



TruVision S Series ANPR Camera Configuration Manual

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Product documentation

Please scan the QR code to download the electronic version of the product documentation. The manuals are available in several languages.

Content

Important information ii

Limitation of liability ii

Product warnings ii

Warranty disclaimers iii

Intended use iv

Advisory messages iv

Introduction 1

Product overview 1

Contact information and manuals/firmware 1

Network access 2

Internet Explorer – Checking the browser security level 2

Activating the camera 3

Using non-Internet Explorer web browsers (plugin-free browser) 5

Overview of the camera web browser 6

Camera configuration 7

Local configuration 7

Configuration menu overview 8

System 9

Certificate Management 17

Network 24

Video/Audio 38

Image 42

Picture overlay 49

Event 50

Storage 66

VCA Configuration 74

Camera operation 91

Login and Logout 91

Live view mode 91

Play back recorded video 95

Snapshot 98

ANPR Monitor 99

Application 100

Log 101

Index 103

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THE EQUIPMENT SHOULD ONLY BE OPERATED WITH AN APPROVED POWER ADAPTER WITH INSULATED LIVE PINS.

DO NOT CONNECT TO A RECEPTACLE CONTROLLED BY A SWITCH.

THIS UNIT INCLUDES AN ALARM VERIFICATION FEATURE THAT WILL RESULT IN A DELAY OF THE SYSTEM ALARM SIGNAL FROM THE INDICATED CIRCUITS. THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 60 SECONDS. NO OTHER SMOKE DETECTOR SHALL BE CONNECTED TO THESE CIRCUITS UNLESS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

WARNING! The equipment should only be operated with an approved power adapter with insulated live pins.

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of batteries according to the instructions. Contact your supplier for replacement batteries.

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Intended use

Use this product only for the purpose it was designed for; refer to the data sheet and user documentation. For the latest product information, contact your local supplier or visit us online at firesecurityproducts.com.

The system should be checked by a qualified technician at least every 3 years and the backup battery replaced as required.

Advisory messages

Advisory messages alert you to conditions or practices that can cause unwanted results. The advisory messages used in this document are shown and described below.

WARNING: Warning messages advise you of hazards that could result in injury or loss of life. They tell you which actions to take or to avoid in order to prevent the injury or loss of life.

Caution: Caution messages advise you of possible equipment damage. They tell you which actions to take or to avoid in order to prevent the damage.

Note: Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

Introduction

Product overview

This is the configuration manual for the following TruVision IP camera models:

- TVLP-S01-0401-BUL-G (4MP ANPR camera, 2.8 – 12 mm, 50m IR)
- TVLP-S01-0402-BUL-G (4MP ANPR camera, 8 – 32 mm, 100m IR)

You can download the software and the following manuals from our web site:

- TruVision S Series ANPR Camera Installation Guide
- TruVision S Series ANPR Camera Configuration Manual

Contact information and manuals/firmware

For contact information and to download the latest manuals, tools, and firmware, go to the web site of your region:

EMEA:	firesecurityproducts.com Manuals are available in several languages.
Australia/New Zealand:	firesecurityproducts.com.au

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 popular browsers. The procedures below described how to use Microsoft Internet Explorer (IE) and other web browsers.

Internet Explorer – Checking the 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 ActiveX 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 via a web browser and via TruVision Device Manager to find the IP address of the camera.

Activating the camera via a 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 meet the following conditions:

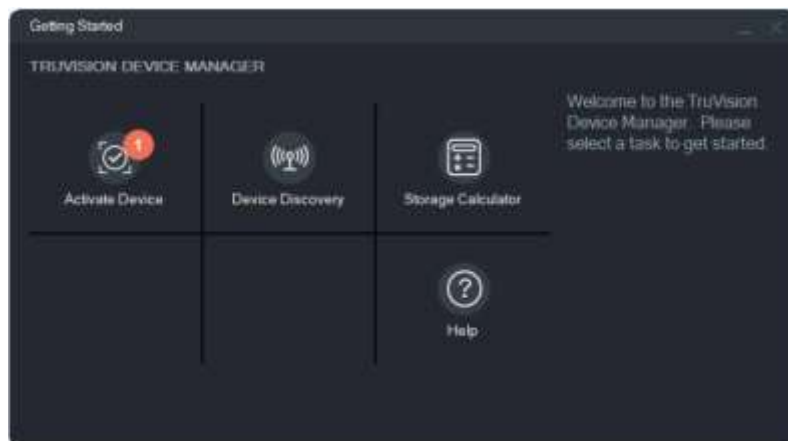
- Between 8 and 16 characters
- At least 1 lower case letter
- At least 1 upper case letter
- At least 1 of following special characters _ : - , . * & @ / \$? Space.

We recommend that you do not use a space at the start or end of a password, and 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.

Activating the camera via TruVision Device Manager:

1. Run *TruVision Device Manager 9.1SP1* or newer to search for TruVision cameras on your local network.
2. After launching Device Manager, the number of inactive TruVision devices (unconfigured devices recently connected to the network) can be displayed by clicking the Activate Device button. From there you can select the cameras you want to activate.



3. A pop-up window confirms the activation

Device Activation / Change IP Address

Please provide the device credentials to change the network settings

Requires Activation	Model	DHCP	IP Address	Subnet Mask	Gateway	Status
☒	TVLP-501-0402-BUL-G		192.168.1.70	255.255.255.0	192.168.1.1	

Select the check box next to each device to be edited. The user name and password are applied to each device selected.

Network: [Dropdown]

Physical Address: 9c:4f:1a:92:10:6d

New IP Address: 192.168.1.70

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.1

☐ Enable DHCP

User Name: [Text Field]

Password: [Text Field]

Confirm Password: [Text Field]

Password Complexity: [Meter]

Apply

Close

Enter username “admin” in the user name field and enter a strong password in the password field.

Note: A valid password range must meet the following conditions:

- Between 8 and 16 characters
- At least 1 lower-case letter
- At least 1 upper-case letter
- At least 1 of following special characters : _ - , . * & @ / \$? Space.
- The password is case-sensitive.

We recommend that you do not use a space at the start or end of a password, and 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. Change the device IP address, subnet mask and gateway by entering new values in the corresponding fields or check the box “Enable DHCP” if you want the camera to automatically receive IP settings from the DHCP server on the network.
5. Click **Apply** to save the admin password and the new network settings.

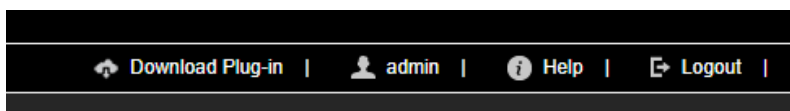
After clicking **Apply**, the activation status will appear in the activation column.

Using non-Internet Explorer web browsers (plugin-free browser)

Plugin-free browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, and Apple Safari have limitations compared to Internet Explorer that uses ActiveX plugins. To solve this, an additional plugin can be download through the camera live view web page. Please note that an internet connection is needed to download this plugin.

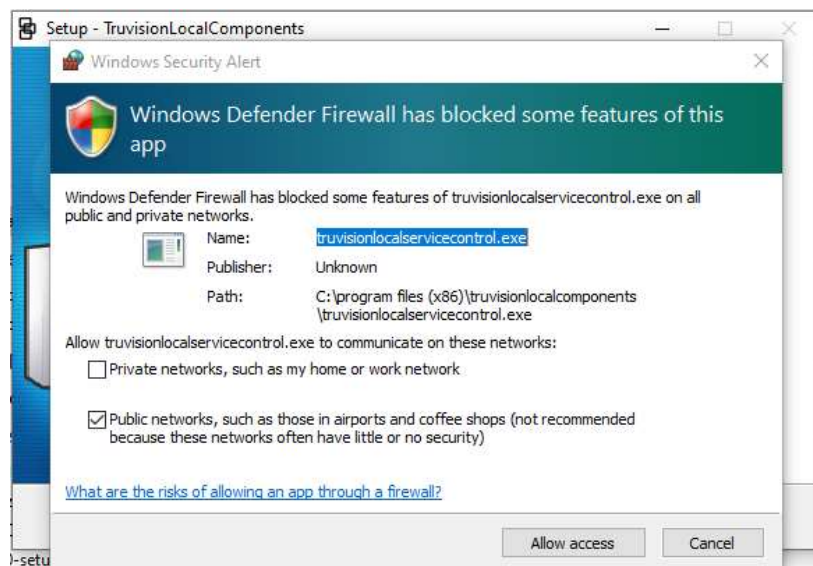
After activating the camera, you will be redirected to the camera Live View page where you might see a pop-up to download a plugin. In case the plugin has not downloaded

automatically, click the “Download Plug-in” icon at the top right of the camera Live View web page to download the plugin installation file to your PC.

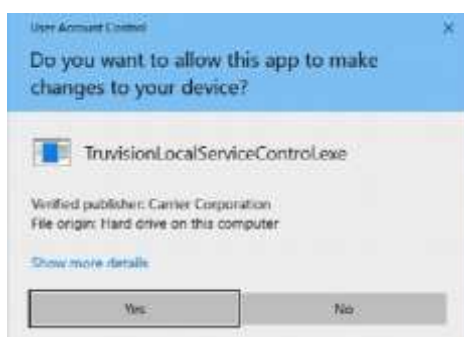


Close the browser and install the downloaded plugin *TruVisionLocalComponents.exe* on your PC. Once the plugin is installed, you can reopen the browser to view and configure the camera.

During installation of the plugin, Windows Defender may show a pop-up message that you should accept by clicking the “Allow access” button.



Note that this application will automatically start every time when starting Windows. Depending on your Windows configuration you might see below pop-up message after logging on to Windows. Accept the message to enable the plugin for plugin-free browsers.



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, “Example of the Local configuration window”, on page 7 for an example.

Camera configuration

This chapter explains how to configure the cameras through a web browser.

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 through the web interface.

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

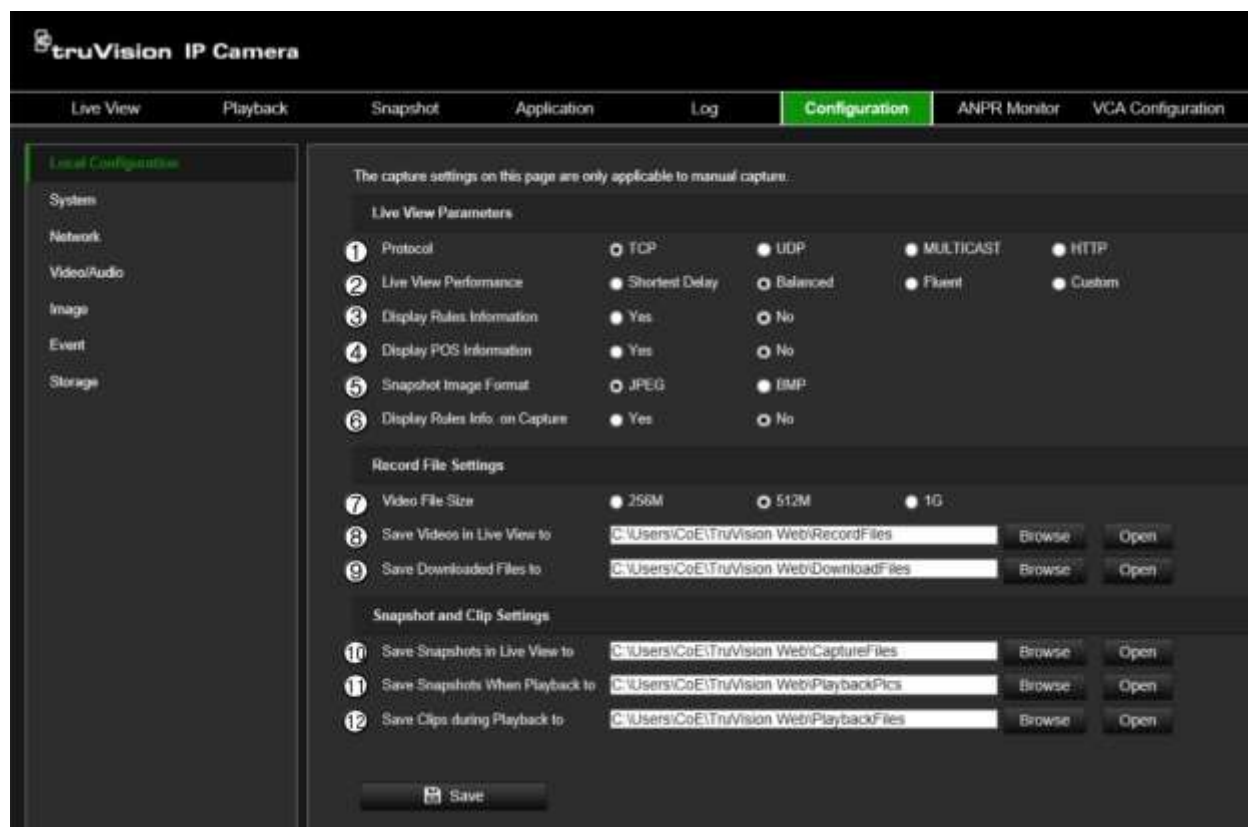
There are two main folders in the configuration panel:

- Local configuration
- Configuration

Local configuration

Use the Local Configuration menu to manage the protocol type, live view performance and local storage paths for snapshots, downloads, and camera browser recording. In the Configuration panel, click **Local Configuration** to display the local configuration window. See Figure 1 below for descriptions of the different menu parameters.

Figure 1: Example of the Local configuration window



Parameters	Description
Live View Parameters	
1. Protocol	Specify the network protocol used. Options include TCP, UDP, MULTICAST and HTTP.
2. Live View Performance	Specify the transmission speed. Select one of the options: Shortest Delay: Real-time video has priority over video fluency. Balanced: The device ensures both real-time video and fluency. Fluent: Video fluency has priority over real-time video. In a poor network environment, the camera cannot ensure video fluency even if this option is enabled. Custom: Set the frame rate manually. In a poor network environment, reducing the frame rate improves the fluency of live view. However, the rule information may not be displayed.
3. Meta Data Overlay	It refers to the rules on your local browser. Specify whether 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. Display POS Information	Enable external data to be displayed as text overlay on camera image (currently not used)
5. Snapshot Image Format	Choose snapshot image format: JPEG or BMP.
6. Display Rules Info on Capture	You can see the rules box in local snapshot when you enable this option. Note that the rules box is only supported for motion detection, and smart event detection in local snapshot.
Record File Settings	
7. Video File Size	Specify the maximum file size. Options include: 256 MB, 512 MB and 1GB.
8. Save Videos in Live View to	Specify the directory for recorded files.
9. Save Downloaded Files to	Specify the directory for downloaded files.
Snapshot and Clip Settings	
10. Save Snapshots in Live View To	Specify the directory for saving snapshots in live view mode.
11. Save Snapshots when Playback To	Specify the directory for saving snapshots in playback mode.
12. Save Clips during Playback to	Specify the directory for saving video clips in playback mode.

Configuration menu overview

Use the Configuration panel to configure the server, network, camera, alarms, users, transactions, and other parameters such as upgrading the firmware. See Figure 2 below for descriptions of the configuration menus available.

Figure 2: Configuration menu overview



Configuration menus	Description
1. System	Displays device basic information including SN and the current firmware version, time settings, maintenance, and serial port parameters. You can only modify the device name and device number. See “System” below for further information.
2. Network	Defines the network parameters required to access the camera over a network. See “Network” on page 24 for further information on the setup.
3. Video/Audio	Defines recording parameters. See “Video/Audio” on page 38 for further information.
4. Image	Defines the image parameters, OSD settings, overlay text, and privacy mask. See “Image” on page 42 for further information on the setup.
5. Event	Defines Basic events motion detection, video tampering, alarm input/output, exception and Smart events Face detection, Intrusion detection, Cross Line detection. See “Event” on page 50 for further information on the setup.
6. Storage	Defines recording schedule, storage management, NAS configuration and snapshot. See “Storage” on page 66 for further information on the setup.

System

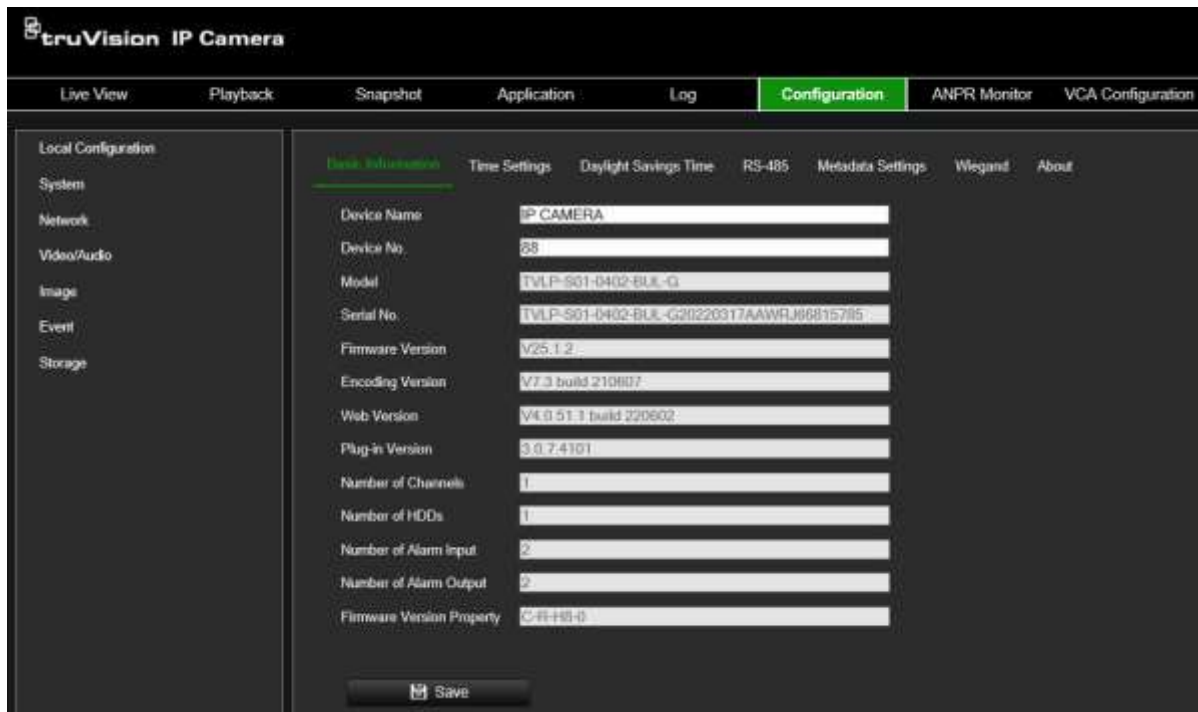
Manage system settings, perform maintenance related tasks, as well as configure security and user related features.

System settings

System settings include an overview of system settings, date & time, and some VCA related options.

Basic Information

This menu displays the hardware and firmware related information of the device.

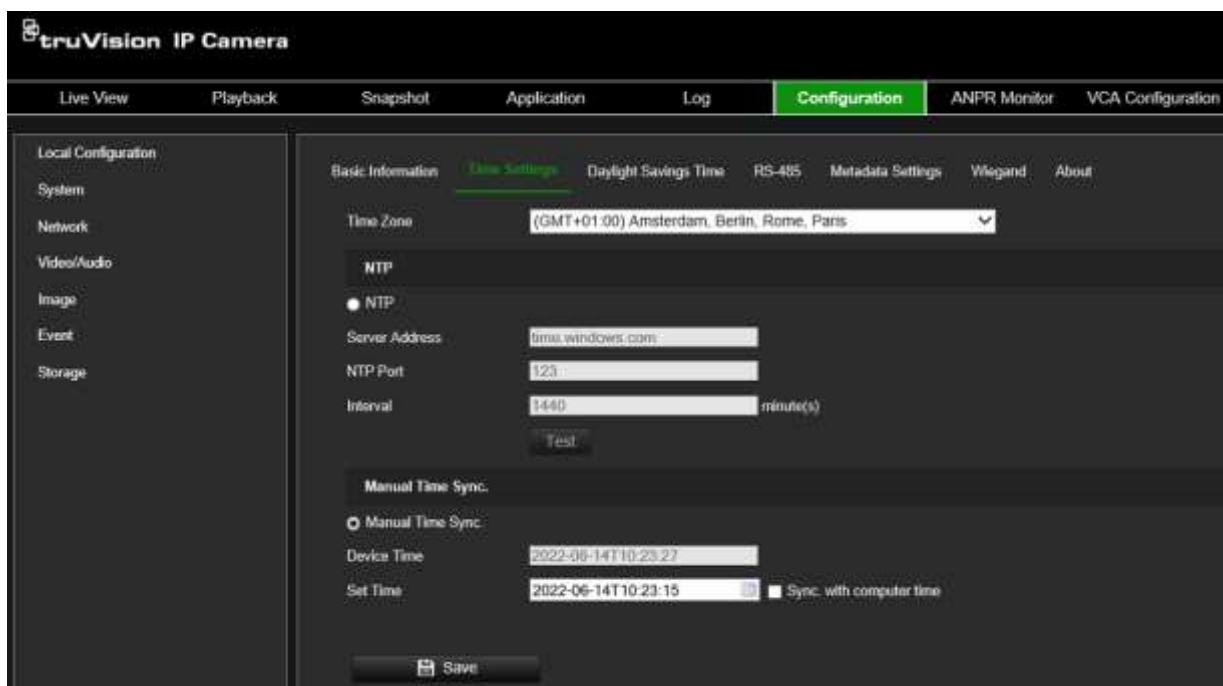


Time settings

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. Click **Configuration > System > System Settings > Time Settings**.



2. From the **Time Zone** drop-down list, select the time zone that is the closest to the camera's location.
3. Select one of the options for setting the time and date:

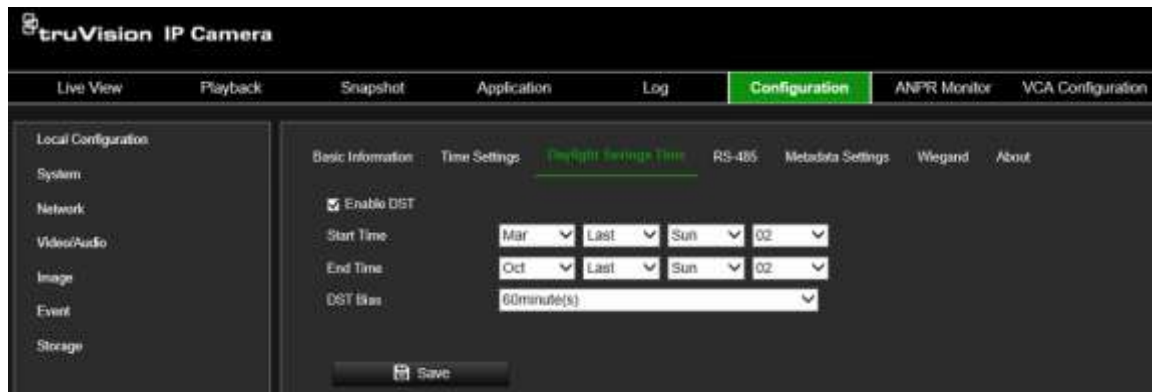
Synchronize with an NTP server: Select the **NTP** enable box and enter the server NTP address. The time interval can be set from 1 to 10080 minutes.

— 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 instantly synchronize the time of the camera with the time of your computer and automatically select the same time zone as the computer.

To define Daylight Saving Time (DST):



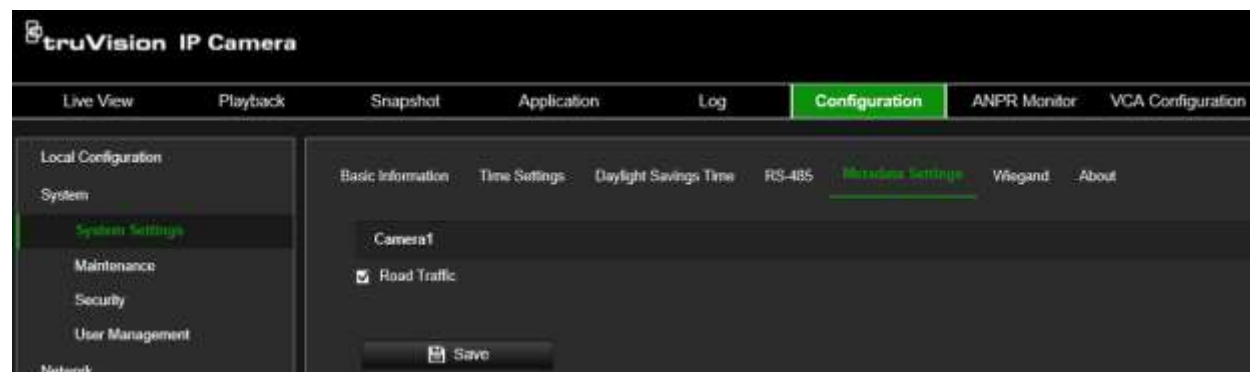
1. Click **Configuration > System > System Settings > Daylight Savings Time**. Select **Enable DST** to enable the DST (Daylight Savings Time) function and set the dates of the DST period.
2. Click **Save** to save changes.

RS-485

The camera has a RS-485 connection, which is normally not used for ANPR applications

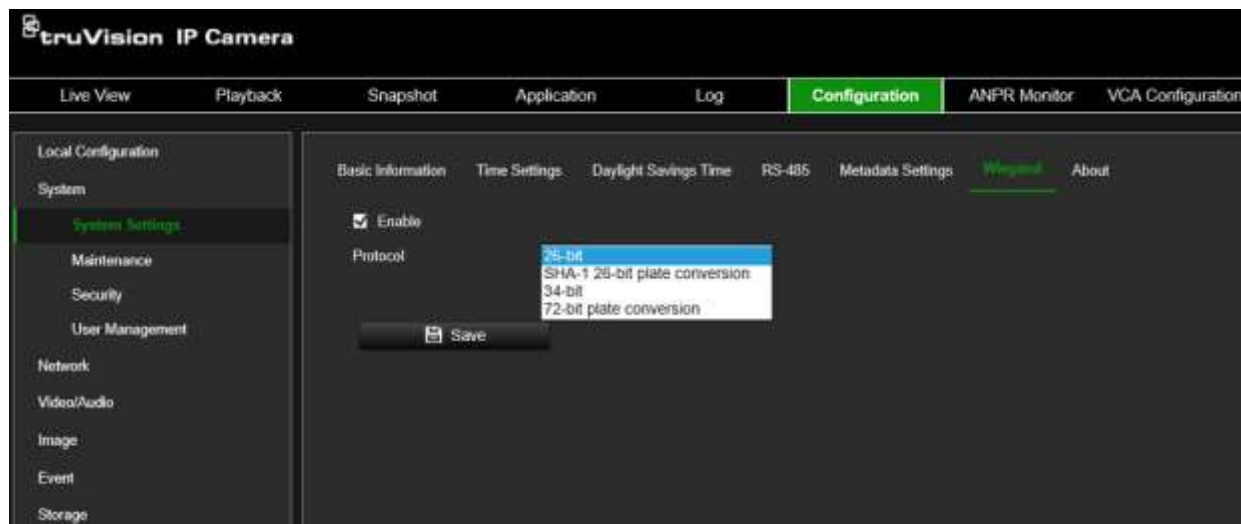
Metadata Settings

Enable this option to send ANPR metadata to a third-party application.



Wiegand

Wiegand is a serial data communication for access control.



To set up the Wiegand bit format:

1. From the menu toolbar, click **Configuration > System > System Settings > Wiegand**.
2. Click the **Enable** check box to enable the Wiegand interface of the camera
3. Select one of the options from the drop-down list to configure the Wiegand format

Protocol	Description
26-bit	26-bit Wiegand data based on ID number populated in the license plate blocked/allowed list loaded in the camera
SHA-1 26-bit plate conversion	The camera performs a hash on the captured license plate characters and generates Wiegand data from this in 26-bit format.
34-bit	34-bit Wiegand data based on ID number populated in license plate blocked/allowed list loaded in the camera
72-bit plate conversion	The camera performs a hash on the captured license plate characters and generates Wiegand data from this in 72-bit format.

Note: when using the plate conversion formats, no ID needs to be entered in the license plate block/allow list if used.

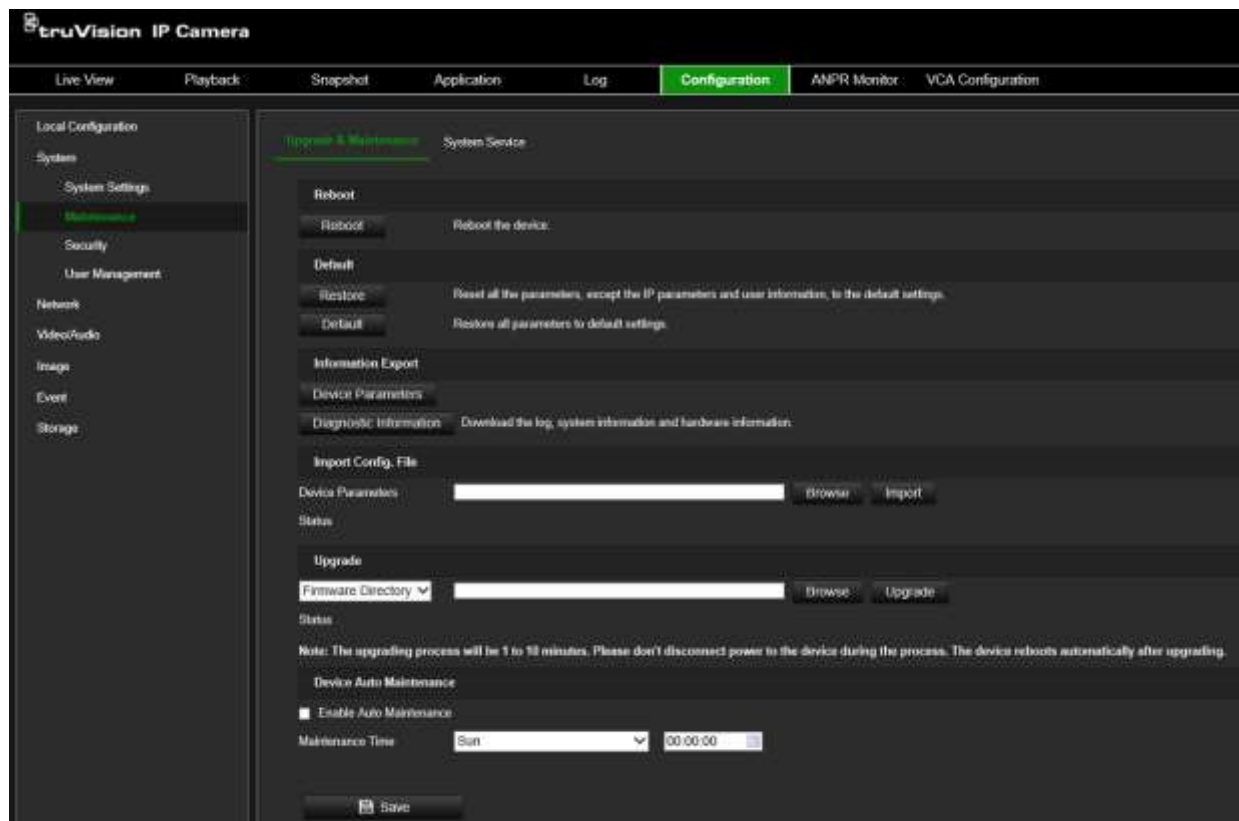
4. Click **Save** to save changes.

About

The Open-source Software Licenses used by the camera are listed here.

Maintenance

Maintenance tasks such as importing/exporting configurations and firmware upgrade can be managed in this menu, *Upgrade and Maintenance*.



Reboot camera

Click **Reboot** to restart the camera.

Restore default settings

Click the **Restore** or **Default** button to restore default settings to the camera. There are two options available:

- **Restore:** Restore all the parameters, except the IP parameters and user information, 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.

The camera will always ask for the admin password when executing a restore 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 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 menu toolbar, go to **Configuration > System > Maintenance > Information Export**.

2. Click **Browse** to select the local configuration file and then click **Import** to start importing a configuration file. Depending on the selected file, a password might be needed to import the configuration file.
3. To export camera settings, click **Device Parameters** and set the saving path to save the configuration file. The camera will ask to encrypt the exported file with a password. Choose any password you want and make sure to remember it when importing the file.
4. To export three categories of diagnostic information, click the **Export Diagnostic Info** button.

Upgrade firmware

The camera firmware is stored in the flash memory of the camera. 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. In some cases, a factory default might be required after upgrade. Always refer to the FW release note when upgrading.

To upgrade firmware version:

1. Download on to your computer the latest firmware from our web site at:
www.firesecurityproducts.com
2. When the zipped firmware file is downloaded to your computer, extract it to the desired destination.
Note: Do not save the file on your desktop.
3. From the menu toolbar, click **Configuration > Camera Configuration > System > 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. (this feature is currently not supported)
 - **Firmware** – Click **Browse** to locate the firmware file manually for the camera.
4. Click **Upgrade**. 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.

Security

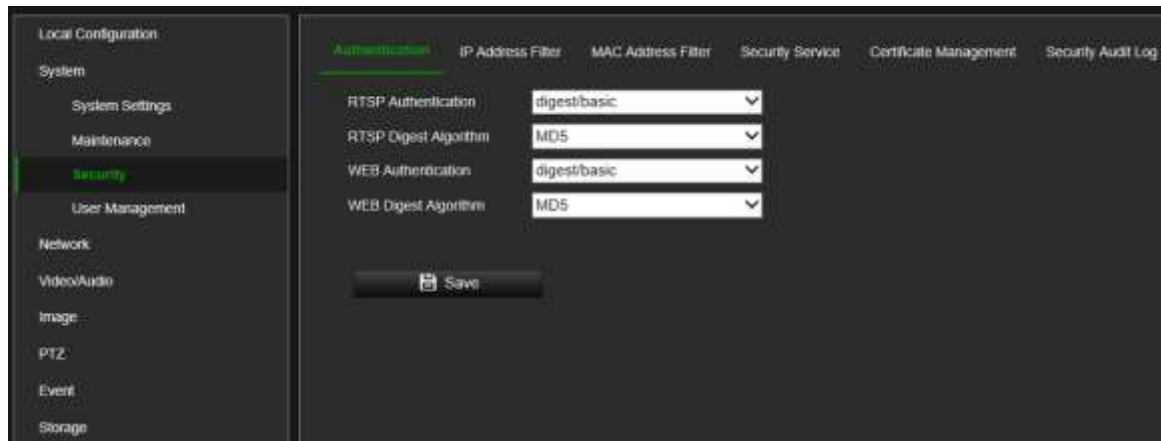
Security related parameters, such as user accounts and IP address filter, can be managed via the camera menu **System > Security**.

Authentication

You can secure the stream data of the live view.

To define the RTSP and web authentication:

1. From the menu toolbar, click **Configuration > System > Security > Authentication**.



2. Select the **RTSP Authentication** type: **digest/basic** or **digest** in the drop-down list and the desired algorithm MD5, SHA256 or MD5/SHA256.

Note: Digest/Basic is the default value and needs to be used when the camera is used with TruVision Navigator.

3. Select the **Web Authentication** type: **digest/basic** or **digest** in the drop-down list and the desired algorithm MD5, SHA256 or MD5/SHA256.

Note: Web authentication is the authentication used between the camera and the web browser.

4. 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 can be configured so that only the IP address of the server hosting the video management software can access the camera.

To define the IP address filter:

1. From the menu toolbar, click **Configuration > System > Security > IP Address Filter**.
2. Select the **Enable IP Address Filter** check box.
3. Select the type of IP Address Filter in the drop-down list: Forbidden or Allowed.
4. Click **Add** to add an IP address and enter the address.
5. Click **Modify** or **Delete** to modify or delete the selected IP address.
6. Click **Save** to save the changes.

MAC address filter

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

To define the MAC address filter:

1. From the menu toolbar, click **Configuration > System > Security > Mac Address Filter**.
2. Select the **Enable MAC Address Filter** check box.
3. Select the type of MAC Address Filter in the drop-down list: Forbidden or Allowed.
4. Click **Add** to add a Mac address and enter the address. Format of the MAC address needs to be xx-xx-xx-xx-xx-xx
5. Click **Modify** or **Delete** to modify or delete the selected MAC address.
6. Click **Save** to save the changes.

Security service

Use this menu to enable the following login and logout functions:

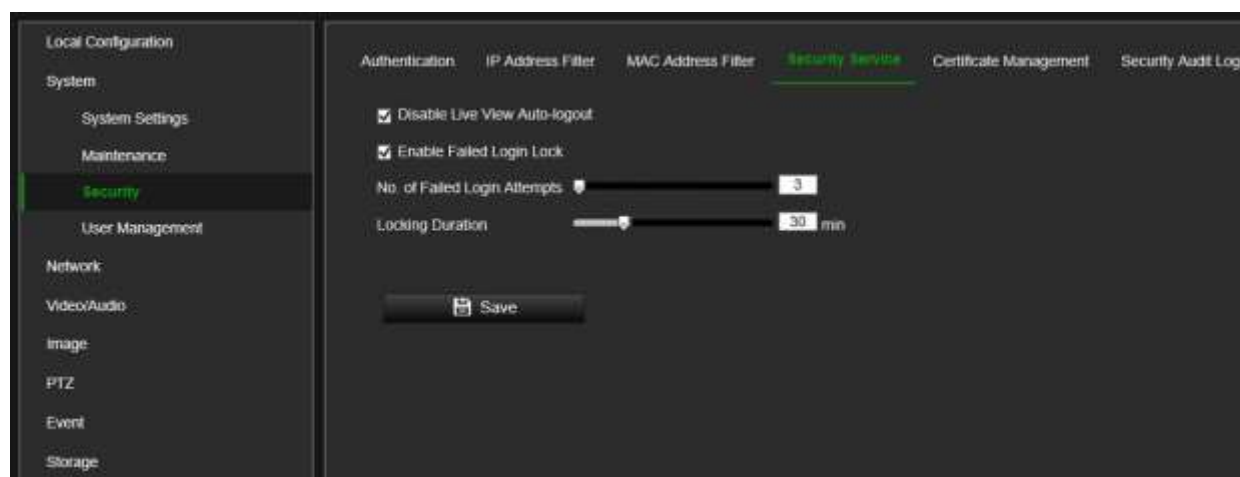
Disable Live View Auto-logout: By default, when logged into the live view webpage and there is no activity for at least five minutes, the system will automatically log out. Select this function to disable automatic log out.

Enable Failed Login Lock: When enabled, this function will lock a user out of the system after a certain number of failed login attempts. It is enabled by default.

- The IP address will be locked if a user performs seven failed user name/password attempts.
- If the IP address is locked, you can log into the device after 30 minutes.

To enable the failed login lock:

1. Click **Configuration > System > Security > Security Service**.



2. Select the **Disable Live View Auto-logout** check box to disable auto-logout when staying at the live view webpage.

3. Select the **Enable Failed Login Lock** check box to check the login attempts.
4. Select the number of failed login attempts from 3 to 20 by adjusting the slider or changing the number in the box.
5. Click **Save** to save the changes.

For security reasons, we recommend leaving the number of failed login attempts at three.

Notes:

- A. The IP address will be blocked when the number of failed login attempts from a user reaches the number of failed username/password attempts configured in the camera (there is no difference in the number of attempts for the admin/operator/user).
- B. If the IP address is blocked, log in to the device again after 30 minutes.

Certificate Management

It helps manage the server/client certificates and CA certificate. It also sends an alarm if the certificates will expire or are expired/abnormal.

To manage certificates:

1. Click **Configuration > System > Security > Certificate Management**.

truVision IP Camera

Live View

Playback

Picture

Application

Log

Configuration

Local Configuration

System

System Settings

Maintenance

Security

Users

Network

Video/Audio

Image

Event

Storage

Counting

EPTZ

Authentication

IP Address Filter

Security Service

Advanced Security

Certificate Management

Security Audit Log

Server/Client Certificate

Create Self-sign...

Create Certificate...

Import

Export

Delete

Certificate Proper...

Certificate ID	Valid From:	Valid To:	Status	Functions
default	2020-05-09 10:51:51	2023-05-09 10:51:51	Normal	HTTPS,WebSockets,Enhanced...

CA certificate

Import

Delete

Certificate Proper...

Certificate ID	Valid From:	Valid To:	Status	Functions
----------------	-------------	-----------	--------	-----------

Certificate Expiration Al...

Enable Certificate Expiration Alarm

Remind Me Before Expira... 7

Alarm Frequency(day) 1

Detection Time (hour) 10

Normal Actions

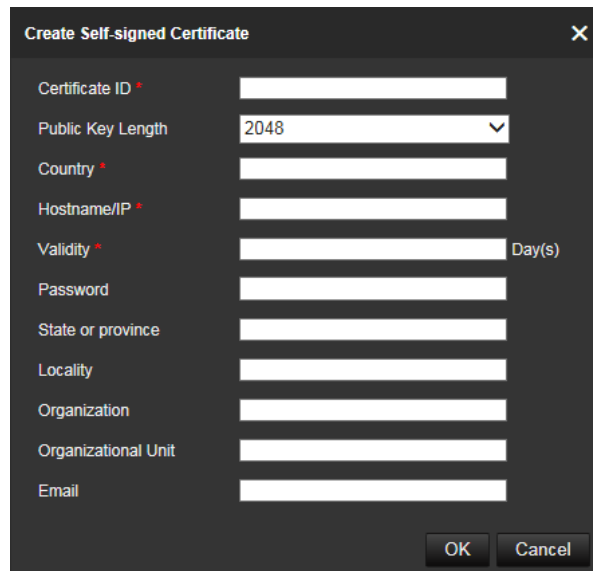
Send Email

Notify Alarm Recipient

Save

To create self-signed certificate:

1. Click **Create Self-signed Certificate**.
2. Enter certificate ID, country, hostname/IP, validity, and other information. The certificate ID should be numbers or letters less than 64 characters.



Create Self-signed Certificate

Certificate ID *

Public Key Length

Country *

Hostname/IP *

Validity * Day(s)

Password

State or province

Locality

Organization

Organizational Unit

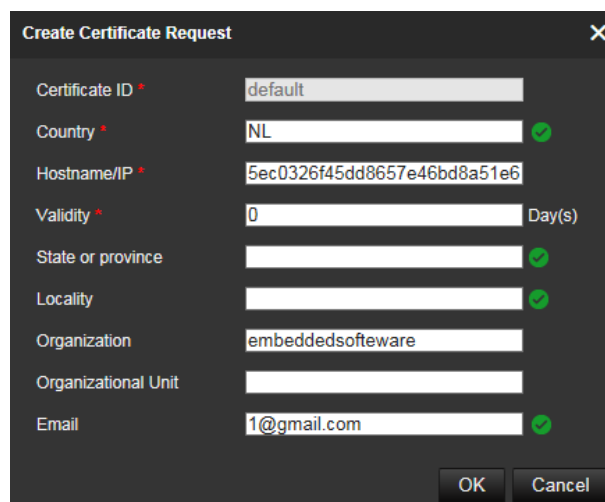
Email

OK Cancel

3. Click **OK** to save the changes.
4. (Optional) After selecting a certificate, click **Export** to export the certificate, click **Delete** to delete the certificate, or click **Certificate Properties** to view the certificate details.

To create a certificate request:

1. Select a saved self-signed certificate.
2. Click **Create Certificate Request**.
3. Enter the related information before saving the request. Otherwise, it cannot be saved.



Create Certificate Request

Certificate ID *

Country * ✓

Hostname/IP *

Validity * Day(s)

State or province ✓

Locality ✓

Organization

Organizational Unit

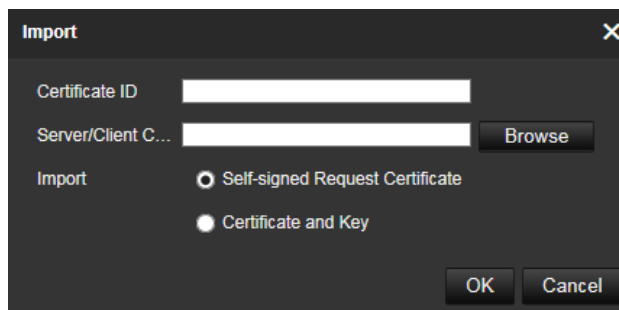
Email ✓

OK Cancel

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

To import a certificate:

1. Click **Import**
2. Enter the certificate ID, click **Browser** to select the desired server/client certificate, select the desired import method and enter the required information.
3. Click **OK** to save the changes



Note:

- Up to 16 certificates are allowed.
- If certain functions are using the certificate, it cannot be deleted.
- You can view the functions that are using the certificate in the Functions column.
- You cannot create a certificate that has the same ID with that of the existing certificate, nor import a certificate that has the same content with that of the existing certificate.

To manage CA certificate:

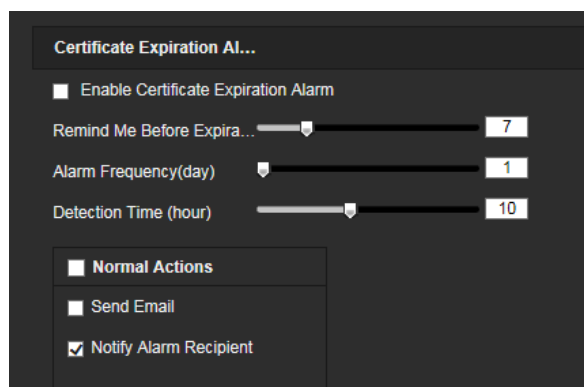
1. Click **Import**
2. Enter certificate ID, click Browser to select the desired server/client certificate, select the import method and enter the required information.
3. Click **OK** to save the changes

Note:

Up to 16 certificates are allowed.

To enable certificate expiration alarm:

1. Check **Enable Certificate Expiration Alarm**. If enabled, notification messages that certificates will soon expire, or have expired or are abnormal, will be sent to the saved email box or alarm recipient.



2. Select the **Remind Me Before Expiration (day)**, **Alarm Frequency (day)** and **Detection Time (hour)** periods by adjusting the bars.

Note:

- If you set the reminding day before expiration to 1, then the camera will remind you the day before the expiration day. You can select between 1 to 30 days. Seven days is the default reminding days.
- If you set the reminding day before expiration to 1, and the detection time to 10:00, and the certificate will expire in 9:00 the next day, the camera will remind you in 10:00 the first day.

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

Security audit log

You can search and analyze the security log files of the device to see if there has been any invalid access. After the camera boots up, security audit logs are saved to the device flash memory every 30 minutes.

Due to limited storage in the flash memory, you can save the logs on a log server. Configure the server settings under **Advanced Settings**.

User Management

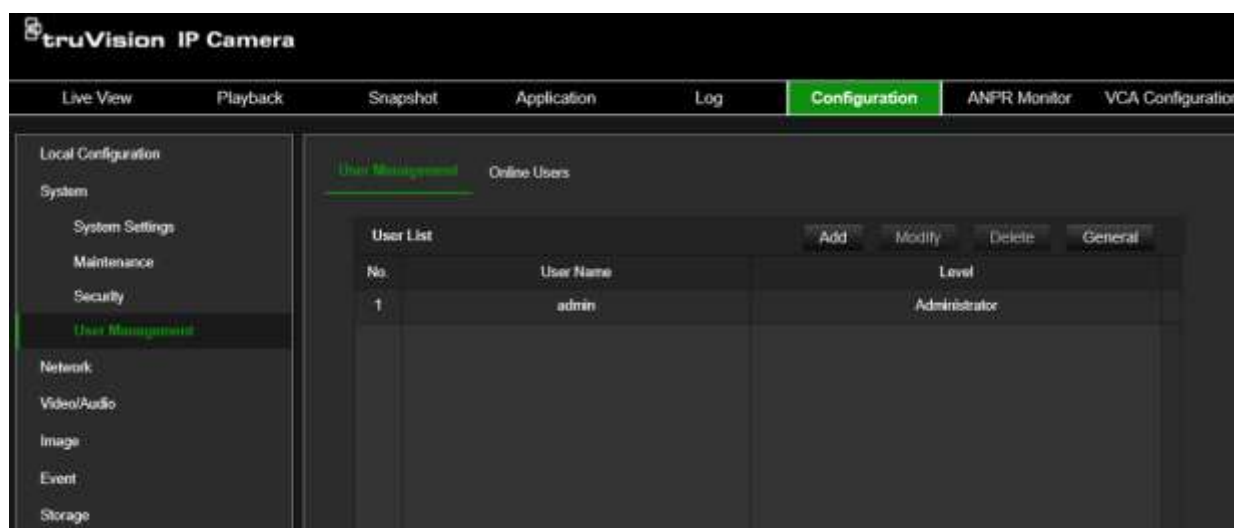
This section describes how to manage users. You can:

- 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 3 below.

Figure 3: User management window



When creating a new user, you must define a password for each user. There is no default password provided for all users. Users can modify their passwords and will

receive a pop-up notification asking to change their password when logging into the camera web page for the first time.

Note: Keep the admin password in a safe place. If you forget it, please contact Technical Support, or reset the camera using the camera hardware reset button. Please be aware that by doing so, you will lose all configuration.

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.
- **User:** This user has the permission of live view, playback, and log search. However, they cannot change any configuration settings.

To add a user:

1. From the menu toolbar, click **Configuration > System > User Management**
2. Click the **Add** button which opens the *Add user* window.

Add user

User Name

Level

Admin Password

Password

Password length must be between 8 and 16 characters and contain upper case letters, lower case letters, numbers, and special characters (: _ ~ , . * & @ / \$? Space).

Confirm

☐ Select All

- ☐ Remote: Parameters Settings
- ☒ Remote: Log Search / Interrogate Wor...
- ☐ Remote: Upgrade / Format
- ☒ Remote: Bi-directional Audio
- ☐ Remote: Shutdown / Reboot
- ☐ Remote: Notify Surveillance Center /...
- ☐ Remote: Video Output Control
- ☐ Remote: Serial Port Control
- ☒ Remote: Live View
- ☒ Remote: Manual Record
- ☐ Remote: PTZ Control
- ☒ Remote: Playback

OK Cancel

3. Enter a username.

4. Select the type of user from the **Level** drop-down list. The options are User and Operator.
5. Enter the Admin Password.
6. In the Password and Confirmation field, enter a password for the new user.

The passwords must meet following requirements:

- Minimum 8 characters and Maximum 16 characters
- Minimum 1 capital letter
- Minimum 1 small letter
- Minimum 1 special character among _ : - , . * & @ / \$? Space

We recommend that you do not use a space at the start or end of a password, and that you reset your password regularly. For high security systems, it is particularly recommended to reset the password monthly or weekly for better protection.

7. Assign permissions to the user. Select from these options:

Remote: Parameters Settings	Remote: Live View
Remote: Log Search/Interrogate Working Status	Remote: Manual Record
Remote: Upgrade/Format	Remote: PTZ Control
Remote: Bi-directional Audio	Remote: Playback
Remote: Shutdown / Reboot	Remote: Import/Export Blocked/Allowed List
Remote: Notify Surveillance Center/Trigger Alarm Output	
Remote: Video Output Control	
Remote: Serial Port Control	

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

To delete a user:

1. From the menu toolbar, click **Configuration > System > User Management**
2. Select the desired user.
3. Click the **Delete** button. A message box appears asking if you want to delete this user. Click **OK**.

Note: Only the administrator can delete a user.

4. Enter the Admin password. Click **OK**.

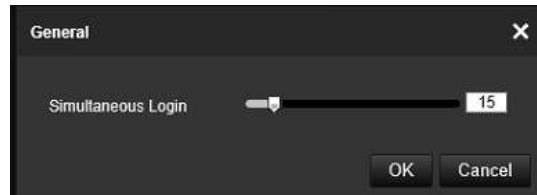
To modify user information:

1. From the menu toolbar, click **Configuration > System > User Management**
2. Select the desired user.
3. Click the **Modify** button. The *Modify user* window appears
4. Change the information required and enter the admin password. Click **OK**.

Note: Only the admin user can modify users.

To define the maximum number of simultaneous logins:

1. From the menu toolbar, click **Configuration > System > User Management**
2. Click the **General** button and use the slider to define the maximum number of simultaneous logins allowed for the camera.



Online users

Use this menu to display users currently connected to the camera. You can see the following user information: user name, level, IP address, and operation time.

Users		Online Users			
User List					Refresh
No.	User Name	Level	IP Address	User Operation Time	
1	admin	Administrator	10.7.70.3	2020-06-04 20:38:29	

Network

Use the Network menu to set the desired network parameters to be able to access the camera. There are two groups of network settings, Basic Settings and Advanced Settings.

TCP/IP

You can set up the following TCP/IP parameters:

Function	Description
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
DHCP	Enable the parameter to automatically obtain an IP address and other network settings from that server.
IPv4 Address	Enter the IPv4 address of the camera.
IPv4 Subnet Mask	Enter the IPv4 subnet mask.
IPv4 Default Gateway	Enter the IPv4 gateway IP address.
IPv6 Mode	Enter the IPv6 mode: Manual, DHCP or Router Advertisement.
IPv6 Address	Enter the IPv6 address of the camera.
IPv6 Subnet Prefix Length	Enter the IPv6 subnet prefix length value of the camera.

IPv6 Default Gateway	Enter the IPv6 default gateway value of the camera.
MAC Address	Shows the MAC address of the devices.
MTU	Enter the valid value range of MTU. Default is 1500.
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.
Enable Multicast Discovery	This function is optional. It enables the automatic detection of the online network camera via private multicast protocol in the LAN.
DNS server	Specifies the DNS server for your network.
Host Name Configuration	Enable hostname configuration and define a hostname in case you want to use a name instead of an IP address to connect to the camera

To set up the TCP/IP parameters:

1. Click **Configuration > Network > Basic Settings > TCP/IP**.

The screenshot displays the 'TCP/IP' configuration page with the following settings:

- Tabs:** TCP/IP (selected), DDNS, PPPoE, Port, NAT, Multicast.
- NIC Type:** Auto (dropdown menu).
- DHCP:** ☒ DHCP.
- IPv4 Address:** 10.7.70.4 (with a 'Test' button).
- IPv4 Subnet Mask:** 255.255.255.0.
- IPv4 Default Gateway:** 10.7.70.254.
- IPv6 Mode:** Route Advertisement (dropdown menu, with a 'View Route Advertisement' button).
- IPv6 Address:** (empty field).
- IPv6 Subnet Mask:** (empty field).
- IPv6 Default Gateway:** :: (empty field).
- Mac Address:** 84:9a:40:b1:a9:7d.
- MTU:** 1500.
- Enable Multicast Discovery:** ☒.
- DNS Server Section:**
 - Preferred DNS Server:** 10.1.7.97.
 - Alternate DNS Server:** 10.1.7.98.
- Domain Name Settings Section:**
 - Enable Dynamic Domain Name:** ☐.
 - Register Domain Name:** (empty text field).
- Buttons:** Save (bottom left).

2. Configure the NIC settings, including the NIC Type, IPv4 settings, IPv6 settings and MTU settings.
3. If the DHCP server is available, select **DHCP**.

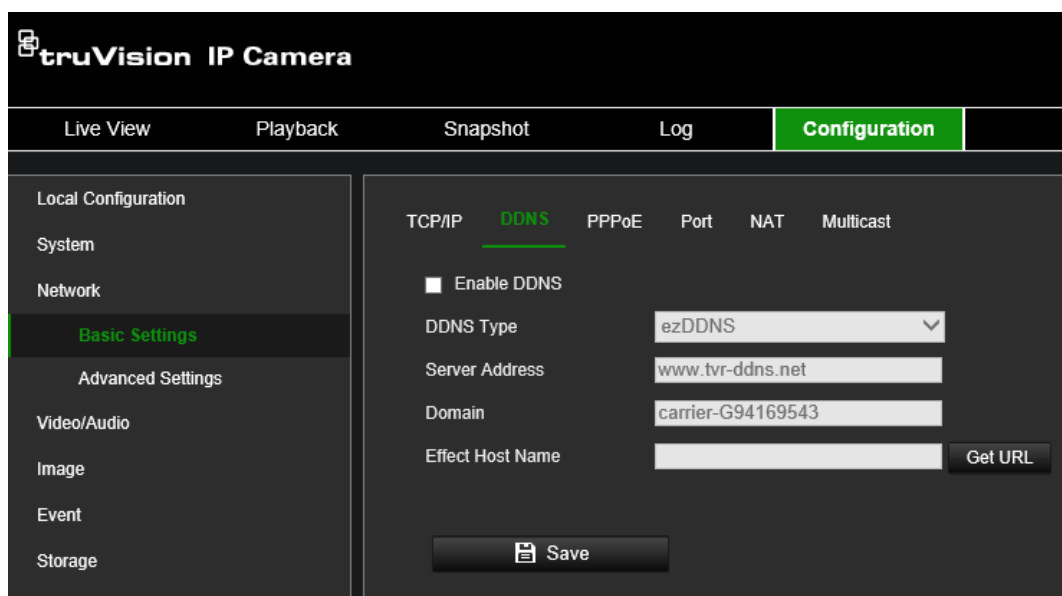
4. If the DNS server settings are required for some applications (e.g., sending email), you should configure the **Preferred DNS Server or Alternate DNS Server**.
5. Click **Save** to save changes.
6. Reboot the device for the changes to take effect.

DDNS

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.

To set up the DDNS parameters:

1. Click **Configuration > Network > Basic Settings > DDNS**.



2. Select **Enable DDNS** to enable this feature.
3. Select the **DDNS Type**. Three options are available: DynDNS, ezDDNS and NO-IP.

DynDNS: Select **DynDNS** and enter the server address for DynDNS. In the recorder domain name field, enter the domain name obtained from the DynDNS web site. Then enter your user name and password registered in the DynDNS network.

For example:

Server address: members.dyndns.org

Domain: mycompanydvr.dyndns.org

User name: myname

Password: mypassword

- Or -

ezDDNS: Enter the host name. It will automatically register it online. You can define a host name for the camera. Make sure you entered a valid DNS server in the network settings and have the necessary ports forwarded in the router (HTTP, Server port, RSTP port).

- Or -

NO-IP: Enter the server address (for example, dynupdate.no-ip.com). In the host name field, enter the host obtained from the NO-IP web site. Then enter the user name and password that are registered with the No-IP network.

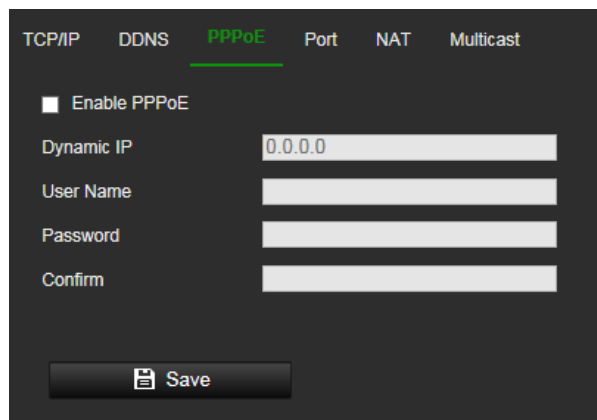
4. Click **Save** to save changes.
5. Reboot the device for the changes to take effect.

PPPoE

This allows you to retrieve a dynamic IP address.

To set up the PPPoE parameters:

1. Click **Configuration > Network > Basic Settings > PPPoE**.



2. Select **Enable PPPoE** to enable this feature.
3. Enter the dynamic IP address.
4. Enter User Name, Password, and Confirm password for PPPoE access.
5. Click **Save** to save changes.
6. Reboot the device for the changes to take effect.

Port

You can set up several ports:

HTTP Port: The default port number is 80, and it can be changed to any port number that is not occupied.

RTSP Port: The default port is 554 and it can be changed to any port number from 1 to 65535.

SRTP Port: The default port is 322.

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

Server Port: The default server port is 8000, and it can be changed to any port number from 2000 to 65535.

Enhanced SDK Service Port: The default server port is 8433, and it can be changed to any port number from 2000 to 65535.

WebSocket Port: The default port is 7681. It can be changed to any port number ranges from 1 to 65535.

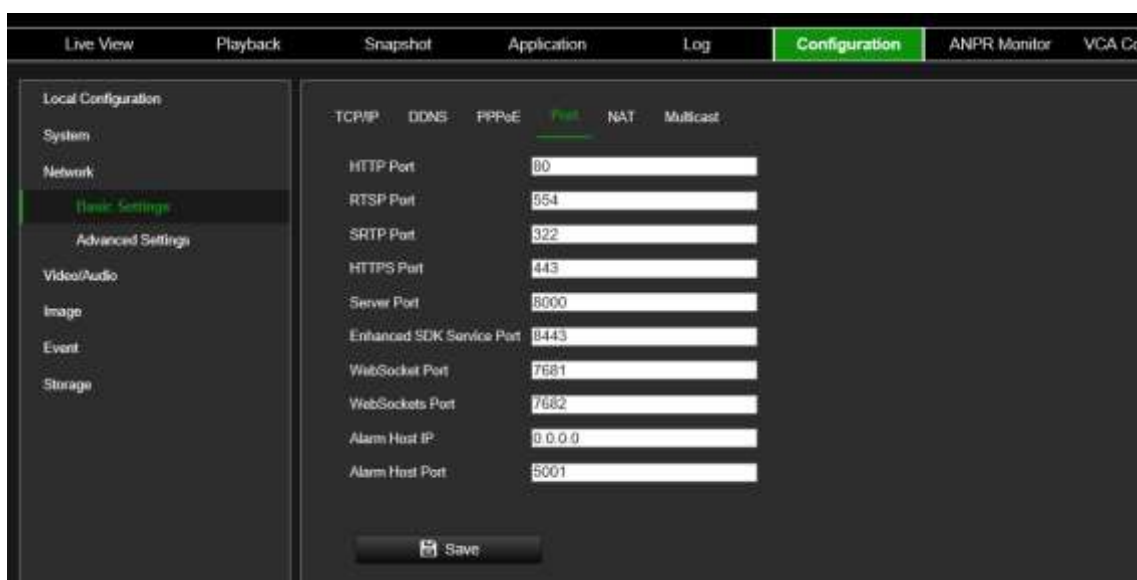
WebSockets Port: The default server port is 7682. It can be changed to any port number from 1 to 65535.

Alarm Host IP: A configurable IP address of a server that will listen and receive alarm messages.

Alarm Host Port: The network port of the server that is listening at. The default server port is 5001. It can be changed to any port No. ranges from 1 to 65535.

To set up the port parameters:

1. Click **Configuration > Network > Basic Settings > Port**.



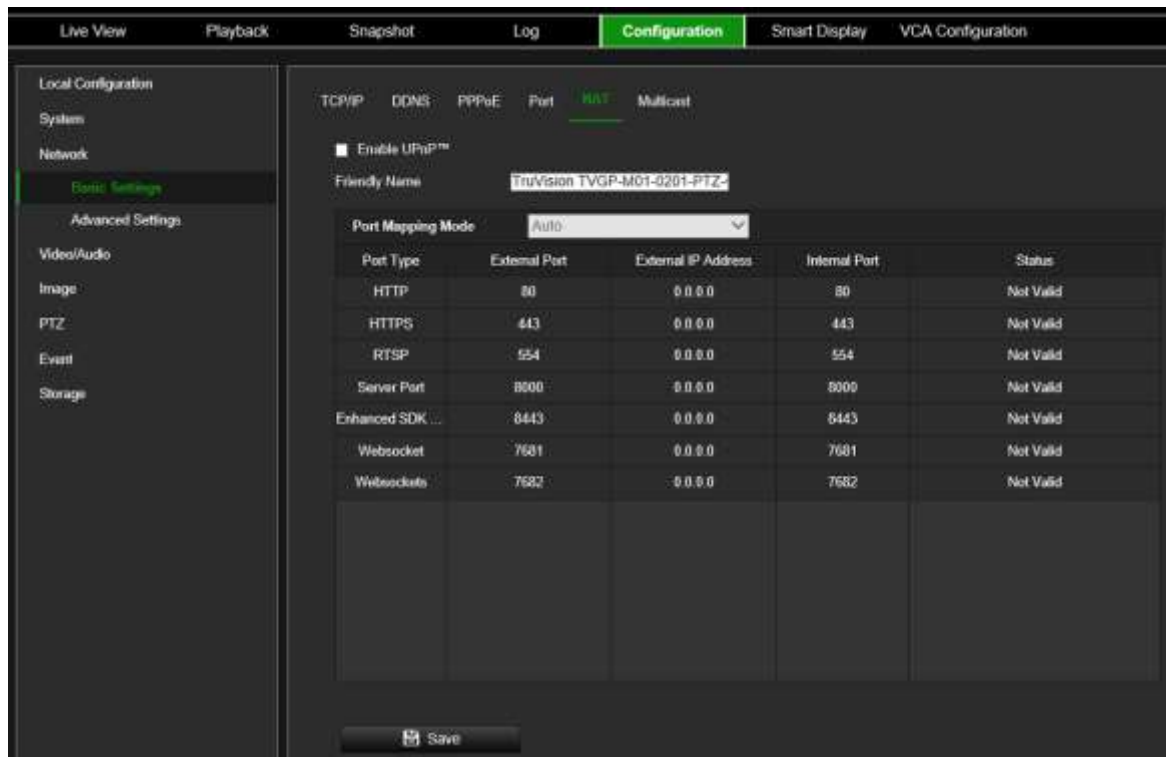
2. Set the HTTP port, RTSP port, HTTPS port and Server port of the camera.
3. Enter the IP address and port if you want to upload the alarm information to the remote alarm host. Also select the **Notify Alarm Recipient** option in the normal Linkage of each event page.
4. Click **Save** to save changes.
5. Reboot the device for the changes to take effect.

NAT

A NAT (Network Address Translation) is used for network connection. Select the port mapping mode: auto or manual.

To set up the NAT parameters:

1. Click **Configuration > Network > Basic Settings > NAT**.



2. Select the **Enable UPnP™** check box to enable the UPnP™ function.

3. Select **Port Mapping Mode** to be Auto or Manual.

If you choose **Manual** mode, you can set the external port as you want.

Note: If you choose **Auto** mode, enable the UPnP™ function at the router.

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

Multicast

Multicast is a protocol for discovering devices on networks. Configure multicast to make the device discoverable.

To set up the Multicast parameters:

1. Click **Configuration > Network > Basic Settings > Multicast**.

The screenshot shows the 'Configuration' tab selected in the top navigation bar. On the left, the 'Local Configuration' sidebar has 'Basic Settings' highlighted under the 'Network' section. The main content area shows the 'Multicast' sub-tab selected. It contains fields for 'IP Address' (0.0.0.0) and 'Stream Type' (Main Stream). Below these are two sections: 'RTSP' with 'Video Port' (8860) and 'Audio Port' (8862), and 'SRTSP' with 'Video Port' (18860) and 'Audio Port' (18862). A 'Save' button is at the bottom.

2. Enter a class D IP address between 224.0.0.19 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.
3. Configure main stream and substream video and audio ports for both RTSP and SRTSP stream types.
4. Click **Save** to save changes.

SNMP

SNMP is a protocol for managing devices on networks. Enable SNMP to get the camera status and parameter related information.

To set up the SNMP parameters:

1. Click **Configuration > Network > Advanced Settings > SNMP**.

The screenshot displays the 'SNMP' configuration page. At the top, there is a navigation bar with tabs for 'SNMP', 'FTP', 'Email', 'HTTPS', 'QoS', '802.1x', and 'Integration Protocol'. The 'SNMP' tab is selected and highlighted in green.

The main configuration area is divided into three sections:

- SNMP v1/v2:** This section contains checkboxes for 'Enable SNMPv1' and 'Enable SNMP v2c'. Below these are input fields for 'Read SNMP Community' (set to 'public'), 'Write SNMP Community' (set to 'private'), 'Trap Address' (empty), 'Trap Port' (set to '162'), and 'Trap Community' (set to 'public').
- SNMP v3:** This section contains a checkbox for 'Enable SNMPv3'. Below it are two identical sets of configuration fields for Read and Write operations. Each set includes: 'Read/Write UserName' (empty), 'Security Level' (dropdown menu set to 'no auth, no priv'), 'Authentication Algorithm' (radio buttons for MD5 and SHA, with MD5 selected), 'Authentication Password' (masked with dots), 'Private-key Algorithm' (radio buttons for DES and AES, with DES selected), and 'Private-key password' (masked with dots).
- SNMP Other Settings:** This section contains a single input field for 'SNMP Port' set to '161'.

At the bottom of the configuration area is a 'Save' button with a floppy disk icon.

2. Select the corresponding version of SNMPv1, SNMP v2c, or SNMPv3.
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.

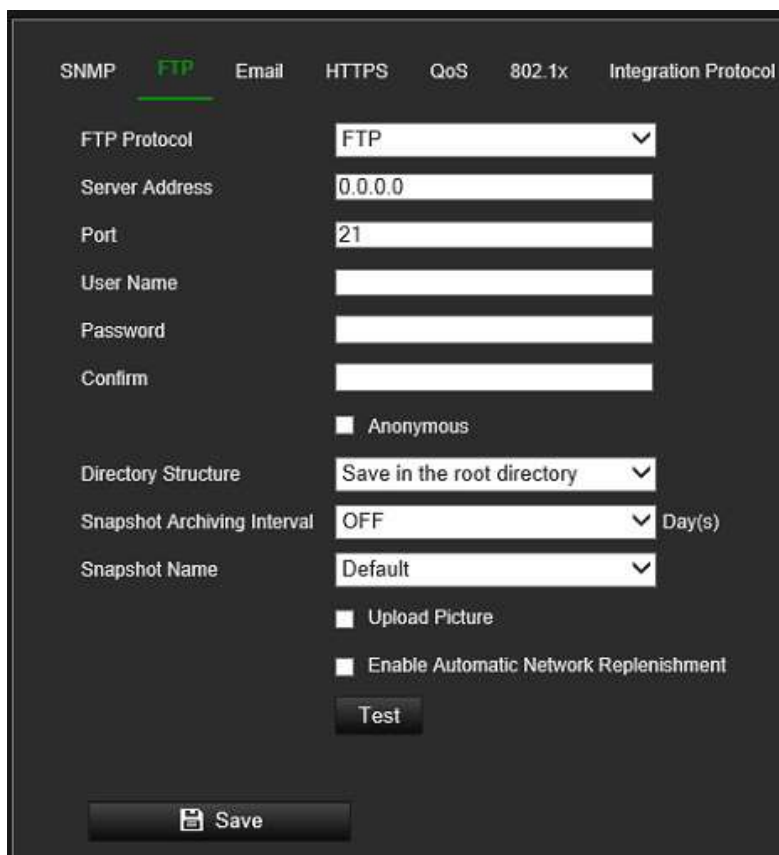
Note: Before setting the SNMP, please download the SNMP software to receive the camera information via the SNMP port. By setting the Trap Address, the camera can send the alarm event and exception messages to the surveillance center. The SNMP version you select should be the same as that of the SNMP software.

FTP

Configure the FTP server to allow the camera to upload snapshot pictures of an event to the server for storage.

To set up the FTP parameters:

1. Click **Configuration > Network > Advanced Settings > FTP**.

The screenshot shows a web-based configuration interface for an FTP server. At the top, there is a navigation bar with tabs for SNMP, FTP (which is highlighted in green), Email, HTTPS, QoS, 802.1x, and Integration Protocol. Below the tabs, the FTP configuration form is displayed. It includes fields for FTP Protocol (a dropdown menu set to 'FTP'), Server Address (a text box with '0.0.0.0'), Port (a text box with '21'), User Name (an empty text box), Password (an empty text box), and Confirm (an empty text box). There is a checkbox for 'Anonymous' which is currently unchecked. Below this is the 'Directory Structure' dropdown menu, set to 'Save in the root directory'. The 'Snapshot Archiving Interval' is set to 'OFF' with a 'Day(s)' label. The 'Snapshot Name' is set to 'Default'. There are two more checkboxes: 'Upload Picture' (unchecked) and 'Enable Automatic Network Replenishment' (unchecked). A 'Test' button is located below these checkboxes. At the bottom of the form is a large 'Save' button with a floppy disk icon.

2. Configure the FTP settings, including FTP protocol, 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, you can select the root directory, Main directory, and Subdirectory. When *Main* directory is selected, you have the option to use the Device Name, Device Number or Device IP for the name of the directory. When *Subdirectory* is selected, you can use the Camera Name or Camera No. as the name of the directory.

Upload Picture: To enable uploading snapshots to the FTP server.

Enable Automatic Network Replenishment: When the connection to the FTP server is unavailable, the camera will temporarily store data on the installed SD card and upload it to the FTP once the connection is restored.

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

Email

Enter the email address to which messages are sent when an alarm event occurs.

To set up the email parameters:

1. Click **Configuration > Network > Advanced Settings > Email**.

The screenshot shows the 'Email' configuration page. At the top, there is a navigation bar with tabs: SHMP, FTP, **Email**, HTTPS, QoS, B02.1x, Integration Protocol, Network Service, HTTP Listening, TCP Acceleration, Traffic Shaping, and SRTP. Below the navigation bar, the 'Email' settings are listed:

- Sender: [Text Input]
- Sender's Address: [Text Input]
- SMTP Server: [Text Input]
- SMTP Port: [Text Input, value: 25]
- Email Encryption: [Dropdown Menu, value: None]
- ☐ Attached Image
- Interval: [Text Input, value: 2]
- ☐ Authentication
- User Name: [Text Input]
- Password: [Text Input]
- Confirm: [Text Input]

Below the settings, there is a 'Receiver' table:

No.	Receiver	Receiver's Address	Test
1			Test
2			Test
3			Test

At the bottom of the page, there is a 'Save' button.

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.

Email Encryption: Encrypt via SSL, TLS. NONE is default.

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

Interval: This is the time between two actions of sending attached 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 user to be notified.

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

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

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

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

3. Click **Test** to test the email parameters set up.

Note: Some email clients block the test message that is sent when using the **Test** button. If you believe the settings are correct, then test the email feature by triggering a real video event.

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

HTTPS

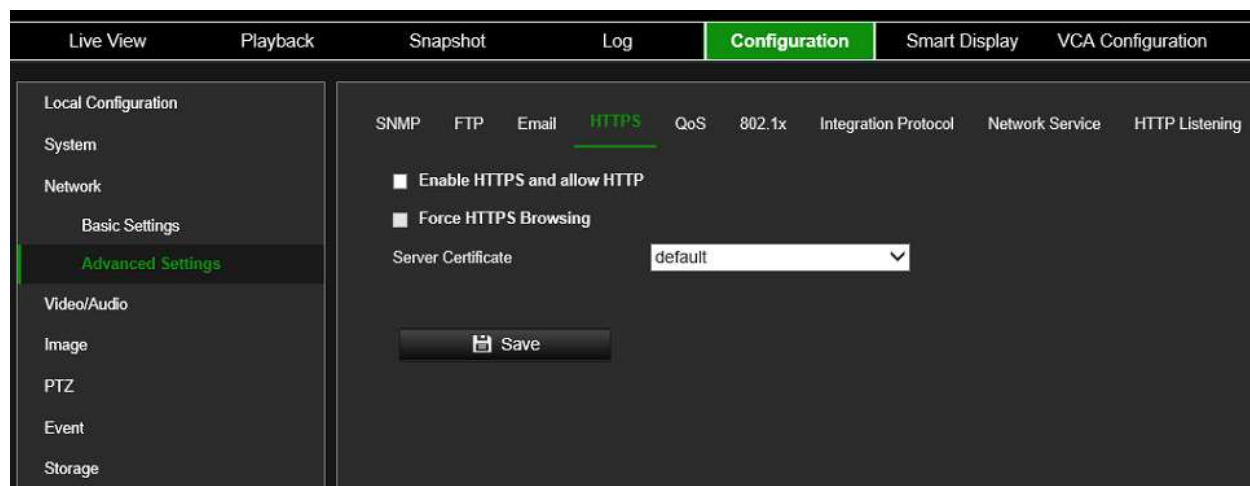
Specifies the authentication of the web site and its associated web server, which protects against Man-in-the-middle attacks.

To set up the HTTPS parameters:

1. Click **Configuration > Network > Advanced Settings > HTTPS**.

Select **Enable HTTPS and allow HTTP** to allow connections.

Enabling option **Force HTTPS Browsing** forces the camera to use HTTPS instead of HTTP.



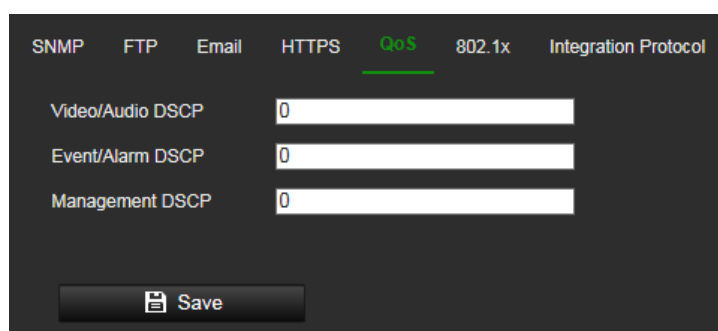
QoS

QoS (Quality of Service) can help solve network delay and network congestion by configuring the priority of data sending.

Enable the option to solve network delay and network congestion by configuring the priority of data sending.

To define the QoS parameters:

1. Click **Configuration > Network > Advanced Settings > QoS**.



The screenshot shows the 'QoS' configuration page. At the top, there are tabs for 'SNMP', 'FTP', 'Email', 'HTTPS', 'QoS' (which is highlighted with a green underline), '802.1x', and 'Integration Protocol'. Below the tabs, there are three input fields for DSCP values: 'Video/Audio DSCP' with a value of '0', 'Event/Alarm DSCP' with a value of '0', and 'Management DSCP' with a value of '0'. At the bottom of the page, there is a 'Save' button with a floppy disk icon.

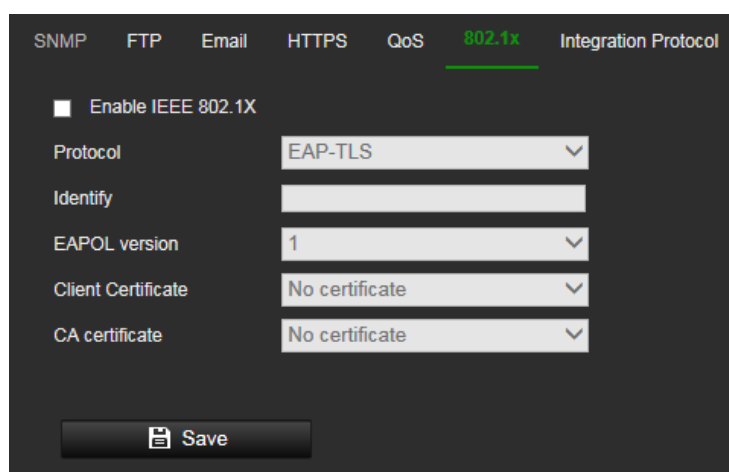
2. Configure the QoS settings, including Video / Audio DSCP, Event / Alarm DSCP and Management DSCP. The valid value range of the DSCP is 0-63. The bigger the DSCP value is, the higher the priority is.
3. Click **Save** to save changes.

802.1x

When the feature is enabled, the camera data is secured, and user authentication is needed when connecting the camera to the network.

To set up the 802.1x parameters:

1. Click **Configuration > Network > Advanced Settings > 802.1X**.



The screenshot shows the '802.1x' configuration page. At the top, there are tabs for 'SNMP', 'FTP', 'Email', 'HTTPS', 'QoS', '802.1x' (which is highlighted with a green underline), and 'Integration Protocol'. Below the tabs, there is a checkbox labeled 'Enable IEEE 802.1X'. Below this, there are several configuration options: 'Protocol' set to 'EAP-TLS', 'Identify' (empty), 'EAPOL version' set to '1', 'Client Certificate' set to 'No certificate', and 'CA certificate' set to 'No certificate'. At the bottom of the page, there is a 'Save' button with a floppy disk icon.

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.

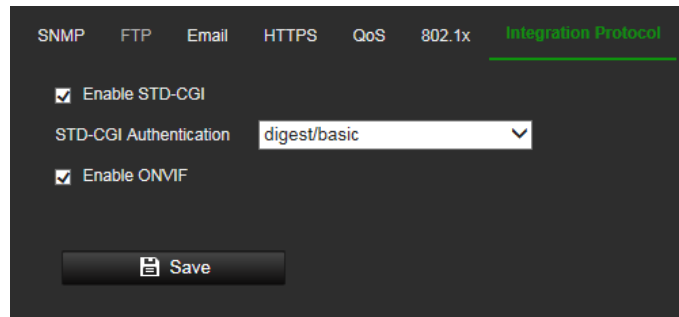
Note: The switch or router to which the camera is connected must also support the IEEE 802.1X standard. A server must also be configured. Please apply and register a user name and password for 802.1X in the server.

Integration protocol

If you need to access the camera through the third-party platform, you can enable STD-CGI function. If you need to access the camera through the ONVIF protocol, you can configure ONVIF from this interface. Refer to ONVIF standard for detailed configuration rules.

To set up the integration protocol parameters:

1. Click **Configuration > Network > Advanced Settings > Integration Parameters**.



2. Select the STD-CGI Authentication method. Digest/basic indicates using digest as priority if supported by the communication. If it is not supported, basic authentication will be the backup.
3. Select the **Enable STD-CGI** check box to enable the STD-CGI protocol.
4. Select the **Enable ONVIF** check box to enable the ONVIF protocol.
5. Click **Save** to save changes.

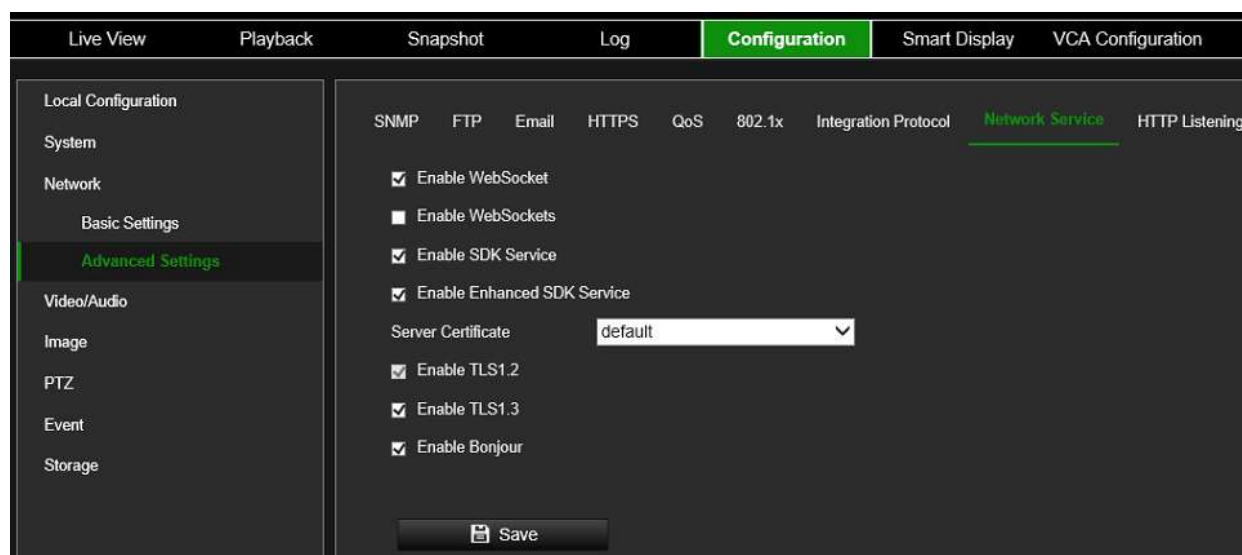
Network service

Use this function to enable or disable certain protocols supported by the camera. Unused functions should be disabled for security reasons. Supported functions depend on the camera model.

- **WebSocket:** TCP-based full-duplex communication protocol port for plug-in free preview. To access the camera, enable this function if using Google Chrome version 45 and higher or Mozilla Firefox 52 and higher. If not enabled, live view, image capture and digital zoom cannot be used with these browsers.
- **WebSockets:** TCP-based full-duplex communication protocol port for plug-in free live view. Certificate verification is required to ensure secure access.
- **SDK Service** and **Enhanced SDK Service:** Enable these functions to be able to use the device with a VMS (like TruVision Navigator or a third-party software using the SDK). **SDK Service** uses the SDK protocol. **Enhanced SDK Service** uses SDK over TLS (Transport Layer Security).

To set up the network service parameters:

1. Click **Configuration > Network > Advanced Settings > Network Service**.



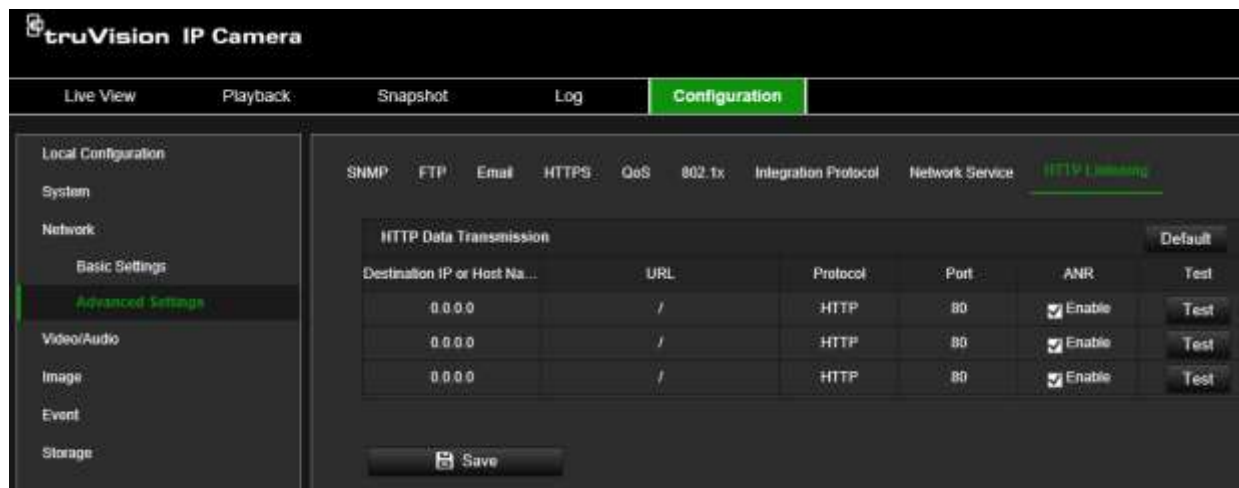
2. Select the **Enable WebSocket** check box to enable WebSocket service for live viewing over HTTP protocol without the plug-in.
3. Select the **Enable WebSockets** check box to enable WebSockets service for live viewing over HTTPS protocol without the plug-in.
4. Select the **Enable SDK Service** check box to enable SDK protocol over HTTP protocol. Client software communicates with the device via SDK service or Enhanced SDK service.
5. Select the **Enable Enhanced SDK Service** check box to enable SDK protocol over HTTPS protocol.
6. TLS1.2 is enabled by default and cannot be changed as HTTPS protocols rely on it.
7. Enable/disable the TLS1.3 option.
8. Enable/disable the Bonjour service.
9. Click **Save** to save changes.

HTTP listening

Alarm information can be sent to destination IP or Host via HTTP protocol.

To set up the HTTP listening parameters:

1. Click **Configuration > Network > Advanced Settings > HTTP**.

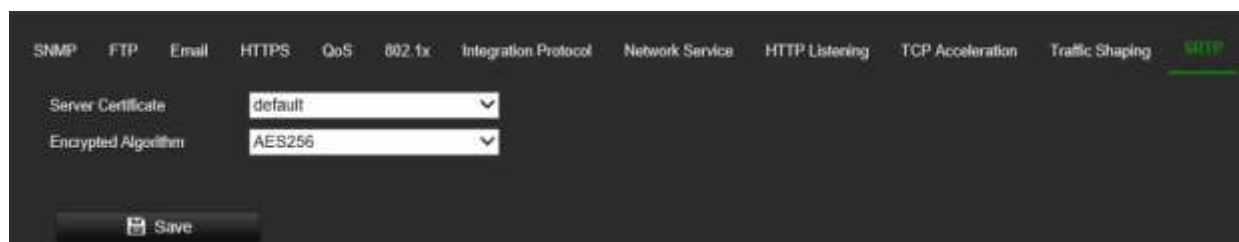


2. Enter destination IP or host name, URL, protocol type and port number.
 3. Click the **Test** button to test if the service is available.
- Note:** the IP address or host name of a server should be available. The server should listen to the designated port.
4. Enable ANR to activate Automatic Network Replenishment to have the camera send buffered events to the alarm host after restoring from a network disconnect.
 5. Click **Save** to save changes.

SRTP

To set up the SRTP parameters:

1. Click **Configuration > Network > Advanced Settings > SRTP** to open its window.



2. Select the server certificate in the drop-down list
3. Select the encrypted algorithm in the drop-down list
4. Click **Save** to save changes.

Video/Audio

You can adjust the video and audio recording parameters to obtain the image quality best suited to your needs. Figure 4 below list the video and audio recording options you can configure for the camera.

Figure 4: Video/Audio Settings menu (Video tab shown)

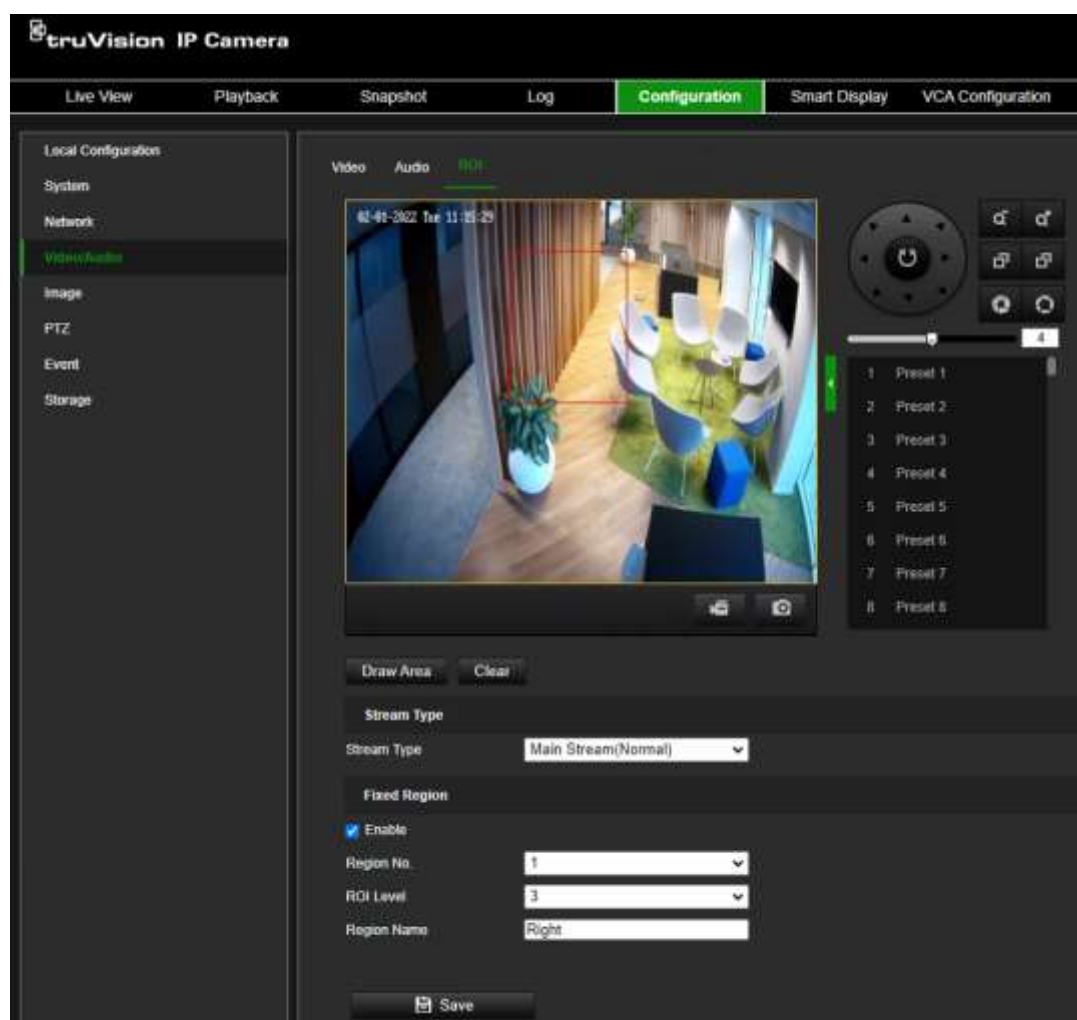


Tab	Parameter descriptions
1. Video	Stream Type: Specifies the streaming method used. Options include: Main Stream, Substream, Third Stream. Note that Third Stream is only available in Standard Event Mode (menu System > VCA Resource) Video Type: Specifies the stream information you wish to record. Select Video Stream to record video stream only. Select Video&Audio to record both video and audio streams. Note: Video&Audio is only available for those camera models that support audio. 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, sub, third, fourth or fifth stream is being used. Note: Resolutions can vary depending on the camera model. Bit Rate Type: Specifies whether variable or fixed bit rate is used. Variable produces higher quality results suitable for video downloads and streaming. Default is Constant. Video Quality: Specifies the quality level of the image. It can be set when variable bit rate is selected. Options are: Lowest, Lower, Low, Medium, Higher and Highest. 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. Note: The maximum frame rate depends on the camera model and selected resolution. Please check the camera specifications in its datasheet. Video Encoding: Specifies the video encoding used. You can choose between H.264 and H.265.

Tab	Parameter descriptions
	H.264+/H.265+: Depending on the selected Video Encoding, this parameter allows you to activate smart codecs H.264+ or H.265+ by switching it to ON. Leaving this parameter OFF will make the camera use standard H.264 or H.265 video encoding. Note: When switching to H.265+/H.264+, parameters such as SVC Profile and I-Frame Interval will not be supported. Profile: Different profile indicates different tools and technologies used in compression. Options for H.264 are: Basic Profile, Main Profile, High Profile. I-Frame Interval: A video compression method. It is strongly recommended not to change the default value 50. SVC: Scalable Video Coding is an extension of the H.264/AVC standard. Select OFF / ON to disable / enable the SVC function. Select Auto and the device will automatically extract frames from the original video when the network bandwidth is insufficient. SVC is not available when H.264+ or H.265+ video encoding is used. Smoothing: Adjust the smoothness of the stream. Smoothing is not available when H.264+ or H.265+ video encoding is used.
2. Audio (only available if hardware supports it)	Audio Encoding: G.722.1, G.711ulaw, G.711alaw, MP2L2, G.726, and PCM are supported. Audio Input: Line In is available to connect an active microphone. Note: Options can vary depending on the camera model. Input Volume: Specifies the microphone volume from 0 to 100. Output volume: Specifies the audio output volume Environmental Noise Filter: Set it as OFF or ON. When you set the function on the noise detected can be filtered.
3. ROI	Enable to assign more encoding resources to the region of interest (ROI) to increase the quality of the ROI whereas the background information is less focused.
4. Target Cropping	Specifies a target area on the live video so that only this specific video area will be displayed by the third stream. It can be used to provide more details about a certain area if needed.

To configure ROI settings:

1. Click **Configuration > Video/Audio > ROI**.



2. Draw the region of interest on the image.
3. Choose the stream type to be used for the ROI encoding.
4. Under the *Fixed Region* section, select **Enable** to manually configure the area.

Region No.: You can configure up to eight fixed ROI regions.

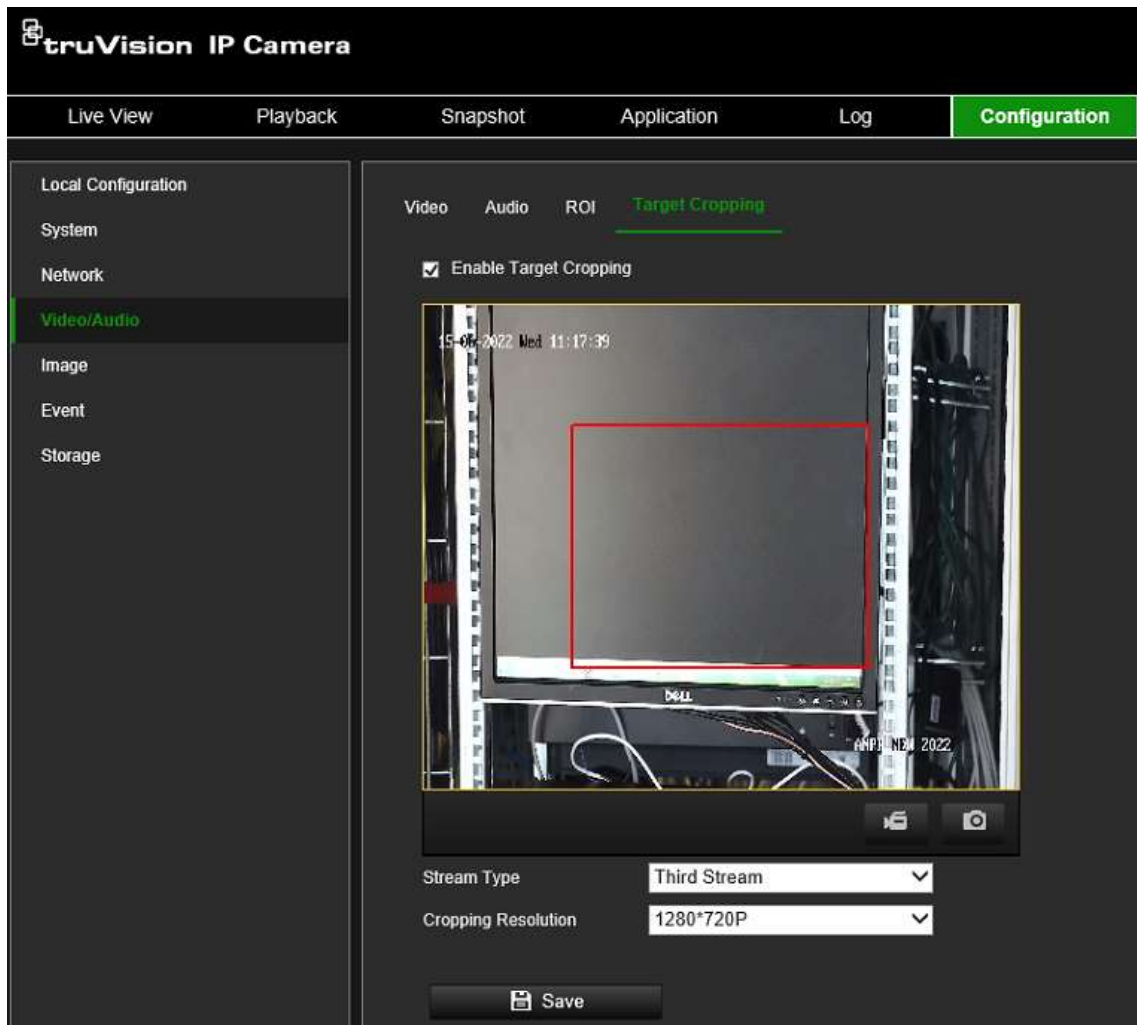
ROI Level: Choose the image quality enhancing level. The larger the value selected, the better the image quality.

Region Name: Set the desired region name.

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

To configure Target Cropping:

1. Click **Configuration > Video/Audio > Target Cropping**.



2. Position the red box to select the region you want to visualize with the third stream.
3. Select the **Cropping Resolution** for the selected area from the drop-down list.
4. Click **Save** to save changes.

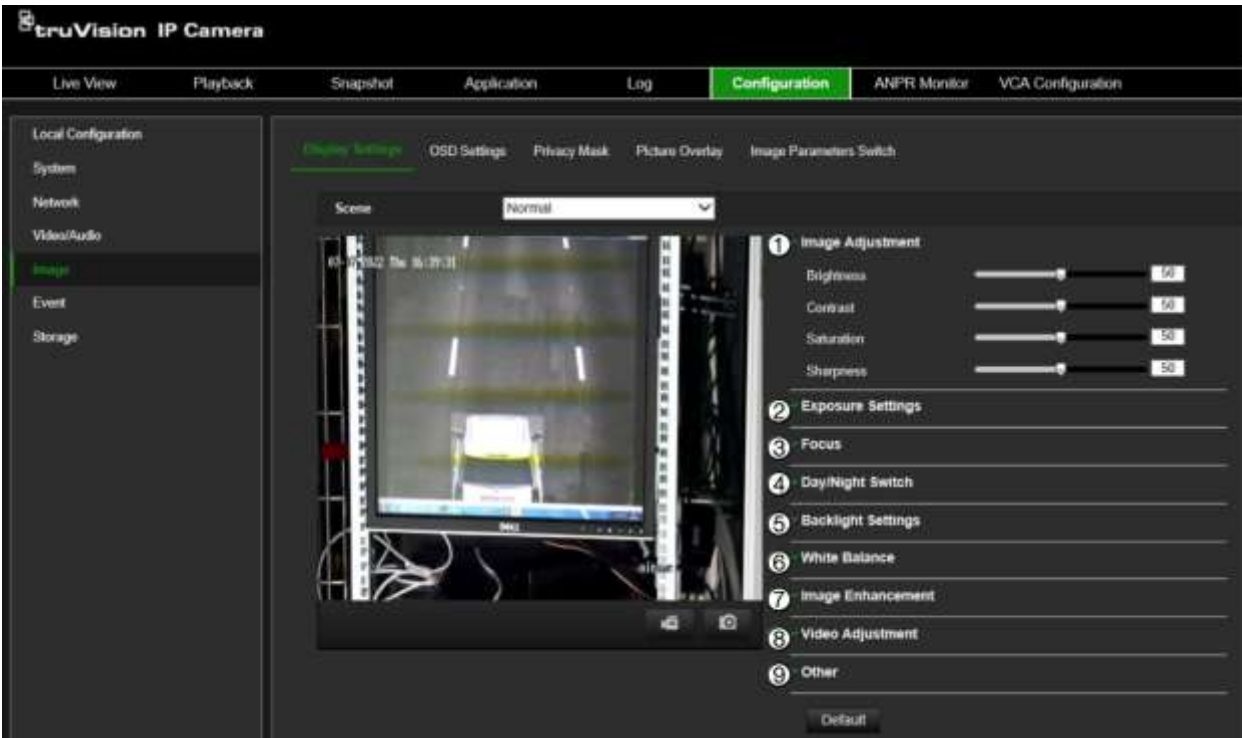
Image

You may need to adjust the camera image depending on the camera model or location background to get the best image quality. See Figure 5 below for more information.

Display Settings

Use this menu to set up how the image is displayed such as image adjustment, exposure settings, day/night settings, backlight settings, and white balance. Available settings can vary slightly depending on camera model.

Figure 5: Display Settings menu



The parameters displayed depend on the **Scene** selected from the drop-down list. Select the scene best suited to the environment: Normal, Back light, Front light, Low Illumination, Custom1, Custom2, or Face.

Parameter	Description
1. Image Adjustment	
Brightness, Contrast, Saturation, Sharpness	Modify the different elements of picture quality by adjusting the values for each of parameter. These options can also be modified from the General control panel in Live View.
2. Exposure Settings	
Iris Mode	Auto: Adjust the auto iris level from 0 to 100 and select the correct Exposure Time Fixed: When selected, only the Exposure Time can be changed. Generic P-Iris: Similar to Auto but can adjust the iris more precisely.
Exposure Time	For ANPR applications. The recommended values to start from are: Speed < 30 km/h: Exposure Time 1/150-1/200 Speed between 30 and 60 km/h: Exposure Time 1/250-1/500 Speed > 60 km/h: Exposure Time 1/500-1/1000 Further adjustment might be needed depending on environment and lighting conditions.
3. Focus	
Focus Mode	Adjust the focus mode and the minimum focus distance. Auto: The device focuses automatically as the scene changes. If you cannot get a well-focused image in auto mode, reduce the light sources in the image and avoid flashing lights.

Parameter	Description
	Semi-auto: The device focuses once after the desired lens zoom level is set. If the image is clear, the focus does not change when the scene changes. Manual: You can adjust the focus manually in live view.
Min. Focus Distance	When the distance between the scene and lens is shorter than the Min. Focus Distance configured, the lens does not focus. Select the desired distance from the drop-down list.
4. Day/Night Switch	
Day/Night Switch	Defines whether the camera is in day or night mode. The day (color) option could be used, for example, if the camera is located indoors where light levels are always good. Select one of the following options: Day: Camera is always in day mode. Night: Camera is always in night mode. Auto: The camera automatically detects which mode to use depending on the amount of light captured by the camera. Scheduled switch: The camera switches between day and night modes according to the configured period. Triggered by Alarm Input: The camera switches between day and night modes depending on the alarm input status. Triggered by Video: Optimize camera behavior for license plate capture. In VCA resource <i>Road Traffic</i> mode, <i>Triggered by Video</i> is advised while in <i>Smart Event</i> mode, <i>Auto</i> is advised.
Sensitivity	Only available when <i>Auto D/N switch</i> mode is selected. It defines the sensitivity of the switch between day and night. Set it between 1 and 7.
Filtering Time	Time the camera waits to switch between day/night when lighting conditions change.
Smart Supplement Light	Enable to avoid over exposure problems by decreasing the amount of IR illumination for objects closer to the camera.
Supplement Light Mode	Enable to turn on the infrared when the brightness is lower than a certain threshold to ensure the normal operation of the camera.
5. Backlight Settings	
BLC	This function improves image quality when the background illumination is high. It prevents the object in the center of the image from appearing too dark. Select OFF, Up, Down, Left, Right, Center, or Auto.
WDR	When enabled, wide dynamic range (WDR) provides clear images when there is high contrast between light and dark areas in the field of view of the camera. Both bright and dark areas can be displayed in the frame. This option can also be enabled/disabled from the General control panel in Live View. Note: WDR or HLC will make the image easier to perform the “ghost image” or detail lost. If the strong light can be solved by the exposure and gain settings, it is not recommended to enable these to counter strong lights.
Wide Dynamic Level	The WDR level can be fine tuned by changing its value between 0 and 100

Parameter	Description
HLC	Use the highlight compensation (HLC) function when there is strong sources of light in the scene that affects the image quality. This option can also be enabled/disabled from the General control panel in Live View. Note: WDR or HLC will make the image easier to perform the “ghost image” or detail lost. If the strong light can be solved by the exposure and gain settings, it is not recommended to enable these to counter strong lights.

6. White Balance

White balance (WB) tells the camera what the color white looks like. Based on this information, the camera will then continue to display all colors correctly even when the color temperature of the scene changes such as from daylight to fluorescent lighting, for example. Select one of the options:

MWB: Manually adjust the color temperature to meet your own requirements.

AWB1: Adjust within a range of 2500 to 9500K, for environments where the lighting is always stable.

AWB2: Slightly different range than AWB1. Check between AWB1 and AWB2 what works best for the environment in which the camera is installed.

Locked WB: Locks the WB to the current environment color temperature.

Incandescent Lamp: For use with incandescent lighting.

Warm Light Lamp: For use where the indoor light is warm.

Natural Light: For use with natural light.

Fluorescent Lamp: For use where there are fluorescent lamps installed near the camera.

7. Image Enhancement

Digital Noise Reduction	Digital noise reduction (DNR) reduces noise, especially in low light conditions, to improve image performance. Select Normal Mode, OFF, or Expert. Default is Normal.
Noise Reduction Level	Only available when DNR is set to Normal Mode. Set the level of noise reduction in the Normal Mode. Higher value has a stronger noise reduction. Default is 50.
Defog Mode	You can enable the defog function when the environment is foggy, and the image is misty. It enhances the subtle details so that the image appears clearer. Default is OFF.
EIS	Electrical Image Stabilizer (EIS) reduces the effects of vibration in a video. Default is OFF. Using EIS will decrease the camera field of view.
Gray Scale	You can select the range of the grey scale as [0-255] or [16-235].

8. Video Adjustment

Mirror	It mirrors the image so you can see it inversed. Select Center, Left/Right, Up/Down or OFF. Default is OFF.
Scene Mode	Select Indoor or Outdoor depending on the camera location.
Video Standard	Select PAL (50 Hz) or NTSC (60 Hz). Select the value depending on the video standards.

Parameter	Description
Capture Mode	It is the selectable video input mode to meet the different demands of field of view and resolution. Available value depends on model and image sensor.
9. Other	
Local Output	The camera has a mini-BNC connector output located under the SD card slot cover that can be activated by setting this parameter to ON.

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

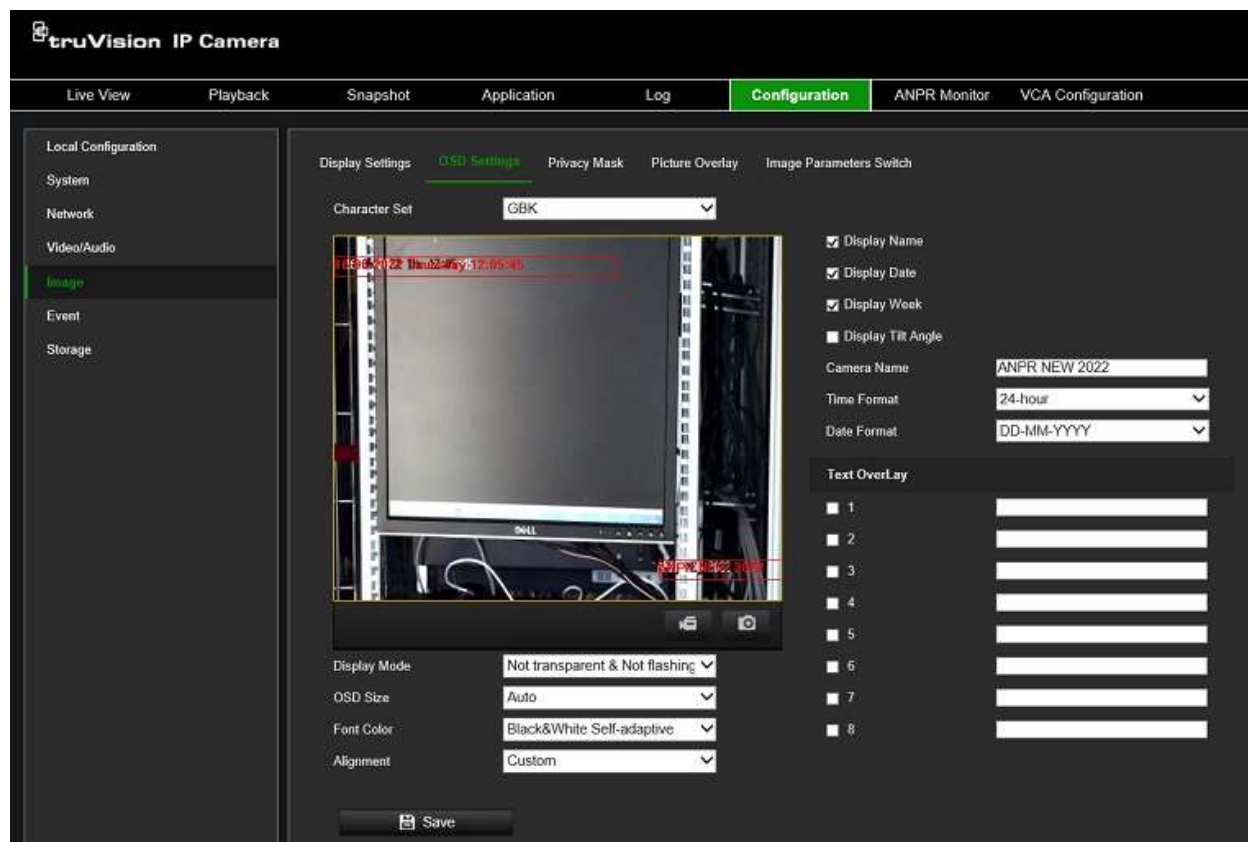
OSD Settings (On Screen Display)

In addition to the camera name, the camera also displays the system date and time on screen. You can also define how the text appears on screen.

You can also set up the OSD settings from the *Live View General* control panel. Go to **Live View > General > OSD Settings** and select the desired options.

To set up the OSD text:

1. Click **Configuration > Image > OSD Settings**.



2. Select the **Display Name** box to display the camera's name on screen. You can modify the default name in the text box of **Camera Name**.
3. Select the **Display Date** check box to display the date/time on screen.
4. Select the **Display Week** check 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** drop-down list boxes.
7. Select a display mode for the camera from the **Display Mode** drop-down 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.
10. Select the desired alignment (Custom, Align Left or Align Right).
11. Click **Save** to save changes.

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

Eight additional custom *Text Overlays* can be created and positioned across the camera image by dragging the text overlay to the desired position on the image. You can also add and position text overlays when in live view mode under the *General* menu.

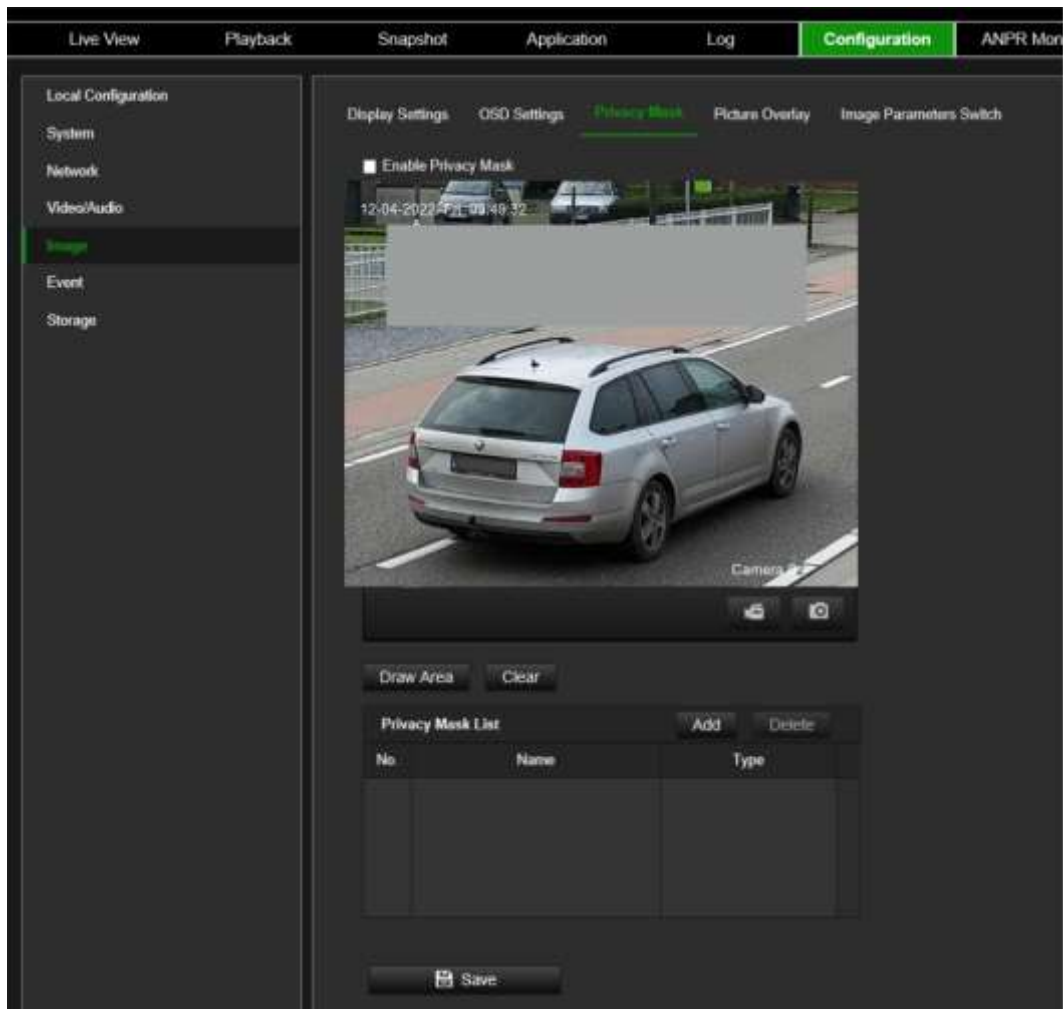
Privacy Mask

Privacy masks let you conceal sensitive areas (such as neighboring windows) to protect them from view on the monitor screen and in the recorded video. The masking appears as a blank or mosaic area on screen. You can create up to 24 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. Click **Configuration > Image > Privacy Mask**.



2. Select **Enable Privacy Masks**.
3. Click the **Draw Area** button. Click and drag the mouse in the live video window to draw the mask area.
4. Click **Add** to add the area. Enter its name, color or mosaic, and active zoom ratio. Each mask can be individually set.
5. To remove a privacy mask, click the desired row in the table below the screen and click **Delete**.

Privacy Mask List			Add	Delete
No.	Name	Type		
1	Privacy Mask 1	Black		
2	Privacy Mask 2	mosaic		

6. Click **Save** to save changes.
7. Click **Clear** to clear all the masking areas set.

Picture overlay

Picture overlay enables you to overlay a picture on the image. This function enables an enterprise or users to overlay their logo on the image, for example. The picture must be in RGB24 bmp format, and the maximum size of the picture is 128*128.

To overlay a picture:

1. Click **Configuration > Image > Picture Overlay**.



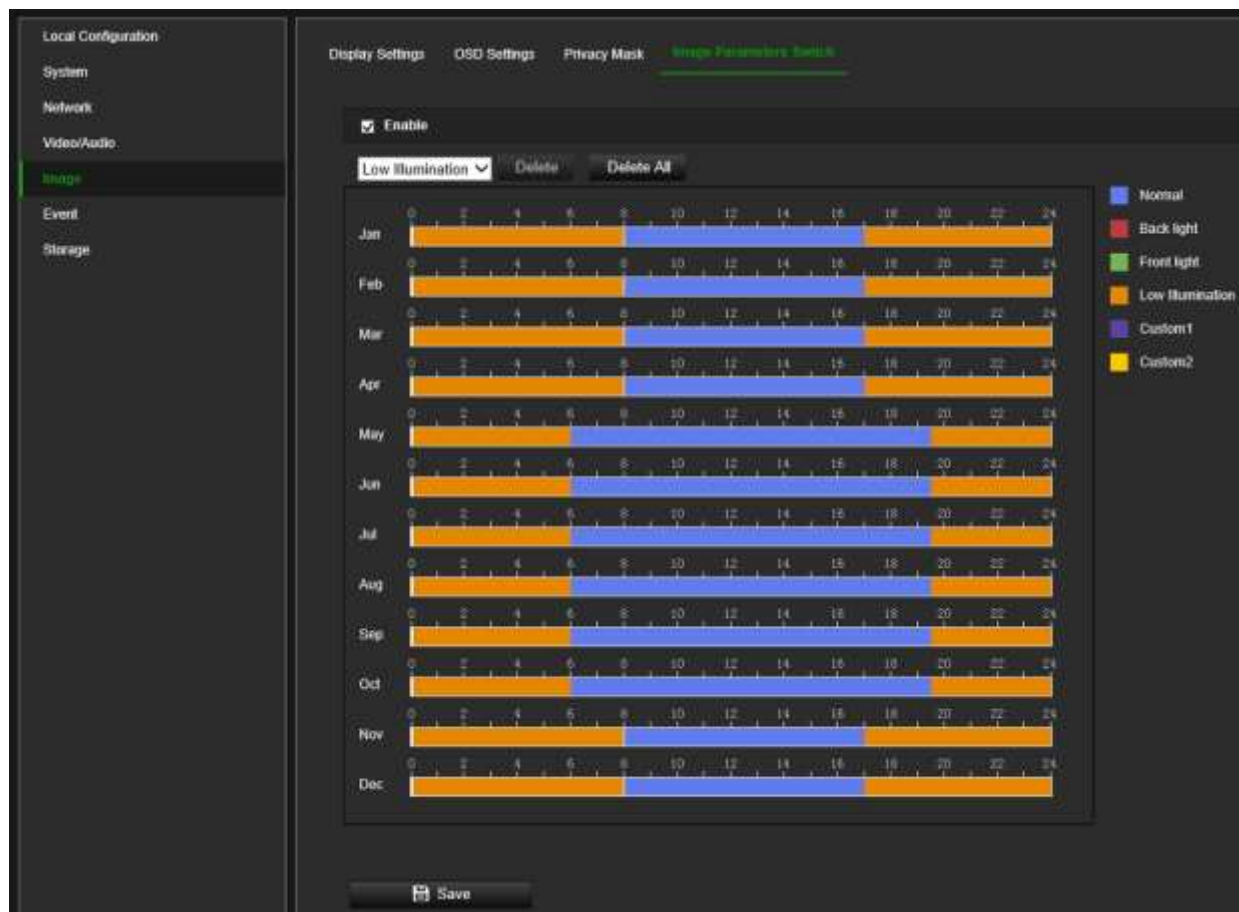
2. Under *Upload Picture*, click **Browse** to select a picture from your library or online and click **Upload** to upload it.
3. Select **Enable Picture Overlay** check box to enable the function.
Note: X coordinate and Y coordinate values are the location of the picture on the image. The picture width and height show the size of the picture.
4. Click **Save** to save changes.

Image Parameters Switch

You can link different lighting scenes to a D/N month schedule, such as low illumination or back light. Before linking the lighting scenes to the D/N schedule, define the parameters for each scene under the *Display Settings* menu (see “Display Settings” on page 42 for further information). You can link up to four lighting scenes to the scheduled D/N.

To set up an image parameter switch:

1. Click **Configuration > Image > Image Parameters Switch**.



2. Select the **Enable** check box to activate this function.
3. Select from the drop-down list the desired lighting scene you want to use and then drag the mouse along the timeline bar of the desired day to draw a period when the alarm can be recorded. You can schedule up to eight time periods in a day.
To change a lighting scene, double click it and make your changes in the pop-up box that appears. Click **Save** to save the changes.
4. Repeat the above step by selecting another lighting scene from the drop-down list, if required. Once the periods/scenes are defined for one month, you can click on a period and manually type in start/end time to fine tune the period.
5. When you hover the mouse above a timeline bar a small green copy button appears at the end of the bar that allows you to easily copy the selected month configuration to any other month.
6. Click **Save** to save changes.

Event

Events can be used to trigger actions whenever the camera is triggered by a physical input or, for example, a VCA event. There are two categories, Basic and Smart Event.

Motion Detection

You can define 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 the programmed arming schedule.

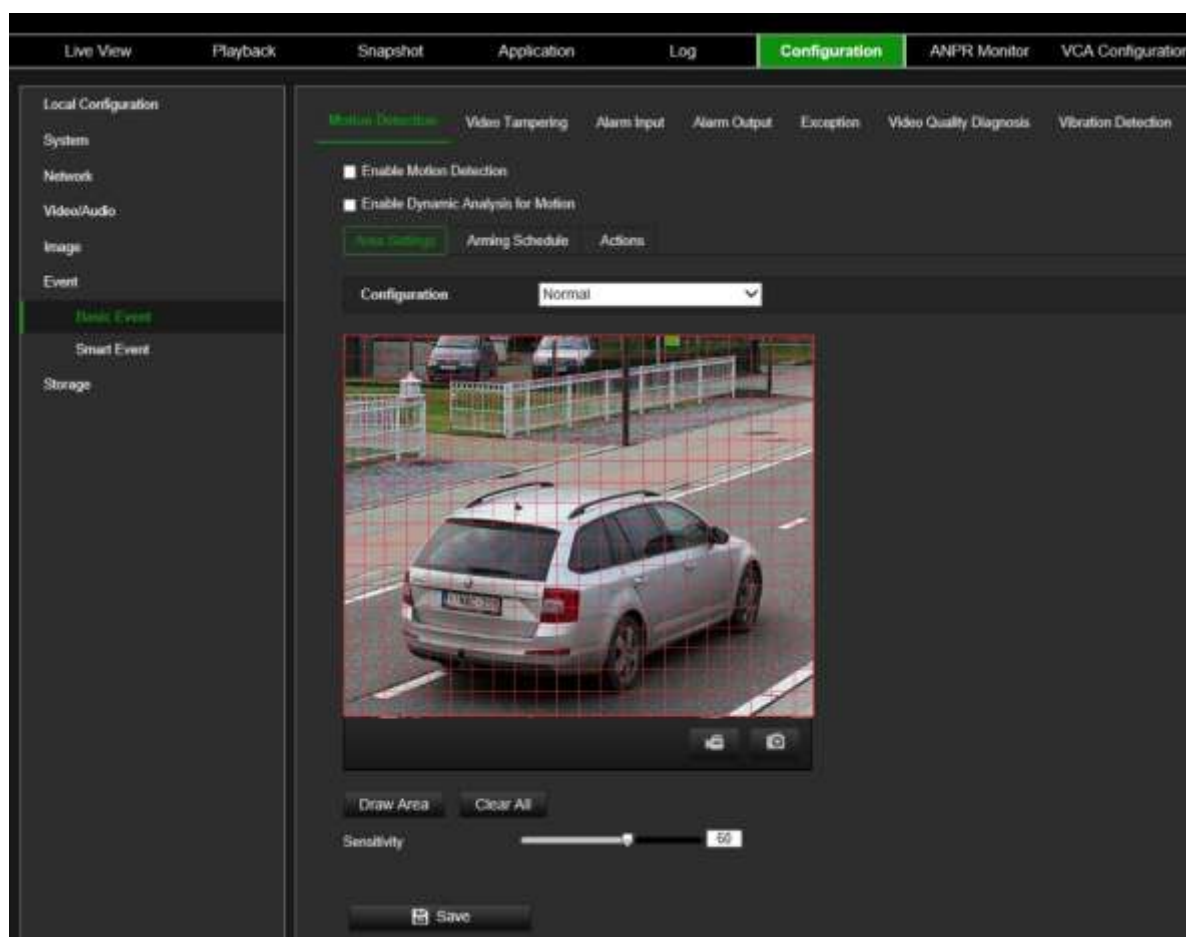
Important note:

- Motion detection is only available when the camera is set to Road Traffic VCA resource mode.
- When the camera is set to Smart Event VCA resource mode (that is no motion detection support), some recorders will still let you configure motion detection from the recorder configuration menu although this feature is not activated in the camera. Therefore, make sure to only configure motion detection in the recorder when the camera is set to Road Traffic VCA resource mode. See also “VCA Resource” on page 74.

You can draw an area on the screen where you want to detect motion and set the motion sensitivity level, the schedule when the camera is supposed to check for motion as well as which methods are used to alert you to a motion detection alarm. See Figure 6 below.

You can also enable dynamic analysis for motion to verify sensitivity in real-time. When there is motion, the area will be highlighted as green.

Figure 6: Motion detection window



Defining a motion detection alarm requires the following tasks:

1. **Area settings:** Draw a polygon area on the image where you want the camera to generate motion detection alarm and set detection sensitivity level.
2. **Arming schedule:** Define the schedule during which the system detects motion.
3. **Recording schedule:** Define the schedule during which motion detection can be recorded (when using an SD card or NAS). See “Recording schedule” on page 22 for further information.
4. **Actions:** Specify the actions triggered by the motion event.
5. **Normal and advanced configuration:** Normal configuration allows you to set the sensitivity level of the motion detection. Advanced configuration gives you additional configuration options. It allows you define up to eight separate motion areas with different sensitivity and scene parameters. Target options person/vehicle are not available in *Advanced Motion Detection* mode.

To set up motion detection in normal mode:

1. Click **Configuration > Event > Basic Event > Motion Detection**.
- **Set up the motion detection area:**
 2. Select the **Enable Motion Detection** check box. Also select the **Enable Dynamic Analysis for Motion** check box if you want to see real-time motion events.

Note: If you do not want the detected object to be marked with the green frame, select **Disable** from **Configuration > Local Configuration > Live View Parameters > Display Rules Info. On Capture**.
 3. Under Configuration, select **Normal** mode from the drop-down list.
 4. Click **Draw Area**. Click the mouse and drag to set the area where you want to detect motion.

Note: You can draw up multiple motion detection areas on the same image.
 5. Click **Clear All** to delete all areas marked and restart drawing.
 6. Move the **Sensitivity** slider to set the sensitivity of the detection. All areas will have the same sensitivity level.
- **Set up the arming schedule:**
 7. Drag and click the timeline bar to edit the arming schedule. In the pop-up box, enter the start and end times (hour and minutes).
 8. Click  to copy the schedule to other days or to the whole week.
- **Set up linking method to the motion detection alarm:**
 9. Click **Actions** to trigger an action when the motion event occurs. Select one or more response methods for the system when a motion detection alarm is triggered:

Send Email	Send 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 33 for further information. If you want to send the event snapshot together with the email, check the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.
Upload to FTP/ Memory Card/ NAS	Capture the image when an alarm is triggered and upload the picture to NAS, Memory Card or FTP server. Note: To upload the snapshot to NAS, you must firstly configure the NAS settings. See “NAS” on page 72 for further information. To upload the snapshot to an FTP, you must firstly configure the FTP settings. See “To set up the FTP parameters” on page 32 for further information. Enable the Upload Type option. To upload the snapshot to FTP and NAS when motion detection or an alarm input is triggered, you must also select Enable Event-triggered Snapshot under the snapshot parameters. See “Storage” on page 66” for further information.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output. Note: This option is only available for cameras that support alarm output.
Trigger Recording	Triggers the recording to start in the camera.

10. Click **Save** to save changes.

To set up advanced motion detection:

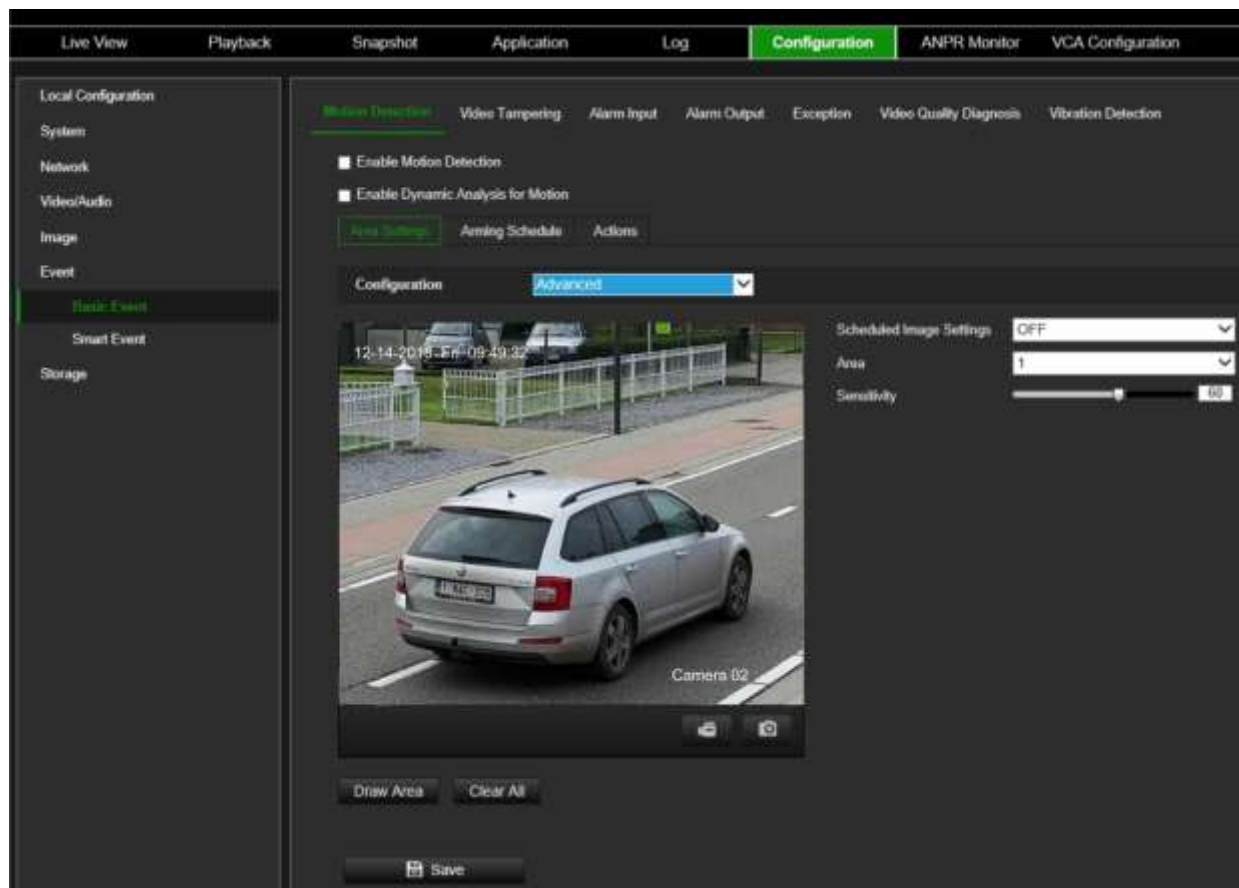
1. Click **Configuration > Event > Basic Event > Motion Detection**.

Then set up the motion detection area, the arming schedule, and the linking method to the motion detection alarm.

- **Set up the motion detection area:**
2. Select the **Enable Motion Detection** box. Also select **Enable Dynamic Analysis for Motion** if you want to see where motion occurs in real-time.

Note: If you do not want the detected object to be marked with the green frame, select **Disable** from **Local Configuration > Live View Parameters > Display Rules Info. On Capture** .

3. Under Configuration, select **Advanced** mode from the drop-down list.



4. Under **Image Settings**, select OFF, Auto D/N Switch or Scheduled D/N settings. Default is OFF.

Auto D/N Switch and Scheduled D/N settings allow you to set different settings for day and night as well as different periods.

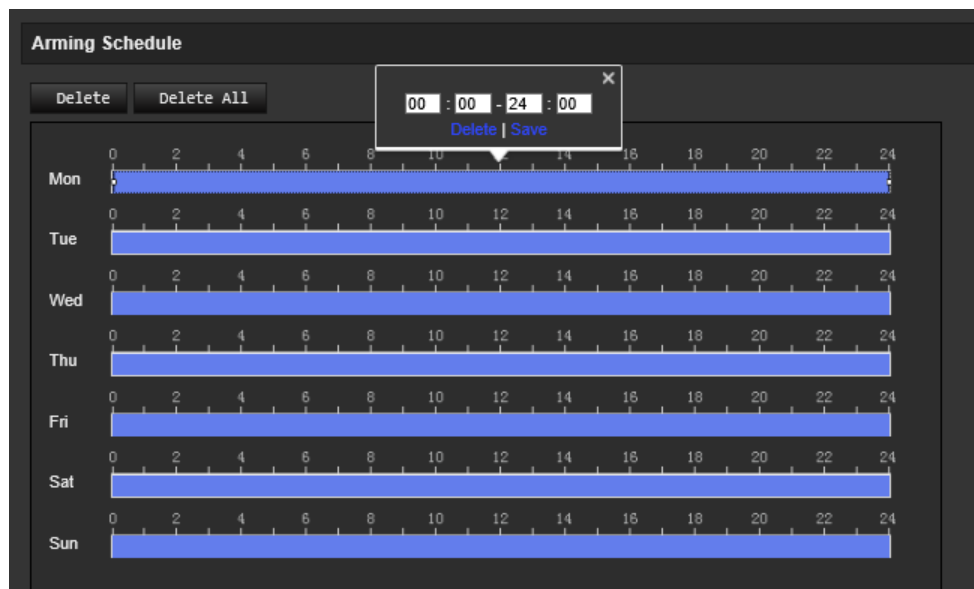
5. Select **Area No.** and click **Draw Area**. Click and drag the mouse on the live video image to draw an area sensitive to motion detection.

Note: You can draw up multiple motion detection areas on the same image. **Stop Drawing** shows up after **Draw Area** is clicked.

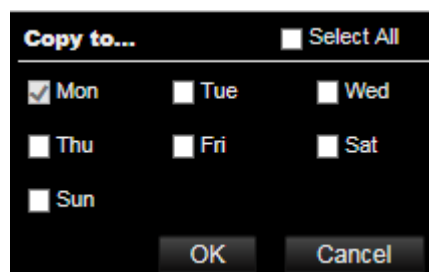
6. Click **Stop Drawing** to finish drawing. Click **Clear All** to delete all areas marked and restart drawing.
7. Move the **Sensitivity** slider to set the sensitivity of the detection for the selected areas.
8. Move the **Percentage** slider to set the proportion of the object that must occupy the defined area to trigger an alarm. Default is zero.
9. Click **Save** to save the changes for that area.
10. Repeat steps 7 to 9 for each area to be defined.

- **Set up the arming schedule:**

1. Under **Arming Schedule**, click the day you want to schedule. The Time pop-box appears. Enter the desired start and end times to detect motion.



2. If you want to copy a day's schedule, position the mouse on the desired day and click  to copy the schedule to other days or to the whole week. The *Copy to* pop-up window appears. Select the desired days to which to copy the schedule and click **OK** to save the changes.



3. Click **OK** to save changes.
- **Set up linking method to the motion detection alarm:**
4. Click **Actions** to specify when an event occurs. Select one or more response methods for the system when a motion detection alarm is triggered.

Send Email	Send 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 33 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.

Upload to FTP/Memory Card/NAS

Capture the image when an alarm is triggered and upload the picture to NAS, Memory Card, or FTP server.

Note: To upload the snapshot to NAS, you must first configure the NAS settings. See “NAS” on page 72 for further information.

To upload the snapshot to an FTP, you must first configure the FTP settings. See “To set up the FTP parameters” on page 32 for further information. Enable the **Upload Type** option.

To upload the snapshot to FTP and NAS when motion detection or an alarm input is triggered, you must also select **Enable Event-triggered Snapshot** under the snapshot parameters. See “Storage” on page 66 for further information.

Trigger Alarm Output

Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output.

Note: This option is only available for cameras that support alarm output.

Trigger Recording

Triggers the recording to start in the camera.

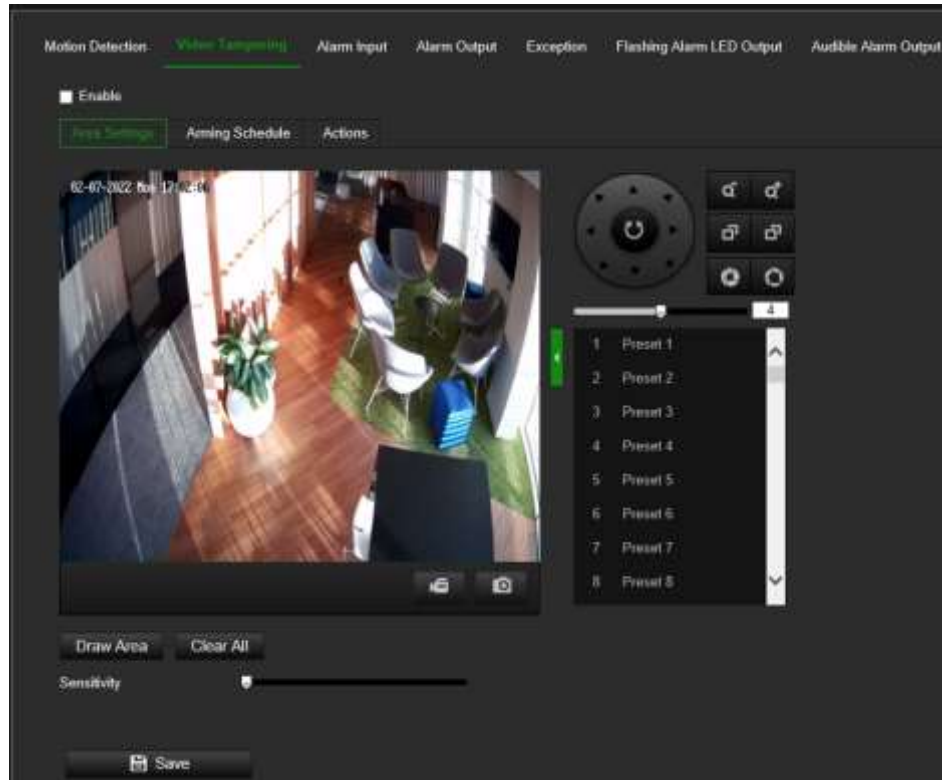
5. Click **Save** to save changes.

Video Tampering

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

To set up tamper-proof alarms:

1. Click **Configuration > Event > Basic Event > Video Tampering**.



2. Select the **Enable** option to activate *Video Tampering*.

3. Move the **Sensitivity** slider to set the detection sensitivity.

4. Edit the arming schedule for video tampering. The arming schedule configuration is the same as that for motion detection. See “To set up motion detection” on page 52 for more information.
5. Specify the linkage method when an event occurs. Select one or more response methods for the system when a video tampering is triggered.

Send Email	Send 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 33 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output. Note: This option is only available for cameras that support alarm output.

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

Alarm Inputs and Outputs

To set up the external alarm input:

1. Click **Configuration > Event > Basic Event > Alarm Input**.
2. Choose the **Alarm Input No.** and the **Alarm Type**. The alarm type can be NO (Normally Open) and NC (Normally Closed). Enter a name for the alarm input.
3. Set the arming schedule for the alarm input. See “To set up motion detection” on page 52 for more information.
4. Select the check box to select the actions.

Send Email	Send 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 33 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.

Upload to FTP/Memory Card/NAS	Capture the image when an alarm is triggered and upload the picture to NAS, Memory Card or FTP server. Note: To upload the snapshot to NAS, you must first configure the NAS settings. See “NAS” on page 72 for further information. To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 31 for further information. Enable the Upload Type option. To upload the snapshot to FTP and NAS when motion detection or an alarm input is triggered, you must also select Enable Event-triggered Snapshot under the snapshot parameters. See “Storage” on page 66 for further information.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output. Note: This option is only available for cameras that support alarm output.
Trigger Recording	Triggers the recording to start in the camera.

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

To set up an alarm output:

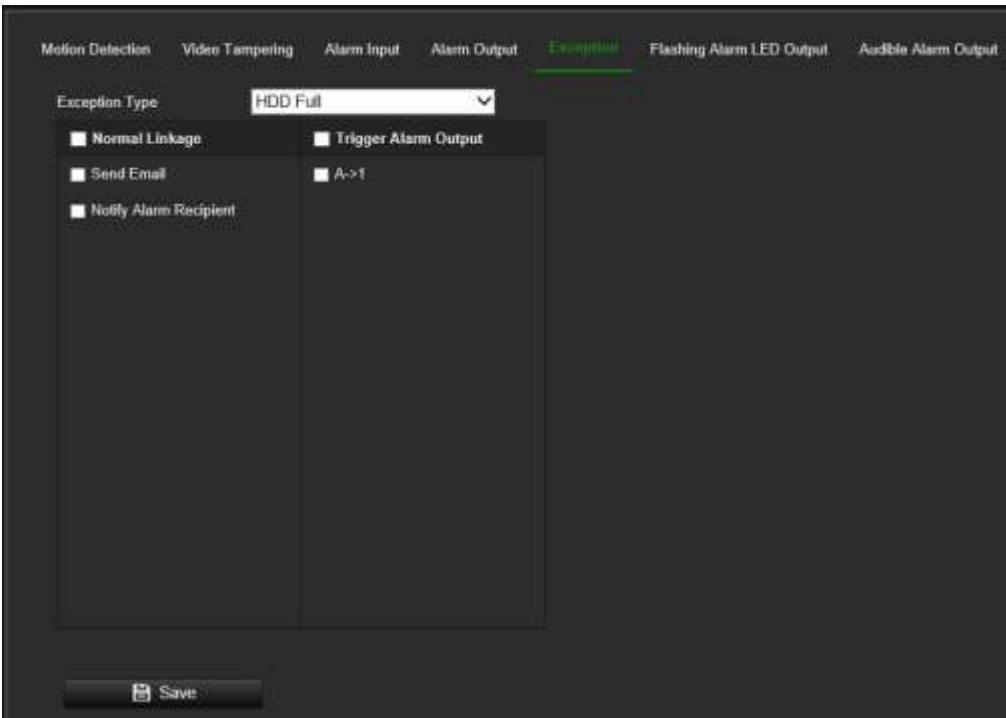
1. Click **Configuration > Event > Basic Event > Alarm Output**.
2. Select one alarm output channel from the **Alarm Output** drop-down list. You can also set a name for the alarm output.
3. Set the duration to 5 s, 10 s, 30 s, 1 min, 2 min, 5 min, 10 min or manual. The duration time is the time the alarm output remains active after the alarm occurs.
4. Set the arming schedule for the alarm input. See “To set up motion detection” on page 52 for more information.
5. Click **Save** to save changes.

Exception

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

- **HDD Full:** All recording space of 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.
- **Invalid Login:** Wrong user ID or password login attempt to the cameras.

Figure 7: Exception window



To set up exception alarms:

- 1. Click **Configuration > Event > Basic Event > Exception**.
- 2. Under **Exception Type**, select an exception type from the drop-down list.
- 3. Specify the actions when an event occurs. Select one or more response actions when an exception alarm is triggered.

Send Email	Send 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 33 for further information. If you want to send the event snapshot together with the email, check the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output. Note: This option is only available for cameras that support alarm output.

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

Video Quality Diagnosis

You can set up the camera to notify you when the image quality decreases. The camera will try to analyze the root cause and report the appropriate event.

Note that this new event type is not recognized by all versions of TruVision Navigator.

1. Select the **Diagnosis Type**. Depending on the camera model, there's multiple Diagnosis types available.
2. Check **Enable** option to enable the selected Diagnose type.
3. Repeat steps 1 ad 2 to activate multiple Video Quality Diagnose types.
4. Set the corresponding parameters.

Alarm Detection Interval: Range [5 to 300] determines the minimum time between reporting the same event.

Sensitivity: Range [1 to 9]. The higher the value is, the more easily the exception can be detected.

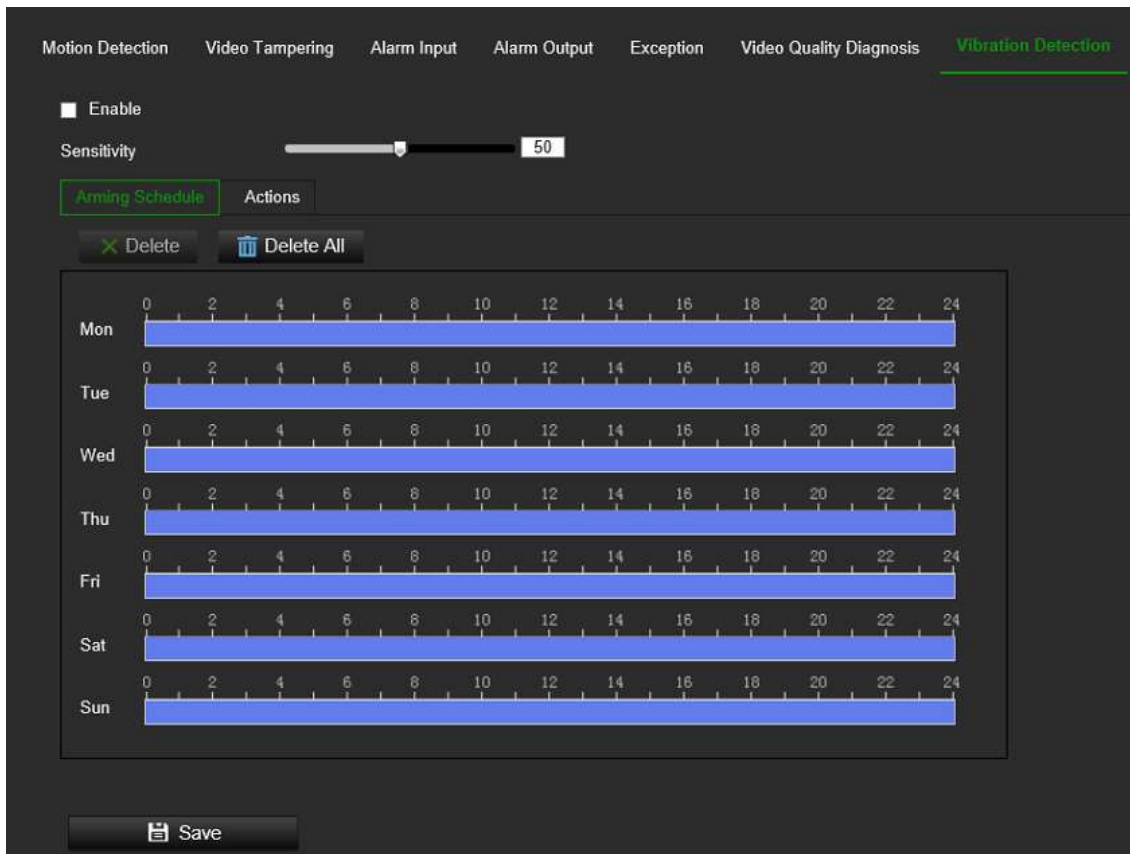
Alarm Delay: Range [0 to 100]. The device uploads the alarm when the alarm occurs for the set number of times.

5. Click Arming Schedule to set the arming schedule.
6. Click Actions to select the linkage methods.
7. Click Save to save changes.

Vibration Detection

You can set up the camera to notify you when vibration is detected by the camera.

Note that this new event type is not recognized by all versions of TruVision Navigator.



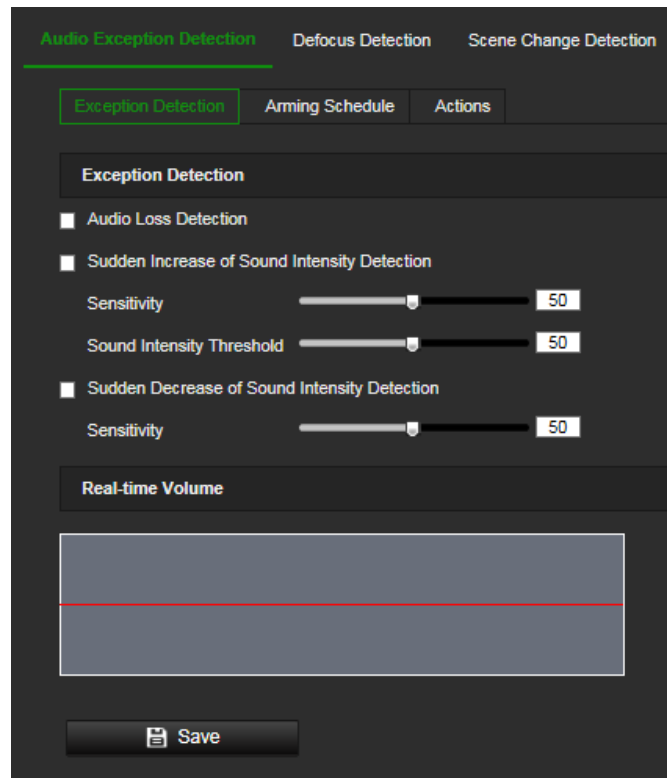
1. Check **Enable** to activate Vibration Detection
2. Click **Arming Schedule** to set the arming schedule.
3. Click **Actions** to select the linkage methods.
4. Click **Save** to save the settings.

Audio Exception Detection

Audio exception detection function detects the abnormal sounds in the surveillance scene, such as the sudden increase/decrease of the sound intensity, and some certain actions can be taken when the alarm is triggered.

To set up audio exception detection:

1. Click **Configuration > Event > Smart Event > Audio Exception Detection**.



2. Select the **Audio Loss Exception** check box to enable the audio loss detection function.
3. Select the **Sudden Increase of Sound Intensity Detection** check box to detect the steep rise in sound in the surveillance scene. You can set the detection sensitivity and threshold for steep rise in sound.
4. Select the **Sudden Decrease of Sound Intensity Detection** check box to detect the steep drop in sound in the surveillance scene. You can set the detection sensitivity and threshold for steep drop in sound.

Notes:

Sensitivity: Range [1-100]. The smaller the value, the greater the change required to trigger detection.

Sound Intensity Threshold: Range [1-100]. It filters the sound in the environment. The louder the environment sound, the higher the value required. You can adjust it according to the real environment.

You can view the real-time sound volume on the interface.

5. Click **Arming Schedule** to set the arming schedule.

6. Select **Actions** and select the linkage methods for audio exception:

Normal Actions	This is a group selection. It automatically selects “Send Email” and “Notify Alarm Recipient”
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 33 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to the remote management software when an event occurs.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output. Note: This option is only supported by cameras that feature an alarm output.
A->1	Trigger the alarm input A->1.
A->2	Trigger the alarm input A->2.
Trigger Recording	Triggers the recording to start in the camera.
A1	The camera has only one channel.

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

Defocus Detection

The camera can detect image blur caused by defocusing the lens, triggering a series of alarm actions. This can be set up to trigger a series of alarm actions.

The sensitivity level determines how much blur is tolerated by the camera before triggering an alarm. When enabled, the camera regularly checks the level of image focus (to allow for variations in light during the day) and then compares the current image to that of the reference image to see if there is a difference. A high sensitivity

level means that there cannot be a large variance between the reference and current image.

To set up defocus detection:

1. Click **Configuration > Event > Smart Event > Defocus Detection**.
2. Select the **Enable** check box to enable the function.

Sensitivity: The range is between 1 and 100. The higher the sensitivity level, the smaller the defocus required to trigger an alarm.

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

Normal Actions	This is a group selection. It automatically selects "Send Email" and "Notify Alarm Recipient".
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 33 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Sends an exception or alarm signal to the remote management software when an event occurs.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select "Select All" or each individual alarm output. Note: This option is only supported by cameras that feature an alarm output.
A->1	Trigger the alarm input A->1.
A->2	Trigger the alarm input A->2.

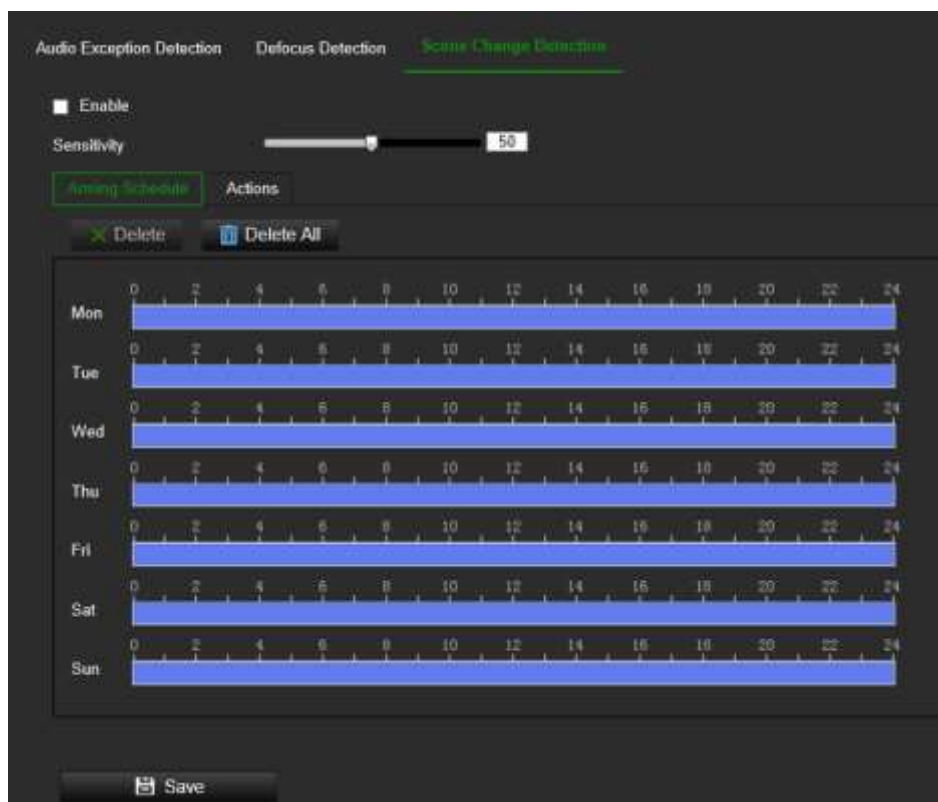
4. Click **Save** to save changes.

Scene Change Detection

You can configure the camera to trigger an alarm when the camera detects a change in the scene caused by a physical repositioning of the camera. It can be set up to trigger a series of alarm actions.

To set up scene change detection:

1. Click **Configuration > Event > Smart Event > Scene Change Detection**.
2. Select the **Enable** check box to enable the function.
3. Configure the sensitivity ranging from 1 to 100. The higher the sensitivity, the easier it is to detect a change of scene and to trigger the alarm.
4. Click the **Arming Schedule tab** to set the arming schedule for the alarm input.



5. Click the **Actions** tab to specify the linkage method when an event occurs. Select one or more response methods for the system when a scene change detection alarm is triggered.

Normal Actions	This is a group selection. It automatically selects "Send Email" and "Notify Alarm Recipient".
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 33 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to the remote management software when an event occurs.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select "Select All" or each individual alarm output. Note: This option is only supported by cameras that feature an alarm output.
A->1	Trigger the alarm input A->1.
A->2	Trigger the alarm input A->2.
Trigger Recording	Triggers the recording to start in the camera.
A1	The camera has only one channel.

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

Storage

Camera streams can be recorded on an optional recording device, NAS or SD card inserted in the camera.

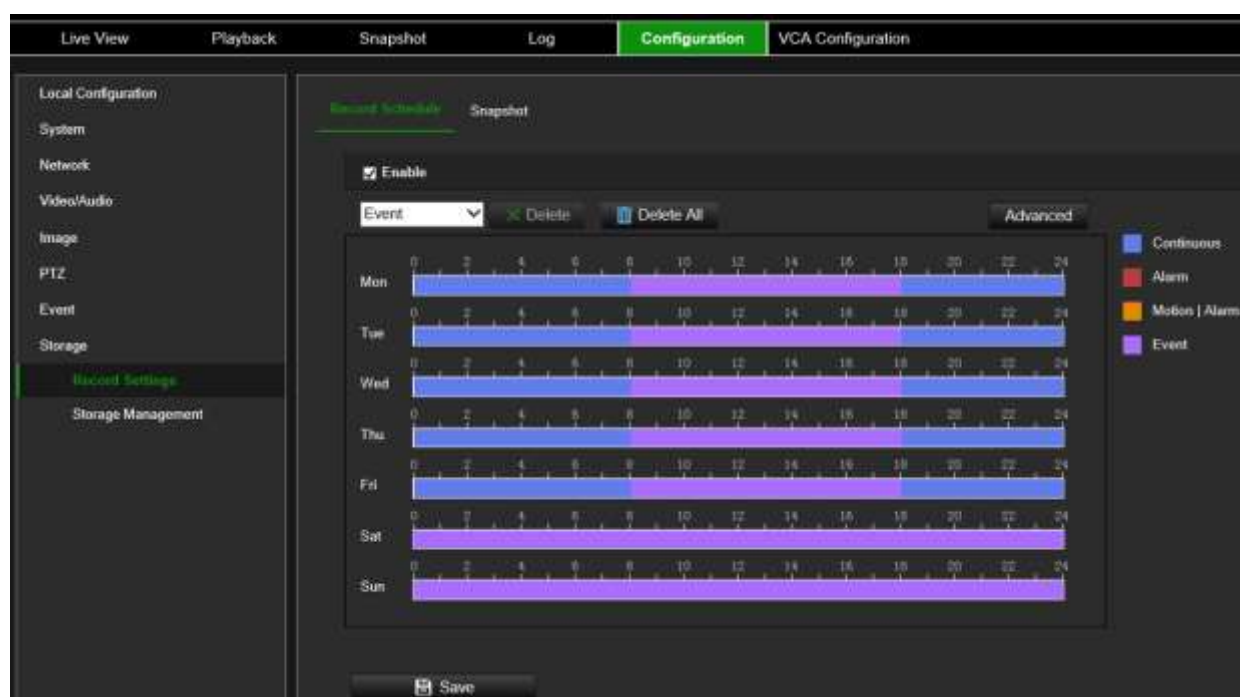
Record Settings

Configure recording and snapshot parameters in this menu.

You can define a recording schedule for the camera in the “Record Schedule” window (see Figure 8 below). The video recordings are saved onto a SD card inserted in the camera or a NAS. The camera’s SD card can provide a backup in case of network failure. The SD card is not provided with the camera.

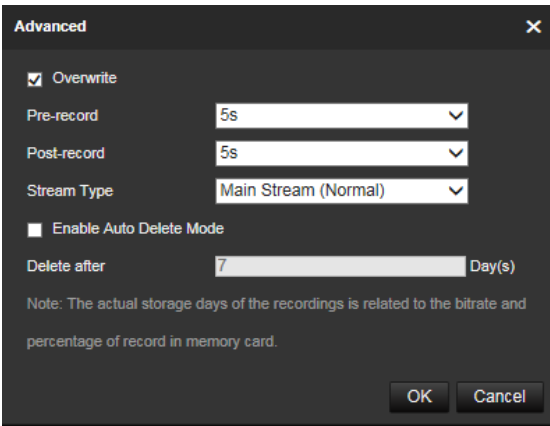
Different recording modes can be defined in the schedule.

Figure 8: Record schedule window



Click the **Advanced** button to open additional recording settings that allow you to set pre-record and post-record times, the stream type, and auto delete mode. When **Auto Delete Mode** is enabled, you can set the number of days after which recordings are automatically deleted.

Figure 9: Record schedule - Advanced window

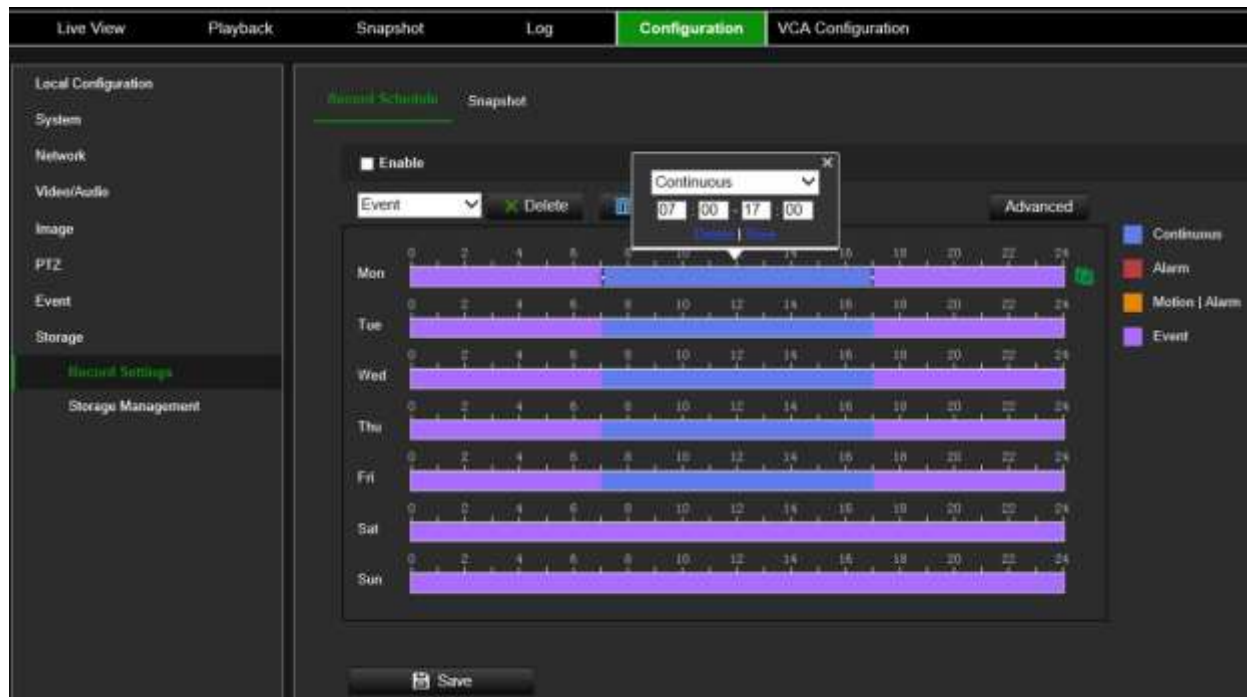


Pre-record time	The pre-record time is set to start recording before the scheduled time or event. For example, if an alarm triggers recording at 10:00, and the pre-record time is set to 5 seconds, the camera starts to record at 9:59:55. The pre-record time can be configured as No Pre-record, 5 s, 10 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 to 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.
Stream type	You can select to record main stream or substream.
Enable Auto Delete Mode	When enabled, recorded video older than the number of days defined by “Delete after” will be automatically deleted, even if the full storage capacity has not been reached.

To set up a recording schedule:

1. From the menu toolbar, click **Configuration > Storage > Record Settings > Record Schedule**.
2. Select the **Enable** check box to enable recording.
Note: To disable recording, disable the option.
3. Configure the recording schedule.

From the drop-down list, select the desired type of recording. Then drag the mouse along the timeline of a day of the week to mark the period of the recording. Click the recording timeline to get the following pop-up window:



4. Enter the exact start and end times of the recording. If required, you can also change the type of recording.
 - **Continuous:** This is continuous recording.
 - **Motion:** Video is recorded when the motion is detected.
 - **Alarm:** Video is recorded when the alarm is triggered via the external alarm input channels. Besides configuring the recording schedule, you must also set the alarm type and enable the *Trigger Channel* check box in the *Linkage Method of Alarm Input Settings* interface. For detailed information, please refer to the section on alarm inputs on page 57.
 - **Motion | Alarm:** Video will be recorded when the external alarm is triggered, or the motion is detected. Besides configuring the recording schedule, you must also configure the settings on the *Motion Detection* and *Alarm Input Settings* interfaces. For detailed information, please refer to the section on alarm inputs on page 57.
 - **Motion & Alarm:** Video will be recorded when the Motion and Alarm are triggered at the same time. Besides configuring the recording schedule, you must also configure the settings on the *Motion Detection* and *Alarm Input Settings* interfaces. For detailed information, please refer to the section on alarm inputs on page 57.
 - **Event:** Video will be recorded when a VCA event is triggered. Besides configuring the recording schedule, you must configure the settings of the selected VCA event type: Audio Exception Detection, Defocus Detection, Scene Change Detection, Face Detection, Intrusion Detection, Cross Line Detection, Region Entrance Detection, Region Exit Detection, Unattended Baggage Detection, and Object Removal Detection.

Note: Up to eight record types can be selected in a single day. Some recording types like motion might not be available depending on the selected VCA resource mode.

5. Set the recording periods for the other days of the week if required. Click **OK**.

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

6. Click **the Advanced** button and set the desired pre- and post-record times stream type and auto delete mode. Click **Save to save the changes** and return to the main recording schedule menu.

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

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

Snapshot (Scheduled snapshots)

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

You can set up the format, resolution, and quality of the snapshots. The quality can be low, medium, or high.

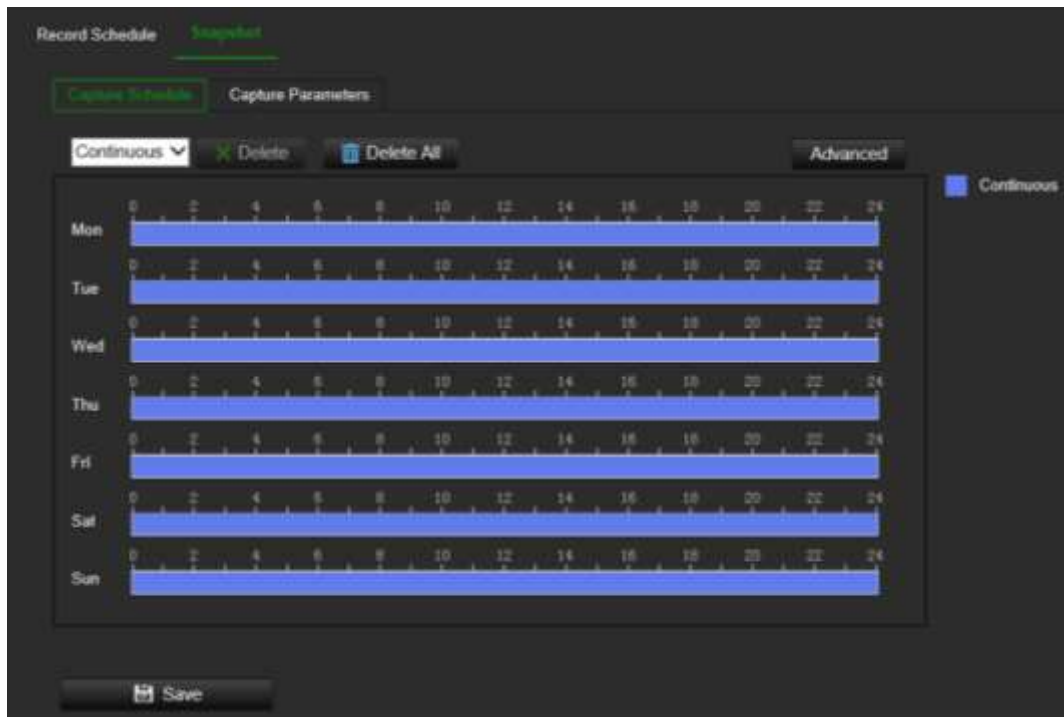
You must enable the option **Enable Timing Snapshot** if you want snapshots to be uploaded with a fixed interval to the FTP server. If you have configured the FTP settings and enabled **Upload Type** in the **Network > Advanced Settings > FTP** tab, the snapshots will not be uploaded to the FTP if the **Enable Timing Snapshot** option is disabled.

You must enable the option **Enable Event-Triggered Snapshot** if you want snapshots to be uploaded to the FTP and NAS when motion detection, VCA event, or an alarm input is triggered. If you have configured the FTP settings and selected **Upload Type** in the **Network > Advanced Settings > FTP** tab for motion detection or an alarm input, the snapshots will not be uploaded to the FTP if this option is disabled.

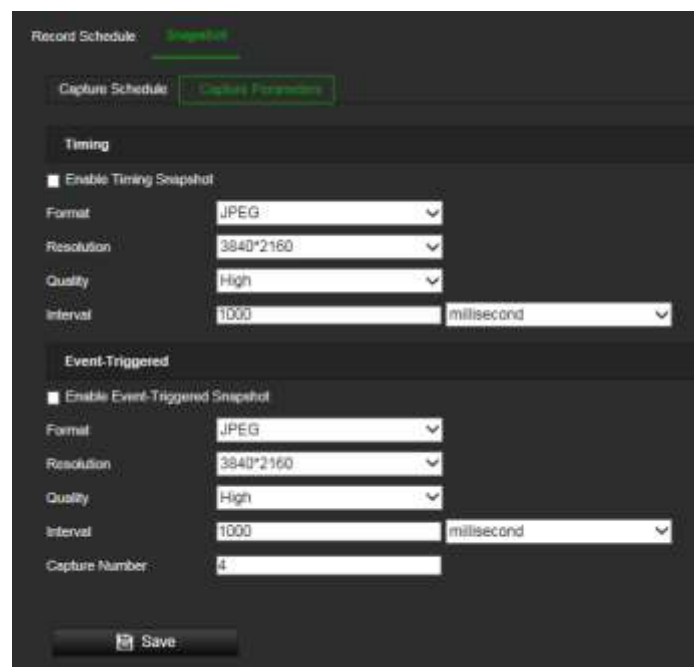
To set up continuous and event-triggered snapshots:

1. From the menu toolbar, click **Configuration > Storage > Record Settings > Snapshot > Capture Schedule**.

Note: *Continuous* is the only recording type available.



2. Click-and-drag the mouse on the timeline bar of the desired days to set the capture schedule.
3. Click **Advanced** to select the stream type.
4. Select the **Capture Parameters** tab to configure the captured snapshot parameters.



5. In the *Timing* section, select the parameters for continuous snapshots:
 - a) Select the **Enable Timing Snapshot** check box.
 - b) Select the desired format of the snapshot. Default is JPEG.
 - c) Select the desired resolution and quality of the snapshot.

- d) Enter the time interval between two snapshots. Select the unit of time from the drop-down list: milliseconds, seconds, minutes, hour, or day.

In the *Event-Triggered* section, select the parameters for event-triggered snapshots:

- a) Select the **Enable Event-Triggered Snapshot** check box.
- b) Select the desired format of the snapshot. Default is JPEG.
- c) Select the desired resolution and quality of the snapshot.
- d) Enter the time interval between two snapshots. Select the unit of time from the drop-down list: milliseconds, seconds, minutes, hour, or day.

6. Under **Capture Number**, enter the total number of snapshots that can be taken.

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

Storage Management

SD card and NAS parameters can be managed in the Storage Management menu.

HDD Management

Use the HDD 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.

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

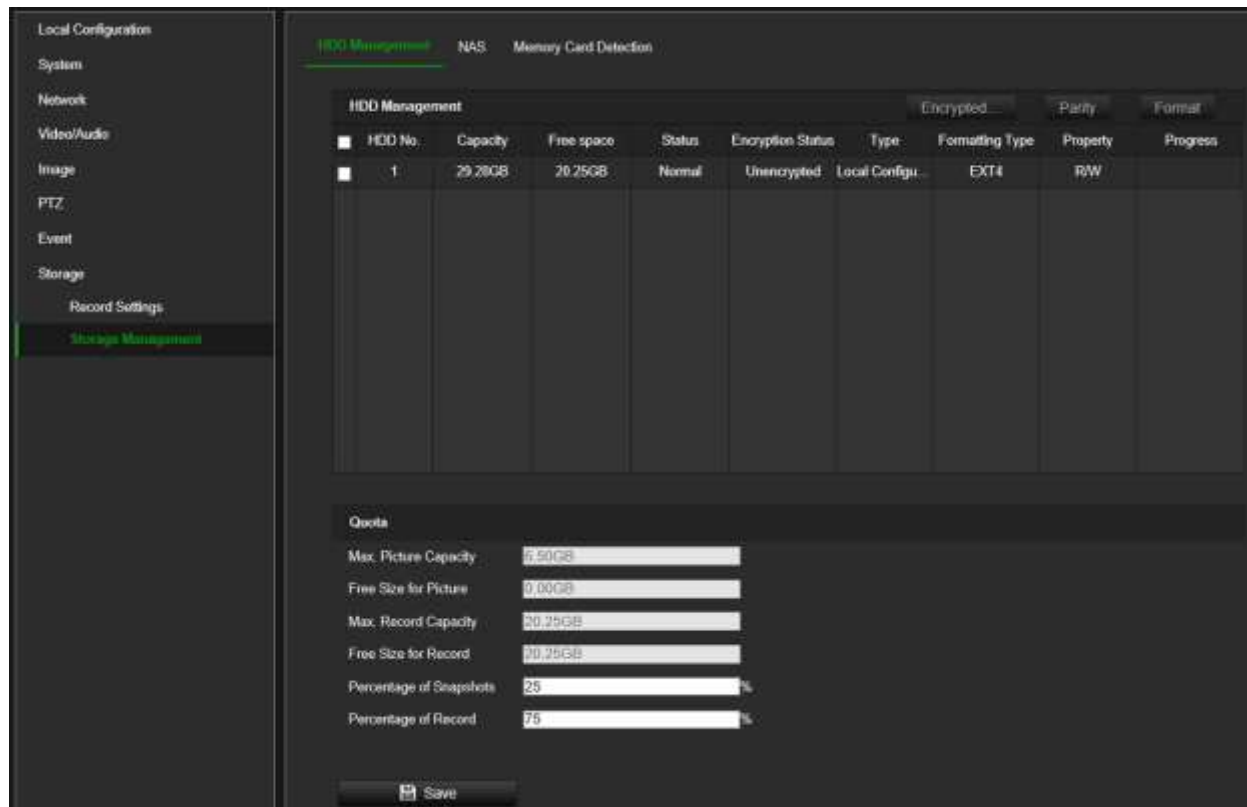
If overwrite is enabled, the oldest files are overwritten when the storage becomes full.

To ensure an efficient use of the storage space available on HDDs, you can control the camera's storage capacity using HDD quota management. This function lets you allocate different storage capacities for main stream/substream recordings and snapshots.

Note: If the overwrite function is enabled, the maximum capacity for both recordings and snapshots is set to zero by default.

To format the storage devices:

1. Click **Configuration > Storage > Storage Management > HDD Management**.



2. Select the **HDD No.** to select the storage.
3. Click the **Encrypted format** button. A window appears for you to select your formatting permission. Some SD cards can support **Encrypted formatting** that provides extra encryption for the data stored on the SD card.
4. Click **OK** and enter the admin password to start the formatting process.
5. Select an HDD and do one of the following steps
 - a) If the disk status is Uninitialized, click **Initialize** to initialize it. When initialization is finished, the status becomes Normal.
 - b) If the disk status is Unencrypted, click **Encrypted Format** to format it. The encryption password is required for this process.
 - c) The status of the encrypted memory card is Encrypted or Verification Failed. If the status is *Verification Failed*, click **Parity**, and enter a password for verification. If the verification is successful, the status becomes Encrypted.

To set the quota storage for recordings and snapshots:

1. Click **Configuration > Storage > Storage Management > HDD Management**.
2. Enter the quota percentage for snapshots and for main stream/substream recordings.
3. Click **Save** and refresh the browser page to activate the settings.

NAS

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

To configure record settings, please ensure that you have the network storage device.

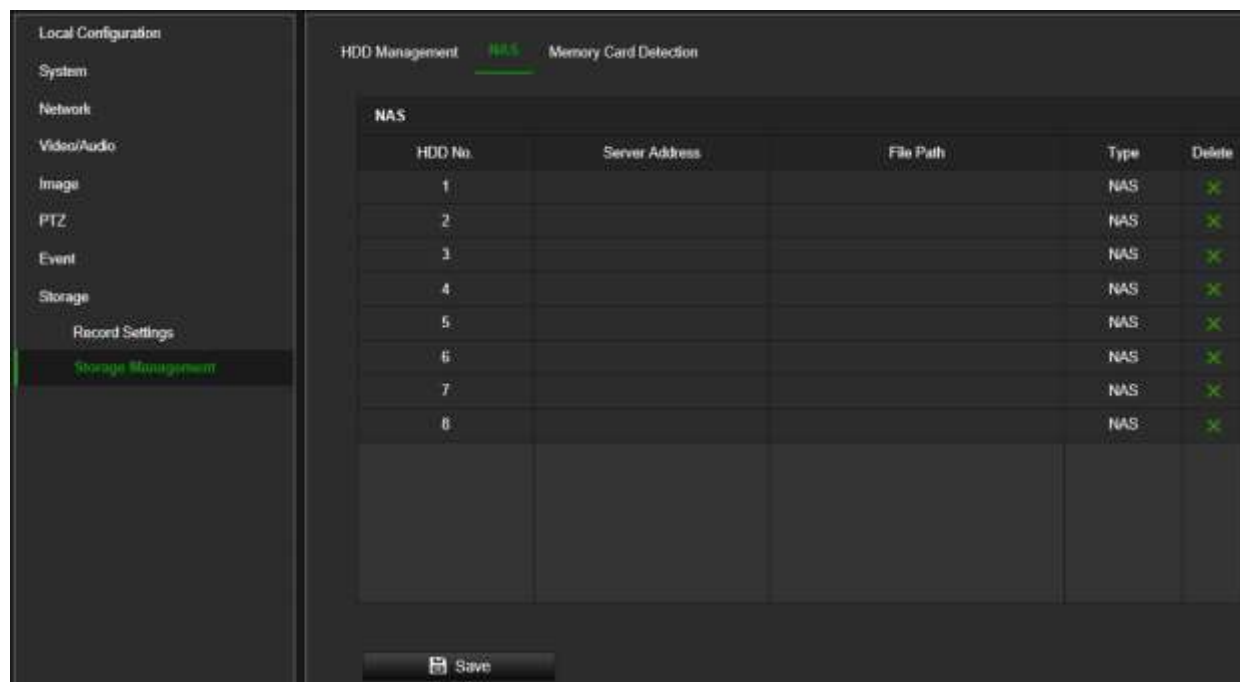
The NAS disk should be available within the network and correctly configured to store the recorded files, log files, etc.

Notes:

1. Up to eight NAS disks can be connected to the camera.
2. The recommended capacity of NAS should be between 9GB and 2TB as otherwise it may cause formatting failure.

To set up a NAS system:

1. Click **Configuration > Storage > Storage Management > NAS**.

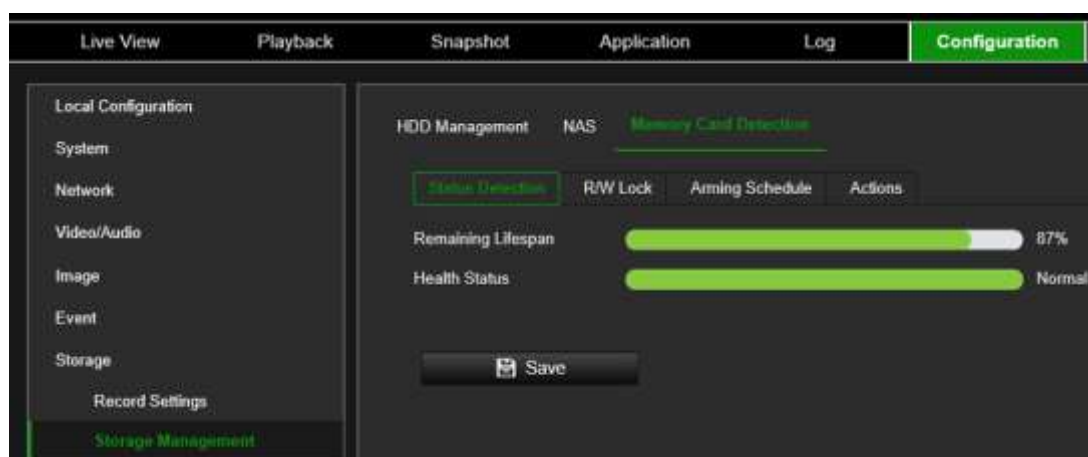


2. Enter the IP address of the network disk, and the NAS folder path.
3. Click **Save** to save changes.

To check the SD card status:

1. Click **Configuration > Storage > Storage Management > Memory Card Detection**.

The health status and estimated lifespan of the SD Card is displayed.



VCA Configuration

Use this menu to configure ANPR (Road Traffic) configuration features. If no ANPR features are needed, the camera can be switched to Smart Event mode to enable VCA events such as Cross Line Detection, Intrusion Detection, and others.

VCA Resource

The camera has two VCA Resource modes that will enable/disable certain smart event features in the camera. See the tables below with supported features for each mode.

Note: Switching between the VCA Resource modes will require the camera to reboot.

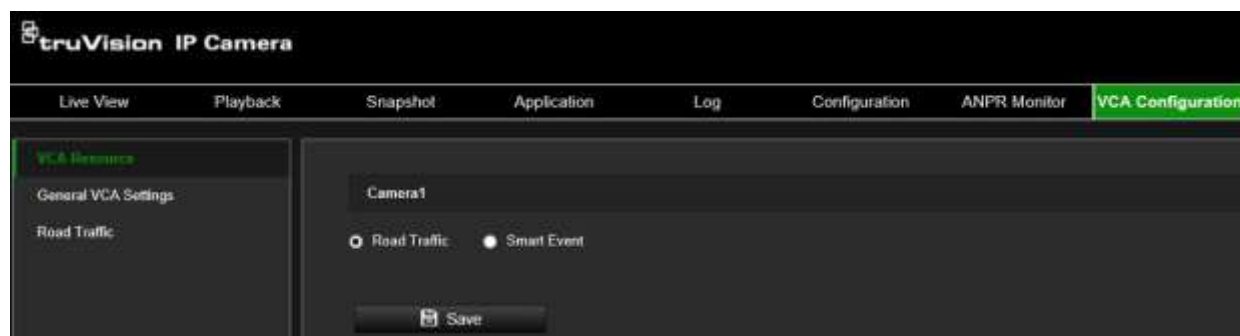


Table 1: Supported features by VCA resource mode

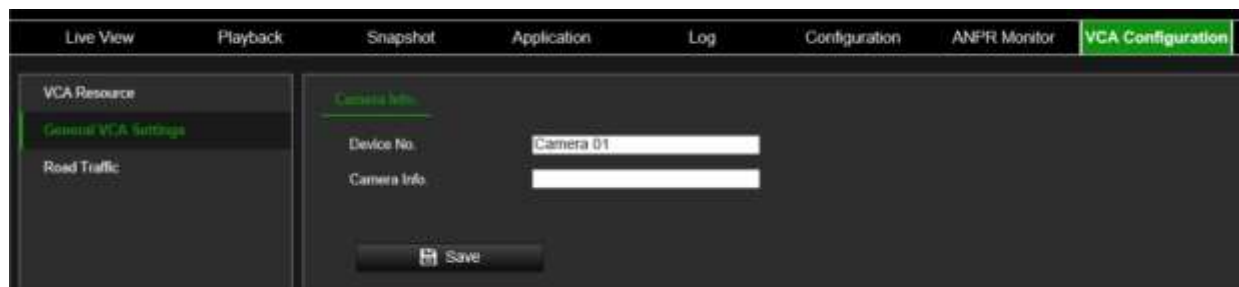
Available features	Road Traffic (Default mode)	Smart Event
Road Traffic (ANPR)	Yes	No
Motion Detection	Yes	No
Cross Line Detection	No	Yes
Intrusion Detection	No	Yes
Region Entry Detection	No	Yes
Region Exit Detection	No	Yes
e-PTZ	No	Yes

Important note:

- Motion detection is **not** available when the camera is set to Smart Event VCA resource mode.
- When the camera is set to Smart Event VCA resource mode (that is, no motion detection support), some recorders will still let you configure motion detection from the recorder configuration menu although this feature is not activated in the camera. Therefore, make sure to only configure motion detection in the recorder when the camera is set to Road Traffic VCA resource mode.

General VCA Setting

The fields *Device No.* and *Camera Info* can be displayed along with captured snapshots triggered by events. Any additional information about the camera can be added here if needed.



The screenshot displays the 'VCA Configuration' interface. At the top, a navigation bar includes 'Live View', 'Playback', 'Snapshot', 'Application', 'Log', 'Configuration', 'ANPR Monitor', and 'VCA Configuration' (highlighted in green). On the left, a sidebar shows 'VCA Resource' with sub-items 'General VCA Settings' (highlighted in green) and 'Road Traffic'. The main area is titled 'Camera Info.' and contains two input fields: 'Device No.' with the value 'Camera 01' and 'Camera Info.' which is empty. A 'Save' button is located at the bottom of the main area.

Road Traffic

This feature is only available when the VCA resource mode is set to **Road Traffic**. See “VCA Resource” on page 74 for more information.

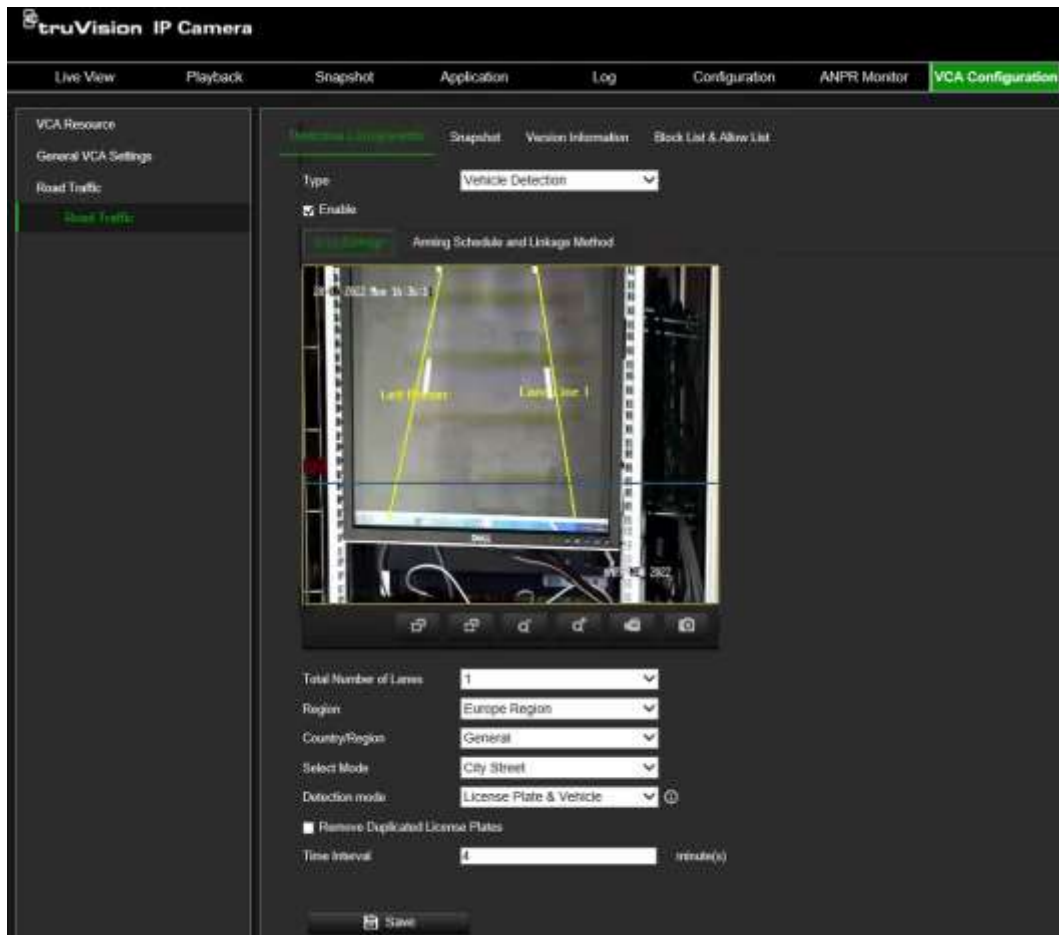
Use the Road Traffic menu to set the desired parameters to identify license plates.

License plate recognition lets you identify, track, and analyze vehicles as they enter or leave the site. The camera can be set up to automatically capture license plates for storage and later analysis.

Using the *Picture Overlay* function, you can also select the information to be embedded in the snapshot of the captured license plate, such as the capture time and direction.

Detection configuration

Use this function to set up the area on screen to be detected and to capture a vehicle's number plate information.



To set up license plate detection:

1. Click **VCA Configuration > Road Traffic > Road Traffic > Detection configuration**.
2. Select detection type, **Vehicle Detection** or **Mixed-traffic Detection**.

Vehicle Detection: The vehicles that enter the configured lane can be detected and a picture of the vehicle and its license plate can be captured and stored.

Mixed-traffic Detection: The motor vehicles and non-motor vehicles that enter the set lane can be detected, and a picture of targets can be captured and stored.

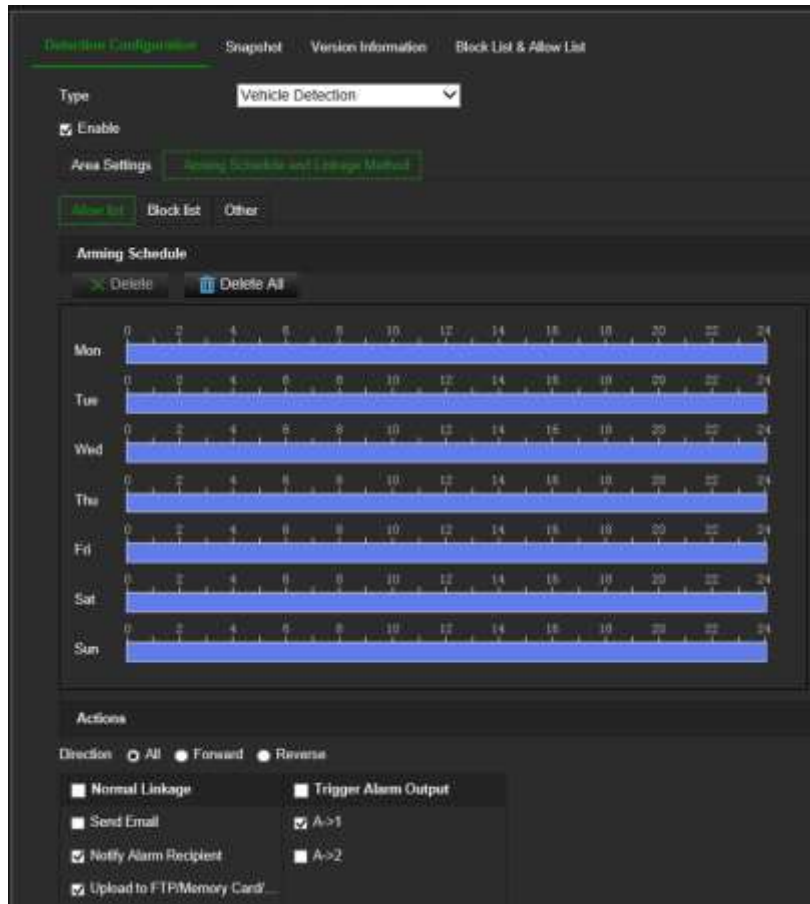
3. Select the **Enable** check box to enable the detection function.
4. Under Total Number of Lanes, select the desired number of lanes from the drop-down list. Up to two lanes can be set up. For the best performance, we recommend using one camera for each lane.
5. Select the desired detection area on the image by adjusting the yellow lane indications in the image.

Blue Detection Line: Mainly used for entry/exit to improve the capture efficiency. The line is used to trigger the capture of a license plate when the vehicle crosses it. We highly recommend placing this line at the middle-lower part of the screen to ensure the car can pass it with the plate and the full view of the car visible.

Lane Definition: The actual detection area is the area between the yellow lines that represent the lanes for the vehicles.

6. Set the **Region** in which the camera is installed to properly capture license plates from that region.
7. In the **Country/Region** drop-down list you will see countries that are assigned to the selected Region. Note that Country/Region grouping is not always done by geography. The assignment of countries to Regions is done on similarity of license plate layouts.
8. Under **Select Mode**, select the desired option:
 - Entrance/exit:** When a vehicle is detected in an entrance or exit area, its license plate number is captured, and the information uploaded to the camera for analysis.
 - City Street:** When a vehicle is detected in a city street, its license plate number is captured, and the information uploaded to the camera for analysis.
 - Alarm Input:** An input alarm triggers the capture of a license plate number, and the information is uploaded to the camera for analysis.
 - Note:** When *Alarm Input* is selected, the alarm input "A<-1" is automatically assigned to trigger vehicle detection. Its alarm type is always NO. If the "A<-1" alarm input is used to trigger vehicle detection, it cannot be used for other basic events. When *Alarm Input* is selected and saved, any previously configured linkage methods for "A<-1" are cancelled.
9. Select **Remove Duplicated License Plates** so that the same license plates are not captured multiple times. **Time Interval** determines the time during which the same license plate will only be reported once.
10. Go to **Arming Schedule and Linkage Method** to set up the schedule and linking method for allowed/blocked/other list.

Set the arming schedule and linkage action separately for the allowed list, the blocked list, and the other list. Note that there is one tab per list type, each with separate arming schedule and actions.



11. Select the direction the vehicle must be moving to trigger the linkage method. Only the vehicles moving in the selected direction can trigger the selected linkage method. Under *Direction*, select one of the following options:

Forward	The vehicle moves toward the camera.
Reverse	The vehicle moves away from the camera
All	The vehicle moves toward or away from the camera.

12. Specify the linkage method when an event occurs. Select one or more response methods for the system when number plate is detected.

Normal Actions	This is a group selection. It automatically selects "Notify Alarm Recipient" and "Upload to FTP/Memory Card/NAS".
Send Email	Send an email to the email addresses defined in the network email menu
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.

Upload to FTP/ Memory Card/ NAS	Capture the image when an alarm is triggered and upload the picture to NAS, Memory Card, or FTP server. Note: To upload the snapshot to NAS, you must first configure the NAS settings. See “NAS” on page 72 for further information. To upload the snapshot to an FTP, you must first configure the FTP settings. See “To set up the FTP parameters” on page 32 for further information. Enable the Upload Type option. To upload the snapshot to FTP and NAS when motion detection or an alarm input is triggered, you must also select Enable Event-triggered Snapshot under the snapshot parameters. See “Snapshots” on page 79 for further information.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Select All” or each individual alarm output. Note: This option is only supported by cameras that support alarm output.
A->1	Trigger the alarm output A->1.
A->2	Trigger the alarm output A->2.

13. Click **Save** to save changes.

Snapshot

This feature is only available when the VCA resource mode is set to **Road Traffic**. See “VCA Resource” on page 74 for more information.

Configure the text overlay to appear at the bottom of the license plate snapshots. You can configure fields like *Device No.*, *Camera Info* and more, which can be displayed in the snapshot overlay.

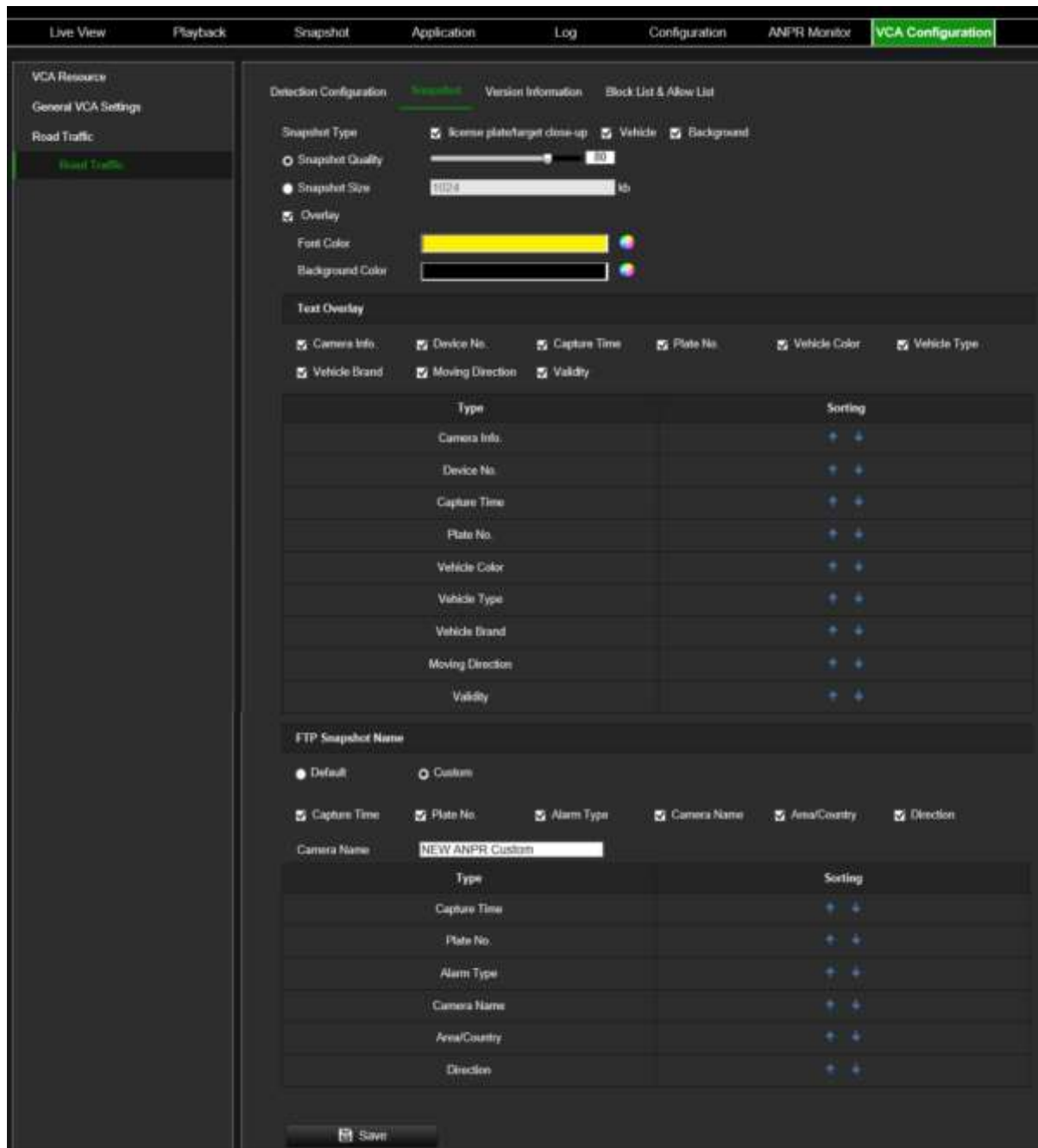
To set up the text overlay function:

1. Click **VCA Configuration > Road Traffic > Road Traffic > Snapshot** and select the snapshots to be created by the camera for each captured license plate. All three options can be selected, if needed.

License plate/target close-up: Cropped image of the license plate

Vehicle: Cropped image of the vehicle

Background: Snapshot of the full camera image, vehicle, and background to overlay on the snapshot.



2. Select the desired text overlay options to display at the bottom of the stored snapshots: Camera Info, Device No., Capture Time, Plate No., Vehicle Color, Vehicle Type, Vehicle Brand, Moving Direction, and Validity are available. The fields can be sorted using the blue up/down arrows in column **Sorting**.
3. Select whether the FTP snapshots use the default naming structure or a customized file name structure.
4. Click **Save** to save changes.

Version Information

This feature is only available when the VCA resource mode is set to **Road Traffic**. See “VCA Resource” on page 74 for more information.

Displays the version of the ANPR algorithms used in the camera.

Blocked and Allowed Lists

This feature is only available when the VCA resource mode is set to **Road Traffic**. See “VCA Resource” on page 74 for more information.

You can store a list of blocked and allowed license plates in the camera to match against when automatically analyzing the captured numbered plates. A list up to a maximum of 10,000 license plates can be loaded in the camera. Storing the list in the camera does not require a SD card, it is stored the internal memory of the camera.

Table 1: Description of Blocked List, Allowed List, and Other

Blocked List	These are license plates marked in the list as restricted vehicles.
Allowed List	These are license plates marked in the list as authorized vehicles.
Other	Captured license plates that are not part of the blocked/allowed list are automatically marked as “Other”.

If you do not have already a list of your blocked/allowed license plates, you must export the empty template from the camera and from that file create your own list. After the list is updated, it can be imported back into the camera. It is a single list in Excel format in which you mark the license plates as allowed or blocked. Captured license plates that are not part of the list will automatically be marked as “Other”.

The screenshot displays the 'VCA Configuration' interface for a TruVision IP Camera. The left sidebar shows 'VCA Resource' with 'General VCA Settings' and 'Road Traffic' (selected). The main area is titled 'Blocked List & Allow List' and includes an 'Import Block List & Allow List' section with a file input field, 'Browse', and 'Import' buttons. Below this is a 'Status' section with a note: 'Note: You can set at most 10,000 license plates in block list & allow list in total.' and an 'Export Block List & Allow List' button. The 'Block List & Allow List Content' section features a 'Filter by' dropdown set to 'All Types', a 'Keywords' search field, and 'Add' and 'Delete' buttons. A table lists the entries:

No.	Plate No.	Type	Creation Time	Effective Start Date	Effective End Date	Wegand CardID	Operation
1	MV20BMY	Allow list	1970-01-01 00:00:00	2022-05-12	2023-05-12	45569	Edit
2	ABC1234	Allow list	1970-01-01 00:00:00	2022-05-13	2022-05-13	91000	Edit

The bottom right corner shows 'Total 2 item(s)' and pagination controls.

The list template format is shown below. See Table 2.

When entering the license plate number, there should be no spaces between the letters and numbers. For example, if the license number plate is “MV-20-BMY”, in the list it should be written as “MV20BMY”.

In column C enter 0 for a license plate to be marked as blocked. Enter 1 in column C to mark a license plate as allowed. Enter the start and stop dates for the list to function

correctly, In column A, it is recommended to enter a unique number to be is used as an index for each record.

The card ID column must be used when the camera is using Wiegand format 26-bit or 34-bit bit. For SHA-1 26-bit plate conversion and 72-bit plate conversion, no data is needed in column F since the camera will generate Wiegand data based on the license plate characters read by the camera.

Table 2: Blocked/allowed list Excel template

	A	B	C	D	E	F
1	No.	Plate No.	Group(0 blocked list, 1 allowed list)	Effective Start Date (Format: YYYY-MM-DD, e.g., 2017-12-07)	Effective End Date (Format: YYYY-MM-DD, e.g., 2017-12-07)	Card ID
2	1	MV20BMY	1	2022-05-12	2022-05-15	45969
3	2	ABC1234	1	2022-05-13	2022-05-22	01000
4	3					
5						

You can manage the license plates from this menu without exporting/importing the Excel file from the camera. Use the *Filter by* and keywords fields to search for license plate records stored in the list. The *Add*, *Delete* and *Edit* buttons allow you to make add, delete, or modify individual license plate records.

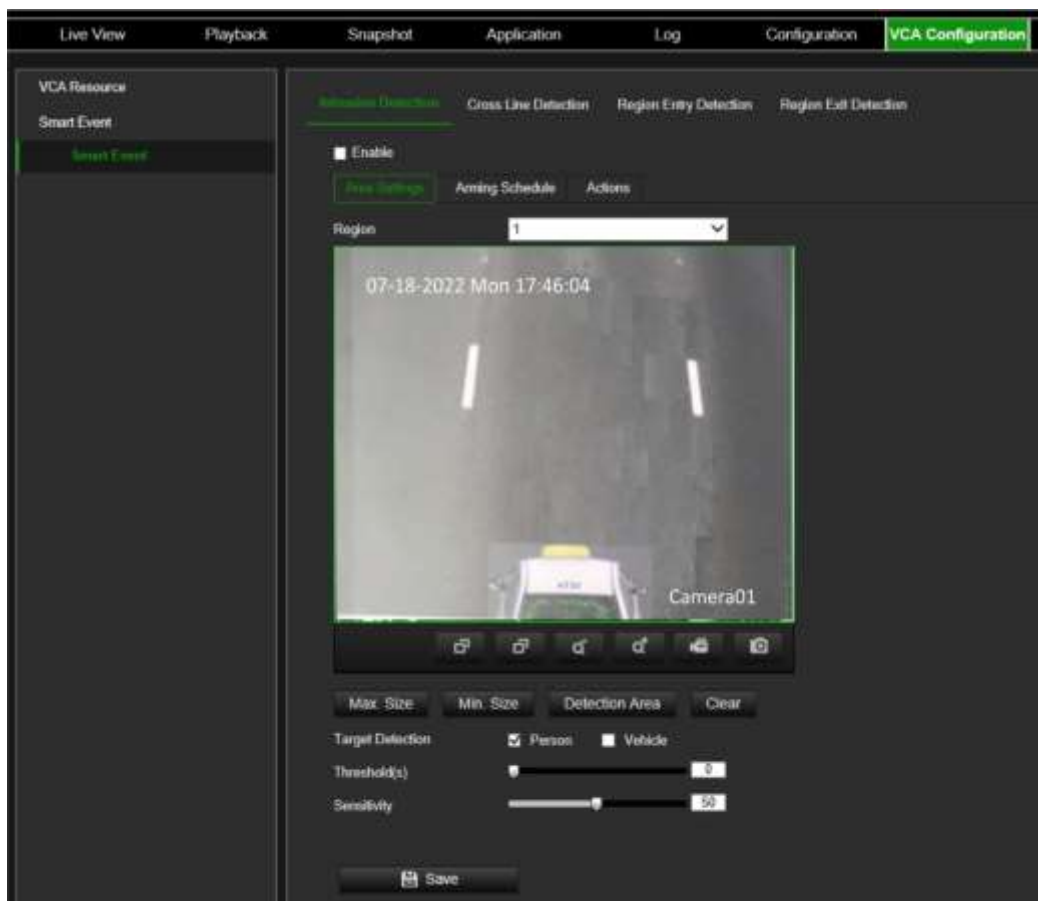
Intrusion Detection

This feature is only available when the VCA resource mode is set to **Smart Event**. See “VCA Resource” on page 74 for more information.

You can set up an area in the surveillance scene to detect when intrusion occurs. Up to four intrusion detection areas are supported. If someone enters the area, a set of alarm actions can be triggered.

To set up intrusion detection:

1. From the menu toolbar, click **VCA Configuration > Smart Event > Intrusion Detection**.



2. Select the **Enable** check box to enable the function.
3. Set the **Max. Size** and **Min. Size** to determine valid targets. Targets smaller or larger than the valid target size are not able to trigger detection.

Max. Size: The maximum size of a valid target. Targets with larger sizes would not trigger detection.

Min. Size: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.

4. Click **Detection Area** and draw a polygon area on the live video viewer where you want the camera to check for intrusion events.

When you draw the polygon, all lines should connect end-to-end to each other. Click **Clear** to clear the area you have drawn.

5. Enable the options **Person** or **Vehicle** to have the camera react to people or vehicles. If neither of these options are selected, the camera will react to all types of objects.
6. Additional options to set up are:

Threshold: This is the time threshold that the object remains in the region. If you set the value as 0 s, the alarm is triggered immediately after the object enters the region. The range is between 0 and 10 seconds.

Sensitivity: The detection sensitivity value defines how fast the camera will react to a moving object in the intrusion zone. The range is between 1 and 100. A higher value will make the camera react faster.

- Click the **Arming Schedule** tab and set the arming schedule for the alarm input. See “To set up motion detection” on page 52 for more information.
- Click the **Actions** tab and specify the actions when an event occurs. Select one or more response actions when an intrusion detection alarm is triggered.

Normal Linkage	Select Send Email, Notify Alarm Recipients, and Upload to FTP/Memory card/NAS
Send Email	Send 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 32 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.
Upload to FTP/Memory card/NAS	Capture the image when an alarm is triggered and upload the picture to NAS, Memory Card or FTP server. Note: To upload the snapshot to NAS, you must first configure the NAS settings. See “NAS” on page 72 for further information. To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 31 for further information. Enable the Upload Type option. To upload the snapshot to FTP and NAS when motion detection or an alarm input is triggered, you must also select Enable Event-triggered Snapshot under the snapshot parameters. See “Storage” on page 66 for further information.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Trigger Alarm Output” or each individual alarm output. Note: This option is only available for cameras that support alarm output.
Trigger Recording	Triggers the recording to start in the camera.

- Click **Save** to save changes.

Cross Line Detection

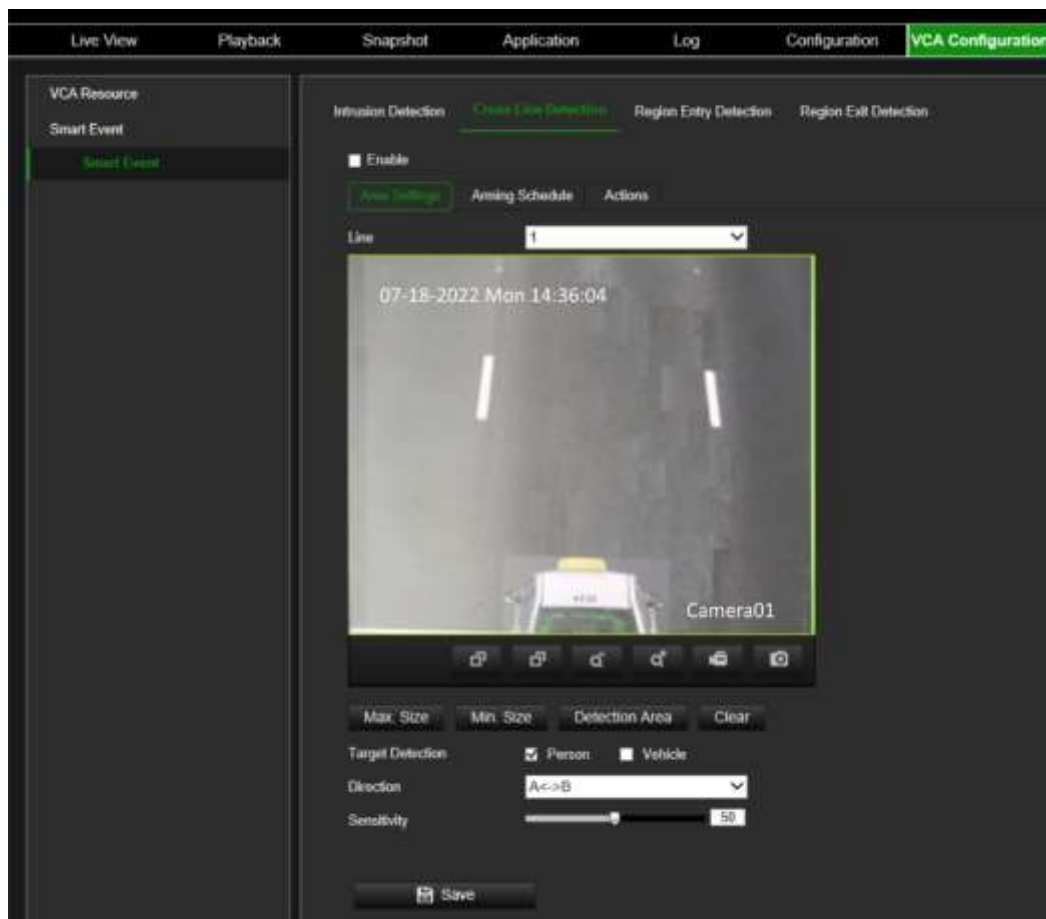
This feature is only available when the VCA resource mode is set to **Smart Event**. See “VCA Resource” on page 74 for more information.

Use this function to detect people, vehicles, and objects crossing a predefined line or an area on screen. Up to four cross lines are supported. The cross line direction can be set as unidirectional or bidirectional. Unidirectional is crossing the line from left to right or from right to left. Bidirectional is crossing the line from both directions.

A series of actions can be triggered if an object, vehicle, or person is detected crossing the line.

To set up cross line detection:

1. From the menu toolbar, click **VCA Configuration > Smart Event > Cross Line Detection**.



2. Select the **Enable** check box to enable the function.
3. Click the **Area Settings** tab.
3. Under **Line**, select the desired line from the drop-down list for detection settings.
4. Set the **Max. Size** and **Min. Size** to determine valid targets. Targets smaller or larger than the valid target size are not able to trigger detection.

Max. Size: The maximum size of a valid target. Targets with larger sizes would not trigger detection.

Min. Size: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.

5. Click **Detection Area** to have a cross line on the live video viewer. Click the starting point of the line on the live video viewer and drag it to the desired end position. Select one of the direction options from the drop-down list:

A<->B: Arrows are displayed on both A and B ends. When an object crosses the line in any direction, it can be detected and trigger an alarm.

A->B: Only an object crossing the line in the A to the B direction can be detected and trigger an alarm.

B->A: Only an object crossing the line in the B to the A direction can be detected and trigger an alarm.

6. Enable the options **Person** or **Vehicle** to have the camera react to people or vehicles. If neither of these options are selected, the camera will react to all types of objects.
7. Set the **Sensitivity** level between 1 and 100. The higher the value, the more easily the line crossing action can be detected.
8. If desired, select another line crossing area to configure from the **Line** dropdown menu. Up to four cross lines can be configured.
9. Set the arming schedule for the alarm input. See “To set up motion detection” on page 52 for more information.
10. Specify the linkage method when an event occurs. Select one or more response methods for the system when a line cross detection alarm is triggered.

Normal Linkage	Select Send Email, Notify Alarm Recipients, and Upload to FTP/Memory card/NAS.
Send Email	Send 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 32 for further information. If you want to send the event snapshot together with the email, select the Attached Snapshot option.
Notify Alarm Recipient	Send an exception or alarm signal to remote management software when an event occurs.
Upload to FTP/Memory card/NAS	Capture the image when an alarm is triggered and upload the picture to NAS, Memory Card or FTP server. Note: To upload the snapshot to NAS, you must first configure the NAS settings. See “NAS” on page 72 for further information. To upload the snapshot to an FTP, you must first configure the FTP settings. See “To define the FTP parameters” on page 31 for further information. Enable the Upload Type option. To upload the snapshot to FTP and NAS when motion detection or an alarm input is triggered, you must also select Enable Event-triggered Snapshot under the snapshot parameters. See “Storage” on page 66 for further information.
Trigger Alarm Output	Trigger external alarm outputs when an event occurs. Select “Trigger Alarm Output” or each individual alarm output. Note: This option is only available for cameras that support alarm output.
Trigger Recording	Triggers the recording to start in the camera.

Note: Additional actions like *Audible Warning* or *Flashing Alarm* may be available depending on camera model.

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

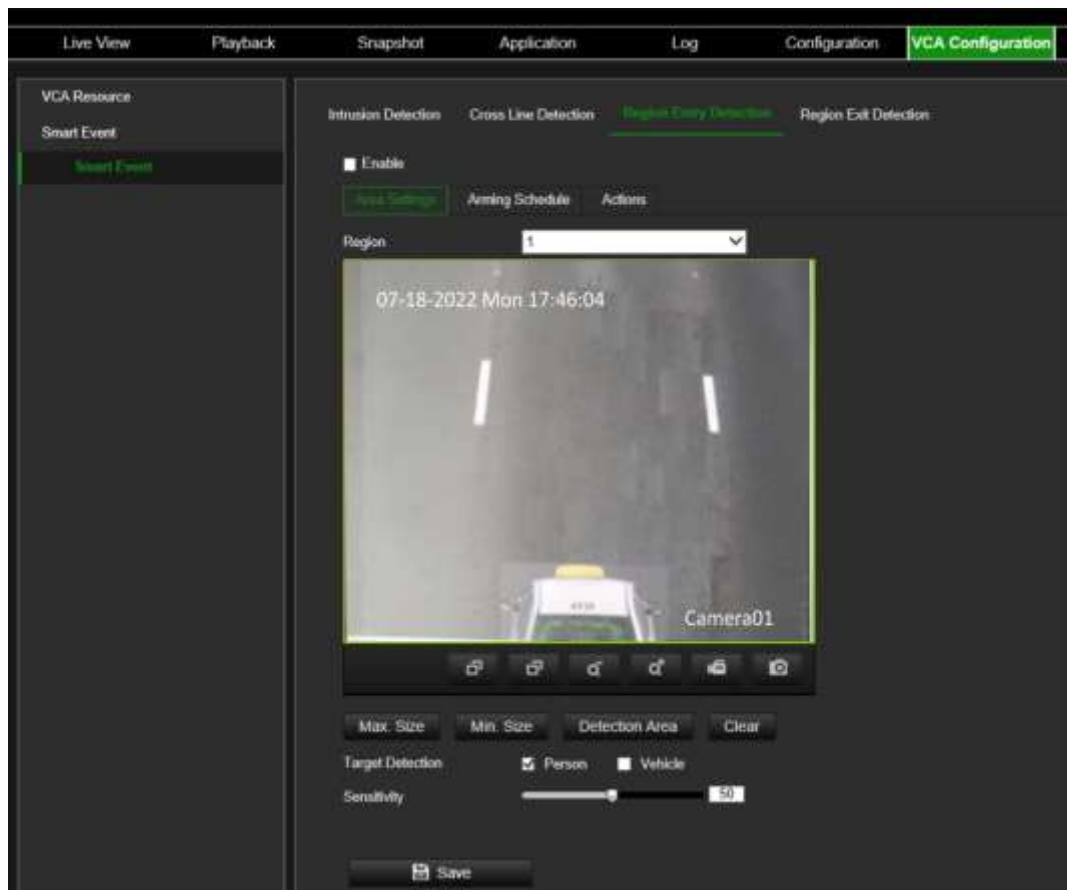
Region Entry Detection

This feature is only available when the VCA resource mode is set to **Smart Event**. See “VCA Resource” on page 74 for more information.

This function detects people, vehicle or other objects that enter a predefined virtual region. It can be set up to trigger a series of alarm actions.

To define region entry detection:

1. From the menu toolbar, click **VCA Configuration > Smart Event > Region Entry Detection**.



2. Select the **Enable** check box to enable the function.
3. Click the **Area Settings** tab.
4. Under **Region**, select the desired region from the drop-down list for detection settings.
5. Click the **Detection Area** button to draw a detection area.
6. Click the live video viewer to specify the four vertexes of the detection region and release the mouse to complete drawing.
7. Set the **Max. Size** and **Min. Size** to determine valid targets. Targets smaller or larger than the valid target size are not able to trigger detection.

Max. Size: The maximum size of a valid target. Targets with larger sizes would not trigger detection.

Min. Size: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.



8. Enable the options **Person** or **Vehicle** to have the camera react to people or vehicles. If neither of these options are selected, the camera will react to all types of objects.
9. Set the detection sensitivity level. Drag the slider to the desired value.

Sensitivity: Range [1-100]. This is the percentage of the target versus the entire detection area.

$$\text{Sensitivity} = 100 - S1/ST*100$$

S1 stands for how much the target occupies the detection area. ST stands for the whole detection area.

Example: If you set the value at 60, the action can be counted as a region entrance action only when 40 percent of the target enters the region.

10. Repeat steps 4 to 9 to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all predefined regions.
11. Click the **Arming Schedule** tab to set the arming schedule.
12. Click the **Actions** tab to select the linkage methods.
13. Click **Save** to save the settings.

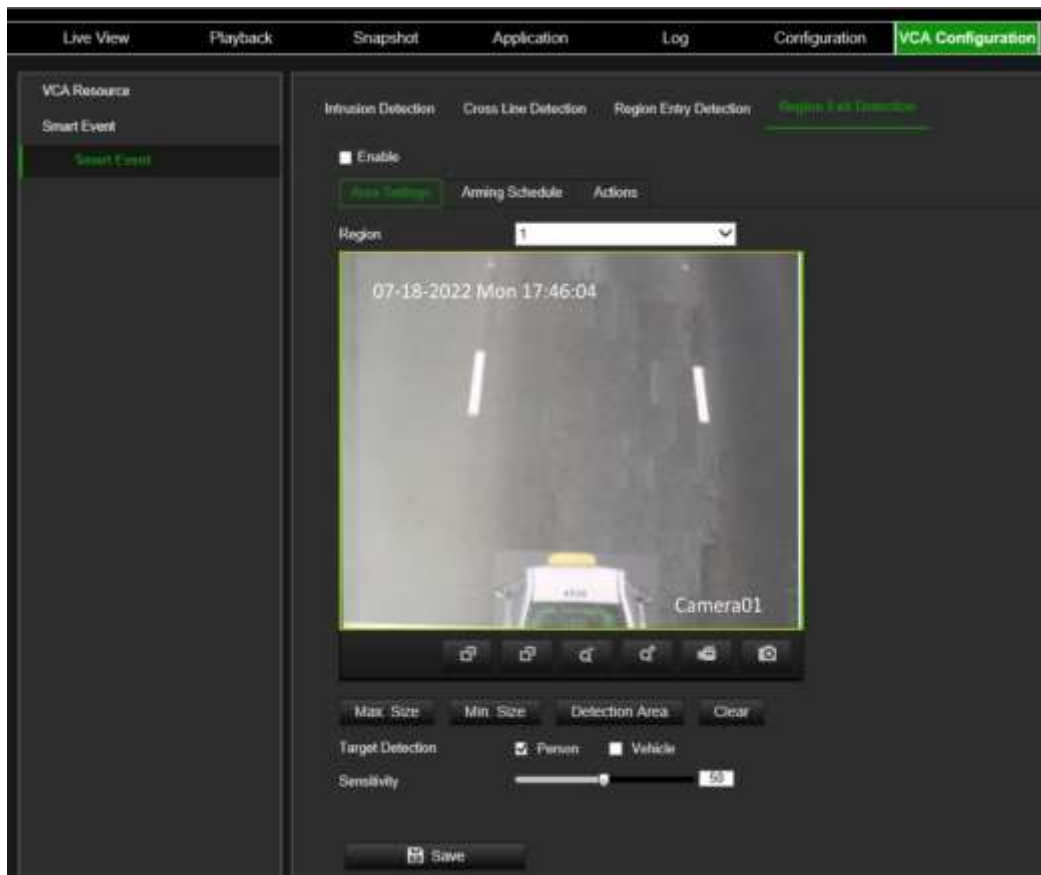
Region Exit Detection

This feature is only available when the VCA resource mode is set to **Smart Event**. See “VCA Resource” on page 74 for more information.

This function detects people, vehicle or other objects that exit from a predefined virtual region. It can be set up to trigger a series of alarm actions.

To define region exit detection:

1. From the menu toolbar, **VCA Configuration > Smart Event > Region Exiting Detection**.



2. Select the **Enable** check box to enable the function.
3. Click the **Area Settings** tab.
4. Under **Region**, select the desired region from the drop-down list for detection settings.
5. Click the **Detection Area** button to draw a detection area.
6. Click the live video viewer to draw the four vertexes of the detection region. Release the mouse to complete drawing.
7. Set the **Max. Size** and **Min. Size** to determine valid targets. Targets smaller or larger than the valid target size are not able to trigger detection.

Max. Size: The maximum size of a valid target. Targets with larger sizes would not trigger detection.

Min. Size: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.



8. Enable the options **Person** or **Vehicle** to have the camera react to people or vehicles. If neither of these options are selected, the camera will react to all types of objects.

9. Set the detection sensitivity level. Drag the slider to the desired value.

Sensitivity: Range [1-100]. This is the percentage of the target versus the entire detection area.

$$\text{Sensitivity} = 100 - S1/ST*100$$

S1 stands for how much the target occupies the detection area; ST stands for the whole detection area.

Example: If you set the value at 60, the action can be counted as a region exiting action only when 40 percent of the target part enters the region.

10. Repeat steps 4 to 9 to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all predefined regions.
11. Click the **Arming Schedule** tab to set the arming schedule.
12. Click the **Actions** tab to select the linkage methods.
13. Click **Save** to save the settings.

Camera operation

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

Login and Logout

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

Note: When an incorrect user name or password has been entered, a message appears showing how many login attempts remain (“Incorrect user name or password. By default, the device will be locked after 3 failed login attempts.”). From a security perspective, we recommend that you leave this setting to default, but login settings can be changed under **Configuration > System > Security > Security Service**.

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

Figure 10: Login dialog box



Live view mode

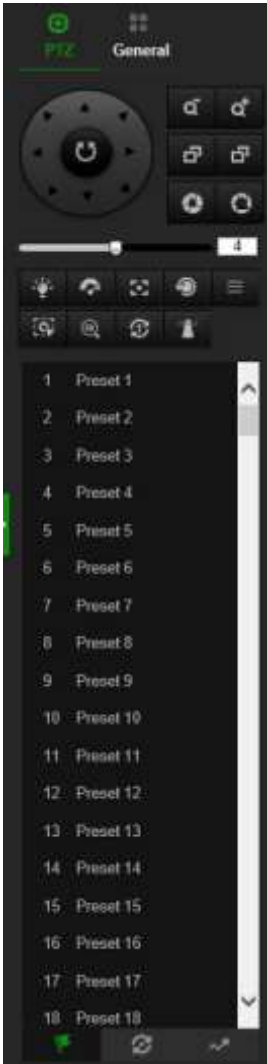
Once logged in, click “Live View” on the menu toolbar to access live view mode. See Figure 11 on page 92 for the description of the interface.

Figure 11: Live view window



	Name	Description
1.	Live view	Click to view live video.
2.	Playback	Click to play back video. See “Play back recorded video” on page 95 for more information.
3.	Snapshot	Click to search snapshots. See “Snapshot” on page 98 for more information.
4.	Application	Click to do a Data Analysis of specific device events. This menu is only available when camera is set to Road Traffic VCA resource mode.
5.	Log	Click to search for event logs. There are three main types: Alarm, Exception, and Operation. See “Log” on page 100 for more information.
6.	Configuration	Click to display the configuration window for setting up the camera.
7.	ANPR Monitor	Click to view captured license plates in real-time. See “ANPR Monitor” on page 99 for further information.
8.	VCA Configuration	Click configure Road Traffic features. When VCA Resource mode Smart Events is selected, other VCA options such as Cross Line Detection, Intrusion Detection, and others will appear here. See “VCA Configuration” on page 74 for more information.
9.	Viewer	View live video. Time, date, and camera name are displayed here.
10.	Download Plug-in	Click to download and install the web plugin recommended for plugin-free browsers. This button only appears in non-Internet Explorer browsers. PC internet connection is required.
11.	Admin	Displays current user logged on.
12.	Help	Click to find function.
13.	Logout	Click to log out from the system. This can be done at any time.
14.	Live view toolbar	 Click to start/stop live view.  Click to manually capture a snapshot.

Name	Description
	 Click to manually start/stop recording. The recording is stored in the directory you have configured.
	 Click to start/stop digital zoom function.
	 Regional exposure: Click and draw a rectangle to optimize the exposure of the selected area.
	 Regional focus: Click can draw a rectangle to optimize the focus in the selected area.
	 Live view with main stream, substream or third stream.
	 Click to select the third-party plug-in. Not supported by all browsers.
	 Turn on/off microphone.
	 Audio on/off and adjust volume/mute.
	 Pixel counter
	 Aspect ratio. Switch window size between 4:3, 16:9, original window size, original ratio, or self-adapt window size.
15. PTZ / General / VCA	Configuration options for PTZ, General, and VCA control panels. These options can be changed from the live view menu. See a description of the control panels below. PTZ control panel: The PTZ panel lets you control the zoom and focus buttons of the camera (see page 94). The user will need permission to use the PTZ control panel (see page 22). General control panel: Although you can modify display, OSD, and video/audio settings from the General Control panel, you have greater control of these settings from the Configuration > Image menu. VCA control panel: Displays the VCA resource mode selected. You can switch between Road Traffic (default) and Smart Event from the VCA control panel. The camera must be rebooted if you change the resource mode.

Name	Description		
PTZ control panel	General control panel	VCA control panel	
			

Operating PTZ control panel

In live view you can use the PTZ zoom and focus buttons to control the zoom and focus of the camera. The other PTZ related features are not applicable for this camera.

Figure 12: PTZ control panel

Zoom, focus and iris: Adjusts zoom, focus and iris.



Play back recorded video

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

Note: You must configure NAS or insert an SD card in the camera to be able to use the playback functions.

To search recorded video stored on the camera's storage device for playback, click **Playback** on the menu toolbar. The Playback window appears. See Figure 13 on page 96.

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 button	Start search.
4. Control playback	Click to control how the selected file is played back: play, stop, slow and fast forward playback.
5. Archive functions	Click these buttons for the following archive actions:  Capture a snapshot image of the playback video.  Start/stop video clip during playback. Sections of a recording are saved to a local computer folder.
6. Digital zoom	Zoom in and out of the selected camera image.
7. Audio control	Modify the audio level.
8. Timeline	The timeline moves from left (oldest video) to right (newest video). It shows where you are in the playback recording. The current time and date are also displayed.
9. Timeline bar	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. 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. Click  to zoom out/in the timeline bar. No bar indicates no recording.
10. Download functions	 Download video files.
11. Recording type	The color code displays the recording type. Recording types are schedule recording, alarms recording and manual recording.

Name	Description
	The recording type name is also displayed in the current status window.
12. Zoom in/out	Click to zoom in or out of the timeline bar.
13. Jump start	Enter a precise time in the box and click  to jump start the playback from this selected time.

To play back recorded video

1. From the menu toolbar, click **Playback**.
2. Select the date and click the **Search** button. The searched video is displayed in the timeline.
3. 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 “Assign permissions to the user” under “To add a user” on page 23 to permit playback of recorded video files.

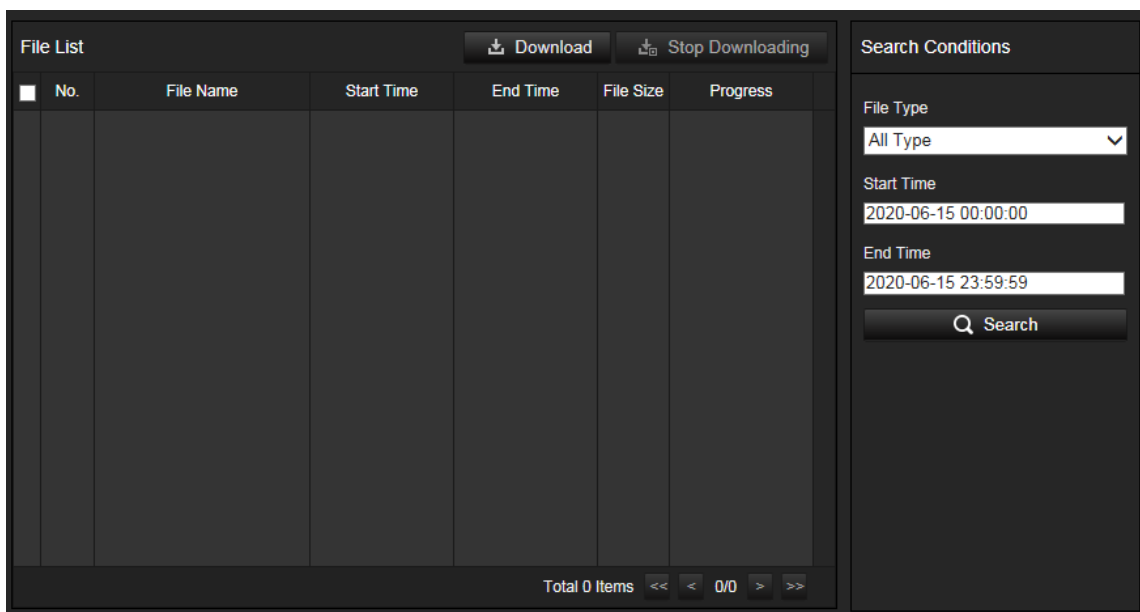
4. Select the date and click the **Search** button to search for the required recorded file.
5. Click **Search** to search the video file.
6. In the pop-up window, select the box of the video file and click  to download the video files.

To archive a recorded video segment during playback:

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

To archive recorded video files:

1. Click the download button  to open the recorded file search window.



The screenshot shows a web interface for managing video files. On the left is a 'File List' table with columns: No., File Name, Start Time, End Time, File Size, and Progress. The table is currently empty. Above the table are buttons for 'Download' and 'Stop Downloading'. On the right is a 'Search Conditions' panel with a 'File Type' dropdown menu set to 'All Type', 'Start Time' and 'End Time' input fields with dates '2020-06-15 00:00:00' and '2020-06-15 23:59:59' respectively, and a 'Search' button. At the bottom of the File List table, it says 'Total 0 Items' with navigation arrows.

2. Select the file type and set start and end time.
3. Click **Search** to search for the recorded video files.
4. Select the desired video files and click **Download** to download them. Downloading files from a NAS or SD card can take some time. A progress bar will be displayed to indicate the download progress.

Snapshot

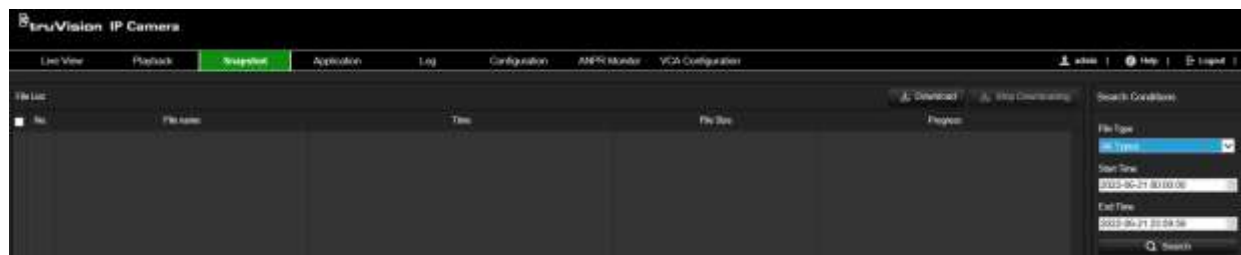
Click **Snapshot** on the menu toolbar to enter the window to search for snapshots. You can search, view, and download the snapshots stored in the NAS or memory card storage.

Notes:

- Make sure the HDD, NAS or memory card are correctly configured before you process the snapshot search.
- To store snapshots, a capture schedule needs to be configured or the camera needs to be set up for ANPR Capture.

To search recorded snapshots:

1. From the menu toolbar, click **Snapshot**.

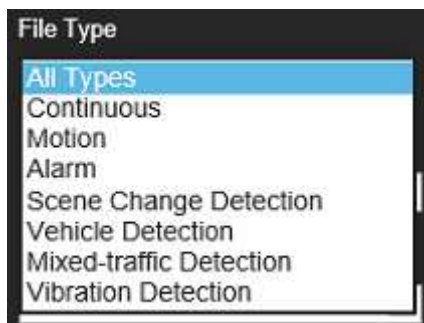


The screenshot shows the 'Snapshot' search window within the TruVision IP Camera interface. The top menu bar includes 'Live View', 'Playback', 'Snapshot' (highlighted in green), 'Appication', 'Log', 'Configuration', 'ANPR Number', and 'VCA Configuration'. The 'File List' table on the left has columns: No., File Name, Time, File Size, and Progress. The 'Search Conditions' panel on the right has a 'File Type' dropdown set to 'All Types', 'Start Time' and 'End Time' input fields with dates '2020-06-21 00:00:00' and '2020-06-21 23:59:59' respectively, and a 'Search' button. The bottom status bar shows 'admin' and 'Help'.

2. From the File Type drop-down list, select the file type for which you want to search: Continuous, Motion, Alarm, Scene Change Detection, Vehicle Detection, Mixed-traffic Detection, Vibration Detection.

Vehicle Detection: when selecting this option, an additional search field Plate No. will appear in which you can enter the full license plate you are trying to search for or at least one character of a license plate

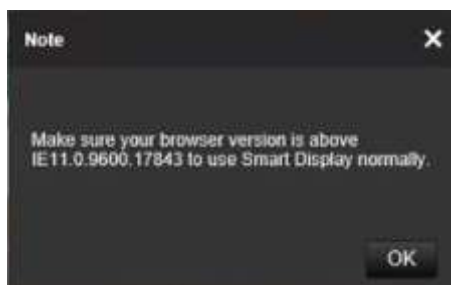
Mixed-traffic Detection: when selecting this option, an additional search field Type will appear in which you can select to either search for Motor Vehicle or Non-motor Vehicle.



3. Select the start time and end time.
4. Click **Search** to find the matching files.
5. In the list of snapshots, select the check box of the files you need and click **Download**.

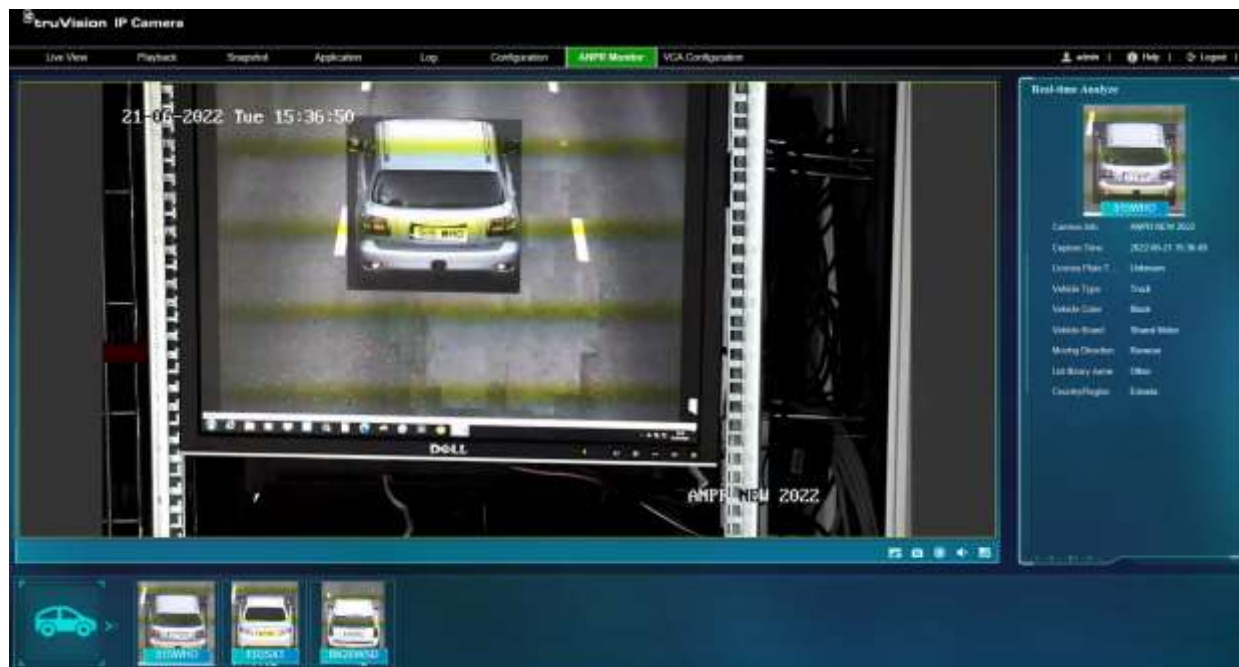
ANPR Monitor

Use this menu to display captured license plates in real-time. This page works only in Internet Explorer version 11.0.9600.17843 and above. Each time you open Smart Display, a pop-up warning will appear to inform the user about the browser compatibility for this feature.



To receive license plate snapshots in real-time:

1. From the menu toolbar, click **ANPR Monitor**. A pop-up warning will appear to inform the user about the browser compatibility for this feature



- At the bottom right of the image there are a set of buttons that can be used for the following functions:

	Start/Stop saving captured snapshots in browser cache.
	Click to manually take a snapshot of the full image.
	Start/stop recording live stream on local PC.
	Mute audio.
	Configure the Smart Display layout.

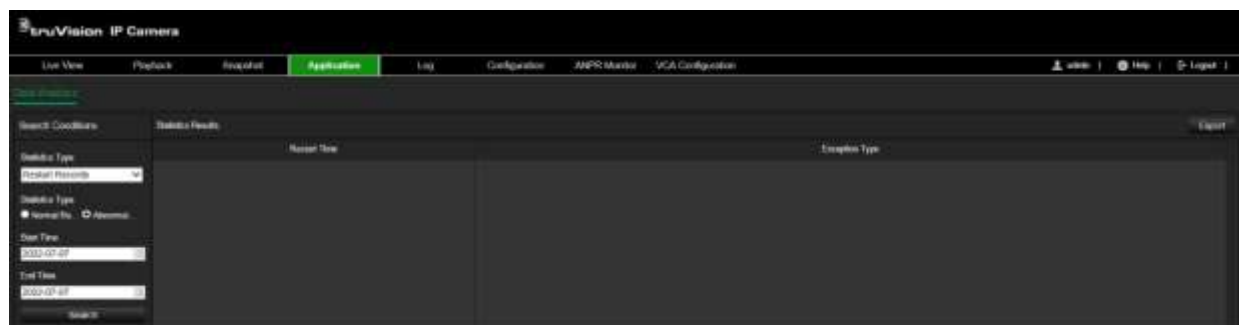
- Click the **Start/Stop**  button to send live captured face snapshots to the browser cache. When using this feature, the browser will inform the user that, for browser performance reasons, a maximum 200 snapshots can be sent to the browser cache.
- Click  again to stop real-time saving of snapshots to the browser cache and automatically download the captured snapshots from the browser cache to your local PC.
- Use additional buttons for extra features, as required (see step 2 above).
- At the bottom, all captured snapshots will be shown horizontally when ANPR settings are correctly configured.
- At the right side there is a Real-Time Analyze section in which captured license plate snapshots are shown.

Application

You can see some statistic configure NAS or install a SD card in the camera to be able to search for log events from the camera.

Use the **Data Analysis** function to search and export the data of the restart, arming, and capture alarm statistics.

1. Log in to the device via the admin user account.
2. Click **Application > Data Analysis**.



3. Set the search criteria. Select one of the *Statistic Type* options:

Capture Alarm: Select the values for Report Type, Alarm Target, Protocol, Alarm Link, and Start Time.

Restart Records: Select the values for Statistics Type, Start Time, and End Time.

Arming: Select the values for Arming Type, Start Time, and End Time.

4. Click **Search**

The data information matching the search criteria will be displayed.

Optional: Click **Export** to save the information to your local device.

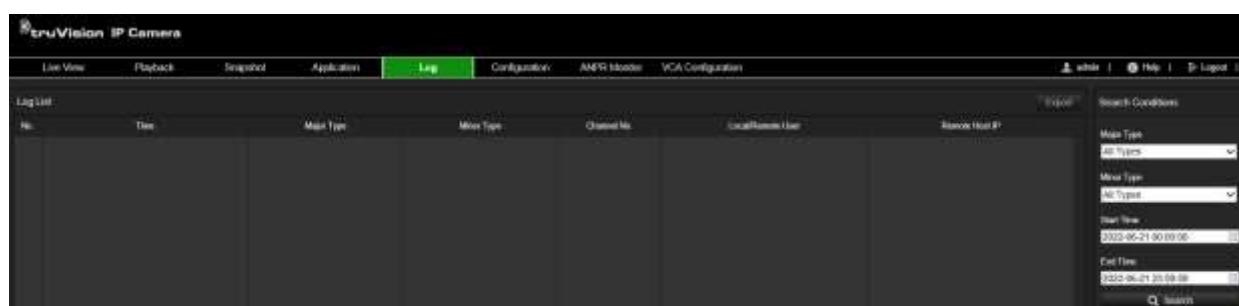
Log

You must configure NAS or install a SD card in the camera to be able to search for log events from the camera.

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 will start overwriting older logs. To view log events stored on storage devices, click **Log** on the menu toolbar to open the log menu.

Note: The user must have viewing log access rights to search and view logs. See “Assign permissions to the user” under “User Management” on page 23 to permit the user to search and view logs.

Figure 14: Log window



You can search for recorded log events by the following criteria:

Major Type: There are three types of logs: Alarm, Exception, and Operation. You can also search All. See Table 3 below for their descriptions.

Minor Type: Each major type has some minor types that can help to refine your search. See Table 3 below for their descriptions.

Start Time and End Time: Set the time window in which you want to search for log events.

Table 3: Types of logs

Log type	Description of events included
Alarm	Start Motion Detection, Stop Motion Detection, Start Tamper-proof, Stop Tamper-proof
Exception	Invalid Login, HDD Full, HDD Error, Network Disconnected and IP Address Conflicted
Operation	Power On, Unexpected Shutdown, Remote Reboot, Remote Login, Remote Logout, Remote Configure parameters, Remote upgrade, 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, Start Bidirectional Audio, Stop Bidirectional Audio, Remote Alarm Arming, Remote Alarm Disarming

To search logs:

1. From the menu toolbar, click **Log**.
2. In the **Major Type** and **Minor Type** drop-down list, select the desired options.
3. Set start and end time of the log.
4. Click **Search** to start the search operation. The results appear in the left window.

Index

8

802.1x parameters
set up, 35

A

Alarm inputs, 57
Alarm outputs, 57
Allowed list of license plates, 81
Archive files, 97, 98
Audio parameters, 38
Auto delete mode, 67

B

Blocked list of license plates, 81
Road traffic, 81

C

Camera image
set up, 42
Camera name
display, 46
Configuration file
import/export, 13
Configuration menu
overview, 8
Cross line detection, 84

D

D/N schedule
link to lighting scenes, 49
Date format set up, 46
Daylight saving time, 11
DDNS parameters
set up, 26
Default settings
restore, 13
Detection
audio exception, 61
cross line, 84
defocus, 63
enter a predefined area, 87
exit, 88
exit a predefined area, 88
intrusion, 82
region entry, 87
scene change, 64
Display information
set up, 46

E

Email parameters
set up, 32
Events

search logs, 100, 101
Exception alarm, 58, 59, 60

F

Failed login lock, 16
Firmware upgrade, 14
Focus
adjust, 94
FTP parameters
set up, 31

H

HDD
formatting, 71
HTTP listening parameters
set up, 37
HTTPS parameters
set up, 34

I

Image parameters switch, 49
Integration protocol parameters
set up, 36
Smart event, 82
Intrusion detection, 82
IP address filter, 15
Iris
adjust, 94

L

Language
change, 91
License plate detection
setup, 75
Live view
description, 91
Live view auto logout, 16
Local configuration menu
overview, 7
Log on and off, 91
Logs
information type, 102
search, 100, 101
security audit log, 21
viewing, 100, 101

M

MAC address filter, 16
Metadata settings, 11
Motion detection
advanced mode, 53
normal mode, 52
Multicast parameters
set up, 29

N

- NAS management, 72
- NAT parameters
 - set up, 28
- Network service parameters
 - set up, 36
- NTP synchronization, 10

P

- Password activation, 3
- Picture overlay, 49
- Playback
 - play back recorded files, 97
 - searching recorded video, 95
- Plugin-free browsers, 5
- Port parameters
 - set up, 27
- Post-recording times
 - description, 67
- PPPoE parameters
 - set up, 27
- Pre-recording times
 - description, 67
- Privacy masks, 47

Q

- QoS parameters
 - set up, 34
- Quota storage, 71

R

- Reboot camera, 13
- Recording
 - parameters, 38
 - playback, 95
 - set up schedule, 66
- Smart event, 87
- Region entry detection, 87
- Smart event, 88
- Region exit detection, 88
- Region of interest
 - set up, 41
- ROI
 - set up, 41
- ROI parameters, 38

S

- SDK functions, 36
- Search
 - events, 100, 101
 - logs, 100, 101
- Security audit log, 21
- Security settings, 14

- Smart event
 - cross line detection, 84
- Snapshots
 - archive, 98
 - event-triggered snapshots, 69
 - scheduled snapshots, 69
- SNMP parameters
 - set up, 30
- SRTP
 - set up, 38
- Storage
 - capacity, 71
- Storage management, 71
 - quota storage, 71
- System time
 - set up, 10

T

- Tamper-proof alarms, 56
- Target cropping, 38
- TCP/IP parameters
 - set up, 24
- Snapshots, 79
- Text overlay, 79
- Time format set up, 46

U

- User management
 - add users, 22
 - delete users, 23
 - modify users, 23
 - online users, 24

V

- VCA resource mode
 - supported features, 74
- Version of ANPR algorithm, 80
- Video clips
 - archive, 97
- Video parameters, 38
- Video quality, 42

W

- Web browser
 - interface overview, 6
- Web browser security level, 2
- WebSocket/WebSockets, 36
- Wiegand settings, 11

Z

- Zoom
 - adjust, 94