



How to Use exacqVision with Hikvision Devices

V2.0.1

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1. Overview

This paper intends to help you use/operate Hikvision devices with exacqVision software. The supported functions are as follows:

Live View, Playback, Record, PTZ control, Motion Detection, Audio, Alarm

Feature	HikVision Driver	Onvif
Discover	√	√
Video Streaming	√	√
Video Configuration - Attribute (Brightness, contrast, etc.)	√	√
Video Configuration - Quality (resolution, framerate, etc.)	√	√
Video Configuration - Codec	X	X
Motion Detection	√	√
Motion Mask/Video Mask	√	X
Audio Input	√	√
Audio Output	X	X
PTZ Control	√	√
Network - Reboot Unit	X	X
Network - Unit IP Settings	√	√
Network - Web Access	√	X
I/O - Input	√	X
I/O - Output	√	X
Events - Camera Tampering	X	X
Events - Smart Event	X	X
Dewarping	√ From 8.0.4.103196	X

You can visit exacqVision's website to find the supported hardware integration list.

<http://www.exacq.com/support/ipcameras.html>

Note:

The Hikvision cameras' firmware show in the exacqVision is baseline.

1.1 About exacqVision

The current test version is V 7.6.4.94409 (x64). You can click the "Check for Updates" to update the software.

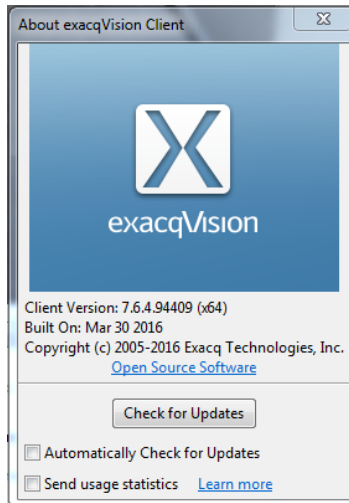


Figure 1. exacqVision Version

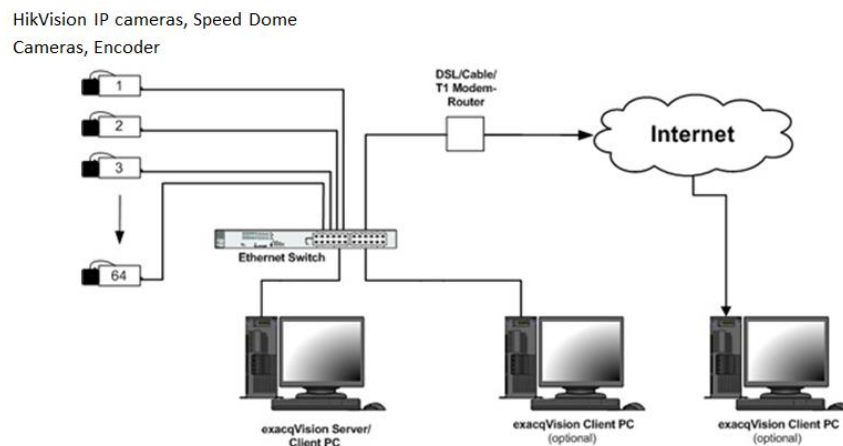


Figure 2. Integration Overview

Note:

1. ExacqVision only supports the old Hikvision encoder that is DS-67xxHWI/HFI.
2. The Hikvision encoder that be supported by exacqVision needs customized firmware.

1.1.1 Client/Server Architecture

ExacqVision software is based on a client/server architecture in which every computer is a client, server, or client/server combination.

	Start	Professional	Enterprise
Max Cameras Per Server	16 Analog / 16 IP	64 Analog / 128 IP	64 Analog / 128 IP
Max Server Connections Per Client	1	512 (client) / 16 (web browser)	512 (client) / 16 (web browser)
Windows & Linux Server Compatibility	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Free Windows, Linux & Mac Clients	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Browser-Based Viewing of Live/Stored Events	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Extended Storage		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Archiving		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Smart Search		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Enterprise Camera/User Management			<input checked="" type="checkbox"/>
Enterprise Server Monitoring			<input checked="" type="checkbox"/>

1.2 Current Test Environment

The Testing license is Professional.

Recorder Hardware Requirements

	Minimum less than 50Mbps camera data 1-2 simultaneous remote clients	Recommended 50-250 Mbps camera data 4 simultaneous remote clients	Current
Processor	Celeron G1610	I3 - 4130	Intel(R) Core™ i7
RAM	2 GB	8 GB	8 GB
Operating System Drive	32 GB Partition	32 GB SSD	150 GB
Video Storage Drive	Less than 15 MBPS Non-Sequential Write	30-150 MBPS Non-Sequential Write	-
NIC	1 x 1 Gbps	2 x 1 Gbps	100 Mbps

Client Hardware Requirements

	Minimum Typically 1-4 analog cameras	Recommended Typically 1 monitor with 16 HD camera	Current
Processor	Celeron G1610	I3 – 6100	Intel(R) Core™ i7
RAM	2 GB	6 GB	8 GB
Hard Drive	10 GB	64 GB SSD	150 GB
Graphics	Inter HD 2000 Series	Inter HD Graphics 530	NVIDIA GeForce GT 320
NIC	1 x 1 Gbps	1 x 1 Gbps	100 Mbps


Supported Operating Systems (Recommended)

Windows Server, client, web Service	Linux Server, Client, Web Service	Mac Client Only	Current
Windows 7 Pro (64-bit recommended) Windows 10 Windows Server 2012 Windows 8.1 Windows Server 2008 Windows Server 2008 R2	Ubuntu 14.04 (64-bit or 32-bit with PAE) Ubuntu 12.04 (64-bit or 32-bit with PAE) Ubuntu 10.04 (64-bit or 32-bit with PAE)	10.10 10.9 10.8 10.7	Windows 7 Home Premium

2. Start VMS

2.1 Login



1. Double click  to run exacqVision software.
2. Input Username and Password.
3. All exacqVision servers are shipped with two operating system accounts:

Username: admin
 Password: admin256
 Privileges: computer administrator

Username: user
 Password: user5710
 Privileges: restricted user

2.2 Brief Introduction

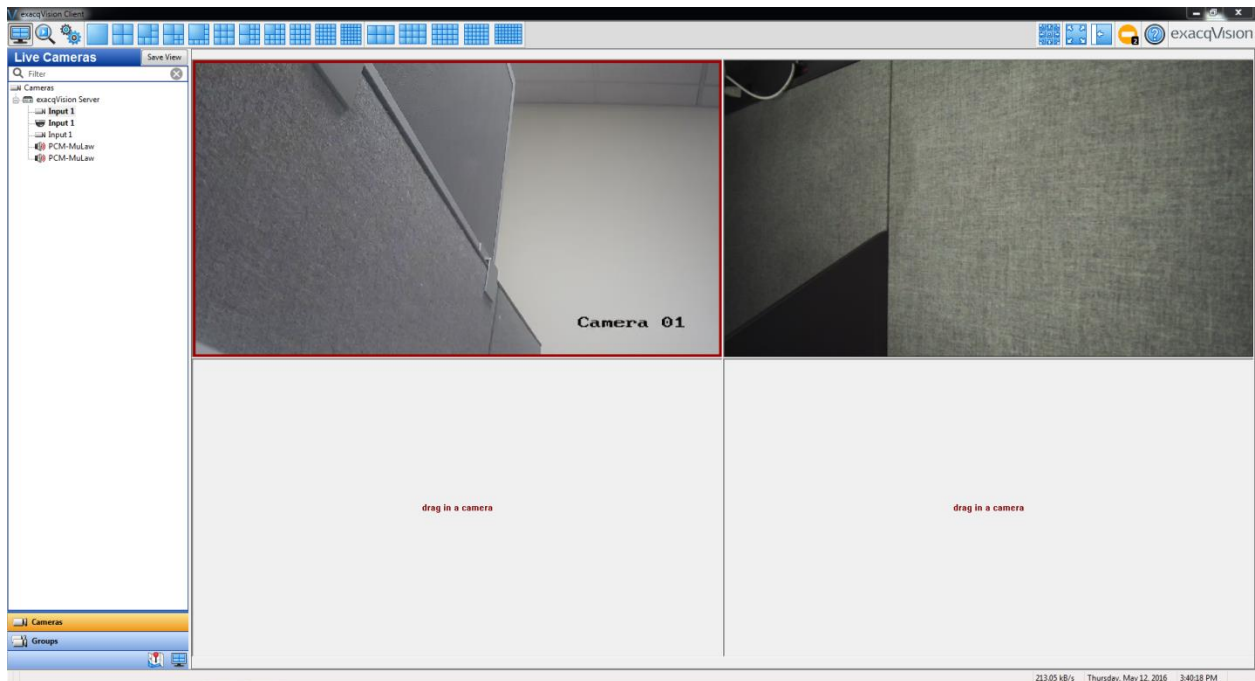













Figure 3. Main Page

Feature	Description
	Main operating page: Live Page allows users the ability to view live video.
	Main operating page: Search Page allows users the ability to search for recorded video.
	Main operating page: Config (Setup) Page allows Administrators and Power Users the ability to

	configure systems.
	Click on one of the blue camera view icons at the top of the screen while in Live Mode. You can easily view cameras in different layout.
	Launch the PTZ controls.
	Fullscreen mode.
	Hide/Show navigation pane.
	Show indicators.
	Show help. You can access online help and additional information about exacqVision System.
	At the upper-right corner of the page lists the current version and built date.

2.3 Client

1. Click  button to enter configuration page.
2. Select "Client" from the left tree. You can find the client page in the right part. The client page allows you to customize you client based on your personal preferences.

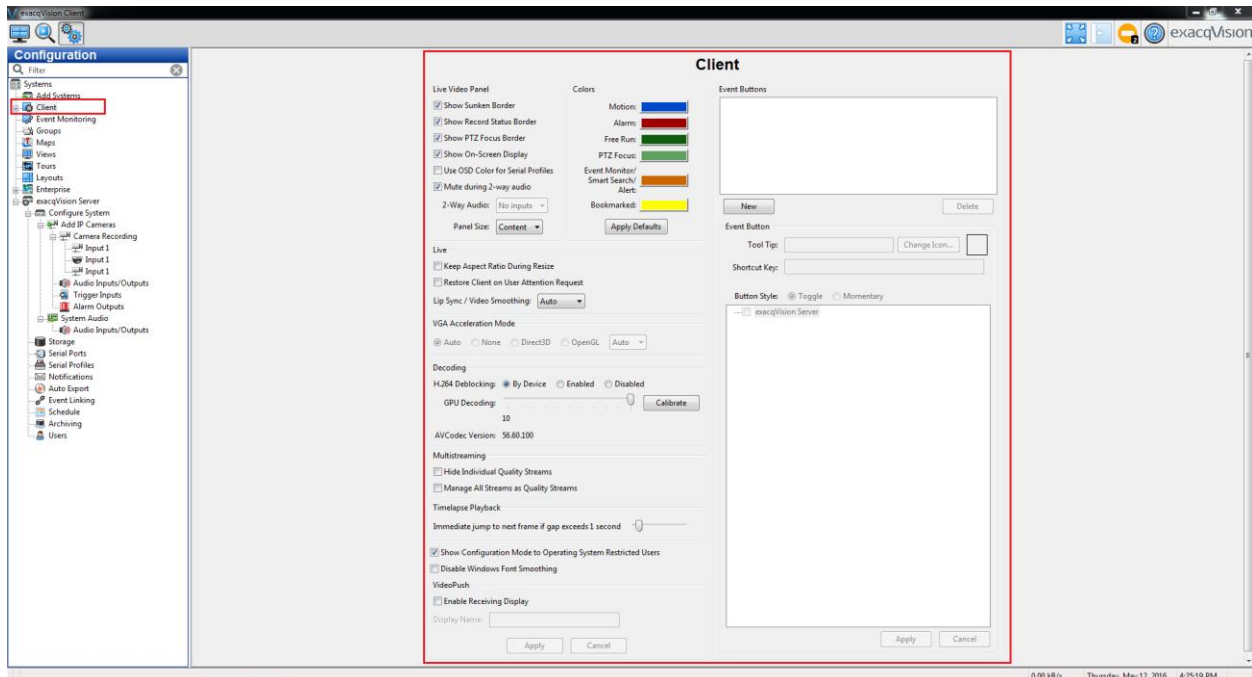



Figure 4. Client Page

3. Basic Functions

3.1 Adding and removing devices

1. Click  button to enter configuration page.
2. Select "Add IP Cameras" from the left tree. You can find the "Add IP Cameras" page in the right part.

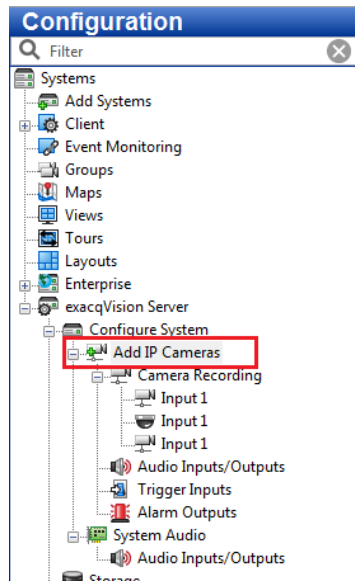


Figure 5. Access "Add IP Cameras"

The screenshot shows the 'Add IP Cameras' interface. It features a table of existing cameras, a 'New' button, a 'Delete' button, and a detailed 'IP Camera Information' form. Below this is a 'Find IP Cameras' section with a table of discovered devices and a 'Rescan Network' button.

IP Camera List

Enabled	Address	Make	Model	MAC	Firmware	Status
<input type="checkbox"/>	10.102.103.126	HIKVision				Not connected.
<input checked="" type="checkbox"/>	10.102.103.68	HIKVision	DS-2CD4132FWD-IZ	44-19-87-1B-FA-15	V5.3.0 Build build	Connected.
<input checked="" type="checkbox"/>	10.102.103.87	HIKVision	DS-2DF88360V-AEL	28-57-8E-DB-FC-36	V5.3.10 Build build	Connected.
<input checked="" type="checkbox"/>	10.102.103.99	HIKVision	DS-2CD4185F-IZ	C4-2F-90-07-81-87	V5.3.0 Build build	Connected.

IP Camera Information

Device Type:

Hostname/IP Address:

Port:

Username:

Password:

Password Confirm:

Buttons: Apply, Cancel

Find IP Cameras

Select All Cameras Show used cameras

Add	Reported Name	Address	Type	Model	MAC	Firmware	Addressable	Systems
<input checked="" type="checkbox"/>	HIKVISION DS-2CD864FWD-E - 40868	10.102.103.3	HIKVision	HIKVISION DS-2CD864FWD-E			No	
<input checked="" type="checkbox"/>	HIKVISION DS-2DF5286-AEL - 430698	10.102.103.214	HIKVision	HIKVISION DS-2DF5286-AEL			No	
<input checked="" type="checkbox"/>		10.102.103.20	ONVIF				No	
<input checked="" type="checkbox"/>	My_EZVIZ_DVR	10.102.103.64	ONVIF	CS-X5-116T			No	
<input checked="" type="checkbox"/>	My_EZVIZ_DVR	10.102.103.146	ONVIF	CS-X5-104T			No	
<input checked="" type="checkbox"/>	0E-13BF40	10.102.103.179	ONVIF	0E-13BF40	C4-2F-90-48-4A-C4		No	
<input checked="" type="checkbox"/>	Network%20Video%20Recorder	10.102.103.184	ONVIF	DS-7716NFI-SP%2F16			No	
<input type="checkbox"/>		10.102.103.83	UPnP		2209892d-c37f-48d4-8f11-551374751e5b		No	
<input type="checkbox"/>		192.168.0.1	UPnP		9d596dc1-5907-915f-3145-6jad3fa34307		No	

Buttons: New, View Log, Delete, Add Selected

Footer: Rescan Network, Last scan: 5/12/2016 1:35:14 PM

Figure 6. Add IP Cameras

1. Manually add a camera by clicking New.
2. Choose the device type “HikVision” or “Onvif”. Enter a username, password, and IP address as configured on the camera. And click “Apply” to save the camera configuration.
3. The “IP Camera List” shows the cameras which connect successfully. To enable a camera, select its checkbox in the IP Camera List. The number of cameras you can enable is subject to licensing limits. The Status column displays connection information.
4. The Find IP Cameras tab scans for supported IP cameras available on the same network that the system is connected to. Select a camera in the Find IP Cameras list.
5. If you make any changes to an IP camera, click “Rescan Network” and check whether it is listed.
6. Click “Add Selected”, then “Please Enter Credentials” box shows up. Type the username and password. Then the selected cameras will add to the IP Camera List.
7. In the “IP Camera List”, click the camera, then the “Delete” button will be available. Then click the “Delete” to delete the camera.

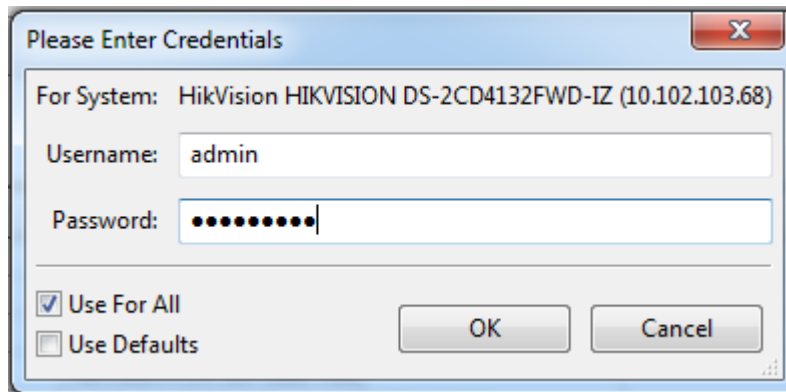


Figure 7. Please Enter Credentials

3.2 Camera Settings

The Camera Settings page is where you configure the individual IP and analog camera settings such as camera name, onscreen display, PTZ settings, video settings, recording quality and motion and video masks. This page is similar for IP and analog cameras, but certain features might be unavailable depending on the type of camera you are configuring.

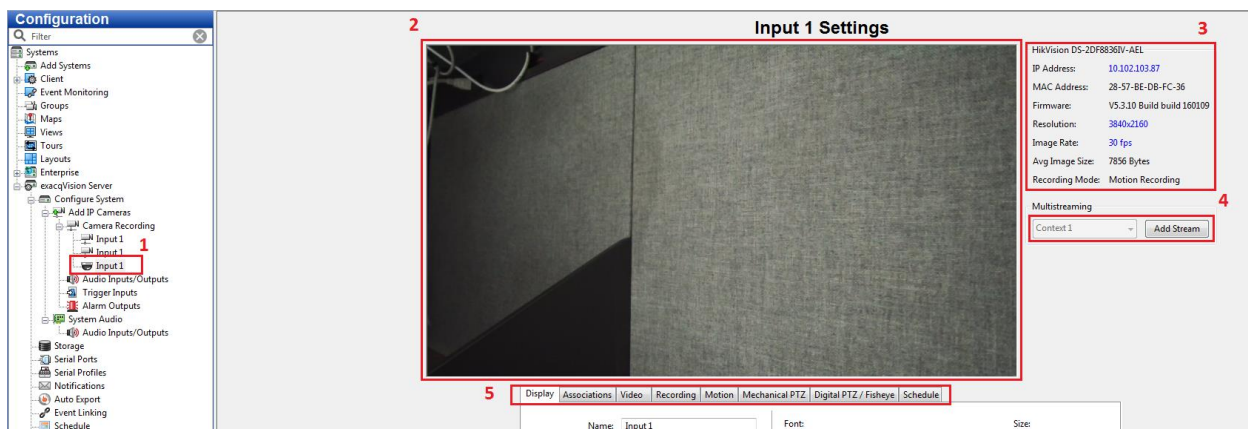


Figure 8. Camera Settings

1. Use the Configuration tree to select the camera that you want to configure.

2. A live view of the selected camera is displayed.
3. Basic information about the camera is listed.
4. The “Multistreaming” feature appears only for cameras that support multistreaming. It allows you to create streams with different video settings or regions of interest from a single camera view.

Note: Not available in exacqVision Start.

5. A series of tabs allows you to complete the rest of the camera’s configuration, as described in the following sections.

3.2.1 Display Tab

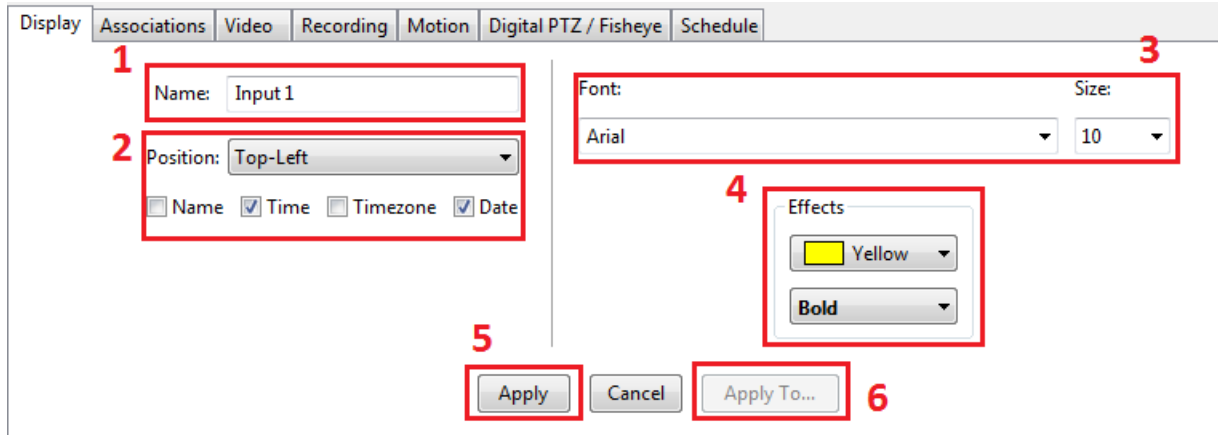


Figure 9. Display Tab

1. Enter a name for the camera (up to 32 characters).
2. Select the position of the onscreen display (OSD) of the camera, along with the camera information included in the display.
3. Select a font and size of the OSD.
4. Select the color of the OSD, along with bold/italics options.
5. To enable changes of settings on this tab, click Apply.
6. To enable the settings on this tab to multiple cameras on the server, click Apply To.

3.2.2 Motion Tab

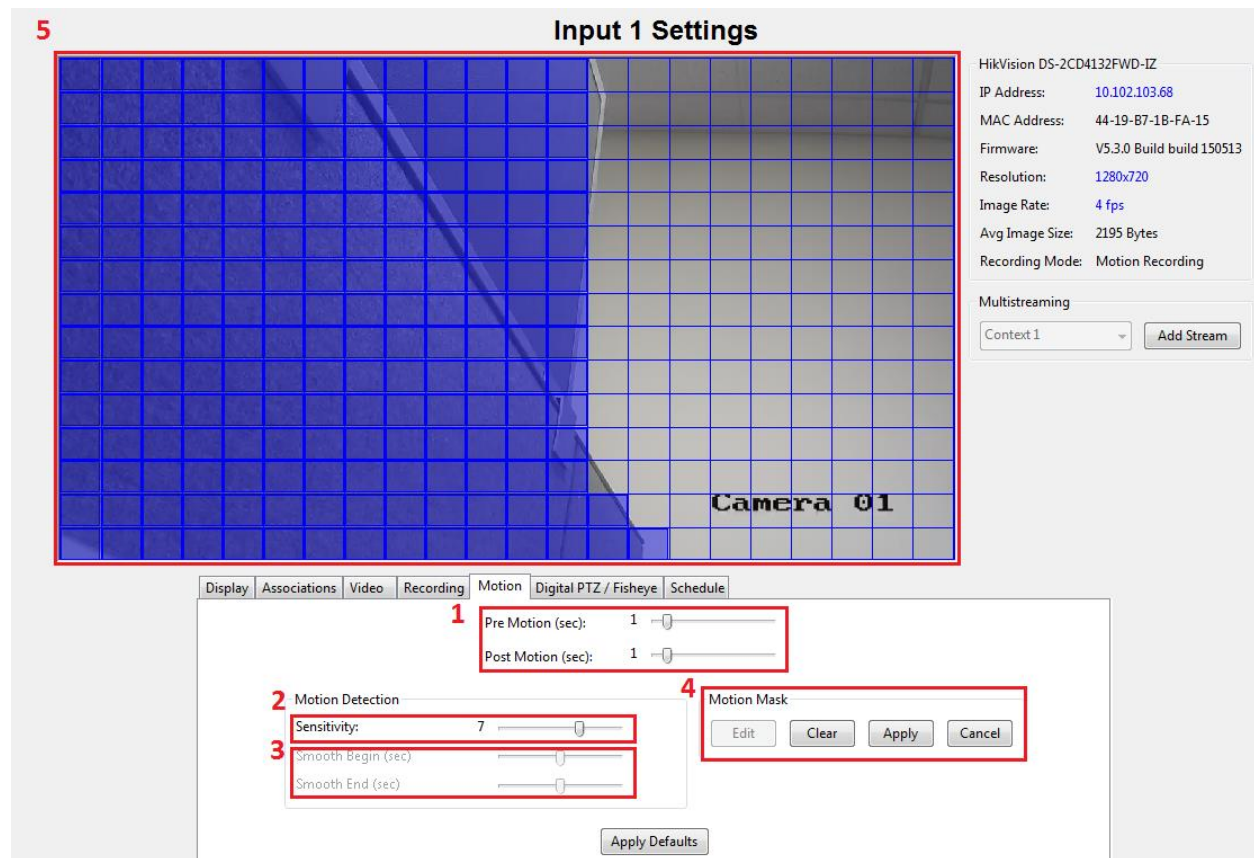


Figure 10. Motion Tab

In the “Camera Settings”, go to “Motion” tab.

1. The “Pre Motion slider” adjusts the number of seconds of video that are saved before the motion event occurs. “Post Motion” is the same as “Pre Motion”, except that the slider adjusts the number of seconds of video that are saved after the motion event has completed.
2. The “Sensitivity” slider allows you to configure how much motion must occur in the camera’s view to trigger motion recording. A low sensitivity setting can reduce false motion created by video noise or shadows.
3. “Smooth Begin” and “Smooth End” can be used to reduce the number of motion alarm events:
 - “Smooth Begin” requires a minimum number of seconds for motion to occur before a motion alarm event begins; this prevents very brief motion occurrences from triggering a motion alarm event.
 - “Smooth End” requires a minimum number of seconds without motion before a motion alarm event is completed; this combines a continuous series of short motion occurrences into a single motion alarm event.

Note: Available only on analog cameras

4. Click “Edit” Button to access the “Motion Mask Window”. A motion mask reduces unwanted recording by ignoring motion events that occur in certain areas of an image.
5. This window displays a blue motion grid over live video from the camera. Draw the mask directly in the grid. You can either individually click each rectangle to create the mask or window, or you can left-click while dragging the cursor across multiple rectangles. Click “Apply” to enable the motion mask or motion window. To delete a motion mask or window, click “Clear”, and click “Apply”.

3.2.3 Video Tab

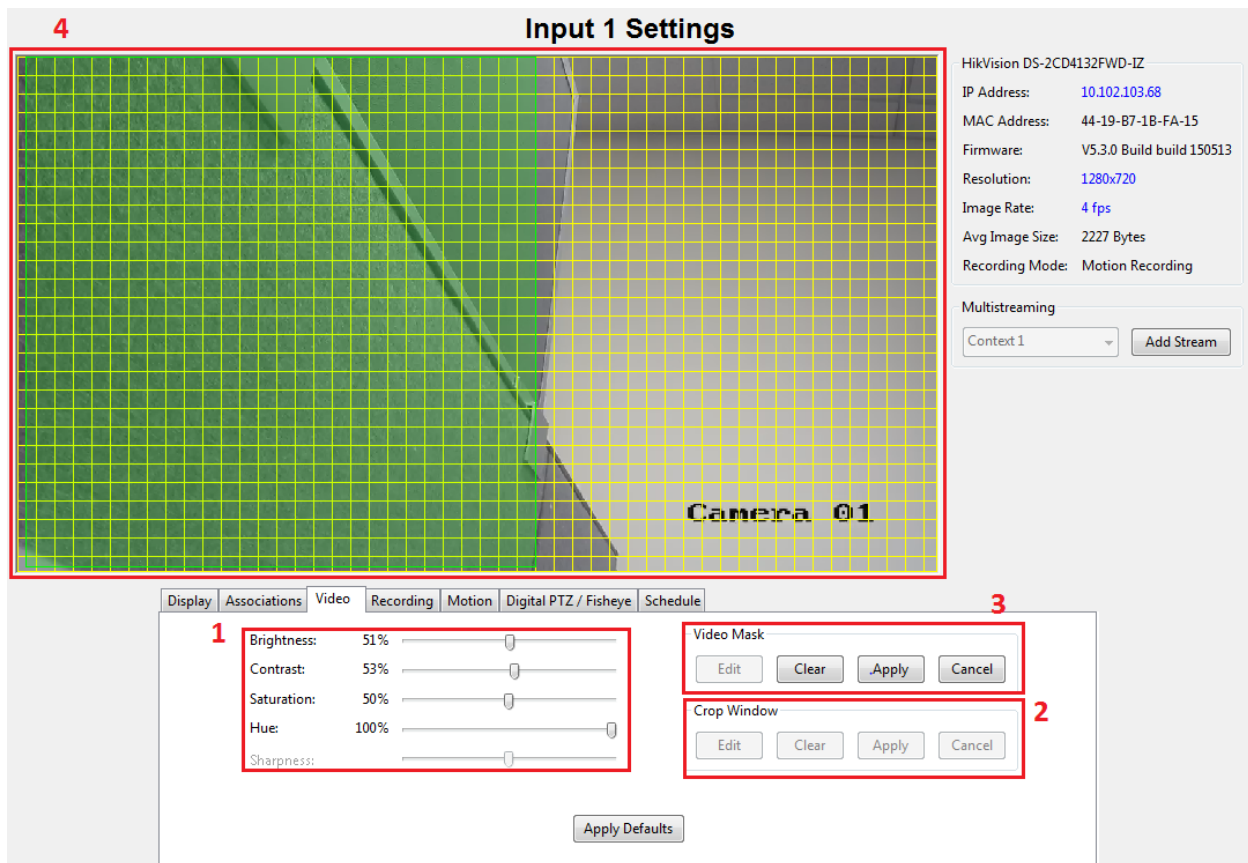


Figure 11. Video Tab

In the “Camera Settings”, go to “Video” tab.

1. The sliders allow you to adjust the image as it is displayed on your screen.
2. Crop Window, available on certain IP cameras, allows you to crop unimportant portions of a camera image in order to save disk space. Click Edit and then use the mouse cursor to draw a box on the video window. This box will be the portion of the camera’s view that will be recorded and displayed (the rest of the view will be ignored). Click “Apply” to activate the crop; click “Edit”, “Clear”, and “Apply” to deactivate the crop.
3. A Video Mask is used to block an area of a camera’s view so that it cannot be seen onscreen in live or recorded video. Click “Edit” access video mask.
4. This window displays a yellow grid over the live video from the camera. Draw the mask directly in the grid by left-clicking while dragging the cursor over the area of the grid you want to mask. A green rectangle indicates the masked area. Click “Apply”. The yellow grid disappears and green rectangle is replaced by a solid gray rectangle. This area is now masked from both live and recorded video. To clear the mask, click the “Clear” button.

3.3 PTZ

3.3.1 PTZ Configuration

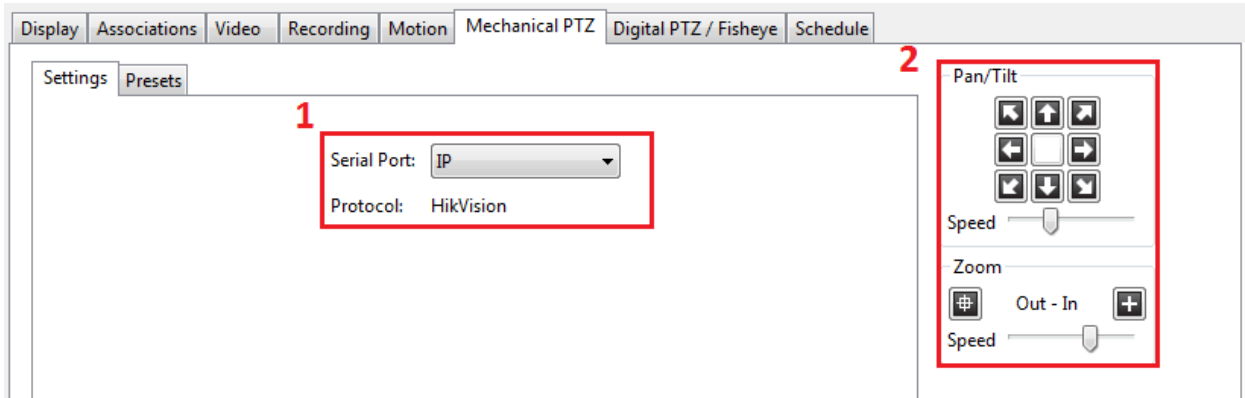


Figure 12. Mechanical PTZ Settings

In the “Camera Settings”, go to “Mechanical PTZ”.

There are 2 tabs in the “Mechanical PTZ”: “Settings” and “Presets”.

1. Select the camera’s COM port from the Serial Port drop-down list. This port is configured on the Serial Ports page.
2. PTZ control button.

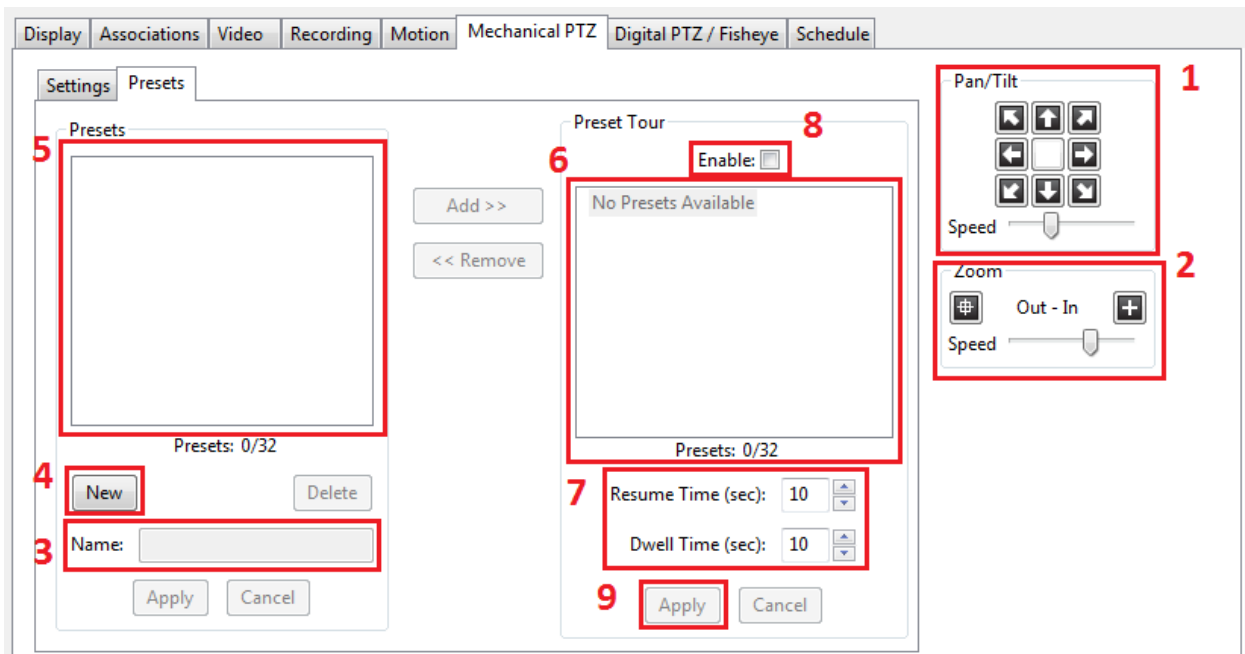



Figure 13. PTZ Presets

1. Use the Pan/Tilt buttons to point the camera at the desired preset location. If the camera moves too quickly or too slowly, move the Speed slider left (slower) or right (faster).
2. Adjust the Zoom, Focus, and Iris settings as desired (Focus and Iris are not available when configuring IP cameras).

3. Enter a name or number for the preset in the Name field.
4. Click New to enable the preset.
5. The preset is listed under Presets. The total number of presets configured and supported is shown under the list.
6. To create a Preset tour, select a preset from the Presets list and click “Add>>” to show it in the Preset Tour list. Repeat for each remaining preset that you want to include in the tour. You can re-order the presets in the Preset Tour list by clicking and dragging them to the desired place in the tour. To delete a preset from the tour, select it in the Preset Tour list and click “<<Remove”. A preset can be included multiple times in the tour.
7. Resume time is the number of seconds after the user stops manually controlling PTZ movement before configured PTZ movements (preset tours or presets triggered by event linking actions) will resume. Dwell time is the amount of time that the camera views each preset before moving to the next preset.
8. Select “Enable” to activate the tour.
9. Click “Apply” to complete the process.

3.3.2 PTZ Control

In the “Live View Page”, move the mouse cursor over the camera’s video window to display a green cross in the center of the window. When you move the cursor, arrows appear that show you which way you can pan and tilt. You can zoom in and out using your mouse wheel.

Alternatively, you can click the PTZ Control Button to display the PTZ Control panel: . This panel is available only when a PTZ-enabled camera is displayed in a video window.

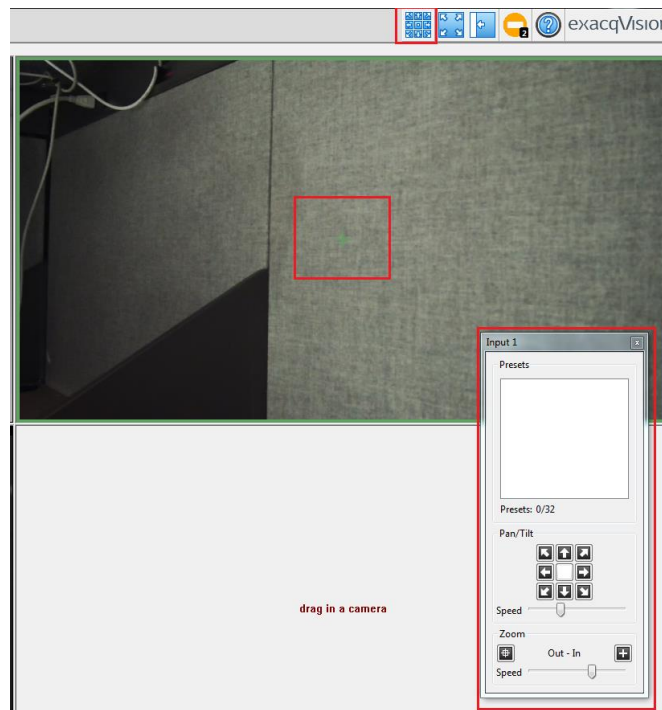


Figure 14. PZT Control

3.4 Record

3.4.1 Schedule

The Schedule page allows you to configure your recording schedule. By default, an exacqVision system is scheduled to record motion and events. There are four modes of video recording, which are color-coded on the Schedule page: motion (blue), free run (green), alarm (red), and off (white). Free run is continual recording. This type of recording uses a large amount of disk space.

Select “Schedule” from the left tree.

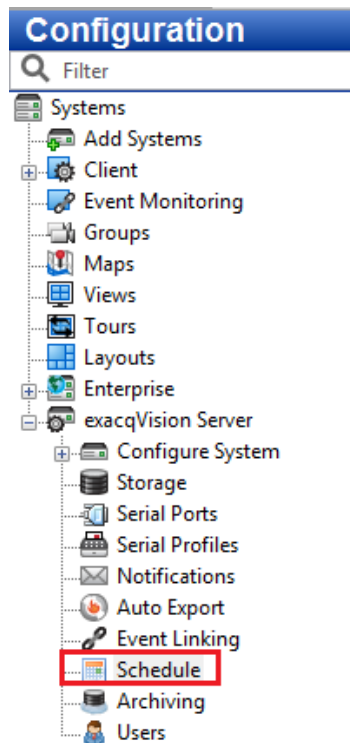


Figure 15. Select Schedule

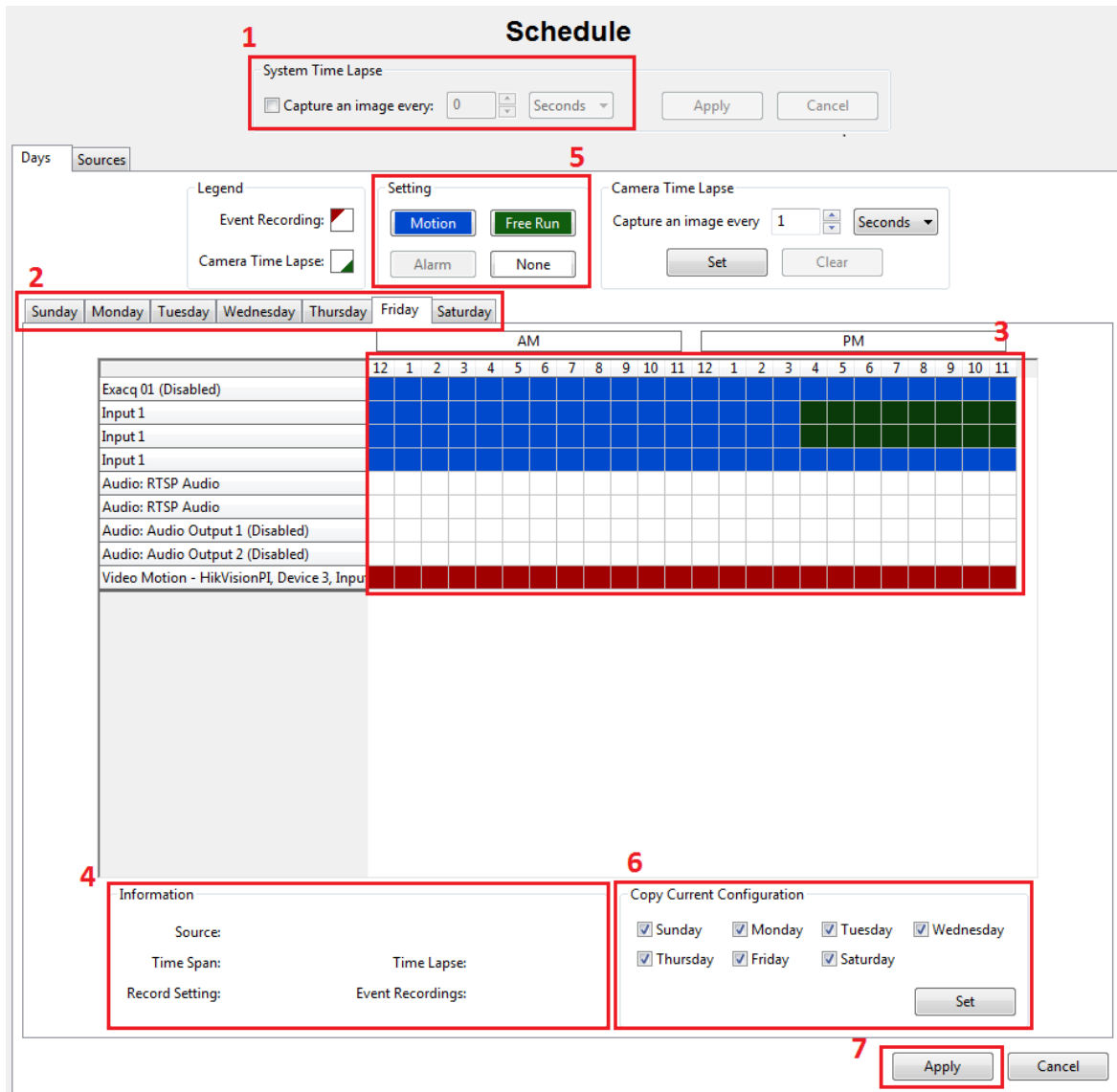


Figure 16. Schedule Days Tab

There are two scheduling tabs: Days and Sources.

On the Days tab, you can configure recording of all video, motion video, or just alarm video. To create a schedule, complete the following steps:

1. To configure time lapse recording, select the “Capture An Image Every” button, select a number, and then select Seconds, Minutes, or Hours from the drop-down list. Click “Apply”. Time lapse recording is not associated with the schedule configured in the grid on the Schedule page.
2. Select the appropriate tab for the day of the week.
3. In the grid, draw a rectangle that corresponds to the hours for each device that you want to schedule.
4. When you hover the cursor over a square, note the details displayed in the Information section.
5. Select the appropriate “Setting” button.
6. To copy the schedule from one day of the week to another, select the appropriate days of the week in the “Copy Current Configuration” section, and then click Set.
7. Click “Apply”.

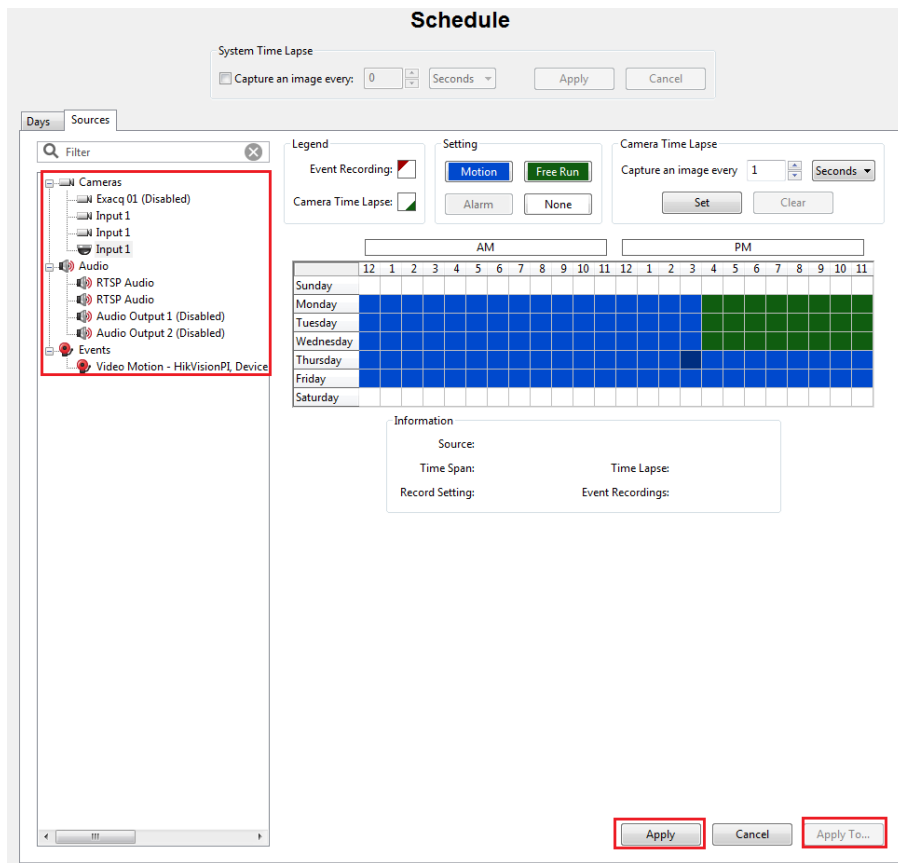


Figure 17. Schedule Sources Tab

On the Sources tab, you can configure a separate recording schedule for each device include the audio device.

Select the device from the tree and schedule it in the same way as described for the Days tab. You can apply the one device’s schedule to another device by clicking “Apply To...”.

3.4.2 Camera Recording

In the “Camera Settings”, go to “Recording”.

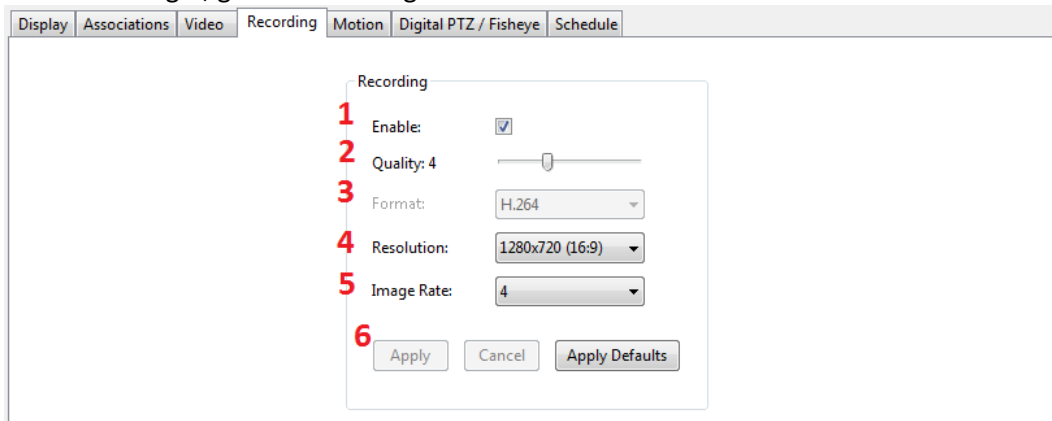


Figure 18. Recording

1. Select “Enable” to record video from the camera based on the configured schedule.
2. The Quality slider allows you to modify the image quality by increasing or decreasing its size. Decreasing image quality saves disk space by reducing the size of the video as it is recorded.
3. The Format setting allows you to select the compression format.
4. The resolution setting allows you to select the size of the video.
5. The Image Rate setting allows you to select the number of images recorded per second from the camera.
6. Click “Apply” to enable changes, or “Apply Defaults” to revert to the factory default settings.

3.5 Event

3.5.1 Event Linking

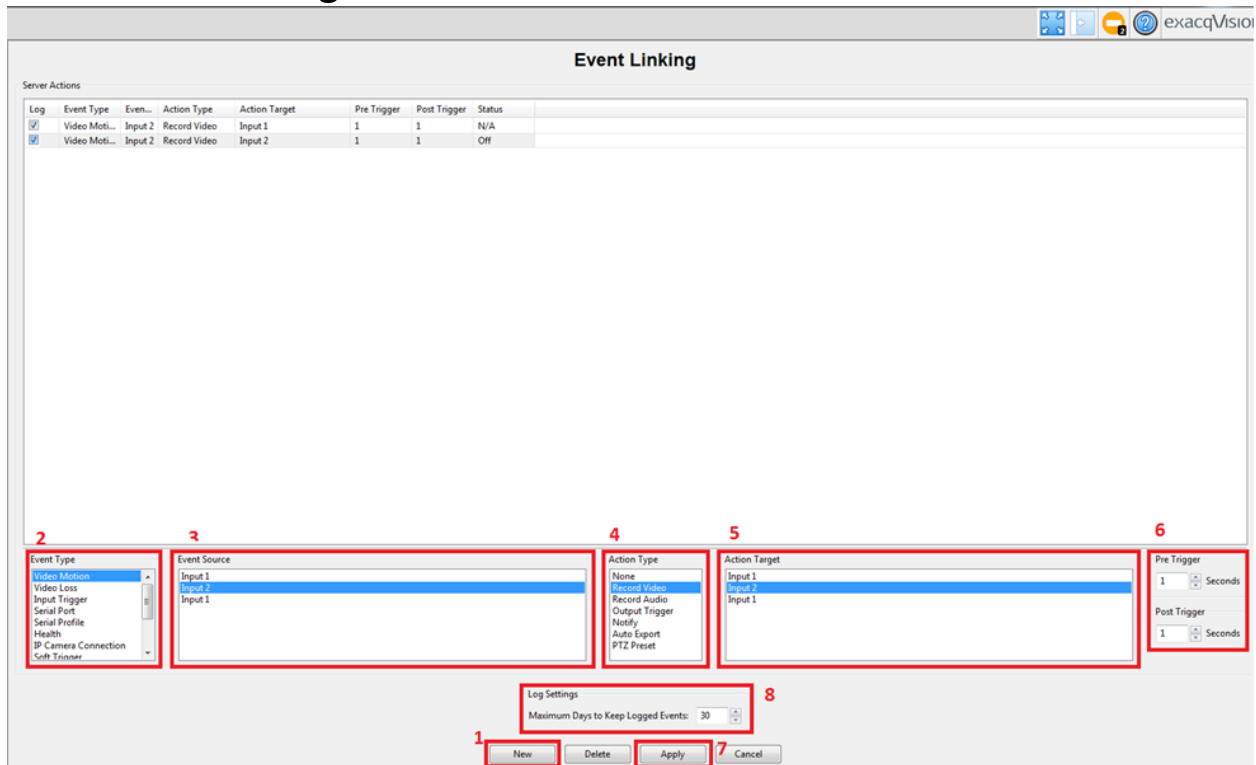


Figure 19. Event Linking

Select “Event Linking” from the left tree.

1. Click the New button to add the event to the Event List.
2. Select the Event Type.
3. Select the Event Source. (If Soft trigger, Time Trigger, or Source Group is selected, you can create or edit the event source using the buttons that appear immediately below the selection box.)
4. Select the Action Type.
5. Select the Action Target.
6. Pre Trigger allows you to store buffered data that was captured up to 100 seconds before the event occurred. This feature can be used only with certain Event Types. Very large Pre Trigger can negatively impact system performance.
- Post Trigger continues the Action Type for up to 100 seconds of video after the event concludes.
7. Click Apply to save all changes to the selected event.

8. The Log Settings field determines how long the event will be stored in the Event database, from zero to 365 days.

Event Type	Description	Event Source
Video Motion	Camera detects motion.	Any of the cameras connected to the exacqVision server.
Video Loss	Analog video signal is disconnected.	Any analog cameras connected to the exacqVision server.
Input Trigger	Discrete input on hybrid server or IP camera with alarm input is activated.	Any input trigger on the back of the server or IP camera connected to the server. The system defaults to a device and input number, but these can be customized on the Trigger Input page.
Serial Port	Key word entered on Serial Profile page is detected on a pre-selected port.	Any of the serial ports configured on the server. See the "Serial Ports" section of this manual for details.
Serial Profile	Key word is detected on any Serial Port with that profile.	Any of the serial profiles you have configured. You can select all key words and rules associated with a serial profile by selecting the profile name, or you can select an individual key word or rule configured in the profile.
Health	Detected problem involving the health of the exacqVision server hardware.	Includes failures or temperature problems on a device; problems with storage configuration; subscription expiration; video throttling alarms; alarms related to parameters monitored on the Hardware Monitoring tab on the System page; failed connection to shared network drive for archiving.
IP Camera Connection	Network can't connect to the IP Camera.	Any of the IP cameras connected to the exacqVision server.
Soft Trigger	Signal sent from the client to the server.	Select New to create a new soft trigger with a default name. Double-click to name it, or click Delete to remove it. You can also select any of the pre-configured soft triggers that are listed.
Time Trigger	Time of day or day of week reached.	Select New to open a window. Name the time trigger, select a start and end time, and select the days of the week when the selected action should occur. (For example, you could perform an Auto Export at 2:00 every morning.)
Analytics	Video analytics event detected.	A list of video analytics events (configured through the provider's interface).
Source Group	Multiple event types for advanced event linking.	Select New to open a window. You can then select any combination of event types and event sources and determine whether any or all of them must occur to trigger the selected action.

3.5.2 Trigger Inputs

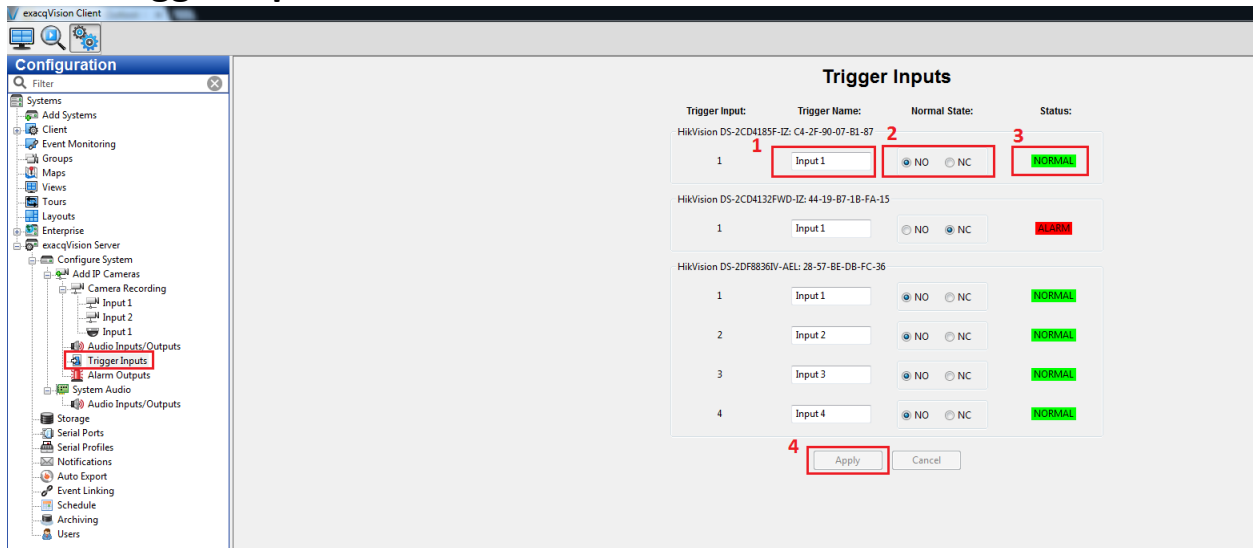


Figure 20. Trigger Inputs

Select Trigger Inputs from the left tree. These triggers can be configured to trigger video recording or a relay using the Event Linking page.

1. Enter a name for each trigger input in the Trigger Name column.
2. Configure the trigger input's Normal State as Normally Open (NO) or Normally Closed (NC).
3. The Status column indicates whether the trigger input is in its normal (green) state or in its alarm (red) state.
4. When you are finished configuring trigger inputs, click "Apply".

Note: You also need configure trigger input's Normal State of Hikvision devices through web.

3.6 Playback

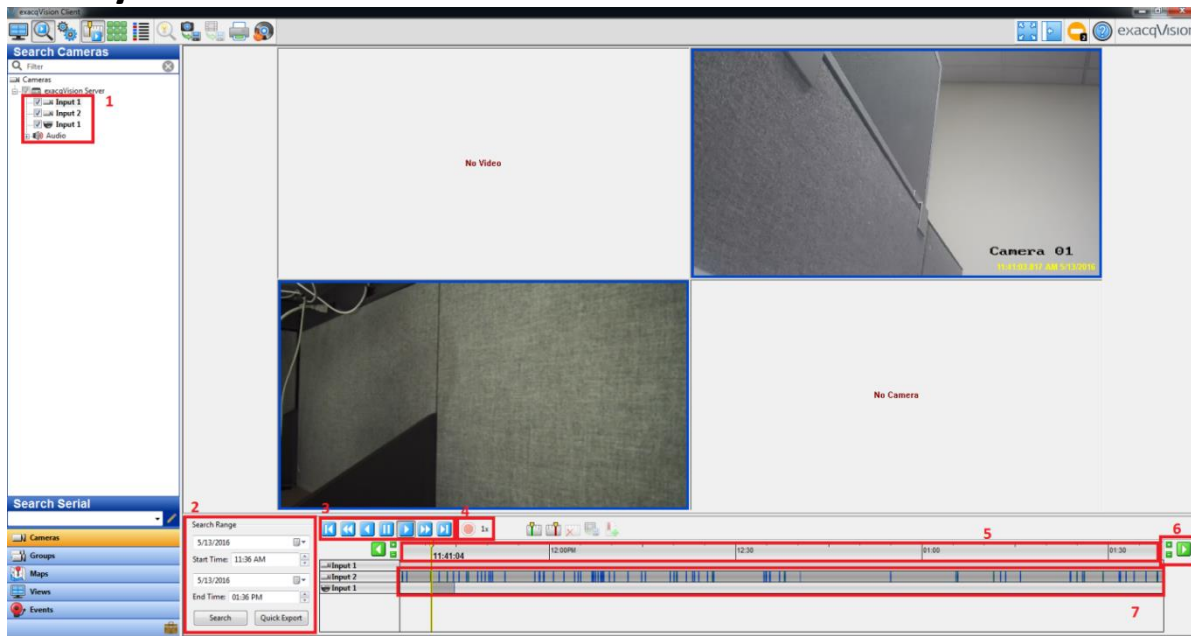



Figure 21. Playback



Click the  button, enter Search Page. The Search Page allows you to search for recorded video, events, and other data.

1. Select one or more sources from the Camera Selection Tree.
2. Select the date and time you want to search.
3. Video Playback Controls. Standard playback controls (left from right): step back, reverse 2x, reverse normal speed, pause, play normal speed, play 2x, step forward.
4. Stop Download Button. Click this button to stop downloading video. Note that the download status indicator disappears when you press this button.
5. Video Timeline. To expand or shrink the timeline, click the plus and minus buttons (or scroll your mouse wheel while the mouse cursor is on the timeline). To change the start or end time of the timeline, click the green left or right arrow buttons.
6. Shift and Zoom Buttons. Click the left or right arrows to shift the video timeline earlier or later. Click the Zoom in (plus) or Zoom out (minus) buttons to decrease or increase the range of the video timeline.
7. Recorded Video Bar. These color-coded bars represent video that has been recorded.

3.7 Audio



Figure 22. Audio

Click “Audio Inputs/Outputs” or expand “System Audio”, click “Audio Input/Output”.

1. Enter a name for the audio input channel.
2. Select Enabled to enable audio recording on the input.
3. Repeat this process until all audio inputs have been named, and then click the Apply button.
4. Click Listen to verify the audio input connected to a channel. This is sometimes helpful when assigning names to multiple audio inputs.
5. The Recording Mode column shows the recording mode selected for the audio input on the Schedule page.