TruVision NVR 71 User Manual

interlogix
United Technologies

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Content

Important information

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 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
Product introduction

Product overview

This recorder is a high performance network video recorder that can store, search, export and manage video from up to 576 Mbps of incoming camera bandwidth, or up to 128 IP cameras. There are many redundancy features to ensure system stability failure such as RAID (only available in dedicated RAID models), hot spare mode, network redundancy, and redundant power supplies. It provides integration with the UTC portfolio of security solutions and offers a seamless product experience within the TruVision brand.

The recorder can fully integrate with the license-free TruVision Navigator software, which is ideal for most commercial applications. It features an easy-to-use and intuitive web browser interface that enables remote configuration and secure viewing, searching, and playing back of video.

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.

Figure 1: Password activation window

User Name: It is always "admin". It cannot be changed.   The bar showing password strength

Enter the new admin password and confirm it.

Tips on creating a strong password:

- A valid password range must be between 8 and 16 characters. You can use a combination of numbers, lower and upper case letters, and special characters : _ - , . * & @ / $? Space. The password must contain characters from at least two of these groups.

- The password is case-sensitive so use a mixture of upper and lower case letters.

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

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

Go to Chapter 16 "User management" on page 105 for further information on creating user passwords.

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 the browser:	When using TruNav:
RTSP port: 554	RTSP port: 554
HTTP port: 80	Server/Client software port: 8000

Go to "Web browser" on page 45 for further information.

Chapter 2
Physical installation

This section describes how to install the recorder.

Installation environment

When installing your product, consider these factors:

- Ventilation
- Temperature
- Humidity
- 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 NVR units.

Humidity: 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 cords

- Recorder

- Hard drive kits

- CD with software and manuals

- *TruVision NVR 71 Quick Start Guide*

- *TruVision NVR 71 User Manual (on CD)*

- *TruVision Recorder Operator Guide* (on CD)

Back panel description

The figure below shows the back panel connections and describes each connector on a typical TVN 71 network video recorder. Details may vary for specific models.

Once all required connections are done, enter the relevant data in the setup wizard (see page 11).

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 2: TVN 71 back panel connections
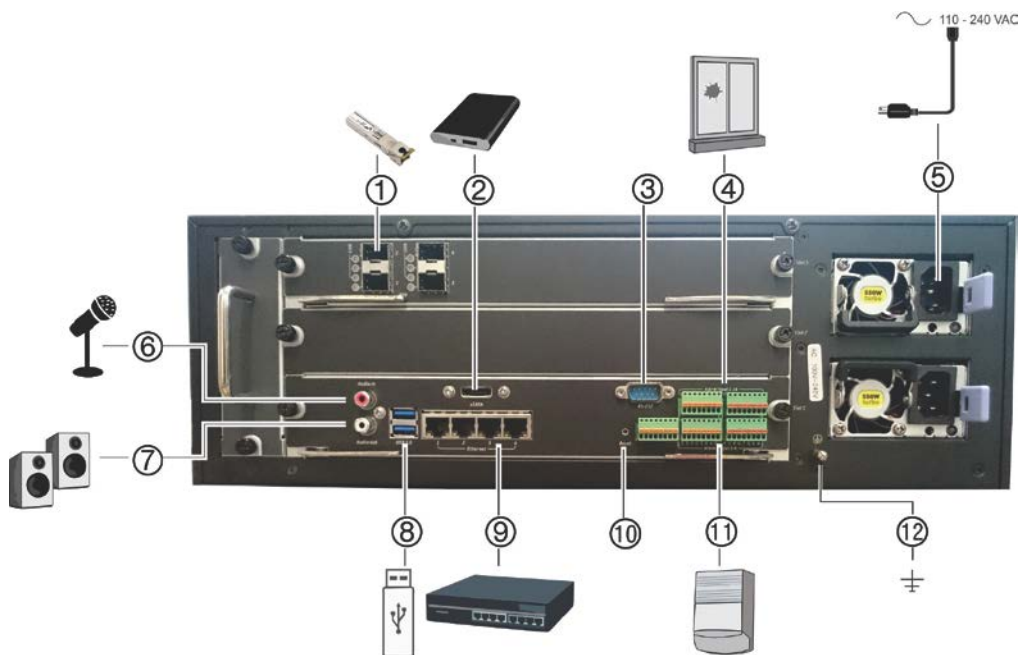
	Description	Use
1.	SFP port (X4)	Plug a small form-factor pluggable transceiver into the port in order to connect fiber cables.(Optional)
2.	eSATA	Connect an optional eSATA drive to extend the internal storage or to archive.
3.	RS-232 input	Used by technical support. See "Configure the RS-232 port" on page 95 for more information.

	Description	Use
4.	Alarm inputs (X16)	Connect physical alarms such as detectors, push buttons, etc.
5.	Redundant power supplies (X2)	Connect two PSUs. The PSUs are shipped with the recorder.
6.	Audio input (X1)	Connect a microphone for bi-directional audio (not recorded) (Optional) Specification: RCA jack, 315 mV, 40 kohms. Unbalanced. Line-level audio requires amplification.
7.	Audio output (X1)	Connect to speakers for audio output.(Optional) Specification: RCA jack, 315mV, 600 ohms. Unbalanced. Line-level audio requires amplification.
8.	USB 3.0 port (X2)	Connect an optional USB device, CD/DVD burner or HDD.
9.	Ethernet ports	Connect to a network.
10.	Reset pin hole	Access to the reset button using a paper clip. Hold down the reset button for seven seconds to reset the network settings back to factory default. **Note**: This might cause the cameras to stop recording and the software to be unable to connect to the recorder.
11.	Alarm outputs (X8)	Connect physical alarm outputs such as a siren, flash, or relay. (Optional)
12.	Ground	Connect to ground.

HDD slots

The recorder has four rows of four HDD (hard disk drive) slots. This allows up to 16 HDDs to be connected, depending on the model. The slots are accessed from the front panel for easy expansion or replacement of the hard drives.

Each HDD slot can support 4 or 6 TB HDDs. The total onboard storage capacity is between 16 and 96 TB in RAID or non- RAID configuration, depending on the model. The storage capacity can be further expanded by using the USB 3.0, eSATA, or NAS functionality.

Rack mounting

The recorder is 3U rack mountable using a rack mount shelf. The rack mount ears included with the product are intended to fix the product in the rack, not to carry the full weight of the recorder. It can also be installed desk-based.

Chapter 3
Getting started

Power on the recorder

The recorder comes equipped with two universal power supplies that will auto-sense 110/240 V, 60/50 Hz.

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

To turn on the recorder:

Plug in both power cords on the back panel. Once it is powered up, the status LEDs on the front panel will light up.

To reboot the recorder:

Connect to the recorder through the web browser interface or TruVision Navigator and reboot the recorder, if needed. See "Restart the recorder" on page 93 for more information.

The startup wizard

The recorder has an express installation wizard that lets you easily configure basic recorder settings when first used. It configures all cameras to default settings. The configuration of each camera and recorder can be customized as required later in the Configuration menu.

Any changes you make to a setup configuration page are saved when you exit the page and return to the main wizard page.

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

To use the Startup wizard:

1. There are two ways to access the Startup wizard:

In Internet Explorer enter the IP address of the recorder. The browser will automatically launch the startup wizard.

Note: Use TruVision Device Manager 4.0 to locate the recorder on the LAN and, if required, to change the recorder's IP address.

- Or -

On the recorder's menu toolbar, click **Configuration** > **Device Management** > **General Settings** and select **Start wizard now** to immediately launch the startup wizard.

2. Enable or disable the option to start the wizard automatically when the recorder is turned on. Click **Next**.

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

Wizard setup pages	Description
User configuration	You can change the admin password. Select the admin entry and click the Edit button. Change the desired admin information and then click OK to save and return to the *User configuration* window.
	See Chapter 16 "User management" on page 105 for more information about users.
Time configuration	Select the desired time zone, date format, system time, and system date.
	If Daylight saving time (DST) is required, select **Enable DST** and enter the start and end times of summer time.
	Set the amount of time to move DST forward from the standard time. Default is 60 minutes.
	Note: The system time and date are visible on screen. However, they do not appear in recordings.
	See "Time and date settings" on page 91 for more information.
Hard drive initialization	The hard drives are initialized at the factory. However if you wish to clear all data, click **Initialization** to initialize the HDD.
IP cameras	A list of cameras already added to the recorder is shown, if any. Their status is shown as Online or Offline. Click **Search/Add** to find any available IP cameras on the LAN.
	There are two ways to add an IP camera to the recorder system:
	Manually: Enter the IP address of the IP camera to be added. Select the appropriate protocol, stream number, and management port, and then enter User name, Admin password, and transfer protocol, and then click the **OK** button. Click, **Next** to move to the next page.
	Automatically: Click **Search/Add** to get a list of all supported IP cameras that are located on the LAN. Select the desired IP cameras from the search results list to add to the recorder system and click **OK**. The camera information cannot be modified. Click, **Next** to move to the next page
Recording schedule setup	Configure your default recording settings as required. The settings apply to all cameras connected to the recorder.
	Select the desired time lapse check box, **TL-Hi** or **TL-Lo**.
	To enable motion detection recording in the recording schedule, select **Enable Motion Detection Plan**. However, no motion will be recorder until you set up a motion grid. The motion grid needs to be set up for each

Wizard setup pages	Description
	camera individually via the normal Configuration menu.
	To enable alarm events recording, select **Enable Alarm Input Plan**.
	Note: You can configure the recording parameters of each individual camera for the different recording schedules in the recording menu.

4. When all the required changes have been entered, a summary page appears showing all the settings.

   Click **Finalize** to exit the Wizard. All changes made are saved. The recorder is now ready to use.

   Note: If you click **Exit Wizard**, you will exit the wizard and changes made to the language, alarm, password, IP camera, or date and time settings will be saved. However, all other changes will be lost.

   For a description of the recorder main menu, see "Web browser interface" on page 16.

Chapter 4
Operating instructions

Control the recorder

You operate the recorder through a browser interface, which provides full functionality for viewing, playback, and recorder configuration. You can also use TruVision Navigator or TVRMobile. Please refer to the TruVision Navigator and TVRMobile user manuals for more information.

You can use your preferred control method for any procedure, but in most cases we describe procedures using the browser.

Front panel description

The function button on the front panel lets you easily export log files. You can also open the front panel to access the HDDs in the recorder. The front panel can be locked with a key to limit access.

The LED indicators light up to alert you of various conditions. See Figure 3 below for more information.

Figure 3: TVN 71 front panel
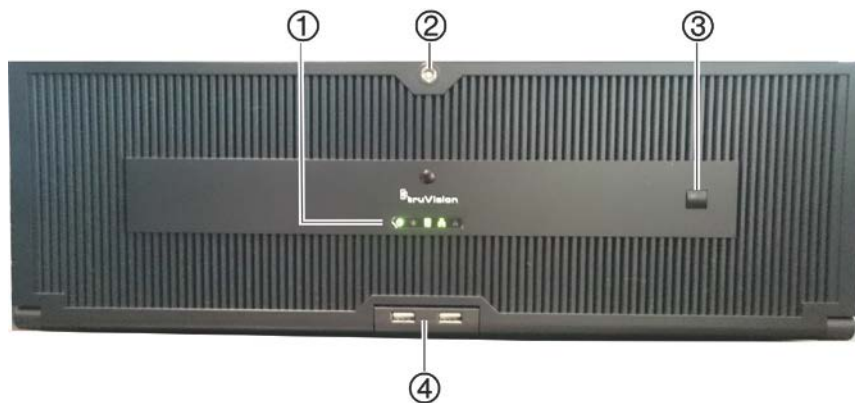
The controls on the front panel include:

Table 1: Front Panel Elements

	Name	Description
1.	Status LEDs	**Power**: A steady GREEN light indicates that the recorder is operating correctly. A RED light indicates a fault.
		Event Alarm: A blinking RED light indicates that there is a sensor Alarm In or another alarm such as motion or tampering. No light indicates no alarm.
		HDD: A blinking RED light indicates that the recorder is accessing the HDD in a read or write operation. A steady RED light indicates HDD failure. No light indicates that the unit is in idle state.
		Network: A GREEN light indicates a normal network connection. A blinking RED light indicates a normal network connection when not all of the eight network ports are in multi-address mode. No light indicates that the recorder is not connected to any network.
		Technical Alarm: A steady RED light indicates that there is a technical alarm from the recorder. No light indicates that there is no alarm.
2.	Front panel lock	You can lock or unlock the front panel with a key. It provides access to the HDDs.
3.	Export log button	**Export log** button: Insert a USB stick into one of the front panel USD ports. Press the button to export the log file of the recorder for all channels (format .txt). The download file has the log information for the past 24 hours from when you press the button. The name format is YYYYMMDDHHMM.txt.
		Note: You cannot export files to a USB CD/DVD burner using this button. However, you can use a USD stick.
4.	USB 3.0 port	There are two USB ports. They can be used for archiving video (setup via the webpage), upgrading the firmware, or exporting the log file (via the front panel button).

Access the web browser

To access the recorder, open the web browser and enter the IP address or domain name assigned to the recorder. On the logon window, enter the user name and password.

The default values for recorder network settings are:

- IP address - 192.168.1.82

- Subnet mask - 255.255.255.0

- Gateway address - 192.168.1.1

- Server port: 8000

- Ports:

When using the browser:	When using TruNav:
RTSP port: 554	RTSP port: 554
HTTP port: 80	Server/Client software port: 8000

For more information on port forwarding, see Appendix B "Port forwarding information" on page 115.

Web browser interface

The recorder's web browser interface has an intuitive structure that allows you to configure the unit's parameters quickly and efficiently. Each submenu item displays a setup menu that lets you edit a group of settings. Most menus are available only to system administrators.

The browser window is divided into three sections. The currently selected submenu is highlighted in green. See Figure 4 below.

Figure 4: Browser window
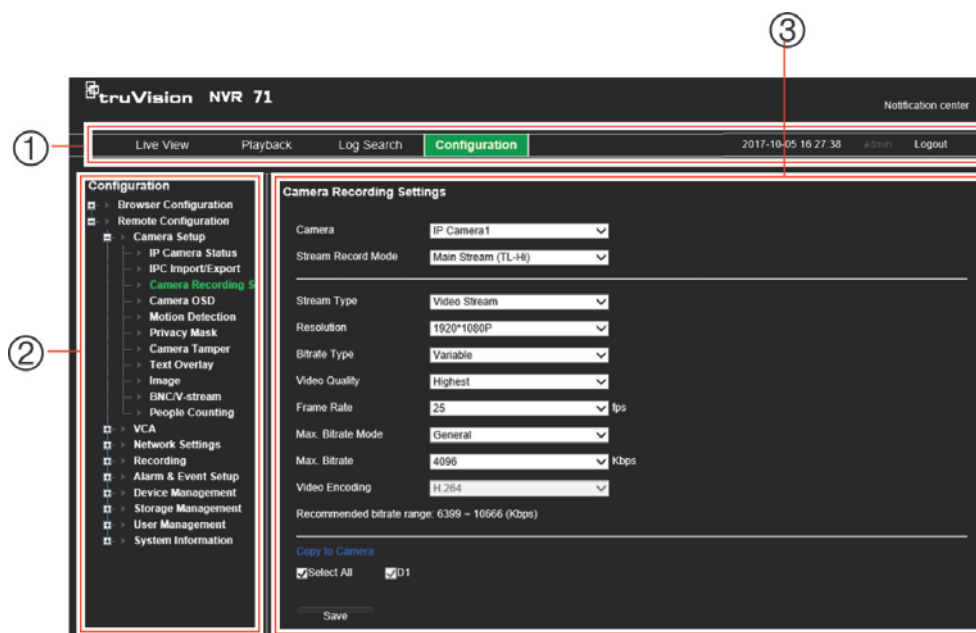
1. **Menu toolbar**: Setup options available for the selected menu function. Move the mouse over a menu function and click to select it. There are four menu modes: Live View, Playback, Log Search, and Configuration.

2. **Configuration panel**: Displays the configuration submenus for the selected menu function. Click an item to select it.

3. **Setup menu**: All the details for the selected submenu are displayed. Click a field to make changes.

Chapter 5
Live view

Live view mode is the normal operating mode of the unit where you watch live images from the cameras.

Web browser live view

The recorder web browser lets you view, record, and play back videos as well as manage all aspects of the recorder from any PC with Internet access. The browser's easy-to-use controls give you live view to all the recorder functions. See Figure 5 on page 19.

You can watch up to 16 cameras in live view simultaneously.

Note: You must run Microsoft Internet Explorer as administrator.

The recorder has three different stream types. You can select the best stream type to type your needs.
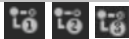
Table 2: Stream types

Stream type	Description
Main stream	Use main stream for live viewing and recording with high resolutions and bandwidth. It delivers high resolution video for local HDD recording and storage.
Substream	Use substream when there is a bandwidth limitation in realtime streaming. It delivers a low or standard resolution video for remote viewing, such as when using a smartphone application.
Transcoded stream	Use transcoded stream for remote live viewing and playback when there is a bandwidth limitation over the web client. You can reduce the resolution, bitrate, and frame rate of the original stream so that it better suits a low bandwidth.
	The recorder transcodes the original stream before sending it over the web. In Auto Mode, if the original stream is 1080p or higher, the resolution of the transcoded stream will be 1080p. If original stream is less than 1080p, the resolution of the transcoded stream will not change.

Figure 5: Live view in the web browser interface

	Name	Description
1.	Custom view	Lets you group selected cameras together in live view. See "Custom views" on page 20 for more information.
2.	Camera live view and recording	Select the camera for live viewing and recording as well as the streaming type.
		Click the button to start/stop live view from the selected camera.
		Click the button to start/stop local recording on your PC from the selected camera.
		Main stream (1) / Substream (2) / Transcoded stream (3) — Position the mouse cursor on the streaming type button and select the desired stream from the pop-up menu: Main stream, Substream, or Transcoded stream.
3.	Menu toolbar	Lets you navigate through the following menus:
		• View live video
		• Play back video
		• Search for event logs
		• Configure settings
		• Log out of the interface
4.	Viewer	View live or playback video.
5.	PTZ/Video parameters panel	Hide/display the PTZ panel. See "Control a PTZ dome camera" on page 22 for more information.

	Name	Description
6.	Display format	Define how you want video to be displayed in the viewer: Single or multiview.
7.	Streaming type	Select main stream, substream, and transcoded stream for all the cameras.
8.	Full screen	Display the video tiles only. Toolbars and panels not displayed. Press ESC button on the keyboard to view toolbars and panels.
9.	Transcoding play	Transcoded streaming is normally used when accessing the recorder via a web client. Modify the resolution, maximum bit rate, and frame rate of the transcoded stream.
10.	Video function toolbar	Lets you do the following in live view:
		Pause live viewing.
		Start/stop live streaming from all cameras.
		Start/stop local recording from all cameras.
		Digital zoom.
		Take a snapshot.
		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.
		Turn audio on/off
		Turn microphone on/off
11.	Alarm output	Shows the alarm outputs of the recorder and lets you trigger them on/off

Custom views

You can easily group cameras so that they appear in live view together. This allows you, for example, to quickly see all the cameras in a pre-defined part of the building such as a parking lot or different floors.

You can change the name of a custom view as well as select which cameras in a custom view group are main stream and substream. Not available for cameras with transcoded streaming.

To create a custom view of cameras:

1. Select the required multiscreen lay-out, depending on the number of cameras you want to show in the custom view.

2. Select a video tile for the camera that you want to appear in the custom view and click the camera button to enable live view ( ).The camera's live view appears in the video tile.

3. Select another video tile and enable live view for the next camera to include in the custom view. Repeat for each camera to be included in the custom view.

4. Click the **Add Custom View** button . The list of selected cameras appears. Enter the name of the custom view in the text box.
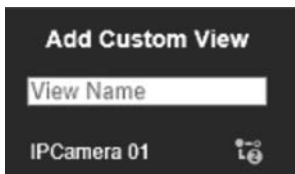
5. Select which cameras will be main stream and substream by clicking on each camera listed in the custom view. The camera button changes to show the streaming type:

   Main stream

   Substream
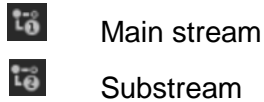
6. Click **Save**. The custom view is listed under "Custom Views".

To call up a custom view of cameras:

1. In the custom view list, double-click the desired custom view. The selected name is highlighted in green. The cameras included in this custom view appear on screen.

To edit a custom view of cameras:

1. Double-click the desired custom view.

2. Click the **Edit Custom View** button .

3. To change the name of the custom view, enter a different name for selected custom view group.

4. To change a camera's streaming type, click the desired camera's streaming type icon. The number on the streaming type icon changes.

    Note: You cannot add a camera to an existing custom view. You need to create a new custom view and add all the desired cameras.

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

To delete a custom view of cameras:

1. Double-click the desired custom view.

2. Click the **Delete Custom View** button . The selected custom view is deleted.

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. Click the digital-zoom button in live view. When enabled, the digital zoom button has a green frame.

2. Use the scroll wheel on the mouse to zoom in/out.

3. To exit digital zoom, click the digital zoom button again. The green frame on the button disappears.

Control a PTZ dome camera

The web browser interface lets you control the PTZ functions of a dome camera. Click a PTZ dome camera and use the PTZ controls on the interface to control the PTZ functions.

See Figure 6 below for a description of the PTZ control panel. The PTZ control panel is always displayed in live view.

Figure 6: PTZ controls panel
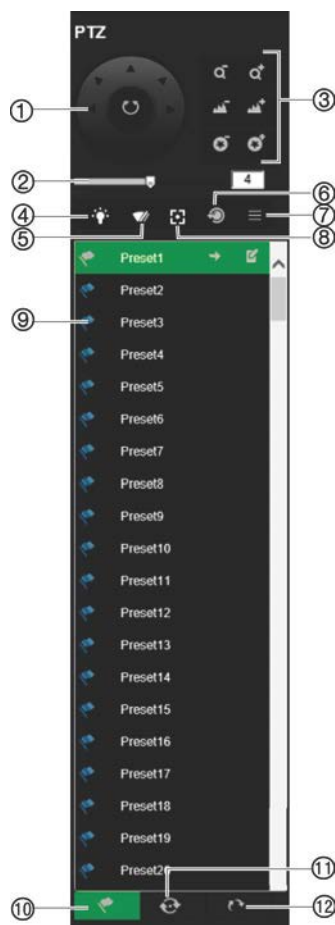
1. Directional pan/auto-scan buttons: Controls the movements and directions of the PTZ. Center button is used to start auto-pan by the PTZ dome camera.

2. Adjust speed of PTZ dome camera.

3. Adjust zoom, focus, and iris.

4. Turn on or off the camera light (Not used).

5. Start or stop camera wiper (Not used).

6. Lens initialization: Initialize the lens of a camera with a motorized lens, such as PTZ or IP cameras. This function helps to maintain lens focus accuracy over prolong periods of time.

7. Auxiliary focus: Automatically focus the camera lens for the sharpest picture.

8. Menu: Not used.

9. Depending on function selected:

   - Call and set the selected preset

   - Run, stop, set, and delete the selected preset tour

   - Run, stop, start recording, stop recording, and delete the selected shadow tour

10. List presets available.

11. List preset tours available.

12. List shadow tours available.

Presets

Presets are previously defined locations of a PTZ dome camera. It allows you to quickly move the PTZ dome camera to a desired position. They are controlled from the PTZ panel in live view. You can set up to 255 presets for a camera.

Presets are saved on the camera and not on the recorder. The presets are identified on screen when they occur.

To call up a preset:

1. In live view, select the desired camera from the camera list.

2. Click the **Preset** button ![icon] at the bottom of the PTZ panel to list all the presets.

3. Click the desired preset from the Preset list in the PTZ panel and click the ![icon] button to call up the preset. The camera immediately jumps to the preset position.

Preset tours

Preset tours are a series of presets. You can set up to eight preset tours for a camera.

Preset tours are saved on the camera and not on the recorder.

Figure 7: Preset tour interface
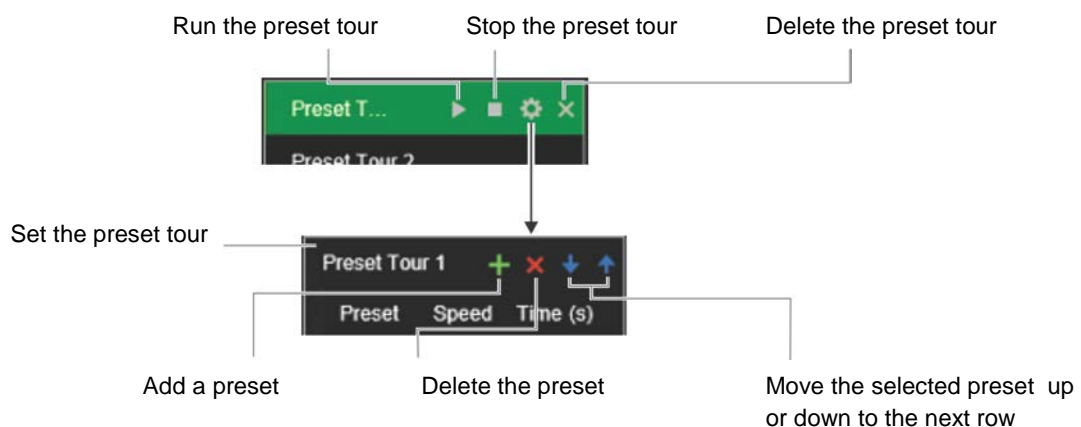
To call up a preset tour:

1. In live view, select the desired camera from the camera list.

2. Click the **Preset Tour** button ![icon] at the bottom of the PTZ panel to list all the preset tours.

3. Click the desired preset tour from the Preset Tour list in the PTZ panel and click the run button to start the tour. The camera immediately moves through the preset tour.

To add a preset tour:

1. In live view, select the desired camera from the camera list.

2. Click the **Preset Tour** button ![icon] at the bottom of the PTZ panel.

3. Select a preset tour from the list and click ![icon] to set a preset tour.

4. Click ![icon] to add a preset. The Step window appears. Select the preset number and enter the speed and dwell time (Time) in seconds of the preset.

   Note: A preset tour should have at least two presets.

5. Repeat step 4 to add other presets to the preset tour.

6. Click **OK** to save the settings. The tour appears in the list.

Shadow tours

Shadow tours allow you to record the manual movement of a PTZ and follow the same tour at a later date. You can set up to eight shadow tours for a camera.

Shadow tours are saved on the camera and not on the recorder.

Figure 8: Shadow tour interface
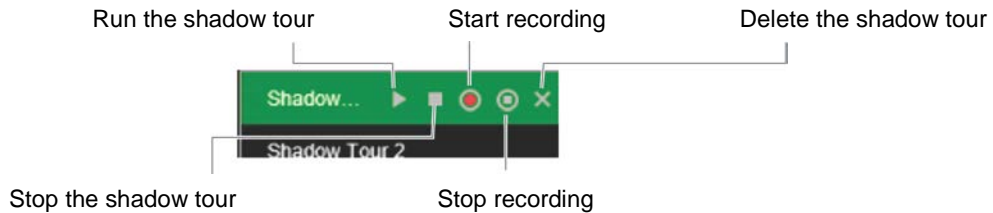
To call up a shadow tour:

1. In live view, select the desired camera from the camera list.

2. Click the Shadow Tour button ▣ at the bottom of the PTZ panel to list all the shadow tours.

3. Select the desired shadow tour and click the run button. The camera immediately carries out the shadow tour movement. Click the stop button to stop the tour.

To set up a shadow tour:

1. In live view, select the desired camera from the camera list.

2. Click the Shadow Tour button ▣ at the bottom of the PTZ panel to list all the shadow tours.

3. Click the record button and, using the PTZ directional buttons, move the camera to follow the desired path. Click the save button to save the tour.

    Note: A shadow tour can be overwritten.

Chapter 6
Playback functionality

The recorder lets you quickly locate and play back recorded video. There are three ways to play back video:

- Web browser
- TruVision Navigator
- TVRMobile

You can search video by specific time, events, motion detection, bookmarks, or snapshots (see Chapter 7 "Searching files" on page 33 for further information). Video can be played back from up to 16 cameras simultaneously.

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 "Customize a user's access privileges" on page 106 for more information).

Overview of the playback view

The playback video can be set up to display a time/date stamp for evidentiary purposes (see "Camera OSD" on page 53).

Note: Greyed out cameras are cameras that are not, or are no longer, connected to the recorder. As such, they may not contain recordings. However, every channel can be selected as channels that were connected in the past might still have associated video recordings.

Figure 9: Playback window
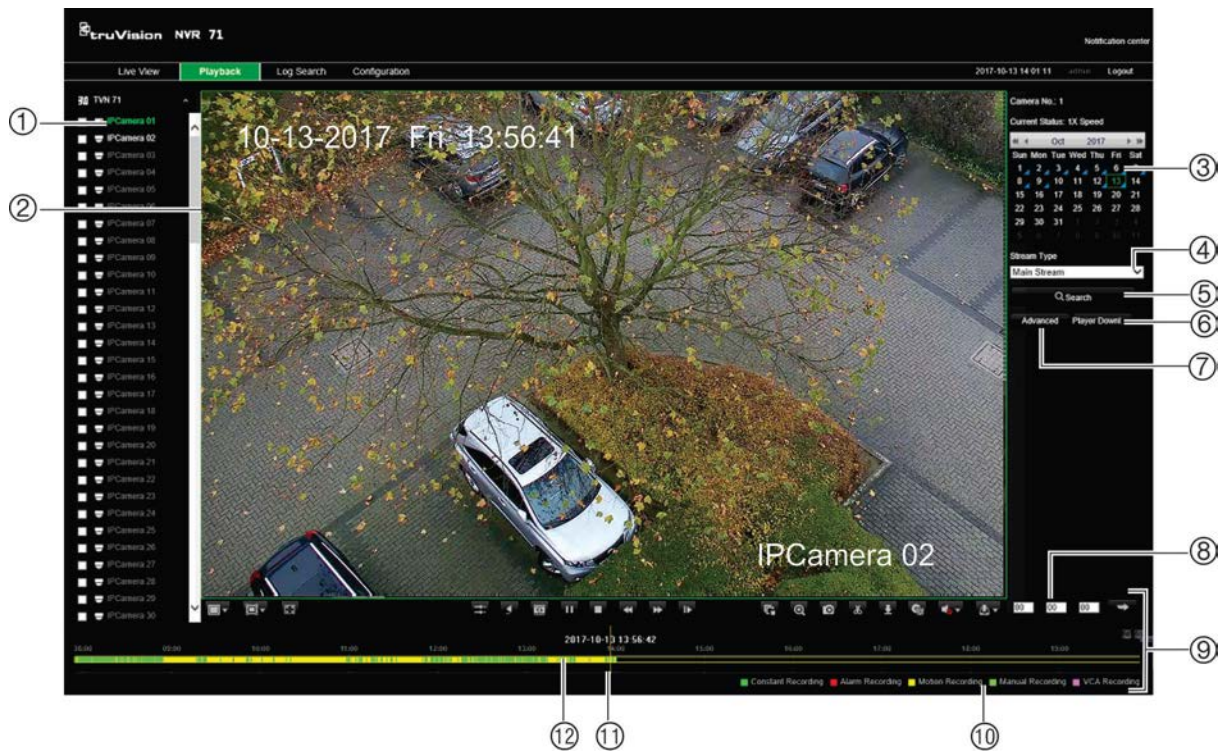
1. **Camera panel**. Select the cameras for playback. Move the mouse over the area to display the list of cameras available. Use the slide bar to see more cameras.

2. Playback viewer.

3. **Calendar panel**.
   Blue: Current selected date
   Green: Current date
   Blue triangle in the corner of a day: Recordings available for this day

4. **Streaming**. Select the streaming type: Main stream or substream.

5. **Search button**. Click to jump to the start of the selected day. Playback of the recording starts from the time set in the time field.

6. **Player Download button**. Click to download TruVision Player on to your PC to play back recordings.

7. **Advanced button**. Search the recordings of selected cameras by time/date as well as by events. Found recordings can then be played back and also locked to avoid being overwritten.

8. **Time field**. Enter the time from which to start playback of the recordings for all the selected cameras.

9. **Playback control toolbar**. See Figure 10 on page 27 for more information.

10. **Recording type**: Description of the color coding of recording types that appear in the playback progress bar. Green indicates constant recording. Red indicates alarm recording. Yellow indicates motion recording. Pale green indicates manual recording. Magenta indicates VCA recording.

11. **Timeline**: Actual time of playback in progress.

12. **Recording progress bar**: This bar displays how much of the period has been recorded. It indicates in color the type of recording.

The playback control toolbar

It is easy to manually control playback using the playback control toolbar. See Figure 10 below.

Figure 10: Playback control toolbar
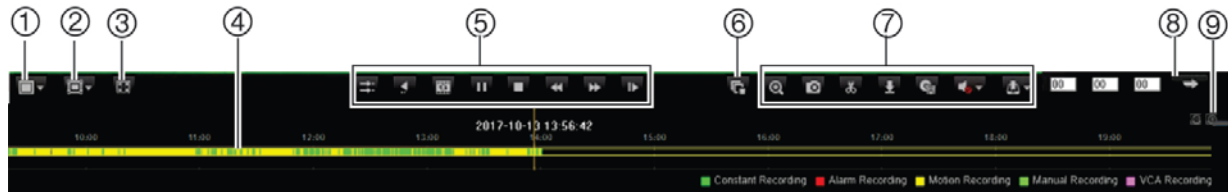
	Description
1.	Display playback on single screen or multiscreen mode.
2.	**Smart playback:**

Click one of these buttons to display when the following events occurred in the timeline.

	Clear		Cross line detected
	Motion		Intrusion detected

3.	**Full screen mode**
4.	**Recording progress bar**: This bar displays how much of the period has been recorded. It indicates in color the type of recording.
5.	**Playback control toolbar**:

	Synchronize playback: Use to synchronize the playback time of several cameras when in multiscreen format. Select one of the video tiles in playback mode and click this button to synchronize all the other camera video tiles. Up to 16 channels can be simultaneously played back.
	Reverse: Click to reverse playback.
	Transcode: Click to play back transcoded video. See Table 2 on page 18 for more information.
	Play/pause playback: Play or pause playback.
	Stop playback. Playback stops and the viewer goes black.
	Fast reverse: Click to scroll through the different speeds available: -64X, -32X, -16X, -8X, -4X, -2X, single frame. Current speed is displayed under the camera name on top right of window. For recorded video with audio, no audio is available during this function.
	Fast forward: Click to scroll through the different speeds available: +64X, +32X, +16X, +8X, +4X, +2X, single frame. Current speed is displayed under the camera name on top right of window. For recorded video with audio, no audio is available during this function.
	Single frame: Click to play back one frame at a time.

6.	**Start/stop all playback**: Stop streaming playback from all cameras.
7.	**Audio and video control toolbar:**

	Digital Zoom. Click to enter the digital zoom function. Click again to exit. See "Digital zoom in playback" on page 30 for more information.
	Snapshot: Capture a snapshot of the video.
	Video clips: Start/stop video clip during playback. Sections of a recording can be saved to an external storage device.
	Download: Download video clips.

	Description
🖳	**Backup**: Click to make back up of recorded files to save locally on the recorder. A list of the recorded files appears
🔊	**Audio**: Drag the scroll bar to the desired audio level.
🗄	**Bookmark management:** Manage bookmarks.

8. **Jump start**: Enter a precise time in the box and click the arrow button to jump start the playback to this selected time.

9. **Zoom**: Zoom in and out of the timebar.

Display order of cameras on screen

By default, playback is in full-screen mode. You can easily change the display mode to multiscreen using the single/multiscreen buttons at the bottom of the screen. You can play back up to 16 cameras at a time.

When using multiscreen mode, you can manually select the order in which the cameras appear on screen during play back. Camera 1 by default is always the camera displayed in video tile 1 and the other video tiles initially have no cameras allocated to them. The time bar underneath is located at midnight of the current day for the first video tile. The name of the camera associated with a selected video tile is displayed in the upper right of the screen under "Camera No." See Figure 11 below.

Figure 11: Associating a camera with a video tile

To select the display order of cameras:

1. Click **Playback** in the menu toolbar. The playback interface appears on screen.

2. Select the first video tile and click the name of the camera in the camera panel. The name turns green and also appears under "Camera No.".

   Note: A message is displayed if there is no recording associated with this camera,

3. Select the next video tile and click the camera name to be associated with this tile.

4. Repeat step 3 for each camera to be displayed.

Play back by camera

See Figure 10 on page 27 for a description of the playback control toolbar.

Double-click a video tile to get full-screen mode. Double-click it again to return to the playback window.

To search and play back recordings from specific cameras:

1. Click **Playback** in the menu toolbar. The playback interface appears on screen.

2. In the camera panel on the left, select which cameras you want to play back. The camera recordings will be displayed in sequential order in the video tiles.

3. In the calendar, click the day of the week you want to play back. Days marked with a blue tab have recordings.

4. Click **Search** and then the **Play** ▶ button.

   Playback starts immediately in the video tiles. Playback of the recording starts from the time set in the time field for all the selected cameras. If you want a different start time for playback, slide the timeline to the desired time for each tile.

   The playback speed of the camera is displayed on the top right of the screen under "Current Status".

   Note: A message appears if there are no recordings found in a video tile for the requested camera or time period.

5. Use the playback control toolbar to manually control playback.

Synchronize play back across cameras

If several cameras are playing back simultaneously, you can synchronize their playback times so that it is easy to follow events across recordings.

Note: Up to 16 cameras can be played back simultaneously.

To synchronize play back from several cameras:

1. Click **Playback** in the menu toolbar. The playback interface appears on screen.

2. In the camera panel on the left, select which cameras you want to play back. The camera recordings will be displayed in sequential order in the video tiles.

3. In the calendar, click the day of the week you want to play back. Days marked with a blue tab have recordings.

4. Click **Search** and then the **Play** ▶ button.

   Play back starts immediately in the video tiles. Playback of the recording starts from the time set in the time field for all the selected cameras. If you want a different start time for play back, slide the timeline to the desired time for each tile.

The playback speed of the camera is displayed on the top right of the screen under "Current Status".

Note: A message appears if there are no recordings found for the requested camera or period.

5. Select the video tile to which you want all the other cameras synchronized and click the **Synchronize Playback** ![icon] button.

6. Use the playback control toolbar to manually control playback.

Playback speed

You can play back a selected video at different speeds. This allows you to carefully examine an event frame-by-frame as it happens.

The current frame rate is shown as "Current Status" below the camera number on the top right of the screen. The speed rates available are: -64X, -32X, -16X, -8X, -4X, -2X, single frame (normal speed). No audio is available when playing back in fast reverse or fast forward.

To change the playback speed:

Click ![icon] and ![icon] to speed up and slow down recorded video.

To play back frame-by-frame:

1. In playback mode, click the **Single Frame** ![icon] button in the playback control toolbar. The speed changes to single frame.

2. Continue to click ![icon] to watch the recording frame by frame.

3. Click the **Play** button return to normal speed.

Digital zoom in playback

You can zoom in on an image during playback to see it in greater detail.

To digitally zoom-in during playback:

1. Click the **Digital Zoom** button in the playback control toolbar.

2. Use the scroll wheel of the mouse to zoom in/out. The selected area is magnified.

3. Click the **Digital Zoom** button again to stop digital zoom and return to normal view.

Capture snapshots

You easily capture a snapshot of a video image for later reference. The image is saved on the unit in JPEG format.

To capture a snapshot:

1. In playback mode, when you see an image that you want to capture click the snapshot button.

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. When an intruder, for example, crosses in front of several cameras, you can save the video clip of the intruder's path across these cameras.

Up to 30 video clips can be made from a recording. Archived files can be played using the TruVision Player tool.

To create video clips during playback:

1. Search for the required files to play back. See "Advanced search video menu" on page 33.

2. Select the file or files to play back and click **Play**. Playback starts immediately.

3. Click the **Start Clipping** button to start the video clip click the **End Clipping** button to stop the video clip. The clip is automatically saved on your PC.

   Note: Go to Configuration > Browser Configuration to see where on your PC the clips have been saved.

4. Repeat for additional clips.

Create bookmarks

You can bookmark the important scenes in a recorded file for later reference.

Bookmarks flag the start of a scene. Up to 64 bookmarks can be saved in a video file. There are two types of bookmarks:

- **Default bookmark** : All default bookmarks have the same generic name, "TAG".

- **Customized bookmark** : You can give a name to a bookmark for easy identification. The time is automatically entered. The same name can be used for several bookmarks.

Bookmarks flag the start and end of a scene. Up to 64 bookmarks can be saved in a video file.

To search for existing bookmarks, see "Search bookmarked recordings" on page 37 for further information.

To create a bookmark:

1. In the playback mode, click the timeline bar where you want the bookmark to start or enter in the exact time of the desired playback start point in the jump start box. The yellow timeline jumps to this position.

   If there multiple video tiles open, first select the desired tile.

2. Click the **Bookmark Management** button and select which bookmark type you want to create: Default or Customized.

3. Click the start bookmark button ![icon] to start the recording clipping. The button turns green. When you want to end the clip, click the bookmark button again to end the clipping. A message will appear to say that the clipping was successful.

Chapter 7
Searching files

This chapter describes how to search and playback recorded videos as well as search them by time, events, bookmarks, and snapshots. It also describes searching for event logs.

Advanced search video menu

You can easily search and play back recorded videos by time and date and events.

A search will usually produce a list of files, which may extend to several pages. The files are listed by date and time. The most recent file is listed first. You can then select a file to play it back. See Figure 12 below for an example of a search.

Figure 12: Advanced Search: Time & Date menu

Click to playback the selected video.

Click to lock recording to prevent it from being overwritten.

	Description
1.	The Advanced Search window has two submenus that allow you to carry out different searches by theme:
	Time and date: Search all video by time and date of recording.
	Event: Search only event recorded files. Files can be searched by event type: Alarm input, motion detection, VCA alarms, or intrusion alarms.
2.	Select the desired camera or cameras to search.
3.	**Record Type:** Select the type of recording: All, constant, motion, manual, or VCA alarms or alarms.
4.	**File Type:** Select
5.	**Stream Type**: Search for main stream or substream recordings.
6.	**Start and end times**: immediately access archived footage for the start and end time shown. See "Search and play back recordings by time and video type" below for further information.
7.	**Search**: Call up Search result list. See below for further information.
8.	Search results.

Search and play back recordings by time and video type

You can search recorded video by date/time and video type, such as constant recordings, motion, manual recordings, VCA alarms, and alarm recordings.

To search and play back recordings by time and type:

1. In playback, click the **Advanced** button and select the **Time & Date** tab**.**

2. Select the desired cameras, record type, file type, stream type as well as the start and end times of the desired period.

3. Click **Search**. The list of search results appears.
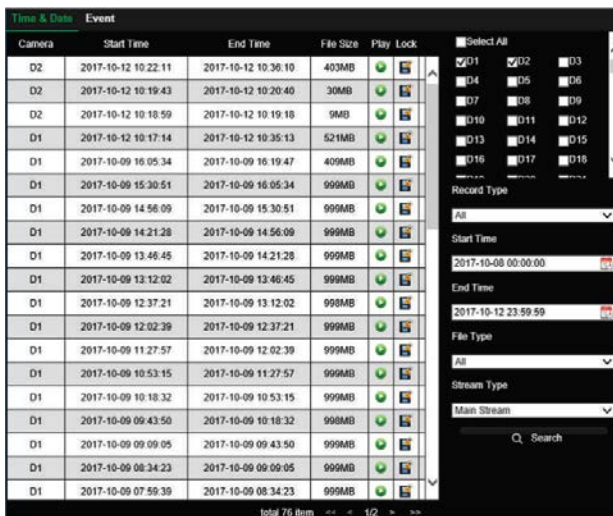
4. Play back the search results:

Click the playback button ⬤ of a desired recording. Only one result can be played back at a time. The playback recording appears in the playback viewer. Click the viewer screen to watch the recording. When the selected recording finishes, the viewer screen goes black.

To view another search result, click **Advanced** and select another file to watch.

Note: If you close the Search window, all search results will be lost.

5. To hide the playback control toolbar during play back, click the full-screen button. Press **Esc** button on your keyboard to return to the playback window with the toolbar displayed.

6. Use the playback control toolbar to manually control playback.

7. To do another search, click **Stop All Playback** ▣ in the playback window and then click the **Advanced** button. Reselect the search criteria and click **Search**.

8. Click ⊠ in the top corner of the advanced search window to close it.

To lock recordings to prevent overwriting:

1. In playback, click the **Advanced** button and select the **Time & Date** tab**.**

2. Select the desired cameras, record type, file type, stream type as well as the start and end times of the desired recording.

3. Click **Search**. The list of search results appears.

4. Click the Lock button ▣ of a desired camera. The selected file cannot be overwritten.

Search and play back recordings by event

You can search recorded video by event type: Alarm Input, Motion, VCA Alarms, and Intrusion alarms. When you select a video to play back from an event search, you can add on to the beginning and end of the video pre-defined times. The pre-play and post-play times can help provide information to what happened just before and after an event. You can select one of seven time periods for the pre and post-play times.

Figure 13: Advanced Search: Event search menu
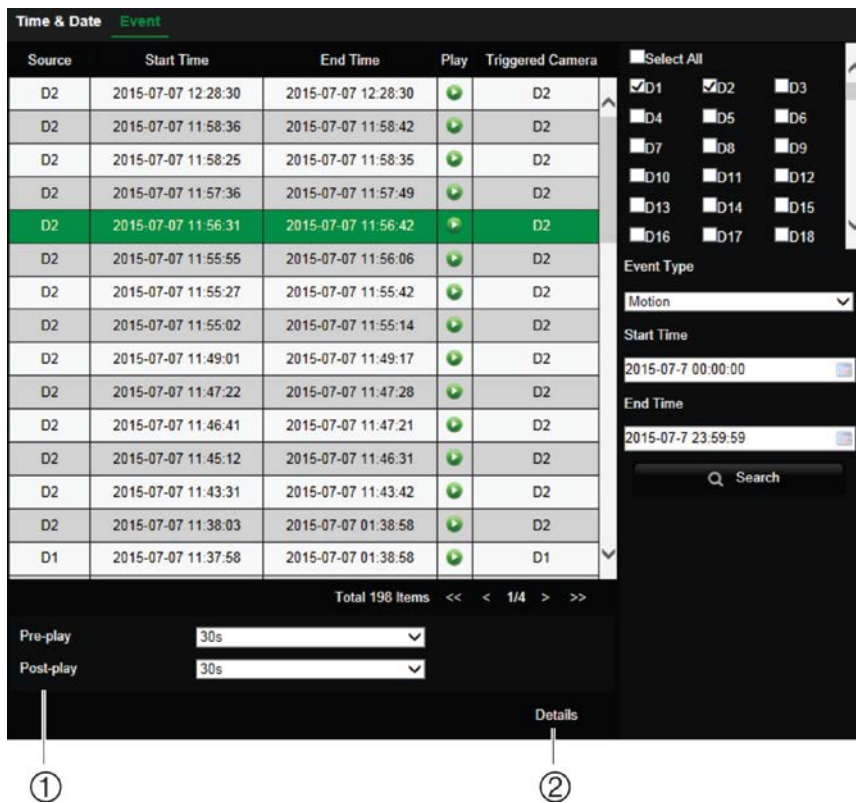
1. Pre and post-play recording times: Extra time added pre and post the recording.

2. Details: Shows the different recording files associated with this event from the selected camera. These can be main and substream recordings.

To search and play back event recordings:

1. In playback, click the **Advanced** button and select the **Event** tab.

2. Select the desired event type as well as start and end times of the desired period.

3. If you selected "Motion", select the desired cameras.

    If you selected "Alarm Input", select the desired alarm inputs.

    If you selected "VCA Alarms", enter the event type from the drop-down list under Event and the cameras.

    If you selected "Intrusion Alarm", enter the desired intrusion panel event.

4. Select the desired date and time to search.

5. For VCA alarms and intrusion alarms, select the desired alarm type.

6. Click **Search**. The list of search results appears.

7. Select the desired video from the list.

8. Select a pre-play and post-play time to add to the playback videos: 5 s, 10 s, 30 s, 60 s, 120 s, 300 s, or 600 s. By default they are 30 s.

9. Play back the search results.

Click the playback button ⏺ of a desired recording. Only one result can be played back at a time. The playback recording appears in the playback viewer. Click the viewer screen to watch the recording. When the selected recording finishes, the viewer screen goes black.

To view another search result, click **Advanced** and select another file from the results list to watch.

Note: If you close the Search window, all search results will be lost.

10. To hide the playback control toolbar during play back, click the full-screen button. Press **Esc** button on your keyboard to return to the playback window with the toolbar displayed.

11. Use the playback control toolbar to manually control playback.

12. To do another search, click **Stop All Playback** ⊡ in the playback window and then click the **Advanced** button. Reselect the search criteria and click **Search**.

13. Click ⊠ in the top corner of the Advanced Search window to close it.

Search bookmarked recordings

You can search bookmarks and then manage them. The manage function lets you rename, play back and delete bookmarks.

For information on creating bookmarks, see "Create bookmarks" on page 31.

To manage bookmarks:

1. In the playback mode, click the bookmark search button. The bookmark window appears.

2. Select the desired stream type, search type, as well as the start and end times of the bookmark clippings. Click **Search**.

3. The results are listed on screen.

   Note: A message appears if no bookmarks are found.

4. You can carry out several actions on the listed bookmarks:

   To rename a bookmark: Click on the **Edit** button or double-click on the name of the desired bookmark in the result list. Enter the new name in the edit box. Click on the green part of the bookmark entry for the name to be accepted.

   To playback a bookmark: Click the **Play** button of the desired bookmark in the result list.

   To delete a bookmark: Click the Delete button in the result list. Confirm that you want to delete the bookmark. It is deleted.

Search snapshots

Snapshots are saved on your browser folder. You can select the folder in the Configuration > Browser Configuration > Save Snapshots when in Playback to. See "Capture snapshots" on page 31 for information on how to create snapshots.

Search event logs

The recorder compiles a log of events, such as the start or end of video recording, recorder notifications, and alarms, through which you can easily search. Logs are categorized by the following event types:

- **Alarm:** Includes motion detection, tamper detection, video tampering, and other alarm events

- **Notification:** Includes system notifications such as video loss, HDD failures, and other system-related events

- **Operation:** Includes users access to the web interfaces and other operational events

- **Information:** Includes general information on the recorder actions, such as the start and end of video recording, etc.

Up to 2000 log files can be viewed at once.

Log files can also be exported onto a USB device. The exported file is named according to the time it was exported. For example: 20140729124841logBack.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:

1. From the menu toolbar, click **Log Search**.

2. Under **Event**, select an option from the drop-down list: All, Alarm, Notification, Operation, or Information.

3. From the **Type** list, select one of the options:

Event	Type
All Types	All Types
Alarm	All Types, Alarm Input, Alarm Output, Start Motion Detection, Stop Motion Detection, Start Camera Tamper, Stop Camera Tamper, Cross Line Alarm Started, Cross Line Alarm Stopped, Intrusion Detected Alarm Started, Intrusion Detected Alarm Stopped, Audio Exception Alarm Started, Audio Exception Alarm Stopped, Sudden Change of Sound Intensity Alarm Started, Sudden Change of Sound Intensity Alarm Stopped, Face Detected Alarm Started, Face Detected Alarm Stopped, Defocus Detected Alarm Started, Defocus Detected Alarm Stopped, Sudden Scene Change Alarm Started, Sudden Scene Change Alarm Stopped, Enter Region Alarm Started, Enter Region Alarm Stopped, Exit Region Alarm Started, Exit Region Alarm Stopped, Object Left Behind Detection Alarm Started, Object Left Behind Detection Alarm Stopped, Object Removal Alarm Started, Object Removal Alarm Stopped, Intrusion Arming Event Stopped, Intrusion Disarming Event Started, Intrusion Event Alarm Started, Intrusion Heartbeat Alarm Started
Notification	All Types, Video Loss Alarm, Invalid Login, HDD Full, HDD Error, Duplicate IP Address Found, Network Disconnected, Abnormal Record, IP Camera Disconnected, IP Camera Address Conflicted, Hot Spare Exception, IP Camera Motion Analysis Exception, EFR Record Exception, Record Buffer Overflow, IP Camera Access Exception
Operation	All Types, Power Up, Abnormal Shutdown, Watchdog Reboot, Local: Export Record File, Remote: Reboot, Remote: Login, Remote: Logout, Remote: Configure Parameters, Remote: Upgrade, Remote: Start Manual Recording, Remote: Stop Manual Recording, Remote: PTZ Control, Remote: Lock File, Remote: Unlock File, Remote: Trigger Alarm

	Output, Remote: Initialize HDD, Remote: Add IP Camera, Remote: Delete IP Camera, Remote: Set IP Camera, Remote: Playback by File, Remote: Playback by Time, Remote: Download by File, Remote: Download by Time, Remote: Export Config File, Remote: Import Config File, Remote: Export Record File, Remote: Get Parameters, Remote: Get Working Status, Connect Transparent Data Chan, Disconnect Transparent Data Chan, Start Bi-directional Audio, Stop Bi-directional Audio, Remote: Alarm Arming, Remote: Alarm Disarming, Remote: Add Network Storage, Remote: Delete Network Storage, Remote: Set Network Storage, Export Snapshot File, Configure SNMP, Operate Bookmark, Delete HDD, Load HDD, Unload HDD, Spare Operate, Upgrade IP Camera Firmware, Export IP Camera File, Import Camera File, Operation: Activation, Operation: Restore Defaults, Restore Default Settings
Information	All Types, Local HDD Information, HDD S.M.A.R.T., Start Recording, Stop Recording, Delete Expired Video File, Network Storage Information, System Running State, Spare Start Backup, Spare Stop Backup, EFR Record Start, EFR Record Stop, ADD IP Camera EFR Time Duration, Delete IP Camera EFR Time Duration, Spare Work Device Information

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

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

    The columns are: File number, Log time, Event, Type, Camera/Alarm/HDD Number, Local/Remote User, and Remote Host IP.

6. Select a file and double-click it. The Details pop-up screen appears listing the information on the log or recording. For a recording it lists such information as start time, type of event, local user, host IP address, parameter type, and camera number. Click **OK** to close the Details pop-up window.

47   2017-10-13 13:29:23

Major Type: Alarm
Minor Type: Stop Motion Detection
Local User: N/A
Host IP Address: N/A
Parameter Type: N/A
Camera No. : D2

OK

7. To save the selected log file to your PC or an external storage device, click **Save Log** in the log results list. In the "Save As" window that appears, enter the file name and select the location to save the file. It will be saved in *.txt format.

8. To archive the results of a log search, click **Save Log** and select the directory in which to save the file. The file is saved in *.txt format.

Chapter 8
Archiving files

Archive recorded files locally on your PC through the browser interface or software, or locally at the recorder on an external device such as USB flash drive, USB HDDs or a DVD burner. You must be in live view to archive video. Access to archive commands may require a password.

Overview of archiving

You can configure the recorder to automatically archive files following a predefined schedule to the selected connected storage media. See "Auto" below for more information.

Auto archiving

You can schedule the recorder to automatically archive recordings at set interval times to an external storage device. You can also select the cameras and recording types to auto archive as well as define how the system responds when the storage device becomes full.

It is easy to see the time of the most recent and next archive recording. Simply click the "Archive Status" menu and the information is displayed.

Archived files can be viewed using the TruVision Player tool.

To schedule automatic archiving:

1. Connect the backup device to the recorder.

2. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Recording** > **Auto Archive Settings**.
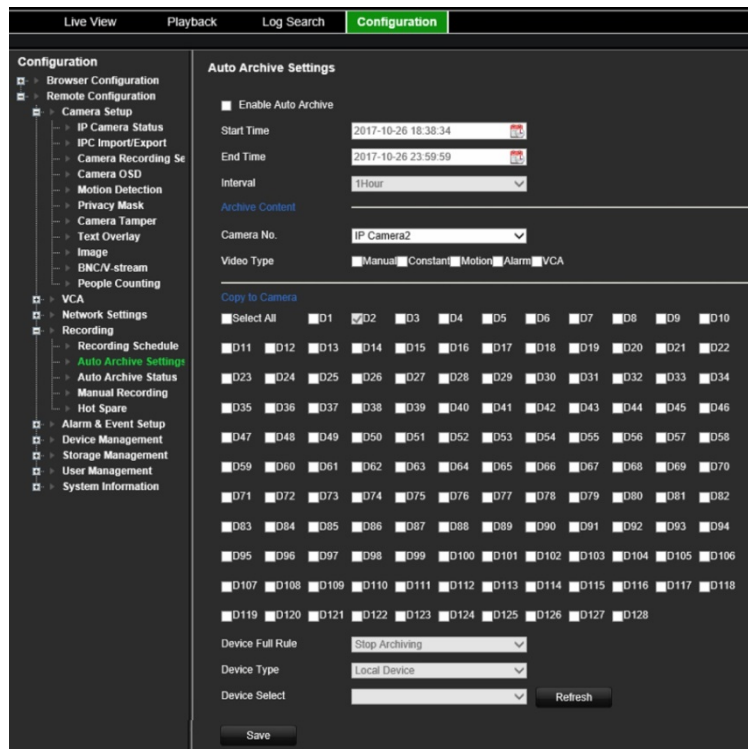
3. Select **Enable Auto Archive**.

4. Select the start and end date and time periods during which archiving can occur automatically.

5. Under **Interval Time**, select the desired interval time for archiving.

   The interval time options available are: 1 hour, 2 hours, 4 hours, 8 hours, 24 hours, or once only. Default is 1 hour.

6. Select the camera to auto archive.

7. Select the type of video files to be archived: Manual, Constant, Motion, Alarm, and VCA. More than one type can be selected.

8. You can copy these selected parameters to other cameras. Under the section "Copy to Camera, select the desired cameras.

9. Select how the recorder responds if the backup device becomes full. There are two options: Stop Archiving or Overwrite.

   If overwrite is selected, the oldest files are overwritten.

10. Under **Device Type**, select Local Device or Network Storage.

11. Under **Device Select**, select the backup device used.

12. If you change any options, click **Refresh**.

13. Click **Save**.

Export video recordings and snapshots via TruVision Navigator

TruVision Navigator allows you to export a single recording file per camera. Exported video files from TruVision Navigator need to be viewed using the TruVision export file tool. For further information on exporting video and snapshots, please refer to the TruVision Navigator 7.1 User Manual.

To export video and snapshots:

1. In the playback window, search for the time frame of the desired video segment.

2. Click the **Video** button to move the selected video segment to the Collector.

3. Select each video or snapshot thumbnail for export in the Collector, or use the Select/Deselect All button in the Collector header bar.
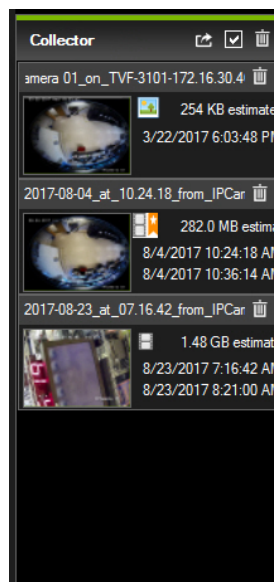
4. Click the **Export** button at the top of the Collector panel.

5. Click **Browse** and select the destination of the export file.

   All selected video thumbnails will be exported as a single file.

6. Click the **Export Now** button.

Note: Make sure there is enough disk space at the destination location for the export. Use the file size estimate in the Collector as a guideline.

Using TruVision Player

Play back video using TruVision Player

Use the standard file player software, TruVision Player, to play back the archived video on your PC. It is downloaded from the Advanced Search menu in playback mode.

You can include multiple files in the TruVision Player playlist. Double-click the desired video file from the list and click the **Start** button. When the first file finishes, the next file will automatically start. Up to 16 files can be played synchronously from multiple cameras.

Merge video files in TruVision Player

1. Add the exported video files to TruVision Player,

2. Click the menu button ▣ and select **Tool** > **Merge**.

3. The Merge window appears. Click **Add File** to add the files you want to merge onto a selected video file. Under **Output Setting**, select the video file to which you want to add the files.
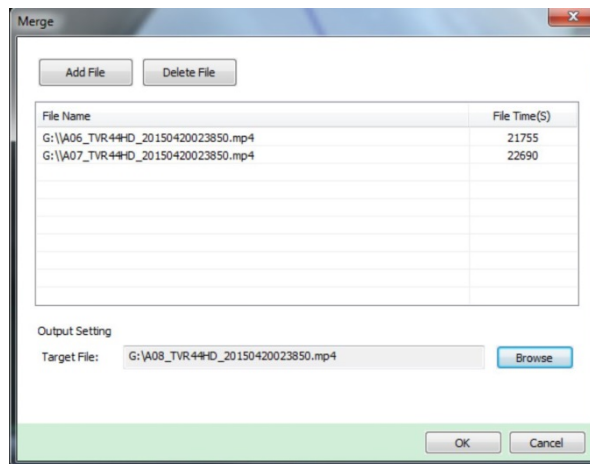
4. Click **OK**.

Watermarking

You can display the digital watermark to authenticate images and protect them from alterations. Watermarking on an image is only visible during playback of exported video using the TruVision platform export video player.

The recorder supports watermarking from TruVision cameras and encoders.

Use the playback application to reveal the watermarking on archived video. Enable the Watermarking option in the player.

Chapter 9
Web browser configuration

This chapter describes how to configure the web browser locally. Use the local browser configuration to configure such settings as protocol type, stream type as well as where to save files on the system.

Windows operating system

The recorder is compatible with Internet Explorer 9, 10 and 11 for Windows 8 and 10 operating systems. It is not compatible with Firefox and Chrome. When using the recorder web browser interface, you can install ActiveX controls to connect and view video using Internet Explorer.

It is also compatible with Safari on PC, and Safari on MAC OS. Please refer to Appendix C "TruVision Mac Safari browser plug-in v3.0" on page 117 to further information on using the Mac Safari operating system.

To have complete functionality of the web browser interface and the recorder player with Windows 8 and above, do the following:

• Run the Browser interface and the recorder player application as an administrator in your workstation

• Add the recorder's IP address to your browser's list of trusted sites

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

1. Open Internet Explorer.

2. Click **Tools**, and then **Internet Options**.

3. Click the Security tab, and then select the **Trusted Sites** button.

4. Click **Sites**.

5. Clear the "Require server verification (https:) for all sites in this zone" box.

6. Enter the IP address or DDNS name in the "Add this website to the zone" field.

7. Click **Add**, and then click **Close**.

8. Click **OK** in the "Internet Options" dialog box.

9. Connect to the recorder for full browser functionality.

Access the web browser

To access the recorder, open the Microsoft Internet Explorer web browser and enter the IP address assigned to the recorder, as a web address. On the logon window, enter the user name and password.

The default values for recorder network settings are:

- IP address - 192.168.1.82

- Subnet mask - 255.255.255.0

- Gateway address - 192.168.1.1

- Server port: 8000

- Ports:

When using the browser:	When using TruNav:
RTSP port: 554	RTSP port: 554
HTTP port: 80	Server/Client software port: 8000

For more information on port forwarding, see Appendix B "Port forwarding information" on page 115.

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.

Click and drag the marker across the timeline on where you want video playback to begin, and then click Play on the playback control toolbar. You can capture a snapshot of a video image, save the video playback, or download the recorded video.

Configure the recorder via the browser

Click **Configuration** on the menu toolbar to display the configuration window. There are two ways to configure the recorder: Browser and Remote.

Note: You must run Microsoft Internet Explorer as administrator.

Browser configuration

Browser configuration lets you define communication and network parameters 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.

See Figure 14 on page 47 for information on browser configuration settings.

Figure 14: Browser configuration

Option		Description
1.	Protocol Type	Specifies the network protocol used. Options include: TCP, DUP, or MULTICAST. Default is TCP.
2.	Stream Type	Specifies the streaming method used. Options include: Main Stream, Substream, or Transcoded Stream. 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.
		Use transcoded stream for remote live viewing and playback when there is a bandwidth limitation. See Table 2 on page 18 for more information about stream types.
3.	Window-division Mode	Specifies the image scale in a video tile. Options are Full Screen, 4:3, or 16:9. Default is full screen.
4.	Video File Size	Specifies the maximum file size. Options include: 256M, 512M, or 1G. Default is 512M.
5.	Latency	Options include: Low, Medium or High. Default is High.
6.	Auto Start Live View	Live view starts automatically when you login. Options are Yes or No. Default is No.
7.	Enable Intelligent Information	Show/hide the IP camera motion or VCA metadata. Options are Yes or No. Default is No.
8.	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.
9.	Save Record Video in Live View to	Specifies the directory for saving recorder video in live view mode.
10.	Save Snapshots in Live View to	Specifies the directory for saving snapshots in live view mode.

Option		Description
11.	Save Snapshots when in Playback to	Specifies the directory for saving snapshots in playback mode.
12.	Save Clips when in Playback to	Specifies the directory for saving video clips in playback mode.
13.	Save Downloaded File to	Specifies the directory for downloaded files.

Chapter 10
Camera setup

Use the "Camera Setup" menu to configure IP cameras. You can also configure the camera OSD, snapshots, recording settings, motion detection, privacy masking, camera tampering, PTZ configurations and V-stream settings.

The camera configuration settings are saved on the recorder.

Supported IP cameras

The recorder supports the following IP cameras:

- TruVision IP cameras with a maximum resolution of 8 MPX (4K)

- Onvif IP cameras

- Axis IP cameras

Please refer to the full IP camera compatibility chart for the latest validated IP camera models for TVN 71.

You can also add IP cameras that support RTSP streaming. See "RTSP Service Port" on page 121 for more information.

IP camera status

The IP camera status menu allows you to add, edit, and remove cameras to the recorder as well as update the cameras' firmware.

Figure 15: IP camera window

Option		Description
1.	Manual Add	Manually add an IP camera to the recorder without searching for it. Enter its parameters: IP Camera No., IP Camera Address, Protocol, Management Port, User Name, Password, and Transfer Protocol.
2.	Modify	Change the parameters of a selected IP camera from the list.
3.	Delete	Delete the selected IP camera from the list.
4.	Search/Add	Search the network for available IP cameras and add an IP camera to the recorder. Select a camera, or cameras, from the list and click OK.
		The camera parameters shown are: IP Camera Address, Channel Number, Protocol, Management Port, Subnet Mask, MAC Address, Serial No., and Firmware Version.
		Note: When you add a camera automatically using the Search/Add feature, the system will check whether the camera password is 1234 or the same as the recorder. If the camera password is neither, the camera status is displayed as "Offline" (see Figure 15) and its password needs to be changed to be the same as the recorder.
5.	Advanced Settings	Synchronize all supported TruVision and UltraView IP cameras passwords.
6.	Custom Protocol	Configure custom RTSP streams. See "RTSP Service Port" on page 121 for more information.
7.	**Refresh**	Update the information displayed on a camera in the recorder device list.

To search the network and add an IP camera:

1. From the menu toolbar, click **Configuration** > **IP Camera Status** > **Search/Add** to search for any supported IP cameras located in the recorder LAN.

2. In the list that appears, select the cameras that you want to add to the recorder.

3. Click **OK** to add the selected cameras to the list of devices in the recorder. The cameras are automatically added to the end of the list of devices.

   Note: If cameras still have default settings, they might have the same IP addresses. This creates an IP conflict. Use the **Modify** button to assign a different IP address to each camera.

To manually add an IP camera:

1. From the menu toolbar, click **Camera Setup** > **IP Camera Status**.

2. Click **Manual Add**. In the pop-up window, enter the camera details such as the IP camera address/domain, protocol, management port, user name, and password. Click **OK**.

   The camera is added to the end of the list of devices.

Note: Only one camera can be manually added at a time.

Import and export IP camera configuration settings

You can export and import the IP camera configuration settings from the recorder. This is useful if you want to copy the configuration settings to another recorder, if you want to edit a large list of camera settings in Excel, or if you want to make a backup of the camera settings.

Insert an external storage device in the recorder. Go to **Remote Configuration** > **IPC Import/Export** to import or export configuration settings. Click **Export** to export the recorder's configuration settings into an external storage device or click **Import** to import configuration settings after selecting a configuration file from the external storage device.

Note: If a setting is incorrect, the import function will not work for cameras that share the setting. An error message will appear on screen.

Camera recording settings

You can set different resolution, frame rate, video quality, stream type, and maximum bit rate values for each camera. For each camera, you can also set different recording settings for each stream mode. For example, you can set different bit rate type, video quality and frame rate for event and alarm recordings for a selected camera.

Figure 16: Camera recording settings
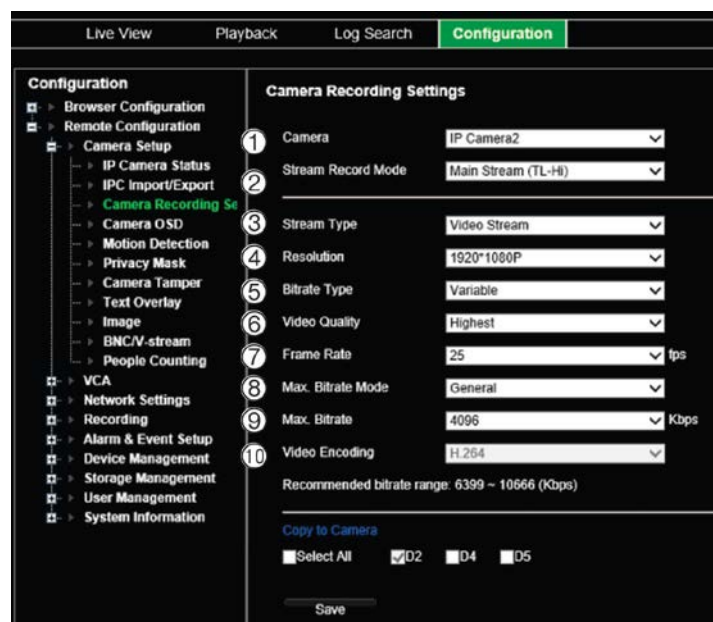
Parameter	Descriptions
1. Camera	Specifies the camera selected.

Parameter		Descriptions
2.	Stream Record Mode	Specifies the streaming method used.
		Options include: Main Stream (TL-Hi), Main Stream (TL-Lo), Main Stream (Event), Main Stream (Alarm), Substream.
3.	Stream Type	Specifies the stream type you wish to record.
		Select Video Stream to record video stream only. Select Video&Audio to record both video and audio streams.
		Note: Video&Audio is only available for those camera models that support audio.
4.	Resolution	Specifies the recording resolution. A higher image resolution provides a higher image quality but also requires a higher bit rate. The resolution options listed depend on the type of camera and on whether main or sub stream is being used.
		Note: Resolutions can vary depending on the camera model.
5.	Bitrate Type	Specifies whether variable or fixed bit rate is used. Variable produces higher quality results suitable for video downloads and streaming. Default is Constant.
6.	Video Quality	Specifies the quality level of the image. It can be set when variable bit rate is selected. Options include: Lowest, Lower, Medium, Higher, and Highest.
7.	Frame Rate	Specifies the frame rate for the selected resolution.
		The frame rate is the number of video frames that are shown or sent per second.
		Note: The maximum frame rate depends on the camera model and selected resolution. Please check the camera specifications in its datasheet.
8.	Max. Bitrate Mode	If "General" is selected, a list of predefined bit rates is displayed. If "Custom" is selected, any bit rate can be entered.
9.	Max Bitrate	Specifies the maximum allowed bit rate. A high image resolution requires that a high bit rate must also be selected.
10.	Video Encoding	Specifies the video encoding standard. Depending on the camera model, you can select H264 or H265.

To configure recording settings:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Camera Setup** > **Camera Recording Settings**.

2. Select the camera you want to configure.

3. Select one of the stream record modes: Mainstream (TL-Hi) (default), Mainstream (TL-Lo), Mainstream (Event), Mainstream (Alarm), or Substream.

4. Configure the following recording settings for the selected record stream mode and camera (options available depend on the camera model):

• **Stream Type**: Select the type of stream to record, either video or video and audio.

• **Resolution**: Select the resolution of the recording.

• **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 of time.

- **Frame Rate**: Select the recording frame rate.

- **Max. Bitrate Mode**: Select the general (Default) or customized option.

- **Max. Bitrate (kbps)**: If the customized maximum bit rate mode was selected, enter the value here. The recommended bit rate range to use is displayed.

- **Video Encoding**: Select the desired video encoding standard.

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

6. If you want to save these parameters to another camera, select the desired cameras under "Copy to Camera".

   Note: When copying settings to cameras that do not support the settings, an error message will be displayed when trying to save. For example, it is not possible to set a Full HD resolution on a camera that does not support that resolution.

7. Click **Save** 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. They are part of the image and are therefore also recorded.

To configure the OSD settings:

1. From the menu toolbar, click **Configuration** > **Camera Setup** > **Camera OSD**.
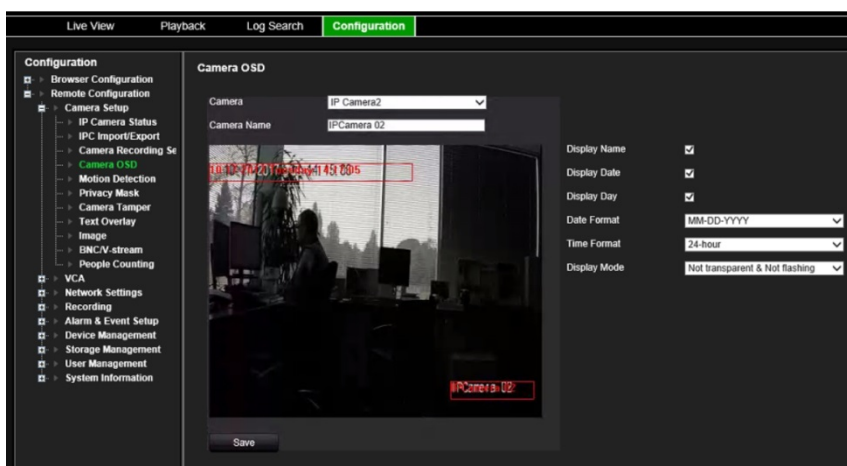
2. Select the desired camera and enter a name for the camera, if required. The name can have up to 32 alphanumeric characters.

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

4. Select date and time formats.

5. Select how you want the camera information displayed.

    Select one of the options from the drop-down list. Default is non-transparent & not flashing.

    - Transparent & Flashing
    - Transparent & Not flashing
    - Non-transparent & Flashing
    - Non-transparent & Not flashing

6. There are two red text boxes in the camera view window; one for the camera name and the other for the date/time. Using the mouse, click and drag a text box to the desired display position.

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

Motion detection

The motion detection menu allows you to 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. However, the motion alarm is only triggered if it occurs during a programmed time schedule.

To set up motion detection:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Camera Setup** > **Motion Detection**.

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**. Use this feature to display and store motion metadata. This metadata can also be used in TruVision Navigator and is also used for motion search.

5. Select the areas on-screen to be sensitive to motion.

    Click the **Area Settings** tab and then click the **Start Drawing** button. Drag the mouse cursor across the window to select an area sensitive to motion detection, which are shown as a red motion grid. Click the **Stop Drawing** button to stop selecting the area. Click **Clear** to clear the screen.
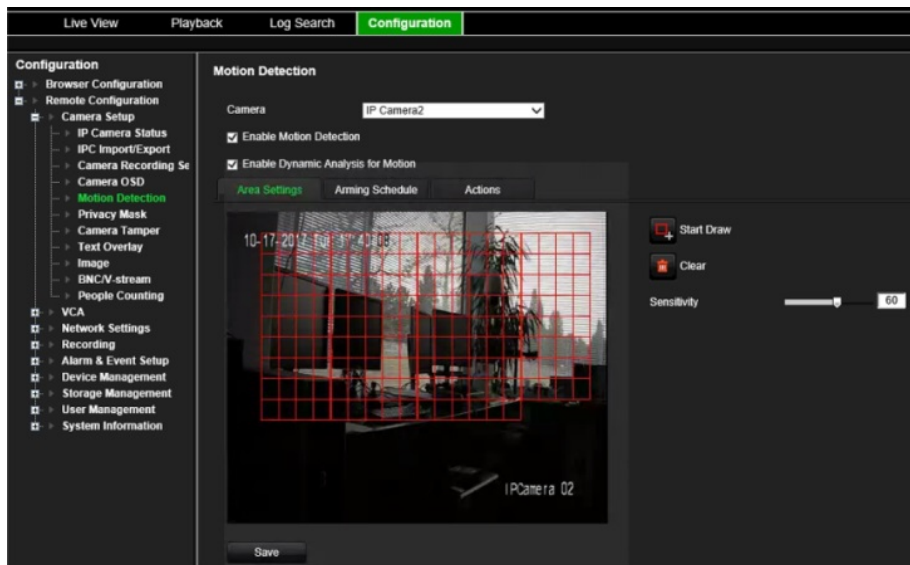
Set the sensitivity level. Drag the sensitivity scroll bar to the desired sensitivity level. Default is 50.

6. Select the arming schedules for motion detection.

   a) Click the **Arming Schedule** tab and then click the time bar of the desired day of the week. In the Time pop-up window, enter the start and end times during the day when motion can be recorded and click **Save** to save the change. You can schedule up to eight time periods in a day. Default is 24 hours.

   Note: Time periods defined cannot overlap.

   b) To copy the settings to other days of the week, place the mouse cursor at the end of the day time bar. A green icon appears. Click it to get the Copy to pop-up window. Select the desired days and click **Copy**.

7. Link the corresponding action to motion detection.

   a) Click the **Actions** tab to open the Actions window. Select the linkage method by which you want the recorder to notify you of the event (see page 83 for the list of alarm notification types available). More than one option can be selected.

   b) Under **Trigger Alarm Output**, select which external alarm outputs are triggered when an event occurs.

   c) Under **Trigger Channel**, select which cameras will be recorded when an event occurs.

8. Click **Save** to save 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 cannot be viewed in live view or recorded mode, and appears as a black area on the video image.

The number of privacy masks supported depends on the camera model.

To setup a privacy mask:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Camera Setup** > **Privacy Mask**.

2. Select the camera for privacy masking.

3. Seelct **Enable Privacy Mask** to enable the feature.

4. Set up the mask area.

   Click the **Start Draw** button and, using the mouse, click and drag a privacy-mask box in the camera view window over the desired area. Click the **Stop Draw** button to stop drawing. If you want to draw another privacy mask, click **Start Draw** again.
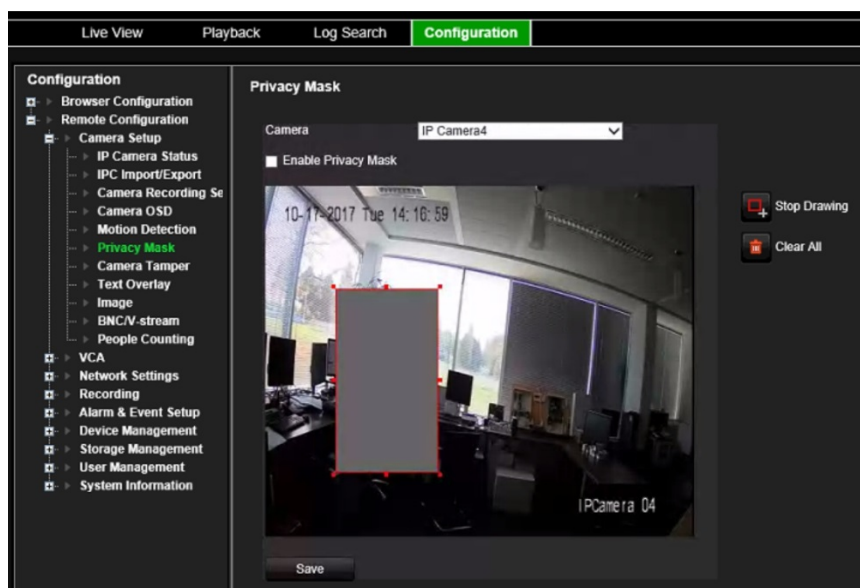
   To delete all masks, click **Clear All**. You cannot delete individual privacy masks.

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

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 can select a specific area of the camera screen to detect tampering.

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

To set up video tampering detection:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Camera Setup** > **Camera Tamper**.

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

3. Select **Enable Camera Tamper** to enable the feature.

4. Select the area on-screen to be sensitive to tamper. By default none of the screen is sensitive to tamper. Only one area can be drawn.

    Click the **Start Draw** button and drag the mouse cursor across the window to deselect areas sensitive to motion detection. Click the **Stop Draw** button to select areas. Click **Clear** to clear the screen.

5. Select the tamper detection sensitivity level by clicking the sensitivity scroll bar. Higher sensitivity is to the right of the bar.

6. Select the arming schedules for tamper.

Click the **Arming Schedule** tab and then click the **Edit** button. 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: Time periods defined cannot overlap.

7. Specify the linkage method when an event occurs.

    Click the **Actions** tab to open the Actions window. Select the method by which you want the recorder to notify you of the alarm (see page 83 for the list of alarm notification types available). "Notify Alarm Host" is the default selection. More than one option can be selected.

8. In the Actions window, specify which external alarm outputs are triggered when an event occurs.

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

Text overlay

You can add up to four lines of text on screen via the browser. This option can be used, for example, to display emergency contact details. By default these lines of text are positioned along the top of the screen. The strings follow each other consecutively.

To add on-screen overlay text:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Camera Setup** > **Text Overlay**.

2. Select the desired camera.

3. Select the string check box **1** for the first line of text.

4. Enter the text for string 1 in the column alongside. Up to 44 alphanumeric characters can be used.

5. Repeat steps 3 and 4 for each extra line of text, selecting the next string number.

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

Image settings

The Image tab allows you to adjust image settings for each individual camera channel.

You may need to adjust the camera image depending on the location background in order to get the best image quality.

You can modify the digital noise reduction (DNR) value to improve image quality. This function removes image noise from a video signal, which can be more pronounced in low light conditions.

To adjust display settings:

1. From the menu toolbar, click **Camera Setup** > **Image**.

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

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

Enable Rotate	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.

   Note: This is only available for cameras that support the function.

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

V-stream encoding

The V-stream shows all camera channels within one camera tile. V-stream is available for remote use with the browser interface, mobile application, TruVision Navigator or third party software implementation.

This feature is particularly useful if you have limited bandwidth available on a remote location but still want to be able to view all camera tiles at once.

V-stream encoding can be set for up to 16 cameras.

To enable V-streaming:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Camera Setup** > **V-stream Encoding**.

2. Select **Enable V-stream**.

3. Select the desired settings for frame rate (fps) and maximum bit rate (Kbps).

4. Select the screen mode. Select 1*1, 2*2, 1+5, 1+7, 3*3, or 4*4.

5. Select the screen order of the cameras.

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

Object counting

This function helps to calculate the number of people or objects entering or exiting a configured area and is primarily used with entrances or exits.

Set up the people counting function from the camera itself. Please refer to the camera's configuration manual for further information.

Note: Only TruVision Series 4 cameras currently support counting. This function cannot distinguish between a moving person and a moving object.

To set up counting statistics:

Note: An SD card must be installed and configured in the camera in order to save count data and generate reports.

1. From the menu toolbar, click **Camera Setup** > **People Counting**.

2. Select the camera from which you want to count objects.

3. Select the report type: Daily report, Weekly report, Monthly report, or Annual report.

    Daily report calculates the data on the selected date. Weekly report calculates for the week of the selected date. Monthly report calculates for the month of the selected date. Annual report calculates for the year of the selected date.

4. Under **Statistics Time**, select the desired day/month/year for the report.

5. Click **Counting** to list the people/object counting result. The camera pushes the counting data to the recorder every 15 minutes. As a result there might be differences between the counting data seen via the camera webpage and via the recorder.

Video analytics

VCA (video content analysis) is the intelligent analysis of video to detect events of interest. When the function is enabled, the recorder can handle VCA alarms generated by Interlogix cameras that support the VCA feature.

VCA is configured at the camera and not at the recorder. However, you can link actions to a VCA alarm from IP cameras that support this feature.

Table 3: VCA types

Face Detected	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 is located in a narrow corridor.
Audio Input Exception	This function is used to detect when the camera detects sounds that are above a selected threshold.
Cross Line Detected	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 (A -> B, B -> A, or A<-> B). Unidirectional is crossing the line from left to right or from right to left. Bidirectional is crossing the line from both directions.
Intrusion Detected	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 type is different from the intrusion events that are reported to the recorder via the UTC Alarm panel integration.
Defocus Detected	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.
Sudden Scene Change	This function is used to detect when the camera detects a change in the scene caused by an intentional rotation of the camera.
Enter Region Detected	This function detects people, vehicles or other objects that enter a designated area from outside that area.
Exit Region Detected	This function detects people, vehicle or other objects that exit from a designated area, and certain actions can be configured to occur when the alarm is triggered.
Object Left Behind Detected	Unattended baggage detection function detects the objects left in the designated area such as baggage, a purse, dangerous materials, etc.
Object Removed Detected	Object removal detection function detects objects removed from a designated area, such as exhibits on display.

To setup VCA alarm actions:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **VCA** and select the desired VCA type from the configuration panel.

2. Select the camera for which to set up the VCA alarm.

   Note: A pop-up message will appear when the camera does not support this VCA type.

3. Enable the VCA type.

If *Face Detected* has been selected, also enable **Enable Dynamic Analysis for Face Detection**.

4. If you have selected *Face Detected or Defocus Detected*, set the sensitivity level.

5. If you have selected *Audio Input Exception*, enable **Audio Loss Detection**, **Sudden Increase of Sound Intensity Detection** and/or **Sudden Decrease of Sound Intensity Detection**.

    For **Sudden Increase of Sound Intensity Detection** set the levels for sensitivity and sound intensity threshold.

    For **Sudden Decrease of Sound Intensity Detection** set the sensitivity level.

6. If you have selected *Cross Line Detected, Intrusion Detected, Enter Region Detected, Exit Region Detected, Object Left Behind Detected, or Object Removed Detected*, click the **Area Settings** tab. Draw the areas on the image that will be sensitive to motion, and set the sensitivity and threshold values.

7. Click the **Arming Schedule** tab to set the schedule for the detection.

    Place the mouse cursor on the schedule start time for the desired day of the week and drag it to the end time to mark the schedule for that day. Repeat the process for the other days of the week.

    To copy a day's schedule to other days, place the mouse cursor on the day of the week to copy. A green icon appears at the end of the line. Click it and in the pop-up menu that apears, select the days of the week to which to copy this schedule and click **OK**.

    Repeat this step for each camera.

8. Click the **Actions** tab to define which actions are required with the VCA events from each camera.

    Set the alarm linking method:

    Select the method by which you want the recorder to notify you of the alarm: Enable Alarm Audio, Notify Alarm Host, and Send Email. See page 83 for the list of alarm notification types.

    Set the alarm outputs to be triggered:

    Set the external alarm outputs to be triggered when an event occurs. Select "Select All" or each individual alarm output.

    Set the cameras to be recorded:

    Set the channels to be recorded when an event occurs. Check "Select All" or select each individual channel.

    Set the PTZ linking to be triggered:

    Select the PTZ camera for linking and select the preset, preset tour, and/or a shadow tour to be triggered when the alarm is detected. Enable the preset, preset tour, and/or a shadow tour.

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

Chapter 11
Network settings

The Network settings menu allows you to manage all network related aspects of the recorder including general network settings, DDNS, NTP synchronization, email setup, FTP server, and HTTPS setup.

Additionally, the Network statistics menu provides 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 networking order to:

- Connect IP cameras to it

- Connect to the recorder over the LAN

- Connect to the recorder over the internet

Network 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:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **Network Settings**.

2. Enter the required settings:

Parameter	Description
1. Working Mode	The recorder has eight 10M/100M/1000M NIC cards that support net fault tolerance, load balance, and multi-address modes.
	The default mode is Net fault-tolerance.
	There are four RJ45 NIC cards and four NIC cards with a fiber connector (SFP).
	Select one of the options:
	Net Fault-tolerance: When one LAN port fails, the other one takes over. This is the default option.
	Load Balance: The bandwidth is divided over the LAN ports with one IP address.
	Multi-address: Each LAN port is separate with its own IP address. This allows a LAN port for the IP cameras and another for client PCs, such as TruNav.

Parameter	Description
2. 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. Default value is 10/100/1000M self-adaptive.
3. DHCP	Select **Enable DHCP**. It is disabled by default. Dynamic Host Configuration Protocol (DHCP) is a network application protocol used by devices (DHCP clients) to obtain configuration information for operation in an Internet Protocol network.
4. IPv4 Address	Enter the IP address for the recorder. This is the LAN IP address of the recorder. Default value is 192.168.1.82.
5. 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.
6. 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. Default value is 192.168.1.1.
7. IPv6 Address	Enter the IPv6 address for the recorder. This is the IP address of the local network to which the recorder is connected. Default value is fe80::240:3dff:fe7e:926f/64
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 (bytes)	Enter a value between 500 and 9676. Default is 1500.
11. 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.
12. Alternate DNS Server	Enter the alternate 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. Main NIC	Select the main LAN port when net fault tolerance or load balance mode is selected. LAN 1 is default. Select which LAN is the main route when multi-address mode is selected.
14. Server Port	Use the server port for remote client software access. The port range is between 1024 and 65535. Enter the server port value. The default value is 8000.
15. HTTP Port	Use the HTTP port for remote internet browser access. Enter the HTTP port value, which can be any port number that is not occupied. The default value is 80.
16. Multicast IP	Enter a D-class IP address between 224.0.0.0 to 239.255.255.255. Only specify this option if you are using the multicast function. Some routers prohibit the use of multicast function in case of a network storm.

Parameter		Description
17.	RTSP Service Port	The RTSP (Real Time Streaming Protocol) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers.
		Enter the RTSP port value, which can be between1 to 65535. The default value is 554.
18.	HTTPS Port	HTTPS (Hyper Text Transfer Protocol Secure) allows a secure access to the browser. Enter the HTTPS port value. The default port number is 443.
19.	Outgoing Bandwidth Limit (Kbps)	The outgoing bandwidth limit is a threshold you can set to limit the amount of outgoing bandwidth that is being handled by the recorder. You can also increase the outgoing bandwidth, though this will negatively impact the incoming bandwidth of the recorder.

20. Click **Save** 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.

To configure PPPoE settings:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **PPPOE**.

2. Select **Enable PPPoE**. It is disabled by default.

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

4. Click **Save** and manually reboot the recorder to save the settings.

DDNS settings

DDNS servers allow you to connect to your recorder using a fixed address. This fixed 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 information" on page 115 for more information.

There are three DDNS providers to choose from:

• **ezDDNS:** A free-of-charge service included with your recorder and fully managed within the recorder interface

- **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

Figure 17: ezDDNS setup window

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

To set up DDNS:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **DDNS**.

2. Select **Enable DDNS**. It is disabled by default.

3. 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 tvn-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. Ask your ISP service provider for your DNS server address or look it up in the browser interface settings of your router.

    Go to **Network Settings** and enter the preferred and alternate DNS server addresses as well as the default gateway address.

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

NTP server settings

A Network Time Protocol (NTP) server can also be configured on your recorder to keep the date and time current and accurate.

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.

To set up an NTP server:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **NTP**.

2. Select **Enable NTP**. It is disabled by default.

3. Enter the NTP settings:

•   Interval (min): Time in minutes to synchronize with the NTP server. The value can be between 1 and 10080 minutes. Default is 60 minutes.

•   NTP Server: IP address of the NTP server.

•   **NTP Port:** Port of the NTP server.

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

Email settings

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

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

To configure email settings:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **Email**.

2. Enter the required settings.

Option	Description
Sender	Enter the name of the sender of the email.
Sender's Address	Enter the sender's email address.
SMTP Server	Enter the SMTP server's IP address.
SMTP Port	Enter the SMTP port. The default TCP/IP port for SMTP is 25.
Enable SSL/TLS	Select the check box to enable the SSL or TLS cryptographic protocol required by the SMTP server. The recorder will auto-detect which encryption method is being used.
	SSL/TLS is an encryption method that is used to increase the security level of data transfer via email.
Include Snapshot	Select if you want to send an email with attached alarm images.
Interval	Select an interval range. Default is two seconds.
	The interval range represents the time range in between the alarm images being sent. For example, if you set the interval range at two seconds, the second alarm image will be sent two seconds after the first alarm image
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.
Receiver	Enter an email recipient. Up to three receivers can be entered.
Receiver's Address	Enter the email address of the selected receiver.
Test	Click the Test button to confirm that the settings have been correctly configured.

3. Click **Test** to the test email settings for each email address.

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

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

Configure an FTP server to store snapshots

You can upload your snapshots to an FTP server for storage.

Note: It is not possible to stream video to an FTP site.

To configure the FTP server settings:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **FTP**.

2. Select the **Enable FTP** box.

3. Enter the FTP server information.

4. Select the directory to use (root, parent, or secondary). If Parent or Child were selected, select the desired options for them.

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

SNMP settings

SNMP is a protocol for managing devices on networks. When you enable SNMP in the menu, network management systems can retrieve recorder status information from the recorder via SNMP.

When you set the trap address and trap port in the recorder menu to the network management system's IP address and port number, and set up the network management system as trap receiver, trap notifications (such as startup) are sent from the recorder to the network management system.

Before configuring this function, you must first install the SNMP software.

To configure SNMP protocol settings:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **SNMP**.

2. Select the **Enable SNMP** box.

3. Enter the required settings.

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

Add a network storage system

You can use multiple network storage systems (NAS) or IP SAN devices to remotely store recordings.

The recommended brands of storage system to use are:

- Iomega StorCenter ix2-dl

- QNAP TS-219 II Turbo NAS

- QNAP TS-220/221

To set up a network storage system:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **Network Storage**.

2. Under **Server IP**, enter the IP address of the desired remote storage system.

3. Under **File Path**, enter the file path name to define where on the remote storage system you want to store the files.

   Note: If using the NAS storage system Iomega StorCenter ix2-dl, you must add the prefix "/nfs" to the NAS path.

4. Under **Type**, select type of storage system to be used: NAS or IP SAN. Default is NAS.

5. Up to eight remote storage systems can be set up.

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

UPnP settings

The recorder supports UPnP (Universal Plug and Play). This feature lets the recorder automatically configure its own port forwarding, if this feature is also enabled in the router.

You can select one of two methods to set up UPnP:

Automatic mapped type: The recorder automatically uses the free ports available that were set up in the Network Settings menu.

Manual mapped type: You enter the particular external port settings and IP addresses required to connect to the desired router (see Figure 18 below).

Figure 18: UPnP manual configuration screen
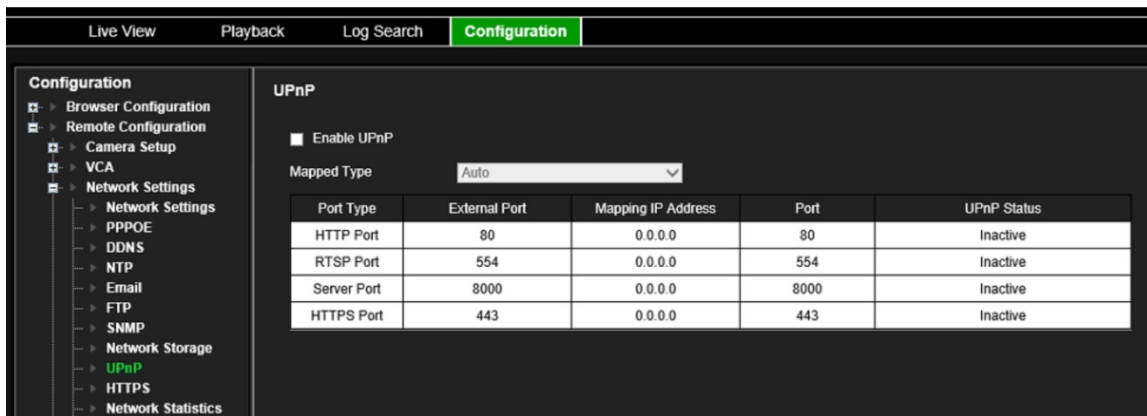
To enable UPnP:

1. Connect the recorder to the router.

   Note: The router must support UPnP and this option must be enabled.

2. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **UPnP**.

3. Check the **Enable UPnP** box.

4. From **Mapped Type,** select Auto or Manual.

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

The HTTPS port can only be configured through the web browser.

Note: You must run Microsoft Internet Explorer as administrator.

Create a certificate:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **HTTPS**.

2. Check **Enable HTTPS**.

   Note: This only works if you have entered the address in the browser as HTTPS (as in https://192.168.1.70)

3. Select the type of certificate you want:

   - **Create a self-signed certificate:**

   a) Select **Create Self-Signed certificate**.
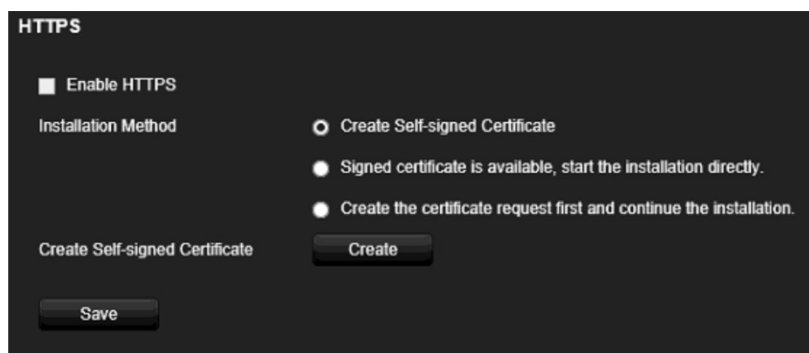
b) Click **Create**. The Create pop-up window appears.

c) Enter the country, hostname/IP address, and days of validity (there are more parameters, but you do not need to add anything to them) and click **OK.**

d) A screen appears showing certificate information. Click **Save**.

- Or -
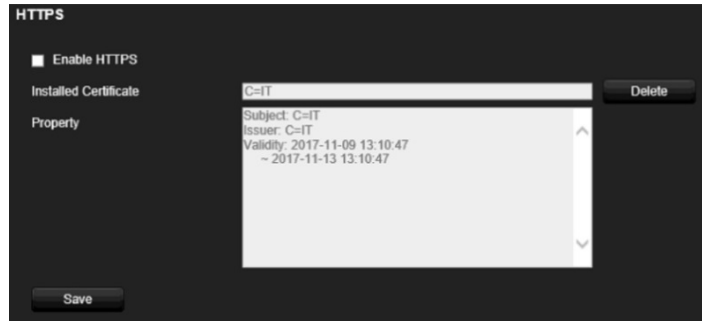
- **Create a certificate request and continue with the installation**

a) Select **Create the certificate request first and continue the installation**.

b) Click **Create** to create the certificate request and then click **Download**. Click **Save** to save the certificate in the desired folder and then submit it to a trusted certificate authority for signature.

c) When you receive the signed certificate, upload it to the recorder. Click **Browse** to locate the certificate file and then click **Install**.

- Or -

- **If you already have a certified certificate:**

a) Select **Signed certificate is available, start the installation directly**.

b) Click **Browse** to locate the certificate file and then click **Install**.

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

Network statistics

You can easily check the bandwidth that is being used by remote live view and playback.

To check network statistics:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Network Settings** > **Network Statistics**.

2. The latest information is displayed on the bandwidth used by remote live view and playback as well by Net Receive Idle and Net Send Idle. Click **Refresh** to update the information.

Filter IP addresses

You can define the list of forbidden or allowed IP addresses that can be accessed by the recorder. This lets you select who can access the system, increasing the system's security. The function is disabled by default.

To define forbidden or allowed IP addresses:

1. From the menu toolbar, click **Network Settings** > **IP Address Filter**.

2. Select the **Enable IP Filter** check box.

3. Under **IP Filter Type**, select Forbidden or Allowed.

4. Click **Manually Add**. In the "Add IP Address" pop-up dialog box, enter the IP address to be controlled and click **OK**.

   Click **Delete** to remove IP addresses from the list.

5. If required, you can modify a saved IP address. Click **Modify** and enter the changes.

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

Chapter 12
Recording

Use the Recording menu to define the camera recording schedules, configure auto archiving and hot spare mode, and select the cameras for manual recording.

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 29 on page 89 for a description of the recording schedule window.

Note: If a camera is set up for continuous recording (called "constant recording"), it will still switch to event recording or alarm recording if motion events are triggered or to alarm recording when alarms are triggered. This can be turned off in the individual action settings for each individual alarm if needed.

See Figure 19 on page 75 for a description of the recording schedule window;

Figure 19: Description of the recording schedule window
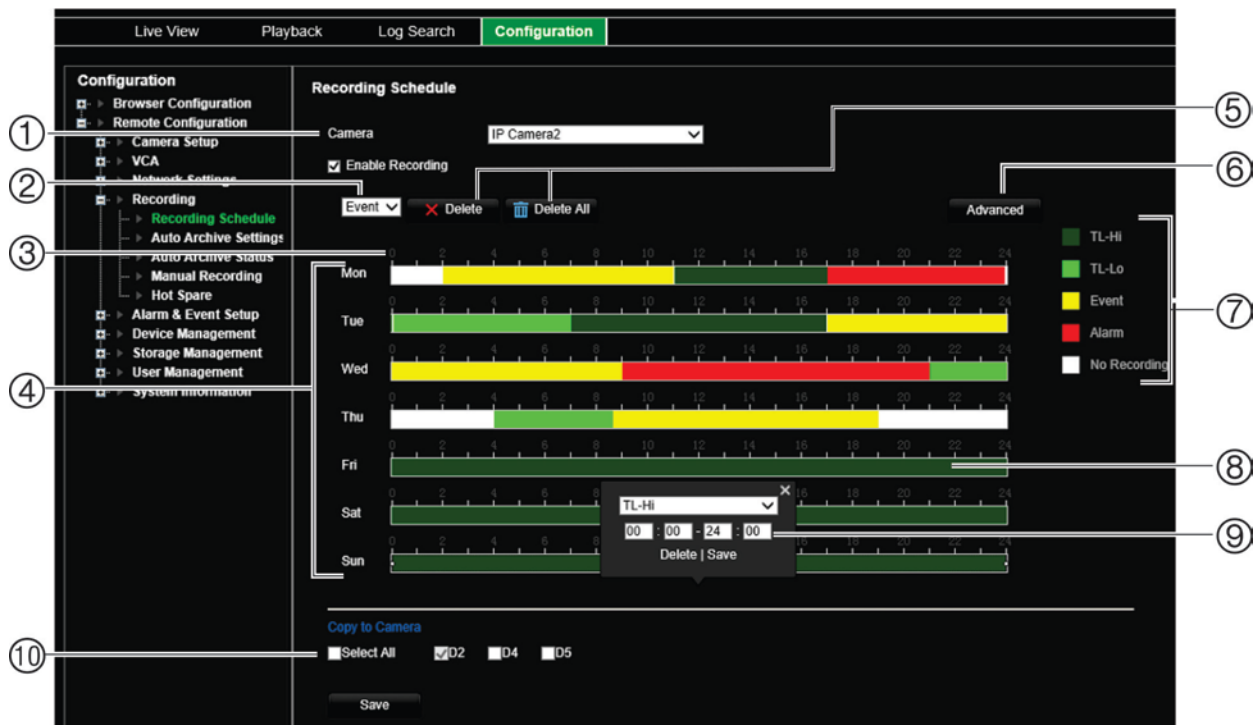
1. Camera: Select a camera.

2. **Recording type for a time period**: Select the recording type for a new recording period.

3. Schedule time: Represents the 24-hour cycle during which a schedule is selected.

4. Schedule map: There are seven days to select: Monday (Mon), Tuesday (Tue), Wednesday (Wed), Thursday, (Thu), Friday (Fri), Saturday (Sat), and Sunday (Sun).

5. **Delete/Delete All**: Select a recording period on a camera's day and click **Delete** to delete it. Click **Delete All** to delete all recording schedules for the selected camera.

6. **Advanced settings:** Click to modify the following parameters:

- **Record Audio**: Enable to record sound with the images. Default is Enable.

- **Enable EFR**: Enable the EFR function (Edge Failover Recording) to save video to the SD card in the selected camera when the network is offline. This video will then be synchronized to the recorder HDD when the network becomes online again.

- **Pre Event**: This is the time the camera starts recording before the event. Select the time in seconds from the list to start pre-recording before the event. Default is 5 seconds.

  The maximum pre-recording times available depend on the constant bit rate. See "Maximum storage times" in the appendix.

- **Post Event**: This is the time the camera continues to record after the event. Select the time in seconds from the list to stop post-recording after the event. Default is 5 seconds.

- **Auto Delete (day)**: Select the number of days after which recorded video from the specified camera is permanently deleted from the HDD. A "day" is defined as the 24-hour period from when the auto delete mode (ADM) was set.

  The maximum number of days that can be set is 365. However, the actual number of days permitted depends on the HDD capacity. If the value is set to '0', the option is disabled. Default is Disable.

7. **Recording type:** There are five types of recording to select, which are color-coded:

- **TL-Hi** (Dark green): High quality time lapse. It records high quality continuous video. This is the default recording type.

- **TL-Lo** (Bright green): Low quality time lapse. It records low quality continuous video. This could be used, for example, for night recordings when few events or alarms are expected. Saving the video in low quality helps save resources on the HDD.

- **Event** (Yellow): It records only events, such as motion detection.

- **Alarm** (Red): It records only alarms. It has priority over constant and event recording.

- **None** (White): No recording during this period.

8. Timeline: There is a 24-hour timeline for each day. Up to eight recording periods can be scheduled during the 24-hour period.

9. **Edit schedule window**: Enter the recording type, and time for the recording period.

10. **Copy to Camera:** Click to copy recording schedules between cameras.

Define a recording schedule

There are a couple of ways to define the recording schedule. You can use the *Edit schedule* pop-up window, which appears when you click a schedule period on a timeline. You can also drag the start or end of the schedule period bar and move it to the desired time. The time period of the bar appears above so it is easy to adjust it to a specific time period.
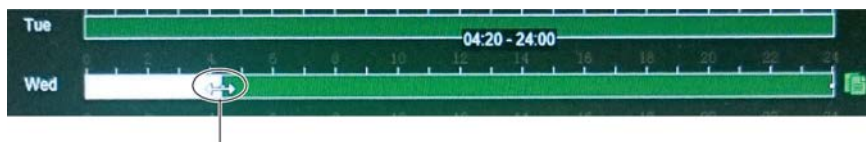
Drag the start or end of the schedule period bar and move it to the desired time.

The Edit schedule pop-up menu does not appear if you click a "No Recording" time period. However, you can drag the mouse along the white "No recording" zone on the timeline to create a new recording period. Before creating the new recording period on a timeline, select the recording type from the drop down list (see item 2, Figure 19).

To set up a daily recording schedule:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Recording** > **Recording Schedule**.

2. Select a camera.

3. Check the **Enable Recording** box.

4. Click the timeline of the desired day of the week. The *Edit schedule* window pops up. Select the desired recording type, and enter the start and end times of the recording schedule. Click **Save**.

   You can define up to eight different periods during a day, and a different schedule for each day of the week.

   Note: The time periods defined cannot overlap.

5. To copy a day's schedule to another day of the week click ▦ , which appears at the end of the day's timeline. The *Copy to* pop-up menu appears. Select the day or days of the week to which to copy this day's schedule and click **OK**.

6. To copy a camera's recording schedule to another camera, or several cameras, select the desired cameras under "Copy to Camera".

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

Manual recording

The recorder lets you manually record video during live view. This can be useful if you know that the recorder is not currently recording and you see something of interest on a camera screen that should be recorded.

Once a manual recording is started, the recording continues until it is manually stopped. If an alarm occurs during a manual recording, the alarm recording has priority over the manual recording. If a scheduled recording is already in progress when a manual recording is started, it continues to record as scheduled.

Alternatively, the manual recording menu shows the current state of manual recording for each camera. In this menu you can enable or disable the current manual recording for any given camera.

To start and stop manual recording:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Recording** > **Manual Recording**.

2. Check the boxes of the cameras to start or stop manual recording. The button is red when manually recording. Default is off.
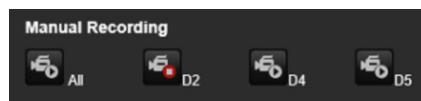
Hot spare

You can set up a spare recorder to act as a slave unit (hot spare) for up to four master recorders. This slave unit will continually monitor the master recorders and if one of the master recorders should fail, it can then take over recording until the failed recorder comes back online. Once the failed recorder is back operating normally again, the slave recorder will send its recordings to the HDDs of the recovered master so that no recordings are missing.

The hot spare recorder can only backup one master recorder at a time. If more than one recorder should fail, the hot spare recorder will only backup the recorder that failed first.

All recorders must have the same number of channels.

Once the failed master recorder is back online, the slave unit will return to its normal monitoring state.

Note: When the hot spare recorder records the cameras of another recorder, it will record the cameras continuously. So any event settings such as motion and VCA are not taken into account by the hot spare recorder.

In order to have the failover functionality working properly, the following points must be taken into account:

- A stable network connection is required.

- There must be at least 10 Mbps of unallocated bandwidth available with the main recorder.

- This unallocated bandwidth is used for streaming the video footage from spare unit to master unit during the recovery process.

- Ideally the failover recorder must have equal storage capacity to the main recorder to accommodate for long outage times of the main recorder.

To set up a hot spare recorder:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Recording** > **Hot Spare**.

2. First set up the master recorders.

   For each master recorder, select the **Normal Mode** button and **Enable** check box. Enter the IP address and password of the hot spare recorder.
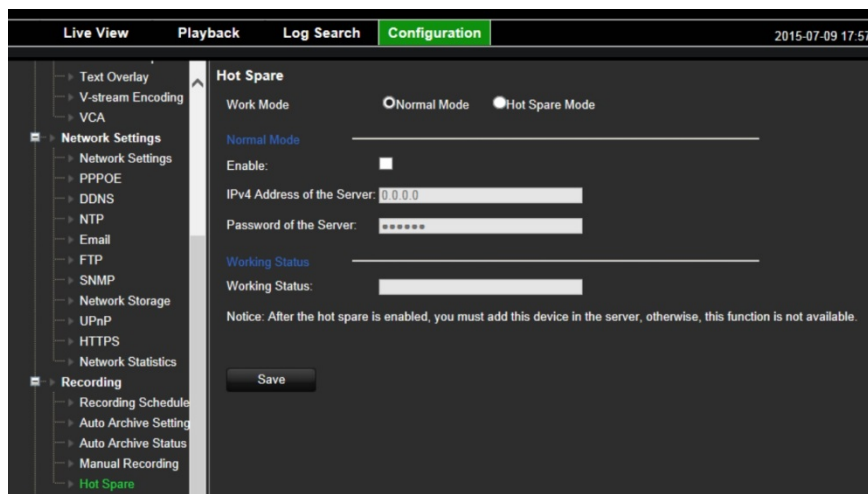
3. Set up the hot spare recorder.

   Check the **Hot Spare Mode** box.

4. The **Working Status** field displays whether the hot spare is in stand-by mode or busy.

5. Click **Save** to save the settings. The recorder will automatically reboot.

Chapter 13
Alarm and event setup

This chapter describes the alarm and event setup menu and provides more information on the different types of alarms and connected responses. Alarms are all notifications related to either physical alarm inputs on recorders and cameras or anything that does not work as expected: device errors, network issues, and video loss.

Set up alarm inputs

You can configure the recorder to record when an alarm is triggered by an external alarm device (for example, PIR detector, dry contacts…). "A" inputs are marked A for analog and are physical inputs of the recorder. "D" inputs are marked as D for digital and are physical inputs on the IP cameras.

To set up external alarms:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Alarm Input**.
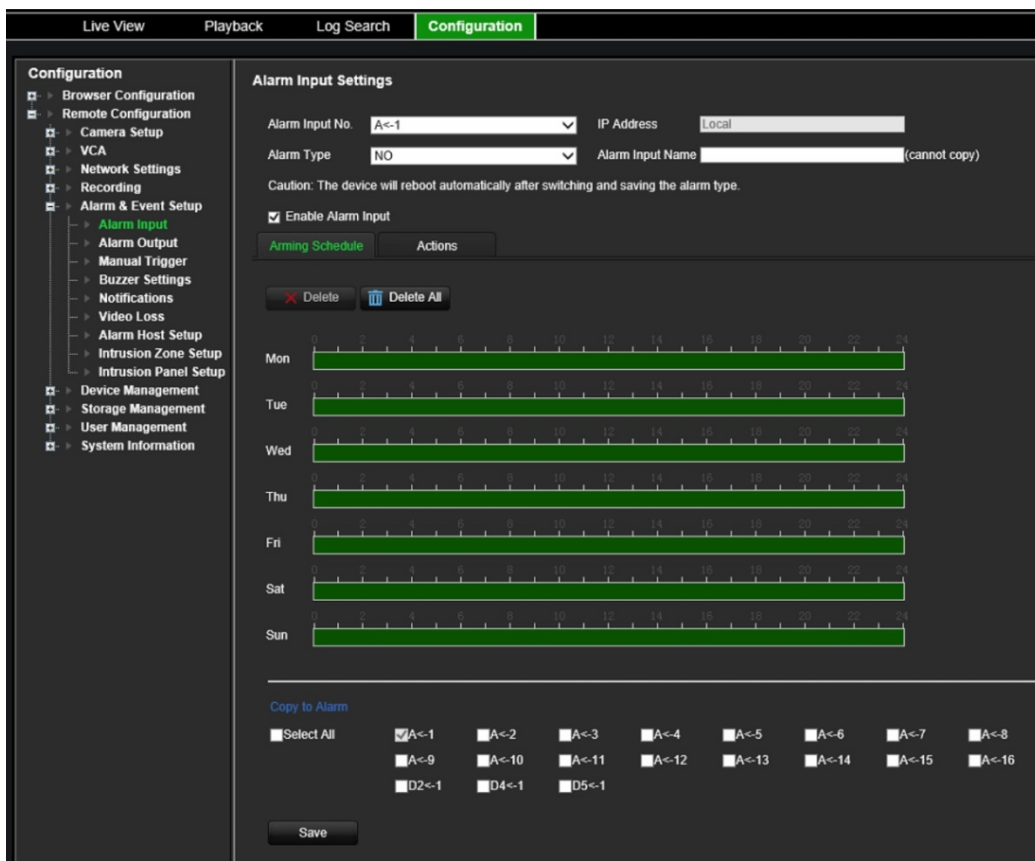
2. Select the alarm input number of a camera, which corresponds to the connector on the back panel of the recorder, and enter a name for it, if desired (the name cannot be copied).

3. Select the alarm input type, NO (normally open) or NC (normally closed). Default is NO.

4. Check the **Enable Alarm Input** box.

5. Select the arming schedule for the external alarm.

    a) Click the **Arming Schedule** tab. Click the timeline of the desired day of the week. The *Edit schedule* window pops up. Enter the start and end times of the arming schedule. Click **Save**.

    You can define up to eight different periods during a day, and a different schedule for each day of the week.

    Note: The time periods defined cannot overlap.

    b) To copy a day's schedule to another day of the week click , which appears at the end of the day's timeline. The *Copy to* pop-up menu appears. Select the day or days of the week to which to copy this day's arming schedule and click **OK**.

6. Specify the linkage method when an event occurs.

    a) Click the **Actions** tab. Select the method by which you want the recorder to notify you of the alarm: Enable Alarm Audio, Notify Alarm Host, Send Email (see page 83 for the description of these alarm response types).

b) Specify which alarm outputs are triggered when an event occurs.

c) Select the cameras to be triggered when an external alarm is detected.

d) Select the PTZ camera function required in response to an external alarm.

Under **PTZ Linking**, enable the preset, preset tour or shadow tour to be triggered when the alarm is detected and enter the preset, preset tour or shadow tour number.

7. If you want to copy the settings to other alarm inputs, select the desired alarm inputs under "Copy to alarm".

8. Click **Save** to save the 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.

"A" outputs are marked A for analog and are physical outputs of the recorder. "D" outputs are marked as D for digital and are physical outputs on the IP cameras.

To set up an alarm output:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Alarm Output**.

2. Select the alarm output. Enter a name for it, if desired (the name cannot be copied).

3. Select a time out option between 5 seconds and 10 minutes, or select "Manual".

    The timeout setting lets you define how long an alarm signal remains active after the alarm has ended. If you select **Manual**, the alarm signal remains active until it is acknowledged (see "Manual trigger" on page 82).

4. Select the arming schedule for the alarm output.

a) Under the **Arming Schedule** tab click the timeline of the desired day of the week. The *Edit schedule* window pops up. Enter the start and end times of the arming schedule. Click **Save**.

You can define up to eight different periods during a day, and a different schedule for each day of the week.

Note: The time periods defined cannot overlap.

b) To copy a day's schedule to another day of the week click , which appears at the end of the day's timeline. The *Copy to* pop-up menu appears. Select the day or days of the week to which to copy this day's arming schedule and click **OK**.

5. If you want to copy the settings to other alarm outputs, select the desired alarm outputs under "Copy to alarm".

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

Manual trigger

The manual trigger menu allows you to manually trigger outputs of the recorder.

To trigger or clear alarm outputs manually:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Manual Trigger**.

2. Select the desired alarm output and click the following buttons:

    Trigger: Trigger an alarm output or stop an alarm output.

    Trigger All: Trigger all alarm outputs or stop all alarm outputs.

    Clear All: Stop all alarm outputs at once.

    Note: The alarm output name can be entered in the Alarm Output menu.

Buzzer settings

When an alarm is triggered by the system or a camera, the recorder can be set up to respond with a warning buzzer. The buzzer time is the time that it takes for the recorder to time-out the buzzer when a continuous alarm occurs. For example, when a physical alarm input is continuously triggered, the buzzer will time out after the time specified.

To set up alarm notifications:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Buzzer Settings**.

2. Under **System buzzer timeout time** select a buzzer time limit: 5 s, 10 s, 20 s, 30 s, 60 s, 120 s, 240 s, or Constant. Default is Constant.

3. Under **Camera buzzer timeout time** select a buzzer time limit: 5 s, 10 s, 20 s, 30 s, 60 s, 120 s, 240 s, or Constant. Default is Constant.

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

Alarm notification

When setting up the rules for alarm detection, you can specify how you want the recorder to notify you about an alarm or event. You can select more than one notification type.

Not all notifications types are available for all types of alarms.

You can quickly check the system status by looking at the status LEDs on the front panel.

The alarm response methods are:

- **Enable Alarm Audio:** Triggers an audible *beep* when a notification or alarm is detected by the system or a camera.

- **Notify Alarm Host:** Sends a signal to TruVision Navigator or other software applications when an alarm or notification is detected.

- **Send Email:** Sends an email when an alarm or notification is detected. See "Email settings" on page 67 for information on how to configure the recorder to send an email.

To set up alarm notifications:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Notifications**.

2. Select the **Display Event Icon** check box so that the event icon appears in the OSD in live view when an alarm or event is triggered (default is enabled).

3. Select an alarm notification type. Under **Notification Type**, select the desired technical event notification:

   - **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.

   - **Duplicate IP Address Found**: There is an IP address conflict with another system on the network.

   - **Invalid Login**: Wrong user name or password used.

   - **Record/Capture Exception**: No space for saving recorded files or captured images.

   - **Hot Spare Exception**: Errors occurred with hot spare HDD.

4. Check one or more response method: Enable Alarm Audio, Notify Alarm Host, and Send Email

   Note: The list of options available depends on the alarm notification type selected.

5. Select the alarm outputs to be triggered when an alarm notification detected.

6. Repeat steps 2 and 6 for other alarm notification types.

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

Event notifications

Event notifications appear in the Notification Center.

The different types of events notifications are:

-   **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.

-   **Duplicate IP Address Found**: There is an IP address conflict with another system on the network.

-   **Invalid Login**: Wrong user name or password used.

-   **Video Loss**: The video image is lost. Video may be lost if the camera develops a fault, is disconnected, or is damaged.

-   **Video Loss**: The video image is lost. Video may be lost if the camera develops a fault, is disconnected, or is damaged.

-   **Alarm Input**: An alarm triggered by an external alarm device (for example, PIR detector, dry contacts…)

-   **Camera Tamper Detected**: The camera view has changed. For example, someone has deliberately blocked the camera view by spraying paint on the lens or by moving the camera

-   **Motion Detected**: Motion is detected.

-   **Abnormal Record**: 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.

-   **IP Camera Address Conflicted**: Conflict in IP address setting.

-   **Abnormal Array**: Errors occurred with the array.

-   **Motherboard Temperature Anomaly**:

-   **Hot Spare Exception**: Errors occurred with hot spare HDD.

-   **Resolution or Bitrate of Substream Not Supported**

-   **Cross Line Detected**: People, vehicles and objects have been detected crossing a pre-defined line or an area on screen.

-   **Intrusion Detected**: Someone has been detected entering a pre-defined area in the surveillance scene.

-   **Audio Input Exception**: A camera has detected sounds that are above a selected threshold.

-   **Sudden Change of Sound Intensity**: A camera has detected a change in the scene caused by an intentional rotation of the camera.

- **Face Detected**: A camera has detected that a human face is moving towards it.

- **Defocus Detected**: There is image blur caused by defocusing the lens.

- **Scene Change**: A camera has detected a change in the scene caused by an intentional rotation of the camera.

- **Enter Region Detected**: A camera has detected that an object, such a vehicle, people or other objects, has entered a designated region.

- **Exit Region Detected**: A camera has detected that an object, such a vehicle, people or other objects, has exited a designated region.

- **Object Left Leave Behind**: A camera has detected that an object has been left in a designated region, such as baggage.

- **Object Removed**: A camera has detected that an object has been removed from a designated region, such as exhibits on display.

- **Enter Region Detected**: A camera has detected that an object, such a vehicle, people or other objects, has entered a designated region.

- **Exit Region Detected**: A camera has detected that an object, such a vehicle, people or other objects, has exited a designated region.

- **Leave Behind**: A camera has detected that an object has been left in a designated region, such as baggage.

- **Object Removed**: A camera has detected that an object has been removed from a designated region, such as exhibits on display.

To view events in the notification center

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Notifications**.

2. Click the **Event Hint Settings** button. Check those required. All event items selected will be listed in the Notification Center if triggered. All notifications are selected by default.

Detect video loss

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:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Video Loss**.

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

3. Check the **Enable Video Loss Alarm** box to enable the feature.

4. Select the arming schedule for video loss.

    a) Under the **Arming Schedule** tab click the timeline of the desired day of the week. The *Edit schedule* window pops up. Enter the start and end times of the arming schedule. Click **Save**.

    You can define up to eight different periods during a day, and a different schedule for each day of the week.

    Note: The time periods defined cannot overlap.

    b) To copy a day's schedule to another day of the week click , which appears at the end of the day's timeline. The *Copy to* pop-up menu appears. Select the day or days of the week to which to copy this day's arming schedule and click **OK**.

5. Specify the linkage method when video loss occurs.

    a) Click the **Actions** tab. Select the method by which you want the recorder to notify you of the alarm: Enable Alarm Audio, Notify Alarm Host, Send Email, and Upload to FTP.

    b) Specify which alarm outputs are triggered when an event occurs.

6. Repeat steps 2 to 5 for another camera.

7. 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 in order to successfully receive notifications from the recorder.

To set up an alarm host:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Alarm & Event Setup** > **Alarm Host Setup**.

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

    Alarm host IP represents 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. Up to three alarm hosts can be set. For each alarm host, the default port is 5001, 5002, and 5003.

3. Click **Save** to save the 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 Interlogix intrusion panels via IP and to be linked to recorder actions.

The following Interlogix panels are supported:

- ATS Master (EMEA only)

- Advisor Advanced (EMEA only)

- 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

- 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.

For NX panels, polling must be enabled in the NX-590E.

To set up the zones in an alarm panel:

1. From the menu toolbar, click **Alarm & Event Setup** > **Intrusion Zone Setup**.
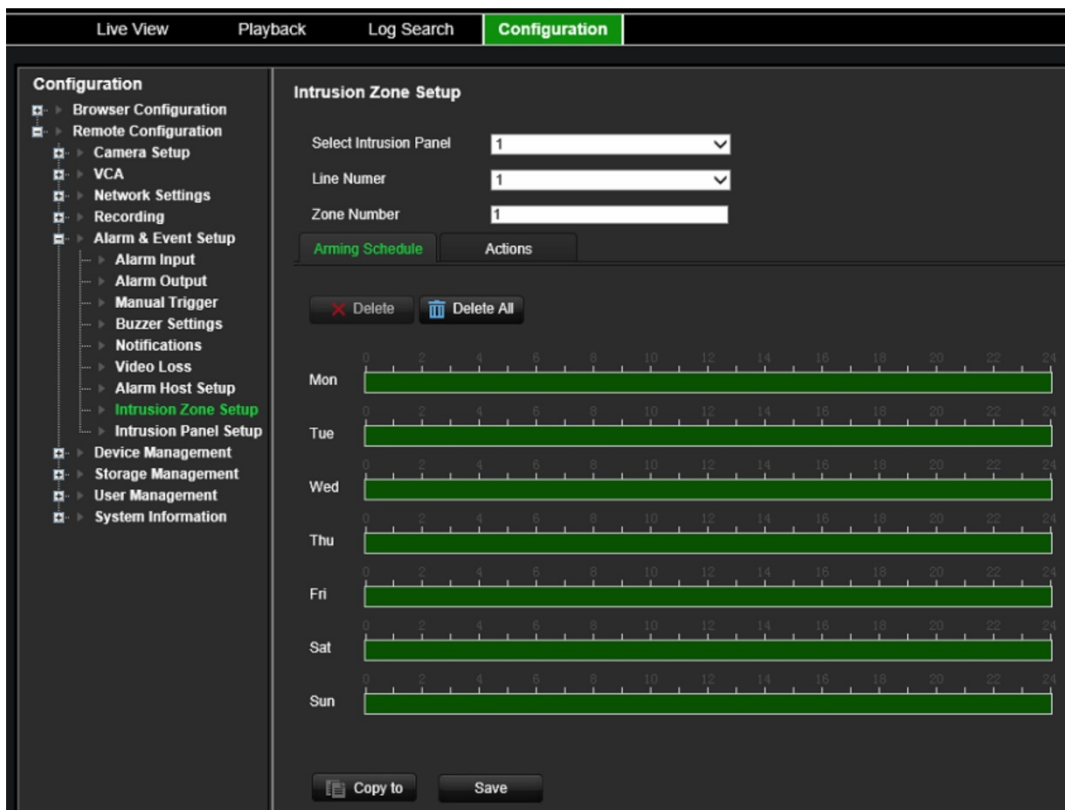
2. Under **Select Intrusion Panel**, select intrusion panel 1, 2 or 3.

3. Under **Line Number**, select the desired ID of a zone. The maximum is 32. The number does not have to match the zone number.

4. Under **Zone Number**, select the desired zone number. The zone number can be any valid number of the panel, which does not need to match the zone number.

5. Select the arming schedule for the intrusion alarm.

    a) Click the **Arming Schedule** tab. Click the timeline of the desired day of the week. The *Edit schedule* window pops up. Enter the start and end times of the arming schedule. Click **Save**.

    You can define up to eight different periods during a day, and a different schedule for each day of the week.

    Note: The time periods defined cannot overlap.

    b) To copy a day's schedule to another day of the week click ![icon], which appears at the end of the day's timeline. The *Copy to* pop-up menu appears. Select the day or days of the week to which to copy this day's arming schedule and click **OK**.

6. Specify the linkage method when an alarm occurs.

    a) Click the **Actions** tab. Select the method by which you want the recorder to notify you of the intrusion panel alarm: Enable Alarm Audio, Notify Alarm Host, Send Email (see page 83 for the description of these alarm response types).

    b) Specify which alarm outputs are triggered when an alarm occurs.

    c) Select the cameras to be triggered when an intrusion panel alarm is detected.

    d) Select the PTZ camera function required in response to an alarm.

    Under **PTZ Linking**, enable the preset, preset tour or shadow tour to be triggered when the alarm is detected and enter the preset, preset tour or shadow tour number.

    e) Click **OK** to save the changes and return to the *Intrusion Zone Setup* window.

7. To copy the intrusion panel's arming schedule to up to three other intrusion panels, select the desired intrusion panels and zones under "Copy to" at the bottom of the window.

8. Click **Save** to save the intrusion zone setup parameters.

To set up an alarm panel in the recorder:

1. From the menu toolbar, click **Alarm & Event Setup** > **Intrusion Panel Setup**.
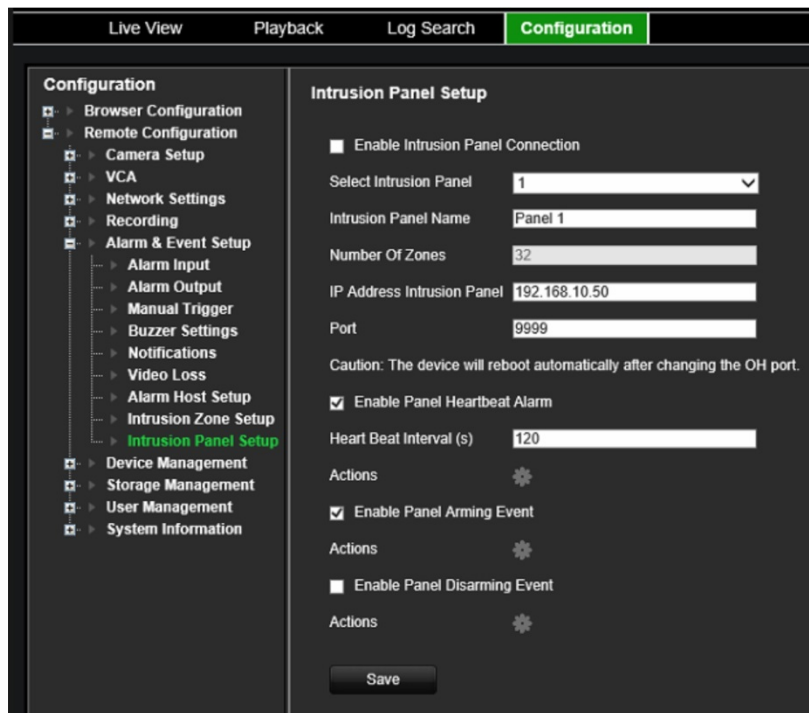
2. Select the **Enable Intrusion Panel Connection** check box to enable the intrusion panel connection.

3. Set up the intrusion panel connection parameters.

    a) Select which panel you want to set-up. Up to three panels can be set up.

    b) Enter a name for the panel.

    c) Enter the 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.

    d) Enter the panel's IP address. The IP address must be in the same LAN as the recorder.

    e) 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.

    Caution: The recorder will reboot automatically when the intrusion panel port number is changed.

4. Set up the heartbeat alarm parameters.

    a) Select **Enable Panel Heartbeat Alarm** check box to enable the panel heartbeat alarm. The heartbeat alarm will then be reported to the recorder.

    b) 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.

c) Click the ⚙ button to set up the actions linked to the panel heartbeat alarm. Go to step 7 for further information.

5. Set up the panel arming alarm parameters.

a) Select the **Enable Panel Arming Event** check box to enable the panel arming event. When the panel is armed, it will be reported to the recorder.

b) Click the ⚙ button to set up the actions linked to the panel arming event. Go to step 7 for further information.

6. Set up the panel disarming alarm parameters.

a) Select the **Enable Panel Disarming Event** check box to enable the panel disarming event. When the panel is armed, it will be reported to the recorder.

b) Click the ⚙ button to set up the actions linked to the panel disarming event. Go to step 7 for further information.

7. To define the actions for the heartbeat, panel arm and panel disarm alarms that are reported by the intrusion panel, click ⚙ and do the following:

a) Click the **Arming Schedule** tab. Click the timeline of the desired day of the week. The *Edit schedule* window pops up. Enter the start and end times of the arming schedule and click **Save**.

You can define up to eight different periods during a day, and a different schedule for each day of the week.

Note: The time periods defined cannot overlap.

b) Click the **Actions** tab. Select the method by which you want the recorder to notify you of the intrusion panel alarm: Enable Alarm Audio, Notify Alarm Host, Send Email (see page 83 for the description of these alarm response types).

c) Specify which alarm outputs are triggered when an alarm occurs.

d) Select the cameras to be triggered (recorded) when an intrusion panel alarm is detected.

Under **PTZ Linking**, enable the preset, preset tour or shadow tour to be triggered when the alarm is detected and enter the preset, preset tour or shadow tour number.

e) Click **OK** to save the changes and return to the *Intrusion Panel Setup* window.

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

Chapter 14
Device management

This chapter describes how to:

- Set up the time and date of the recorder

- Set up general system parameters such as the device name and eSATA as well as enable the wizard to start upon login

- Import/export configuration files

- Upgrade the firmware

- Set up holiday periods

- Configure RS-232 settings

Time and date settings

You can set up the date and time that will appear on-screen as well as on time stamped recordings. The start and end time of daylight saving time (DST) in the year can also be set. DST is deactivated by default. See Figure 20 below for the Time settings screen.

Figure 20: Time and date settings window
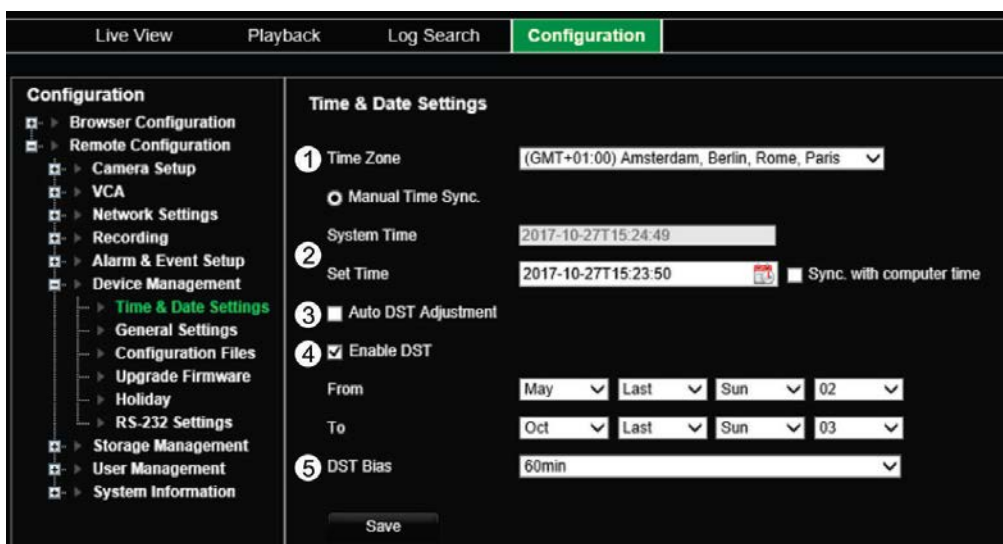
Option	Description
1. Time Zone	Select a time zone from the list.
2. System Time	The system time is set up in the Wizard or can be set up via the **Set Time** field
Set Time	Enter the system date and time. Default is the current date and time. Time is always in 24-hour format.
3. Auto DST Adjustment	Enable to activate DST is automatically. It depends on the time zone selected. Default is Disable.
4. Enable DST	Manually define DST. If this option is selected, the *Auto DST adjustment* option is disabled. Default is Disable.
	Click the check box to enable or disable daylight savings time (DST).
From	Enter the start date and time for daylight savings.
To	Enter the end date and time for daylight savings.
5. DST Bias	Set the amount of time to move DST forward from the standard time. Default is 60 minutes.

General recorder settings

Use the Device Management menu to configure the recorder name, manage an external eSATA device, and to start the wizard at login.

Figure 21: General settings of the recorder
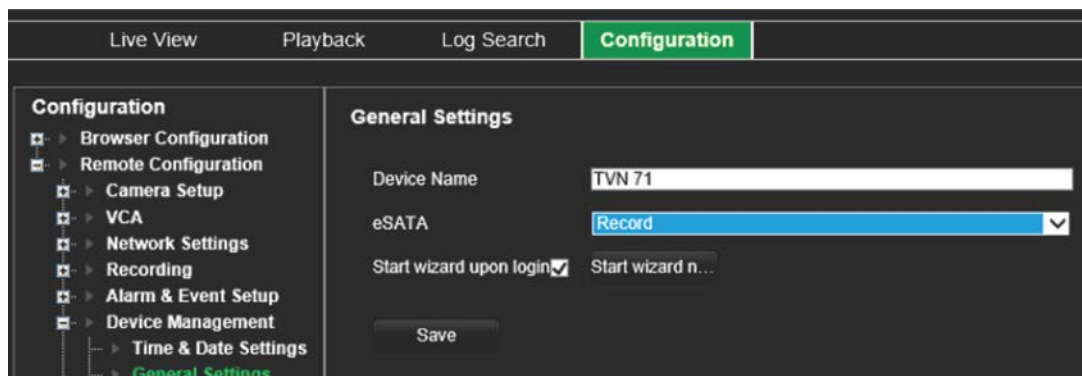
Option	Description
1. Device Name	Define the recorder name. The default name is TVN 71.
	Click the edit box and enter the new name from the soft keyboard.
2. eSATA	Configure the e-SATA device to record or archive video.
3. Start Wizard upon login	This will immediately start the wizard. The system is not rebooted. Default is Disable.

Using an eSATA recording device

You can use an external storage device, such as an eSATA HDD, to backup video or to add its recording capacity to that of the recorder itself. If you change this option, you must reboot the recorder to implement the change.

To define how the eSATA device is used:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** >**Device Management** > **General Settings**.

2. Under eSATA, select one of the two options:

   Record: Extend the recording capacity of the recorder.

   Archive: Backup data onto an eSATA backup device.

   Note: If the external storage device is part of the total internal capacity of the recorder, then it is no longer available for backing up video.

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

Configuration files

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

This menu also allows you to reboot the unit, and restore default factory settings

Restart the recorder

To restart the recorder:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Device Management** > **Configuration Files**.

2. Click the **Restart** button.

   Note: Only the administrator can reboot the unit.

3. In the pop-up window, enter your admin password and click **OK**.

   The system reboots.

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

Note: Only the administrator can restore factory default settings.

To restore parameters to default factory settings:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Device Management** > **Configuration Files**.

2. To restore all parameters, except network 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 settings to default.

   — Or —

   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.

   The changes are immediately implemented.

Import and export files

Insert an external storage device in the recorder. Go to the **Configuration** > **Remote Configuration** > **Device Management** > **Configuration Files** to import or export configuration settings.

To export the recorder's configuration parameters into an external storage device, click the **Export** button**.**

To import configuration parameters from an external storage device, enter the location of the file to select it and click **Import**.

Upgrade system firmware

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

- Via a USB device

- Via the recorder web browser

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

The firmware upgrade file is labeled *TVN70.dav*.

To update the system firmware using the browser:

1. Download the latest firmware from our web site at:

   www.interlogix.com

   - Or -

   https://firesecurityproducts.com/products/video/recorders

2. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Device Management** > **Upgrade Firmware**.

3. Select the firmware file and click **Upgrade**. Click **Yes** to begin the upgrade process.

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

Holiday schedules

It is possible to indicate holidays for which you can create a separate recording schedule. Once one or more holidays are created, a separate entry for holiday will be included in the recording schedule (refer to "Recording schedule" on page 74 of the manual)

To set up a holiday recording schedule:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Device Management** > **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 and click **Enable Holiday**.

4. Select whether the holiday period will be categorized by date, week, or month and then enter the start and end dates.

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

6. Repeat steps 2 to 5 for other holiday periods.

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

Configure the RS-232 port

Use the RS-232 menu under **Device Management** to configure the RS-232 parameters such as baud rate, data bit, stop bit, parity, flow control, and interface.

Figure 22: RS-232 setup window
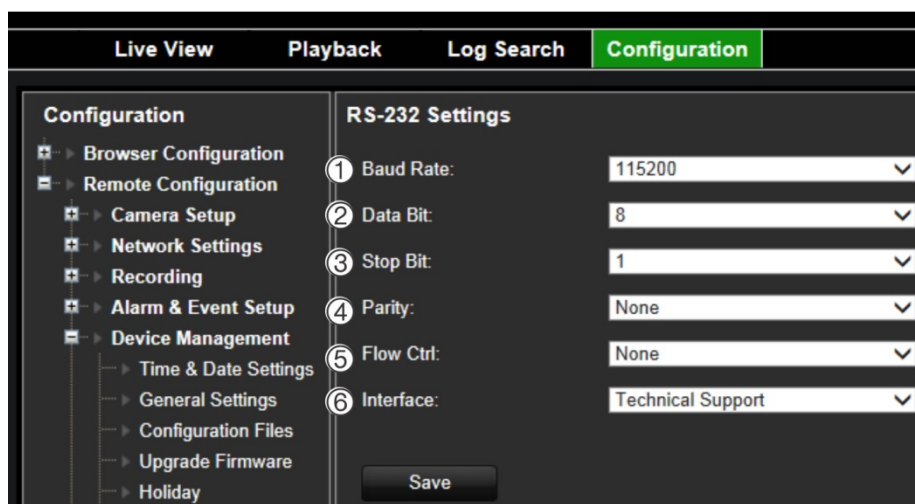
Option		Description
1.	Baud Rate	This is a measure of the speed of data transmission. Default is 115200.
2.	Data Bit	A bit is the smallest unit of data in a serial communication message. A data bit is the bit carrying the information, as opposed to the start bit and the stop bit. Default is 8.
3.	Stop Bit	Stop bits mark the end of a transmission of a serial communication message. Default is 1.
4.	Parity	The method used to detect errors in the number of bits being transmitted. Default is None.
5.	Flow Ctrl	Flow control is the process by which data transfer is regulated so that it does not arrive too quickly for the receiving process. Default is None.
6.	Interface	This shows how the RS-232 port can be used. It is used by Technical Support only. **Technical Support**: Console mode.

Chapter 15
Storage management

This chapter describes the content of the Storage Management menu, including HDD information, Storage Mode, S.M.A.R.T. settings as well as RAID settings.

HDD information

You can check the status of any of the installed HDDs on the recorder at any time.

To check the status of a HDD:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Storage Management** > **HDD Information**.
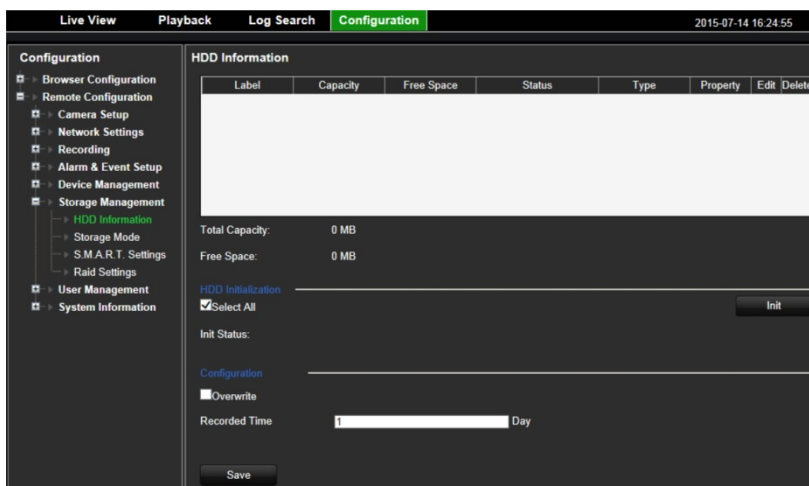
2. Note the status of the HDDs listed under the Status column.

   If the status is listed as Normal or Sleeping, the HDD is in working order. If it is listed as Abnormal and has already been initialized, the HDD needs to be replaced. If the HDD is Uninitialized, you need to initialize it before it can be used in the recorder. Refer to "Initializing HDDs" above for more information.

Note: The status information is also shown in the **System Information > HDD** window.

Initialize a HDD

The HDDs delivered with the unit do not need to be initialized before they can be used. When reusing HDDs, you can also re-initialize the HDD. However, all data on the HDD will be erased.

To initialize a HDD:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Storage Management** > **HDD Information**.

2. Click **Select All** to select all the HDDs.

3. Click the **Init** button to begin initialization.

   After the HDD has been initialized, the status of the HDDs changes from Abnormal to Normal.

Overwrite a HDD

You can select how the recorder responds when the HDDs become full and there is no longer sufficient space to save new data. The overwrite option is enabled by default.

To enable overwrite when the HDDs are full:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Storage Management** > **HDD Information**.

2. Enable **Overwrite**.

Caution: If the overwrite option is disabled and the quota management capacity for a channel is set to zero, the recordings on that channel can still be overwritten. To avoid this happening, set a quota level for the channel or use the group management mode.

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

Install HDDs

You can install up to 16 HDDs in the recorder.

Caution: Do not insert or remove HDDs with the recorder powered up.

Note: This unit contains electrostatic-sensitive components. Before handling the HDDs, make sure you are properly grounded to avoid ESD damage.

To install a HDD:

1. Unpack the recorder box.

2. Unpack the recorder HDD box.

   Note: HDDs for the TVN 71 are delivered separately from the chassis box due to shipping weight.

3. Use the key provided in the accessories box to unlock the recorder front panel.

4. Press the latches on both sides of the front panel to open it.
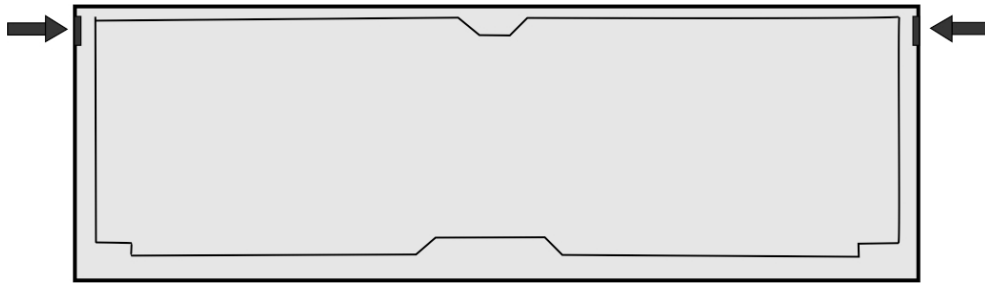
5. Install the HDDs as shown below. The first drive in position number 1, the second drive in position number 2, etc. Continue to install all the hard drives in numerical order.

6. Insert a HDD into one of the HDD bays until it has fully seated into position. Repeat with the rest of the HDDs.
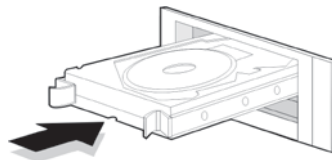
7. Close and re-lock the front panel.

   Note: The HDDs must be installed BEFORE powering up the unit. The drives are defaulted to a single HDD group that is automatically ready to record once cameras are added and configured with recording schedules.

8. Apply the supplied label to the recorder chassis. Place it next to the original label without covering it.

   Note: Failure to install the label will affect the warranty of the recorder.

9. Initialize the new HDDs, if needed. See "Initialize a HDD" on page 98.

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. This function lets you allocate different storage capacities for both recordings and snapshots to each camera.

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

To set the HDD quota for a camera:

1. From the menu toolbar, click **Configuration** > **Storage Management** > **Storage Mode**.
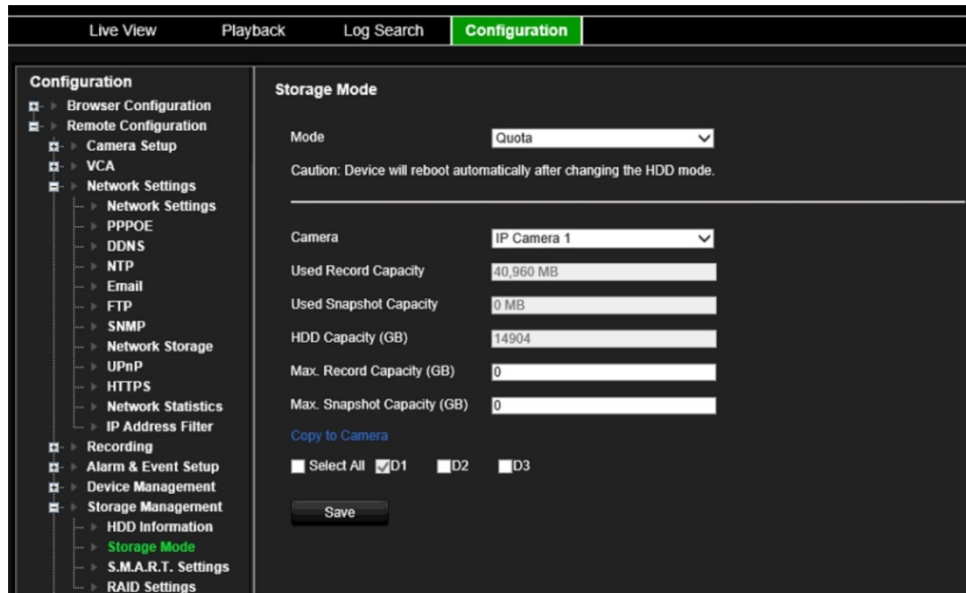
2. Under the Mode option, select **Quota**.

    Note: The recorder will reboot automatically if you change the HDD mode.

3. Select a camera whose storage capacity you want to change and enter the values in GB for the maximum record capacity and snapshot capacities. The available quota space available is displayed on screen.

4. If you want to copy these values to other cameras, select each camera individually.

5. Click **Save** 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 particular HDD group. You could, for example, save the records from a couple of high priority cameras to one HDD, and save the recordings from all the other cameras to another HDD.

To set up an HDD group:

1. From the menu toolbar, click **Configuration** > **Storage Management** > **Storage Mode**.

2. Under **Mode**, select **Group**.

    Note: The recorder will reboot automatically if you change the HDD mode.

3. Under **Record on HDD Group**, select a number for the HDD group.

4. Check the channels to be added to this group.

    Note: By default, all channels belong to HDD group 1.

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

Important: You can add the same camera to more than one group. However, there is no parallel recording across HDDs. When a camera is in more than one group and the first HDD fails, the second HDD only then takes over the recording of that camera.

Dual streaming capacity

You can set up the recorder so that it records both main stream and substream. Doing so will allow you to, via the browser or TruVision Navigator, get access to the substream in both live & playback. You are also able to set the dual stream ratio. This can be useful, for example, if you have bandwidth limitations as you can then adjust the ratio to record more substream than main stream.

To set up dual streaming mode:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Storage Management** > **Storage Mode**.

2. Under the **Mode** option, select **Dual Streaming**.

   Note: The recorder will reboot automatically if you change the HDD mode.

3. Under **Capacity Ratio**, use the mouse to adjust the main stream/substream storage ratio. By default, the ratio is 50:50.
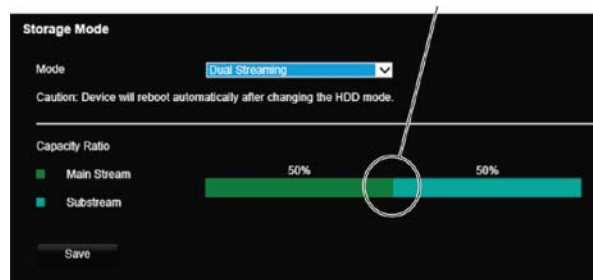
4. Click **Save** to save the settings.

S.M.A.R.T. settings

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) reports on a variety of hard drive attributes. It helps ensure that the HDD is functioning properly at all times while protecting video stored on the hard drive.

Note: A recorder with RAID functionality does not support S.M.A.R.T.

To view the S.M.A.R.T. information of a HDD:

1. From the menu toolbar, click **Configuration** > **Storage Management** > **S.M.A.R.T. Settings.**

2. Select the HDD whose data you want to see. A detail listing of S.M.A.R.T. information is displayed.
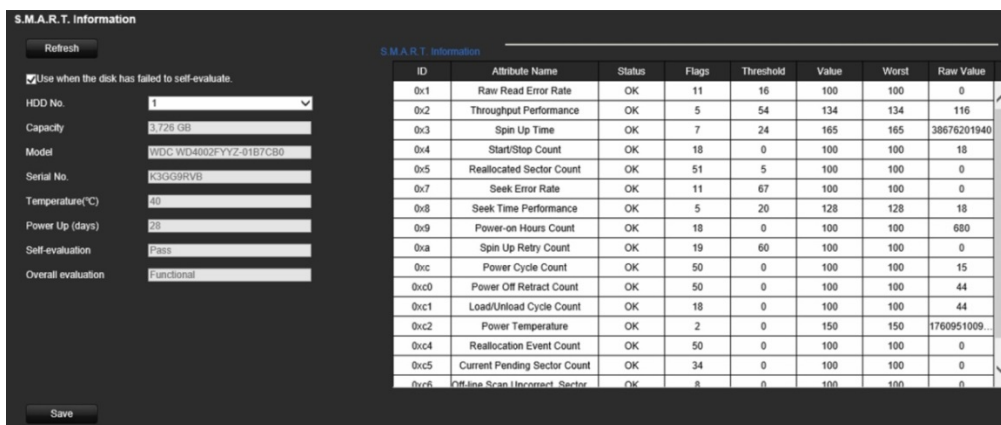
3. If you want to continue to use a HDD when the S.M.A.R.T. test has failed, check the box **Use when the disk has failed to self-evaluate**.

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

RAID settings

RAID is data storage technology. It combines multiple HDDs into a single logical unit for the purposes of data redundancy or performance improvement.

Note: RAID settings are only available when using a TVN 71 RAID model (TVN-7101R-xxT).

Data recovery and manual rebuild

You can recover the data when a HDD fails depending on the RAID level.

See Table 4 below for a description of the different RAID levels and data recovery.

Table 4: Data recovery by RAID level

RAID level	Number of HDDs	What it does	Recovery in case of a HDD failure
0	Minimum 2	Data is split across two or more HDDs. Each HDD contains a part of the data. Multiple HDDs can deal with simultaneous data writing, which increases the writing speed.	Replace the failed HDD. The failure of one disk will result in total data loss. There is no backup method available for RAID 0.
1	2	RAID 1 creates an exact copy of a data set (data mirroring) on two HDDs. The array will continue to operate as long as at least one HDD is operational.	Replace the failed HDD and manually rebuild.
5	Minimum 3	The parity information is divided over all HDDs in the array. For every HDD position, the parity information will be	In a RAID 5 setup, one HDD can fail but the data will be OK.

RAID level	Number of HDDs	What it does	Recovery in case of a HDD failure
		on one disk and the corresponding data will be on the other disk for the same position.	When one HDD fails, the data can be restored via the parity information on the other disks. Replace the failed HDD and manually restart the rebuild process. To do this, select the new hard drive and click the **Rebuild** button.
6	Minimum 4	RAID6 is almost the same as RAID5, but there are two parity blocks per disk. This allows a quicker rebuild process than RAID 5.	In a RAID 6 setup, two HDDs can fail, but still the data will be OK. When a HDD fails, the data can be restored via the parity information of the other disks. Replace the failed HDD and manually restart the rebuild process. To do this, select the new HDD and click the **Rebuild** button.
10	Minimum 4	It is the same as RAID 0 but in combination with RAID 1 (data mirroring)	Replace the failed HDD and manually restart the rebuild process.

Automatic rebuild

You can also automatically rebuild RAID 1, 5, 6, and 10.

To automatically rebuild, add an extra drive in the recorder that is not assigned to the RAID array. Configure this HDD as a backup disk (hot-spare disk). To do this, select this extra disk in the RAID settings and click the **SET** button.

Figure 23: RAID Set button
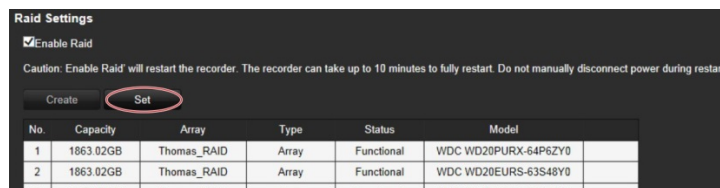
Whenever a HDD fails in the RAID array, the backup/hot-spare disk will be automatically used to rebuild the array.

You can then replace the faulty hard disk and configure that new disk as the hot-spare/backup disk.

Create a RAID array

To create a RAID array:

1. From the menu toolbar, click **Configuration** > **Storage Management** > **RAID Settings**.

2. Click the **Enable RAID** checkbox.

   The system will automatically reboot.

Caution: The system can take up to 10 minutes to fully restart. Do not manually disconnect power during restart.

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3. Once the system has restarted, go to the **Raid Settings** menu.

4. Click the **Create** button to open the "Create Array" window.

5. Enter a name for the array, and select the RAID level and the drives to be included.

6. Click **OK** to start the process. When the process is complete, data on the RAID group is displayed.

   Note: You can create a RAID array of RAID 0, RAID 1, RAID 5, RAID 6, and RAID 10.

   - If you choose RAID 0, at least 2 HDDs must be installed.

   - If you choose RAID 1, 2 HDDs need to be configured for RAID 1.

   - If you choose RAID 5, at least 3 HDDs must be installed.

   - If you choose RAID 6, at least 4 HDDs must be installed.

   - If you choose RAID 10, 4/6/8 HDDs need to be configured for RAID 10.

To rebuild a RAID array:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **Storage Management** > **Raid Settings**.

2. Ensure the **Enable RAID** checkbox is checked.

3. Click the **Rebuild** button to open the "Rebuild Array" window.

4. Select the HDD to include.

5. Click **OK** to start the process. When the process is complete, data on the RAID group is displayed.

Chapter 16
User management

By default the recorder comes with one user account: an Administrator account. See Table 5 below for a description of the different user accounts.

Table 5: User accounts

User	Description
Administrator	The administrator account includes extended menu with full access to all settings. The Administrator has the authority to add, delete, or configure parameters for many of the system functions.
	There can only be one administrator.
	The user name is "admin". The name cannot be modified. You must define a high-security password. There is no default password provided.

Add a new user

Only a system administrator can create a user. You can add up to 16 new users.

To add new users:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **User Management** > **Users**.

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

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

4. Enter the new user's name and password. Both the user name and password can have up to 16 alphanumeric characters. See "Activate the admin password" on page 6 for information on the rules to set up a password. You will be shown the security level of the new password: Low, Medium or High. Confirm the new password.

5. Define the user's permissions.

   Check the required access privileges for basic permissions and camera operation. See "Customizing a user's access privileges" below for the permission descriptions for each permission group.

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

7. The list of users is displayed.

Customize a user's access privileges

Only an administrator can allocate access privileges to Operator and Guest users. The access privileges can be customized for each user's needs. The administrator's access privileges cannot be changed.

There are two types of privilege settings: Basic Permission and Camera Operation.

Basic permission settings

By default, only remote log search and bi-directional audio are enabled for operators, and only the remote log search is enabled for guests.

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

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

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

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

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

- **Remote Surveillance Center/Trigger Alarm Output:** Remotely notify alarm and exception messages to the remote client, and control the alarm output.

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

- **Remote Serial Port Control:** Remotely configure the RS-232 port.

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

Camera operation settings

By default, all IP cameras are enabled for operators for each of these settings. By default, the IP cameras are only enabled for local playback and remote playback for guests.

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

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

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

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

- **Remote Video Export**: Remotely backup recorded files from any channel.

- **Remote Video Download**: Remotely download video files.

To customize a user's access privileges:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **User Management** > **Users**.

2. Select the user to edit from the list and click the **Edit** button. The "Edit user" window opens.

3. Check the required access privileges for basic permissions and camera operation.

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

Delete a user

Only a system administrator can delete a user.

To delete a user from the recorder:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **User Management** > **Users**.

2. Select the user to delete from the list and click the **Delete** button.

3. Click **OK** in the pop-up window to confirm deletion. The user is immediately deleted.

Modify a user

A user's name, password, and access level can be changed. Only a system administrator can modify a user.

To modify a user:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **User Management** > **Users**.

2. Select the user to edit from the list and click the **Edit** button. The "Edit user" window opens.

3. Edit the user information and click **OK** to save the settings and return to the previous window.

Change the Administrator's password

The administrator's password can be changed in the **User Management** menu.

To change the admin password:

1. From the menu toolbar, click **Configuration** > **Remote Configuration** > **User Management** > **Users**.

2. Select "admin" in the list of users and click the Edit button. The "Edit user" window opens.

3. Enter the new admin password. Both the user name and password can have up to 16 alphanumeric characters. See "Activate the admin password" on page 6 for information on the rules to set up a password. You will be shown the security level of the new password: Low, Medium or High. Confirm the new password.

4. Enter the new admin password and confirm it. Change the admin MAC address, if required. Click **OK** to save the settings and return to the previous window.

Chapter 17
System information

View system information

To view system information:

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

2. To view device information, click **Device Info**.

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

3. To view camera information, click **Camera**.

   You can view the information on each camera: camera number, camera name, status, motion detection, camera tamper, video loss, preview link sum, and preview link information.

   Preview link sum shows the amount of remote applications that are streaming video from this video channel. Preview link information shows you the IP addresses that are currently connected to this channel.

4. To view record information, click **Record**.

You can view the camera number, recording status, stream type, frame rate, bit rate (Kbps), resolution, record type, and active schedule.

5. To view alarm input information, click **Alarm Inputs**.

You can view the alarm input number, alarm name, alarm type, alarm status, and triggered camera.

6. To view alarm output information, click **Alarm Outputs**.

You can view the alarm output number, alarm name, and alarm status.

Alarm Outputs

Alarm No.	Alarm Name	Status
A->1		Enabled
A->2		Enabled
A->3		Enabled
A->4		Enabled
A->5		Enabled
A->6		Enabled
A->7		Enabled
A->8		Enabled
D2->1		Enabled
D4->1		Enabled
D5->1		Enabled

7. To view network information, click **Network**.

You can view the IPv4 address, IPv4 subnet mask, IPv4 default gateway, IPv6 address, IPv6 default gateway, preferred DNS server, alternate DNS server, enable DHCP, MAC address, enable PPPoE, HTTP port, RTSP service port, multicast IP, and outgoing bandwidth limit (Kbps).

Network

Select NIC	BAND0
IPv4 Address	192.168.1.109
IPv4 Subnet Mask	255.255.252.0
IPv4 Default Gateway	192.168.1.1
IPv6 Address	fd46:1e89:4cd9:0:9ef6:1a...
IPv6 Default Gateway	
Preferred DNS Server	192.168.1.1
Alternate DNS Server	8.8.8.8
Enable DHCP	Disabled
MAC Address	9c:f6:1a:86:31:b7
Enable PPPoE	Disabled
HTTP Port	80
RTSP Service Port	554
Server Port	8000
Multicast IP	
Outgoing Bandwidth Limit(Kbps)	524288

8. To view HDD information, click **HDD**.

You can view the HDD label, status, capacity, free space, property, type, and group.

HDD Information

Label	Capacity	Free space	Status	Type	Property
HDD1	7451.78GB	7448.00GB	Normal	Virtual Disk	R/W

Total Capacity	7451.78GB
Free Space	7448.00GB
Recorded Time	1 Day(s)

9. To view RAID information, click **Raid Info**.

You can view the version, physical HDD count, array count, RAID type, hot spare type, and support rebuild.

Version	1.1.0.0003
Physical HDD Count	16
Array Count	16
RAID Type	0 1 5 6 10
Hot Spare Type	Global Hot Spare
Support Rebuild	Yes

10. Click **Live View** on the menu toolbar to return to live view.

Appendix A
Specifications

	TVN 71
Video & audio input	
Video compression standards supported	H.264, H.265, RTSP custom protocol, Onvif
Max. IP camera input	128
Max. bandwidth per channel	16 Mbps
Audio input	1-ch, RCA (2.0 Vp-p, 1 kΩ)
Total recording bandwidth available	Up to 576 Mbps
Bi-directional audio	1-ch (reduplicated with audio input 1), RCA (2.0 Vp-p, 1 kΩ)
Video & audio output	
Recording resolution	8 MPX / 6 MPX / 5 MPX / 4 MPX / 3 MPX / 1080P / UXGA / 720P / VGA / 4CIF / DCIF / 2CIF / CIF / QCIF
Audio output	1-ch, RCA (2.0 Vp-p, 1 kΩ)
Dual-stream recording	Up to 16 channels
Auto archiving	Yes
Stream type	Video, Video & Audio
Recording modes	Time lapse High, Time lapse Low, Event, Alarm, Manual
Networking	
Network interface	8 × 10M / 100M / 1000M self-adaptive Ethernet interface (4x RJ45; 4x SFP (Fiber))
Total connections to recorder (non-viewing)	256
Total viewing streams available per camera channel	128
Total viewing bandwidth available	512Mbps
Hard disk	
SATA	16 SATA interfaces
Max. onboard storage capacity	96 TB (non RAID or RAID)
Capacity per HDD	6 TB
RAID	0/1/5/6/10

	TVN 71
External interface	
Serial interface	1 RS-232 interface (for Technical Support)
USB interface	Front panel: 2 × USB 2.0 (front), Back panel: 2 × USB 3.0 (back)
Alarm in	16
Alarm out	8
Miscellaneous	
Power supply	2 × 100 to 240 VAC, 6.3 A, 50 to 60 Hz
Power consumption (without HDD)	≤ 140 W
Power consumption (with 16 × 2TB RAID HDDs)	150 W
Operating temperature	-10 to +50ºC (14 to 122°F)
Relative humidity	10 to 90%
Chassis	3U rack-mountable or desk-based chassis
Dimensions (W x H x D)	442 × 494 × 146 mm (17.4 × 19.4 × 5.7 in.)
Weight	≤ 16 kg (35.3 lb.) (without HDD)

Appendix B
Port forwarding information

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.

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: 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 Interlogix 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 is located on or near the serial number sticker on the bottom of the device.

If you cannot find any information for your particular router, please contact your router manufacturer or internet service provider for further assistance.

Appendix C
TruVision Mac Safari browser plug-in v3.0

Overview

For TruVision recorder browser functionality in Mac Safari browsers a plug-in must be installed.

System requirements

- Mac OS > 10.8

- Safari > 8.0 .5

Supported recorders

- TVN 11

- TVN 71

Plug-in installation

1. Download the TruVision Mac Safari Browser Plug-In v3.0 file from our website:

   Go to the Interlogix.com website. Navigate from the home page by clicking **Video** > **Recorders**. Select your recorder. Click the **Downloads** link. Scroll down to Software and click the download link.

   For EMEA only:

   Go the firesecurityproducts.com website. Navigate from the home page by clicking **Products** > **Recorders** (in the Video & Transmission section). Select your recorder and on its webpage click **Downloads**. There you will find the Mac Safari plugin. Click it to download.

2. As our Mac Plugin is not downloaded from the Apple App Store, you need to make sure that the security settings of your Mac allow the installation.

   Go to **System Preferences** and click **Security & Privacy**.
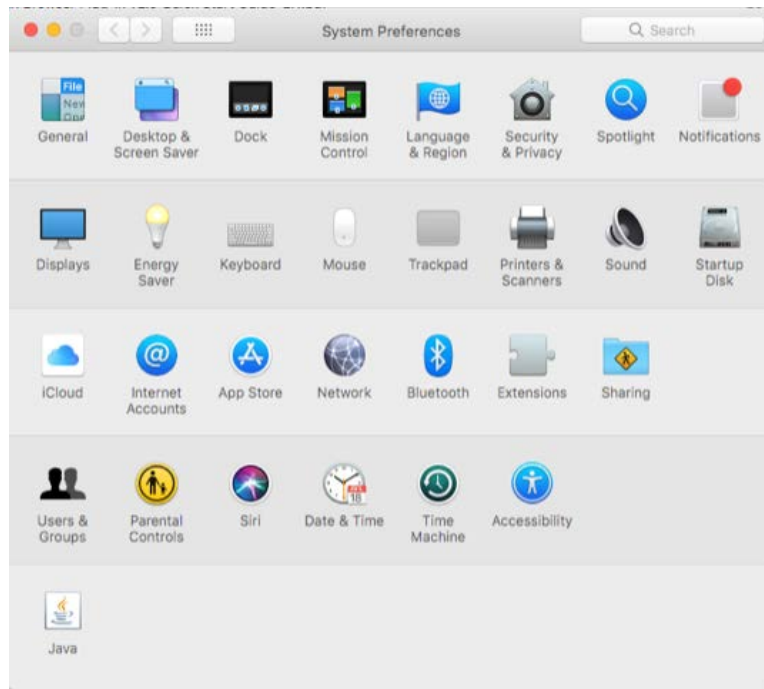
Select the option that allows the Mac to download apps from the App Store and identified developers.
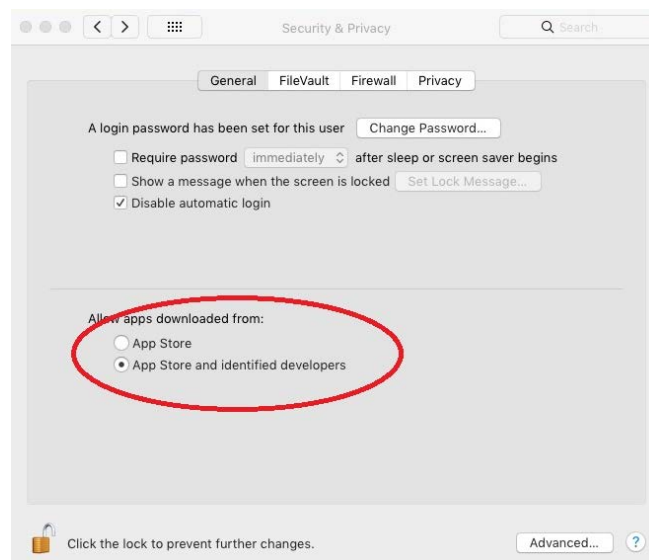
3. Unzip the *UTCWebVideoPlugin.zip* file and extract the pkg file to your desktop.

4. Click **Open** to open the file.

5. Follow the installation instructions provided.
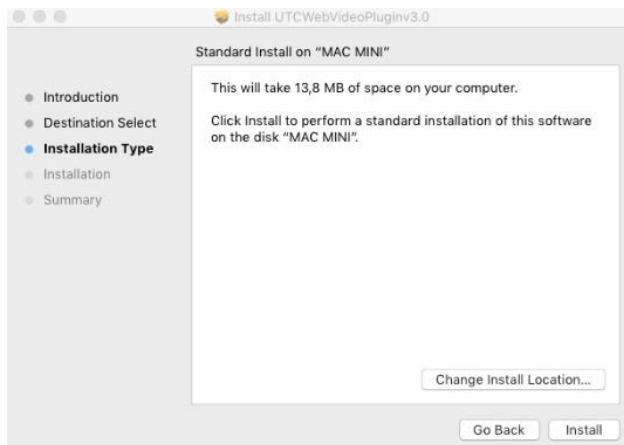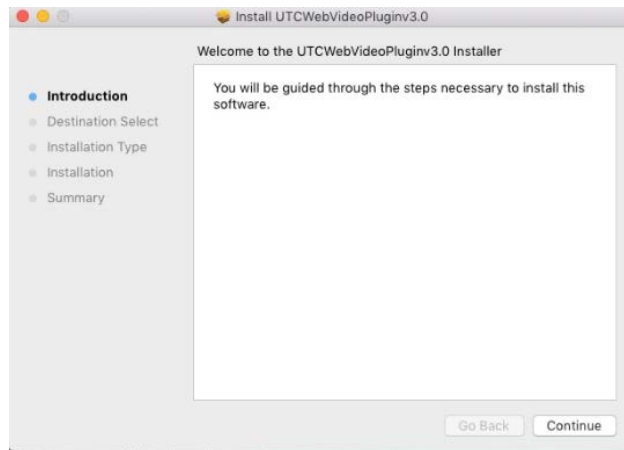
6. Enter the Username and Password of the Mac when requested.
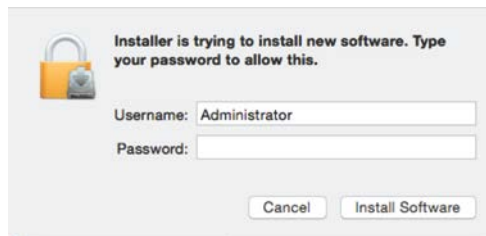
7. After a successful installation, close the installation dialog window.
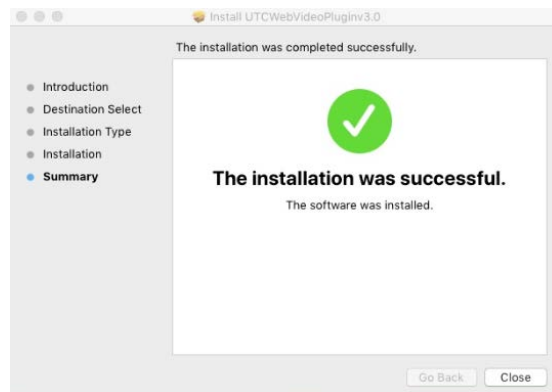
8. Open **Safari** and connect to any supported device.

Click '**Trust**' to trust the plugin.
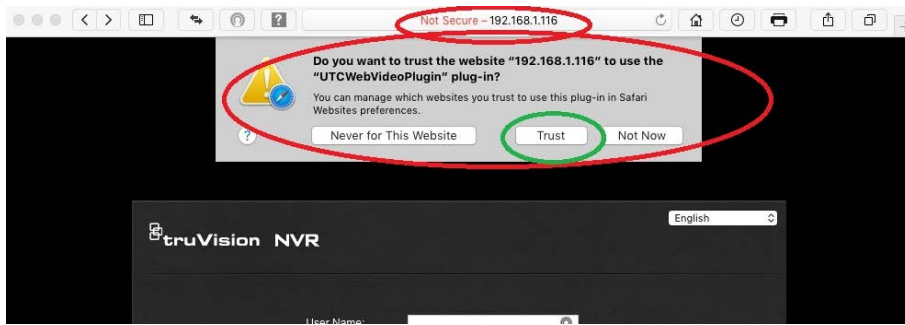
Bug fixes in this version

- High resolution streams will be shown without shaking/flickering

- Intelligent information of VCA events can be seen on the live view page.

- Drawing a motion detection zone will be saved and motion will be detected in the dedicated zone(s).

Known limitations

- *Text In* is not supported in this version.

- The player download does not work for Mac. The player needs to be downloaded from the recorder directly via a USB stick.

Appendix D
Guidelines when using high camera count (>32 cameras)

Introduction

When working with a large number (>32) of cameras per recorder, specific guidelines are advised for hard drives, network settings, and event linking features to ensure optimal performance of the TruVision recorder. Not following these guidelines may result in loss of frames.

Hard drive configuration

The hard drives that we use in our recorders are especially designed for video surveillance purposes and/or enterprise class installations.

However, every hard drive has specific limitations.

Due to the read/write speed limitations of the hard drive, the maximum advised number of cameras per hard drive is 32 cameras with a maximum bit rate of 4Mbps/camera or a total bit rate of 128Mbps.

The number of cameras will decrease if the camera resolution requires a higher bit rate.

Going above these limitations may result in sporadic video recording gaps.

We advise to use HDD Group Mode for non-RAID configurations or RAID 5 or 6 for RAID configurations.

A. For non-RAID configurations

The recorder a feature called **HDD Group Mode**.

Use the **HDD Group Mode** and use at least four hard drives.

When there are more than 32 cameras on the recorder, we advise to assign not more than 32 cameras per group. Every camera can only be part of one group.

B. For RAID configurations

The recorder supports different RAID levels but with high camera numbers (>32), we recommend to use RAID 5 or 6 only.

Using RAID 5 or 6 will distribute the recording load over the different hard drives.

Use at least three (RAID 5) or four (RAID 6) hard drives in a recorder when using RAID 5 or 6.

See the "HDD information" on page 97 for more information about how to configure HDD grouping or RAID.

Network configuration

It is essential that a stable network environment is used.

A poor quality network will result in data loss, offline cameras, and will equally impact the recorder's performance.

A qualitative network will increase the recording stability and viewing performance of the recorder.

We recommend the following settings:

- Connect two or more network ports. Make sure the ports on the switches are 1 Gigabit ports.

- In the *Network* settings of the recorder, choose the working mode **Load Balance** and connect all the network ports to the same switch. The ports of the switch also need to be configured in load balance mode.

For the connection between cameras and the recorder it is better to spread the cameras over multiple switches as well.

It is also important to ensure the use of qualitative non-blocking switches, such as those available within the Interlogix IFS product range.

Event recording triggers

The process of activating event or alarm recording requires intelligence from the recorder. When triggering a high number of alarm/event recordings simultaneously, the recorder's performance can be impacted.

We advise to limit the maximum number of cameras that will be recorded for an event to four. This will minimize the risk of impacting the recorder's performance.

Appendix E
Default menu settings

Browser Configuration		
	Browser Configuration	
		Protocol: TCP
		Stream Type: Main Stream
		Multiscreen Display: Full Screen
		Video File Size: 512M
		Latency: Medium
		Auto Start Live View: No
		Enable Web Page Time out: Enabled
		Save Record Video from Live View to the path:
		Save Snapshots from Live View to the path:
		Save Snapshots from Playback to the path:
		Save Clips when Playback to the path:
		Save Download File to:
Remote Configuration		
Camera Setup		
	IP Camera Status	
		Manual Add
		Camera No., IP Camera Address, Stream No., Management Port, Security, Status, Protocol
		Modify
		IP Camera No.: [Null]
		IP Camera Address: [Null]
		Protocol: TruVision
		Management Port: 8000
		Stream No.: 1
		User Name: admin
		Password: [Null]

		Transfer Protocol: Auto
	Delete	
	Search/Add	
		IP Camera Address, Activation, Stream No., Protocol, Management Port, Subnet Mask, MAC Address, Serial No., Firmware Version
	Advanced Settings	
	Custom Protocol	
		Custom Protocol: Custom Protocol 1
		Protocol Name: Custom 1
		Stream Type: Main Stream
		Protocol: RTSP
		Transfer Protocol: Auto
		Port: 554
		Stream Path: [Null]
IPC Import/Export		
	Configuration File: [Null]	
Camera Recording Settings		
	Camera: [Null]	
	Stream Record Mode: Main Stream (TL-Hi)	
	Stream Type: Video Stream	
	Resolution: [Null]	
	Bitrate Type: Variable	
	Video Quality: Highest	
	Frame Rate: [Null]	
	Max. Bitrate Mode: General	
	Max. Bitrate: 4096 Kbps	
	Video Encoding: [Null]	
Camera OSD		
	Camera: [Null]	
	Camera Name: [Null]	
	Display Name: Enabled	
	Display Date: Enabled	
	Display Day: Enabled	
	Date Format: MM-DD-YYYY	
	Time Format: 24-hour	
	Display Mode: Non-transparent & Not Flashing	

Motion Detection		
	Camera: [Null]	
	Enable Motion Detection: Disabled	
	Enable Dynamic Analysis for Motion: Disabled	
	Area Settings	
	Arming Schedule	
	Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel - No	
Privacy Mask		
	Camera: [Null]	
	Enable Privacy Mask: Disabled	
Camera Tamper		
	Camera: [Null]	
	Enable camera Tamper: Disabled	
	Area Settings:	
	Arming Schedule: (All day for whole week)	
	Actions: Alarm Linking – No; Trigger Alarm Output – No	
Text Overlay		
BNC/V-stream		
	Enable V-stream: Disabled	
	Max. Bitrate: [Null]	
	Frame Rate: [Null]	
	Screen Mode: 4*4	
	Screen Order:	
VCA		
	Face Detected	
		Camera: [Null]
		Enable Face Detection: Disabled
		Enable Dynamic Analysis for Face Detection: Disabled
		Sensitivity: 0
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel - No
	Audio Input Detected	
		Camera: [Null]
		Exception Detection: Audio Loss Detection –Disabled; Sudden Increase in Sound Intensity Detection-Disabled; Sudden Decrease of Sound Intensity-Disabled
		Arming Schedule

		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Cross Line Detected	
		Camera: [Null]
		Enable Cross Line Detection: Disabled
		Area Settings: Line; Direction; Sensitivity
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel - No
	Intrusion Detected	
		Camera: [Null]
		Enable Intrusion Detection: Disabled
		Area Settings: Region; Threshold; Sensitivity
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Cross Line Detected	
		Camera: [Null]
		Enable Cross Line Detection: Disabled
		Area Settings: Line; Direction; Sensitivity
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel - No
	Defocus Detected	
		Camera: [Null]
		Enable Defocus Detection: Disabled
		Sensitivity: 1
		Alarm Linking: Disabled
		Trigger Alarm Output: Disabled
		PTZ Linking: Disabled
	Sudden Scene Change Detected	
		Camera: [Null]
		Enable Sudden Scene Change: Disabled
		Sensitivity: 1
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Enter Region Detected	
		Camera
		Enable Enter Region Detection: Disabled

		Area Settings: Region; Threshold; Sensitivity
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Exit Region Detected	
		Camera
		Enable Exit Region Detection: Disabled
		Area Settings: Region; Threshold; Sensitivity
		Arming Schedule: (All day for whole week)
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Enter Region Detected	
		Camera
		Enable Enter Region Detection: Disabled
		Area Settings: Region; Threshold; Sensitivity
		Arming Schedule:
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Object Left Behind Detected	
		Camera
		Enable Object Left Behind Detection: Disabled
		Area Settings: Region; Threshold; Sensitivity
		Arming Schedule:
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
	Object Removed Detected	
		Camera
		Enable Object Removed Detection: Disabled
		Area Settings: Region; Threshold; Sensitivity
		Arming Schedule:
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ Linking
Network Settings		
	Network Settings	
		Working Mode: Net Fault-tolerance
		NIC Type: Auto
		DHCP: Disabled
		IPv4 Address: [Null]
		IPv4 Subnet Mask: [Null]
		IPv6 Default Gateway: [Null]

		MAC Address: [Null]
		MTU: 1500 Bytes
		Preferred DNS Server:
		Alternate DNS Server:
		Main NIC: LAN1
		Server Port: 8000
		HTTP Port: 80
		Multicast:
		RTSP Service Port: 554
		HTTPS Port: 443
		Enable Telnet:: Disabled
		Outgoing Bandwidth Limit: [Null]
	PPPOE	
		Enable PPPOE: Disabled
		User Name: [Null]
		Password: [Null]
		Confirm: [Null]
	DDNS	
		Enable DDNS: Disabled
		DDNS Type: ezDDNS
		Server Address: [Null]
		Domain:
		Status: [Null]
		Effect Domain: [Null]
	NTP	
		Enable NTP: Disabled
		Interval: 60 minute
		NTP Server: [Null]
		NTP Port: 123
	Email	
		Sender:
		Sender's Email Address:
		SMTP Server: [Null]
		SMTP Port: [Null]
		Enable SSL/TLS: Disabled
		Include Snapshot: Disabled
		Interval: 2 s
		Enable Server Authentication: Disabled

	User Name: [Null]
	Password: [Null]
	Select Receiver: Receiver 1
	Receiver Name: [Null]
	Receiver's Address: [Null]
FTP	
	Enable FTP: Disabled
	FTP Protocol:
	FTP Server: [Null]
	FTP Port: 21
	User Name: (Null)
	Password: (Null)
	Directory: Use root directory
SNMP	
	Enable SNMP: Disable
	Read Community: public
	Write Community: private
	Trap Address: [Null]
	Trap Port: 162
	SNMP Port: 161
Network Storage	
	Server IP:
	File Path:
	Type: NAS
UPnP	
	Enable UPnP: Disabled
	Port Type: HTTP Port; RTSP Port ; Server Port ; HTTPS Port
	External Port:
	Mapping IP Address:
	Port:
	UPnP Status:
HTTPS	
	Enable HTTPS: Disabled
	Installation Method: Create Self-singed Certificate
Network Statistics	
	IP Camera: [Null]
	Remote Live View: 0bps
	Remote Playback: 0bps

		Net Receive Idle: [Null]
		Net Send Idle: [Null]
		Outgoing Bandwidth Limit: [Null]
	IP Address Filter	
		Enable IP Address Filter: Disabled
		IP Address Filter Type: Forbidden
Recording		
	Recording Schedule	
		Camera: [Null]
		Enable Recording: Enabled
		Schedule: All day for whole week TL-Hi
		Advanced: Record Audio – Yes; Enable EFR – Yes; Pre Event – 5 s; Post Event – 5 s; Auto Delete (day) – 0;
	Auto Archive Settings	
		Enable Auto Archive: Disabled
		Start Time: (Current date and time)
		End Time: (Current date and time)
		Interval: 1 hour
		Select Camera: IP Camera 1
		Video Type: (All disabled)
		Copy to Camera: D1
	Auto Archive Status	
		Current Status: No Schedule
		Last Archive Time: (Null)
		Last Archive Status: (Null)
		Next Archive Status: (Null)
		Archive Device Name: (Null)
		Free Space: (Null)
	Manual Recording	
		Cameras: Off
	Hot Spare	
		Work Mode: Normal Mode
		Normal Mode Enable: Disabled
		IPv4 Address of the Server: 0.0.0.0
		Password of the Server: (Null)
		Working Status: (Null)

Alarm & Event Setup

Alarm Input

Alarm Input No.: A<-1	
Alarm Type: NO	
IP Address: Local	
Alarm Input Name: (Null)	
Enable Alarm Input: No	
Arming Schedule: All day for whole week	
Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ linking: (Null)	
Copy to Alarm: A<-1	

Alarm Output

Alarm Output No.: A->1	
IP Address: Local	
Time Out: 5 s	
Alarm Output Name: (Null)	
Alarm Status: OFF	
Arming Schedule: All day for whole week	
Copy to Alarm: A>-1	

Manual Trigger

Alarm Output Number:	
Alarm Output Name:	
Status:	

Buzzer Settings

System Buzzer Time: Constant	
Camera Buzzer Time: Constant	

Notifications

Display Event Icon: Enabled	
Event Hint Settings: All	
Event Priority: VCA > Motion	
Notification Type: HDD Full	
Alarm Linking: Disabled	
Enable Alarm Audio: Disabled	
Trigger Alarm Output: Disabled	

Video Loss

Camera: (Null)	
Enable Video Loss Alarm: Disabled	
Arming Schedule: All day for whole week	

		Actions: Alarm Linking – No; Trigger Alarm Output – No
	Alarm Host Setup	
		Alarm Host 1 IP: (Null)
		Alarm Host 1 Port: 5001
		Alarm Host 2 IP: (Null)
		Alarm Host 2 Port: 5002
		Alarm Host 3 IP: (Null)
		Alarm Host 3 Port: 5003
	Intrusion Zone Setup	
		Select Intrusion Panel: 1
		Line Number: 1
		Zone Number: 1
		Arming Schedule: All day for whole week
		Actions: Alarm Linking – No; Trigger Alarm Output – No; Trigger Channel – No; PTZ linking: (Null)
	Intrusion Panel Setup	
		Enable Intrusion Panel Connection: Disabled
		Select Intrusion Panel: Panel 1
		Intrusion Panel Name:
		Number of Zones: 32
		IP Address of Panel:
		Port:
		Enable Panel Heartbeat Alarm: Enabled
		Actions:
		Enable Panel Arming Event: Enabled
		Actions: Arming Schedule; Actions
		Enable Panel Disarming Event: Enabled
		Actions: Arming Schedule; Actions
Device Management		
	Time & Date Settings	
		Time Zone: (GMT-08:00) Pacific Time(U.S. & Canada)
		Manual Time Sync: Enabled
		System Time: Current System Date & Time
		Set Time:
		Auto DST Adjustment: Disabled
		Enable DST: Disabled
		From: Apr 1st Sun 2:00
		To: Oct last Sun 2:00

		DST Bias: 60 minutes
	General Settings	
		Device Name: TVN 71
		eSATA: Record
		Start Wizard upon login: Enabled
	Configuration Files	
		Restart
		Restore
		Default
		Configuration File: (Null)
		Export
	Upgrade Firmware:	
		File: (Null)
	Holiday	
		Status: All Disabled; Start Date: 1st. Jan; End Date: 1st Jan
	RS-232 Settings	
		Baud Rate: 115200
		Data Bit: 8
		Stop Bit: 1
		Parity: None
		Flow Ctrl: None
		Interface: Technical Support
Storage Management		
	HDD Information	
		HDD: Label; capacity; Free Space; Status; Type; Property
		Overwrite: Enabled
	Storage Mode	
		Mode: Quota
		Camera: IP Camera 1
		Used Record Capacity: (Null)
		Used Snapshot Capacity: (Null)
		HDD Capacity (GB): (Null)
		Max Record Capacity (GB): (Null)
		Max Snapshot Capacity (GB): (Null)
	S.M.A.R.T. Settings	
		Use when the disk has failed to self-evaluate: Enabled
		HDD No.: 1
		Capacity: (Null)

		Model: (Null)
		Serial No.: (Null)
		Temperature (°C):
		Power Up (days): 28
		Self Evaluation:
		Overall Evaluation: Functional
		S.M.A.R.T. Information : ID ; Attribute Name ; Status ; Flags ; Threshold ; Value ; Worst ; Raw Value
	RAID Settings	
		Enable RAID: Enabled
		Create
		Set
		Delete
		Rebuild
User Management		
	Add	
	Edit	
	Delete	
System Information		
	Device Info	
		Model: (Model number)
		Serial No.: (Model's serial number)
		Firmware Version:
		Encoding Version:
		Web Version:
		Plugin Version:
		Number of Channels:
		Number of HDDs:
		Number of Alarm Inputs:
		Number of Alarm Outputs:
	Camera	
		Camera No.; Camera Name; Status; Motion Detection; Camera Tamper, Video Loss; Preview Link Sum; Preview Link Info
	Record	
		Camera No.; Recording Status; Stream Type; Frame Rate; Bitrate (Kbps); Resolution; Record Type; Active Schedule
	Alarm Input	
		Alarm No.; Alarm Name; Alarm Type; Status; Triggered Camera

Alarm Output		
	Alarm No.; Alarm Name; Status	
Network		
	IPv4 Address:	
	IPv4 Subnet Mask	
	IPv4 Default Gateway	
	IPv6 Address	
	IPv6 Default Gateway	
	Preferred DNS Server	
	Alternate DNS Server	
	Enable DHCP	
	MAC Address	
	Enable PPPoE	
	Server Port	
	HTTP Port	
	Multicast IP	
	Outgoing Bandwidth Limit (Kbps)	
HDD		
	Label; Status; Capacity; Free Space; Status; Type; Property;	
RAID Info		
	Version:	
	Physical HDD Count:	
	Array Count:	
	RAID Count:	
	Hot Spare Type:	
	Support Rebuild:	

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