captured images.
6. Archive functions	Click these buttons for the following archive actions: <ul style="list-style-type: none">  Enable digital zoom.  Capture a snapshot image of the playback video.  Start/Stop clipping video files.
7. Recording type	The color code displays the recording type. Recording types are schedule recording (blue), alarms recording (red), and manual recording. The recording type name is also displayed in the current status window.
8. Time moment	Vertical bar shows where you are in the playback recording. The current time and date are also displayed.

Name	Description
9. Timeline bar	<p>The timeline bar displays the 24-hour period of the day being played back. It moves left (oldest) to right (newest). The bar is color-coded to display the type of recording.</p> <p>Click a location on the timeline to move the cursor to where you want playback to start. The timeline can also be scrolled to earlier or later periods for play back.</p> <p>Click  to zoom out/in the timeline bar.</p>
10. Audio control	Control level of audio.
11. Control playback	Click to control how the selected file is played back: Play, Stop, Slow, and Fast Forward.


To play back recorded video:

1. Select the date and click the **Search** button. The searched video is displayed in the timeline.
2. Click **Play** to start playback. While playing back a video, the timeline bar displays the type and time of the recording. The timeline can be manually scrolled using the mouse.


Note: You must have playback permission to play back recorded images. See “Modify user information” on page 73 for more information.

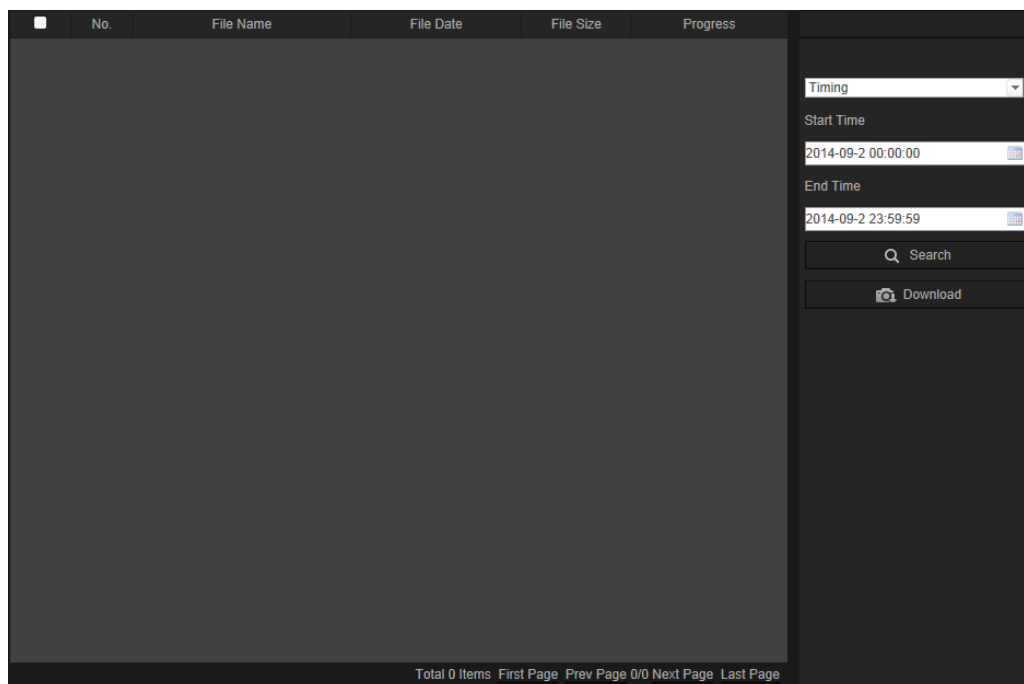
3. Select the date and click the **Search** button to search for the required recorded file.
4. Click  to search the video file.
5. In the pop-up window, select the check box of the video file and click **Download** to download the video files.

To archive a recorded video segment during playback:

1. While playing back a recorded file, click  to start clipping. Click it again to stop clipping. A video segment is created.
2. Repeat step 1 to create additional segments. The video segments are saved on your computer.

To archive recorded snapshots:

1. Click  to open the snapshots search window.



2. Select the snapshot type as well as the start and end time.
3. Click **Search** to search for the snapshots.
4. Select the desired snapshots, and click **Download** to download them.

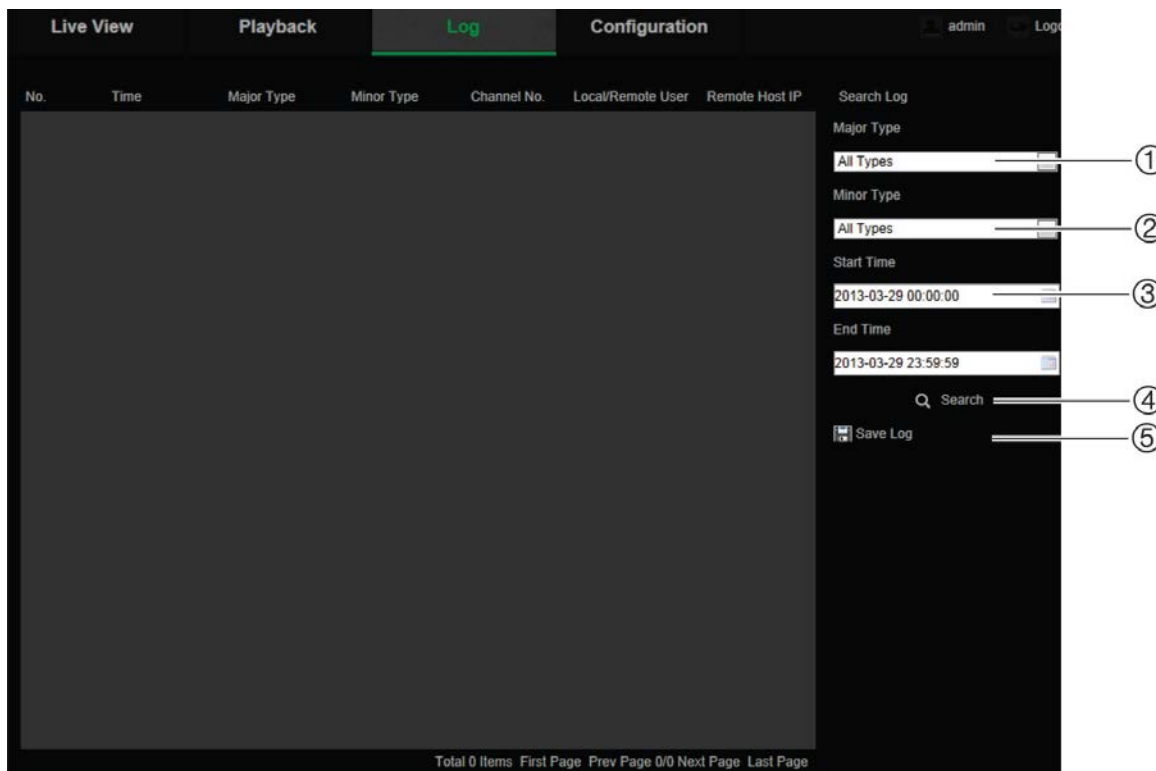
Searching event logs

You must configure NAS or insert a SD card in the dome camera to be able to use the log functions.

The number of event logs that can be stored on NAS or SD card depends on the capacity of the storage devices. When this capacity is reached, the system starts deleting older logs. To view logs stored on storage devices, click **Log** on the Configuration panel. The Log window appears. See Figure 14 on page 84.

Note: You must have view log access rights to search and view logs. See “Modify user information” on page 73 for more information.

Figure 14: Log window



- 1. Major Type
- 2. Minor Type
- 3. Start and end search time
- 4. Start search
- 5. Save searched logs

You can search for recorded logs by the following criteria:

Major type: There are four types of logs: All Types, Alarm, Exception, and Operation. See Table 1 below for their descriptions.

Minor type: Each major type log has some minor types. See Table 1 below for their descriptions.

Date and Time: Logs can be searched by start and end recording time.

Table 1: Types of logs

Main log type	Minor log types: Description of events included
Alarm	Alarm Input, Alarm output, Start Motion Detection, Stop Motion Detection, Start Tamper-proof, Stop Tamper-proof, Face Detection Started, Face Detection Stopped, Cross Line Detection Started, Cross Line Detection Stopped, Intrusion Detection Started, Intrusion Detection stopped, Defocus Detection Started, Defocus Detection stopped, Audio input Exception, Sudden change of sound Intensity Detection.
Exception	Invalid Login, HDD Full, HDD Error, Network Disconnected and IP Address Conflicted

Main log type	Minor log types: Description of events included
Operation	Power On, Abnormal Shutdown, Remote Reboot, Remote Login, Remote Logout, Remote Configure parameters, Remote Start Record, Remote Stop Record, Remote PTZ Control, Remote Initialize HDD, Remote Playback by File, Remote Playback by Time, Remote Export Config file, Remote import config file, Remote Get Parameters, Remote Get Working Status, Establish Transparent Channel, Disconnect Transparent Channel, Start Bidirectional Audio, Stop Bidirectional Audio, Remote Alarm Arming, Remote Alarm Disarming

To search logs:

1. Click **Log** in the Configuration panel to display the Log window.
2. In the *Major Type* and *Minor Type* drop-down list, select the desired option.
3. Select start and end time of the log.
4. Click **Search** to start your search. The results appear in the left window.

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