TVN 12 User Manual

Product warnings and disclaimers

THESE PRODUCTS ARE INTENDED FOR SALE TO AND INSTALLATION BY QUALIFIED PROFESSIONALS. CARRIER FIRE & SECURITY B.V. CANNOT PROVIDE ANY ASSURANCE THAT ANY PERSON OR ENTITY BUYING ITS PRODUCTS, INCLUDING ANY "AUTHORIZED DEALER" OR "AUTHORIZED RESELLER", IS PROPERLY TRAINED OR EXPERIENCED TO CORRECTLY INSTALL FIRE AND SECURITY RELATED PRODUCTS.

For more information on warranty disclaimers and product safety information, please check https://firesecurityproducts.com/policy/product-warning/ or scan the QR code.

FCC conditions

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This Device must accept any interference received, including interference that may cause undesired operation.

FCC compliance

Class A: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

ACMA compliance

Notice! This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

cUL	**Safety Instructions:**
	Improper use or replacement of the battery may result in explosion hazard. Replace with the same or equivalent type only. Dispose of used batteries in conformance with the local codes.
	Instructions de sécurité:
	L'utilisation ou le remplacement inadéquats de la pile peuvent entraîner un risque d'explosion. Remplacez-la par le même type ou l'équivalent du même type seulement. Jetez les piles usagées conformément aux directives fournies par le fabricant de la pile.
Compliance	
European Union directives	This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU.
	2012/19/EU (WEEE Directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: recyclethis.info.
	2006/66/EC (Battery Directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: recyclethis.info.
Contact information	EMEA: https://firesecurityproducts.com
	Australian/New Zealand: https://firesecurityproducts.com.au/
Product documentation	Please consult the following web link to retrieve the electronic version of the product documentation. The manuals are available in several languages.

Content

Important information

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To the maximum extent permitted by applicable law, in no event will Carrier be liable for any lost profits or business opportunities, loss of use, business interruption, loss of data, or any other indirect, special, incidental, or consequential damages under any theory of liability, whether based in contract, tort, negligence, product liability, or otherwise. Because some jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages the preceding limitation may not apply to you. In any event the total liability of Carrier shall not exceed the purchase price of the product. The foregoing limitation will apply to the maximum extent permitted by applicable law, regardless of whether Carrier has been advised of the possibility of such damages and regardless of whether any remedy fails of its essential purpose.

Installation in accordance with this manual, applicable codes, and the instructions of the authority having jurisdiction is mandatory.

While every precaution has been taken during the preparation of this manual to ensure the accuracy of its contents, Carrier assumes no responsibility for errors or omissions.

Product warnings

YOU UNDERSTAND THAT A PROPERLY INSTALLED AND MAINTAINED ALARM/SECURITY SYSTEM MAY ONLY REDUCE THE RISK OF EVENTS SUCH AS BURGLARY, ROBBERY, FIRE, OR SIMILAR EVENTS WITHOUT WARNING, BUT IT IS NOT INSURANCE OR A GUARANTEE THAT SUCH EVENTS WILL NOT OCCUR OR THAT THERE WILL BE NO DEATH, PERSONAL INJURY, AND/OR PROPERTY DAMAGE AS A RESULT.

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BUT NOT LIMITED TO, SENSORS OR DETECTORS UNLESS REQUIRED BY APPLICABLE LAW. AS A RESULT THESE COMMUNICATIONS MAY BE INTERCEPTED AND COULD BE USED TO CIRCUMVENT YOUR ALARM/SECURITY SYSTEM.

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.

Warranty disclaimers

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CARRIER DOES NOT PROVIDE MONITORING SERVICES FOR YOUR ALARM/SECURITY SYSTEM ("MONITORING SERVICES"). IF YOU ELECT TO HAVE MONITORING SERVICES YOU MUST OBTAIN SUCH SERVICE FROM A THIRD PARTY AND CARRIER MAKES NO REPRESENTATION OR WARRANTY WITH RESPECT TO SUCH SERVICES INCLUDING WHETHER OR NOT THEY WILL BE COMPATIBLE WITH THE PRODUCTS, SOFTWARE OR SERVICES MANUFACTURED, SOLD OR LICENSED BY CARRIER.

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.

Chapter 1
Physical installation

Installation environment

When installing your product, consider these factors:

- Ventilation
- Temperature
- Moisture
- Chassis load

Ventilation: Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. Ensure that the location planned for the installation of the unit is well ventilated.

Temperature: Consider the unit's operating temperature (-10 to +55 ⁰C, 14 to 131 °F) and noncondensing humidity specifications (10 to 90%) before choosing an installation location. Extremes of heat or cold beyond the specified operating temperature limits may reduce the life expectancy of the recorder. Do not install the unit on top of other hot equipment. Leave 44 mm (1.75 in.) of space between rack-mounted DVR units.

Moisture: Do not use the unit near water. Moisture can damage the internal components. To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.

Chassis: Equipment weighing less than 15.9 kg (35 lb.) may be placed on top of the unit.

Unpacking the recorder and its accessories

When you receive the product, check the package and contents for damage, and verify that all items are included. There is an item list included in the package. If any of the items are damaged or missing, please contact your local supplier.

Items shipped with the product include:

- AC power cord or external power supply (depending on the model)
- Recorder including HDDs

- USB mouse

- Rack mounts (8 and 16-channel models only)

- *TruVision NVR 12 Quick Start Guide*

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

- *TruVision NVR 12 Quick Start Guide*

- *TruVision NVR 12 User Manual*

- *TruVision NVR 12 Operator Guide*

Back panel

The figures below show the back panel connections and describe each connector on a typical TVN 12 digital video recorder. Details may vary for specific models.

Before powering up the recorder, insert the hard drives and connect a main monitor for basic operation.

Note: For every hardwired alarm input, connect one wire to the input connection with the alarm number label and one wire to a ground connection (labeled G).

Figure 1: TVN 1216S back panel connections
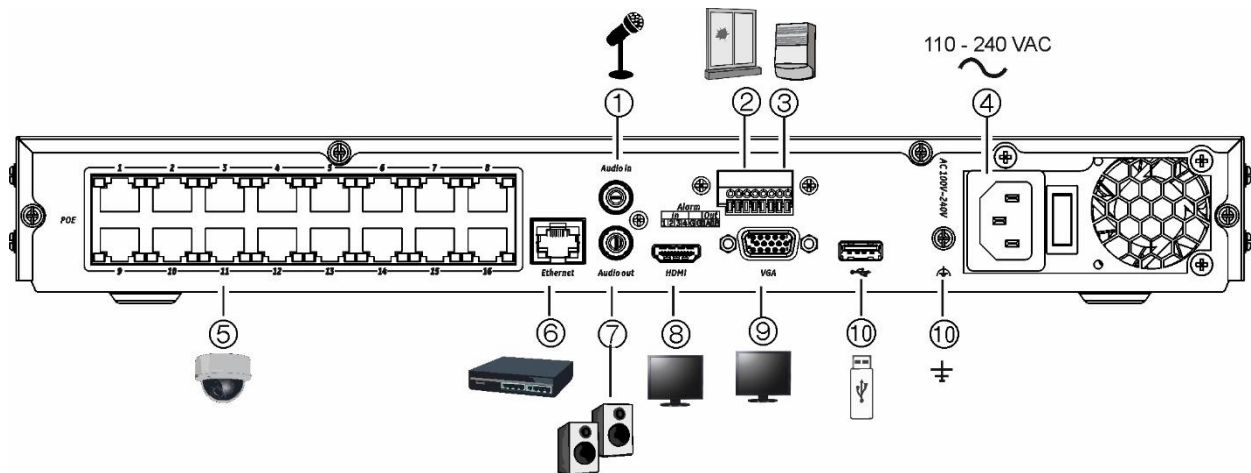
Figure 2: TVN 1204c back panel connections
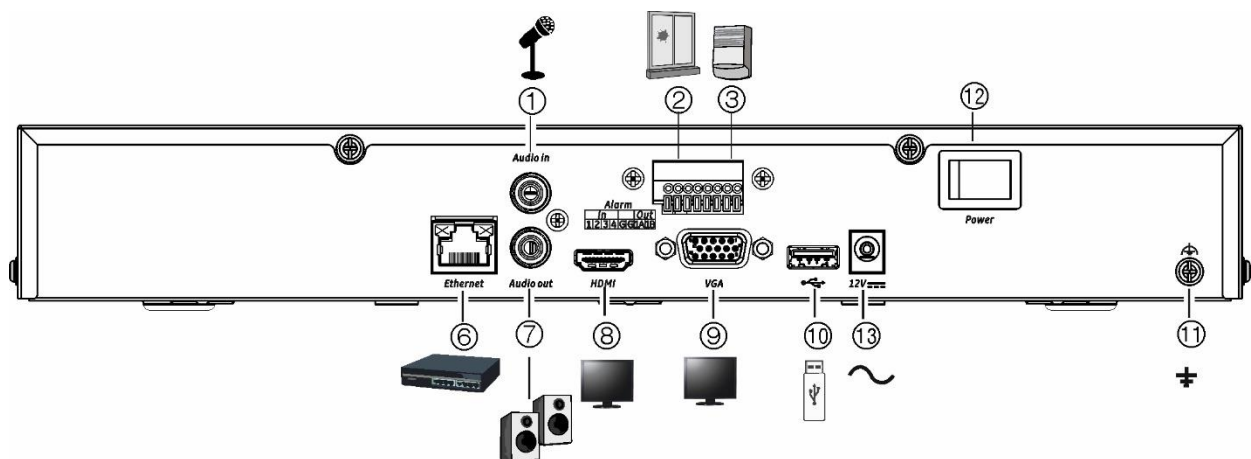
1. Connect a microphone for bi-directional audio (not recorded).
2. Connect up to four alarm inputs
3. Connect one alarm relay output.
4. Connect to power.
5. Embedded PoE ports to connect IP cameras (depending on model).
6. Connect to a network.
7. Connect to speakers for audio output.

8. Connect to an HDTV. The HDMI connection supports both digital audio and video.
9. Connect to a VGA monitor.
10. Connect to an optional USB 2.0 device such as a mouse or HDD.
11. Connect to ground.
12. Power switch (on/off).
13. Connect to the 12 VDC PSU (included).

Default IP address - 192.168.1.82

Download the latest recorder firmware and TruVision Navigator software from www.firesecurityproducts.com

PoE ports

The S models of the recorder have PoE ports for camera connections. Connect up to 8 or 16 IP cameras to the embedded PoE ports on the TVN 12S recorder.

Monitor connections

The recorder supports up to 1920 × 1080 / 30 Hz resolution in VGA and 4K resolution in HDMI. The monitor resolution should be at least 1280 × 720. Adjust your monitor accordingly to this resolution.

The VGA or HDMI monitor can be used as the main monitor of the recorder. Both produce the same content.

Rack mounting

The four-channel version of the recorder is a desk-top model, so it is not shipped with rack ears. The TVN 1208(S) and TVN 1216(S) recorders are shipped with rack ears.

Front panel

There are no buttons on the front panel to control recorder functions. There are status LEDs showing power, HDD data upload/download, and the network connection.

Figure 3: Front panel
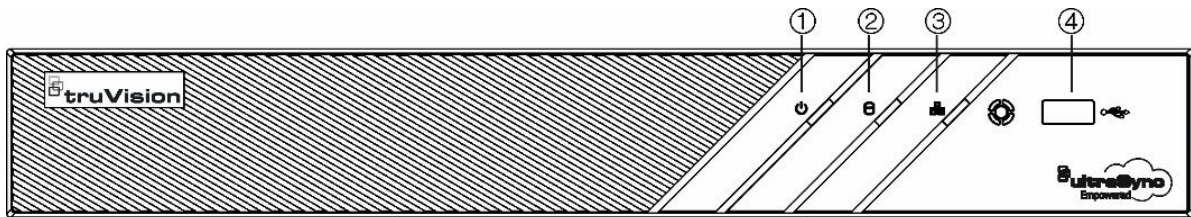
	Name	Description
1.	Power	A steady green light indicates the recorder is working correctly. Red indicates a fault.
2.	HDD	Light blinks red when data is being read from or written to the HDD. A steady red light indicates an HDD exception or error.
3.	Tx/Rx	Steady green indicates a normal network connection. No light indicates that it is not connected to a network.
4.	USB interface	Universal Serial Bus (USB) port for additional devices such as a USB mouse or USB Hard Disk Drive (HDD).

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: https://firesecurityproducts.com

Manuals are available in several languages.

Australia / New Zealand: https://firesecurityproducts.com.au/

Chapter 2
Getting started

The recorder can be configured through the OSD (On Screen Display) shown on a monitor connected to the recorder, web browser, TruVision Navigator, and the SDK.

You can access the recorder through the OSD and web interfaces. They let you view, record, and play back videos as well as manage many aspects of the recorder from any PC with internet access. See Figure 4.

Figure 4: Web browser interface (live view with menu options shown)
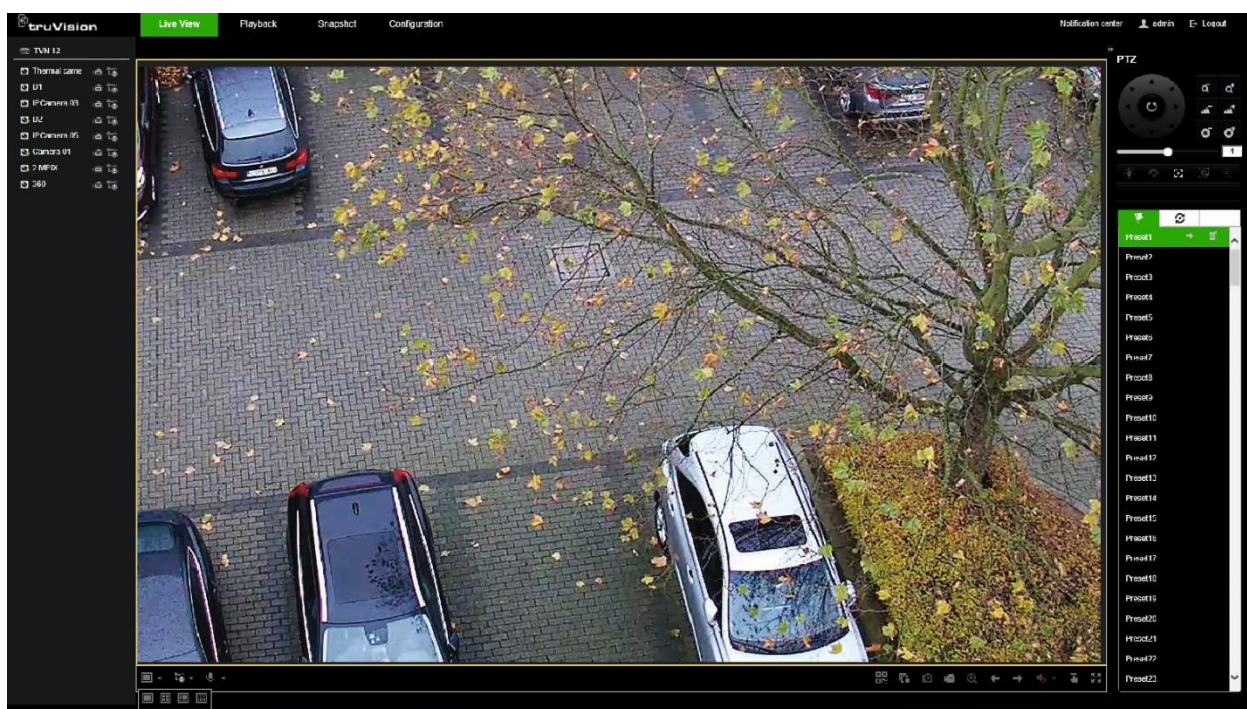
The recorder can fully integrate with the license-free TruVision Navigator software, which is ideal for most commercial applications. TVN 12's easy and intuitive-to-use web browser interface enables remote configuration and secure viewing, searching, and playing back of video from computers connected via the Internet.

Powering up the recorder

Before starting the recorder, connect at least one monitor (VGA or HDMI). Otherwise, you will not be able to see the user interface and operate the device.

It comes equipped with a universal power supply that will auto-sense 110/240 V, 60/50 Hz. Models are shipped with the power cords for their region.

Note: It is recommended to use an uninterruptible power supply (UPS) in conjunction with the device.

To turn on/off the recorder:

Turn on or off the recorder using the power switch on the back panel. Once it is powered up, the status LEDs on the front panel will light up.

Activate the admin password

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

A message will appear on-screen when the unit has been activated.

Tips on creating a strong password:

- A valid password range must be between 8 and 16 characters. You must use at least one character from each of the following items: numbers, lower-case letters, upper-case letters, and special characters : _ - , .* & @ / $? Space. The maximum number of allowed attempts to enter a password is 3. Lockout is 30 minutes when in web mode and 10 minutes when in OSD mode.

- The password is case-sensitive.

- Do not use personal information or common words as "password".

- The password cannot contain the username.

- 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.

Note: If you should forget your admin password, please contact our Technical Support to reactivate the unit with a new password.

Go to Chapter 6 "User management" on page 52 for further information on creating user passwords.

You can also set up the camera password when starting up the recorder.

Default network settings:

The network settings are:

- IP address - 192.168.1.82

- Subnet mask - 255.255.255.0

- Gateway address - 192.168.1.1

- Ports:

When using a browser:	*When using TruNav:*
RTSP port: 554	RTSP port: 554
HTTP port: 80	Server/Client software port: 8000
When using Google Chrome, Apple Safari, Opera, or Mozilla Firefox, port in HTTP mode: port 7681	

Access via a web browser

To access the unit via the browser, open a web browser and enter the IP address assigned to the recorder as a web address. In the logon screen, enter the user ID and password.

You can also access the recorder interface using its OSD display. However, the OSD does not have all the same functions as the browser. The user manual explains how to use the recorder via the browser and OSD modes.

The recorder can automatically detect which browser you are using.

Microsoft Internet Explorer plug-in

When using Microsoft Internet Explorer, install the recorder web plug-in to see live camera images. You are requested to install this plug-in the first time you use the recorder via Internet Explorer.

Google Chrome, Apple Safari, and Mozilla Firefox plug-in

There is another plug-in tool available for use with Google Chrome, Apple Safari, and Mozilla Firefox, which can be downloaded via the webpage of the recorder. Click "Download plug-in" on top right of the recorder window when using one of these browsers. This plug-in solves the limitations of the plugin-free solution.

The recorder must be connected to the internet to download the plug-in.

Plug-in free browser access

You can use the recorder without a plug-in for the browsers Google Chrome, Apple Safari, and Mozilla Firefox. However, there are limitations to the functions that can be accessed. See Table 1 on page 15.

Table 1: Browser plugin-free limitations

Mode	Function	Result	Remark
Live	Live view	Possible for resolution <= 1080p; bit rate<= 2048kbps	For viewing higher resolution/quality cameras, use the substream.
	Audio	Supported	
	Capture a snapshot	Supported	
	Digital zoom	Supported	
	Window division	Supported	
	Full screen view	Supported	
	Local record	Only supported for Google Chrome	
Playback	Playback	1 channel @ 1080P (max.)	
	Fast forward	Not supported	
	Single frame	Not supported	
	Reverse playback	Not supported	
	Download a video clip	Not supported	
Configuration	Export device parameters		
	Import device parameters		
	Firmware upgrade		
	Draw area (Motion/VCA)		
	Export log		
	Local configuration		
	File path setting		

Access via the OSD

When you log in to the recorder, you see the OSD interface showing live view of one or more cameras. Many features of live view can be quickly accessed by placing the cursor on a live image and clicking the right-button of the mouse. The mouse menu appears. For more information, see Chapter 14 "Live view in OSD mode" on page 133.

Startup wizard in OSD mode

The recorder has an express installation wizard when using OSD mode that lets you easily configure basic recorder settings when first used. The configuration of each camera and recorder can be customized as required.

By default, in OSD mode the startup wizard will start once the recorder has loaded. It will walk you through some of the more important settings of your recorder.

Note: If you want to set up the recorder with default settings only, click **Next** in each screen until the end.

There is no startup wizard when using web mode. Once you log on to the recorder, you are immediately in live mode and must set up the recorder from the Configuration menu.

**To use the Startup wizard in OSD mode:**

1. Log on to the recorder. If it is the first time using the device, the installation wizard automatically appears. By default, once set up the wizard no longer appears when logging on to the recorder.

   Note: To always launch the startup wizard when rebooting, enable **Wizard** in the **Configuration** > **System** > **General** > **Basic Settings** menu.

2. Select the preferred language for the system and resolution from the drop-down list and then click **Apply**.

3. In each setup configuration page, enter the desired information and then click **Next** to move to the next page. The setup configuration pages are:

Wizard setup pages	Description
Time and date configuration	Select the desired time zone, date format, system time, and system date.
	If Daylight saving time (DST) is required, check Enable DST and enter the desired summer and winter months.
	Network time protocol (NTP) is a networking protocol for time synchronization. The device can connect to NTP (network time protocol) server to sync time. NTP time synchronization is disabled by default.
	The interval time is the synchronization time in minutes with the NTP server.
	NTP server IP address and port are displayed.
	Note: Recordings use the camera time and date.
Network configuration	Configure your network settings such as the IP address, subnet mask, and default gateway. Enter the preferred DNS server address as well as the alternate one to use.
HDD management	The hard drives are initialized at the factory. However, if you wish to clear all data, select the HDD, and click **Init** (Initialize) to initialize the HDD. You can also add and delete hard drives.

Wizard setup pages	Description
Adding IP cameras	There are two categories of IP cameras listed in the display. The "Added Device List" shows the IP cameras that have been added to the recorder. The lower list, "Online Device List", shows the IP cameras that have been detected on the LAN and can be added to the recorder. It also shows the cameras that cannot be added to the recorder (for example, when they are already added to another recorder). These latter cameras are indicated by an orange alert triangle.
	Note: The number of cameras that can be added to the recorder depends on the camera model. You do not need to search for PoE cameras. They are automatically recognized when plugged in.
	To add a new camera to the recorder that is not in the Online Device List, click **Custom Add**. In the pop-up screen, enter the IP address of the IP camera to be added. Select the appropriate protocol (e.g., TruVision), stream number, management port, channel port, and transfer protocol. Then enter the camera user name and admin password.
	Click the **Add** button. Click **Next** to move to the next page.
	Enable the "Use Camera Activation Password" check box to activate the camera, if needed.
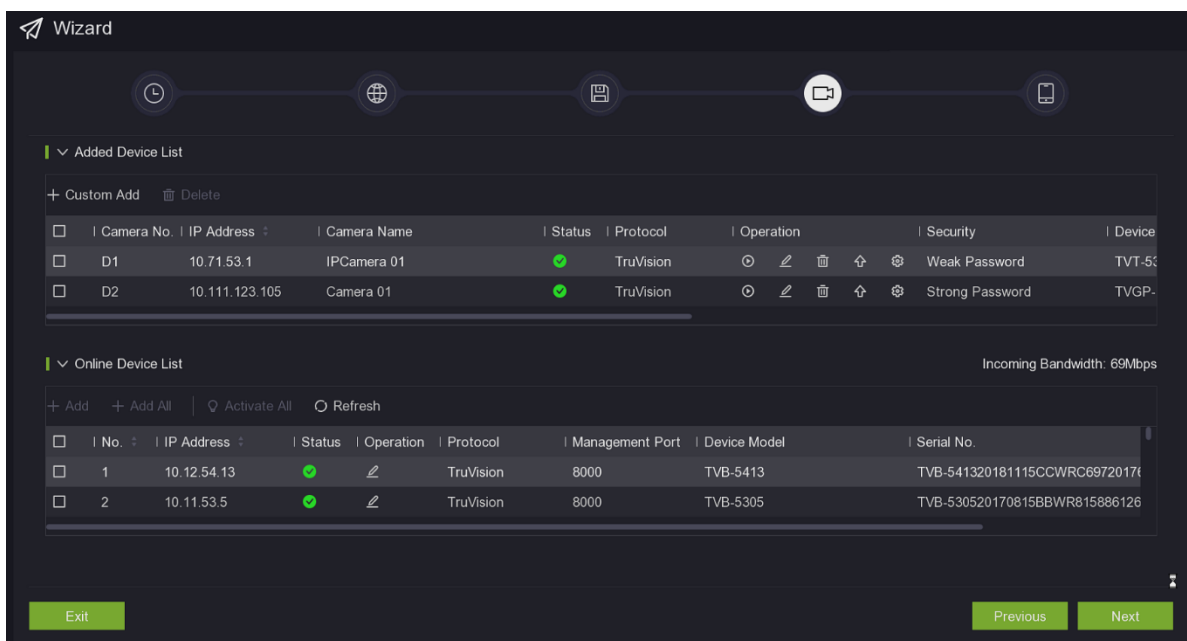
UltraSync	To add the recorder to UltraSync, you must first register the recorder in the UltraSync system. Select the **Register to UltraSync** to register.
	You can also register to UltraSync under **Configuration** > **Network** > **UltraSync** menu in web mode (see page 68).

4. Click **Finish** to exit the Wizard. The recorder is now ready to use. The live view window appears.

Change the recorder's language

You can set the language of the recorder when you log in via the web browser. Select the desired language from the drop-down list shown.

There are two ways to set the language when using the recorder OSD:

- It can be set from the Startup Wizard.

- It can also be set by selecting **Configuration** > **System** > **General** > **Basic Settings**.

Chapter 3
Browser configuration

When using Internet Explorer, there is a local browser configuration menu. It lets you define communication and network parameters that are related to the web browser application, such as protocol type, maximum file size, stream type and network transmission settings. You can also specify the directory locations for saving recorded and playback video, captured images, and downloaded files. The browser interface settings are saved on your PC, not on the recorder.

However, these browser-related functions are not available in OSD mode nor when using the browsers Google Chrome, Mozilla Firefox, and Apple Safari when they are used without installing the plug-in (see "Google Chrome, Apple Safari, and Mozilla Firefox plug-in" on page 14). When this plug-in is used, the local browser configuration menu is also available for these browsers.

The other configuration menus (System Network, Video/Audio, Image, Event, Storage and VCA) are for the recorder itself. They are also available in OSD mode.

Figure 5: Local configuration on the web browser (Internet Explorer only)
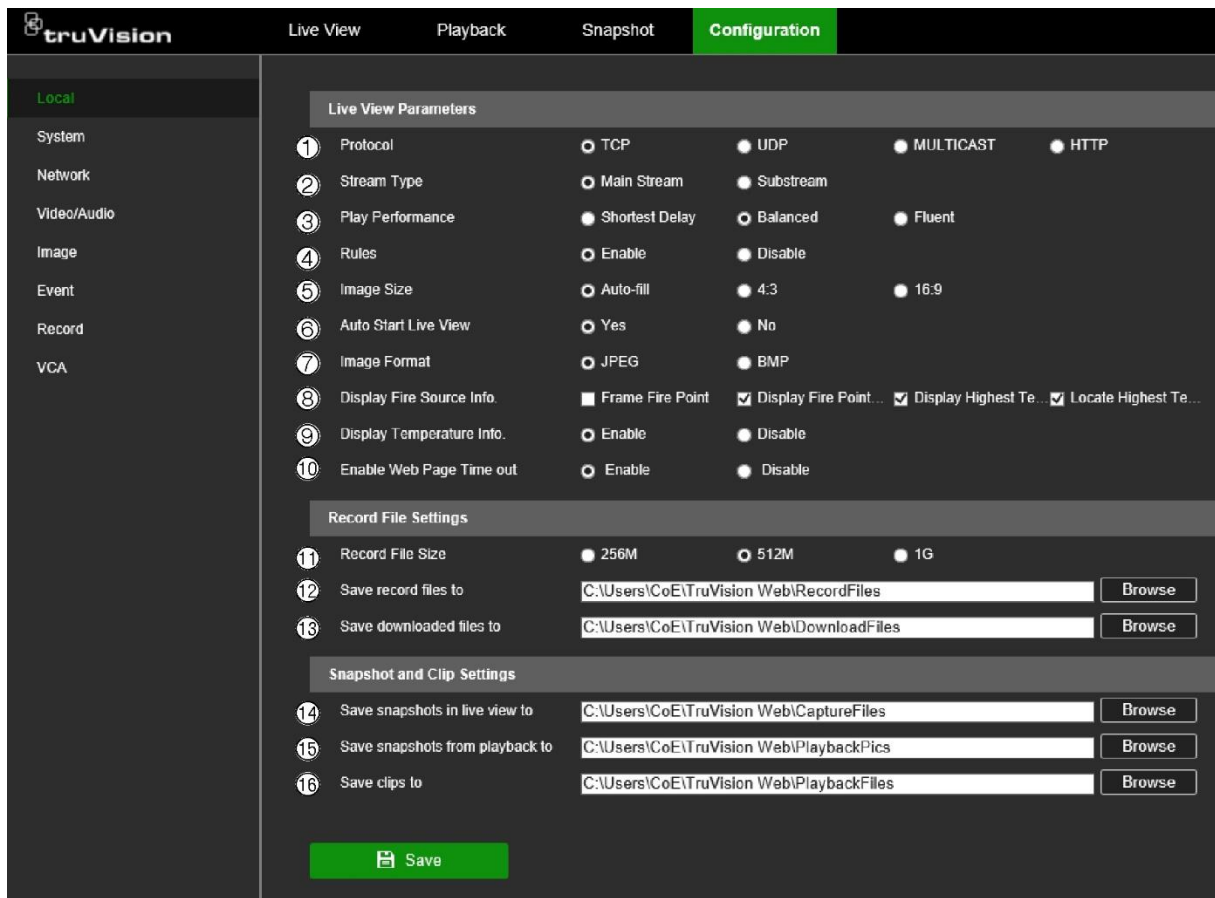
Options		Description
Live View Parameters		
1.	Protocol	Specifies the network protocol used. Options include TCP, UDP, MULTICAST, or HTTP. Default is TCP.
2.	Stream Type	Specifies the streaming method used. Options include: Main Stream or Substream. Default is Main Stream.
		Use main stream for live viewing and recording with high resolutions and bandwidth. Use substream when there is a bandwidth limitation, such as when using a mobile app.
3.	Play performance	Specifies the play performance of live view. Options include Shortest delay, Balanced, or Fluent.
4.	Rules	Specifies if the gridlines/VCA lines are shown as overlay on the video stream for events.
5.	Image Size	Specifies the maximum file size. Options include: Autofill, 4:3, and 16:9.
6.	Auto Start Live View	Live view starts automatically when you log in. Options are Yes or No. Default is Yes.
7.	Image Format	Specifies the image format of snapshots, JPEG or BMP.
8.	Display Fire Source Info	**CAUTION**: Only use this function when the thermal camera supports fire detection. Not all TruVision thermal cameras support fire detection.

Options	Description
	This function is available when using the TruVision IP thermal camera. To be operational, the thermal camera function "Fire Source Detection" must be enabled under the VCA Resource Configuration menu.
	It lets you visualize in live mode the temperature hot spots. The hot spots are displayed on screen with a list showing the temperature ranges of the hot spots.
	You can select up to four options: Frame fire point, Display point distance, Display the highest temperature, and Locate highest temperature point.
	IMPORTANT NOTICE: This fire detection feature is not a substitute for a certified fire detection system.
9. Display Temperature Info.	If TruVision thermal cameras support temperature detection, then temperature information is available.
	This function is available when using the TruVision IP thermal camera. To be operational, the thermal camera function "Temperature Measurement + Behavior Analysis + Standard VCA Functions" must be enabled under the VCA Resource Configuration menu.
	It displays the temperature information in the frames that were set up in the thermal camera.
	Note: Behavior analysis is currently not supported by any TruVision cameras.
	IMPORTANT NOTICE: This fire detection feature is not a substitute for a certified fire detection system.
10. Enable Web Page Time-out	The web page times out after five minutes if there is no mouse movement by the user.
	Options for time out are Enable and Disable. Default is Enabled. When disabled, the web page will not time out.
Record File Settings for manual recording of video on a PC or another network location	
11. Record File Size	Specify the size of recorded files. Options include 256M, 512M or 1G.
12. Save Record Files To	Specifies the directory for saving recorded video in live view mode.
13. Save Downloaded Files To	Specifies the directory for downloaded files.
Snapshot and Clip Settings	
14. Save Snapshot In Live View To	Specifies the directory for saving snapshots in live view mode.
15. Save Snapshots When In Playback To	Specifies the directory for saving snapshots in playback mode.
16. Save Clips To	Specifies the directory for saving video clips in playback mode.

Chapter 4
System management

The System menu lets you specify the settings for viewing system information, time, RTSP/web authentication, restore default parameters, update firmware, search system logs, restricting access, camera password management, camera management, user management, and live view default settings.

System settings

View the recorder information

You can view the device name and number, model, serial number, firmware version, encoding version, web version, plug-in version, number of channels, number of HDDs, number of alarm inputs, and number of alarm outputs. You can modify the device name and number.

In OSD mode, you can set the lock screen time.

To modify the recorder name and number in web mode:

1. Click **Configuration** > **System** > **System Settings** > **Basic Information**.

2. Enter the new device name and number. The other options cannot be changed.

Options	Description
Device Name	Define the recorder name. Enter the new recorder name. Default is TVN 12.
Device No.	The device number to use for the recorder when linking the device to a network keyboard, etc. The value can be set between 1 and 255. The default value is 255.

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

To modify the recorder name and number in OSD mode:

1. Click **Configuration** > **System** > **General** > **More Settings**.

2. To view the device information, click the tab **Basic Information**. Enter the new device name and number. The other options cannot be changed.

Options	Description
Device Name	Define the recorder name. Enter the new recorder name. Default is TVN 12.
Device No.	The device number to use for the recorder when linking the device to a network keyboard, etc. The value can be set between 1 and 255. The default value is 255.

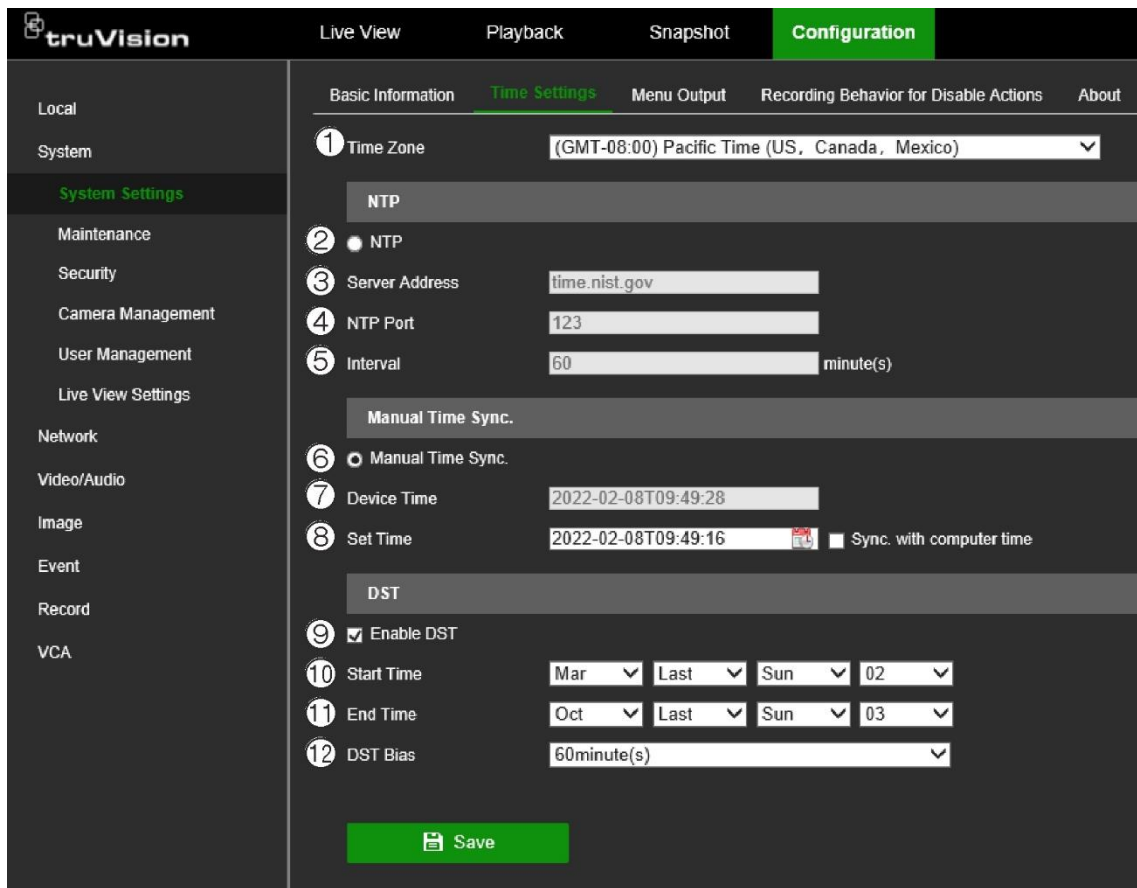3. Click **Save** to save the settings.

Time settings

This browser menu lets you specify the recorder's time zone, network time protocol (NTP), and manual time synchronization. The start and end time of daylight-saving time (DST) in the year can also be set. DST is deactivated by default.

An NTP server can be configured on your recorder to keep the date and time current and accurate. You can also manually time synchronize the NTP server.

Note: If the device is connected to a public network, you should use a NTP server that has a time synchronization function, such as the server at the National Time Center (IP Address: 210.72.145.44) or europe.ntp.pool.org. If the device is setup in a more customized network, NTP software can be used to establish a NTP server used for time synchronization.

Figure 6: Time Settings menu in web mode

	Option	Description
1.	Time Zone	Select your time zone from the list.
	NTP	
2.	NTP	Select the check box to enable the feature. It is disabled by default.
3.	Server Address	IP address of the NTP server. Default is *time.nist.gov.*
4.	NTP Port	Port of the NTP server. Default is 123.
5.	Interval	Time in minutes to synchronize with the NTP server. The value can be between 1 and 10080 minutes. Default is 60 minutes.
	Manual Time Sync.	
6.	Manual Time Sync.	Select the check box to enable the feature. It is enabled by default.
7.	Device Time	The device time is automatically displayed.
8.	Set Time	Manually enter or select the date and time from the calendar. Check the **Sync. with computer time** to synchronize the device with that of the local computer.
	DST	
9.	Enable DST	Click the check box to enable or disable daylight savings time (DST). Default is *Disabled.*
10.	Start Time	Enter the start date and time for daylight savings.
11.	End Time	Enter the end date and time for daylight savings.

Option	Description
12. DST Bias	Set the amount of time to move DST forward from the standard time. Default is 60 minutes.

To modify the time and date settings in OSD mode:

1. Click **Configuration** > **System** > **General** > **Basic Settings**.

2. Select the date format.

3. Enter the new system time and date.

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

To modify daylight savings time in OSD mode:

1. Click **Configuration** > **System** > **General** > **DST Settings**.

2. Enter the start and end times for DST.

3. Select the DST bias time. Default is 60 minutes.

4. Click **Apply** to save the settings.

VGA/HDMI resolution

You can select the resolution of the VGA and HDMI monitors.

If the network bandwidth is insufficient, using the video compression standard SVC (scalable video coding) will allow video to continue to be displayed by lowering the frame rate. SVC extracts repeating (P) frames (frames with similar content) from video streams resulting in a better decoding capacity.

To set the VGA/HDMI resolution in web mode:

1. Click **Configuration** > **System** > **System Settings**.

2. Click the tab **Menu Output**.

3. Select the desired resolution from the drop-down list:

1280*720/60 Hz (720P)	2560*1440/60 Hz (2K)
1280*1024/60 Hz	3840*2160/30 Hz (4K)
1600*1200/60 Hz	4096*2160/30 Hz (4K)
1920*1080/60 Hz (1080P)	

4. Enable or disable the **Enhanced SVC Mode**. It is enabled by default.

    Note: The IP cameras must support SVC mode for this function to be enabled.

5. Click **Save** to save the settings. The recorder automatically reboots.
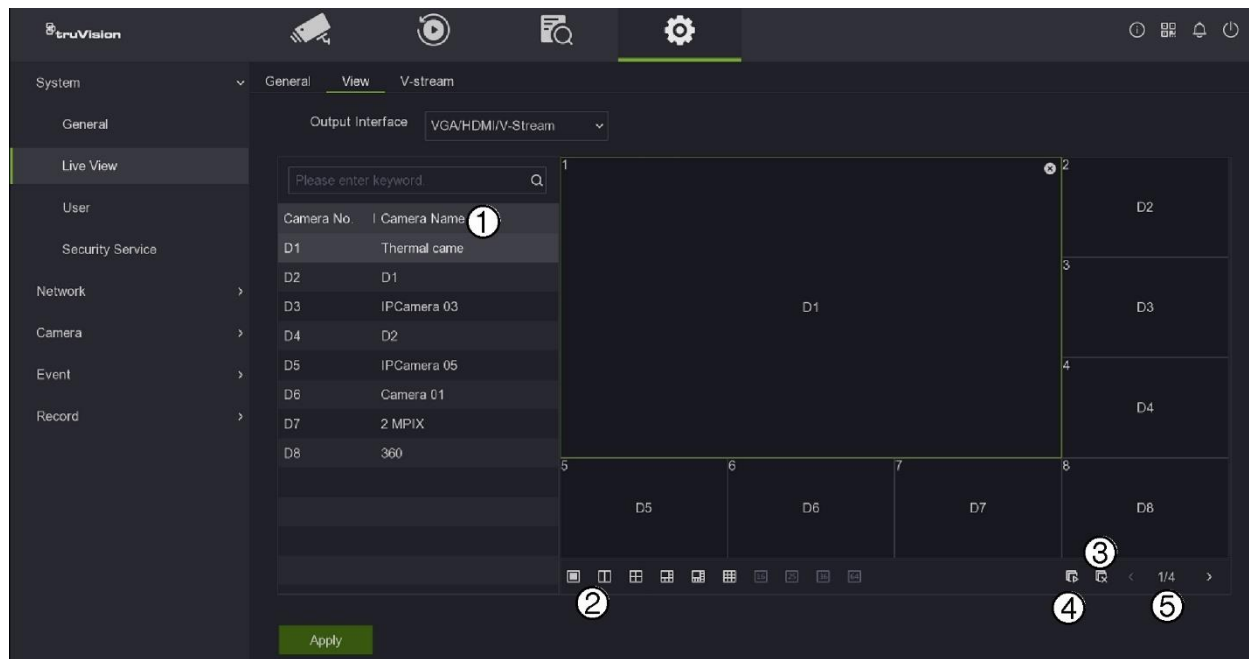
To set the VGA/HDMI resolution in OSD mode:

1. Click **Configuration** > **System** > **General** > **Basic Settings**

2. Select the desired VGA/HDMI resolution (the same options as in web mode).

3. Enable or disable the **Enhanced SVC Mode**. It is enabled by default.

4. Click **Save** to save the settings. The recorder automatically reboots.

Default live view monitor setup

You can set up the default layout of live view as displayed on the monitor and define the camera channel for each video tile.

To set up the default live view format in OSD mode:

1. Click **Configuration** > **System** > **Live View** > **View**.

	Option	Description
1.	Channel list	Shows the list of available camera channels.
2.	Multiscreen options	Specifies the image scale in a video tile. Options are Full Screen, 1+1, 2x2, 1+5, 1+7, 3x3, 4x4.
		The number of channels available depends on the recorder model.
3.	Unassign all channels from the video tiles.	
4.	Assign all the channels to the video tiles.	
5.	Scroll between the different multiscreen pages. Cameras can be assigned to any video tile. Cameras can be assigned only once.	

2. Select the desired multiscreen format.

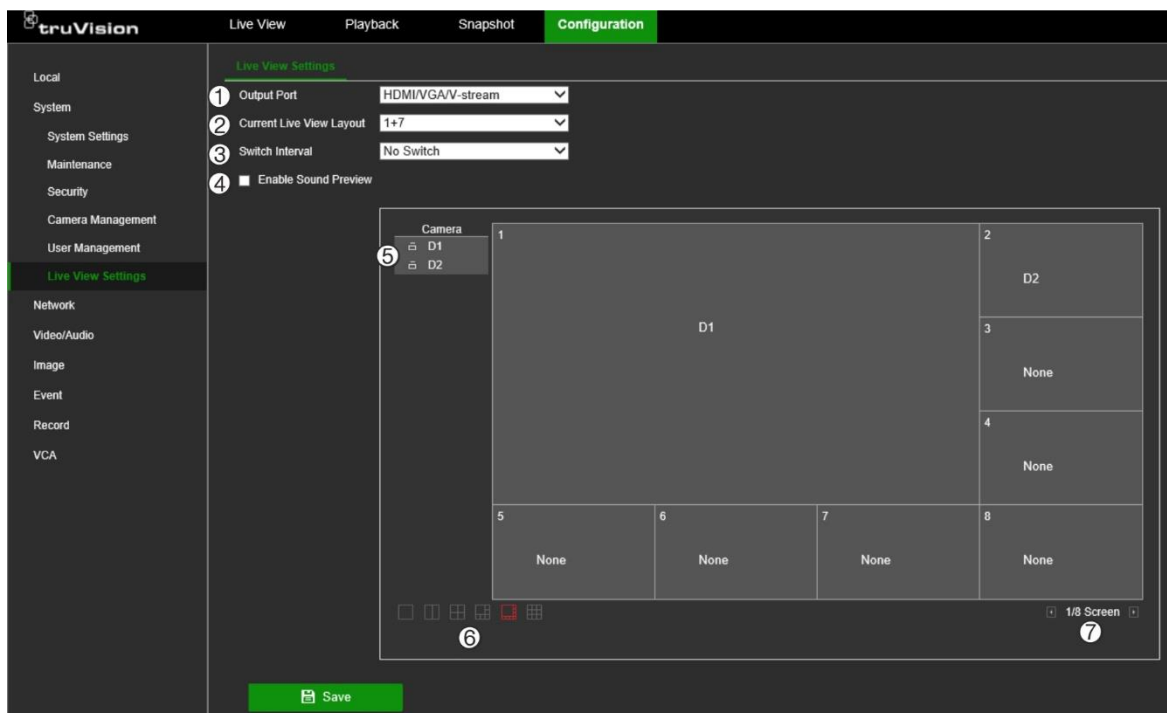3. Assign a camera to a video tile.

   You can assign each camera manually. Select a video tile and then double-click on the desired camera. To select the camera order for sequencing, select full-screen mode and allocate one camera per page.

   To remove a camera from a tile, click the X on the top right corner of the desired camera in a video tile.

   To assign all cameras automatically to the video tiles, click ⬚. The cameras are assigned in numerical order. Click ⬚ to unassign the cameras.

To set up the default live view format in web mode:

1. Click **Configuration** > **System** > **Live View Settings**.

	Option	Description
1.	Output Port	Applies to OSD mode. Always fixed: VGA/HDMI/V-stream.
2.	Current Live View Image	Shows the current multiview mode in use in OSD mode.
3.	Switch interval	This is the dwell time. It is the time a camera is displayed on screen before moving to the next camera. Sequencing can only be done in single-view display mode. The time options are: No switch, 5s, 10s, 20s, 30s, 60s, 120s, or 300s.
4.	Enable Sound Preview	Applies to OSD mode only. Enable sound in live view for cameras that support sound.
5.	Camera list	Shows the list of available camera channels.
6.	Multiscreen options	Specifies the image scale in a video tile. Options are Full Screen, 1+1, 2x2, 1+5, 1+7, 3x3, 4x4. The number of channels available depends on the recorder model.

	Option	Description
7.	Multiscreen pages	Scroll between the different multiscreen pages. Cameras can be assigned to any video tile. Cameras can be assigned only once.

2. Select the desired multiscreen format.

3. Assign a camera to a video tile.

   You can assign each camera manually. Select a video tile and then double-click on the desired camera. To select the camera order for sequencing, select full-screen mode and allocate one camera per page.

   To remove a camera from a tile, click the X on the desired camera in a video tile.

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

Recording behavior for Disable Actions

You can select how recordings are carried out for *Disable Actions.* Select one of the options:

• **No influence on recording**: *Disable Actions* will have no influence on the recordings. Recording of all cameras will continue as scheduled.

• **Disable all recordings**: *Disable Actions* will stop all recordings for all cameras, regardless of the schedule or recording type.

• **Disable event/alarm recordings**: *Disable Actions* will stop the scheduled recordings for events (motion, VCA) and alarms (alarm inputs, intrusion panel alarms). Cameras that are scheduled for continuous recording will not stop the recording.

For further information on Disable Actions, see "Disable Actions" on page 97.

To set the recording behavior for Disable Actions in web mode:

1. Click **Configuration** > **System Settings** > **Recording Behavior for Disable Actions**.

2. Select the desired recording behavior from the drop-down list.

3. Click **Save** to save the settings. The recorder automatically reboots.

To set the recording behavior for Disable Actions in OSD mode:

1. Click **Configuration** > **System** > **General** > **More Settings**.

2. Under *Recording Behavior for Disable Actions* select the desired option from the drop-down list.

3. Click **Save** to save the settings. The recorder automatically reboots.

Software licenses used

In web mode, click **Configuration** > **System** > **System Settings** > **About** to see the open-source licenses.

This function is not available using OSD mode.

Lock screen password

In OSD mode, you can configure the recorder so that a password is required to log in if the screen is locked. From the OSD menu toolbar, click **Configuration** > **System** > **General** > **Basic Settings**. Select **Lock Screen Password**.

This function is not available using web mode.

Screen time out

In web mode, the webpage times out after five minutes if there is no mouse movement by the user.

However, in OSD mode you can change the period before which the screen times out or set up the system so that it never times out. From the OSD menu toolbar, click **Configuration** > **System** > **General** > **More Settings**. Under **Lock Screen** select the desired period before the system locks out

Maintenance

Reboot

Note: Only the administrator can reboot the recorder.

To reboot the recorder in web mode:

1. Click **Configuration** > **System** > **Maintenance** > **Upgrade & Maintenance** > **Reboot**.

2. A pop-up screen appears asking you to confirm your user name and password. Click **OK**.

3. The recorder reboots.

To reboot the recorder in OSD mode:

1. Click the Power button ⏻ on the top right-hand corner of the screen.

2. Click the **Reboot** button in the *Power* pop-up window.

3. A pop-up screen appears asking you to confirm the admin name and password. Click **OK**.

4. The recorder reboots.

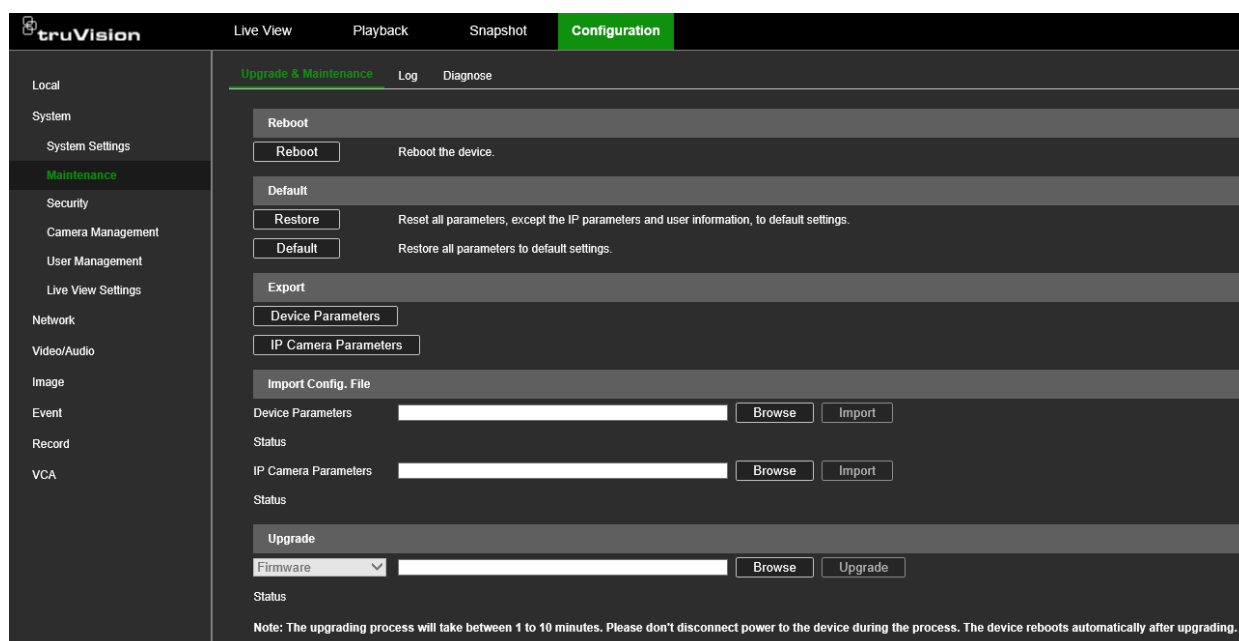# Upgrade system firmware

The firmware on the recorder can be updated using these methods:

- Via a USB device

- Via the recorder web page

- Via the recorder OSD

- Using TruVision Navigator. For further information, refer to the TruVision Navigator user manual.

The firmware upgrade file is labeled *tvn12.dav*.

To update the system firmware in web mode:

1. Click **Configuration** > **System** > **Maintenance** > **Upgrade & Maintenance**.

2. Under the section "Upgrade", click **Browse** and search for the latest firmware file. You can find the latest firmware on our website, www.firesecurityproducts.com and search for "TVN 12".

3. Click **Upgrade**.

To update the system firmware in OSD mode:

1. Download the latest firmware to a USB device from our web site at:

   www.firesecurityproducts.com and search for "TVN 12"

2. Connect the USB device to the recorder.

3. Click the Maintenance button 🛈 on the top right-hand corner of the screen.

4. Click the firmware upgrade button ⬆ in the *System Info* pop-up window.

5. Select the firmware file format. The list of files is displayed.

6. Click **Upgrade**.

7. When the upgrade process is completed, the recorder will reboot automatically.

Restore default settings

The administrator can reset the recorder to the factory default settings. Network information such as IP address, subnet mask, gateway, MTU, NIC working mode, server port, and default route are not restored to factory default settings.

To restore parameters to factory default settings in web mode:

1. Click **Configuration** > **System** > **Maintenance** > **Upgrade & Maintenance**.

   Note: Only the administrator can restore the default settings.

2. To restore all parameters to default factory settings:

   Click the **Default** button. Enter the Admin password, click **OK**, and then click **Yes** to confirm that you want to restore all parameters to default.

   — or —

   To restore all parameters, except network and user settings, to default factory settings:

   Click the **Restore** button. Enter the Admin password, click **OK**, and then click **Yes** to confirm that you want to restore all parameters except network and user settings to default.

3. Click **OK** to confirm.

To restore parameters to factory default settings in OSD mode:

1. Click the Maintenance button on the top right-hand corner of the screen.

   Note: Only the administrator can restore the default settings.

2. Select the type of default restoration required:

   Simple Restore: Restore all parameters, except the network (including IP address, subnet mask, gateway, MTU, NIC working mode, default route, server port, etc.) and user account parameters, to the factory default settings

   Factory Restore: Restore all parameters to the factory default settings.

   Restore to Inactive: Restore the recorder to the inactive status. Only the admin password will be restored.

3. Click **Yes**. The recorder will reboot automatically.

Import/export configuration files

You can export and import configuration settings from the recorder or IP cameras. This is useful when you are updating or replacing a recorder with IP cameras, or if you want to make a backup of the recorder and IP camera settings.

The exported recorder config file cannot be opened. However, the exported camera configuration file is an Excel file of all the cameras added to the recorder. This file can be edited on a computer.

If you are going to import this IP camera information to a new recorder, for example, change the recorder model name in the file to the new model name. The camera passwords are not displayed in the Excel file. Go to "Display the camera passwords" on page 45 for information on to how to see the camera passwords in the recorder. These can then be manually entered into the Excel file for each camera before importing the file into the new recorder. The file is then ready to be imported to a different recorder.

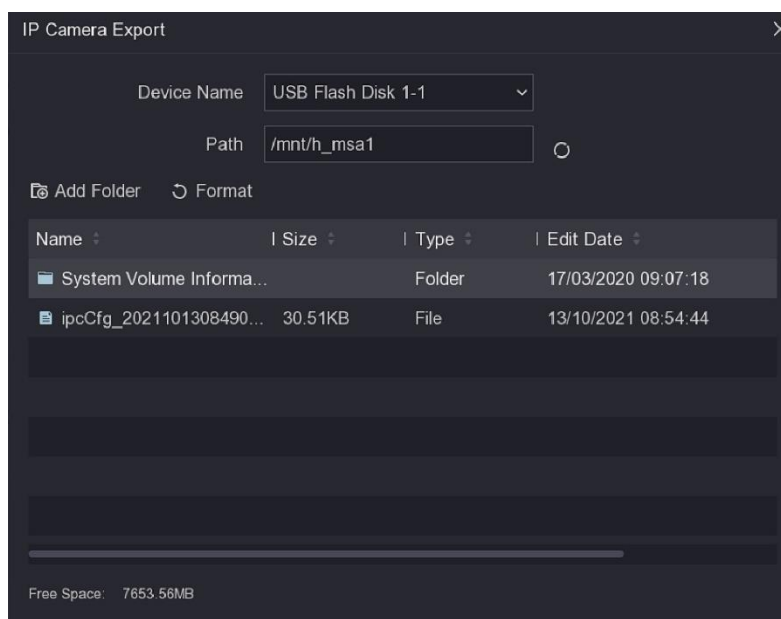**Note**: The recorder config file can only be exported and imported in web mode.

To export the recorder and camera configuration files in web mode:

1. Insert an external storage device in the recorder.

2. Click **Configuration** > **System** > **Maintenance** > **Upgrade & Maintenance**.

3. Under *Export*, click **Device Parameters** to export the recorder's configuration settings into an external storage device. The recorder's configuration file cannot be opened.

4. Click **IP Camera Parameters** to export the camera configuration settings into an external storage device. This file has the format ipcxxx.xls.

5. Make any changes required to the camera configuration file.

To export the camera configuration file in OSD mode:

1. Insert a backup device in the recorder.

2. Click **Configuration** > **Camera** > **Camera** > **IP Channel** > **…More** > **Export**.

   The backup device name and path are displayed.

3. Select the configuration file and click **Export**. The file is saved to the backup device.

Note: The passwords of the cameras are not exported. Their values in the exported file are empty.

To import the recorder and camera configuration files in web mode:

1. Insert an external storage device in the recorder that has your camera configuration Excel file.

2. Click **Configuration** > **System** > **Maintenance** > **Upgrade & Maintenance**.

3. To import a recorder's parameters, under the section "Import Config. File > Device Parameters" click **Browse** to locate the desired recorder configuration file on the external storage device. The file name is displayed beside the Browser button. Click **Import**.

4. To import the Excel file with the camera parameters, under the section "Import Config. File > IP Camera Parameters" click **Browse** to locate the desired camera configuration file on the USB stick or hard drive. The file name is displayed beside the Browser button. Click **Import**.

   If the camera passwords were included in the Excel file, the cameras are immediately connected to the recorder. If there are no camera passwords included in the file, you will need to add them manually to each camera (go to Camera Management > IP Camera > Modify.)

To import a camera configuration file in OSD mode:

1. Insert a backup device in the recorder.

2. Click **Configuration** > **Camera** > **Camera** > **IP Channel** > **…More** > **Import**.

3. Select the desired configuration file and click **Import**.

   If the camera passwords were included in the Excel file, the cameras are immediately connected to the recorder. If there are no camera passwords included in the file, you will need to add them manually to each camera (go to Camera > IP Channel > ⚙ Set > Camera Password).

Search system logs in web mode

Many events of the recorder, such as operation, alarm, information, and notification are logged into the system logs. They can be viewed and exported at any time.

Up to 2000 log files can be viewed at once.

Log files can also be exported onto a USB device or hard drive. The exported file is named according to the time it was exported. For example: 20220919124841logBack.txt.

Note: Connect the backup device, such as a USB flash drive, to the recorder before commencing the log search.

To search video from the system log in web mode:

1. Click **Configuration** > **System** > **Maintenance** > **Log**.

2. Select the search start and end date and times.

3. Select one of the **Major Type** and **Minor Type** options from the drop-down lists.

4. Click the **Search** button. A list of results appears.

For each log item, the log file shows the time, major type, minor type, channel number, local/remote user, remote host IP and details.

5. Click **Export** to archive the log file to a USB flash device. The Export window appears. Select where you want to save the file. The default file type is *.txt. Click **Save** to export the select file.

Search system logs in OSD mode

Many events of the recorder, such as operation, alarm, information, and notification are logged into the system logs. They can be viewed and exported at any time.

Up to 2000 log files can be viewed at once.

Log files can also be exported onto a USB device or hard drive. The exported file is named according to the time it was exported. For example: 20220919124841logBack.txt.
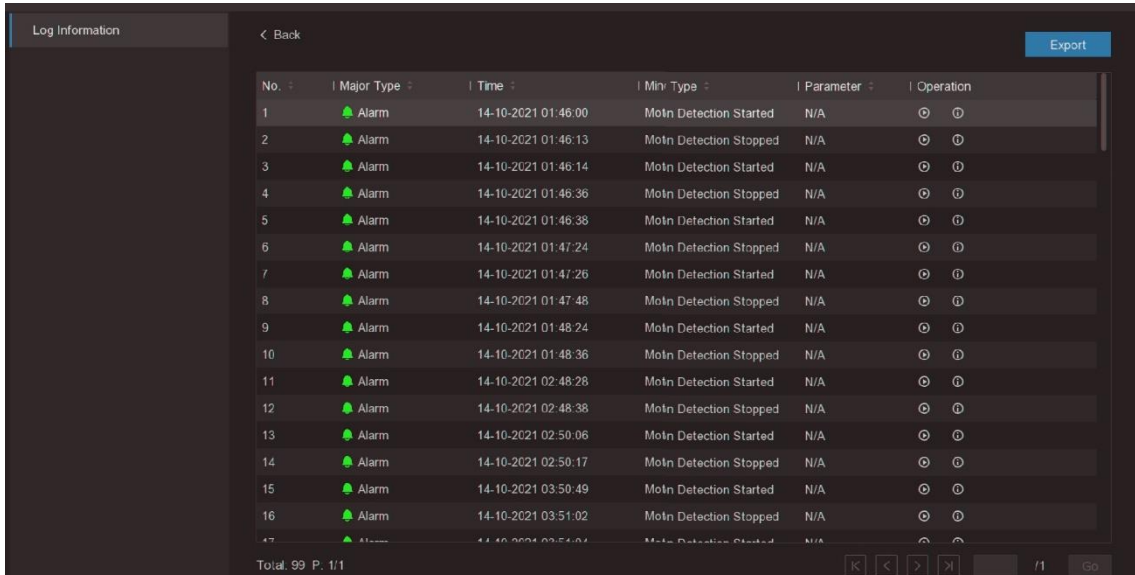
Note: Connect the backup device, such as a USB flash drive, to the recorder before commencing the log search.

To search video from the system log in OSD mode:

1. Click **Maintenance** ⓘ > **More**. The *Log Information* screen appears.

2. Select the search start and end date and time.

3. Select one of the **Major Type** and **Minor Type** options from the drop-down lists.

4. Click the **Search** button. A list of results appears.

   For each log item, the log file shows the major type, time, minor type, channel number, local/remote user, remote host IP and details.

5. Click **Export** to archive the log file to an external storage device, such as a USB flash device. The Export window appears. Select where you want to save the file. The default file type is *.txt. Click **Save** to export the select file.

Diagnose

This feature is only for Technical Support. The diagnose feature allows the technical support engineer to capture data from the recorder for troubleshooting.

You can save a file of a camera stream on a USB flash drive for later analysis.

The diagnostic functions are not available in OSD mode.

There are two diagnose possibilities:

• Diagnose the recorder.

• Diagnose one or more camera streams.

To diagnose the recorder:

1. Get the special debug file from Technical Support.

2. Use an empty USB flash drive and install the debug file in the root directory.

3. Insert the USB flash drive in the recorder.

4. Click **Configuration** > **System** > **Maintenance** > **Diagnose**.

5. Select **USB Flash Drive Debugging** and click **Save**.

6. Reboot the recorder.

7. Once the recorder reboots, it will write diagnostic information to the USB flash drive.

8. Follow the instructions from Technical Support.

9. After the debugging session, go again to **Configuration** > **System** > **Maintenance** > **Diagnose**, deselect **USB Flash Drive Debugging** and click **Save**.

10. Remove the USB flash drive and send the captured files to Technical Support.

To debug a camera stream:

1. Insert a USD flash drive in the recorder.

2. Click **Configuration** > **System** > **Maintenance** > **Diagnose**.

3. Under **Channel No.**, select the desired camera.

4. Under **Stream Type**, select the stream type.

5. Click **Start Debugging**. The file is saved on the USB flash drive. It has the following structure:

   IPCXX means:

   • **4-channel recorder:**

      Main stream: 8-11

      Substream: 12-15

   • **8-channel recorder:**

      Main stream: 8-15

      Substream: 16-23

   • **16-channel recorder:**

      Main stream: 8-23

      Substream: 24-39

   IPC-X means the actual click debugging operation times = X+1. For example, when using TVN 12 and an IPC8-0 file is generated, it means the first channel main stream with one-click debugging operation time.

Security

Authentication

The administrator can set the authentication to access RTSP and HTTP streams.

The RTSP authentication by default is set to "digest/basic". The HTTP authentication is set by default to "digest". The authentication type should be left at it default values unless otherwise instructed by the system administrator, as choosing the wrong value will negatively impact performance.

The function is not available in OSD mode.

Note: RTSP and HTTP must first be enabled to be authenticated. Go to **Network** > **Advanced Settings** > **Network Service** to check their status. By default, they are enabled.

The ISAPI protocol can be enabled/disabled. ISAPI stands for "Internet Server Application Programming Interface". This interface can enable external systems to interact with the recorder.

To set RTSP and HTTP authentication in web mode:

1. Click **Configuration** > **System** > **Security** > **Authentication**.
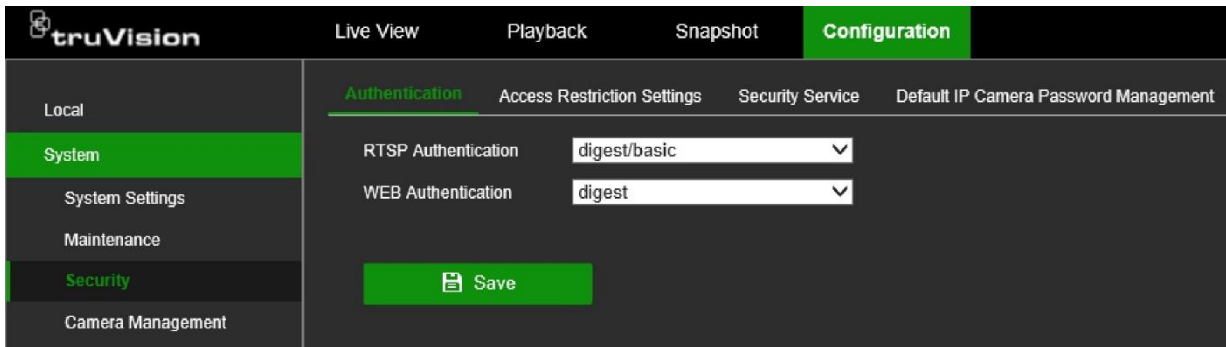
2. Select the desired authentication type, **Digest** or **Digest/Basic**. It is recommended to keep the values at default.

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

To set RTSP and HTTP authentication in OSD mode:

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

2. Select the **RTSP** check box to enable the function. It is enabled by default.

3. Select the desired RTSP authentication type, **Digest** or **Digest/Basic**. It is recommended to keep the value at default.

4. Select the **HTTP** check box to enable the function. It is enabled by default.

5. Select the desired HTTP authentication type, **Digest** or **Digest/Basic**. It is recommended to keep the value at default.

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

To enable/disable ISAPI authentication in web mode:

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

2. Select the **Enable ISAPI** check box to enable the function. It is enabled by default.

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

To enable/disable ISAPI authentication in OSD mode:

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

2. Select the **Enable ISAPI** check box to enable the function. It is enabled by default.
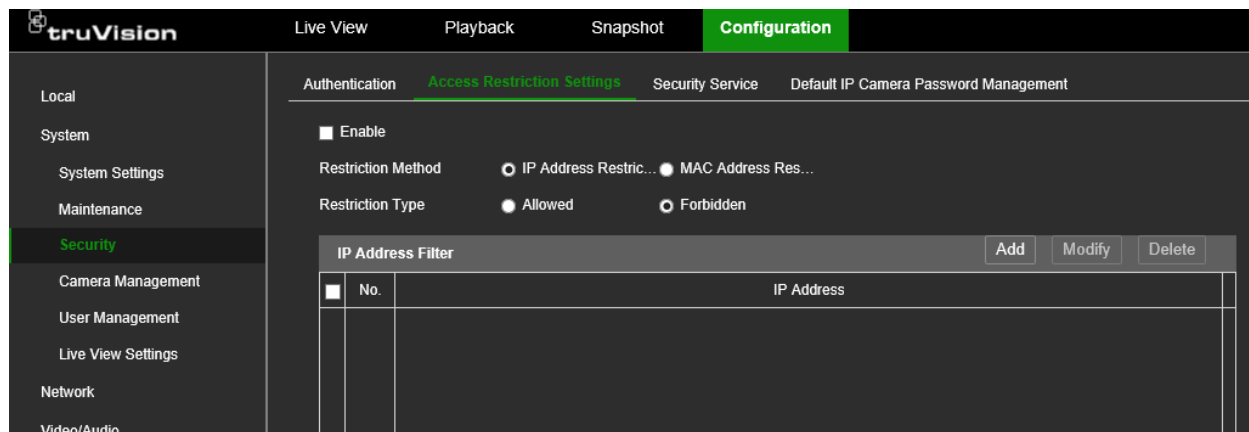
3. Click **Save** to save the setting.

Restrict IP address access

Use this menu to restrict access of specified IP or MAC addresses to the recorder. This function can be used to control who can log on to your recorder.

This function is not available in OSD mode.

To enable/disable the IP address access restrictions in web mode:

1. Click **Configuration** > **System** > **Security** > **Access Restriction Settings**.

2. Select **Enable** to enable the function. It is disabled by default.

3. Select whether you want to restrict/allow an IP address or a MAC address. Then under **Restriction Type**, select **Allowed** or **Forbidden**.

4. Click **Add** to save the setting and enter the IP address or MAC address.

    Addresses in the list can be modified and deleted.

5. Click **Save** to save the setting.

SSH network protocol

SSH or Secure Shell is a cryptographic network protocol for operating network services securely over an unsecured network.

This function is for technical support only and is not available using OSD mode.

To enable/disable the SSH protocol in web mode:

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

2. Select **Enable SSH** if required. It is disabled by default.

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

Chapter 5
Camera management

Camera Management allows you to add and remove IP cameras as well as modify their settings. The recorder supports most TruVision IP cameras and encoders and is compliant with ONVIF profile S cameras. See Table 2 below for the list of cameras supported by the recorder.

Note: Ensure that any ONVIF camera has been tested together with the recorder before installation.

Table 2: TruVision cameras, encoders and decoders supported by TVN 12

Camera Series	Features
S1 IP Cameras (TVx-11xx)	Support for live view and continuous/event recording, as well as search and playback.
S2 IP Cameras (TVx-12xx)	Support for live view and continuous/event recording, as well as search and playback.
S3 IP Cameras (TVx-53xx)	Support for live view and continuous/event recording, as well as search and playback.
S4 IP Cameras (TVx-54xx)	Support for live view and continuous/event recording, as well as search and playback.
S5 IP Cameras (TVx-55xx)	Supported.
S6 IP Cameras (TVx-56xx)	Supported.
M Series IP Cameras (TVGP-M01 fixed cameras)	Supported. Able to set target type (people/vehicle) and search for these events in the recorder.
S7 IP Cameras (TVx-57xx)	Supported (FW upgrade S7 camera needed to hide non-supported person/vehicle option in TVN 12 camera configuration menu).
Stainless Steel Dome Camera (TVD-5801)	Support for live view and continuous/event recording, as well as search and playback.
Stainless Steel PTZ Camera (TVP-5201)	Support for live view and continuous/event recording, as well as search and playback.
FishEye - 360* Cameras (TVF-110x)	Support for live view and continuous/event recording, as well as search and playback.
FishEye – 360° Cameras (TVF-520x)	Supported up to 6MP.

Camera Series	Features
Compact IP PTZ Cameras (TVP- 5101/5102/5103)	Supported.
Full-size IP PTZ Cameras (TVP-5104/5105)	Supported.
Legacy IP PTZ Cameras (TVP-110x)	Support for live view and PTZ control, continuous/event recording, as well as search and playback.
IP PTZ Camera (TVP-1122)	Supported.
Panoramic Camera (180 TVW-3130)	Support for live view and continuous/event recording as well as search and playback.
Multi-imager Camera (TVS-5101)	Supported.
Thermal IP Camera (TVB-5701)	Support for streaming/recording and thermal events.
ANPR cameras (TVB-5412/5413)	Only streaming/recording. No ANPR events.
Encoders (TVE-110/410/810/1610)	Supported, H.264 only.
Encoders (TVE-120/420/820/1620)	Supported, H.264 and H.265.
Decoders TVE-DEC11/12	Supported.
S Series Thermal IP camera (TVTH-S01)	Supported. Able to set target type (people/vehicle) and search for these events in the recorder.
M Series IP PTZ Cameras (TVGP-M01-xxxx-PTZ-G)	Supported. Able to set target type (people/vehicle) and search for these events in the recorder. Support for face capturing.
M Series IP PTZ Cameras (TVGP-P01-xxxx-PTZ-G)	Supported. Able to set target type (people/vehicle) and search for these events in the recorder. Support for face capturing.

The TVN 12 contains protocols from third-party camera manufacturers that allow you to add cameras from these manufacturers to the recorder.

The cameras cannot be discovered via the discovery feature of the recorders. These cameras need to be added manually. See Figure 7 on page 41 when using web mode and Figure 8 on page 42 when using OSD mode for more details.

The following brands are supported: Acti, Arecont, Axis, Bosch, Brickom, Canon, Hunt, Panasonic, Pelco, Samsung, Sanyo, Sony, Vivotek, and Zavio.

Carrier cannot provide a list of supported cameras. It is the responsibility of the installer to test a third-party camera before installing it.

Manage IP cameras in web mode

Click **Configuration** > **System** > **Camera Management** > **IP Camera** to get to the web page for managing camera.

Figure 7: Managing IP cameras in web mode

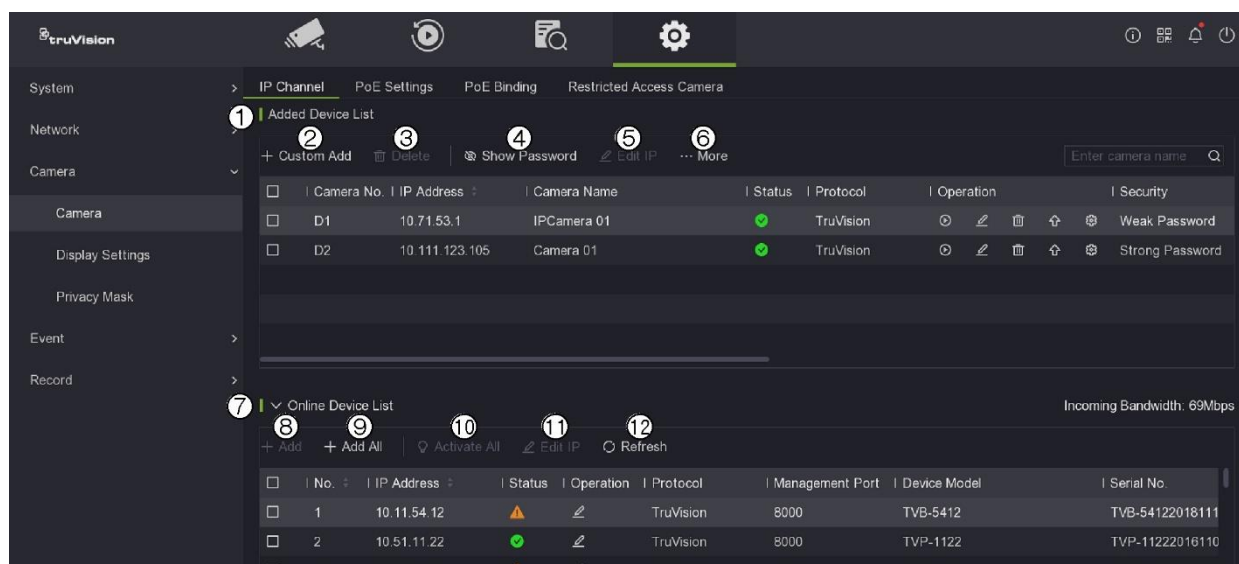| Feature	Description
1. IP camera list	This shows the list of IP cameras added to the recorder. The camera information shown is Camera Number, Camera Name, Channel Number, IP Address, Management Port, Security, Status, Protocol, and Connect.
	The "Connect" column is the list of bridge PoE/IP addresses that can be clicked to go to the selected camera web page. It only appears on this page if the "Bridge PoE/IP" function" under *Network > Advanced Settings > Other* is enabled. See "Open the camera web page from within the recorder web page" on page 67 for more information.
2. Add	Manually add a camera to the recorder by entering its IP address and other required information.
3. Modify	Select a camera from the list to change its IP Camera Address, Protocol, Management Port, Channel No., and Transfer protocol. You also need to enter the name and password of the selected camera.
	The camera by default is time synchronized with the recorder.
	For more information on managing camera passwords, see "Manage camera passwords" on page 45.
4. Delete	Delete the selected IP camera from the list.
5. Refresh	Reload webpage.
6. Quick Add	Add an IP camera from the network.
	Note: The camera password must be recognized by the recorder. It should be either the same as the recorder password or the same as the default IP camera password. Change the camera password in **Modify**.
7. Custom Protocol	You can see the protocol in use under the "Protocol" column.
	Use the "Custom Protocol" feature to connect an IP camera that does not use a standard protocol, such as TruVision. Many IP cameras can stream video using the RTSP protocol. The recorder allows you to define a RTSP custom protocol per camera type and to add cameras to the recorder via RTSP. Select one of the customized protocols listed and give it a name. Select main stream or substream and the protocol type, transfer protocol, port, RTSP, and the stream path.
	Note: When adding cameras via RTSP, only video streaming is available.

Feature	Description
	No other functionality will be supported by the recorder.
8. Activation	Enter the selected IP camera's password so that it is activated by the recorder.
	By enabling the "Use Default IP Camera Password" the recorder will use the default camera password that applies to all cameras activated by the recorder. See "Manage camera passwords" on page 45 for more information.

Note: More functionality is available using OSD mode.

Manage IP cameras in OSD mode

Click **Configuration** > **Camera** > **Camera** > **IP Channel** to get to the OSD page for managing camera.

Figure 8: Managing IP cameras in OSD mode

Feature	Description
Added Device List	
1. Added Device List	This is the list of IP cameras added to the recorder. The maximum number of cameras permitted will depend on the recorder model.
	The camera information shown is Camera Number, IP Address, Camera Name, Status, Protocol, Operation, and Security.
	Under *Operation* you can selected the following functions:
	⊙ **Play**: Plays live video in a small pop-up screen.
	✎ **Edit**: Change the following camera settings: protocol, management port, channel port and transfer protocol. However, if you change the IP address here it will NOT change the address of the selected camera but will look for a camera with the new IP address. See "Change camera settings" on page 50 for more information.
	🗑 **Delete**: Delete the selected camera from the *Added Device List*. Cameras added to the PoE ports of the recorder cannot be deleted.

| Feature	Description
	⬆ **Upgrade**: Upgrade the firmware of the selected camera. The camera will automatically reboot once the upgrade is completed.
	⚙ **Set**: Change the IP address and camera password of the selected camera. The current password is not displayed.
2. +Custom Add	Manually add a camera listed under the *Online Device List* to the recorder by entering its IP address and other required network information.
	You can enable the **Camera Activation Password** from here. For more information on managing camera passwords, see "Manage camera passwords" on page 45.
3. Delete	Delete the selected camera from the *Added Device List*.
4. Show Password	Display the passwords of all the cameras connected to the recorder.
	Note: This option is not available in web mode.
5. Edit IP	This feature allows you to set-up an IP address, subnet mask and gateway for the select cameras.
	Select one or more cameras from the camera list and set-up a start IP address (in the same IP address range as the recorder). The selected cameras will automatically get an IP address.
6. …. More	Several more functions are available:
	H.265 Auto Switch Configuration: When you enable this option, the recorder will automatically switch to the H.265 stream when the IP camera is initially added (if the IP camera supports H.265 video format). Default is enabled.
	Upgrade: Upgrade the firmware of the selected cameras. The cameras will automatically reboot after the upgrading is complete.
	Export: Export the configuration file from a selected camera to a backup device connected to the recorder. See "Import/export configuration files" on page 31 for more information.
	Import: Import camera configuration files from a backup device connected to the recorder. See "Import/export configuration files" on page 31 for more information.
	Protocol: Displays the protocol in use. However, instead of using a standard protocol, such as TruVision, you can set up a RTSP custom protocol per camera type and add cameras to the recorder via RTSP. Click ✎ **Edit** and select a custom protocol to create and then complete the protocol information requested. You can set up a custom protocol for main and substream. Click **OK**. Once the custom protocol is set up, you can link the protocol to a camera. When adding a new custom camera, this RTSP custom protocol can be selected as the camera's protocol.
	Camera Activation Password Settings: After entering the recorder admin password, enter the camera activation password. It is enabled under the *+Custom Add* menu.
	Batch Configuration: This feature allows you to do a time synchronization for multiple cameras at the same time.
Online Device List	
7. Online Device List	This is the list of cameras found on the LAN and not linked to this recorder.
	The cameras, however, could be linked to another recorder. Cameras with an orange triangle as their status indicate that these cameras are already added to another recorder.
	You can enable/disable this function via the web or OSD.
	Via the web: Go to **Configuration** > **Network** > **Advanced Settings** >

Feature	Description
	Other and select Enable IP Camera Link Detection.
	Via the OSD: Go to System > Security Service and enable/disable Camera Link Detection.
8. +Add	Add an IP camera from the LAN to the recorder. If there are already the maximum number of permitted cameras connected to the recorder, a message will appear saying that this camera cannot be added.
	For PoE models: when all PoE ports are enabled, you cannot add cameras from the LAN network. Go to PoE Binding to disable PoE ports first before you can add cameras from the LAN network (see "Use the LAN network" on page 48 for more information).
	Note: The camera password must be recognized by the recorder. It should be either the same as the recorder password or the same as the default IP camera password. Change the camera password in Modify.
9. +Add All	Add the selected cameras to the recorder.
10. Activate All	Activate the selected cameras before adding them to the recorder.
11. Edit IP	This feature allows you to set-up an IP address, subnet mask and gateway before the selected camera is added to the recorder.
	Select one or more cameras from the camera list and set up a start IP address (in the same IP address range as the recorder). The selected cameras will automatically get an IP address.
12. Refresh	Refresh the status for the cameras in the list.

PoE settings

Only S models of the recorder have PoE ports for camera connections. The number of PoE channels available depends on the recorder model.

The PoE Channel menu in web mode and the PoE Settings menu in OSD mode are only available for cameras with PoE ports.

Figure 9: PoE Settings menu in OSD mode
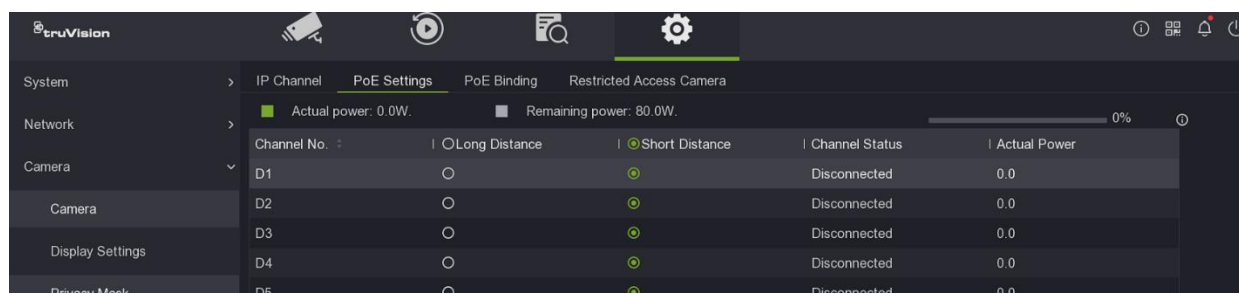
In the example shown above, only channel number 3 (D3) is connected to the recorder PoE port. The other cameras are connected through the LAN to the recorder.

In OSD mode you can also see the power consumption and can select the cable length used for the PoE connection. "Long distance" is for cables between 100 and 300 m, and "Short distance" is for cables less than 100 m. Short distance is selected by default. Changing the cable length selected can change the power consumption.

Note: For distances between 100 and 250 m use a CAT5e or CAT6 network cable. For distances above 250 m use a CAT6 network cable.

- The PoE ports are enabled with the short distance mode by default.

- The bandwidth of IP camera connected to the PoE via long network cable (100 to 300 m) cannot exceed 6 Mbps.

- The allowed maximum long network cable may be less than 300 meters depending on the IP camera models and cable materials.

Manage camera passwords

You can change the camera password to be the same as that of the recorder. However, you can keep the original camera passwords when connecting the cameras to the recorder by using the "Camera Activation Password" or the "Default IP Camera Password" in the recorder.

Display the camera passwords

When in OSD mode, you can display passwords of all the cameras connected to the recorder. This function is not available in web mode.

To display the camera passwords in OSD mode:

1. Click **Configuration** > **System** > **Camera Management** > **IP Camera**.

2. Under *Added Device List*, click **Show Passwords**. Enter the recorder admin password. The passwords of all the cameras connected to the recorder appear in the column *Camera Password*.

3. Click **Hide Passwords** to hide the passwords.

Change a camera's password

You can directly change a camera's password from the recorder when in OSD mode. This function is only available for cameras that have been added via the LAN network.

To change a camera's password in OSD mode:

1. Click **Configuration** > **Camera** > **Camera** > **IP Channel**.

2. Select the desired camera and click **Set**. In the pop-up screen, select the **Camera Password** tab.

3. Enter the current and new camera password. Confirm the new password and then click **Apply**.

Camera activation password

You can set up a camera-specific password in the recorder that allows a selected camera to be accessed by the recorder even when the password of the camera itself is different from that of the recorder.

To set up a camera activation password for a camera in web mode:

1. Click **Configuration** > **System** > **Camera Management** > **IP Camera**.

2. Select the desired camera and then click the **Activation** button.

3. In the pop-up screen, enter the activation password and re-enter it to confirm it. Click **OK**.

   Note: If you enable the "Use Default IP Camera Password" check box, the activation password text boxes are disabled for the selected camera.

To set up a camera activation password for a camera in OSD mode:

1. Click **Configuration** > **Camera** > **Camera** > **…More** and select **Camera Activation Password Settings** from the drop-down list. Enter the administrator password of the recorder.

2. Enter the activation password and click **OK**.

3. To associate this activation password with a specific camera, select a camera from the "Device Added List" and click **Edit**. Select the **Use Camera Activation Password** check box and click **OK**.

Default IP camera password

You can set up a single default camera-specific password in the recorder that allows all the cameras connected to the recorder to have a different camera password from that of the recorder and yet still be recognized by the recorder.

When "Sync IP Password" is enabled and you then add a camera to the recorder that is on the online device list, the recorder will check that the camera's password is the same as the one entered in the recorder (the Default IP Camera Password). If they are identical, the camera is added and comes online. If the two passwords are not identical, you will need to enter the correct password manually.

If adding cameras to the recorder that have a different password than the camera password in the recorder, select the **Sync. IPC Password** function and click **Save**.

To set up the default password for all cameras when activating an IP camera:

1. When initially activating the recorder, you can enter the default IP camera password, if desired. This applies to both web and OSD mode.

   Note: This is the only time that the default IP camera password can be set in OSD mode.

To set up a default password for all cameras in web mode:

1. Click **Configuration** > **System** > **Security** > **Default IP Camera Password Management**.
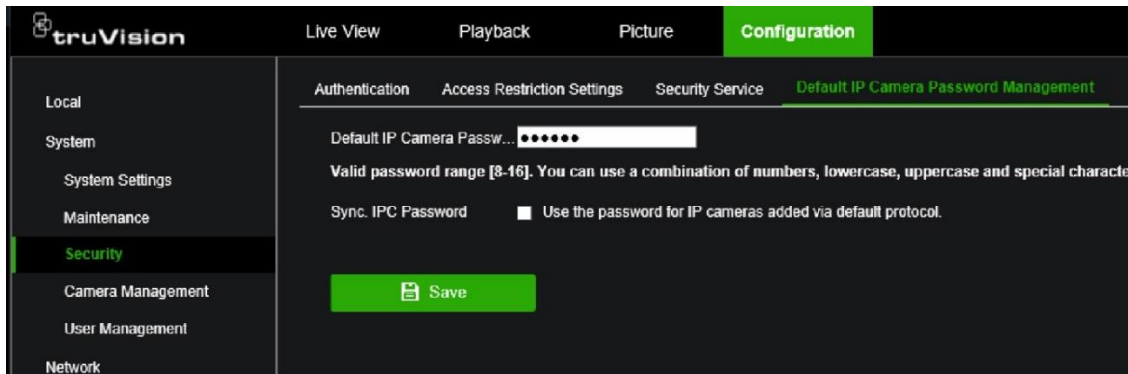
2. Under **Default IP Camera Password**, enter the new password. It will apply to all cameras activated and added to the recorder.

3. Enable **Sync IPC Password** for the recorder to check the camera's password against the default IP camera password in the recorder.

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

Add an IP camera

This section describes how to add IP cameras to the recorder.

The process depends on the recorder type (with/without PoE ports), camera status (activated/inactivated) and method used for adding the cameras (via the OSD menu or via the webpage).

Use the recorder's PoE ports (for S models only)

Note: When adding cameras to the recorder that have a different password than the camera password in the recorder, select the *Sync.IPC Password* function and press Save. See "Default IP camera password" on page 46 for more information on using the "Sync IP password" function.

To add an IP camera via the PoE ports:

• **Camera is not yet activated:**

1. Set up the camera password in the recorder in web mode (see "Manage camera passwords" on page 45).

2. Connect the IP camera to one of the free PoE ports at the back of the recorder.

3. The recorder assigns an IP address (192.168.254.x) to the camera and will automatically activate the camera using the password set up in the recorder. This process will take a couple of minutes.

4. The camera automatically connects to the recorder. This process will take a couple of minutes. The recorder starts recording video as soon as the camera has been successfully added.

- **Camera is already activated, has a LAN IP address, and has the same password as the recorder:**

1. Connect the IP camera to one of the free PoE ports at the back of the recorder.

2. The recorder assigns an IP address (192.168.254.x) to the camera and will come online. This process will take a couple of minutes.

3. The camera automatically connects to the recorder. The recorder starts recording video as soon as the camera has been successfully added.

Note: If adding cameras to the recorder that have a different password than the camera password in the recorder, select the **Sync. IPC Password** function and click **Save**.

Use the LAN network

This method can be used for all recorder models.

For recorders with PoE ports make sure that one or more of the PoE ports on the recorder are disabled so that cameras that are on the LAN can be added to the recorder. You can do this via the OSD or via the webpage.

To see which cameras are connected to a PoE port in web mode:

1. To see which cameras are connected to a PoE port, click **Configuration** > **System** > **Camera Management** > **PoE Binding**.

   The list of cameras appears showing which are connected to a PoE port.
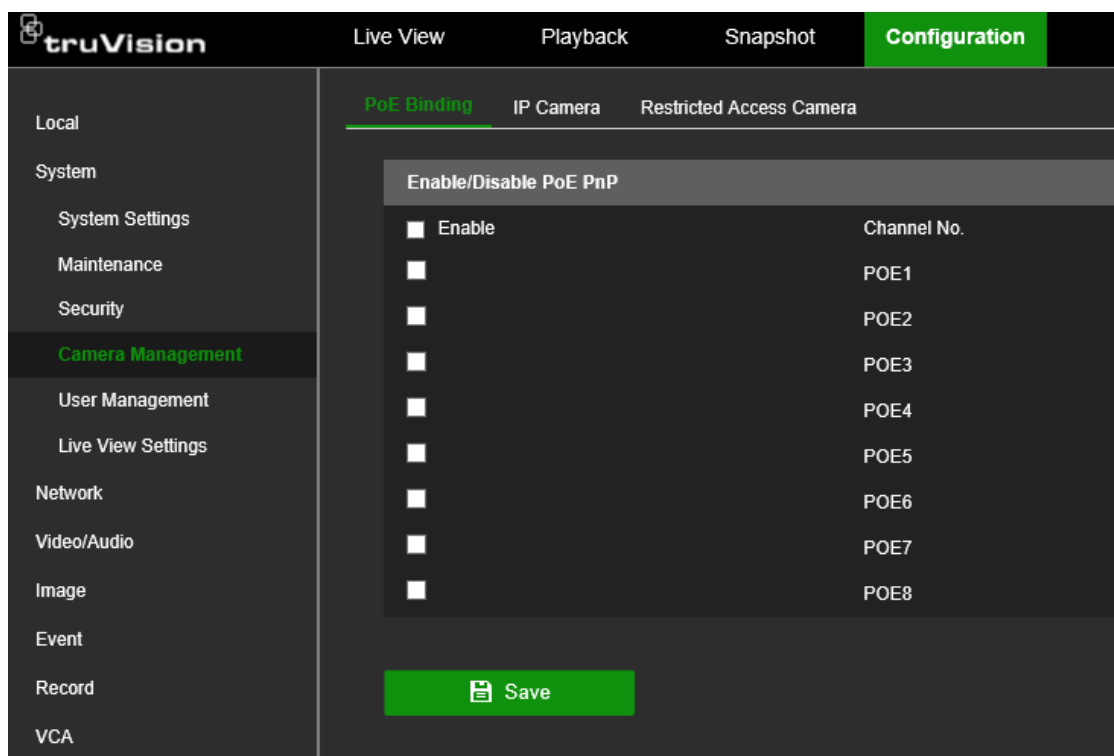
2. Click **Save** to save any changes.

To see which cameras are connected to a PoE port in OSD mode:

1. To see which cameras are connected to a PoE port, click **Configuration** > **Camera** > **Camera** > **PoE Binding**.

2. Click **Apply** to save any changes.

- **Camera is not yet activated:**

Note: A camera that is not activated has the default IP address 192.168.1.70.

The camera can only be activated successfully in web mode as described below if the recorder's IP address is within the same network segment of the default IP address of the camera.

When the recorder has an IP address in another network range, you must activate the IP camera first via the TruVision Device Manager or follow the process in OSD mode.

To add an IP camera on the LAN in web mode:

1. Click **Configuration** > **System** > **Camera Management** > **IP Camera**.

2. Click **Quick Add** to find the cameras on the LAN. Select the desired camera and click **OK**.

3. Select the desired camera from the list and click **Activation**. You will be asked to enter a camera password, or you can select to use the default IP camera password that you added in the recorder and click **OK** (see "Manage camera passwords" on page 45).

4. The camera is activated and comes online. This process will take a couple of minutes. Click **Refresh** to refresh the webpage and see the camera status change from offline to online.

5. Add another camera by following steps 2 to 4.

To add an IP camera on the LAN in OSD mode:

1. Click **Configuration** > **Camera** > **Camera** > **IP Channel**.

2. Click **Online Device List** to display the list of cameras in the LAN.

3. Select the camera that you want to add and click **Activate All**.

4. The recorder asks you to enter a new password or you can select to use the camera password that is stored in the recorder. The camera is activated.

5. You can now add it with the default IP address (192.168.1.70) to the recorder.

   Recommended: Press **Edit IP** and change the IP address of the camera before it is added.

6. The camera can then be added to the recorder via the **+Add** button.

- **Camera is already activated:**

To add an IP camera on the LAN network in web mode:

1. Make sure that the cameras are on the same network segment as the recorder. If needed, use the TruVision Device Manager to change the network settings of the cameras.

2. Click **Configuration** > **System** > **Camera Management** > **IP Camera**.

3. Click **Quick Add** to find the cameras on the LAN. Select the desired camera(s) and click **OK**.

4. Click **Refresh** to refresh the webpage. The camera(s) will come online when the camera password is identical to the camera password that is defined in the recorder.

Note: If adding cameras to the recorder that have a different password than the camera password in the recorder, select the **Sync. IPC Password** function and click **Save**.

To add an IP camera on the LAN in OSD mode:

1. Make sure that the cameras are on the same network segment as the recorder. If needed, use the TruVision Device Manager to change the network settings of the cameras.

2. Click **Configuration** > **Camera** > **Camera** > **IP Channel**.

3. Click **Online Device List** to display the list of cameras in the LAN.

4. Select the camera(s) that you want to add and click **+Add** or **+Add All** to add the camera(s) to the recorder.

Note: If adding cameras to the recorder that have a different password than the camera password in the recorder, select the **Sync. IPC Password** function and click **Save**.

Change camera settings

If the camera's settings (such as the IP address, protocol, management port, channel number, camera user name, camera's admin password, and transfer protocol) are changed after activating the camera in the recorder, you will then need to manually update them in the recorder. If this is not done, the recorder will no longer be able to connect with the camera.

To change camera settings in web mode:

1. Click **Configuration** > **System** > **Camera Management** > **IP Camera.**

2. Select the camera whose setting you want to change and click **Modify**. The *IP Camera* pop-up screen appears.

3. Make the desired changes and click **OK** to save them.

To change camera settings in OSD mode:

1. Click **Configuration** > **Camera** > **Camera** > **IP Channel**.

2. Select the camera whose setting you want to change and click **Edit** 🖉.The *Edit IP Camera* pop-up screen appears. Change the desired settings.

   If you want to use the camera activation password, select the check box.

3. To change the camera password, click **Set** ⚙. In the pop-up screen, click the "Camera Password" tab. Enter the current and new passwords and confirm. Click **Apply** to save.

   Note: The Set function is only available for cameras that have been added via the LAN network.

4. Make the desired changes to the camera settings and then click **OK**.

5. If you want the camera time to synchronization with the other cameras connected to the recorder, click **Configuration** > **Camera** > **Camera** > **IP Channel** > **…More** > **Batch Configuration**. Select the cameras to time synchronize. Click **OK**.

Restrict viewing cameras on a VGA/HDMI monitor

You can restrict the display of cameras on the local monitor. This might be needed if you want to avoid that all cameras appear on the local monitor.

To setup the restriction in web mode:

1. Click **Configuration** > **System** > **Camera Management** > **Restricted Access Camera**.

2. Enable the channels that you do not want to show on the VGA/HDMI monitor.

3. Click **Save**.

4. The restriction will be applied after the user logs out of the OSD menu.

To setup the restriction in OSD mode:

1. Click **Configuration** > **Camera** > **Camera** > **Restricted Access Camera**.

2. Enable the channels that you do not want to show on the VGA/HDMI monitor.

3. Click **Save**.

4. The restriction will be applied after the user logs out of the OSD menu.

Chapter 6
User management

You can manage users in both web and OSD modes. However, the OSD has limited user management capabilities.

Manage users in web mode

Only a system administrator can create, modify, or delete a user. You can have a maximum of 32 users (the administrator as well as operators and users). The User window shows the list of users for the recorder, their names, and user level (Administrator, Operator, or User).
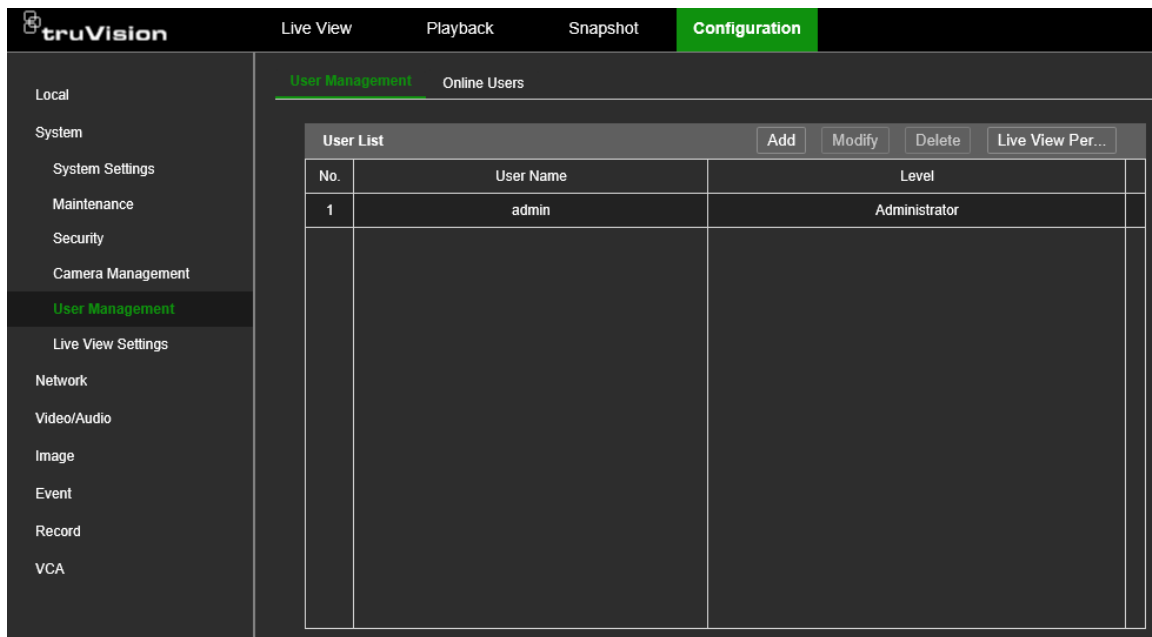
Important: When you connect the TVN 12 to UltraSync, the system automatically creates a user called "UltraSync". This user cannot be modified or deleted.

Add or delete users

To add a new user:

Only a system administrator can add a user.

1. Click **Configuration** > **System** > **User Management** > **User Management**.

2. Click **Add** to enter the *Add User* window.

3. Select the new user's access level: Operator or User. Default is User.

4. Enter the administrator's password.

5. Enter the new user's name and password. Both the user name and password can have up to 16 alphanumeric characters. Confirm the user's password.

   Tips on creating a strong password:

   • A valid password range must be between 8 and 16 characters. You must use at least one character from each of the following items: numbers, lower-case letters, upper-case letters, and special characters : _ - , .* & @ / $? Space. The maximum number of allowed attempts to enter a password is 3. Lockout is 30 minutes.

   • The password is case-sensitive.

   • Do not use personal information or common words as "password".

   • The password cannot contain the username.

   • 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.

6. If required, modify the user's access permissions. See "Modify a user's access permissions" on page 54 for the list of options.

7. Click the **OK** button save the settings and return to the previous window.

To modify a user's information:

Only a system administrator can modify a user's information.

1. Click **Configuration** > **System** > **User Management** > **User Management**.

2. From the user list, select the user to be modified.

3. Click **Modify** to enter the *Modify User* window.

4. Enter the administrator's password.

5. Change the desired information on the user, such as the password, level, or name.

6. Click **OK** to save the settings and return to the previous window.

To delete a user:

Only a system administrator can delete a user.

1. Click **Configuration** > **System** > **User Management** > **User Management**.

2. From the user list, select the user to be deleted.

3. Click **Delete** and enter the administrator's password.

4. Click the **OK** button save the settings and return to the previous window.

Modify a user's access permissions

Access privileges to the recorder's functions can only be managed in **web mode**.

Only an administrator can allocate access permission to operators and users. The access permissions can be customized for each operator and user needs. By default, the administrator has access to all access permissions, and these cannot be changed. See Table 3 for more information.

Table 3: Description of default access permissions by user type

User type	Default access permissions
Administrator	Can access to all permissions. Permissions cannot be changed.
Operator	Local playback, local log search, local manual operation, local PTZ control, local video search, remote log search/interrogate working status, remote bi-directional audio, remote live view, remote manual record, remote PTZ control, and remote playback/download.
	By default, with this permission the user is not allowed to configure the recorder.
User	Local playback, local log search, remote log search/interrogate working status, remote live view, and remote playback/download.
	By default, with this permission the user is not allowed to configure the recorder.

Local configuration settings

By default, only the local log search, local playback, remote log search/interrogate working status and remote live view setting is enabled for users.

• **Local: Upgrade/Format:** Locally upgrade the firmware or format the HDD.

• **Local: Shutdown/Reboot:** Shutdown or reboot the recorder.

- **Local: Parameters Settings:** Configure parameters and import the configuration from the recorder.

- **Local: Log Search:** Search and view logs of the recorder.

- **Local: Camera Management:** Locally add, delete, and edit IP cameras.

- **Local: Playback:** Locally play recorded files that are on the recorder.

- **Local: Manual Operation:** Locally start/stop manual recording on any of the channels, snapshots, and video clips

- **Local: PTZ Control:** Locally control PTZ dome cameras.

- **Local: Video Export:** Locally back up recorded files from any of the channels.

Remote configuration settings

- **Remote: Parameters Settings:** Remotely configure parameters and import configuration.

- **Remote: Log Search/Interrogate Working Status:** Remotely view logs that are saved on the recorder.

- **Remote: Upgrade/Format:** Remotely upgrade the firmware and format the HDD.

- **Remote: Bi-directional audio:** Use bi-directional audio between the remote client and the recorder

- **Remote: Shutdown/Reboot:** Remotely shutdown or reboot the recorder.

- **Remote: Notify Surveillance Center/Trigger Alarm Output**

- **Remote: Video Output Control:** For future use.

- **Remote: Serial Port Control**: Remotely configure RS-232 and RS-485 ports.

- **Remote: Camera Management:** Remotely enable and disable channels.

- **Remote: Live View:** Remotely select and view live video over the network.

- **Remote: Manual Record**: Remotely start/stop manual recording on any of the channel.

- **Remote: PTZ Control:** Remotely control PTZ dome cameras.

- **Remote: Playback/Download:** Remotely play and download recorded files that are on the recorder.

To customize a user's access privileges (web mode only):

1. Click **Configuration** > **System** > **User Management** > **User Management**.

2. Select a user and click **Modify**. The Modify User widow appears.

3. Enter the admin password.

4. Select the desired access privilege settings for the user.

5. Click the **OK** button save the settings and return to the previous window.

See which users are online

When in web mode, you can easily see which users are online using the recorder.

To see who is online:

1. Click **Configuration** > **System** > **User Management** > **Online Users**.

   The *User List* window appears, listing all users currently online.

Manage users in OSD mode

The OSD mode has limited user management capabilities.

Only a system administrator can create and delete a user as well as change a password. You can have a maximum of 32 users (the administrator as well as users). The User window shows the list of users for the recorder, their names, password security and user level (admin or user). You can only create operators in web mode.
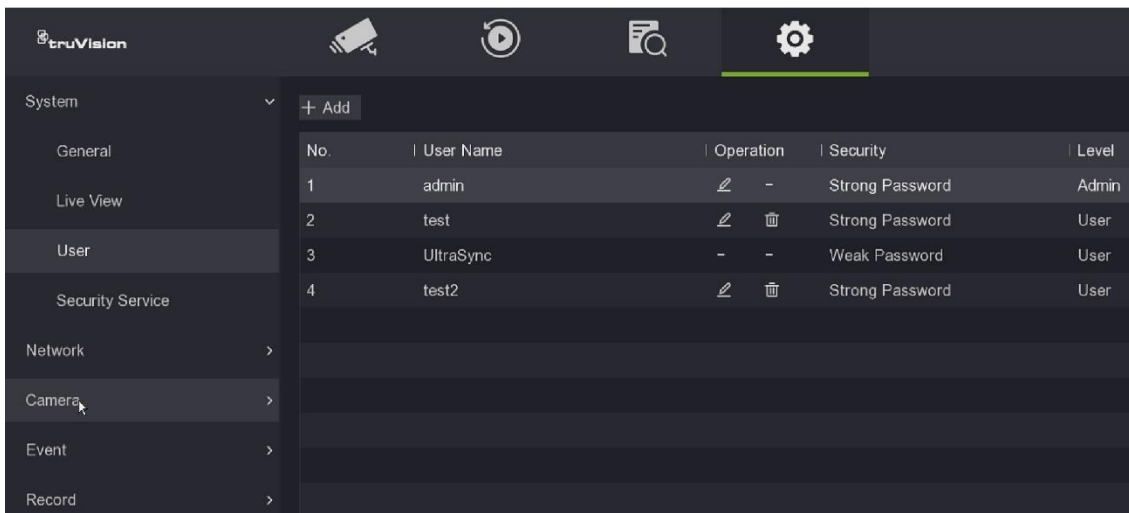
Creating and managing user access permissions can only be done in web mode. See "Modify a user's access permissions" on page 54 for more information on user access permissions.

When a user is added via the OSD mode, the user always gets the "User" permission by default. The permission can only be changed via the web page of the recorder.

Important: When you connect the TVN 12 to UltraSync, the system automatically creates a user called "UltraSync". This user cannot be modified or deleted.

To add a new user:

1. Click **Configuration** > **System** > **User**.

2. Click **+Add** to enter the "Add User" window.

3. Enter the new user's name and password. Confirm the password. Both the user name and password can have up to 16 alphanumeric characters. New users by default receive the User permission level.

Tips on creating a strong password:

- A valid password range must be between 8 and 16 characters. You must use at least one character from each of the following items: numbers, lower-case letters, upper-case letters, and special characters : _ - , .* & @ / $? Space. The maximum number of allowed attempts to enter a password is 3. Lockout is 10 minutes.

- The password is case-sensitive.

- Do not use personal information or common words as "password".

- The password cannot contain the username.

- 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. Click **OK** to save the settings and return to the previous window.

To change a user password:

1. Click **Configuration** > **System** > **User**.

2. Click for the user whose password you want to change.

3. Enter the new user's password and confirm it. The password can have up to 16 alphanumeric characters.

4. Click **OK** to save the settings and return to the previous window.

To delete a user:

1. Click **Configuration** > **System** > **User**.

2. Click for user to be deleted.

3. Click **Yes** to confirm you want to delete the user.

Chapter 7
Network settings

The Network menu allows you to manage all network related aspects of the recorder including general network settings, DDNS, PPPoE, port settings, NTP synchronization, email setup, UPnP settings, FTP server setup, and IP address filter.

Additionally, the Net Detect and Network statistics menus provide you with a useful and efficient tool to analyze the behavior of the recorder on the network.

You must correctly configure your recorder's network settings before using it over the network to:

- Connect IP cameras to it
- Connect to the recorder over the LAN
- Connect to the recorder over the internet

TCP/IP settings

Note: As every network configuration may differ, please contact your Network Administrator or ISP to see if your recorder requires specific IP addresses or port numbers.

To configure general network settings (web and OSD modes):

1. In web mode:

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

   — or —

   In OSD mode:

   Click **Network** > **General** > **TCP/IP**.

2. Enter the required settings: (web mode shown)

Option		Description
1.	NIC Type	Network interface card (NIC) is a device used to connect the recorder to a network. Select the NIC type used from the drop-down list.
2.	DHCP	DHCP (Dynamic Host Configuration Protocol) is a protocol for assigning an IP address dynamically to a device each time it connects to a network.
		Select this check box if you have a DHCP server running and want your recorder to automatically obtain an IP address and other network settings from that server. The DHCP server is typically available in your router.
		Default value is Disable.
		In OSD mode, it is called "DHCP (IPv4)".
3.	IPv4 Address	Enter the IPv4 address of the recorder. The default IP address is 192.168.1.82.
		In OSD mode, it is called" IP Address".
4.	IPv4 Subnet Mask	Enter the subnet mask for your network so the recorder will be recognized within the network.
		Default value is 255.255.255.0.
		In OSD mode, it is called "Subnet Mask".

Option		Description
5.	IPv4 Default Gateway	Enter the IP address of your network gateway so the recorder will be recognized within the network. This is typically the IP address of your router. Consult your router user manual or contact your ISP to get the required information on your gateway.
		In OSD mode, it is called "Default Gateway".
6.	IPv6 Address	Enter the IPv6 address of the recorder.
		This setting is not available in OSD mode.
7.	Subnet Prefix Length	This displays the number of bits in the subnet address.
		This setting is not available in OSD mode.
8.	IPv6 Default Gateway	Enter the IPv6 address of your network gateway so the recorder will be recognized within the network. This is typically the IP address of your router.
9.	MAC Address	Displays the MAC address. The MAC address is a unique identifier of your recorder, and it cannot be changed.
10.	MTU	Enter a value between 500 and 9676. Default is 1480.
11.	Auto DNS	This function is automatically enabled when DHCP is enabled. When enabled, the preferred and alternate DNS servers are automatically obtained.
		In OSD mode, it is called "Auto Obtain DNS".
12.	Preferred DNS Server	Enter the preferred domain name server to use with the recorder. It must match the DNS server information of your router. Check your router's browser interface or contact your ISP for the information.
13.	Alternate DNS Server	Enter the alternate domain name server to use with the recorder.
14.	Internal IPv4 Address	Enter the internal NIC IPv4 address. This is the IP address of the recorder's internal network managing only the PoE port cameras. This is not the LAN IP address.
		Default value is 192.168.254.1.

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

DDNS settings

DDNS servers allow you to connect to your recorder using a dynamic address. This dynamic address needs to be registered with a DNS service. The DDNS setup menu allows you to enable or disable DDNS and to configure it using ezDDNS, No-IP or DynDNS.

Note: Some service providers block the default RTSP streaming port 554 used for video streaming, so if you are not receiving video images over the internet, you may need to change it to another value. See Appendix B "Port forwarding info" on page 162 for more information.

There are three ways to set up a DDNS account:

- **ezDDNS**: A free-of-charge service included with your recorder and fully managed within the recorder interface. It is exclusive to TruVision products.

- **DynDNS:** A third-party service where users need to apply for a DynDNS account on the Dyn.com website.

- **No-IP:** A third-party service where users need to apply for a no-IP account on the no-ip.com website.

Caution: If you use the services of DynDNS or No-IP, your account user name and password for these services will be sent to them in clear text format when you set up your connection in the recorder.

Note: You cannot have two recorders with the same host name.

To set up DDNS in web and OSD modes:

1. In web mode:

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

   — or —

   In OSD mode:

   Click **Network** > **General** > **DDNS**.

2. Select the **Enable DDNS** check box to enable this feature. It is enabled by default. Option is called "Enable" in OSD mode.

3. Under **DDNS Type**, select one of the DDNS types listed:

   ezDDNS: Click the **Get URL** button. The URL address to access the unit is displayed. If no host name is specified, the DDNS will allocate one automatically.

   The maximum length for the host name field is 64 characters. This limit does not include tvr-ddns.net. An example of a host name could be *max64chars.tvr-ddns.net*.

   — or —

   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 —

NO-IP: Enter 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** in web mode or **Apply** in OSD mode to save the settings.

PPPoE settings

Although not usually used, you can connect the recorder directly to a DSL modem. To do this, you need to select the PPPoE option in the network settings. Contact your ISP to get the user name and password.

This function is only available in web mode.

To configure PPPoE settings in web mode:

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

2. Select the **Enable PPPoE** check box.

3. Enter your user name and password and confirm the password.

   Note: The user name and password should be assigned by your ISP.

4. Click **Save**. It is recommended to reboot the recorder.

Email settings

The recorder can send email notifications of alarms or notifications through the network.

Notes:

• Ensure that the DNS address has been set up correctly beforehand.

• The TVN 12 uses TLS 1.2 for email communication.

To configure email settings via the web:

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

2. Enter the required settings.

Option	Description
Enable Server Authentication	Select the check box if your mail server requires authentication and enter the login user name and password.
User Name	If the mail server requires authentication, enter the login user name.
Password	If the mail server requires authentication, enter the login password.
SMTP Server	Enter the SMTP server's IP address.
SMTP Port	Enter the SMTP port. The default TCP/IP port for SMTP is 25.

Option	Description
Enable SSL/TLS	Select the check box to enable SSL/TLS if it is required by the SMTP server. This feature is optional.
Sender	Enter the name of the sender of the email.
Sender's Address	Enter the sender's email address.
Select Receiver	Select an email recipient. Up to three receivers can be selected.
Receiver	Enter the name of the receiver of the email.
Receiver's Address	Enter the email address of the receiver.
Include Snapshot	Select the check box if you want to send an email with attached alarm images.
Interval	Select the interval time between the snapshots that are sent in the single email. The default interval is 2 seconds. The interval range represents the time range in between the alarm/event snapshots being sent. For example, if you set the interval range at two seconds, the second alarm/event snapshot will be sent two seconds after the first alarm image.

3. Click **Test** to the test email settings.

   Note: We recommend that you test the email settings after entering values in the email window.

4. Click **Apply** to save the settings and click **Exit** to return to live view.

To configure email settings via the OSD:

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

2. Enter the required settings.

Option	Description
Server Authentication	Select the check box if your mail server requires authentication and enter the login user name and password.
User Name	If the mail server requires authentication, enter the login user name.
Password	If the mail server requires authentication, enter the login password.
SMTP Server	Enter the SMTP server's IP address.
SMTP Port	Enter the SMTP port. The default TCP/IP port for SMTP is 25.
SSL/TLS	Select the check box to enable SSL/TLS if it is required by the SMTP server. This feature is optional.
Attach Snapshot	Select the check box if you want to send an email with attached alarm images.
Sender	Enter the name of the sender of the email.
Sender's Address	Enter the sender's email address.
Select Receivers	Select an email recipient. Up to three receivers can be selected.
Receiver	Enter the name of the receiver of the email.
Receiver's Address	Enter the email address of the receiver.

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

HTTPS settings
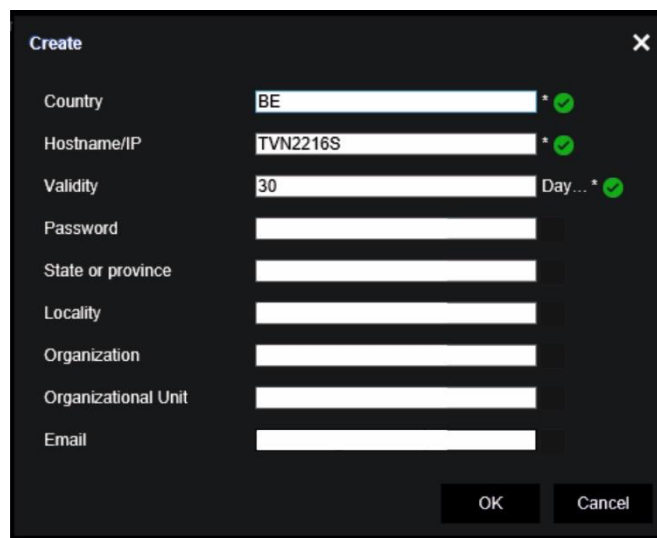
Using HTTPS (Hypertext Transfer Protocol Secure) is a secure protocol that provides authenticated and encrypted communication. It ensures that there is a secure private channel between the recorder and cameras

You can create self-signed server certificates as well as request certified server certificates to ensure your network security.

Note: The HTTPS setting is only available in web mode.

To create a certificate:

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

2. Select **Enable HTTPS**.

3. Click "**Create Self-Signed certificate**" and click **Create**.

4. Type in the country, hostname/IP address, and the days of validity. The other parameters are optional. Click **OK**.

5. Select **Enable HTTPS** and then click **Save**.

6. Close the connection and open a new browser tab using the HTTPS protocol. A certificate error appears in the address field.

    Note: The browser address must have the format HTTPS (such as https://192.168.1.70).

7. Click on the Certificate error icon to view the certificate, and then click **Install Certificate**.

To use a signed certificate:

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

2. Select **Enable HTTPS**.

3. Click "**Signed certificate is available. Start the installation directly.**"

4. Enter the password, which is optional.

5. Under *Install Signed Certificate*, click **Browse** to locate the certificate and then click **Install**.

6. Select **Local Machine**, and then click **Next**.

7. Select **Place all certificates in the following store**, and then click **Browse**.

8. Select **Trusted Root Certification Authorities/Third-Party**, and then click **OK**.

9. Click **Next**.
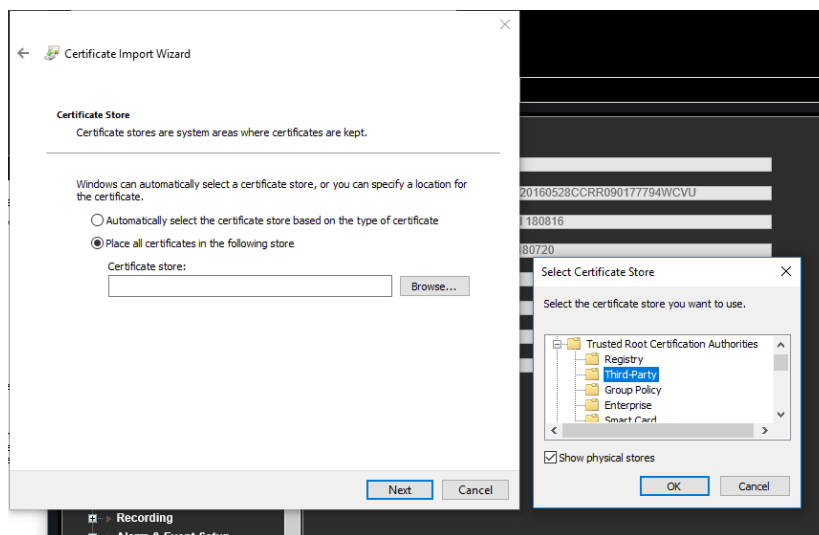
10. Click **Finish** to install the certificate to the local host, and then close the browser.

Buy a certificate:

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

2. Select **Enable HTTPS**.

3. Click "**First create the certificate request and continue the installation**" and click **Create**.

4. Fill out the parameters requested and click **OK**.

5. Under *Download Certificate Request*, click "**Download**" and get a .csr file.

   Visit a site like https://www.startssl.com/?app=1 and upload your .csr file to get a trusted certificate.

6. Under *Install Generated Certificate*, click **Browse** to locate the certificate and then click **install**.

7. Click **Save**.

For larger companies, a corporate certificate might be available with the IT department.

Network protocols and plug-in applications

Note: As every network configuration may differ, please contact your Network Administrator or ISP to see if your recorder requires specific IP addresses or port numbers.

See "Alarm host setup" below for information on setting up an alarm host with ports.

To configure port settings in web mode:

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

2. Enter the port values:

   HTTP protocol: This is used to connect via a browser. Default value is 80.

   RTSP (Real Time Streaming Protocol): This is a video streaming protocol. Default value is 554.

   HTTPS port: Using HTTPS (Hypertext Transfer Protocol Secure) is a secure protocol that provides authenticated and encrypted communication. It ensures that there is a secure private channel between the recorder and cameras. The HTTPS setting is only available in web mode. See "HTTPS settings" on page 64 for information server certificates.

   Server port: Use the server port for remote client software access. The port range is between 1024 and 65535. Default value is 8000.

   WebSocket port: This is used to live view on non-IE browsers. Default value is 7681. This port setting is only available in web mode.

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

To configure general network settings in OSD mode:

Note: The HTTPS and WebSocket ports can only be set up via the browser.

1. Click **Configuration** > **Network** > **General** > **Port**.

2. Enter the port values:

   Server port: Use the server port for remote client software access. The port range is between 1024 and 65535. Default value is 8000.

   HTTP protocol: is used to connect via the IE browser. Default value is 80.

   RTSP (Real Time Streaming Protocol): This is a video streaming protocol. Default value is 554.

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

Alarm host setup

If an alarm host is set, the recorder sends a signal to the host when an alarm is triggered. An example of an alarm host is the TruVision Navigator server. Note that

alarm host applications need to have the TruVision recorder SDK implemented to successfully receive notifications from the recorder.

To set up an alarm host in web mode:

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

2. Enter the **Alarm Host IP** and the **Alarm Host Port** values.

   The alarm host IP is the IP of the remote PC where the TruVision Navigator software is installed. The alarm host port value must be the same as software's alarm monitor port. The default alarm host port value is 5001.

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

To set up an alarm host in OSD mode:

1. Click **Configuration** > **Network** > **General** > **More Settings**.

2. Enter the **Alarm Host IP** and the **Alarm Host Port** values.

   The alarm host IP is the IP of the remote PC where the Network Video Surveillance software installed. The alarm host port value must be the same as software's alarm monitor port. The default alarm host port value is 5001.

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

Multicast IP address

The network devices must support multicast and be enabled. The recommended multicast address is between 239.252.0.0 and 239.255.255.255.

To enable multicast in web mode:

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

2. Enter the multicast address.

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

To enable multicast in OSD mode:

1. Click **Configuration** > **Network** > **General** > More **Settings**.

2. Enter the multicast IP address.

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

Open the camera web page from within the recorder web page

This function can only be done in web mode.

To open a camera webpage from within the recorder's webpage:

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

2. To allow the recorder to connect to cameras via a browser, select **Enable Bridge PoE/IP**.

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

Detect if a camera is already connected to another device

You can set up the recorder to allow it to detect whether a camera is already connected to another device. This function can only be done in web mode.

When this feature is enabled, you can see if a camera is already added to another device from the OSD menu (Online Device List). See "Manage IP cameras in OSD mode" on page 42.

To detect if a camera is connected to another device:

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

2. To allow the recorder to detect whether an IP camera is already connected to another device, select **Enable Camera Link Detection**.

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

Connect the recorder to UltraSync

The recorder lets you stream video to applications that support UltraSync.

An UltraSync connection enables a remote connection to the recorder without using port forwarding in a router.

To connect the recorder to UltraSync in web mode:

Note: This setup must be done by an installer. It cannot be done by an end-user.

1. Click **Configuration** > **Network** > **UltraSync**.
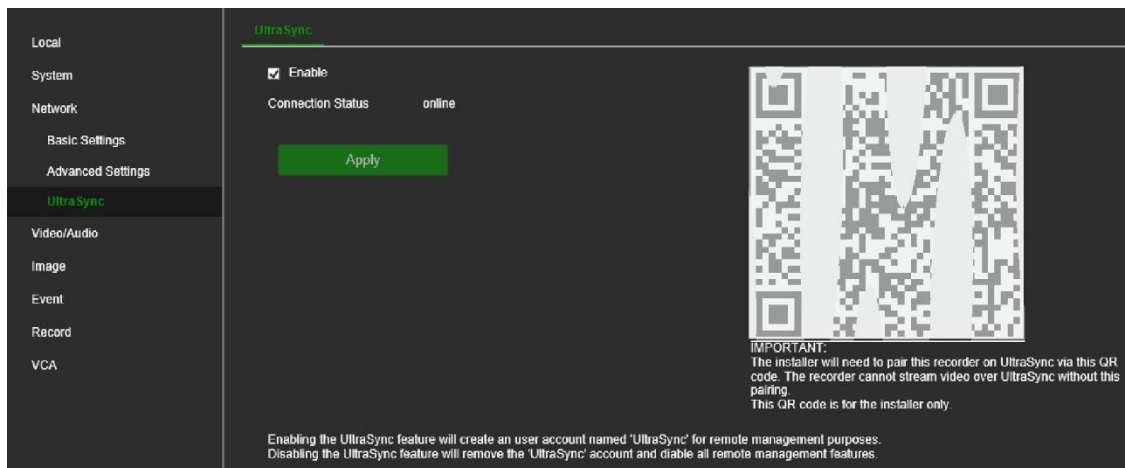
2. Select **Enable** to enable this function for the recorder. Click **Apply**.

    After clicking Apply, it will take a couple of minutes before the recorder will be connected to UltraSync

3. The installer needs to scan the QR code with his mobile phone. The QR will open the UltraSync login page on a browser. The installer then enters his UltraSync username and password to pair the recorder to his account. The end-user can only view video from the UltraSync connected recorder in the mobile application when the recorder is paired to an installer account.

    See the *Operator Guide* for information on adding the recorder to the mobile application, TVRMobile.

Add the recorder to TVRMobile

TVRMobile is the name of the mobile application for iOS and Android devices that allows you to see live and playback video of TruVision recorders as well as control the recorders on a mobile device.

Download the application from Google Play store (Android) or Apple App store (iOS). The application is supported on Android version 9 and higher and on iOS version 14 and higher.

To add the recorder to TVRMobile:

1. Open the TVRMobile app.

2. Go to **Devices**. Tap ⊕ and then tap **Manual Add**.

3. Enter the recorder's name to be linked. The name can have up to 16 alphanumeric characters. Default name is Device01.

4. Under **Register Mode**, select either ezDDNS, IP/Domain or UltraSync.

ezDDNS	When the device is registered in the ezDDNS server, you need to type in the registered ezDDNS server address and the device domain name.

IP/Domain	Manually access the device using a fixed IP address or a domain server. You need to edit the IP address or domain address.
UltraSync	Add the device that is registered to UltraSync.
	On the recorder, click the QR code icon ⊞ in the toolbar (OSD menu) or on web live view page. The QR code of the SCI code appears with the SID number code.
	In the app, manually enter this SID number. The SID is a 12-digit numerical code that is displayed as xxx-xxxx-xxxx-xxxx. The code needs to be entered without the dashes (-). The dashes are automatically added when the SID code is entered.
	The SCI code is shown as a QR code. Scan it by pressing the scan icon ⊡ on the mobile app.

5. Enter the user name and password.

    Note: The number of cameras under the device can be obtained after the device has been successfully added.

6. Tap 🔲 to confirm the settings. The device is added to the device list.

7. Tap ⬅ to exit and return to the previous page.

The recorder's *Operator Guide* also describes for the end-user how to add the recorder to TVRMobile.

For further information on using TVRMobile, please refer to its user manual.

Chapter 8
Video and audio configuration

Audio

Select whether to hear audio from cameras in both live and playback mode. However, to be able to hear audio in playback, you must enable the audio output setting. Audio is disabled by default.

Setting up audio in OSD mode enables audio for the monitor output. If using a HDMI monitor, the audio is outputted directly from the HDMI monitor (if available). If using a VGA monitor, audio is heard from the audio output on the back panel when Audio is enabled.

To set up audio in OSD mode:

1. In OSD mode, from the menu toolbar, click **Configuration** > **System** > **Live View** > **General**.
2. Enable **Audio**. It is disabled by default. Adjust the volume to the desired level.
3. Click **Apply** to save the settings.

To set up audio in web mode:

1. In web mode, from the menu toolbar, click **Configuration** > **System** > **Live View Settings**.
2. Select **Enable Sound Preview**. It is disabled by default.

   Note: The sound level can only be adjusted from the OSD mode.
3. Click **Save** to save the settings.

Dual VCA

Enabling the Dual-VCA function will send the VCA event information (e.g., intrusion detection, line crossing detection, face detection, etc.) to the connected back-end device for further analysis. Not all camera models support this function.

Note: This function is not available via OSD mode.

To set up Dual VCA in web mode:

1. In web mode, from the menu toolbar, click **Configuration** > **Video/Audio** > **Display Info. On Stream**.

2. Select the **Enable Dual-VCA** check box.

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

V-stream encoding

If the available bandwidth is limited, you can remotely view several channels in real time with one stream over the web browser or VMS (Video Management System), such as TruVision Navigator, using the V-stream encoding option ("V" stands for "virtual"). When enabled, you can see the output from the cameras on a remote client monitor in one stream.

To set up V-stream encoding in web mode:

1. Click **Configuration** > **Video/Audio** > **V-stream**.

2. Select the **Enable V-Stream Encoding** check box to enable the feature.

3. Select the **Max. Bitrate** from the drop-down list.

4. Select the **Frame Rate** from the drop-down list.

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

To set up V-stream encoding in OSD mode:

1. Click **Configuration** > **System** > **Live View** > **V-stream**.

2. Select the **Enable V-Stream Encoding** check box to enable the feature.

3. Select the **Max. Bitrate** from the drop-down list.

4. Select the **Frame Rate** from the drop-down list.

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

Chapter 9
Image settings

The chapter describes how to adjust a camera's image settings, adding information to be displayed on-screen, and set up privacy masks. You can also set up day/night function when using OSD mode.

Display settings

You may need to adjust the brightness, contrast, and saturation values depending on the location background to get the best image quality. More functions are available using OSD mode, which allows you to also rotate the image and use mirror mode as well as set the day/night switch, digital noise reduction (DNR), and wide dynamic range (WDR).

To adjust display settings in web mode:

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

2. Under **Camera**, select the desired camera.

3. Under **Image Settings**, adjust the brightness, contrast, and saturation values by dragging each scroll bar.

    Click the **Default** button to return image setting values to the default position.

4. Under **Exposure Settings**, adjust the iris mode and exposure time.

5. Under **Backlight Settings**, adjust the BLC area and WDR setting.

To adjust display settings in OSD mode:

1. Click **Configuration** > **Camera** > **Display Settings**.

2. Under **Camera**, select the desired camera.

    Under **Camera Name**, you can change the camera name, if desired.

3. Under **Image Settings**, adjust the brightness, contrast, and saturation values by dragging each scroll bar.

4. Select how you want the camera to rotate the image. There are two rotate functions:

Rotation Type	You can rotate the image 270°. In a vertical-shaped scene, such as a hallway or corridor, the image is shown with a vertical (tall) rather than horizontal (wide) format. The video image is at a 9:16 aspect ratio. Default is Off;
Mirror Mode	You can flip the camera image three ways: Left-Right: Flip the image horizontally. Up-Down: Flip the image vertically. Center: Flip both horizontally and vertically. Default is Off.

5. Under **Backlight**, select the WDR option: Off, On or Auto. Default is Auto.

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.

6. Under **Image Enhancement**, select the DNR type: Close, Normal Mode or Expert Mode. Default is Normal Mode. Digital noise reduction (DNR) reduces noise, especially in low light conditions, to improve image performance.

When *Normal Mode* is selected, set the level of noise reduction. Higher value has a stronger noise reduction. Default is 50.

When *Expert Mode* is selected, select the desired Time DNR Level and Space DNR Level. Default is 50.

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

Camera OSD

The recorder lets you configure which information is displayed on-screen for each individual camera.

The on-screen display (OSD) settings appear in live view mode and include the camera name, time, and date. You can also add text to the image. They are part of the image and are therefore also recorded.

To configure the OSD settings in web mode:

1. Click **Configuration** > **Image** > **OSD Settings**.
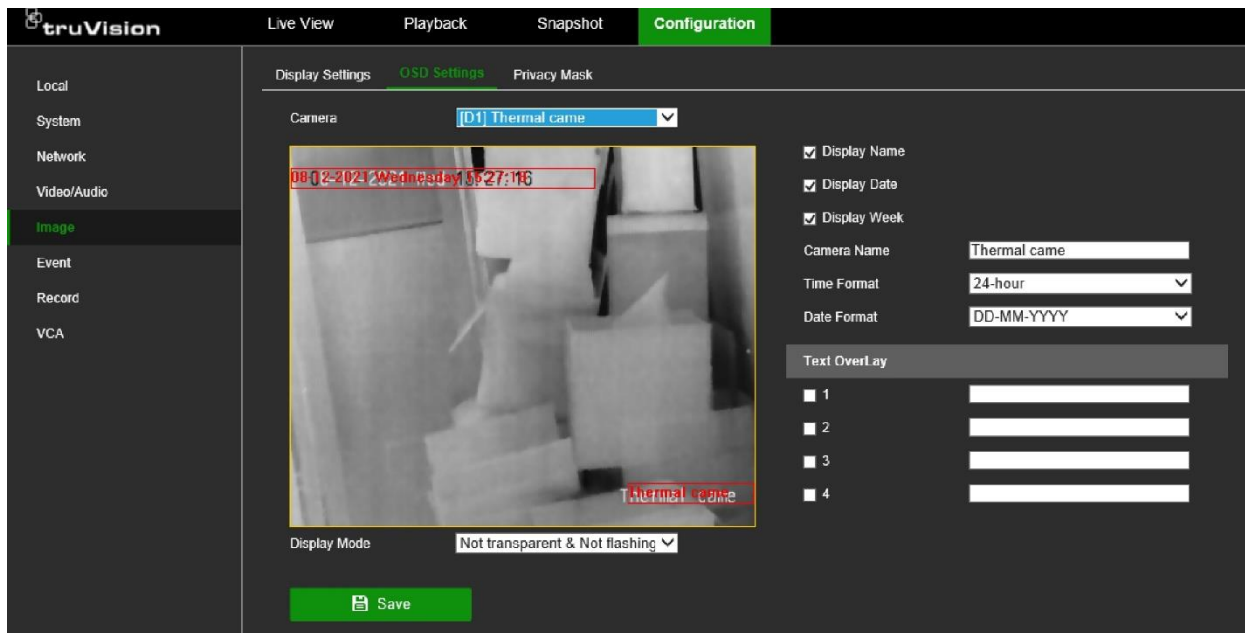
2. Under **Camera**, select the desired camera.

3. Select the **Display Name**, **Display Date**, and **Display Week** check boxes to display the camera name, date, and week.

4. Select a date format and a time format.

5. Define the text to be added on-screen to display extra information, such as contact information. This text is embedded in the video and cannot be removed. Up to four lines of text can be added.

   Note: The text overlay function is not available in OSD mode.

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

To configure the OSD settings in OSD mode:

1. Click **Configuration** > **Camera** > **Display** > **OSD Settings**.

2. Under **Camera**, select the desired camera.

3. Select the **Display Name**, **Display Date**, and **Display Week** check boxes to display the camera name, date, and week.

4. Select a date format and a time format.

5. Select how you want the camera information displayed. Select one of the options from the drop-down list.

   • Transparent & Flashing

   • Transparent & Not Flashing

   • Non-transparent & Flashing

   • Non-transparent & Not Flashing (default)

   Note: This function is not available in web mode.

6. Click **Apply** to save the settings.

Day/night switch

This function is only available in OSD mode.

You can define 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.

To configure day/night switch in OSD mode:

1. Click **Configuration** > **Camera** > **Display** > **Day/Night Switch**.

2. Under **Camera**, select the desired camera.

3. Under **Day/Night Switch**, select one of the options:

    Day: Camera is always in day mode.

    Night: Camera is always in night mode.

    Auto: The camera automatically detects which mode to use. Select the sensitivity of the switch between day and night. Default is 4.

    Auto-Switch: The camera switches between day and night modes according to the configured period. Enter the start and end times.

    Triggered by Alarm Input: The camera switches to day or night mode after an alarm is triggered. Default is Day.

4. Click **Apply** to save the settings.

Privacy mask

You can define an area on screen to remain hidden from view and recording. For example, you can choose to block the view of a camera when overlooking residential premises. This hidden area is referred to as privacy masking. Privacy masking can be viewed in live view and recorded mode. It appears as a black area on the video image.

The number of privacy masks is determined by the number supported by the camera.

To setup a privacy mask in web mode:

1. Click **Configuration** > **Image** > **Privacy Mask**.

2. Select the camera for which to set up privacy masking.

3. Select the **Enable Privacy Mask** check box to enable the function.

4. Set up the mask area.

    Click **Draw Area**. Using the mouse, click and drag a privacy-mask box in the camera view window over the desired area. You can set up to four areas for privacy masking. To delete the masks, click **Clear All**.
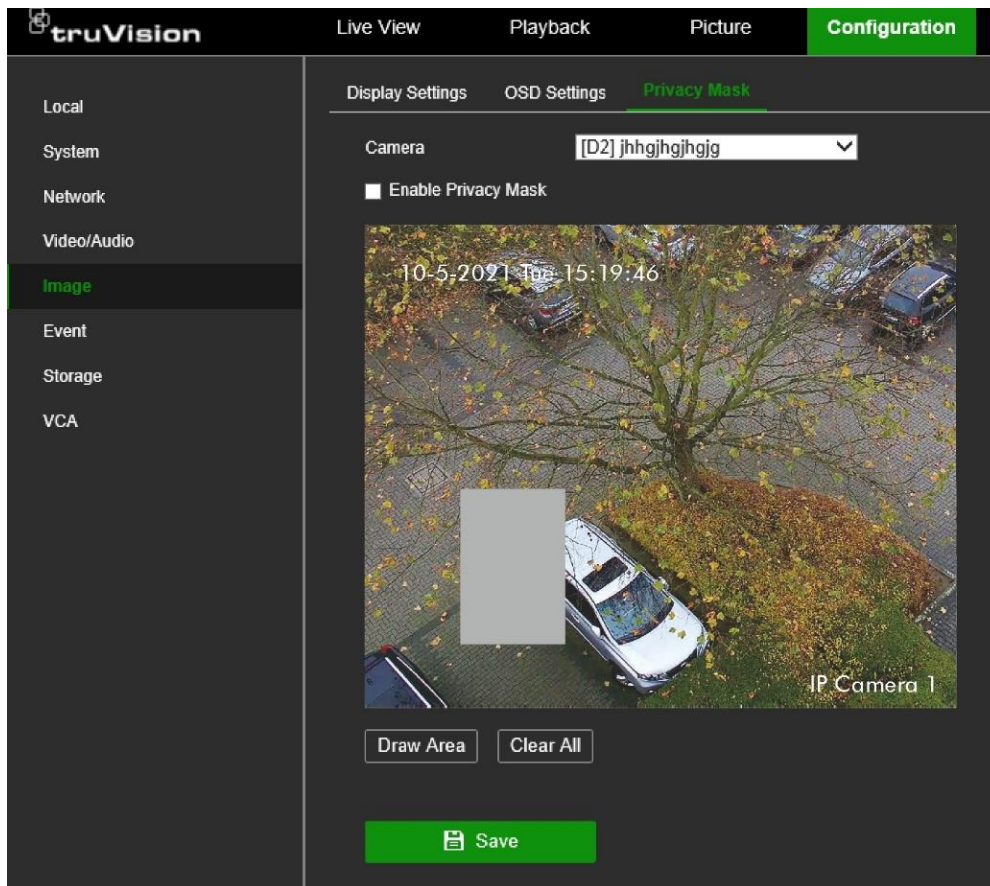
5. Click **Save** to save the settings.

To setup a privacy mask in OSD mode:

1. Click **Configuration** > **Camera** > **Camera** > **Privacy Mask**.

2. Select the camera for which to set up privacy masking.

3. Select the **Enable** check box to enable the function.

4. Set up the mask area.

    Using the mouse, click and drag a privacy-mask box in the camera view window over the desired area. You can set up to four areas for privacy masking. Each area has a different colored frame. To delete the masks, click **Clear**.

5. Click **Apply** to save the settings.

Chapter 10
Event setup

This chapter describes the how to configure for the detection of alarms and events such as motion detection, video loss, camera tampering, and VCA events. There is also information on the different types of alarms and connected responses. Intrusion integration is also explained.

Motion detection

The motion detection function is used to detect motion in a selected area. You can enable or disable motion detection for each camera as well as create motion grids, set the sensitivity of the motion detection, and link motion detection to a specific action.

Note: Not all cameras support this function.

To set up motion detection in web mode:

1. Click **Configuration** > **Event** > **Basic Event** > **Motion**.
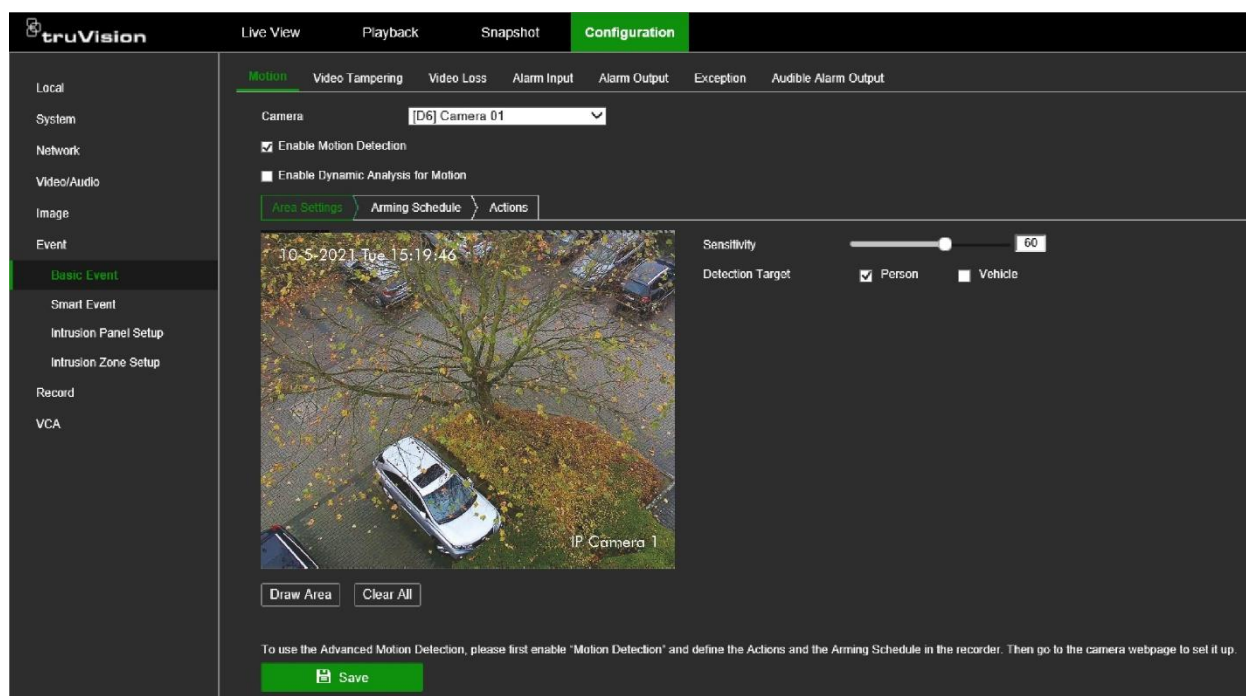
2. Select the camera to detect motion. Each camera must be set up individually.

3. Select **Enable Motion Detection**. If this is not enabled, motion will not be recorded.

4. Select **Enable Dynamic Analysis for Motion**. This allows you to see on-screen motion being detected while setting up the feature. Areas where motion is detected are shown as solid red squares in the motion grid.

5. Click the **Area Settings** tab to create specific areas on-screen to be sensitive to motion. Click **Draw Area** and drag the mouse cursor over the window to select the areas sensitive to motion detection. Click **Stop Drawing**. Repeat this Draw Area-Stop Drawing action for each motion-sensitive area.
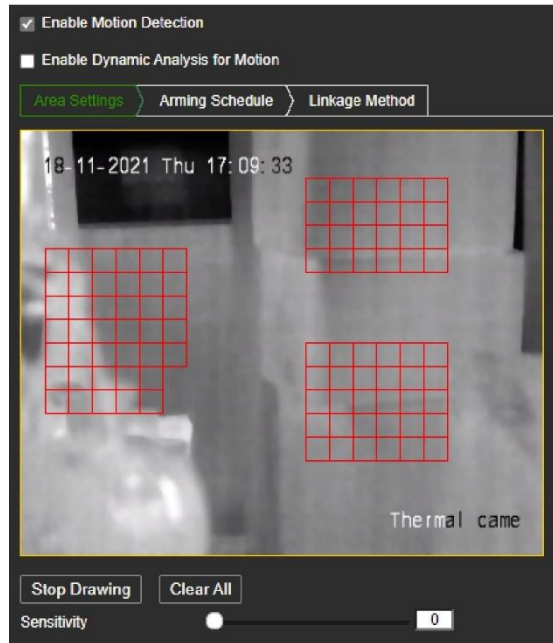
   Set the sensitivity level. Drag the Sensitivity scroll bar to the desired sensitivity level.

6. If the camera supports people/vehicle detection, set the Detection Target as **Person** and/or **Vehicle**. Alarms that are not triggered by people and/or vehicles are ignored.

   Note: Not all cameras support this function. See the list of supported cameras on page 39.

7. Click the **Arming Schedule** tab to select the daily arming schedules for motion detection.

   Click the desired day of the week and a pop-up screen appears where you can enter the start and end times when motion detection can trigger the given actions. You can schedule eight periods in a day. Default is 24 hours.
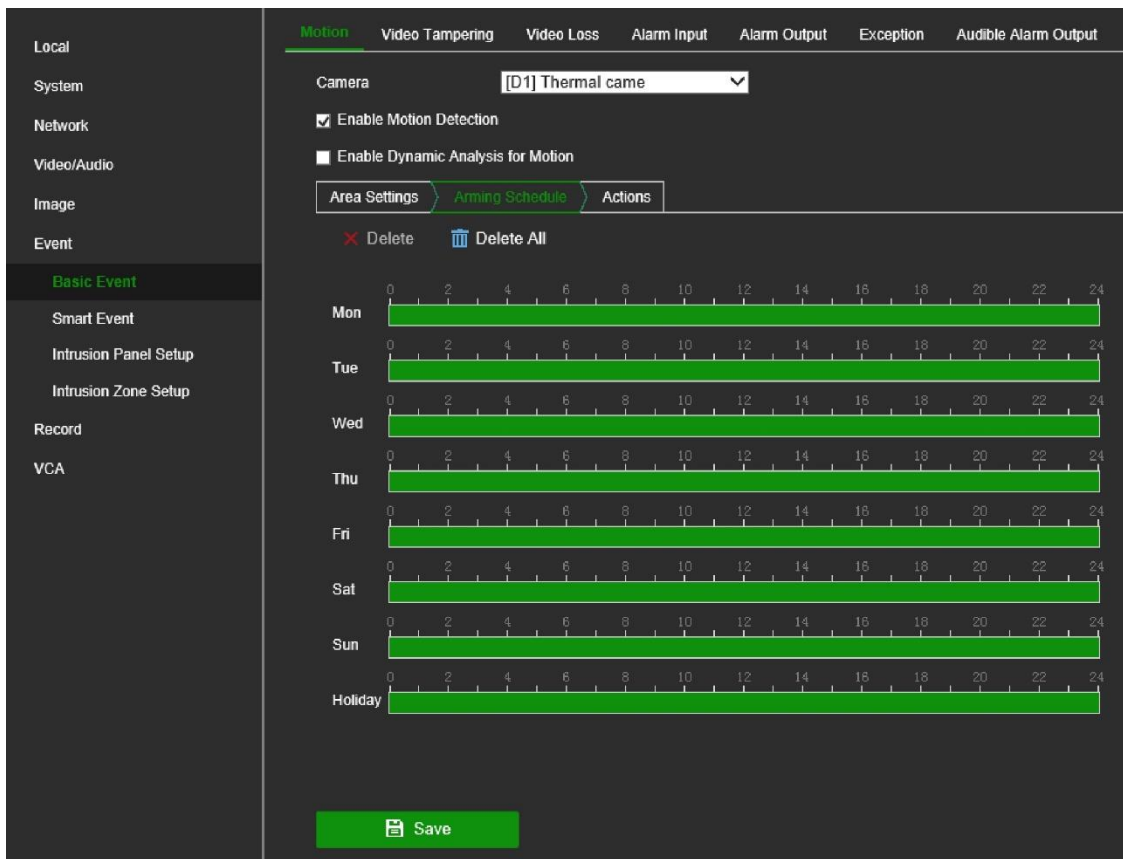
Note that when motion detection is enabled, motion events will always trigger event recording, regardless of the recording schedule (see page 111 for more information on recording schedules).

8. Link the corresponding action to motion detection.

Click the **Actions** tab to define the method by which you want the recorder to notify you of the alarm: Full-screen Monitoring, Enable Alarm Audio, Notify Surveillance Center, Send Email, and Trigger Alarm Output, as well as Audio and Light Alarm Linkage (only for supported cameras).
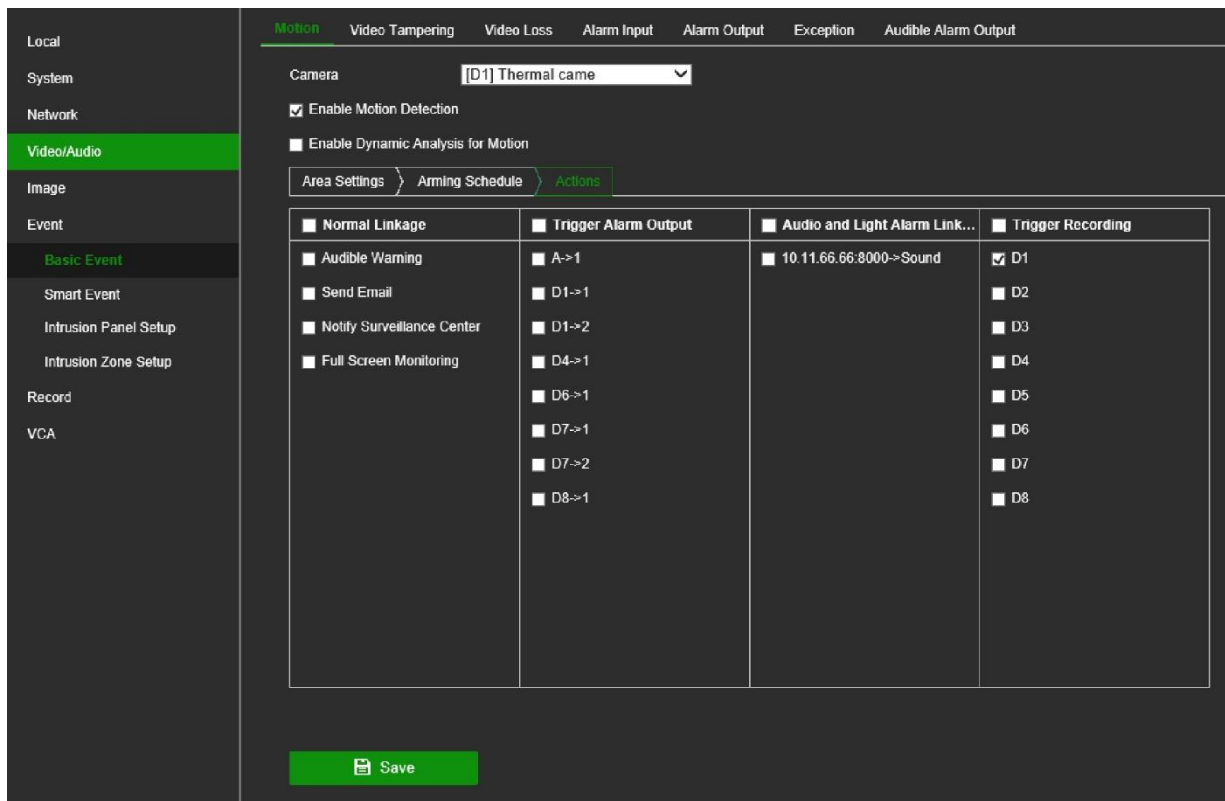
The list of action options available depends on the camera.

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

To set up motion detection in OSD mode:

1. Click **Configuration** > **Event** > **Normal Event** > **Motion Detection**.
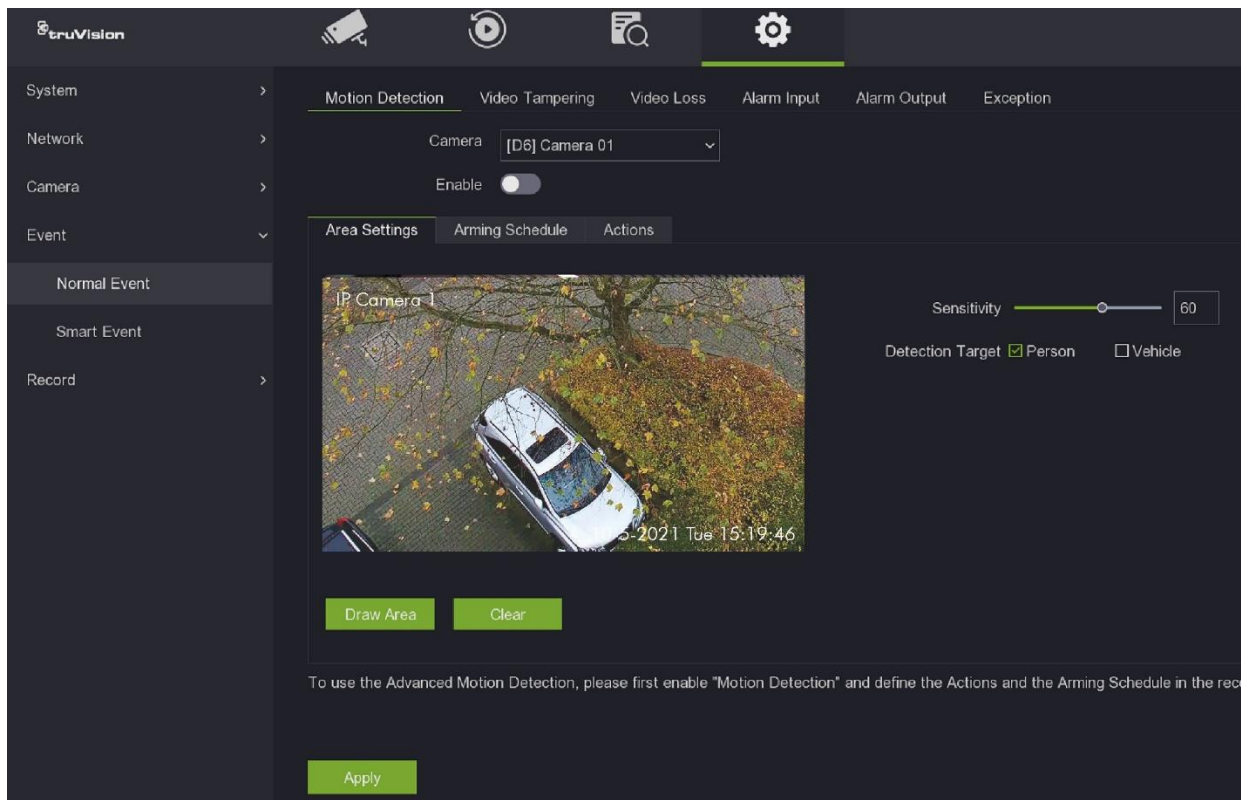
2. Select the camera to detect motion. Each camera must be set up individually.

3. Select **Enable** to enable motion detection. If this is not enabled, motion will not be recorded.

   Note: **Enable Dynamic Analysis for Motion** is only available in web mode.

4. Click the **Area Settings** tab to create specific areas on-screen to be sensitive to motion. Click **Full screen** and drag the mouse cursor over the window to select the areas sensitive to motion detection.

   Set the sensitivity level. Drag the Sensitivity scroll bar to the desired sensitivity level.

5. If the camera supports people/vehicle detection, set the Detection Target as **Person** and/or **Vehicle**. Alarms that are not triggered by people or vehicles are ignored.

6. Click the **Arming Schedule** tab to select the daily arming schedules for motion detection.

   Click the desired day of the week. A pop-up screen appears where you can enter the start and end times when motion detection can trigger the given actions. You can schedule one period in a day. Default is 24 hours.
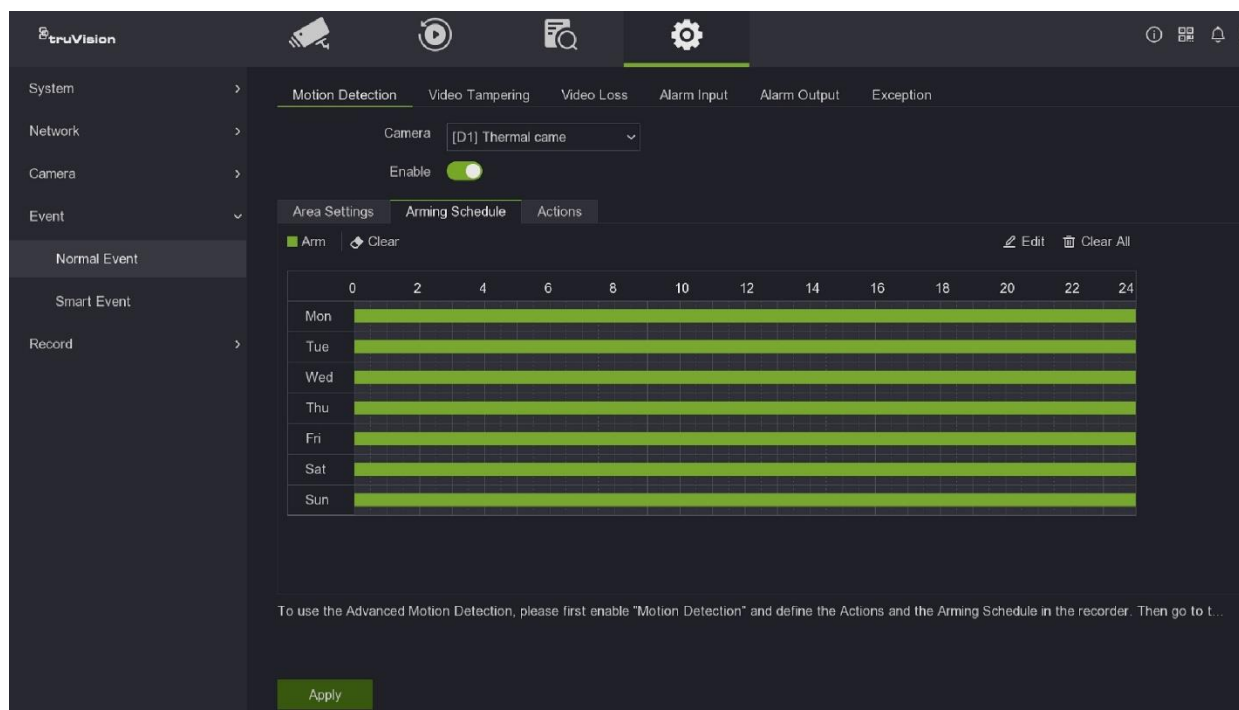
   Note that when motion detection is enabled, motion events will always trigger event recording, regardless of the recording schedule (see page 111 for more information on recording schedules).

7. Link the corresponding action to motion detection.

   Click the **Actions** tab to define the method by which you want the recorder to notify you of the alarm: Full-screen Monitoring, Enable Alarm Audio, Notify Surveillance Center, Send Email, and Trigger Alarm Output, as well as Audio and Light Alarm Linkage (only for supported cameras).
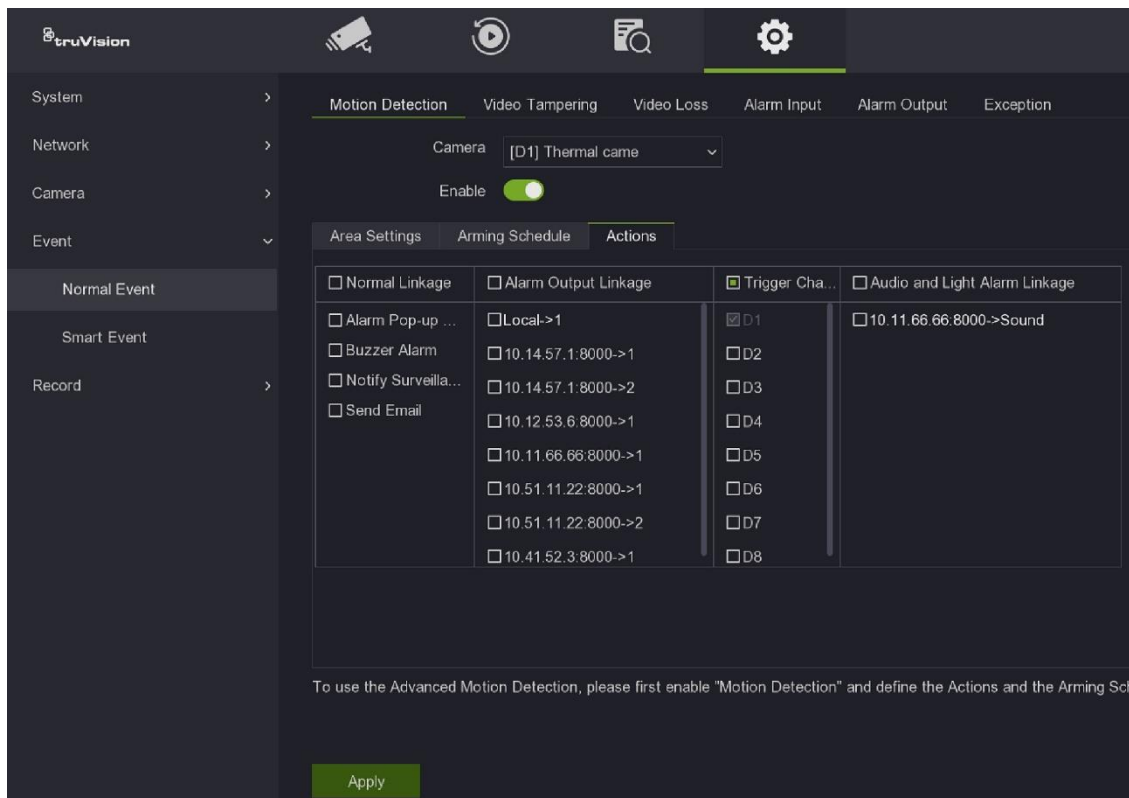
The list of action options available depends on the camera.

8. Click **Save** to save settings.

Advanced motion detection

TruVision Series 6 IP cameras, and future TruVision cameras, have a function called "Advanced motion detection", which allows you to fine tune the motion detection setup. Basic motion detection setup is available in recorders, but advanced motion detection must be done from the camera.

To set up advanced motion detection:

1. Enable motion detection in the recorder and set up the actions and arming schedule.

2. Go to the camera's webpage to set up advanced motion detection.

Camera tamper

You can setup the recorder to alert you when the camera view has changed such as when someone has deliberately blocked the camera view by spraying paint on the lens or by moving the camera. You select a specific area of the camera screen to detect tampering.

This function is not supported by all camera models.

Note: It is strongly recommended not to configure for video tampering when using PTZ dome cameras.

To set up video tampering detection in web mode:

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

2. Select a camera to configure for video tampering detection.

3. Select the **Enable Video Tampering** check box to enable the function.

4. Create a specific area on-screen that is sensitive to detect tampering.

    Click the **Area** tab and click **Draw Area**. Drag the mouse cursor across the screen to select the area sensitive to tamper. Only one area can be drawn. Click **Clear All** to delete the area.

    Select the tamper detection sensitivity level by clicking the sensitivity scroll bar.

5. Select the recording schedules to detect tampering.

    Click the **Arming Schedule** tab and then click the day to set up a period during which alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule up to eight periods in a day. Default is 24 hours for a day.

    Note: The time periods defined during a day cannot overlap.

6. Select the response method to an external alarm.

    Click the **Actions** tab and select the method by which you want the recorder to notify you of the alarm.

    Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, Notify Surveillance Center, and Full Screen Monitoring. More than one option can be selected.

    Note: "Audible warning" is called "Buzzer Alarm" in OSD mode.

    Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the IP addresses of cameras that have an output contact and are connected to the recorder. More than one option can be selected.

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

To set up video tampering detection in OSD mode:

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

2. Select a camera to configure for video tampering detection.

3. Select the **Enable** check box to enable the function.

4. Create a specific area on-screen that is sensitive to detect tampering.

Click the **Area** tab and then drag the mouse cursor across the screen to select the area sensitive to tamper. Only one area can be drawn. Click **Clear** to delete the area.

Select the tamper detection sensitivity level by clicking the sensitivity scroll bar.

5. Select the recording schedules to detect tampering.

Click the **Arming Schedule** tab and select the day of the week and the periods during the day when alarms can be recorded. Click **Edit** to enter the start and end times for each period required in a day. You can schedule up to eight periods in a day. Default is 24 hours.
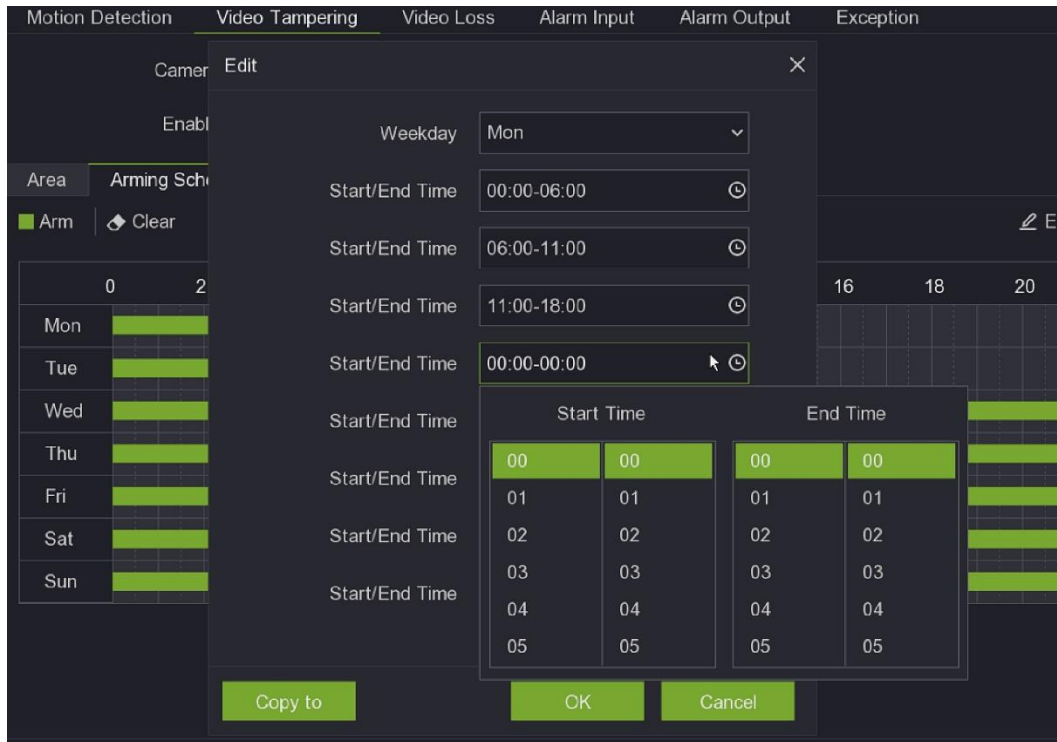
When in the schedule pop-up screen (see above), click **Copy to** to copy the schedule from one day to another.

Note: The time periods defined during a day cannot overlap.

6. Select the response method to an external alarm.

Click the **Actions** tab and select the method by which you want the recorder to notify you of the alarm.

Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Alarm Pop-up Window, Buzzer Alarm, Notify Surveillance Center, Send Email. More than one option can be selected.

Alarm Output Linkage: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the IP addresses of cameras that have an output contact and are connected to the recorder.

7. Click **Apply** to save settings.

Video loss detection

Video may be lost if the camera develops a fault, is disconnected, or is damaged. You can set up the recorder to detect video loss and trigger a system notification.

To setup video loss detection in web mode:

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

2. Select a camera to configure for video loss detection.

3. Select the **Enable Video Loss Detection** check box to enable the function.

4. Set the arming schedule for detecting video loss.

   Click the **Arming Schedule** tab and then click the day to set up a period during which alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule up to eight periods in a day. Default is 24 hours for a day.

   Note: The periods defined during a day cannot overlap.

5. Select the alarm response method.

   Click the **Actions** tab and select the method by which you want the recorder to notify you of the alarm.

   Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, Notify Surveillance Center, and Full Screen Monitoring. More than one option can be selected.

   Note: "Audible warning" is called "Buzzer Alarm" in OSD mode.

   Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the IP addresses of cameras that have an output contact and are connected to the recorder. More than one option can be selected.

6. Click **Save** to save settings.

To setup video loss detection in OSD mode:

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

2. Select a camera to configure for video loss detection.

3. Select the **Enable** check box to enable the function.

4. Set the arming schedule for detecting video loss.

   Click the **Arming Schedule** tab and then click the day to set up a period during which alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule up to eight periods in a day. Default is 24 hours for a day.

   Note: The periods defined during a day cannot overlap.

5. Select the alarm response method.

   Click the **Actions** tab and select the method by which you want the recorder to notify you of the alarm.

   Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, Notify Surveillance Center, and Full Screen Monitoring. More than one option can be selected.

   Note: "Audible warning" is called "Buzzer Alarm" in OSD mode.

   Alarm Output Linkage: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the channels numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

6. Click **Apply** to save settings.

Set up alarm inputs

The recorder can be configured to record when an alarm is triggered by an external alarm device (for example, PIR detector, dry contacts…). They are the physical inputs on the cameras and recorder.

To set up external alarms in web mode:

1. Click **Configuration** > **Event** > **Basic Event** > **Alarm Input**.

2. Select the desired alarm input number of the recorder or camera, alarm type (NO (normally open) or NC (normally closed)). Default is NO. You can also enter a name for the alarm.

   The camera IP address is automatically entered depending on the alarm input number selected.

3. If you set *Settings* to **Not used**, the alarm input will be disabled. If you set Settings to **Input**, the selected linkage method(s) of the alarm input will be disabled. For information on *Disable Actions*, see "Disable Actions" on page 97.

4. Set the arming schedule for detecting external alarms.

   Click the **Arming Schedule** tab and then click the day to set up a period during which triggered alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule up to eight periods in a day. Default is 24 hours for a day.

   Note: The periods defined during a day cannot overlap.

5. Select the alarm response method.

   Click the **Actions** tab and select the method by which you want the recorder to notify you of the alarm.

Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, Notify Surveillance Center, and Full Screen Monitoring. More than one option can be selected.

Note: "Audible warning" is called "Buzzer Alarm" in OSD mode.

Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the channels numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

Trigger Recording: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger recording. More than one camera can be selected.

PTZ Linkage: This is the PTZ camera function required in response to an external alarm. Select the PTZ camera under **PTZ Linkage**. Enter the preset, preset tour or shadow tour that is triggered when the alarm is detected.

6. If you want to copy a camera's settings to another camera, click **Copy to**. In the pop-up window that appears, select the camera to which to copy the settings. Click **OK**.

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

To set up external alarms in OSD mode:

1. Click **Configuration** > **Event** > **Normal Event** > **Alarm Input**.

   The window displays the status of the alarm inputs is shown for the recorder and cameras.
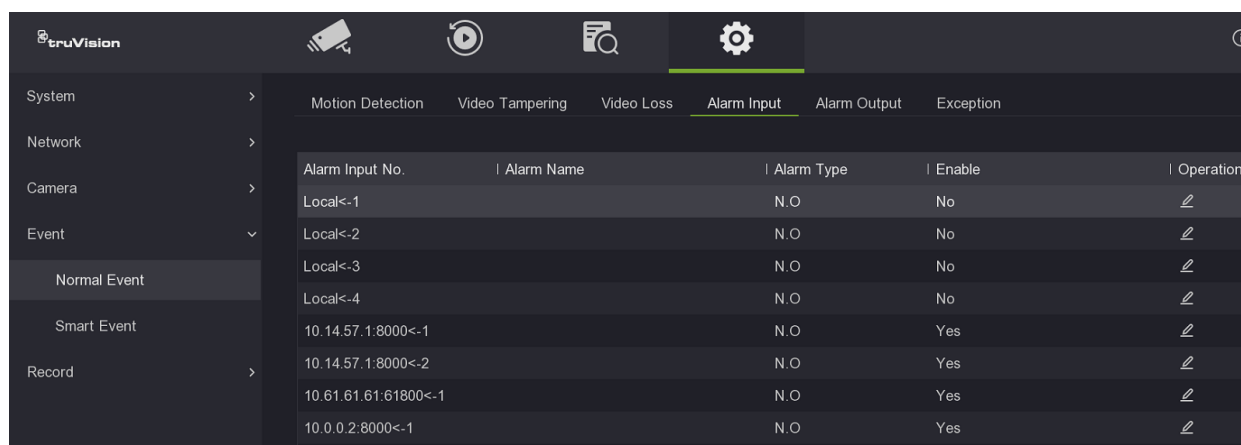
2. To change the settings for any recorder or camera alarm input, click **Edit** ✐ for the desired recorder/camera. Change the alarm type (NO (normally open) or NC (normally closed)). Default is NO. You can also enter a name for the alarm.

3. If you set *Settings* to **Not used**, the alarm input will be disabled. If you set Settings to **Input**, the selected linkage method(s) of the alarm input will be disabled. For information on *Disable Actions*, see "Disable Actions" on page 97.

4. Set the arming schedule for detecting external alarms.

   This function is only available in web mode.

5. Select the alarm response method.

   This function is only available in web mode.

6. Click **Apply** to save settings.

Set up alarm outputs

You can connect the recorder to an alarm system, such as a siren or intrusion system, which is then activated when an alarm is triggered. You can select how long the alarm signal remains active as well as schedule when alarm outputs can be triggered.

The alarm status of a recorder or camera is disabled by default. It can be triggered by a event such as motion detection when its status will then change from OFF to ON. However, there are up to two ways to manually trigger the alarm output of a device. The alarm can be manually triggered from the Configuration > Event menu in both web and OSD mode as well as from live view when in web mode only.

If, for example, you want to enable an output, go to live view in web mode and in the bottom right corner of the screen click the *Alarm Output* ▣ icon and enable the desired recorder/camera. The alarm status under Event > Basic Event > Alarm Output then changes to ON. When you want to disable the output, return to *Alarm Output* in live view and deselect the option. The alarm status changes back to OFF.

To set up an alarm output in web mode:

1. Click **Configuration** > **Event** > **Basic Event** > **Alarm Output**.

2. Select the desired alarm output number of the recorder or camera. You can also enter a name for the alarm. The camera IP address is automatically entered depending on the alarm input number selected.

3. Under *Delay*, select a timeout option between 5 seconds and 10 minutes or select "Manual".

   The delay setting (or dwell time) lets you define how long an alarm signal remains active after the alarm has ended. If you select **Manual**, the alarm status remains unchanged until it is manually changed.

4. To manually change the alarm status of the selected recorder or camera:

   Live view: At the bottom right corner of the screen, click the *Alarm Output* ▣ icon and enable the desired recorder/camera. The alarm status of the selected device changes from OFF to ON.

   — or —

   Configuration > Event > Basic Event > Alarm Output: Click the **Manual Alarm** button. The alarm status of the selected device changes from OFF to ON. The button is renamed *Clear Alarm.* Click **Clear Alarm** to disable the alarm status.

5. Set the arming schedule for the alarm outputs.

   Click the **Arming Schedule** tab and then click the day to set up a period during which triggered alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule up to eight periods in a day. Default is 24 hours for a day. Click **Delete All** to delete all saved schedules or **Delete** to delete the schedule for the selected day.

   Note: The periods defined during a day cannot overlap.
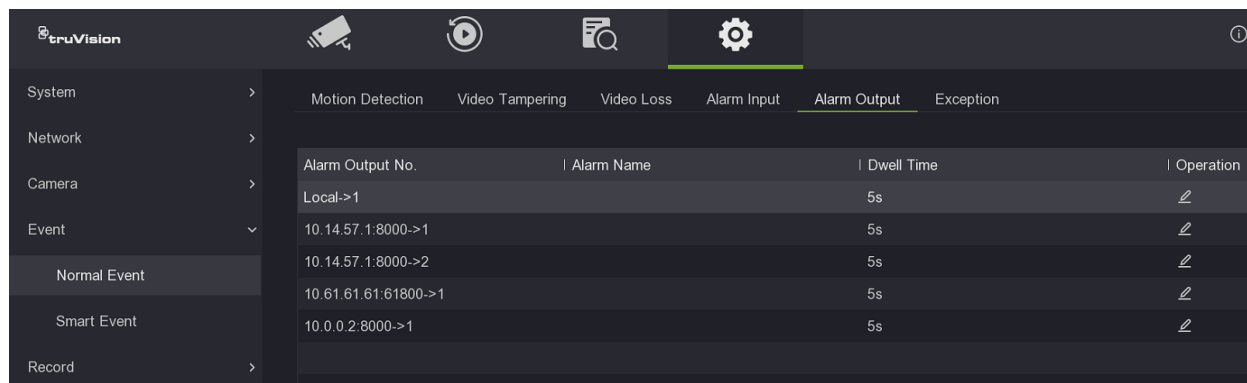
6. If you want to copy a camera's settings to another camera, click **Copy to**. In the pop-up window that appears, select the camera to which to copy the settings. Click **OK**.

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

To set up an alarm output in OSD mode:

1. Click **Configuration** > **Event** > **Normal Event** > **Alarm Output**.

   The status of the alarm outputs is shown for the recorder and cameras.

2. To change the settings for any recorder or camera alarm output, click **Edit** ✎ for the desired recorder/camera. You can also enter a name for the alarm.

3. Under *Dwell Time*, select a timeout option between 5 and 600 seconds or select "Manually Clear".

   The dwell time lets you define how long an alarm signal remains active after the alarm has ended. If you select **Manually Clear**, the alarm status remains unchanged until it is manually changed.

4. To manually change the alarm status of the selected recorder or camera, click the **Trigger** button at the bottom of the screen. The alarm status of the selected device changes from *Close* to *Enable*. The button is renamed Clear. Click **Clear** to disable the alarm status.

5. Set the arming schedule for the alarm outputs.

   Click the **Arming Schedule** tab and then click the day to set up a period during which triggered alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule up to eight periods in a day. Default is 24 hours for a day. Click **Clear All** to delete all saved schedules or **Clear** to delete the schedule for the selected day.

Note: The periods defined during a day cannot overlap.

6. If you want to copy a camera's settings to another camera, click **Copy to**. In the pop-up window that appears, select the camera to which to copy the settings. Click **OK**.

7. Click **Apply** to save settings.

Manually trigger an alarm output

You can manually trigger outputs of the recorder.

To trigger or clear alarm outputs manually in web mode:

1. Click **Configuration** > **Event** > **Basic Event** > **Alarm Output**.

2. Select the desired alarm output and click the **Manual Alarm** button to trigger or stop an alarm output. Click **Clear Alarm** to clear an alarm output.

3. Click **Save**. The alarm is silenced.

To trigger or clear alarm outputs manually in OSD mode:

1. Click **Configuration** > **Event** > **Normal Event** > **Alarm Output**.

2. Under Operation, click the **Edit** button for the desired alarm output of a recorder/camera. The arming schedule window opens.

3. Click the **Trigger** button to trigger an alarm output. Click **Clear** to clear an alarm output.

4. Click **Apply**. The alarm is silenced.

Exception notification

You can select the alarm and event exception types to be included in the alarm center that lists the detected alarm and event notifications. Click the alarm center icon in the top right of the screen to get the list of exception types that have been triggered.

The different types of exception types:

•   **HDD Full:** All installed HDDs are full and will not record any more video.

•   **HDD Error:** Errors occurred while files were being written to the HDD, there is no HDD installed, or the HDD had failed to initialize.

•   **Network Disconnected:** Disconnected network cable.

•   **IP Conflict**: Conflict in IP address setting.

•   **Illegal Login:** Wrong user ID or password used.

•   **Record Exception:** HDD cannot record any more files. This could be due to the overwrite option being disabled so recorded files are locked and cannot be deleted.

- **PoE Power Overload:** PoE power overload detected. Note that this is only shown in OSD mode.

To set up event notifications in web mode:

1. Click **Configuration** > **Event** > **Basic Event** > **Exception**.

2. Select a event notification and how the recorder should respond to it.

   Under **Exception Type**, select the desired alarm or event to be notified.

3. Select the alarm response method.

   Select the method by which you want the recorder to notify you of the alarm.

   Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, and Notify Surveillance Center. More than one option can be selected.

   Note: "Audible warning" is called "Buzzer Alarm" in OSD mode.

   Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the channels numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

4. Click **Save** to save settings.

To set up event notifications in OSD mode:

1. Click **Configuration** > **Event** > **Normal Event** > **Exception**

2. Select the **Event Hint** check box to enable the function.

3. Select a event notification and how the recorder should respond to it.

   Under **Exception Type**, select the desired alarm or event to be notified.

4. Select the alarm response method.

   Select the method by which you want the recorder to notify you of the alarm.

   Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Buzzer Alarm, Send Email, and Notify Surveillance Center. More than one option can be selected.

   Note: "Audible warning" is called "Buzzer Alarm" in OSD mode.

   Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the IP addresses of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

5. Click **Apply** to save settings.

Intrusion integration alarm reporting

The recorder includes an alarm receiver software module for intrusion integration. This permits SIA and XSIA events to be reported to the recorder from Aritech intrusion panels via IP and to be linked to recorder actions.

The following Aritech panels are supported:

- ATS Master (EMEA only)

- Advisor Advanced

- NetworX panels

Up to three intrusion panels can be set up in the recorder. Each panel can report up to 32 intrusion zones (a zone is an intrusion panel input).

The panels must support the SIA or XSIA reporting protocol. They can report the following alarm types to the recorder:

- An arming event

- A disarming event

- An alarm event that has an "A" as a second character in the SIA/XSIA code as well as codes BV and HV.

Intrusion Alarm_BA (Burglary alarm)	Intrusion Alarm_TA (Tamper alarm)
Intrusion Alarm_EA (Exit alarm)	Intrusion Alarm_UA (Technical alarm (General))
Intrusion Alarm_FA (Fire alarm)	Intrusion Alarm_WA (Technical alarm (Water))
Intrusion Alarm_GA (Technical alarm (gas))	Intrusion Alarm_ZA (Technical alarm (Low temperature))
Intrusion Alarm_HA (Hold-up alarm)	Panel Heartbeat Alarm
Intrusion Alarm_JA (User code tamper)	Arming Panel Alarm
Intrusion Alarm_KA (Technical alarm (High temperature)	Disarming Panel Alarm
Intrusion Alarm_MA (Medical alarm)	Intrusion Alarm_HV (Hold-up verified)
Intrusion Alarm_PA (Panic alarm	Intrusion Alarm_BV (Burglary verified)
Intrusion Alarm_QA (Emergency alarm)	

- A heartbeat alarm

In the intrusion panel, set up the recorder as a normal monitoring station. Use OH version 3 so that the data format is understood by the recorder.

The *Intrusion Panel Setup* and *Intrusion Zone Setup* functions are only available in web mode.

This function is **only available in web mode**.

To set up an alarm panel in the recorder in web mode:

1. Click **Configuration** > **Event** > **Intrusion Panel Setup**.

2. In the *Intrusion Panel Setup* window, enter the required settings.
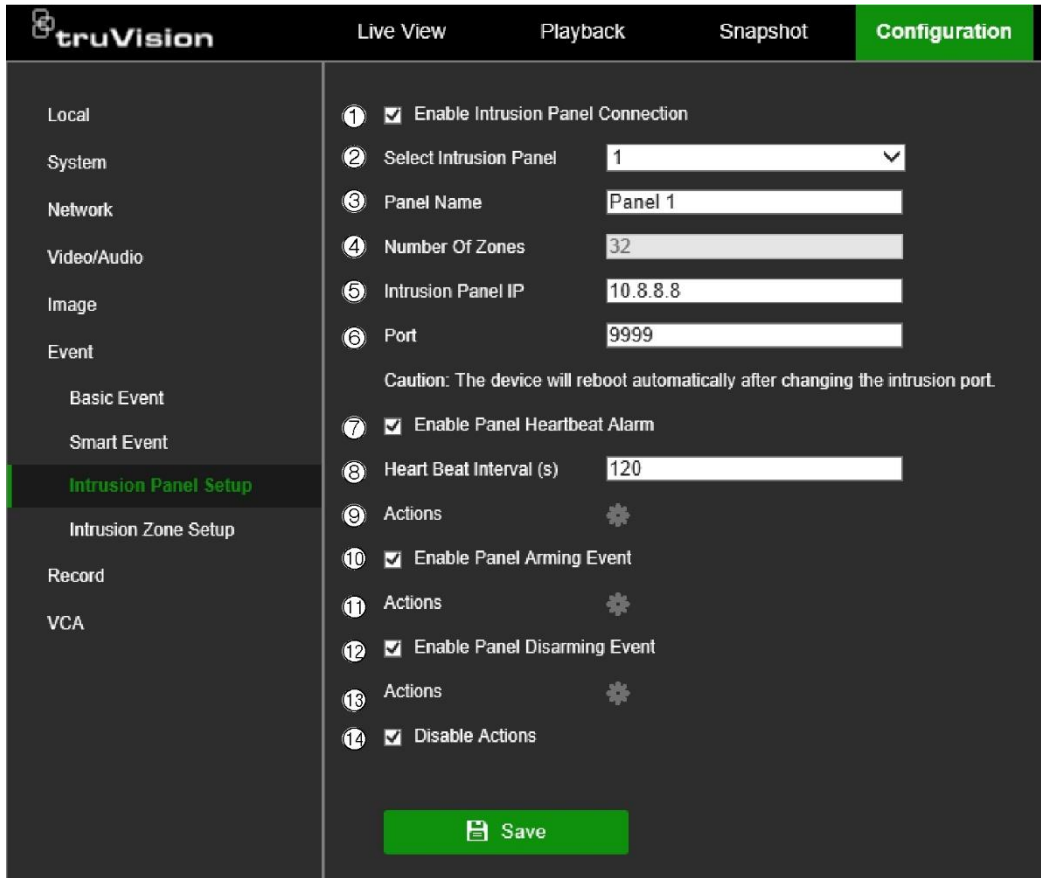
Option	Description
Set up the intrusion panel connection parameters:	
1. Enable Intrusion Panel Connection	Select this check box to enable the intrusion panel connection.
2. Select Intrusion Panel	Select which panel you want to set-up. Up to three panels can be set up.
3. Panel Name	Enter a name for the panel.
4. Number of Zones	Up to 32 panel zones can report to the recorder. The number cannot be increased but you can allocate a different ID for each zone under the "Intrusion Zone Setup" menu.
5. Intrusion Panel IP	Enter the panel's IP address. The IP address must be in the same LAN as the recorder.
6. Port	Enter the port that is used to report the events. Default is 9999. This port number must match the port number set up in the intrusion panel.
Set up the heartbeat alarm parameters:	
7. Enable Panel Heartbeat Alarm	Select this check box to enable the panel heartbeat alarm. The heartbeat alarm will then be reported to the recorder.

8.	Heartbeat Interval(s)	Enter the interval between two heartbeats. It is measured in seconds. Default is 120 s. This interval is valid even if the "Enable Panel Heartbeat Alarm" check box is disabled.
		To be able to trigger a heartbeat alarm when the heartbeat is not received within this interval, enable the "Enable Panel Heartbeat Alarm" check box.
		The recorder heartbeat interval must always be higher than that of the intrusion panel.
9.	Actions	Click the **Actions** ⚙ button to set up the actions linked to the panel heartbeat alarm. Go to step 3.

Set up the panel arming event parameters:

| 10. | Enable Panel Arming Event | Select this check box to enable the panel arming event. When the panel is armed, it will be reported to the recorder. |
| 11. | Actions | Click the **Actions** ⚙ button to set up the actions linked to the panel arming event. Go to step 3. |

Set up the panel disarming alarm parameters:

12.	Enable Panel Disarming Alarm	Select this check box to enable the panel disarming event. When the panel is disarmed, it will be reported to the recorder.
13.	Actions	Click the **Actions** ⚙ button to set up the actions linked to the panel disarming alarm. Go to step 3.
14.	Disable Actions	Select this check box to enable the execution of event/alarm actions and to influence the recording behavior. Default is Disabled.
		See "Disable Actions" on page 97 for further information.

3. To define the actions for the heartbeat, panel arm and panel disarm alarms that are reported by the intrusion panel, enable the desired functions, and click the **Actions** tab for each to set up the arming schedule and alarm response actions.

Arming Schedule:	Define the alarm schedule for the actions over a week and for holidays. You can schedule one period in a day. Default is 24 hours.
Actions:	**Normal Linkage**: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, Notify Surveillance Center, Full-screen Monitoring.
	Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are the channels numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.
	Trigger Recording: This applies to the cameras connected to the recorder. A message is sent to the selected camera to start recording. More than one camera can be selected.
	PTZ Linking: Select the PTZ camera as well as the preset, preset tour, or shadow tour that is triggered when the alarm/event is detected. **Note**: The preset tour and a shadow tour have a time limitation when using them as an action here.

   Click **OK** to return to the main window.

4. Click **Save** to save the intrusion panel setup parameters.

To set up the zones in an alarm panel in web mode:

1. Click **Alarm & Event Setup** > **Intrusion Zone Setup**.

2. Under **Select Intrusion Panel**, select intrusion panel 1, 2 or 3.

3. Under **Line Number**, select the desired line number. The line number can be any valid number of the panel, which does not need to match the zone ID.

4. Select the desired ID of a zone. The maximum is 32. The number does not have to match the line number.

5. Click the *Arming Schedule* tab to set the arming schedule for the selected zone number. Click the day to set up a period during which triggered alarms can be recorded. In the pop-up box that appears, enter the start and end times. You can schedule one period in a day. Default is 24 hours for a day.

6. Click the *Actions* tab to set the alarm response method. Select the method by which you want the recorder to notify you of the alarm.

Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, and Notify Surveillance Center. More than one option can be selected.

Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are the channels numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

Trigger Recording: This applies to the cameras connected to the recorder. A message is sent to the selected camera to start recording. More than one camera can be selected.

PTZ Linking: Select the PTZ camera as well as the preset, preset tour, or shadow tour that is triggered when the alarm/event is detected.

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

Disable Actions

The *Disable Actions* feature allows you to disable the execution of the event/alarm actions and to influence the recording behavior based on the arming status of an alarm panel.

The actions associated with motion detection, VCA, and alarms (alarm inputs or intrusion panel events) can be disabled when the alarm panel is disarmed. This will avoid users receiving unnecessary notifications (push notifications, emails, events in TruVision Navigator) or triggering actions (alarm output, PTZ preset, ...).

When the panel is armed again, the recorder will resume its scheduled operation and execute the configured actions and recordings.

The *Disable Actions* function can be used via Alarm Input 1 or via the OH integration.

The function can also be used with non-Aritech alarm panels.

To set up Disable Actions via alarm input 1 in web mode:

1. Click **Configuration** > **Event** > **Basic Event** > **Alarm Input**.
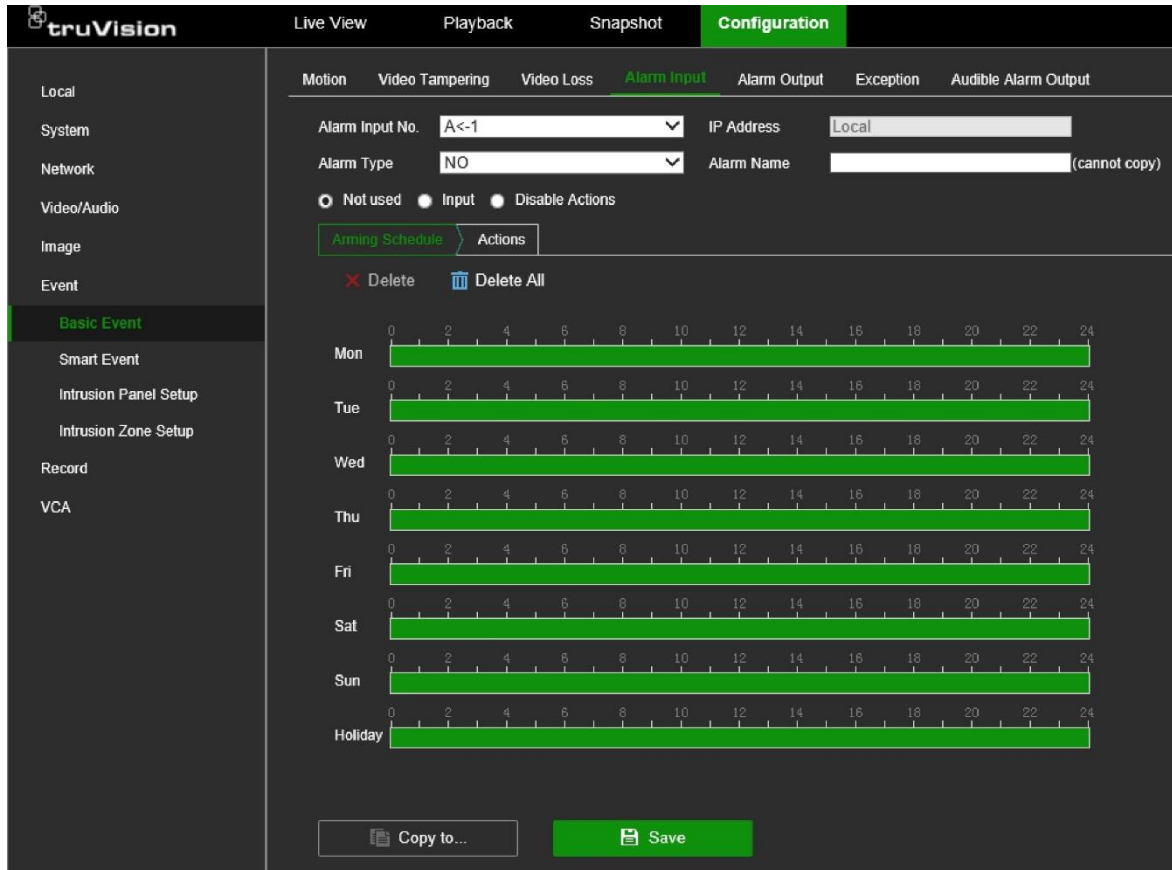
2. Select **Disable Actions** for alarm input 1. The Disable Actions function is only available for alarm input 1.

3. Make sure the alarm panel has a relay contact to connect it to the recorder. Connect one wire to alarm input 1 and connect the other wire to one of the Ground ('G') connections.

4. Select the alarm input type, NO (normally open) or NC (normally closed). Default is NO.

5. When the alarm input is triggered, the actions for motion detection and VCA will be disabled.

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

To set up Disabled Actions via the alarm panel (OH integration) in web mode:

1. Click **Configuration** > **Event** > **Intrusion Panel Setup**.
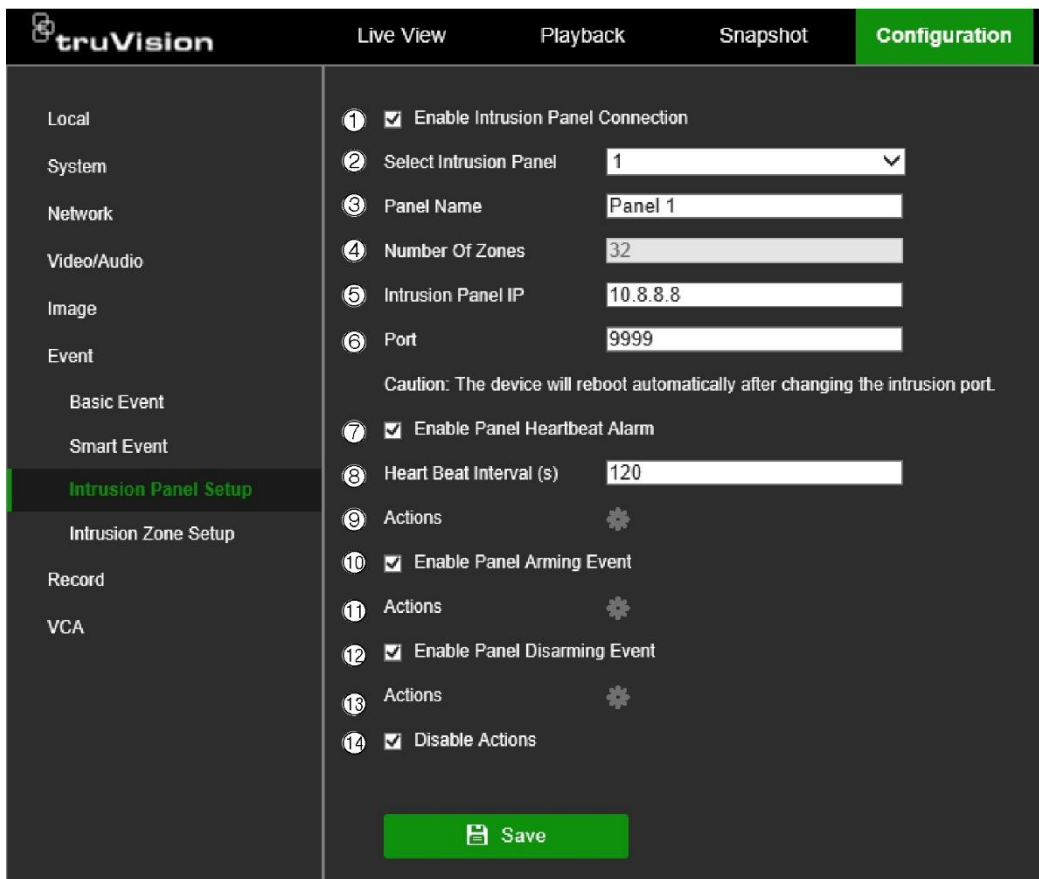
2. Select **Disable Actions** for the desired alarm panel connection. Three alarm panels can be linked to the recorder. You can enable **Disable Actions** for each panel.

   Make sure that you also set up the other parameters for the alarm panel. See "Intrusion integration alarm reporting" on page 93 for further information.

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

   When the alarm panel sends a SIA/XSIA event for disarming (OP message), the recorder will not execute the actions anymore for motion detection and VCA or for alarms (alarm inputs or intrusion panel events).

   Note: The actions that are set-up for the disarming event will also no longer be executed. This is a known limitation.

To define the recording behavior when Disable Actions is used in web mode:

1. Click **Configuration** > **System** > **System Settings**.

2. Click the tab **Recording Behavior for Disable Actions**.

3. Select one of the options from the drop-down list. The options are:

   No influence on recording: Disable Actions will have no influence on the recordings. Recording of all cameras will continue as scheduled.

   Disable all recordings: Disable Actions will stop all recordings for all cameras, regardless of the schedule or recording type.

   Disable event/alarm recordings: Disable Actions will stop the scheduled recordings for events (motion, VCA) and alarms (alarm inputs, intrusion panel

alarms). Cameras that are scheduled for continuous recording will not stop the recording.

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

To set-up Disable Actions via alarm input 1 in OSD mode:

1. Click **Configuration** > **Event** > **Normal Event** > **Alarm Input**.

2. Under Operation, click the **Edit** ✎ button for the desired alarm input of a recorder/camera.

3. Select **Disable Actions** for the recorder alarm input 1. The Disable Actions function is only available for the recorder alarm input 1.

4. Make sure the alarm panel has a relay contact to connect it to the recorder. Connect one wire to alarm input 1 and connect the other wire to one of the Ground ('G') connections.

5. Select the alarm input type, NO (normally open) or NC (normally closed). Default is NO.

6. When the alarm input is triggered, the actions for motion detection and VCA event will be disabled.

7. Click **Apply** to save the changes.

Smart event

The configuration of each individual smart event that is available in a camera can be configured via the recorder. It is possible sometimes to fine tune the configuration in the camera webpage.

There are several types of smart events to select. The type of smart events listed depends on what the camera supports. When a smart event is detected, a series of linkage methods can be triggered. See Table 4 below.

Note: Smart events use event recording settings.

Table 4: Smart types

Smart event types	Description
Face Detection	When this function is enabled, the camera can detect a moving object that is moving towards it, triggering a configurable response. The camera can only detect a face looking directly into the camera, not side views. This feature is best suited when the camera is in front of a door or in a narrow corridor.
Audio Exception Detection	Audio exception detection detects the loss of sound as well as the sudden increase or decrease of sound that is above a selected threshold.

Smart event types	Description
Cross Line Detection	This function can be used to detect people, vehicles, and objects crossing a pre-defined line or an area on-screen. The line crossing 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. This event can be used to detect people or vehicles when this function is supported by TruVision cameras.
Intrusion Detection	You can set up an area in the surveillance scene to detect when intrusion occurs. If someone enters the area, a set of alarm actions can be triggered. This event can be used to detect people or vehicles when this function is supported by TruVision cameras.
Defocus Detection	The camera can detect image blur caused by defocusing of the lens, triggering 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.
Scene Change	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.
Enter Region Detection	This function detects people, vehicles or other objects that enter a designated region from outside the designated region.
Exit Region Detection	Region exiting detection function detects people, vehicle or other objects that exit from a designated region, and certain actions can be configured to occur when the alarm is triggered.
Object Left Behind Detection	Unattended baggage detection function detects the objects left in the designated region such as baggage, a purse, dangerous materials, etc.
Object Removed Detection	Object removal detection function detects objects removed from a designated region, such as exhibits on display.
Fire Detection	This event type detects a fire source. Its schedule and actions are set up in the recorder. It is only available via the web browser. **IMPORTANT NOTICE**: This fire detection feature is not a substitute for a certified fire detection system.
Temperature Difference Alarm	This event option is currently not supported by the thermal camera. This event type triggers an alarm when the temperature difference between two regions exceeds the defined temperature threshold value. Its schedule and actions are set up in the recorder. It is only available via the web browser.
Temperature Alarm	This event type triggers an alarm when the temperature exceeds the defined temperature threshold value. Its schedule and actions are set up in the recorder. It is only available via the web browser.

To set up Smart Event actions in web and OSD mode:

1. Click **Configuration** > **Event** > **Smart Event**.

2. Select the desired camera to set up the smart event.

The Smart types available are displayed as tabs. The list depends on what is supported by the camera.

Note: There are more Smart types displayed in web mode than OSD mode for the same camera.

3. Select the recording schedules for the smart event.

   Click the **Arming Schedule** tab and select the day of the week and the time periods during the day when motion can be recorded. You can schedule up to eight time periods in a day. Default is 24 hours.

   Note: The time periods defined cannot overlap.

4. Select the response method by which you want the recorder to notify you of the Smart event.

   Click the **Actions** tab and select the desired options. More than one option can be selected.

   Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, and Notify Surveillance Center. More than one option can be selected.

   Alarm Output Linkage: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are the channels numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

   Trigger Recording: This applies to the cameras connected to the recorder. A message is sent to the selected camera to start recording. More than one camera can be selected.

   Audio and Light Alarm Linkage: Only for supported cameras. This action lets you hear a pre-recorded audio message and see a flashing white LED.

   PTZ Linkage: Select the PTZ camera as well as the preset, preset tour, or shadow tour that is triggered when the alarm/event is detected.

5. Select the PTZ control actions to link to the smart event.

   Under **PTZ Linkage,** select the PTZ camera and enter the preset, preset tour, or shadow tour number to be triggered when the alarm is detected. Also select the audio and light alarm linkage, for cameras that support these features.

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

Behavior analysis

The behavior analysis function lets you configure the cameras to detect specific behavior events. For each event type you can define several parameters such as the event rules, arming schedule, the alarm response method, the shield region and how to display the VCA event.

This function is only available in web mode.

Behavior analysis is currently only supported by the new TruVision thermal cameras (TVTH-S01 cameras).

Behavior analysis rules for thermal cameras
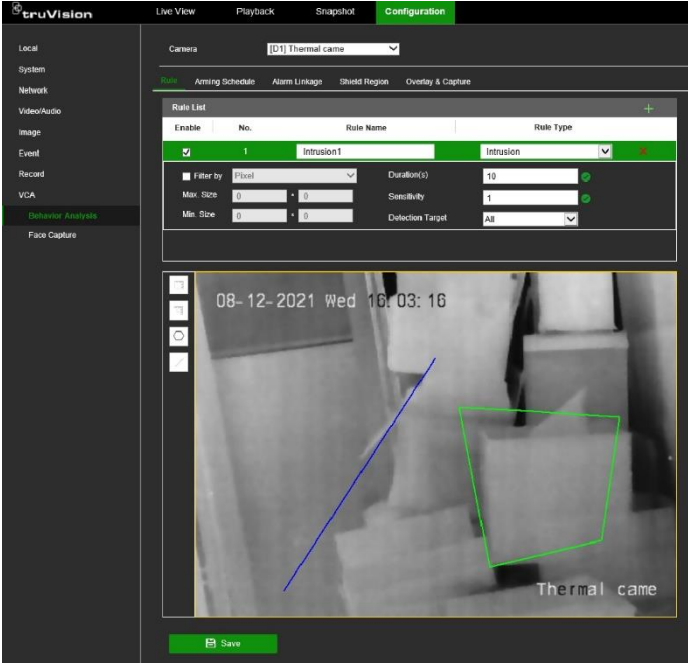
Use the **VCA** > **Behavior Analysis** > **Rule** menu to set up the rule parameters for behavior analysis. See Figure 10 below.

Figure 10: Description of the rule menu (Cross line behavior type shown)
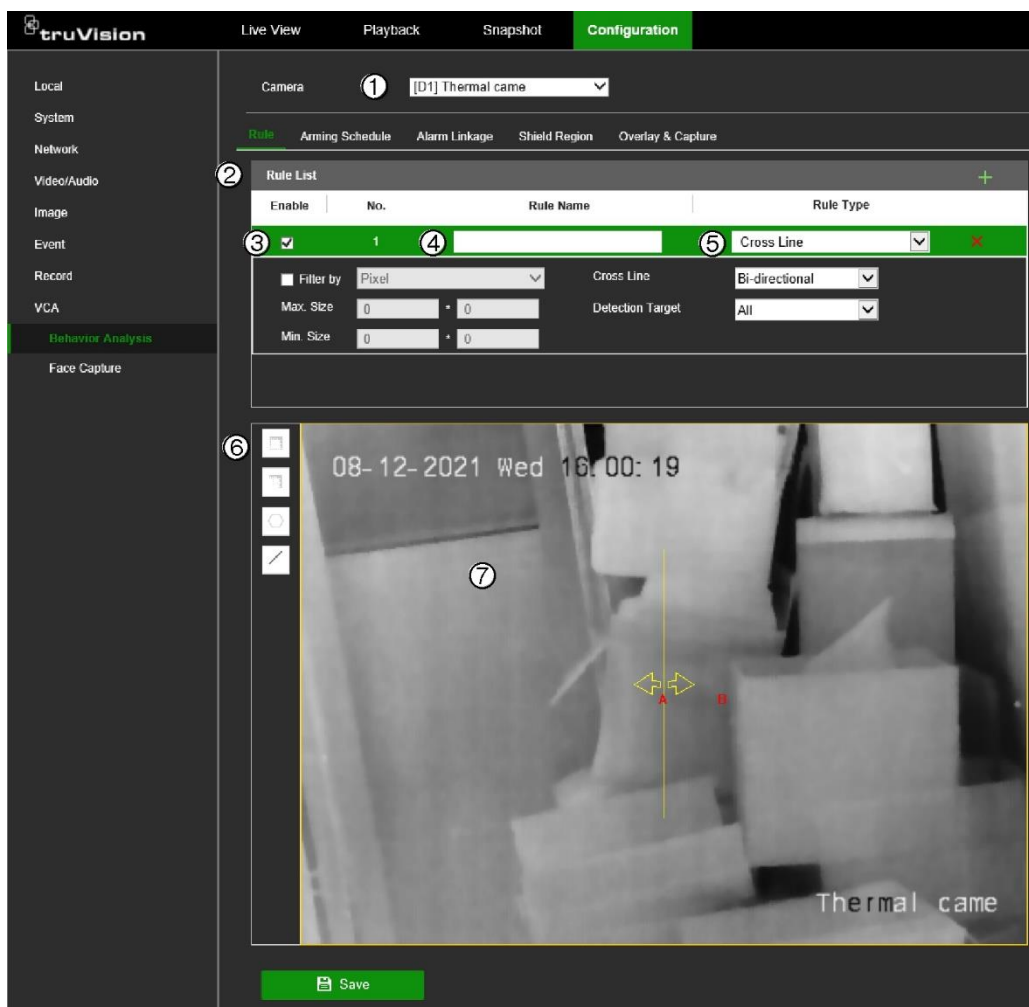
Item		Description
1.	Camera	Select the desired camera. The camera must support behavior analysis function.
2.	Rule list	You can create up to eight rules for a camera. Click ➕ to add a new rule. Click ❌ to delete a rule.
3.	Enable a rule	Select the check box ☑ of a rule to enable it.
4.	Name of the behavior type	Enter the name of the rule.

Item		Description
5.	Behavior type	Select one of the four behavior types for the rule from the drop-down menu: Cross Line, Intrusion, Region Entrance, or Region Exiting. Depending on the behavior type selected, the list of parameters that can be modified is displayed.
6.	Draw the detection area in the viewer.	
	⟋	**Cross line**: An alarm in triggered when a person and/or vehicle crosses the line. Click this button to draw the detection line and then click **Save**.
		The yellow arrow on the line shows the entry direction. Change the detection direction, if needed, by selecting one of the options from the *Cross Line* parameter drop-down list.
	⬡	**Intrusion**: An alarm in triggered when a person and/or vehicle stays in the detection area beyond the set time (blue area). Click this button to draw the intrusion detection area.
		Region entrance: An alarm will be triggered when a person and/or vehicle enters the detection area. Click this button to draw the intrusion detection area.
		Region exiting: An alarm will be triggered when a person and/or vehicle leaves the detection area. Click this button to draw the intrusion detection area.
		Note: You can only have one behavior type per rule.
	⬚ ⬚	**Maximum and minimum detection sizes**: When you have selected intrusion, region entrance or region exiting as the behavior type, you can define the maximum and minimum sizes of the object to be detected.
		Click each icon and the draw the minimum and maximum size of the area that can be detected. Only objects that fall within these limits will be detected.
7.	Viewer	The behavior type detection areas of all rules created are displayed here. The Intrusion/Region Entrance/Region Exiting polygon area of the selected rule is green. A Cross Line is yellow. The detection area polygons/lines of unselected rules are blue. See the figure below. The green selected detection area shown is for an intrusion rule.
		The behavior type polygon/line of the selected rule can be modified. You can also draw a new area in the viewer and the old behavior type is deleted when the change is saved.

Item	Description

You need to set up how the behavior analysis as well as the arming schedule and linking methods for the alarm actions.

To set up the behavior rules:

1. Click **Configuration** > **VCA** > **Behavior Analysis** > **Rule**.

2. Select the desired camera.

3. Click ➕ to add a new rule. Click ✖ to delete a rule. Existing rules can also be changed.

4. Enter the name of the new rule or change the name of an existing rule.

5. Select the desired behavior type from the drop-down list. Change the parameters shown below, if required.

6. Draw the detection area in the viewer. See Figure 10 on page 103 for more information. Click **Save** to save changes.

7. Set up the arming schedule:

   a) Click the *Arming Schedule* tab. If there is more than one rule, select the desired rule. The arming schedule of each rule must be set up separately.

   b) Click the day you want to schedule. The Time pop-box appears. Enter the desired start and end times to detect motion and click **Save**.

   c) If you want to copy a day's schedule, move the mouse cursor to the end of the day where a green icon appears. A pop-dialog box appears. Select the desired days to which to copy the schedule and click **OK** to save the changes.

   d) Repeat steps a to c for each rule.

8. Set up the linking method to the behavior event alarm:

    Click the *Alarm Linkage* tab. select one or more response methods for the system when a motion detection alarm is triggered. More than one option can be selected.

    Normal Linkage: This applies to the recorder. It is the alarm notifications that the recorder can send. The options are: Audible Warning, Send Email, and Notify Surveillance Center. More than one option can be selected.

    Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. A message is sent to the selected camera to trigger an alarm contact. The options are: A -> 1 (this is the relay output of the recorder), and the channel numbers of the cameras that have an output contact and are connected to the recorder. More than one option can be selected.

    Trigger Recording: This applies to the cameras connected to the recorder. A message is sent to the selected camera to start recording. More than one camera can be selected.

9. Click **Save** to save changes.

Shield regions for thermal cameras

You can mask small areas on the camera image so that they cannot be counted. Live view does not display the various counting/detection boxes on screen. If, for example, a camera is mounted on a high ceiling and views a few entrances, but you only want the behavioral analysis carried out on one of the entrances, you can draw a shield area over the other entrances on screen to prevent them being included in the analysis. You can draw up to four shield regions.

This function is only available in web mode.

To set up shield regions:

1. Set up the behavioral analysis rules (see "Behavior analysis rules for thermal cameras" on page 103 for instructions).

2. Click **Configuration** > **VCA** > **Behavior Analysis** > **Shield Region**.

    All the rule areas set up are visible on screen in blue.
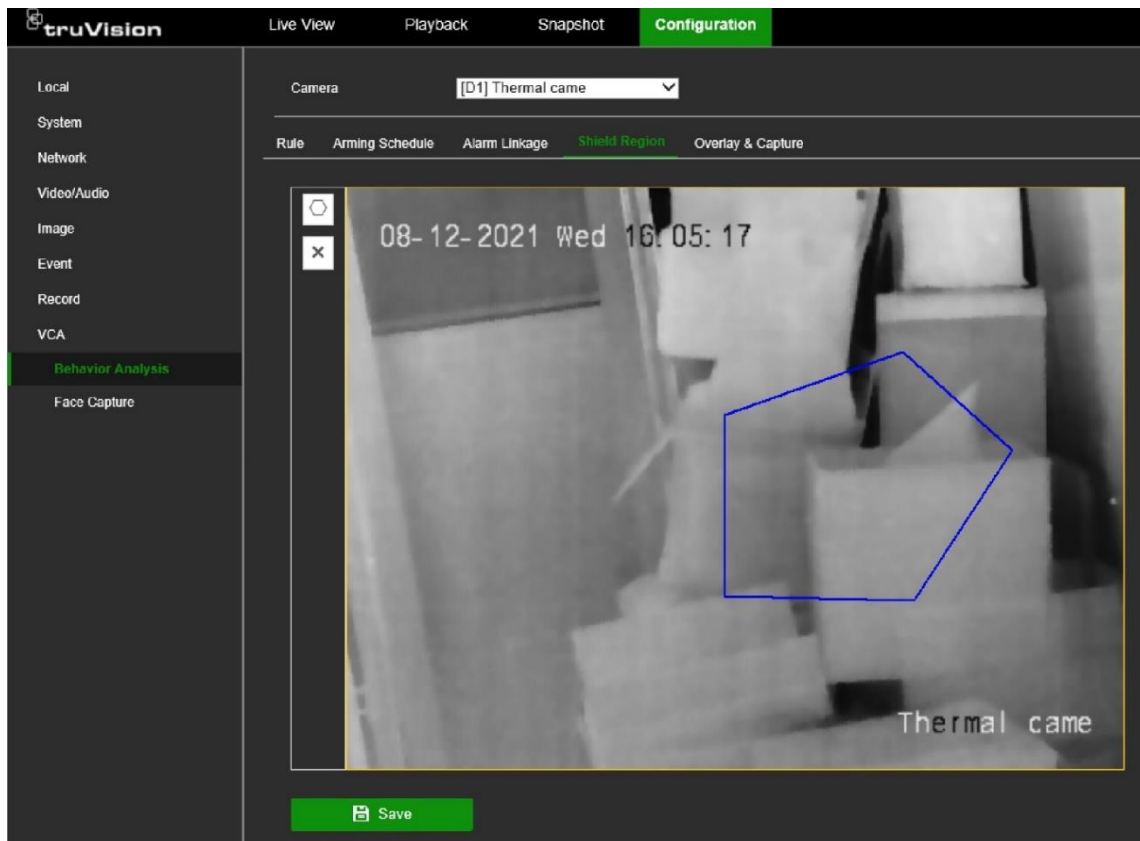
3. Click ⬡ and draw a polygon shield region on the desired area in t-he image. Click ☒ to delete all the shield regions.

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

Overlay and capture

Use this menu to select how you want information displayed on the image as well as the snapshot settings for thermal cameras. You can also set the flow overlay settings.

In web mode, click **Configuration** > **VCA** > **Behavior Analysis** > **Overlay & Capture** and select the desired options. Click **Save** to save changes.

Figure 11: VCA Overlay & Capture window
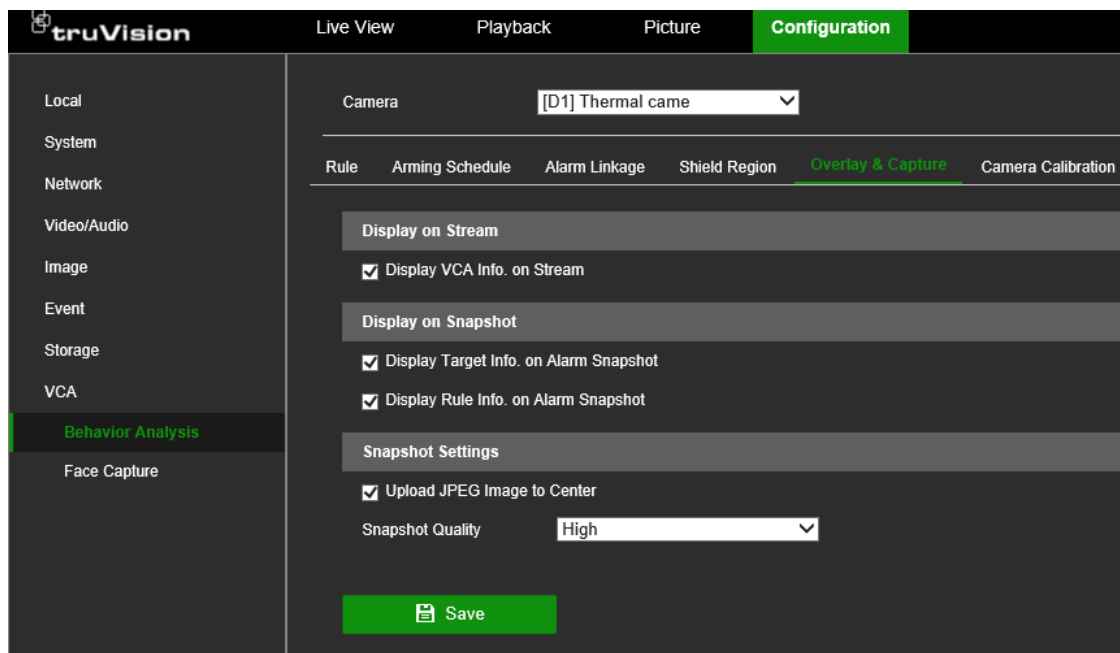
	Item	Description
1.	Display VCA Info on Stream	Select **Display VCA Info on Stream** to display a green frame on the detected target in live and playback modes.
2.	Display on Snapshot	Select to overlay target information and rule information on the alarm snapshot.
3.	Snapshot Settings	Select to upload a JPEG snapshot of the alarm event to the notification center. You can also select the quality of the snapshot to upload (high, medium, or low).

Face capture

The Face Capture function is only supported by the latest TruVision PTZ cameras (TVGP-M01 and TVGP-P01 cameras).

This function is only available in web mode.

The Face Capture settings in the TVN 12 are limited to setting up the rule and defining the recorder actions. For more detailed settings for this feature, please see the configuration manual of the PTZ camera.

To set up the basic settings for face capture in web mode:

1. Go to **Configuration** > **VCA** > **Face Capture**.

2. Select the PTZ camera that supports the face capture option in the camera drop-down list.

3. Click the **Face Capture** tab.

4. Under **Arming Schedule**, define the desired arming schedule for the actions

5. Click the **Actions** tab to define which recorder actions need to be executed when a face is captured by the camera.

   Normal Linkage: This is a group selection. The options are: Audible Warning, Send Email, Notify Surveillance Center, and Full Screen Monitoring. More than one option can be selected.

   Trigger Alarm Output: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger an alarm contact. The options are: Local -> 1 (this is the relay output of the recorder), and the IP addresses of cameras that have an output contact and are connected to the recorder. More than one option can be selected.

   Trigger Recording: This applies to the cameras connected to the recorder. A message is sent to the selected camera to trigger recording. More than one camera can be selected.

   PTZ Linking: This is the PTZ camera function required in response to an external alarm. Select the PTZ camera under PTZ Linking. Enter the preset, preset tour or shadow tour that is triggered when the alarm is detected.

6. Click **Save** to save settings.

To set up the detection area for the face capturing in web mode:

1. Go to **Configuration** > **VCA** > **Face Capture**.

2. Select the PTZ camera that supports the face capture option in the camera drop-down list.

3. Click the **Rule** tab.
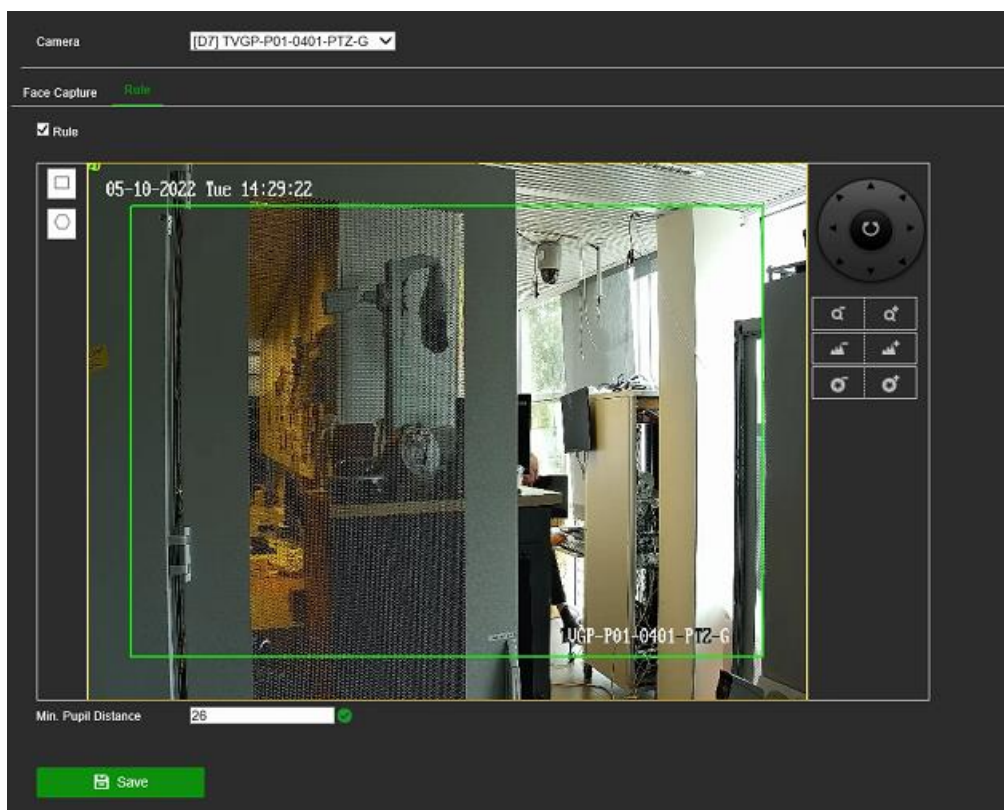
4. Use the PTZ controls to move the camera to the exact location where you want to use face capture.

5. Select the Rule checkbox to enable it.

   Configure one detection scene. The device will capture faces in the defined area when the arming schedule is active.

6. Use PTZ control panel or click the screen to locate a scene where you want to capture faces.

7. Click and draw a detection area on the live image.

8. Click to draw the minimal pupil distance.

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

Chapter 11
Recording

This chapter describes how to schedule video recording, set up the camera recording settings, and set up holiday recording schedules.

Recording schedule

Defining a recording schedule lets you specify when the recorder records video and which pre-defined settings are used. Each camera can be configured to have its own recording schedule.

The schedules are visually presented on a map for easy reference. See Figure 12 on page 112 for a description of the recording schedule window.

Note: If a camera is set up for continuous recording, it will still switch to event recording if events are triggered.

Figure 12: Description of the recording schedule window in web mode
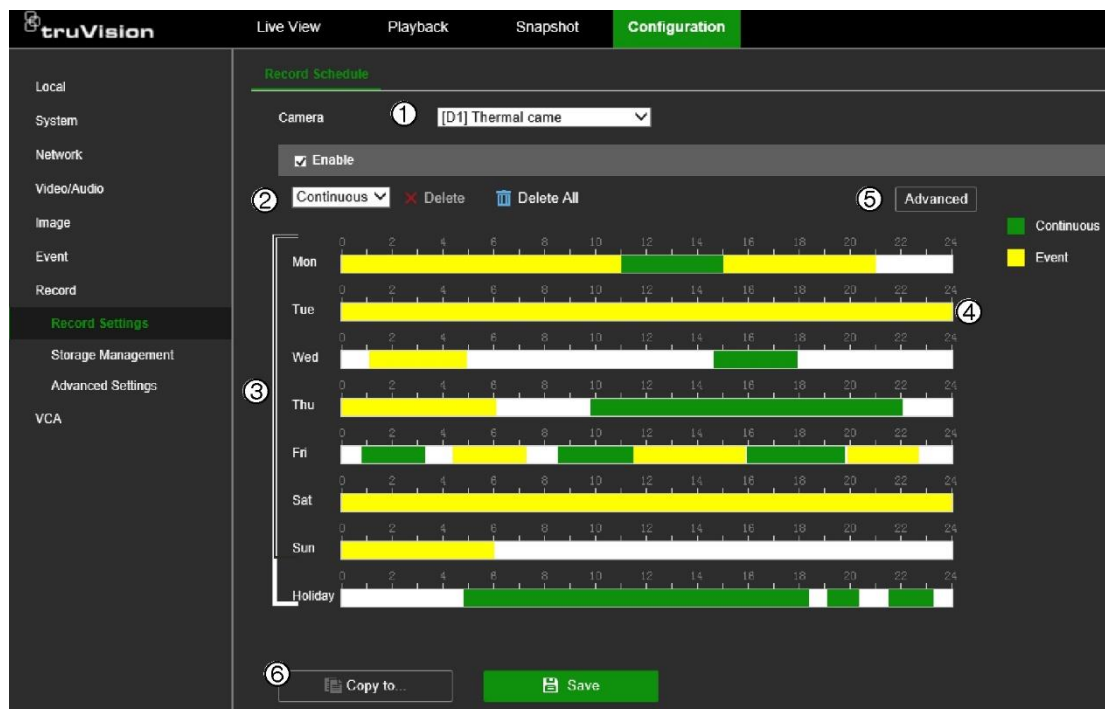
1. **IP camera**. Select a camera.
2. **Recording type**. There are two types of recording to select, which are color-coded:
    *   Event (Yellow): Records all events (basic and smart, alarms and VCA events).
    *   Continuous (Green): Records continuous recording. By default, continuous recording is scheduled for 24 hours.
3. **Schedule map**. There are eight days to select: Sunday (Sun), Monday (Mon), Tuesday (Tue), Wednesday (Wed), Thursday (Thu), Friday (Fri), and Saturday (Sat), and Holiday (if enabled).
4. **Timeline**. There is a 24-hour time line for each day. Up to eight recording periods can be scheduled during the 24-hour period.
5. **Advanced button.** Click to set extra recording settings such as recording audio, enabling EFR, pre- and post-recording times, stream type, and the number of days to keep videos/snapshots.
6. **Copy button.** Click to copy schedules between cameras.

To set up a recording schedule in web mode:

1. Click **Configuration** > **Record** > **Record Settings** > **Record Schedule**.

2. Select the camera.

3. Select the **Enable** check box to enable recording.

4. Set the recording schedule for the camera.

    To change a schedule, click the scheduled recording in the timeline for the desired day. In the pop-up box that appears, select whether you want to record continuous or event recording and enter the start and end times. Click **Save**.

Recording type	Description
Continuous	This is continuous recording.
Event	Video will be recorded when any event (basic event, smart event, and alarm input trigger) is triggered. Besides configuring the recording schedule, you must configure the settings for the respective events. See Chapter 10 "Event setup" on page 78.

To add another recording period to the timeline, in an area of the time with no scheduling drag the mouse to the desired end time. You can then click on this scheduled period and in the pop-up dialog box fine tune the start and end times.

You can schedule up to eight periods in a day. Default is 24 hours for a day.

5. Click the **Advanced** button.

   Select the stream type to set the pre- and post-recording times as well as the stream type. These values apply to all recording schedules.

   Pre-record time: The pre-record time is set to start recording before the scheduled time or event. For example, if an alarm triggers a 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, or 5 s.

   Note: The five-second pre-event recording time cannot always be reached. It depends on the resolution, the bit rate setting and quality setting for the camera. The use of high-resolution cameras (>4MP), high bit rate settings, and high-quality settings may result is a shortened pre-event recording time.

   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, substream, or Dual Stream.

   To record audio, select the **Record Audio** check box. Only applicable for cameras that support audio.

   To enable Edge Failover Recording (EFR), select the **Enable EFR** check box. Edge Failover Recording means that a SD card is used in the camera. When this feature is enabled, the camera will automatically detect a disconnection from the recorder and will record on the SD card (continuous recording). When the connection with the recorder is restored, the data will be automatically written from the SD card to the hard drive of the recorder.

   If you want that saved videos and snapshots are automatically deleted after a certain number of days, enter the number of days in the **Keep Videos/Snapshots for … days(s)** field box.

6. Set the recording types and periods for the other days of the week.

   If you want to copy a camera's schedule to other days, click at the end of the time bar of the desired day to copy the schedule. The *Copy to* pop-up window appears. Select the desired days to which to copy the schedule and click **OK** to save the changes.

7. Set the recording parameters for the other cameras.

   If you want to copy a camera's schedule to other cameras, click **Copy to** and in the pop-up dialog box, select the cameras and then click **OK**.

8. Click **Save** to save changes.

To set up a recording schedule in OSD mode:

1. Click **Configuration** > **Record** > **Schedule**.

2. Select the camera to set up recording.

3. Select the **Enable** check box to enable recording.

4. Set the recording schedule for the camera.

   Click **Edit** 🖉 and in the pop-up menu select the day of the week and the type of recording required.

Recording type	Description
Continuous	This is continuous recording.
Event	Video will be recorded when any event or alarm is triggered. Besides configuring the recording schedule, you must configure the settings for the events/alarms. See Chapter 10 "Event setup" on page 78.

   Enter the start and ends times for each time period during the day. Up to eight periods can be entered per day. Periods cannot overlap. Set the required periods for each day.

   If you want to copy a camera's schedule to other cameras, click **Copy to** and in the pop-up dialog box, select the cameras.

   Click **OK** when completed.

5. Click the **Advanced** button.

   Set the pre- and post-recording times as well as the stream type. These values apply to all recording schedules for the camera.

   Pre-record time: The pre-record time is set to start recording before the scheduled time or event. For example, if an alarm triggers a 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 or 5 s.

   Note: The five-second pre-event recording time cannot always be reached. It depends on the resolution, the bit rate setting and quality setting for the camera. The use of high-resolution cameras (>4MP), high bit rate settings, and high-quality settings may result is a shortened pre-event recording time.

   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 30 s, 60 s, 120 s, 300 s, or 600 s.

   Stream type: You can select to record main stream, substream, or dual stream.

To record audio, select the **Record Audio** check box.

If you want that saved videos and snapshots are automatically deleted after a certain number of days, enter the number of days in the **Video/Snapshot Expiry Time (day)** field box.

Note: It is not possible to select **Enable EFR** in OSD mode.

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

Camera encoding settings

You can define the encoding settings for each camera.

To configure camera encoding settings in web mode:

1. Click **Configuration** > **Video/Audio** > **Video**.
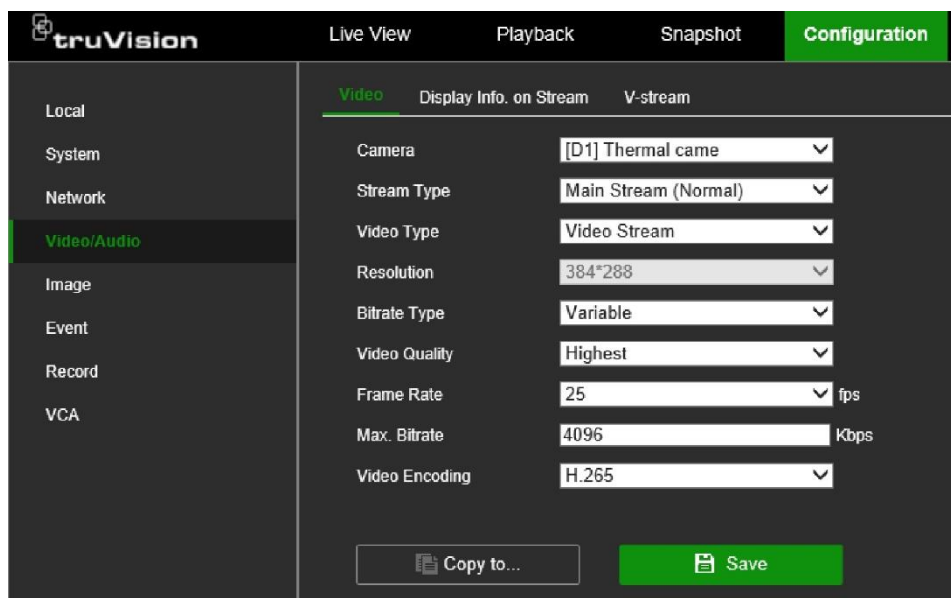
2. Select the camera you want to configure.

3. Configure the following encoding settings (options available depend on the camera model):

    • **Stream Type**: Select the type of stream to record, Main Stream (Normal), Main Stream (Event) or Substream.

    • **Video Type**: Select whether to encode Video or Video & Audio. Default is Video.

    Note: The volume level of the audio is set in OSD mode.

    • **Resolution:** Select the resolution of the recording. Options include: 8MP, 6MP, 5MP, 4MP, 3MP, 1080p, UXGA, 720p, VGA, 4CIF, DCIF, 2CIF, CIF, and QCIF. The available resolutions depend on the camera model.

    • **Bitrate Type:** Select Variable (default) or Constant. If "Variable" is selected, the bandwidth can vary depending on video quality and the bandwidth required. If

"Constant" is selected the video streaming is always at the maximum bit rate
selected.

- **Video Quality**: Select the quality at which to record. If "Constant" is selected as
the bit rate type, this option is unavailable. If a low video quality is selected, the
image quality is poorer, and the bandwidth required is reduced thereby allowing
recording over a longer period.

- **Frame Rate:** Select the recording frame rate. The options listed depend on the
camera model.

- **Max. Bitrate (kbps)**: Enter the maximum bitrate value.

- **Video Encoding**: Select the desired video encoding standard. Depending on the
camera model, you can select H264, H265, or H265+ (via the Enable H.265+
switch).

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

To configure camera encoding settings in OSD mode:

1. Click **Configuration** > **Record** > **Parameter**.
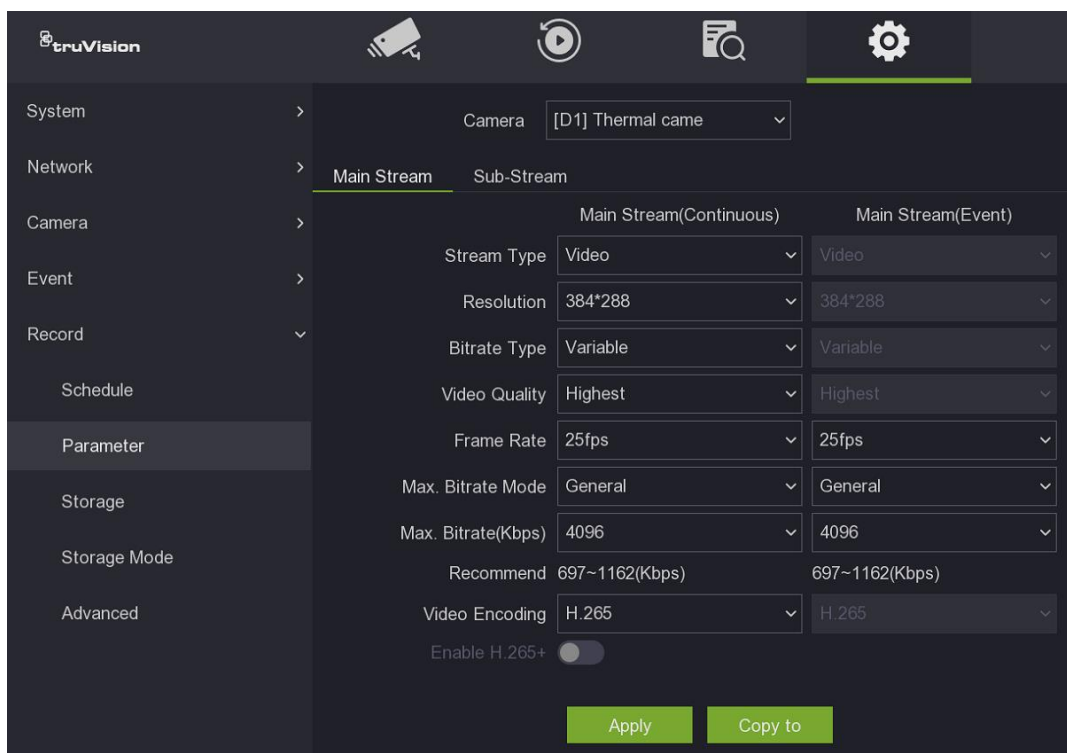
2. Select the camera you want to configure.

3. Select the stream type. Click the Main Stream or Substream tab.

4. Configure the following encoding settings (options available depend on the camera
model). If main stream has been selected, you can select the parameters for both
continuous and event recording.

- **Stream Type**: Select the type of stream to record, either Video or Video & Audio.
Default is Video.

- **Resolution:** Select the recording resolution. The options listed depend on the camera model.

- **Bitrate Type:** Select Variable (default) or Constant. If "Variable" is selected, the bandwidth can vary depending on video quality and the bandwidth required. If "Constant" is selected the video streaming is always at the maximum bit rate selected.

- **Video Quality**: Select the quality at which to record. If "Constant" is selected as the bit rate type, this option is unavailable. If a low video quality is selected, the image quality is poorer, and the bandwidth required is reduced thereby allowing recording over a longer period.

- **Frame Rate:** Select the recording frame rate.

- **Max. Bitrate Mode**: Select the general (Default) or customized option.

- **Max. Bitrate (kbps)**: Enter the maximum bitrate value.

- **Video Encoding**: Select the desired video encoding standard. Depending on the camera model, you can select H264 or H265.

  For H.265, you can select **Enable H.265+**. This H.265+ encoding is based on standard H.265 encoding. It uses a lower video bitrate for a video scene compared to standard H.265. A lower bit rate results also in a reduced transmission bandwidth and in a reduced storage capacity that is required to store the video stream.

  H.265+ is based on three key technologies: prediction encoding, noise suppression and flexible bit rate control.

  To setup H.265+, make sure that you use a camera that supports H.265+.

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

Holiday recording schedules

It is possible to create separate recording schedules for holiday periods. Once one or more holidays are created, a separate entry for holiday will be included in the recording schedule. See Figure 12 on page 112 for further information.

Note: This function is not available in OSD mode.

To set up a holiday recording schedule in web mode:

1. Click **Configuration** > **Storage** > **Advanced Settings** > **Holiday**.

2. Select a holiday period from the list and click its **Edit** button to modify the settings. The Edit window appears.

3. Enter the name of the holiday period.

4. Select whether the holiday period will be categorized by date, week, or month, and then enter the start and end dates. Click **OK**.

5. Click **OK** to return to the Edit window.

6. Repeat steps 2 to 5 for other holiday periods.

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

Chapter 12
Storage management
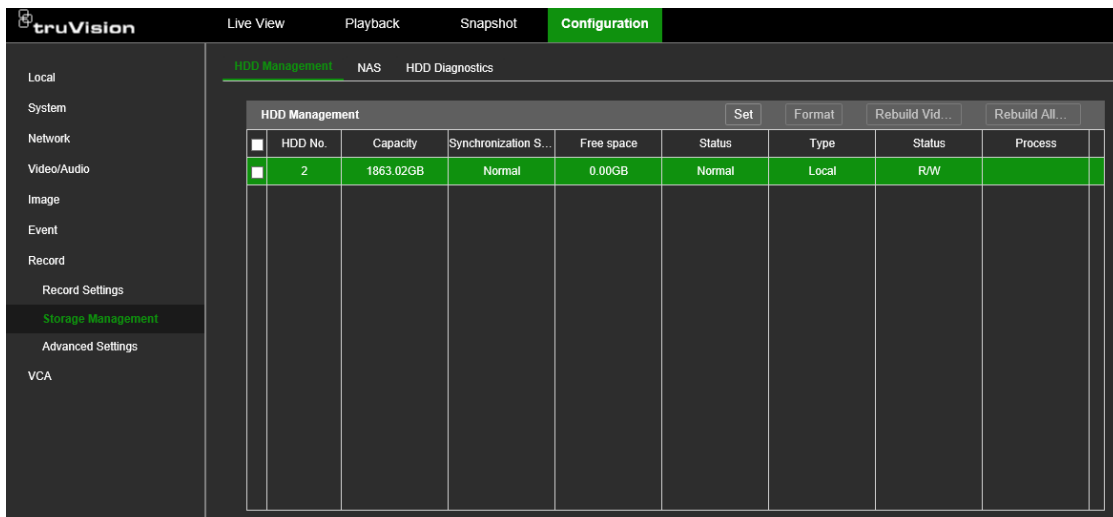
This chapter describes the management of hard drives and network storage systems as well as storing data.

Storage status information

You can check the status of any of the installed HDDs on the recorder at any time. The maximum number of HDDs that can be installed depends on the recorder model.

To check the storage status in web mode:

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

2. Note the status of the HDDs and NAS listed under the Status column.

   If the status is listed as *Normal* or *Sleeping*, the HDD/NAS is in working order. If it says *Inactive*, the HDD needs to be activated. Refer to "Activate a new HDD" on page 120 for more information.

To check the storage status in OSD mode:

1. Click **Configuration** > **Record** > **Storage**.

2. Note the status of the HDDs/NAS listed under the Status column.

   If the status is listed as *R/W*, the HDD/NAS is in working order. If it says *Inactive*, the HDD/NAS needs to be activated. Refer to "Activate a new HDD" below for more information.

Activate a new HDD

The recorder automatically detects when a new HDD has been added. The newly added HDD is not activated or recognized. The status column will show, "Not active". Before the new HDD can be initialized, it needs to be activated.

This function is not available in OSD mode.

To check the status of an HDD in web mode:

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

2. Click the **Set** button to set up the criteria of the HDD to activate it.

Initialize an HDD

The built-in HDD does not need to be initialized before it can be used. You can also re-initialize the HDD. However, all data on the HDD will be destroyed.

To initialize an HDD in web mode:

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

2. Click the **Format** button to begin initialization.

   After the HDD has been initialized, the status of the HDD changes to Normal.

To initialize an HDD in OSD mode:

1. Click **Configuration** > **Record** > **Storage**.

2. Select the storage system to initialize.

3. Click the **Init** button to begin initialization.

4. Enter the admin password. Initialization then proceeds.

   After the storage system has been initialized, the status of the HDD changes to Normal.

Add a network storage system

You can use a network storage system (NAS) or storage area network (SAN) to remotely store recorder recordings. You can add up to eight storage systems.

The recommended brands of storage system to use are:

- Seagate BlackArmor NAS 220

- Iomega StorCenter ix2-dl

- NETGEAR ReadyNAS Pro 2

- QNAP TS-219 II Turbo NAS

You can add up to eight network disks to the recorder.

To set up a network storage system in web mode:

1. From the menu toolbar, click **Configuration** > **Record** > **Storage Management** > **NAS**.
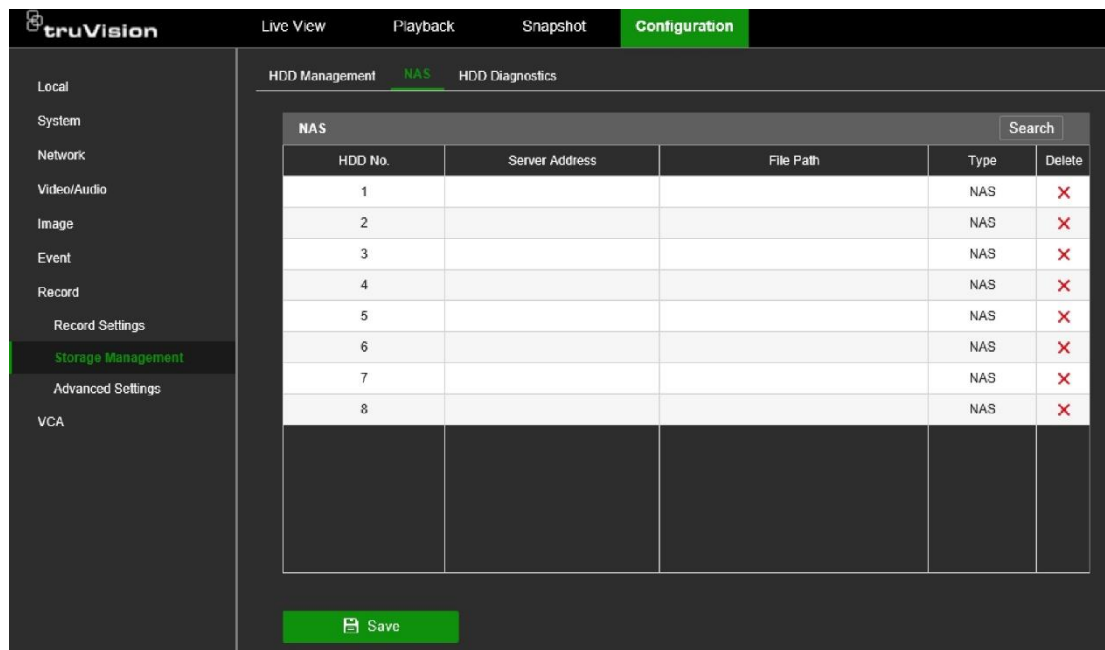
2. There are two ways to enter the information on the NAS to be added.

   a) Search online.

   Click the **Search** button. Select the type of remote system to add, NAS or IP-SAN. Under *Server Address*, enter the IP address of the desired remote storage system. When the remote storage is located, it is listed in the table. Click **OK**. The newly added NAS/IP-SAN

   — or —

   b) Manually enter the NAS information.

   Under the *Server Address* column, manually enter the IP address in the *Server Address* column. Under the *File Path* column, manually enter the file path name for where on the remote storage system you want to store the files. Under the *Type* column, select NAS or IP-SAN.

   Note: If using the NAS storage systems Seagate BlackArmor NAS 220 or Iomega StorCenter ix2-dl, you must add the prefix "/nfs" to the NAS path.

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

To set up a network storage system in OSD mode:

1. Click **Configuration** > **Record** > **Storage**.

2. Click the **+Add** button.

3. Select the number of the storage system to use.

4. Under **Type**, select the type of storage system to be used: NAS or IP-SAN. Default is NAS.

5. Under **NAS IP**, enter the IP address of the storage system.

6. Under **NAS Directory**, search for the file path name to define where on the remote storage system you want to store the files.

   Note: If using the NAS storage systems Seagate BlackArmor NAS 220 or Iomega StorCenter ix2-dl, you must add the prefix "/nfs" to the NAS path.

7. Click **OK** to save the changes and to return to the Storage window.

S.M.A.R.T. settings

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) reports on a variety of indicators of hard drive reliability while protecting video stored on the hard drive.

Note: This function is not available in OSD mode.

To view the S.M.A.R.T. information of an HDD in web mode:

1. Click **Configuration** > **Record** > **Storage Management** > **HDD Diagnostics** > **S.M.A.R.T. Settings**.

2. If you want to continue to use an HDD when the S.M.A.R.T. test has failed, select the check box **Continue to use when this disk when self-evaluation has failed**.

3. Select the HDD whose data you want to see. A detail listing of S.M.A.R.T. information is displayed.

4. If you want to test the HDD selected, select the type of self-test from the drop-down list and then click the **Start Self-test** button.

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

Bad sector detection

You can improve the performance of your HDDs by ensuring that they have no bad sectors. Bad sectors can slow down an HDD when reading or writing data, for example.

Note: This function is not available in OSD mode.

To detect HDD bad sectors in web mode:

1. Click **Configuration** > **Record** > **Storage Management** > **HDD Diagnostics** > **Bad Sector Detection**.

2. Select the HDD you want to test.

3. Select whether you want to do a key area detection or a full detection and click **Start Detect**.

4. The system checks the HDD. The color-coded result is displayed on screen.
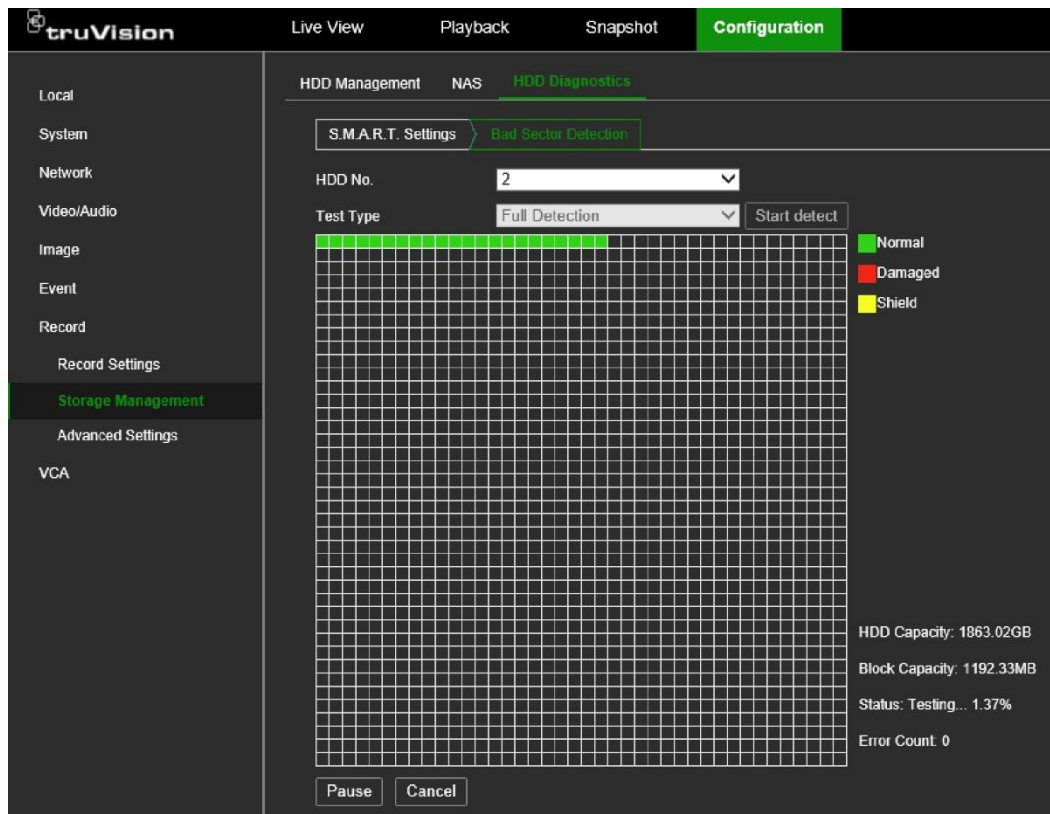
5. If required, click **Pause** to pause the test or **Cancel** to cancel it.

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

HDD sleep mode

You can set the HDD to enter standby mode, or sleep mode, after a period of inactivity. Sleep mode decreases the power consumption of an HDD.

To enable HDD sleep mode in web mode:

1. Click **Configuration** > **Record** > **Advanced Settings** > **Other**.

2. Select the **Enable HDD Sleeping** check box to enable sleep mode. Default is Enable.

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

To enable HDD sleep mode in OSD mode:

1. Click **Configuration** > **Record** > **Advanced**.

2. Select the **HDD Sleeping** check box to enable sleep mode. Default is Enable.

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

Overwrite an HDD

You can select how the recorder responds when the HDDs become full and there is no longer enough space to save new data. The overwrite option is enabled by default.

To enable HDD overwrite in web mode:

1. Click **Configuration** > **Record** > **Advanced Settings** > **Other**.

2. Select **Enable Overwrite** check box to enable overwrite mode. Default is Enable.

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

To enable HDD overwrite in OSD mode:

1. Click **Configuration** > **Record** > **Advanced**.

2. Select the **Overwrite** check box to enable sleep mode. Default is Enable.

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

Record file duration

The feature makes it easier to export files. If the standard files of 1 GB need to be exported, it takes more time to do so than if the files are time-based and consequently smaller.

Important: This feature has nothing to do with the individual setting per camera for the storage duration (which is the number of days that the files are kept on the hard drive).

When this feature is disabled, the recorder stores video files up to a maximum size of 1 GB.

When this feature is enabled, the recorder will split the video files into files of a specified duration. The duration can be set between 10 minutes and 300 minutes (5 hours).

To enable Record File Duration in web mode

1. Click **Configuration** > **Record** > **Advanced Settings** > **Other**.

2. In the **Record File Duration field**, enter the time in minutes.

Storage mode

To ensure an efficient use of the storage space available on HDDs, you can control an individual camera's storage capacity using HDD quota management.

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

Note: This function is not available in web mode.

To set the HDD quota for a camera in OSD mode:

1. Click **Configuration** > **Record** > **Storage Mode**.

2. Under the Mode option, select **Quota**.

3. Select a camera whose storage capacity you want to change and enter the values in GB for the maximum record and snapshot capacities. The available quota space available is displayed on screen.

4. If you want to copy these values to other cameras, click **Copy** and select each camera individually. Click **OK**.

5. Click **Apply** to save the settings.

Group HDDs

Your recorder can organize multiple HDDs into groups. Videos from specified channels can be set to be recorded onto a specific HDD group. You could, for example, save the recordings from a couple of high priority cameras to one HDD, and save the recordings from all the other cameras to another HDD.

By default, the TVN 12 recorders are delivered with one HDD. The group feature cannot therefore be used. However, the 8- and 16-channel recorders have two hard drive slots.

If needed, an additional HDD can be purchased and added as second hard drive. It is strongly advised to use only hard drives that are designed for video surveillance applications, such as Western Digital Purple hard drives.

You can buy the spare HDD kits from Carrier Fire & Security. For the prices, please contact your Carrier account manager.

When more than one HDD is used, you can set up HDD groups in the recorder or use the HDD redundancy option (see page 127).

Note: This function is not available in web mode.

To set up an HDD group in OSD mode:

1. Click **Configuration** > **Record** > **Storage Mode**.

2. Under **Mode**, select **Group**.

3. Under **Record on HDD Group**, select a number for the HDD group.

4. Select the channels to be added to this group.

   Note: By default, all channels belong to HDD group 1.

5. Click **OK** to reboot the recorder.

Redundancy in group mode

The 8- and 16-channel recorders support redundancy for hard drives. You can set one or more hard drives as redundant drives. The redundant hard drive(s) will record the cameras simultaneously.

Be aware that using the redundancy option reduces the storage capacity of the recorder.

There must be more than one hard drive installed in the recorder before setting up this function.

To set up redundancy in the recorder in web mode:

1. Click **Configuration** > **Record** > **Storage Mode**.

2. Under **Mode**, select **Group**.

3. From the menu toolbar, click **Configuration** > **Record** > **Storage**.

4. Select the HDD to use for redundant recording and click **Edit** ✏ in the Operation column. Select **Redundancy** and click **OK**.

5. From the menu toolbar, click **Configuration** > **Record** > **Schedule** > **Advanced**. Select **Redundant Record** for the desired camera and click **OK**.

   This option must be manually set for each camera.

6. Click **Apply** to save the settings.

To set up redundancy in the recorder in OSD mode:

1. In OSD mode, set the storage mode as **Group**.

2. From the web mode menu toolbar, click **Configuration** > **Record** > **Storage Management** > **HDD Management**.

3. Select the HDD to be used for redundant recording. In the Status column, click the status item of the HDD and from the drop-down list select **Redundancy** and click **Set**.

4. From the menu toolbar, click **Configuration** > **Record Settings** > **Advanced**. Select **Redundant Record** for the desired camera and click **OK**.

   This option must be manually set for each camera.

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

Alarm and snapshot storage

If the HDD is almost full, you can disable the storage of alarm events as well as snapshots to save space. When *Alarm Storage* is disabled, the recorder will still record the event, but the event recording markers (yellow lines) in the playback timeline are no longer stored (see Figure 20 on page 142 for more information).

Note: This function is not available in web mode.

To disable alarm and snapshot storage in OSD mode:

1. Click **Configuration** > **Record** > **Advanced**.

2. To disable the storage of event recording markers in the playback timeline, deselect **Alarm Storage**.

    To disable snapshot storage, deselect **Picture Storage**.

    Note: Both these functions are enabled by default.

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

Repair HDD database

There are two ways to repair a HDD:

*   **Rebuild Video (web mode only)**: This function will only rebuild and refresh the data library related to video. The rebuild speed is relatively fast. When video cannot be queried by the data library, use this route to quickly view video.

*   **Rebuild All Data (web mode) / Repair Database (OSD mode)**: This function will rebuild all databases on the HDD (video, snapshots, alarms, events). Existing data will not be affected but search and playback functions will not available during the rebuild. The first 30% of the progress is rebuilding the video database. It is recommended to rebuild all databases.

Note: Do not shutdown the recorder during rebuilding.

To repair databases on a HDD in web mode:

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

2. Select the desired HDD and then click **Rebuild Video** or **Rebuild All Data**.

3. Click **OK**. The rebuilding starts.

To repair databases on a HDD in OSD mode:

1. Click **Configuration** > **Record** > **Storage Mode**.

2. Select the desired HDD and then click **Repair Database**.

3. Click **Yes**. The rebuilding starts.

Chapter 13
Live view in web mode

Live view mode is the normal operating mode of the recorder where you watch live images from the cameras. The recorder automatically enters live view mode once powered up. On the monitor you can see whether a recording is in progress and, if set up to do so, the current date and time, as well as the camera name.

This chapter describes how to use live view in web mode.

Description of live view

Figure 13: Live view in web mode
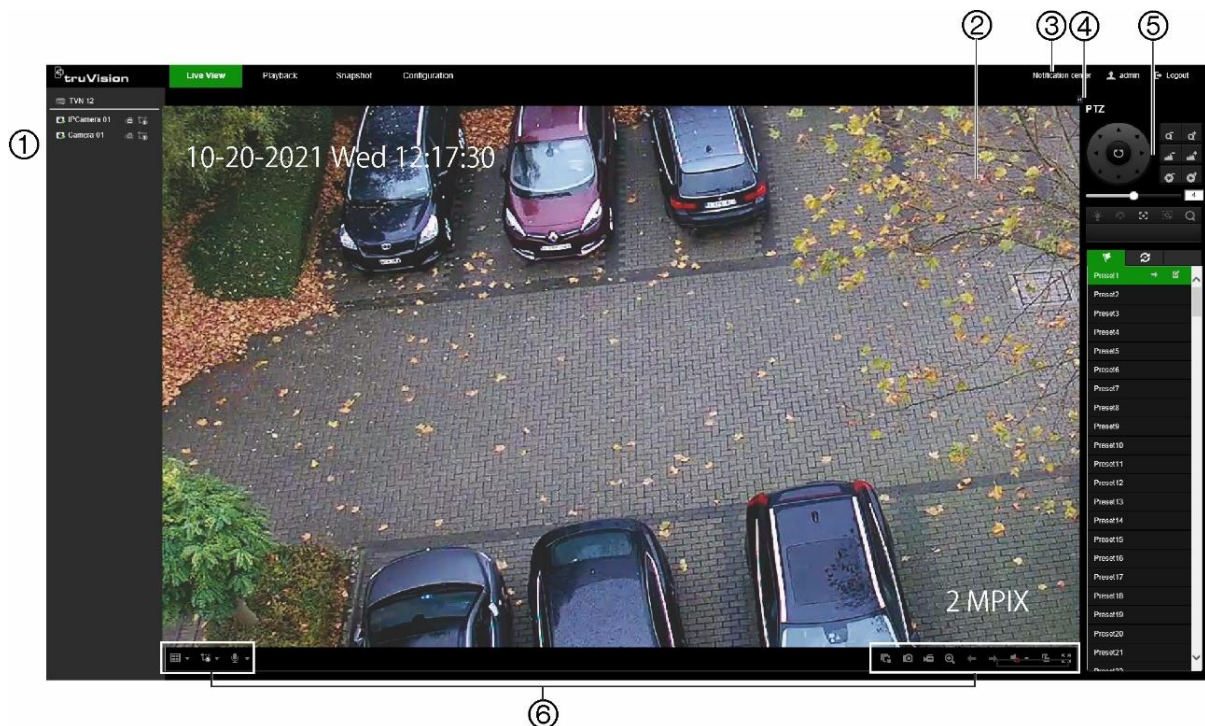
	Description
1.	Camera panel. Click the camera to display in the selected video tile.
2.	Live view viewer.

	Description
3.	Notification Center. Click to see list of all events.
4.	Click to hide or display the PTZ control panel.
5.	PTZ control panel.
6.	Live view toolbar:

	Multiview type: Switch between the different multiview options from the drop-down list.
	Stream type: Switch between main stream (1) and substream (2).
	Bi-directional audio: Turn microphone on/off.
	QR code: This is a QR code that contains the SCI code for the recorder when it registered to UltraSync. The SCI code needs to be entered when the recorder is added to TVRMobile. Instead of entering this SCI code manually, the QR code can be scanned to add the SCI code automatically in the SCI field of the mobile app.
	For further information on adding the recorder to TVRMobile, see "Add the recorder to TVRMobile" on page 69.
	Live views: Stop/start all live views.
	Capture: Capture a snapshot of a video image. See Figure 5 on page 20 for the location where the snapshots are to be saved.
	Recording: Stop/start recording live view and save the files on the PC (not the recorder).
	Digital zoom: Stop/start digital zoom to zoom in/out of the selected camera image.
	Previous page / Next page: View previous and next camera respectively.
	If viewing in multiview format, live view moves to the next group of cameras for the selected number of video tiles.
	Audio: Adjust the audio level.
	Alarm output: Select an alarm output to switch it ON or OFF.
	Full screen: Only video tiles appears on-screen. Press ESC to return to screen with the menus and viewer.

PTZ control

The web browser interface lets you control the PTZ functions of a dome camera. Select a PTZ dome camera and use the PTZ controls on the interface to control the PTZ functions.

Figure 14: PTZ control panel description
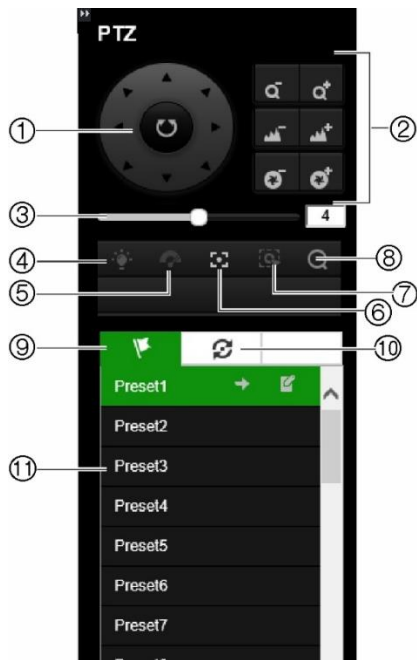
1. Directional pad/auto-scan buttons: Controls the movements and directions of the PTZ. Center button is used to start auto-pan by the PTZ dome camera.
2. Adjust zoom, focus, and iris.
3. Adjust speed of PTZ dome camera.
4. Turn on or off the camera light (if available on the camera).
5. Start or stop camera wiper (if available on the camera).
6. Auxiliary focus: Automatically focus the camera lens for the sharpest picture.
7. Start manual tracking.
8. Start 3D zoom.
9. Preset tab. Click to get the list the presets available.
10. Preset Tour path tab. Click to get the list the preset tours available.
11. Start the selected preset/preset tour (depending on function selected).

Preset and preset tours

When in live view you can quickly call up the list of existing presets, preset tours by using the mouse or keypad. See Figure 14 above for a description of the PTZ control panel.

Note: The PTZ dome camera used must be able to support a preset command.

Presets are previously defined locations of a PTZ dome camera. It allows you to quickly move the PTZ dome camera to a desired position.

Preset Tours are defined series of presets. You can program up to a maximum of four.

Note: Shadow tours are only available in OSD mode.

If the display was in multiview format, it changes to single-screen format for the selected camera.

Presets

To set up a preset:

1. In live view, click the desired video tile.

2. In the PTZ control panel, select the **Preset** tab and then select the desired preset to use from the list.

3. Using the directional buttons, position the camera in the desired direction. Adjust the focus and zoom as required.

4. Click to set the preset. The preset is saved.

To call up a preset:

1. In live view, select the desired video tile.

2. In the PTZ control panel, select the **Preset** tab and click the desired preset from the list.

3. Click ➡ to call the preset. The camera immediately jumps to the preset position.

Preset tours

To set up a preset tour:

1. In live view, select the desired video tile.

2. In the PTZ control panel, select the **Preset Tour Path** tab and then select the desired preset tour path to use from the list.

3. Click ⚙ to start a preset tour path. The Step window appears.
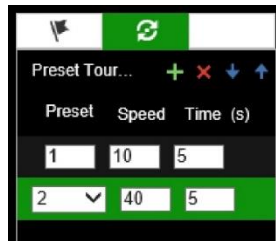
4. Click ➕ to add a preset to the preset tour path. Enter the preset number, the speed at which the camera moves from this preset to the next, and the duration in seconds that the camera will stay at this preset.

5. Repeat step 4 for each preset you want to add to the preset tour.

   To change the order of the presets, click the up or down blue arrows. To delete a preset, select it in the list and click ❌.

   Note: A preset tour should have at least two presets.

6. Click **OK** to save the settings and return to the main preset tour path window.

To call up a preset tour:

1. In live view, the desired video tile.

2. In the PTZ control panel, select the Preset Tour Path tab and then select the desired preset tour path to use from the list.

3. Click ▶ to start the preset tour path. The camera immediately carries out the preset tour movement. Click the ⬛ to stop the tour.

   To delete a preset tour path, click ❌.

Chapter 14
Live view in OSD mode

Live view mode is the normal operating mode of the unit where you watch live images from the cameras. The recorder automatically enters live view mode once powered up. On the monitor you can see whether a recording is in progress and, if set up to do so, the current date and time, as well as the camera name.

This chapter describes how to use live view in OSD mode.

Figure 15: Live view in OSD mode
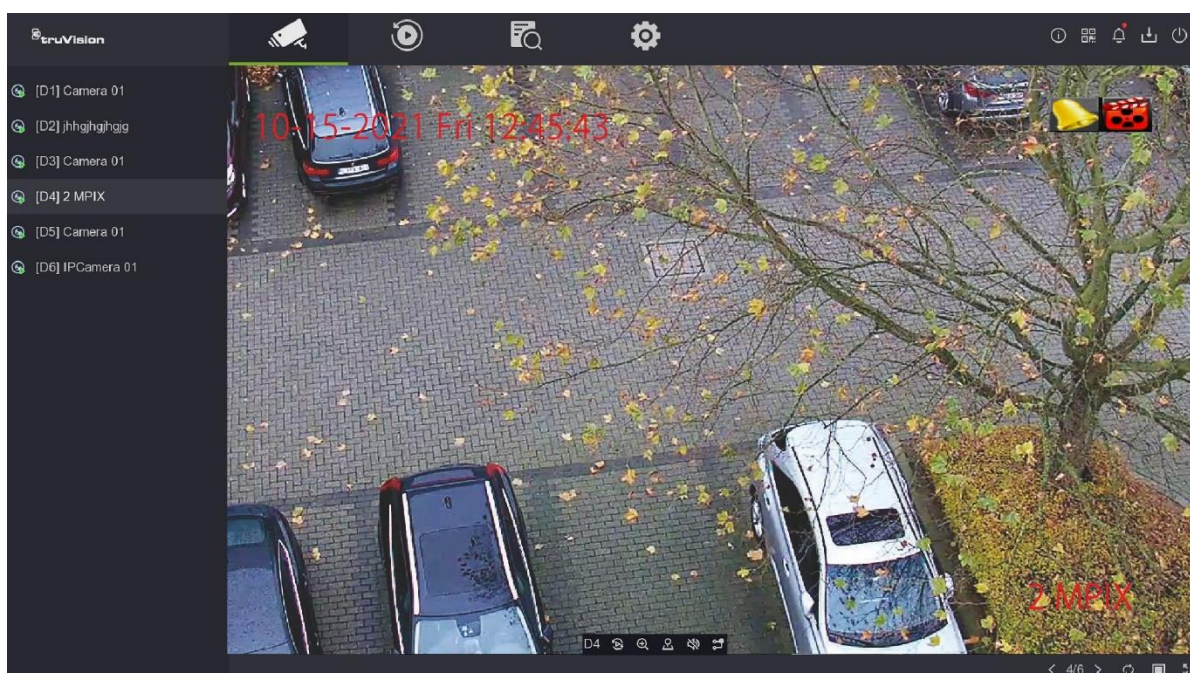
Status information

When in OSD mode, information on the system and camera status is displayed as icons on the main and auxiliary monitors. The camera status icons are shown for each camera. Each icon represents information on a specific item. These icons include:

Table 5: Description of the on-screen status icons

Icon	Description
	Indicates an alarm or event.
	Indicates that a camera channel is being recorded.

The recorder can display more than one icon at the same time.

These status icons do not appear in web mode.

Live view control toolbar

The OSD live view toolbar lets you quickly access regularly used commands. Position the cursor over a video tile to see the control toolbar (see Figure 16 below).

It is not possible to take snapshots in OSD mode.

Figure 16: OSD live view control toolbar

Icon	Description
D[x]	Camera number of the selected camera.
	Instant Playback: Playback the recorded video from the last five minutes. If no recording is found, then there was no recording made in the last five minutes. Select the desired camera and click the icon to start playback.
	Digital Zoom: Enter digital zoom. See "Digital zoom" on page 137 for further information.
	PTZ Control: Enter PTZ control mode. See "PTZ control" on page 138 for more information.
	Audio On: Enable/Disable audio output. The stream type must be set to Video/Audio. See "Audio" on page 71 for further information.
	Switch Stream: Switch between main stream and substream. It also shows the current stream, the actual bit rate, and the frames per second.

Live view mouse menu

Many features of live view can be quickly accessed by placing the cursor on a live image and clicking the right-button of the mouse to get the mouse menu (see Figure 17 on page 135).

Figure 17: The OSD mouse menu
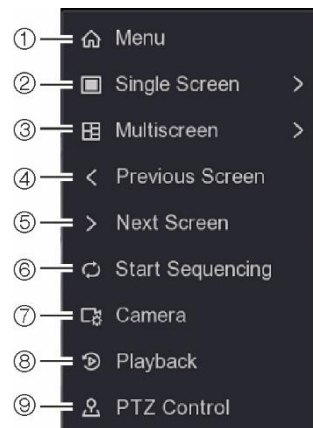
	Name	Description
1.	Menu	When the video tiles are shown without the menu, press to include the menu in the display.
2.	Single Screen	Switch to a single-screen view for the selected camera from the drop-down list.
3.	Multiscreen	Switch between the different multiview options from the drop-down list. See "Single and multiview display modes" on page 136 for information on selecting multiview formats.
4.	Previous Screen	Displays the previous page of multiscreen video tiles.
5.	Next Screen	Displays the next page of multiscreen video tiles.
6.	Start Sequencing	Turn on sequence mode. The window automatically sequences between cameras. To set up the sequence dwell time, go to Configuration > System > Live View > General and select a sequence dwell time value.
7.	Camera	Enter the Camera configuration menu. See "Manage IP cameras in OSD mode" on page 42 for further information.
8.	Playback	Enter the Playback window.
9.	PTZ Control	Open the PTZ control panel in live view.

Live view general setup menu

You can easily set up several live view functions such as the default multiscreen layout, the sequence dwell time, the alarm pop-up output and delay as well as enable audio and its volume.

From the OSD mode menu toolbar, click **Configuration** > **System** > **Live View** > **General**.

Figure 18: General settings for live view in OSD mode
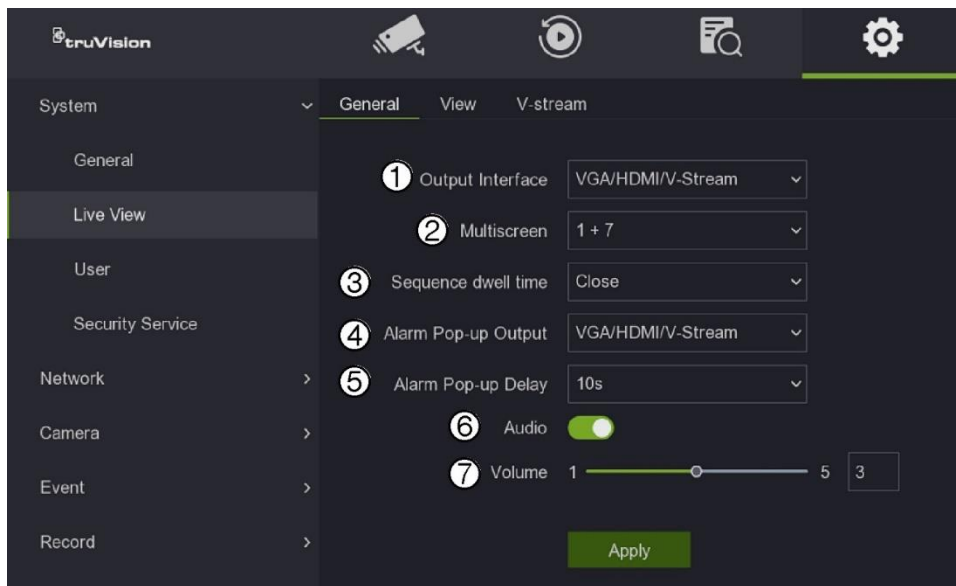
	Name	Description
1.	Output Interface	Always fixed: VGA/HDMI/V-stream.
2.	Multiscreen	Select the default multiscreen layout. See "Default live view monitor setup" on page 26 for information on assigning channels to video tiles.
3.	Sequence Dwell Tile	Define delay between two consecutive channels during sequencing.
4.	Alarm Pop-up Output	Only one option, VGA/HDMI/V-stream.
5.	Alarm Pop-up Delay	Define the time that a camera in alarm will be shown in full screen. The minimum is 1 s, and the maximum is 10 s.
6.	Audio	Enable Audio to hear audio via the HDMI monitor or, for VGA, the audio output on the back panel of the recorder
7.	Volume	Adjust the audio level.

Single and multiview display modes

The recorder has single and multiview formats. The number of multiview display modes available depends on the recorder model.

There are four ways to select the multiview format:

- Place the mouse cursor on the desired video tile and right-click the mouse. In the OSD mouse menu that appears, select the desired multiview option (see Figure 17 on page 135).

- In the bottom-right of live mode, click the multiview icon and select the desired option.
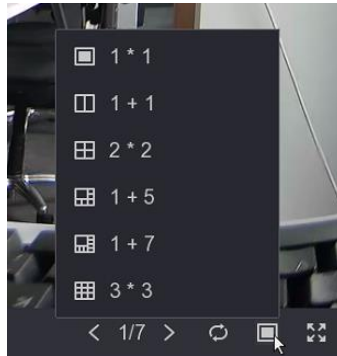
- Double-click a selected video tile to switch between multiview and single-view format. The multiview format used is shown in the bottom-right of the screen.

- Go to **Configuration** > **System** > **Live View** > **General** and select the desired multiview format.

Sequencing cameras

The sequencing feature allows a camera to be displayed briefly on screen, before advancing to the next camera in the sequence list. Sequencing can only be done in single-view display mode. See "Default live view monitor setup" on page 26 for more information on assigning cameras to video tiles.

The default sequence displays each camera in numerical order. In OSD mode, go to **Configuration** > **System** > **Live View** > **View** to define the sequence order.

Note: Dwell time must not be set to "Close" for sequencing to function.

There are two ways to start sequencing in live view:

- Select the camera where you want to start sequencing. Right-click the mouse and select **Start Sequence** to start the sequencing. Right-click again and select **Stop Sequence** to stop sequencing.

- In the bottom-right of live mode, click the sequencing icon 🔄 to start sequencing. It becomes green when enabled. Click again to disable sequencing.

To set up camera sequencing from web mode, go to **Configuration** > **System** > **Live View Settings**.

Digital zoom

You can easily zoom in or out of a camera image in live view mode and playback using the digital zoom command. The zoom command magnifies the camera image four times.

To quickly zoom in/out on a camera image:

1. Left-click the mouse on the desired camera. The live view toolbar appears.

2. Click the digital-zoom icon. The camera image is magnified four times.

3. To exit digital zoom, right-click the mouse.

PTZ control

When in live view you can quickly call up the list of existing presets, preset tours, and shadow tours by using the mouse or keypad. You can also control the movement of the PTZ camera.

Mouse	Left-click the mouse on the desired camera image. The live view toolbar appears. Click the PTZ control icon ⬛ to enter PTZ mode. The PTZ control panel appears.
Keypad	Press the Enter ⏎ button on the keypad.

If the display was in multiview format, it changes to single-screen format for the selected camera. See Figure 19 below for a description of the PTZ control panel.

Note: The PTZ dome camera used must be able to support a preset command.

Figure 19: PTZ control panel

	Name	Description
1	Configure PTZ settings	Open the *PTZ Parameter Settings* menu to configure PTZ.
2.	Directional pan/auto-scan buttons	Controls the movements and directions of the PTZ. The center button is used to start auto-pan by the PTZ dome camera.
3.	PTZ movement	Adjusts the speed of PTZ movement.
4.	Zoom, focus, and iris	⬛ ⬛ Adjust the zoom in and out.
		⬛ ⬛ Adjust the focus in and out.
		⬛ ⬛ Adjust the iris in and out.

	Name	Description
5.	Select PTZ command	Displays the desired function from the scroll bar:
		Preset: Presets are previously defined locations of a PTZ dome camera. It allows you to quickly move the PTZ dome camera to a desired position.
		Preset Tour: This is a defined series of presets.
		Shadow Tour: Allows you to record a manual movement of a PTZ and to follow the same tour later.

Presets

To call up a preset:

1. In live view, select the desired video tile. Select the PTZ control icon in the control toolbar, or right-click the mouse and select **PTZ Control**. The PTZ control panel appears.

2. in the **Preset** tab, double-click the desired preset from the list. The camera immediately jumps to the preset position.

To set up a preset:

1. In live view, select the desired video tile. Select the PTZ control icon in the control toolbar, or right-click the mouse and select **PTZ Control**. The PTZ control panel appears.

2. Select the desired preset from the preset list.

3. Using the directional buttons, position the camera in the desired direction. Adjust the focus and zoom as required.

4. Click ![icon].

Preset tours

To call up a preset tour:

1. In live view, select the desired video tile. Select the PTZ control icon in the control toolbar, or right-click the mouse and select **PTZ Control**. The PTZ control panel appears.

2. Click the **Preset Tour** tab and double-click the **Call** button of the desired preset tour from the list. The camera immediately carries out the preset tour movement. Click the **Stop** button to stop the tour.

To set up a preset tour:

1. In live view, select the desired video tile. Select the PTZ control icon in the control toolbar, or right-click the mouse and select **PTZ Control**. The PTZ control panel appears.

2. Click the **Preset Tour** tab.

3. Click ✐ of the desired preset tour from the preset tour list.

4. Click ✚ to add a preset tour. Enter the preset number, the speed at which the camera moves from this preset to the next, and the duration the camera will stay at this preset. Click **OK**. The preset is added to the preset tour list on the left of the screen.

5. Repeat step 4 for each preset you want to add to the preset tour.

6. When you have finished entering presets to the preset tour, click **Save**.

Shadow tours

Note: Shadow tours are only available in OSD mode.

To call up a shadow tour:

1. In live view, select the desired video tile. Select the PTZ control icon in the control toolbar, or right-click the mouse and select **PTZ Control**. The PTZ control panel appears.

2. Click the **Shadow Tour** tab and click the **Call** button of the desired shadow tour from the list. The camera immediately carries out the shadow tour movement.

To set up a shadow tour:

1. In live view, select the desired video tile. Select the PTZ control icon in the control toolbar, or right-click the mouse and select **PTZ Control**. The PTZ control panel appears.

2. Click the **Shadow Tour** tab.

3. Select the desired shadow tour from the shadow tour list.

4. Click the **Record** button and then use the directional PTZ buttons to move the camera to the desired locations. Adjust the focus and zoon as required. Click the **Stop** button to stop the shadow tour recording.

Chapter 15
Playback in web mode

This chapter explains playback when using web mode. However, more playback functions are available in OSD mode.

The recorder lets you quickly locate and play back recorded video. There are multiple ways to play back video:

- 24-hour playback of one day's recorded video. You can also create video clips

- Search video by different themes such as main stream or substream as well as by time (see Chapter 17 "Search recordings" on page 155 for further information)

The recorder continues to record the live view from a camera while simultaneously playing back video on that camera display. You must have the access privilege to play back recordings (see "Modify a user's access permissions" on page 54 for more information).

Description of the web playback window

To search and play back recorded video, click **Playback** in the menu bar to display the Playback window.

Figure 20: 24-hour playback window (web mode)

	Description
1.	**Camera panel**. Select the camera(s) for playback.
2.	Playback viewer.
3.	**Calendar panel**. *Green date number*: Selected day of playback. *Date number with a blue triangle in top right corner*: Continuous recordings are available for this day. *Date number with a yellow triangle in top right corner*: Event recordings are available for this day. *Date number with no triangle in top right corner*: No recordings are available for this day.
4.	**Stream type search**: Select to search recorded video files by main stream or substream.
5.	**Playback time**: Enter the start time of the recorded video to search.
6.	**Search button**: Click to search for recorded video files by selected date, playback time, and stream type.
7.	**Download Player**: Click to download the TruVision Player tool to play back recordings on your PC.
8.	**Playback control toolbar**:

	Multiview type: Select how you want the video to be displayed in the viewer (full, quad, 9, and 16).
	Smart search: Select one of the smart types to search recordings. Select Clear, Motion, Cross Line, or Intrusion Detection. See "Smart search" on page 150 for more information. **Note**: Smart search only works for one camera at a time in full screen (1x1) display.
	Bi-directional audio: Turn microphone on/off.
	Reverse and pause the playback.
	Stop playback.

	Description	
	◁◁	Decrease playback speed
	▶ / ❚❚	Play/pause playback.
	▷▷	Increase playback speed.
	❚▶	Playback one frame at a time
	▣	Stop all playback.
	◉	**Capture**: Capture a snapshot of a video image. See Figure 5 on page 20 for where the snapshots are to be saved.
	✂	**Clipping**: Create a video clip, which can be then exported to a backup device. In the pop-up dialog box, enter the start and end times.
	⊕	**Digital zoom**: Stop/start digital zoom to zoom in/out of the selected camera image.
	🔊	**Audio**: Adjust the audio level.
	↓	Download: Download video snapshots and clip files to the selected directory. See Figure 5 on page 20 for more information on how to set up the directory.
	⛶	Full-screen mode.
9.	⇥	**Synchronous playback**: Click to play back two or more cameras synchronously. Click the asynchronous icon to stop synchronous playback. Selected icon is green.
10.		**Time bar**: Time of actual playback.
11.		**Timeline**: This bar displays the playback recording. Its color shows the recording type.
		It allows you to move forwards or backwards in time. The timeline moves left (oldest video) to right (newest video). Place the cursor on the timeline and drag the timeline to the desired position to where you want playback to start. In 24-hour playback, the time bar shows the actual playback time.
12.		**Recording type**: Description of the color coding of the recording types that appear in the playback timeline. Green indicates constant recording. Yellow indicates event recording.

Play back recordings

Select a camera and a day to search from on the calendar displayed, and then click Search. The timeline below the page indicates video recorded for the specified day. The timeline also classifies by color the type of recording with each type.

To play back recordings:

1. In playback mode, select the desired camera by stopping the current playback, clicking the desired camera, and then clicking **Play** ▶.

2. Select the desired multiview format.

3. Enter the day and time to search for a recording for the selected camera. Click **Search**.

4. Click **Play** to start playback for each camera.

   **Note**: If no image appears for a camera, then there is no recording for the selected time/date.

5. Use the playback control toolbar to manually control playback.

Synchronous playback

Synchronous playback allows you to play back two or more recordings synchronously. You can control all cameras with a single set of video controls to play, pause, forward, and reverse.

Note: This function is only available in web mode.

To synchronously play back recordings:

1. In playback mode, click the **Synchronous** button for synchronous playback (icon is green when enabled). The multiview changes to 2x2, if not already selected.

2. Select the desired cameras by stopping the current playback, clicking the desired camera, and then clicking **Play** to start play back all the cameras in multiview.

   Note: If no image appears for a camera, then there is no recording for the selected time/date.

3. Use the playback control toolbar to manually control playback.

4. Click the **Asynchronous** button to stop synchronous playback.

Smart search

Smart Search allows you to search for events in recorded video during playback, even if the recorder is recording continuously, and no events are set-up. If event recording is used, it can still help you to locate events for areas of the screen where no events have been defined.

Smart search can be done as a search based on a cross line, an intrusion detection area, or a motion detection area.

For cross line and intrusion detection, the smart search can be done without setting up a cross line and/or intrusion detection for the camera.

When a smart search based on motion detection is needed, you must first set up motion detection for the camera, and then select 'Enable Dynamic Analysis for Motion' via the webpage.

To search events using Smart Search in web mode:

1. Make sure that the VCA information from cameras is stored on the hard drive. In OSD mode, go to **Configuration** > **Record** > **Advanced**. Select **Enable Save Camera VCA Data** and then select **Alarm Storage**.

2. Add an IP camera to the recorder and let it record (if needed, set up motion detection for the camera(s)).

3. Go to playback.

4. Select the camera and you should see a colored timeline that shows that video has been recorded.

5. Click **Play** ▶ to start playback.

6. Click **Smart Search**. Select one of the following options:

	Click to delete the selected smart search function.
	Click to search for motion in the whole frame. A yellow bar will appear below the timeline on the time(s) that motion was detected in the video.
	Click to draw a cross line on the playback screen. A yellow bar will appear below the timeline on the time(s) that line was crossed.
	Click to draw an intrusion detection area on the playback screen. A yellow bar will appear below the timeline on the time(s) that the intrusion detection zone detected movement.

Create snapshots

Snapshots can be taken at any time during playback.

Note: Snapshots can only be created in web mode.

To configure snapshots:

1. In playback mode, select the desired camera by stopping the current playback, clicking the desired camera, and then clicking **Play** ▶.

2. When you see a moment in a recording that you want to capture as a snapshot, click the **Capture** button 📷.

   The file is automatically uploaded to the location specified under **Configuration** > **Local** > **Live View Parameters** > **Snapshot and Clip Settings**.

3. Repeat step 2 for additional snapshots.

Create video clips

You can save important scenes in a recorded file for later reference by creating video clips of selected portions of the file during playback. However, you cannot specify in web mode the start and end times of a video clip.

Note: You have more control over the length of a video clip in OSD mode.

To create video clips during playback:

1. In playback mode, select the desired camera by stopping the current playback, clicking the desired camera, and then clicking **Play** ▶.

2. Scroll the timeline where you want the video clip to start and click the **Start Clipping** button in the playback control toolbar. The icon turns green. Let the recording run up to the moment when you want to stop the clip then click **Stop Clipping**.

    The file is automatically uploaded to the location specified under **Configuration** > **Local** > **Live View Parameters** > **Snapshot and Clip Settings**.

    Note: Video clops in OSD mode can be saved to a USD flash drive.

3. Repeat step 2 for additional clips.

Digital zoom in playback

To digitally zoom-in during playback:

1. In playback mode, select the desired camera.

2. Click the **Digital Zoom** button in the playback control toolbar and use the mouse scroll wheel to zoom in and out.

Chapter 16
Playback in OSD mode

This chapter explains playback when using OSD mode.

The recorder lets you quickly locate and play back recorded video. There are multiple ways to play back video:

- Instant playback of the most recently recorded video (accessed from live mode)

- 24-hour playback of one day's recorded video

- Search video by different themes such as video, snapshots, events, people and vehicle (see Chapter 17 "Search recordings" on page 155 for further information)

- Launch playback of a video associated with searched events (see Chapter 17 "Search recordings" on page 155)

The recorder continues to record the live view from a camera while simultaneously playing back video on that camera display. You must have the access privilege to play back recordings (see "Modify a user's access permissions" on page 54 for more information. This function is only available in web mode).

Description of the OSD playback window

Figure 21: 24-hour playback window (OSD mode)
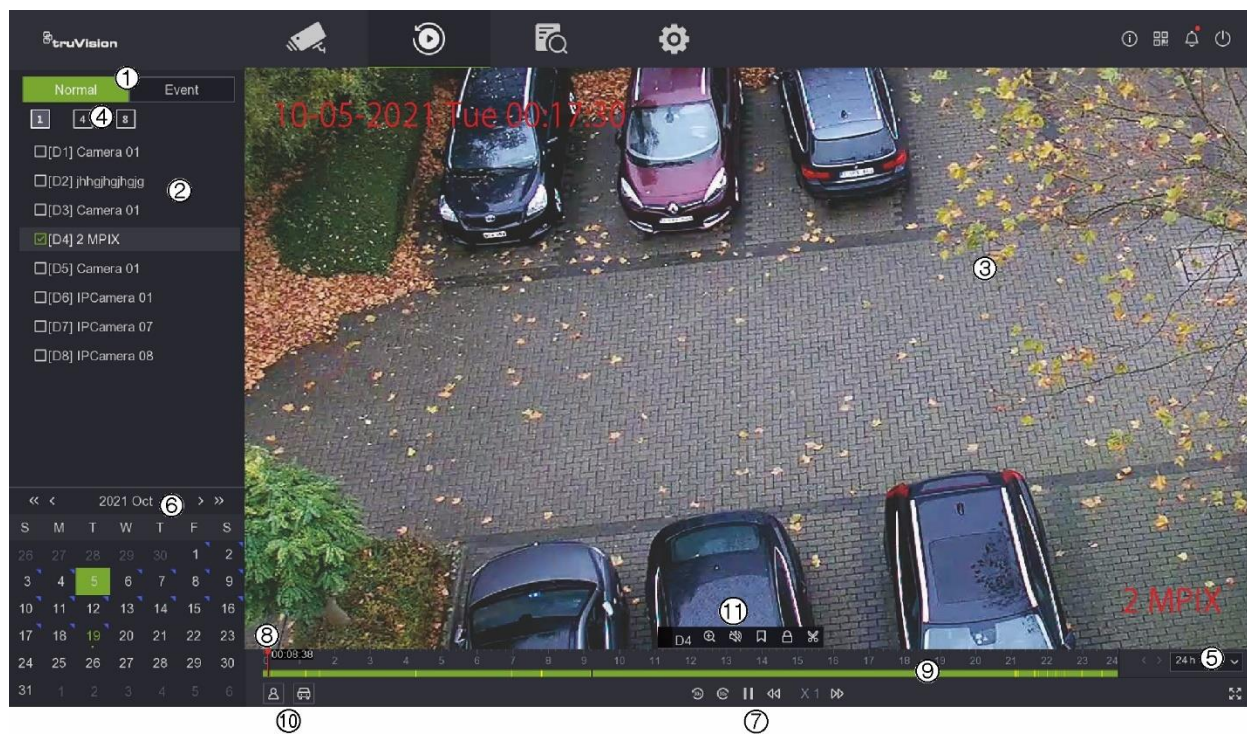
1. **Playback mode**: Select Normal or Event playback.
   Note: Multiscreen selection is only available in normal mode.
2. **Camera panel**. Select the camera(s) for playback. Use the mouse to click on the vertical scroll bar to display the list of cameras available.
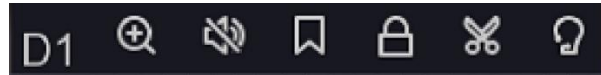3. **Playback viewer**.
4. **Multicamera selection**: Select which cameras to display simultaneously when in normal mode. It can be one camera or a group. The maximum number of cameras that can be displayed will depend on the recorder model.
5. **Playback period**: Select the playback period to display for the selected day: 24-hour, 6-hour, 2-hour, 1-hour, or 30 minutes. Default is 24-hour playback.
6. **Calendar panel**.
   Green square: Selected day of playback.
   Date number with a blue triangle in top right corner: Recordings are available for this day.
   Date number with no blue triangle in top right corner: No recordings are available for this day.

7. **Playback control toolbar**:
   : Reverse the playback by 30 seconds.
   : Forward the playback by 30 seconds.
   / : Play/pause playback.
   : Decrease playback speed: Options available are: ½ speed, ¼ speed, 1/8 speed, single frame.
   : Increase playback speed. Options available are: X1 speed, X4 speed, X8 speed, X32 speed.
   : Speed of playback.
8. **Time bar**: Time of actual playback.
9. **Timeline**: This bar displays the playback recording. It indicates in color the type of recording. Green is a normal (constant) recording and yellow is an event recording.
10. Display recordings that show people or vehicles . This function only works with supported cameras.
11. **Audio and video control toolbar**: This toolbar appears when the mouse cursor is placed on a video tile. See "Audio and video control toolbar" on page 149 for more information.

Audio and video control toolbar

The audio and video control toolbar lets you quickly access regularly used playback commands. Position the cursor over a video tile to see this control toolbar (see Figure 22 below below).

When you are in event playback, a new icon appears in this toolbar that lets you mark the video that have motion, cross line, or intrusion detection in a recording.

Figure 22: Audio and video control toolbar

Icon	Description
D[x]	Camera number of the selected IP camera.
	Digital Zoom: Enter digital zoom. See "Digital zoom" on page 137 for further information.
	Audio On: Enable/Disable audio output. The stream type must be set to Video/Audio. See "Camera encoding settings" on page 115 for further information.
	Bookmark: Create a bookmark of a scene, which can be then exported to a backup device. In the pop-up dialog box, enter the name of the bookmark. See "Create bookmarks" on page 152 for more information.
	Lock: Lock or unlock a file during playback. Locked files can then be exported to a backup device.
	Clip: Create a video clip, which can be then exported to a backup device. In the pop-up dialog box, enter the start and end times.
	Smart Search: This command only appears when in event playback mode. It lets you set the detections areas on screen to find recorded video based on the drawn motion detection areas, cross line, or intrusion detection area. See "Smart search" on page 150 for further information.

Playback modes

There are two types of playback, Normal and Event. This categorization is only available in OSD mode.

Normal playback

In normal playback you will see all the recorded footage, continuous and event, for the selected camera(s). The recording starts at midnight. Several cameras can be selected for multiscreen display in normal playback mode.

To do a normal playback:

1. In playback mode, click **Normal** playback.

2. Select the desired camera. More than one camera can be selected.

3. Hover the mouse cursor on the video tile to display the audio and video control bar.

4. Click the icon for the desired function to carry out (see Figure 22 on page 149).

   Note: Event detection is not available in normal playback.

Event playback

In event playback you can selectively play back the parts of a recording with motion, cross line or intrusion detection events and skip over video that does not have such events. Event playback mode analyses the video for VCA, smart events and motion events and then marks them.

To be able to play back VCA, smart events and motion events you must ensure that the function **Save Camera VCA Data** is enabled. This function is only available in OSD mode.

Only one camera can be selected in event playback mode.

Note: Make sure that you have enabled **Dual-VCA** in the camera. See "Dual VCA" on page 71 for further information.

To play back an event:

1. In playback mode, click **Event** playback.

2. Select the desired camera.

3. Go to **Configuration** > **Record** > **Advanced** and confirm that **Save Camera VCA Data** has been enabled.

4. Hover the mouse cursor on the video tile to display the audio and video control bar.

5. Click the event detection icon 🔍. Select the desired event rule for motion, cross line or intrusion detection and then draw where you want to mark the detection to be done on screen.

   — or —

   Click **Clear** to delete previous detection rules.

6. Click the **Search** icon 🔍 in the control toolbar to search and play back video with the matched events.

Smart search

Smart Search allows you to search for events in recorded video during playback. If event recording is used, it can still help you to locate events for areas of the screen where no events have been defined.

Smart search can be done as a search based on a cross line, an intrusion detection area, or a motion detection area.

For cross line and intrusion detection, the smart search can be done without setting up a cross line and/or intrusion detection for the camera.

When a smart search based on motion detection is needed, you must first set up motion detection for the camera, and then select 'Enable Dynamic Analysis for Motion' via the webpage.

To search events using Smart Search via OSD mode:

1. Make sure that the VCA information from cameras is stored on the hard drive. Go to **Configuration** > **Record** > **Advanced**. Enable **Save Camera VCA Data** and enable **Alarm Storage**.

2. Add an IP camera to the recorder and let it record (if needed, set up motion detection for the camera(s)).

3. Go to **Playback** > **Event**.

4. Select the camera from the list and you should see a colored timeline that shows that video has been recorded.

5. Click **Play** ▶ to start playback.

6. Select **Space Rule** 🔎. Select one of the following search options:

   a. Draw Motion Detection Rule

   b. Draw Intrusion Detection Rule

   c. Draw Cross Line Detection Rule

7. Select the desired function and draw the area of interest on the video frame.

8. Press the search 🔍 icon to start the search.
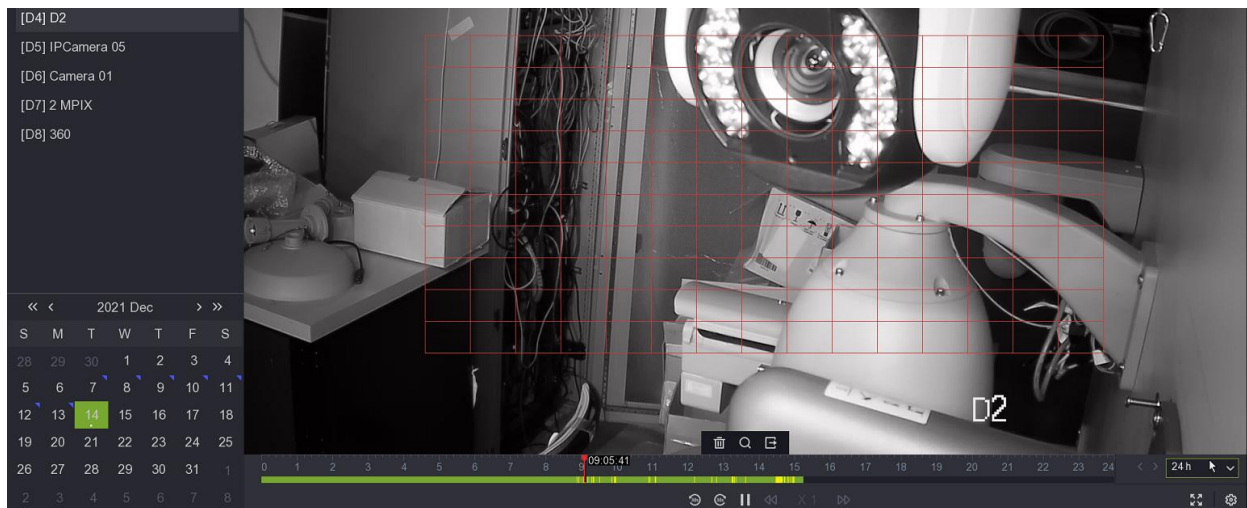
9. The timeline will now display yellow events detected by smart search in the green continuous recording bar. The yellow event lines detected by smart search will look the same as those event lines that already existed in the timeline.

Thumbnail images to preview a recording

This function is only available in OSD mode and not for all cameras.

When in normal and event playback, you can use thumbnail images that appear above the timeline to help guide you to a specific moment in the recording.

Hover the mouse on the timeline where you think the video of interest is located. A thumbnail of the video pops up (see Figure 23 below). If you are in Normal playback, play back starts from the spot where you click on the bar. If you are in Event playback, play back starts from the nearest event on the bar.

Figure 23: Thumbnail image in playback

Instant playback

This function is available from the live view control toolbar in OSD mode (see page 134). When you click the ![icon] icon, you can play back video recorded from the last five minutes for the selected camera. If no recording is found, then there was no recording made in the last five minutes. The five-minute period cannot be adjusted. See "Live view control toolbar" on page 134 This function is not available in web mode.

Create bookmarks

This function is only available in OSD mode.

You can bookmark the important scenes in a recorded file for later reference. A bookmarked recording is 10 seconds long.

To create a bookmark:

1. In playback mode, select the desired camera.

2. In the playback recording, move the timeline to where you want the bookmark to start. In the control toolbar, click the button and enter the bookmark name and click **Save**. The bookmark is saved.

3. To get a list of the bookmarks saved for a camera, click **Search** > **Video** buttons and select **Bookmark** as the type of video to search. Select the date and time range to search, the camera, and then click **Search**.

Create video clips

You can save important scenes in a recorded file for later reference by creating video clips of selected portions of the file during playback.

To create video clips during playback:

1. In playback mode, select the desired camera.

2. Insert a USB flash drive in the recorder to archive the video clips.

3. Click the timeline where you want the video clip to start and click the **Clip** button in the audio and video control toolbar. In the pop-up screen, enter the start and end times of the clip. By default, a clip is 10 minutes long.

4. Click **Save** to save the clip. Select how you would like the clip file saved: with Player or as a video with its log. Click **OK**.

5. The Export screen appears. The size of the video clip file is displayed. Under *Device Name*, select the USD flash drive and click **Save**.

6. Repeat steps 3 to 5 for additional clips.

Digital zoom in playback

To digitally zoom-in during playback:

1. In playback mode, select the desired camera.

2. Click the **Digital Zoom** button in the audio and video control toolbar. The camera image jumps to full screen mode.

3. Right-click the mouse to quit the digital zoom mode and return to full-screen playback mode. The playback control toolbar reappears.

Play back recordings with people and vehicles

The TruVision M Series Fixed IP cameras support the detection of people and/or vehicles. In the playback screen of the OSD mode, you can apply a filter on the playback that will identify recordings of people and/or vehicles. The camera must be set up to record people and /or vehicles.

This function is only available in OSD mode.

To search recordings by people or vehicle detection in OSD mode:

1. In playback mode, select **Normal** Playback.

2. Select the desired camera. Only one camera can be selected.

3. Select a date for playback.

   The timeline will then show the recorded video for the camera.

4. In the bottom right of the screen, select a playback period to zoom into the recording.

5. The timeline will show all recorded events that have been set up. If you want to filter for events with people and/or vehicles,

In the bottom left of the screen, click the **People** 🔳 and/or **Vehicle** 🔳 icon depending on which the camera has been set up to record.

6. The timeline will display the recorded people/vehicle events in yellow.

7. When people and/or vehicle is selected, you can select to skip video without events (normal video) as well as the unselected events.

   Example: If you select to show the events with people, and select **Skip Normal Videos**, then all videos without events and vehicle events will be skipped.

Chapter 17
Search recordings

This chapter describes how to search and play back recorded videos by different theme: video, snapshots, events, people, and vehicles.

Search recordings in web mode

Search recordings in playback mode. See Chapter 15 "Playback in web mode" on page 141.

Search for snapshots in web mode

The recorder can save snapshots of several events.

You can search for stored snapshots via the webpage or the OSD (see page 157 for the OSD).

To search for snapshots in web mode:

1. Click **Snapshot**.

2. Select the camera for which you want to search snapshots.

3. Enter the start and end dates.

   The result will appear in the list. The snapshots can be downloaded on the PC.

Note: The storage of event snapshots must be configured in the configuration settings for the events. Furthermore, it is also important to ensure that the picture storage is enabled in the recorder.

Go to the OSD menu and click **Configuration** > **Record** > **Advanced** and enable **Picture Storage**.

Search recordings in OSD mode

To enter the Search menu in OSD mode, click the Search icon in the top toolbar.

The Search window has five submenus that allow you to carry out different searches by theme.

Figure 24: The Search menu
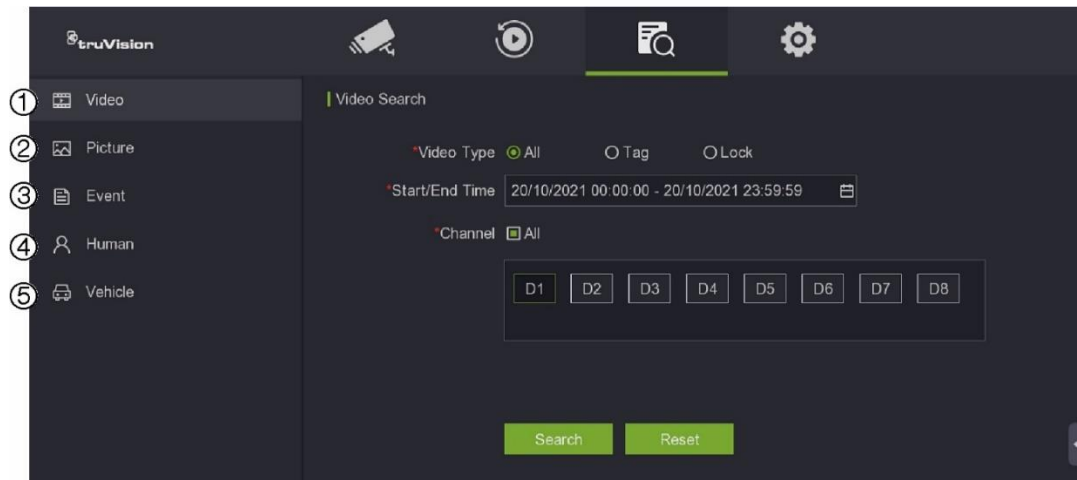
Search type	Description
Video	Search all video by time and date of recording and camera. You can also search for bookmarks and locked videos. Locked videos cannot be overwritten.
Picture	Search all video snapshots and related video clips by time and date of recording and camera.
Event	Search all video by time and date of recording and camera. You can search by the following event types: Alarm inputs, motion, face capture, cross line detection, intrusion, region entrance, region, exiting, unattended baggage, object removal, audio loss exception, sudden change of sound intensity, defocus, sudden scene change, fire detection, temperature detection, and temperature measurement pre-alarm, Intrusion Alarm_BA (Burglary alarm), Intrusion Alarm_TA (Tamper alarm), Intrusion Alarm_EA (Exit alarm), Intrusion Alarm_UA (Technical alarm (General)), Intrusion Alarm_FA (Fire alarm), Intrusion Alarm_WA (Technical alarm (Water)), Intrusion Alarm_GA (Technical alarm (gas)), Intrusion Alarm_ZA (Technical alarm (Low temperature)), Intrusion Alarm_HA (Hold-up alarm), Intrusion Alarm_BV (Verified Burglary), Intrusion Alarm_HV (Verified hold-up), Intrusion Alarm_JA (User code tamper), Panel Heartbeat Alarm, Arming Panel Alarm, and Disarming Panel Alarm.
Person	Search all video and snapshots by time and date of recording and camera and specifically for events caused by people.
Vehicle	Search all video and snapshots by time and date of recording and camera and specifically for events caused by vehicles.

Note:

Alarm input search: To search for recorded video that is based on an alarm input trigger, select the time and date and the appropriate alarm input.

Search results

A search will usually produce a list of recorded files, which may extend to several pages. The files are listed by date and time for each camera selected. The most recent file is listed first. Double click a file to play it back in the screen alongside the search list. See Figure 25 below for an example of the results of a search.

You can view the recording of a search result for a selected camera. Double-click a search result and click the Play ▶ button. The playback of the file starts (see Figure 25 below).

Each event is stored as a separate recording file.

Only one file can be played back at a time.

You can export all or selected files to a backup device.

Figure 25: Example of a search result list
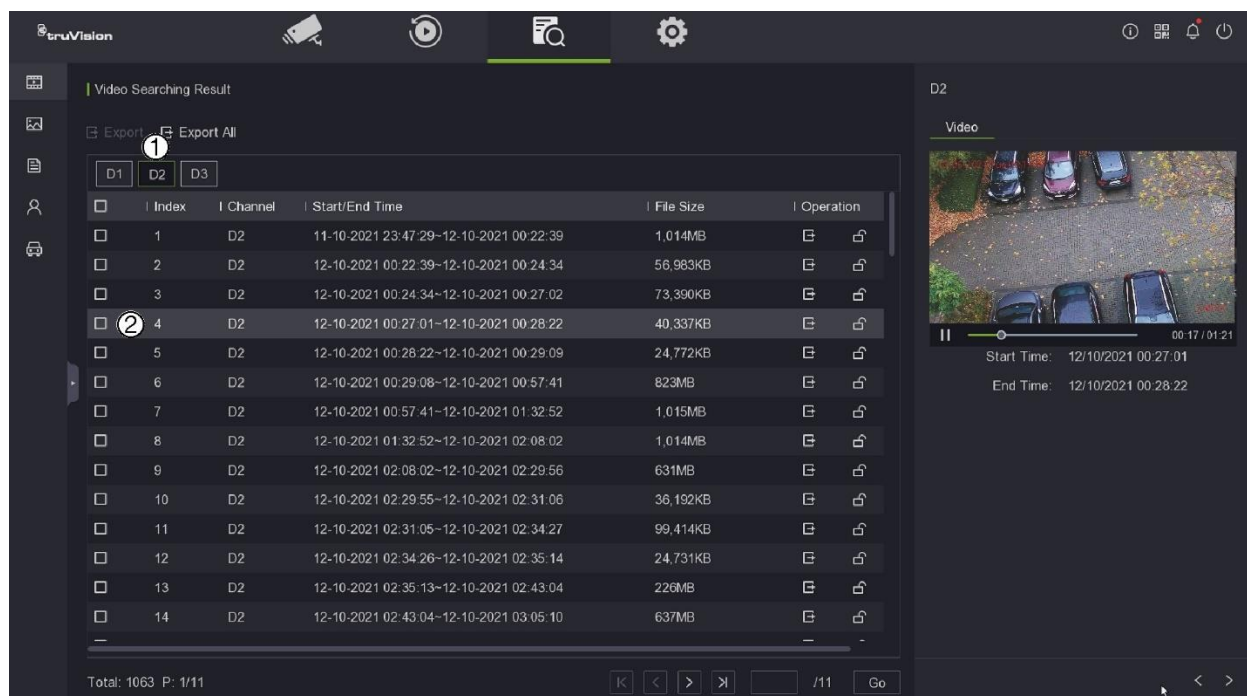
1. Click the camera for which you want to see the search results list.

2. Click a recording in the list to play it back in the screen. Click ▶ to start the playback.

Search for snapshots, bookmarks, or locked recordings

For information on creating bookmarks, see "Create bookmarks" on page 152.

To search for snapshots, bookmarked or locked recordings in OSD mode:

1. Click the Search icon in the top toolbar. The Search menu appears.

2. In the Search menu, click **Video** and then select the video type **Snapshot**, **Bookmark** or **Locked**.

3. If "Bookmark" has been selected, enter the name of the bookmark. The text box can be left empty.

4. Select the start and end times of the recording.

5. Select the desired camera(s).

6. Click **Search**. The list of snapshot/bookmarks/locked files appears.

7. Select the desired recording and then click the **Play** button to play back a recording.

Search recordings by event type

You can search recorded video by event type.

To search recordings by event:

1. Click the Search icon in the top toolbar The Search menu appears.

2. In the Search menu, click **Event**.

3. Select the desired event type from the drop-down list or select **All**.

4. Select the start and end times of the recording.

5. Select the desired camera. Only one camera can be selected.

6. Click **Search**. The list of search results appears. The event type is listed for each recording.

7. Select the desired recording and then click the **Play** button to play back a recording.

Appendix A
Specifications

	TVN 1204c	TVN 1208	TVN 1216
Recording			
Video compression	H.265+/H.265/H.264		
Encoding resolution	8 MP/6 MP/5 MP/4 MP/3 MP/1080p/UXGA/720p/VGA /4CIF/DCIF/2CIF/CIF/QCIF		
Frame rate	1-ch@8 MP (30 fps)/5-ch@1080p (30 fps)		
Stream type	Video, Video & Audio		
Audio compression	G.711ulaw/G.711alaw/G.722/G.726		
Video & audio			
IP video input	4-ch	8-ch	16-ch
	Up to 8 MP resolution	Up to 8 MP resolution	Up to 8 MP resolution
Incoming bandwidth	40 Mbps	80 Mbps	160 Mbps
Outgoing bandwidth	80 Mbps		
HDMI output	1-ch, 4K (4096 x 2160)/30 Hz, 4K (3840 x 2160)/30 Hz, 2K (2560 x 1440)/60 Hz, 1920 x 1080/60 Hz, 1600 x 1200/60 Hz, 1280 x 1024/60 Hz, 1280 x 720/60 Hz		
VGA output	1-ch, 1920 × 1080/60 Hz, 1280 × 1024/60 Hz, 1280 × 720/60 Hz		
Video output mode	HDMI/VGA simultaneous output		
BNC output	N/A		
Audio output	1-ch, RCA (2.0 Vp-p, 1 kΩ)		
Bi-directional audio	1-ch, RCA (2.0 Vp-p, 1 KΩ, using the audio input)		
Synchronous playback	4-ch	8-ch	16-ch
Auxiliary interface			
USB interface	Front panel: 1 × USB 2.0; Back panel: 1 × USB 2.0		
Hard drives			
SATA	1 SATA interface	2 SATA interface	
Capacity	Up to 8 TB capacity for each disk		

	TVN 1204c	TVN 1208	TVN 1216
Network			
Remote connection	16	64	
Network protocol	TCP/IP, DHCP, IPv4, IPv6, DNS, DDNS, NTP, RTSP, SADP, SMTP, NFS, UPnP™, HTTP, HTTPS		
Network interface	1, RJ-45 10/100 Mbps self-adaptive Ethernet interface	1, RJ-45 10/100 Mbps self-adaptive Ethernet interface	1, RJ-45 10/100/1000 Mbps self-adaptive Ethernet interface
General			
Power supply	12 VDC, 1.5 A	12 VDC, 3.33 A	
Power consumption (without HDD)	≤10 W	≤15 W	
Operating temperature	-10 to +55 ºC		
Relative humidity	10 to 90%		
Dimensions (W x D x H)	320 × 240 × 48 mm	385 × 315 × 52 mm	
Weight (without HDD)	≤ 1 kg	≤ 1.8 kg	

	TVN 1204cS	TVN 1208S	TVN 1216S
Recording			
Video compression	H.265+/H.265/H.264		
Encoding resolution	8 MP/6 MP/5 MP/4 MP/3 MP/1080p/UXGA/720p/VGA /4CIF/DCIF/2CIF/CIF/QCIF		
Frame rate	1-ch@8 MP (30 fps)/5-ch@1080p (30 fps)		
Stream type	Video, Video & Audio		
Audio compression	G.711ulaw/G.711alaw/G.722/G.726		
Video & audio			
IP video input	4-ch	8-ch	16-ch
	Up to 8 MP resolution	Up to 8 MP resolution	Up to 8 MP resolution
Incoming bandwidth	40 Mbps	80 Mbps	160 Mbps
Outgoing bandwidth	80 Mbps		
HDMI output	1-ch, 4K (4096 x 2160)/30 Hz, 4K (3840 x 2160)/30 Hz, 2K (2560 x 1440)/60 Hz, 1920 x 1080/60 Hz, 1600 x 1200/60 Hz, 1280 x 1024/60 Hz, 1280 x 720/60 Hz		
VGA output	1-ch, 1920 × 1080/60 Hz, 1280 × 1024/60 Hz, 1280 × 720/60 Hz		
BNC output	N/A		
Video output mode	HDMI/VGA simultaneous output		
Audio output	1-ch, RCA (2.0 Vp-p, 1 kΩ)		
Bi-directional audio	1-ch, RCA (2.0 Vp-p, 1 KΩ, using the audio input)		
Synchronous playback	4-ch	8-ch	16-ch

	TVN 1204cS	TVN 1208S	TVN 1216S
Auxiliary interface			
USB interface	Front panel: 1 × USB 2.0; Back panel: 1 × USB 2.0		
Hard drives			
SATA	1 SATA interface	2 SATA interface	
Capacity	Up to 8 TB capacity for each disk		
Network			
Remote connection	16	64	
Network protocol	TCP/IP, DHCP, IPv4, IPv6, DNS, DDNS, NTP, RTSP, SADP, SMTP, NFS, UPnP™, HTTP, HTTPS		
Network interface	1, RJ-45 10/100 Mbps self-adaptive Ethernet interface	1, RJ-45 10/100 Mbps self-adaptive Ethernet interface	1, RJ-45 10/100/1000 Mbps self-adaptive Ethernet interface
PoE			
Interface	4, RJ-45 10/100 Mbps self-adaptive Ethernet interface	8, RJ-45 10/100 Mbps self-adaptive Ethernet interface	16, RJ-45 10/100 Mbps self-adaptive Ethernet interface
Power	≤ 50 W	≤ 80 W	≤ 150 W
Supported standard	IEEE 802.3 af/at		
General			
Power supply	48 VDC, 1.35 A	48 VDC, 2.5 A	100 to 240 VAC, 50 to 60 Hz
Power consumption (without HDD)	≤10 W	≤ 15W	
Operating temperature	-10 to +55 ºC		
Relative humidity	10 to 90%		
Dimensions (W x D x H)	320 × 240 × 48 mm	385 × 315 × 52 mm	
Weight (without HDD)	≤ 1 kg	≤ 2.6 kg	

Appendix B
Port forwarding info

A router is a device that lets you share your internet connection between multiple computers. Most routers will not allow incoming traffic to the device unless you have configured them to forward the necessary ports to that device. By default, our software and recorders require the following ports to be forwarded:

Note: Port forwarding may reduce the security of the computers on your network. Please contact your network administrator or a qualified network technician for further information.

Note: It is recommended that the recorder is placed behind a firewall and that only those ports that need to communicate with browsers and software can be accessed.

Port: 80	HTTP protocol	Used to connect via IE browser.
Port: 8000	Client Software Port	Used to connect to video streams.
Port: 554	RTSP Port	Real time streaming protocol. Used to record video remotely.
Port: 7681	WebSocket (HTTP)	Use for live view on non-IE browsers.
Port: 1024	RTSP Port for 3G/4G	Use with mobile apps. Used for 3G/4G connection.

Note: It is recommended that the RTSP port 1024 should only be used when experiencing connection issues over a 3G/4G connection.

Seeking further assistance

Third-party assistance on configuring popular routers can be found at:

http://www.portforward.com/

http://canyouseeme.org/

http://yougetsignal.com

Note: These links are not affiliated with nor supported by Aritech Technical Support.

Many router manufacturers also offer guides on their websites as well as including documentation with the product.

On most routers the brand and model number are located on or near the serial number sticker on the bottom of the device.

If you cannot find any information for your router, please contact your router manufacturer or internet service provider for further assistance.

Appendix C
Overview of OSD and web functions

Table 6: Overview of functions available via OSD and Web modes

Function	OSD mode	Web mode
General:		
Startup Wizard	✓	✗
System management:		
Specify time zone, DST	✓	✓
Specify network time protocol (NTP),	✓	✓
Specify manual time synchronized with computer time	✗	✓
Specify system time and date, date format, mouse pointer speed	✓	✗
Change language	✓	✓ (only at log in)
Specify VGA/HDMI resolution	✓	✓
Specify recording behavior for Disable Actions	✓	✓
See open-source software licenses used	✗	✓
Lock screen password setup	✓	✗
Screen time out setup	✓	✗
Reboot recorder	✓	✓
Update recorder firmware	✓	✓
Import/Export recorder configuration files	✗	✓
Import/Export camera configuration files	✓	✓
Search system logs	✓	✓
Diagnose by Technical Support	✗	✓
Security authentication for RTSP & HTTP	✗	✓
Restrict IP address access	✗	✓
SSH protocol enable	✗	✓
Camera management:		
List IP addresses of connected cameras	✓	✓

Function	OSD mode	Web mode
Add, delete, modify cameras	✓	✓
See pop-up view of a camera's live view	✓	✗
Display camera password	✓	✗
Change camera password from the recorder	✓	✗
Use a customized protocol	✓	✗
Camera's activation password setup	✓	✓
Upgrade a camera's firmware from the recorder	✓	✗
Automatically switch to the H.265 stream	✓	✗
Export the camera configuration file to a backup device	✓	✗
Batch configuration	✓	✗
List cameras on LAN and not connected to the recorder	✓	✓
Activate selected cameras before adding them to the recorder	✓	✗
See power consumption and cable length of PoE connections	✓	✗
Set up a single IP camera default password when initially activating the recorder	✓	✓
Set up a single IP camera default password	✗	✓
Restrict viewing cameras on a VGA/HDMI monitor	✓	✓
User management:		
Add, delete, and modify users	✓	✓
Customize a user's access privileges	✗	✓
See which users are online	✗	✓
Change user password	✓	✓
Change user name and level	✗	✓
Network settings:		
Configure general network settings	✓	✓
Set up DDNS	✓	✓
Set up PPPoE	✗	✓
Set up email notifications	✓	✓
Set up HTTPS and WebSocket	✗	✓
Set up alarm host	✓	✓
Connect to UltraSync	✗	✓
Video and audio settings:		
Audio setup	✓	✓
Dual VCA	✗	✓
V-stream encoding	✓	✓
Image settings:		
Display setup	✓	✓

Function	OSD mode	Web mode
OSD information displayed setup	✓	✓
OSD information transparent/flashing	✗	✓
Day/night mode switch	✓	✗
Privacy mask setup	✓	✓
Event settings: (can depend on camera model):		
Motion detection	✓	✓
People/vehicle detection	✓	✓
Camera tamper detection	✓	✓
Video loss detection	✓	✓
Alarm inputs setup	✓	✓
Alarm outputs setup	✓	✓
Manually trigger an alarm output	✗	✓
Exception notification setup	✓	✓
Intrusion integration alarm reporting	✗	✓
Disable execution of event/alarm actions	✗	✓
VCA setup	✓	✓
Face capture setup	✗	✓
Behavior analysis (only supported by TruVision thermal cameras)	✓	✓
Recording:		
Recording schedule setup	✓	✓
Camera recording setup	✓	✓
Holiday recording schedule setup	✗	✓
Storage management:		
Check storage status	✓	✓
Activate new HDD	✗	✓
Initialize HDD	✓	✓
Add network storage system	✓	✓
View SMART settings	✗	✓
Bad sector detection	✗	✓
Enable HDD sleep mode	✓	✓
Overwrite HDD	✓	✓
HDD quota management	✓	✗
Group HDDs	✓	✗
Manage alarm and snapshot storage	✓	✗
Repair HDD database	✓	✓

Function	OSD mode	Web mode
Live view:		
Live view control (multiview, select stream type, bi-directional audio, start/stop recording, start/stop live view, digital zoom, adjust audio level, display previous/next video tile, select alarm output, full-screen view)	✓	✓
View status icons on-screen	✓	✗
Presets, preset tours, and shadow tours setup	✓	✓
PTZ control	✓	✓
Default multiscreen layout	✓	✓
Audio and volume	✓	✓ (audio only)
QR code to automatically enter SCI code to UltraSync	✗	✓
Capture snapshots	✓	✓
Instant playback	✓	✗
Camera sequencing	✓	✓
Playback:		
Playback control (multiview, bi-directional audio, control playback speed, adjust audio level)	✓	✓
Digital zoom	✓	✓
Create snapshots	✗	✓
Create video clip	✓	✓
Download snapshots and video clips to a specific directory	✗	✓
Synchronous playback	✗	✓
Smart search	✓	✓
Playback recordings that show people or vehicles	✓	✗
Lock/unlock file during playback	✓	✗
Create bookmarks	✓	✗
Set detection areas in playback for motion, intrusion, and cross line detection	✓	✗
Search recordings:		
Search recordings by time/date, stream type	✓	✓
Search recordings by VCA type	✓	✗
Search recordings by event type	✓	✗
Search for bookmarked or locked recordings	✓	✗
Search for snapshots	✓	✓