FlexWATCH®

Network Video Recorder User Manual

For

FWR424 / FWR228

Seyeon Technology Co., Ltd

www.seyeon.co.kr

www.flexwatch.com

Safty Warnings and Cautions

Before connecting and operating your device, please be advised of the following tips:

- Make sure to unplug the power cord while installing the unit
- Do not connect several devices to one power adaptor as adaptor overload may cause overheating, electric shock or fire hazard.
- The interior of the unit should have high-voltage areas so do not open the top cover, disassemble, repair or modify.
- Ensure unit is installed in a well-ventilated, dust-free environment and NOT in high-humidity environment
- Input voltage for operation of the unit shall be within the specified voltage range (100 ~ 240V AC) ±10% Maximum, do not use the outlet for connecting the high power consumption products such as the heater, air conditioning etc.
- In case of data storage device (HDD) reaches to the end of its useful life, the recording or playback may not be available so the periodic inspection is highly recommended. We are not responsible for the damaged data due to user's carelessness.
- The default ID and Password is "root"/"root" (case sensitive). To prevent identity theft damage, highly recommend to change your password periodically. User has responsibility for security and other problems caused by careless password management.
- The installation environment needs to be a well-ventilated area and away from direct sunlight or hot area.
- Please avoid installation of unit where close to strong magnetic force, radio wave or wireless device such as Radio / TV.
- Do not place heavy objects on the unit and be careful no foreign substances in the unit.
- A strong shock or vibration may cause damage of unit
- If a strange sound or smell exists, unplug the unit immediately and contact your dealer or manufacturer
- Do not use the unit while the cover is open and Needs a proper air circulation system in a system operation room. Otherwise the unit might be damaged due to internal and/or elements of unit temperature rise.
- Make sure that connect the power cord to a grounded wall outlet. Otherwise it may cause an electric shock or injury.
- Inside of unit there should have sharp edges. Always be careful to avoid any injury when top cover has been opened for installation or replacement of HDDs.

Copyright Information

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Note that with respect solely to the GPL Software, no warranty is provided. We do not offer direct support for the distribution. This offer is valid for up to three years from the date of original purchase of the Product.

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1. Key Features

FWR424/FWR228 NVR is an integrated Video Surveillance Device based on the Embedded Linux OS, and it has the following major features.

- Connect up to 32 channels of IP equipment, including IP cameras and video server/encoder products from various manufacturers, for real-time video and audio surveillance, storage and playback, backup, and re-transmission of video and audio.
- Supports a various manufactureres cameras, including:

  3S, AGNI, AVTech, Acti, Appro, Arecont, Axis, CNB, ICanTek, IQInVision, K-IPCAM, Mobotix, Panasonic, Proprietary, Samsung Electronics, Hanwha/Samsung Techwin, TpLink, Truen, Vivotek

  * For more information about supported cameras, please contact your supplier or our technical support team.
- Supports HDMI and VGA simultaneous output and supports Full HD (1920x1080) monitor.
- Supports up to 10 megapixel IP cameras.
- Supports MJPEG, MPEG4 and H.264 compression type.
- Each channel supports dual stream and triple streams.
- Supports Alarm In/Out.

  * The number of Alarm In/Out ports supported depends on the NVR model number.
- Supports Bi-Directional Audio (2-Way Audio).
- Supports various PTZ protocols.
- Supports various recording methods such as Continues, Motion Detection, Various Events, and Schedule.
- IP assign and basic setting can be done without client PC, when connecting and using FlexWATCH® IP Camera and Video Server (Encoder) models.
- Supports two Network ports, WAN and LAN, for building secure private IP network and bandwidth management.
- Supports NAT function, allowing direct connection to each camera connected via NVR.
- No special monitoring or management programs are required. It can be monitored and managed with the built-in Internet Explorer in Microsoft Windows®.
- For more information on the features and operation of this unit, refer to the user manual on the CD provided with this product and the latest information provided on the FlexWATCH® website (www.flexwatch.co.kr).

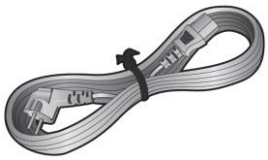
2. Product Description

2.1 Package Contents

Please unwrap the product, and place the product on a flat place or in the place to be installed.

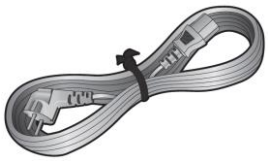
Please check the following contents are included in addition to the main unit

2.1.1 FWR424 Model

	FWR424 Network Video Recorder x 1EA
	Screw for Hard disk fixing x (more than) 16PCS
	Mouse x 1EA
	Power Cable x 1EA

2.1.2 FWR228 Model

	FWR228 Network Video Recorder x 1EA

	Screw for Hard disk fixing x (more than) 32PCS
	Mouse x 1EA
	Power Cable x 1EA

2.2 Part Names and Functions (Front)

2.2.1 FWR424 Model

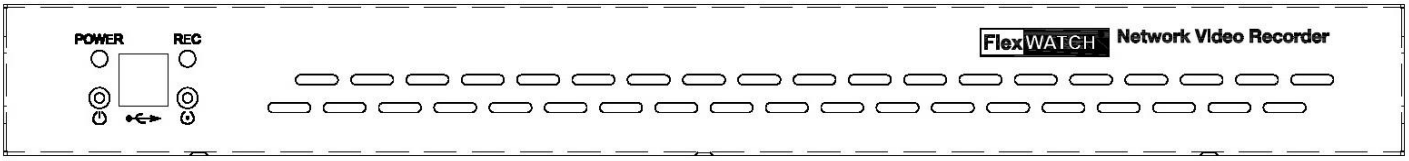


Image	Name	Description
	POWER LED	The LED lights up when the NVR is powered up.
	REC LED	The LED lights up when data is read from or written to the hard disk.
	Power Switch	Power ON / OFF switch of NVR. Press the switch once to power the NVR. To turn the power off, press and hold the button for more than 6 seconds.
	Factory Default Switch	Factory reset switch. Press and hold this button for more than 6 seconds to start the Factory Default process. * Be careful, all settings including network settings will be returned to the factory default settings.
	USB Ports (x2)	It is two USB ports used to connect USB flash drive for backup or input devices such as keyboard, mouse.
	Ventilation hole	Vent holes for venting heat inside the NVR. * Be careful that there are no obstacles around the installed NVR for smooth air circulation.

2.2.2 FWR228 Model

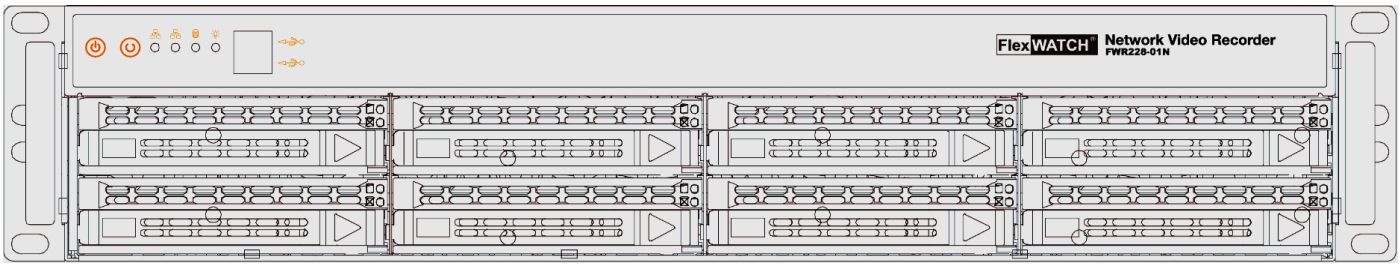
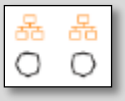
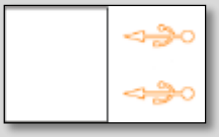
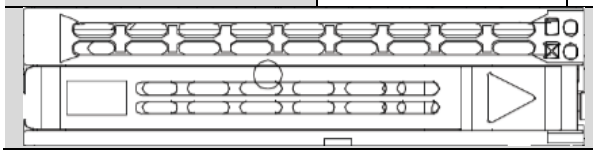


Image	Name	Description
	Power Switch	Power ON / OFF switch of NVR. Press the switch once to power the NVR. To turn the power off, press and hold the button for more than 6 seconds.
	Factory Default Switch	Factory reset switch. Press and hold this button for more than 6 seconds to start the Factory Default process. * Be careful, all settings including network settings will be returned to the factory default settings.
	**Network Status LED**	The left side LED shows the status of the WAN port, and the right side LED shows the status of the LAN port.
	REC LED	The LED lights up when data is read from or written to the hard disk.
	POWER LED	The LED lights up when the NVR is powered up.
	**USB Ports (x2)**	2 It is two USB ports used to connect USB flash drive for backup or input devices such as keyboard, mouse.
	**HDD Drive Bay (x8)**	It is a hot swappable hard disk bay that can hold a total of 8 hard disks.

2.3 Part Names and Functions (Rear)

2.3.1 FWR424 Model

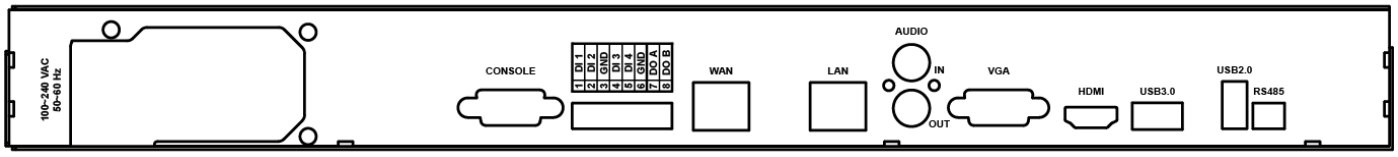
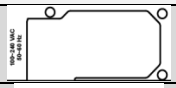
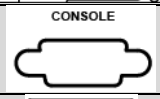
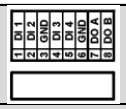
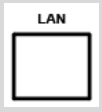
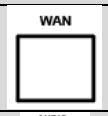
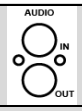
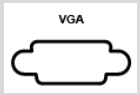


Image	Name	Description
	**Power**	Power input port for power cable connection. Available voltage: 100 ~ 240VDC / Available power frequency: 50 ~ 60Hz
	**Console (RS232)**	RS232 console port. It is a port for installing the program when the device is manufactured.
	**DI / DO**	Alarm In / Out port consists of 4 DI (Digital Input) and 1 DO (Digital Out).
	**WAN**	It is a port for external network connection of NVR. IP cameras and video servers (Encoder) in the external network also can be registered in the NVR via the WAN port. It is recommended to use LAN port for IP camera and video server (Encoder) connection for security enhancement and proper distribution of bandwidth.
	**LAN**	It is a private network port for connection of IP camera and video server.
	**Audio In / Out**	Audio input / output port of RCA standard.
	**VGA Out**	-Sub type VGA Video Out port, which supports 1080P Full-HD resolution output device (monitor, etc.). If the display device (monitor, etc.) does not support Full-HD because the output resolution of the NVR is fixed to Full HD (1080P), the image will be output but a part of the screen may not be displayed.
	HDMI	HDMI Video Out port supports 1080P Full-HD resolution output device (monitor, etc.). Since the output resolution of the NVR is fixed to Full HD (1080P), if the display device (monitor, etc.) does not support Full-HD, no image is output.
	USB 3.0	The USB 3.0 port supports fast data transfer rates and is ideal for data backup.
	USB 2.0	It is a USB ver.2.0 port for connection of input devices such as keyboard, mouse, or USB flash drive for data backup.
	RS485	It is an RS485 port used to connect with PTZ or external device.

2.3.2 FWR228 Model

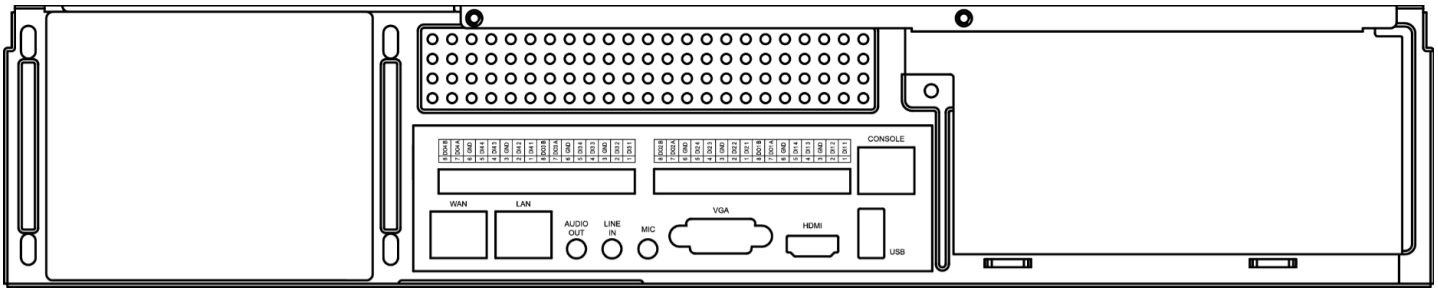
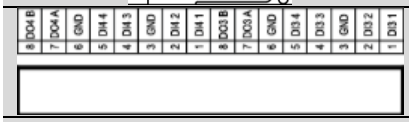
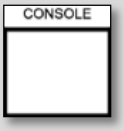
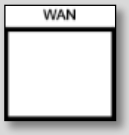
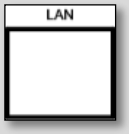
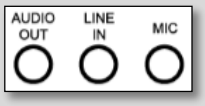
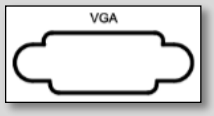
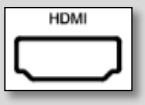
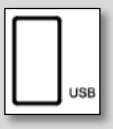


Image	Name	Description
	Power	Power input port for power cable connection. Available voltage: 100 ~ 240VDC / Available power frequency: 50 ~ 60Hz
	DI / DO (Alarm)	Alarm In / Out port consists of 16 DI (Digital Input) and 4 DO (Digital Out).
	RS232	RS232 console port. It is a port for installing the program when the device is manufactured.
	WAN Port	It is a port for external network connection of NVR. IP cameras and video servers (Encoder) in the external network also can be registered in the NVR via the WAN port. It is recommended to use LAN port for IP camera and video server (Encoder) connection for security enhancement and proper distribution of bandwidth.
	LAN Port	It is a private network port for connection of IP camera and video server.
	Audio In / Out	Audio input / output port of RCA standard.
	VGA Out	D-Sub type VGA Video Out port, which supports 1080P Full-HD resolution output device (monitor, etc.). If the display device (monitor, etc.) does not support Full-HD because the output resolution of the NVR is fixed to Full HD (1080P), the image will be output but a part of the screen may not be displayed.
	HDMI Out	HDMI Video Out port supports 1080P Full-HD resolution output device (monitor, etc.). Since the output resolution of the NVR is fixed to Full HD (1080P), if the display device (monitor, etc.) does not support Full-HD, no image is output.
	USB Port	It is a USB port for connection of input devices such as keyboard, mouse, or USB flash drive for data backup. The USB 3.0 port supports fast data transfer rates and is ideal for data backup.

3. Installation

3.1 Hard Disk Drive (HDD) installation

The recording data index is created on the hard disk connected to SATA port 1 of the NVR. Therefore, when installing two or more hard disks, HDD must be installed from SATA Port #1. Changing the port connection of the active HDDs may result in data loss. If it is necessary to change the SATA port connected to the HDD inevitably, please make sure to format the hard disk after changing it.

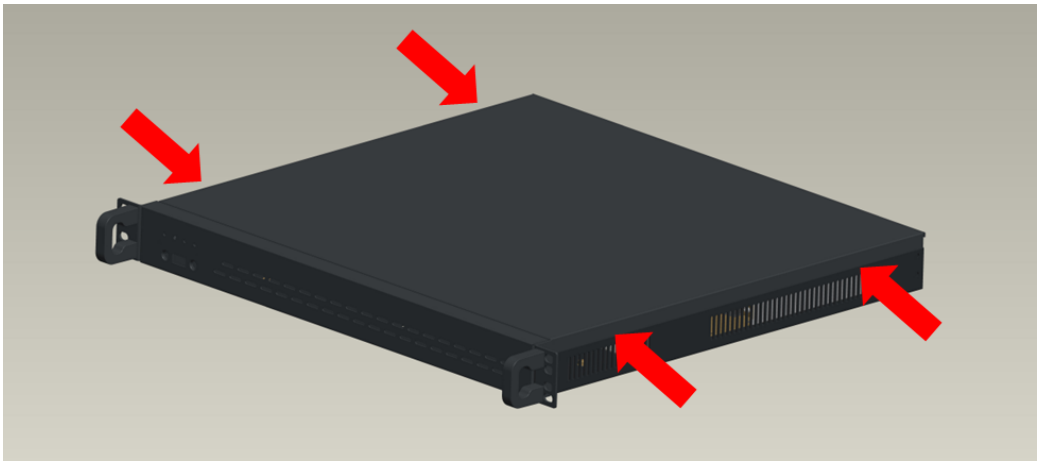
To minimize the risk of data loss due to a damaged HDD or HDD malfunction, back up important data as often as possible. Please backup important data before HDD formatting.

Make sure to unplug the power cord from the wall outlet before HDD installation to prevent possible product damage or injuries such as electric shocks.

3.1.1 FWR424 Model

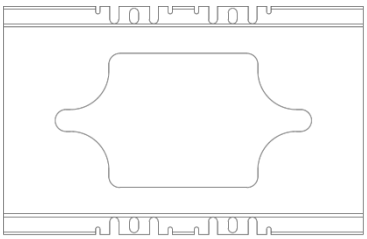
To install the hard disk, follow the instructions below.

① Unscrew the four screws as shown below and remove the top cover.



(Locations of top cover fixing screw.)

② Mount a HDD in the HDD bracket and tightening it using the screws provided.



< HDD Installation Bracket>

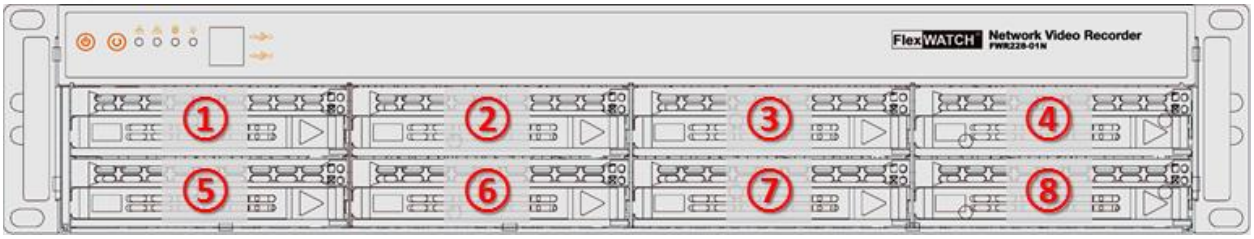
③ Attach the HDD onto HDD installation bracket and assemble to the NVR using screws provided.

④ Connect SATA Cable and Power Cable to the HDDs.

⑤ Assemble the top cover with screws.

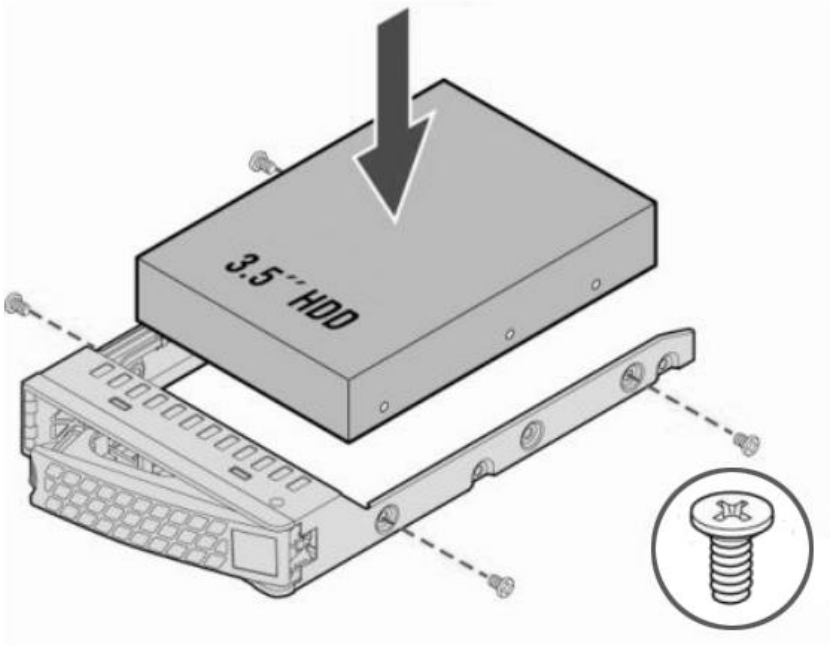
3.1.2 FWR228 Model

HDD must be installed in the following order for using RAID feature.



① Press the release button on the front of the hard disk carrier, and then pull the handle to remove it from the NVR.

② Fix the hard disk to the hard disk carrier using the supplied screws as shown below.



③ Insert the carrier with the hard disk into the hard disk slot on the front of the NVR and push the carrier until it touches the backplane.

④ Push the handle of the carrier to fix it.

3.2 Connect to Monitor

Full HD (1080P) Monitor must be used.
If the monitor does not support Full-HD (1080P), screen may not display properly.

Connects monitor to the VGA or HDMI input ports according to the connection method of the monitor.

3.3 Connect Input Devices

USB Mouse must be connected to the NVR for system operating. USB Keyboard also can be used for ease of use.

USB Keyboard and Mouse can be connected any of USB port on NVR.
However, USB 3.0 port is recommended to use for a backup purpose.

Virtual keyboard will be displayed on the screen as shown below if keyboard is not connected.

3.4 Connect to Network

NVR has built-in WAN and LAN network ports.

WAN port is used for remote access.
Connect to an internet available network or a network where client PC belongs to.

WAN port may not been used if remote access is not necessary.

WAN port also can be used for IP camera and Encoder connections.
However, we recommend using LAN port for the connections,
for enhanced security and bandwidth management.

LAN port is used to build a private network for the connections of IP camera and video servers.
Network Switch is required to connect IP Cameras and/or Video Servers through this port.

4. Starting NVR

It describes the most basic ways to start setting the NVR system.

4.1 Powering On

① Connect the Power Cable on the rear panel of the NVR.

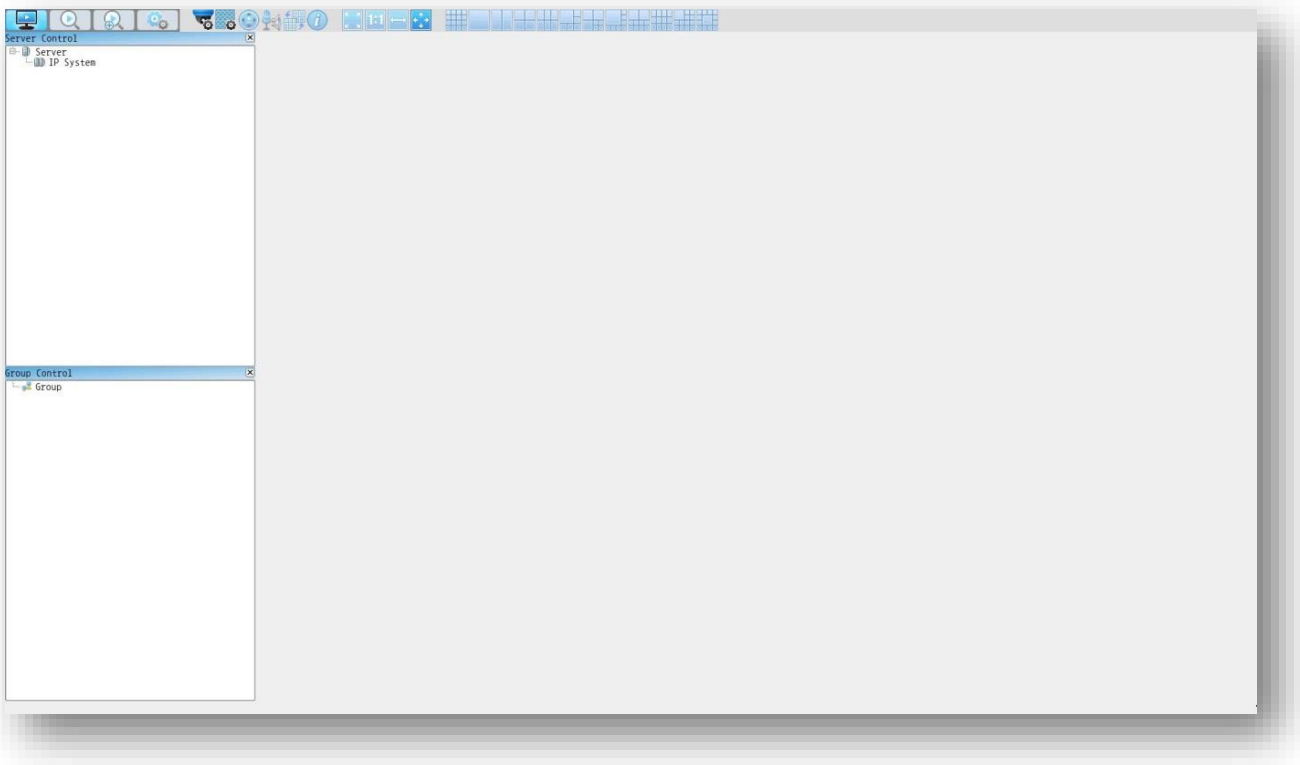
② Turn on the Power switch on the rear panel of the NVR.

③ Press power button one time on front panel of the NVR.

④ NVR will start boot with power LED and beeps.

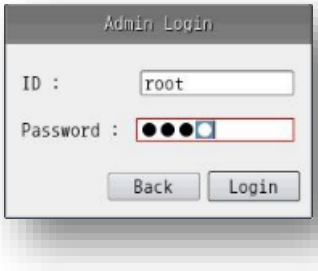
< NVR Booting Screen >

⑤ When NVR has finished booting, Live View screen will be displayed as shown below.



4.2 Setting Date/Time

Applying the correct date and time is strongly recommended to avoid any confusion or errors caused by time difference between the NVR system, IP device and client (remote access) PC.

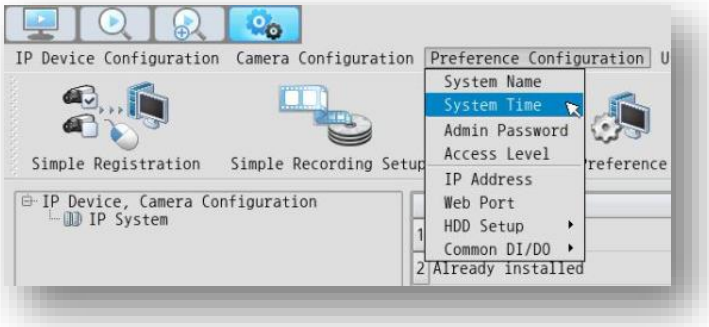


① Click **Congifuration** icon ( ) at upper right corner on local screen.

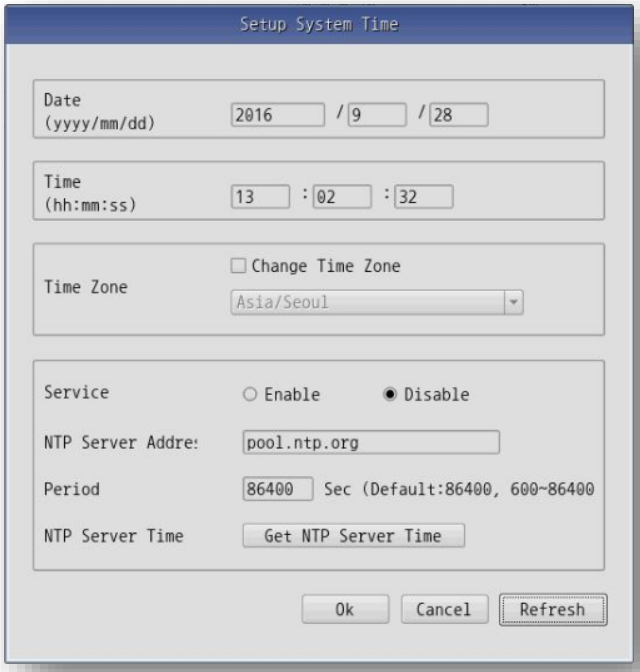
② Login with **ID** and **Password** when login window appears.

Virtual keyboard will appear on screen if a USB keyboard is not attached as shown below. Otherwise, use USB keyboard to input login ID and Password.

Default ID and Password is "root" for both. (Case sensitive)



③ Go to
Preference Configuration -> **System Time**
on the menu bar.



④ Enter the current **Date** and **Time** when Setup System time window appears.

⑤ If necessary, click **Change Time Zone** to select **Time Zone**.
* System Reboot is required.

For more detail about NTP Service,
please refer to *[Pg.60 8.4.2 System Time*].

⑥ **Click OK to apply the changes and close the window.**

After camera registration, the time will be displayed at the top left corder of each channel on live screen as shown on the right.

4.3 Setting of NVR IP

WAN IP setting is not necessary if remote access is not required.
In this case, you may skip this manual section [3.4 Setting of NVR IP].

There are two ways to set IP address to the NVR as follows:

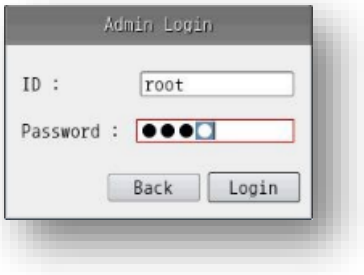
- Remote configuration through a Client PC.
- Configuration through the local monitor.

To remote configure through a Client PC, installation of ***IP Installer*** software (FlexWATCH® dedicated software) is required. Please refer to IP Installer user manual linked below.

Korean: http://www.flexwatch.co.kr/board/download.asp?filepath=EasyGuide&filename=IP Installer Easy Guide.pdf
English: http://www.flexwatch.com/board/download.asp?filepath=EasyGuide&filename=IP Installer Easy Guide ENG.pdf

IP Installer software can be found in the enclosed CD or software download page at FlexWATCH® Web Site (http://www.FlexWATCH.com/support/download/software.asp).

To configure thorugh the local monitor, please follow the steps below:

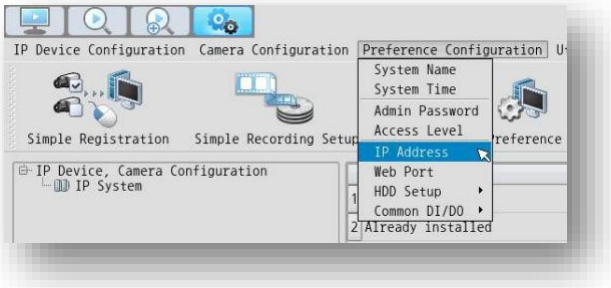


⑦ Click **Congifuration** icon ( ) at upper right corner on local screen.

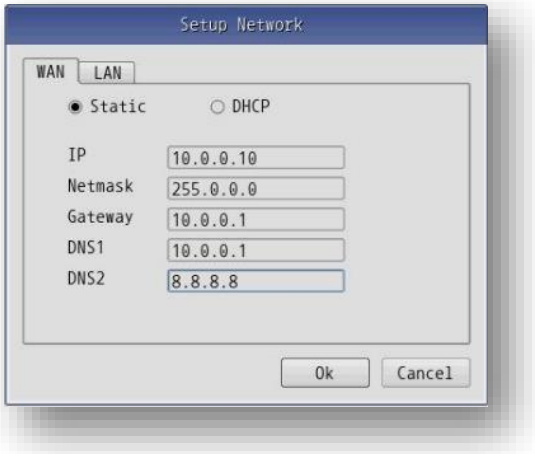
⑧ Login with **ID** and **Password** when login window appears.

Virtual keyboard will appear on screen if a USB keyboard is not attached as shown below.
Otherwise, use USB keyboard to input login ID and Password.

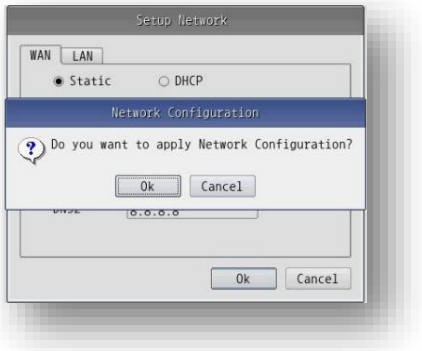
Default ID and Password is "root" for both. (Case sensitive)



① Go to
Preference Configuration -> **IP Address**
on the menu bar.

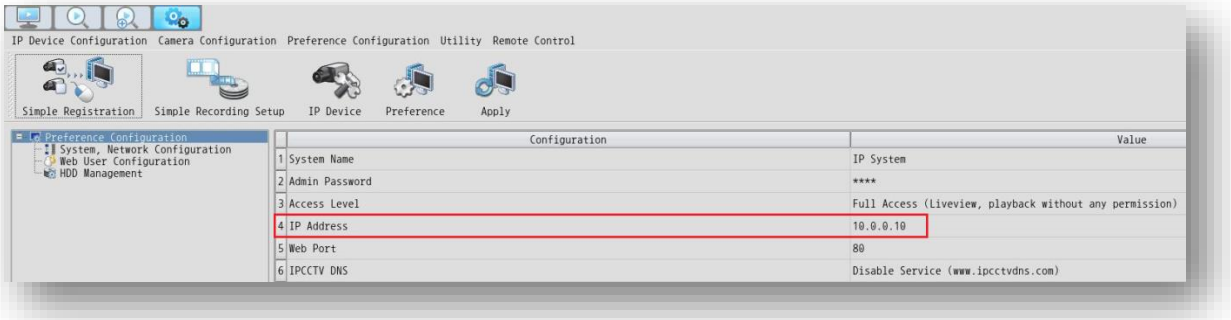


② Enter **IP Information** for the NVR System,
And then Click **OK**.



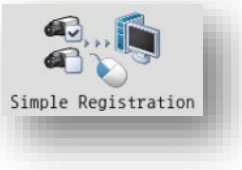
③ Click **OK** to confirm.

④ Changed IP address can be found on following page as shown below.

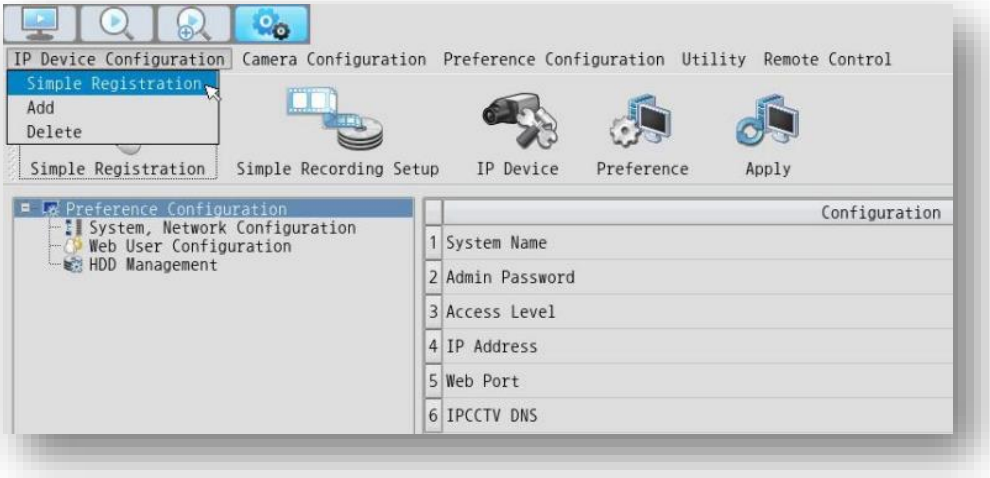


4.4 Registering IP Devices

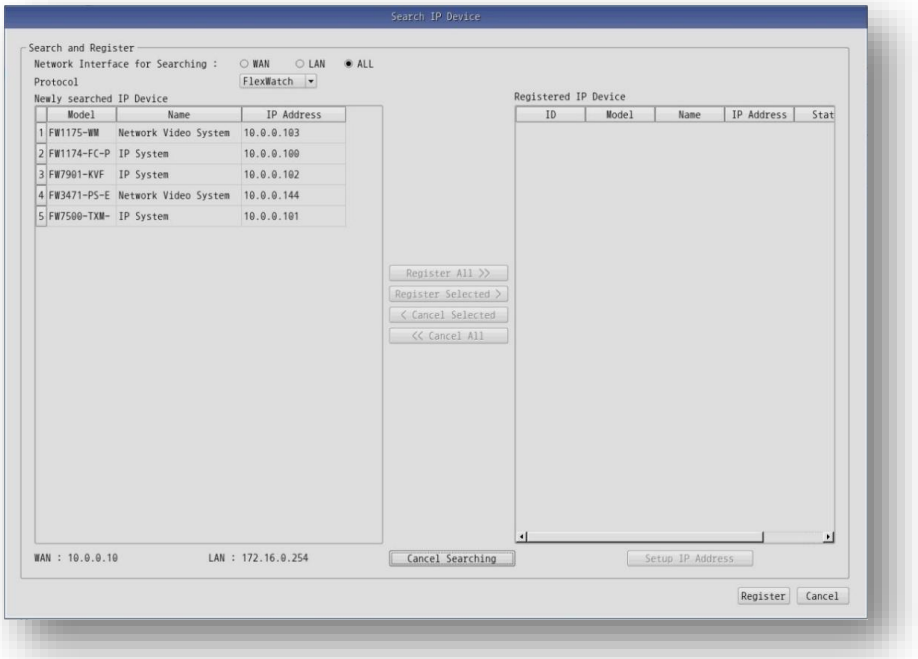
IP devices such as cameras and video servers can be registered through WAN and LAN port.
However, we recommend the use of LAN port for enhanced security and bandwidth management.



Registration of IP devices is available through the ***Search IP-device*** window which can be run by clicking *Simple Registration* icon or go thourgh the menu bar.

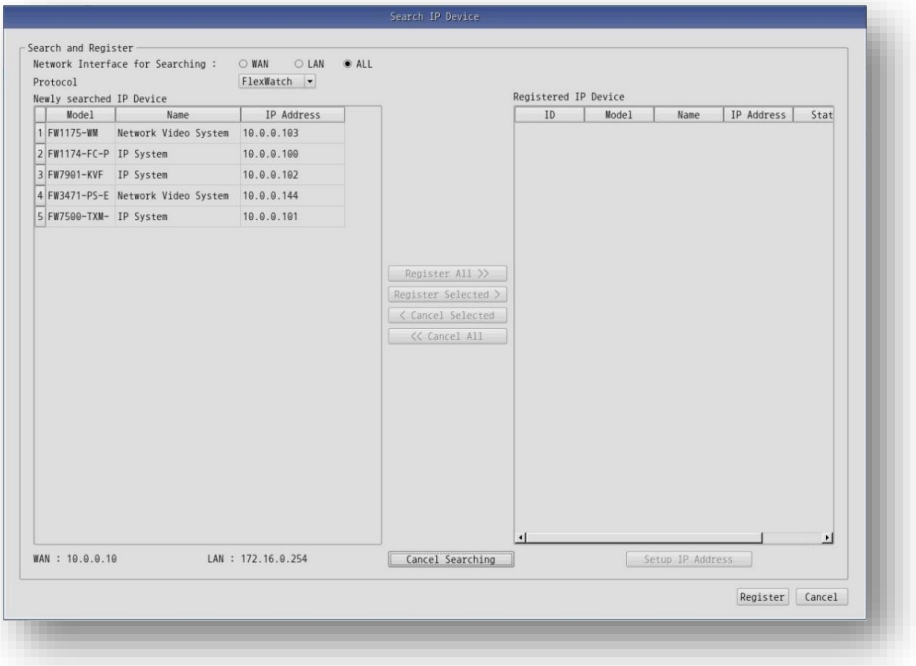


When *Simple Registration* runs, *Search IP-device* window appears and the NVR system start IP device search within the connected network. Then, discovered devices are listed in the left side of the window as shown below.



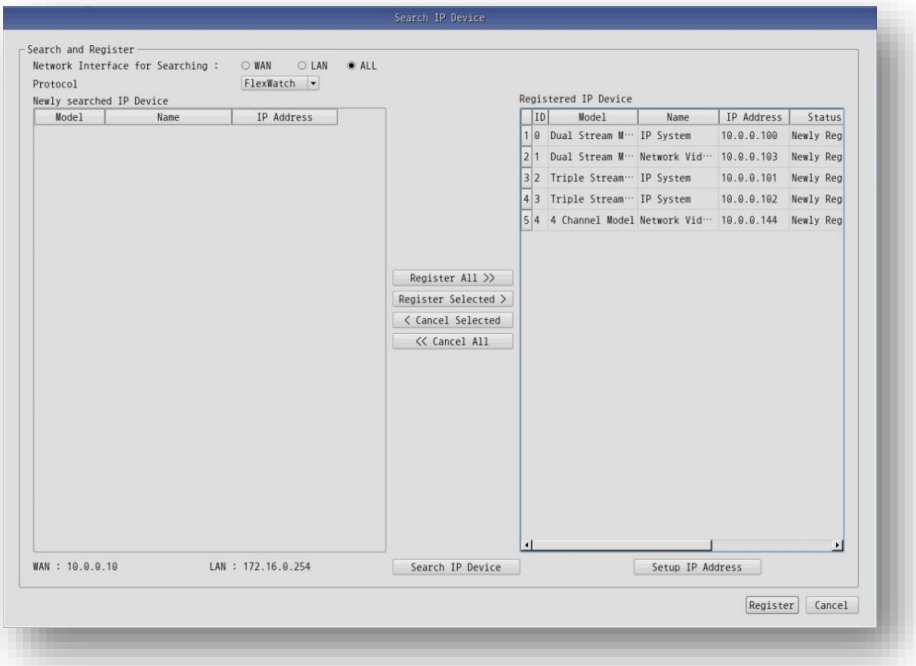
To register IP Devices in the NVR system, please follow the steps below:

① Run **Simple Registration**.



For ONVIF device registration, Select ONVIF protocol and Search IP Device again.

② **Select** and **move** desired IP devices for registration to the right list in the left with *Register All* or *Register Selected* button when IP device search is completed.

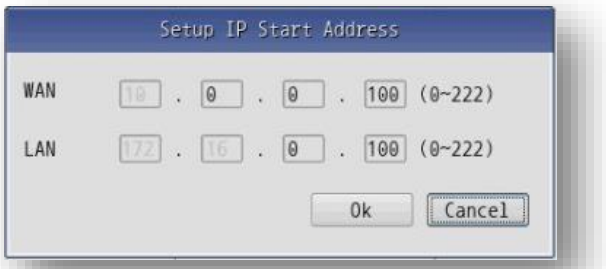


If a keyboard is connected, multiple devices can be selected by clicking mouse while holding down the ctrl or shift key.

③ If IP setup for the IP devices is not necessary, go to Step ⑦.

④ **Select** desired IP devices to assign IP address in the list on the right, and then click ***IP Start Address*** at bottom of the list.

⑤ When the following window appears,
Enter desired **Starting IP address** in the field of WAN/LAN that IP deices found.



Note:
Start with the IP address entered is the number of the last octet increases by 1 and is assigned to each camera.

Example) If starting address is "192.168.1.100",
*Camera 1 = 192.168.1.10**0***
*Camera 2 = 192.168.1.10**1***
*Camera 3 = 192.168.1.10**2***

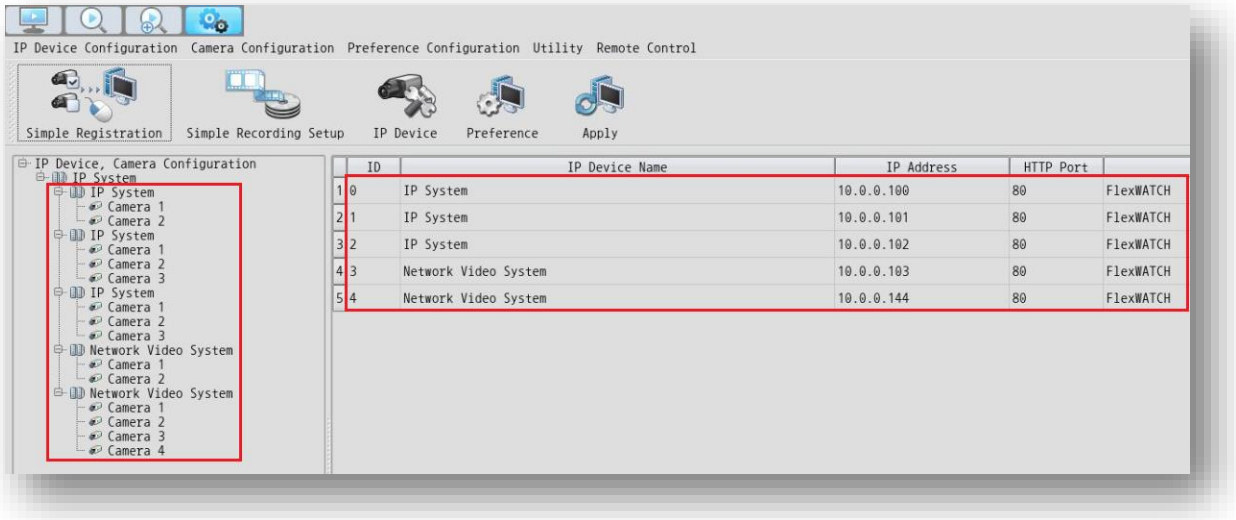
⑥ Click **OK** to save.

⑦ Click **Register** at bottom right.

⑧ Click **Apply** (

) to apply all the changes to the NVR system.

⑨ When the registration is completed successfully, the registered cameras can be found as shown below.



5. Configuration of NVR System

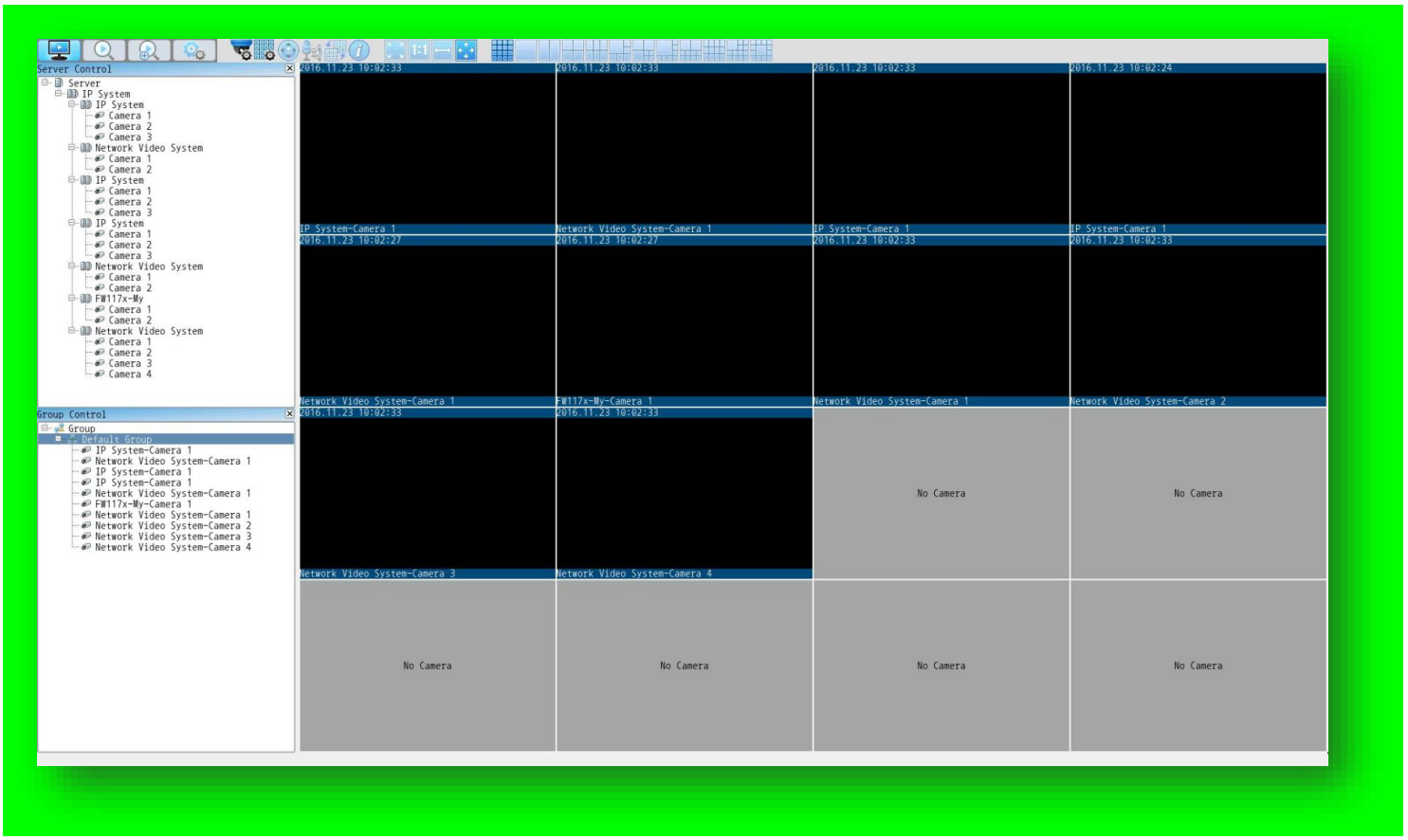
The system consists of 4 Main Pages as below.

Icon	Name	Description
	Live Viewer	Display live video streams from the registered IP cameras and encoders. * For more information, please refer to *[Pg.20, 5. Live Viewer].*
	Player A	Using calendar and timeline graph, recorded data can be searched, playback and backup quickly. * For more information, please refer to *[Pg.28, 6. Player A (Time Search)].*
	Player B	Based on user defined date/time and events, recorded data can be searched, playback and backup. * For more information, please refer to *[Pg.36, 7. Player B(Condition Search)].*
	Configuration	Provides all settings of the NVR system. * For more information, please refer to *[Pg.45, 8. Configuration].*

6. Live Viewer

The NVR system goes into the Live Viewer Page automatically when system booting is finished.

In Live Viewer Page, real-time video of the registered IP devices such as cameras and encoders can be monitored.
Audio is also supported depending on connected IP devices.

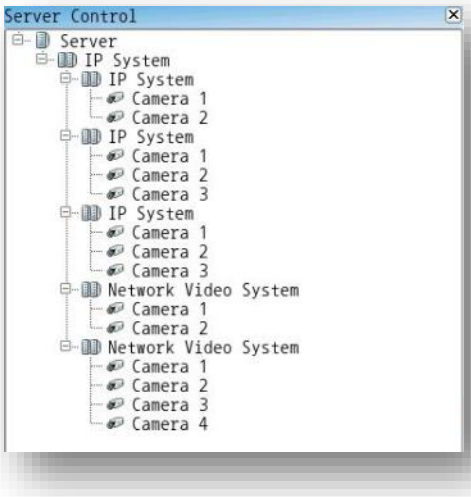


6.1 Live View Tool Bar

Live Tool Bar is located at the top of the Live View Mode screen and it provides the following features.

Icon	Menu	Description
	Server Control Bar	Show/Hide Server Control Bar.
	Group Control Bar	Show/Hide Group Control Bar
	PTZ Control Bar	Show/Hide PTZ Control Bar
	Audio Control Bar	Show/Hide Audio Control Bar.
	Group Circulation	Start/Stop Group Circulation. Group circulation time can be modified in editing menu of each group in the Group Control Bar. (Right Click on desired group)
	Information	Display NVR System information such as model number, firmware, and license.
	Full Screen	View in Full Screen. In full screen mode, Main Menu and Control Bars are hidden. To return to the default view, press ESC on your keyboard or select Exit Full Screen Mode after clicking the right mouse button.
	Original Size	Displays the image to its actual size.
	Maintaining aspect ratio	Displays the image to maximum size possible while maintaining the ratio of the image.
	Filling the screen	Ignoring the ratio of the image and displays the image to the entire display area of the screen.
	Split Mode	Select a split mode of Live Viewer. *Note: Channel position can be changed by Drag and drop with wheel button of the mouse.*

6.2 Server Control Bar



Server Control Bar is located on the top left side of Live Viewer Page and it can be displayed or hidden by clicking Show/Hide Group Control Bar Icon ( ).

All devices registered in the NVR system properly are displayed in the server list as shown on the left.

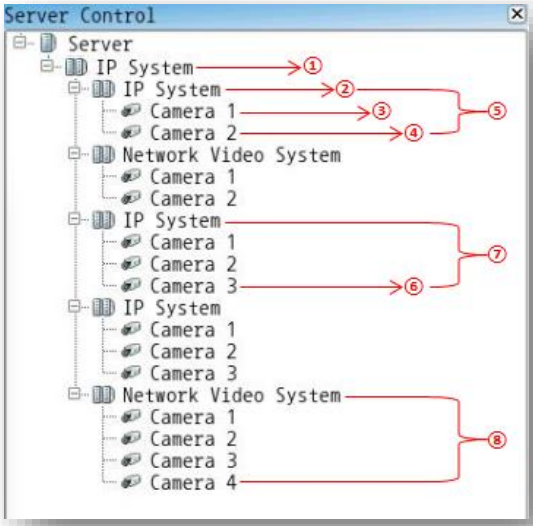
If registered device is not displayed in the list,

*check the registration process again and click Apply (

) icon on the Configuration Page tool bar.*

6.2.1 Server Tree

All IP devices normally registered in the NVR are listed in the server tree of the server control bar. The server tree provides the following information:



① Server name is displayed, which can be changed on the setting page. It facilitates the identification of each NVR system when operating multiple NVR systems.

② The name of the IP device is displayed, which can be changed on the setting page.

③ The name of the primary stream is displayed, which can be changed on the setting page.

④ The name of the primary stream is displayed, which can be changed on the setting page.

⑤ The number of channels appearing on the IP device indicates that it is a dual stream supporting model.

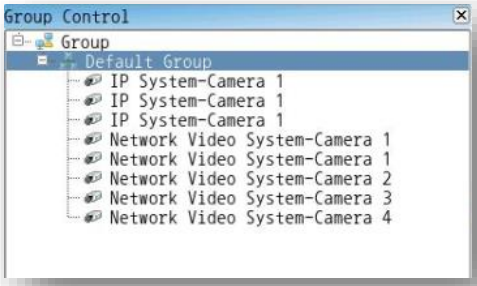
⑥ The name of the Tertiary stream is displayed, which can be changed on the settings page.

⑦ The number of channels appearing on the IP device indicates that it is a triple stream supporting model.

The number of channels appearing on the IP device indicates that it is a 4ch Encoder/Video Server model.

If the registered IP devices do not appear on the server control bar, please check the registration again and click the Apply icon on the configuration toolbar after registration to confirm that the changed registration information is applied to the NVR.

6.3 Group Control Bar



Group Control Bar is located on the middle left side of Live Viewer Page and it can be displayed or hidden by clicking Show/Hide Group Control Bar Icon ( ).

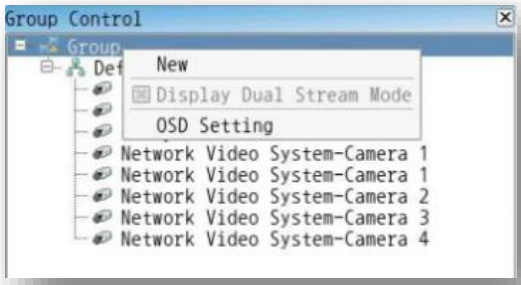
A group is a collection of multiple channels or video streams for live monitoring in one screen.

Up to 16 channels can be registered in a single monitoring group and it can be generated as much as need.

When registration process is completed, primary streams for all registered cameras are registered to Default Group automatically for convenience.

6.3.1 Creating/Modifing/Deleting Group in Live Viewer Page

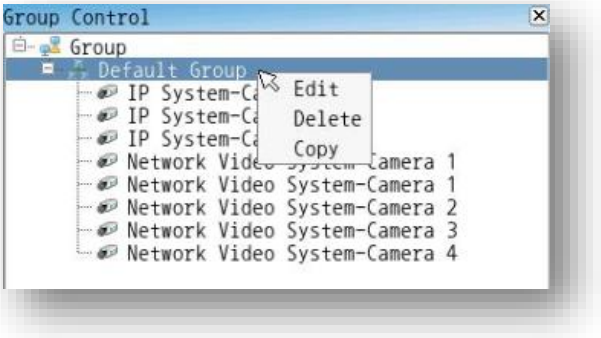
Group can be created as much as need through the Creating Group Window as shown below, and that can be opened by clicking ***New*** on the popup menu appears after right-click the desired group as shown on the right.



Item	Description
Group Name	Name for the viewing group.
Circulation	As known as auto sequence, the NVR system automatically switches between groups in sequence.
Circulation Period	Set the time interval for auto sequence.

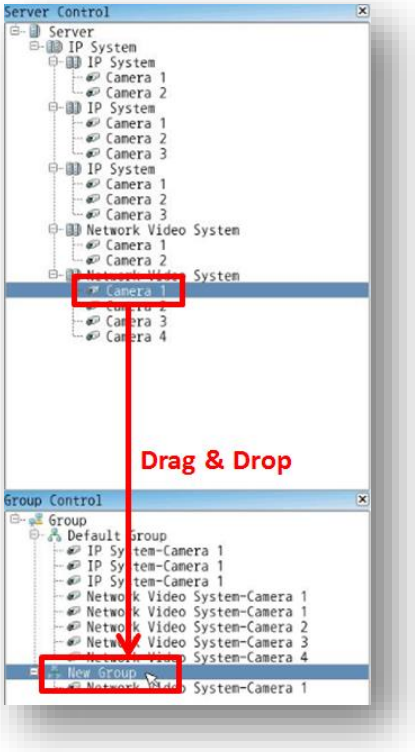
Default Group or Existing Group can be edited, deleted or copied.

These functions are available via the popup menu that appears after right-click the desired group as shown on the right.



6.3.2 Adding IP device

There are two ways to adding IP devices to the desired group.



After selecting the desired channel or stream of the IP device in the server control window, **Drag & Drop** to the desired group as shown on the left.

Or **double click** the desired channel or stream in the server control window after selecting the desired group.

6.4 PTZ Control Bar

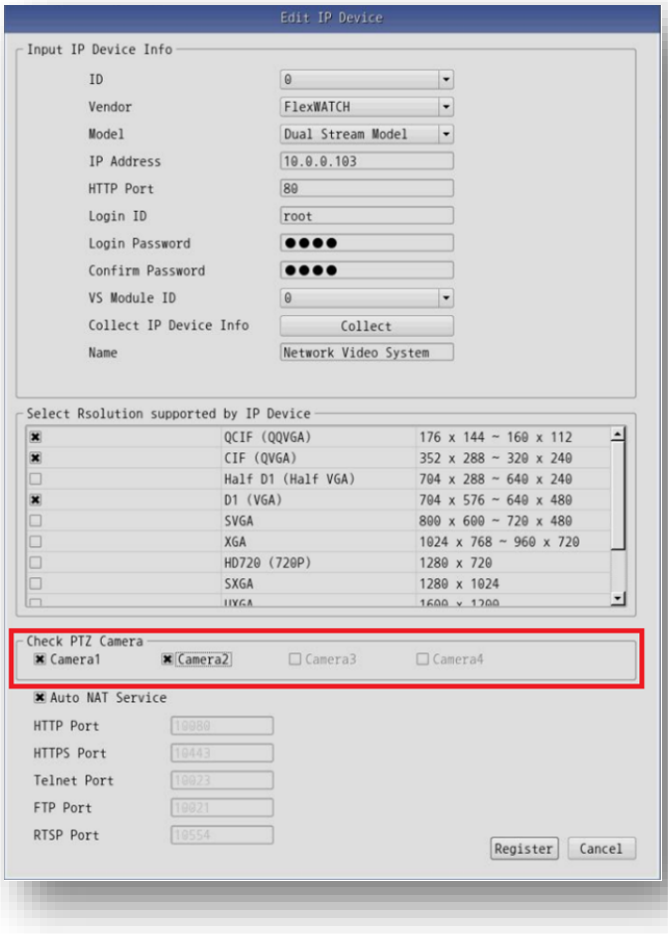
PTZ Control Bar is located on the left side of Live Viewer Page and

it can be displayed or hidden by clicking Show/Hide PTZ Control Bar Icon ( ).

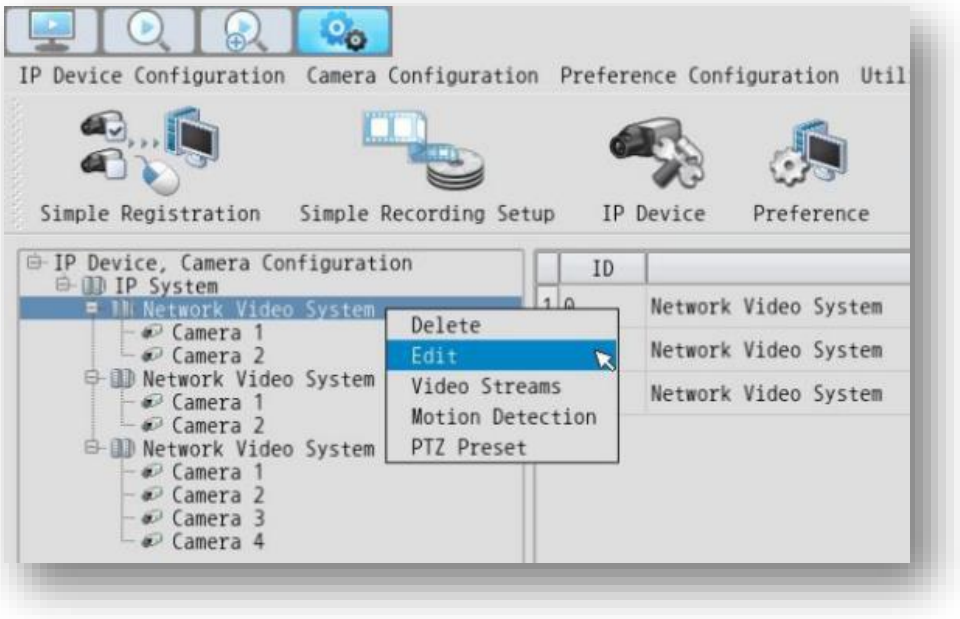
PTZ Control Bar buttons are activated when PTZ channel or stream is selected on the Live Viewer Page.

PTZ control or buttons may be limited to the fuctions supported by registered IP device.

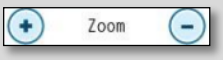
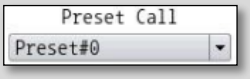
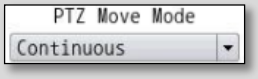
*If PTZ Control Bar buttons are not activated even though PTZ channel or stream is selected, please make sure that the IP device is **registered as PTZ** as shown below.*



*The **Edit IP Device** window can be opened through the pop-up menu that appears when right click on the PTZ device in **IP-device, Camera Configuratiuon** list on System Congifuration Page as shown below.*



PTZ Control Window provides the following basic features and more.

Icon	Menu	Description
	Pan/Tilt Speed	Available between 1~16. (Higher number means fast moving speed)
	PTZ Controller	Up/Down/Left/Right/Diagonal direction
	ZOOM Controller	Control ZOOM
	FOCUS Controller	Control FOCUS
	Autopan	Runs auto Pan/Scan.
	PRESET	Move to each preset point which is set on Admin page of IP device.
	PTZ Move Mode	[Continuous] Move continuously when pressing and holding PTZ control button. Fast movement is possible when using at local network [Step] Method of moving step by step. It is possible to control the exact point when using at remote site. (slow network speed).
	More	Provids more PTZ control buttons.

6.5 Audio Control Window

Audio Control Window can be displayed or hidden by clicking *Show/Hide PTZ Control Bar* Icon ( ).

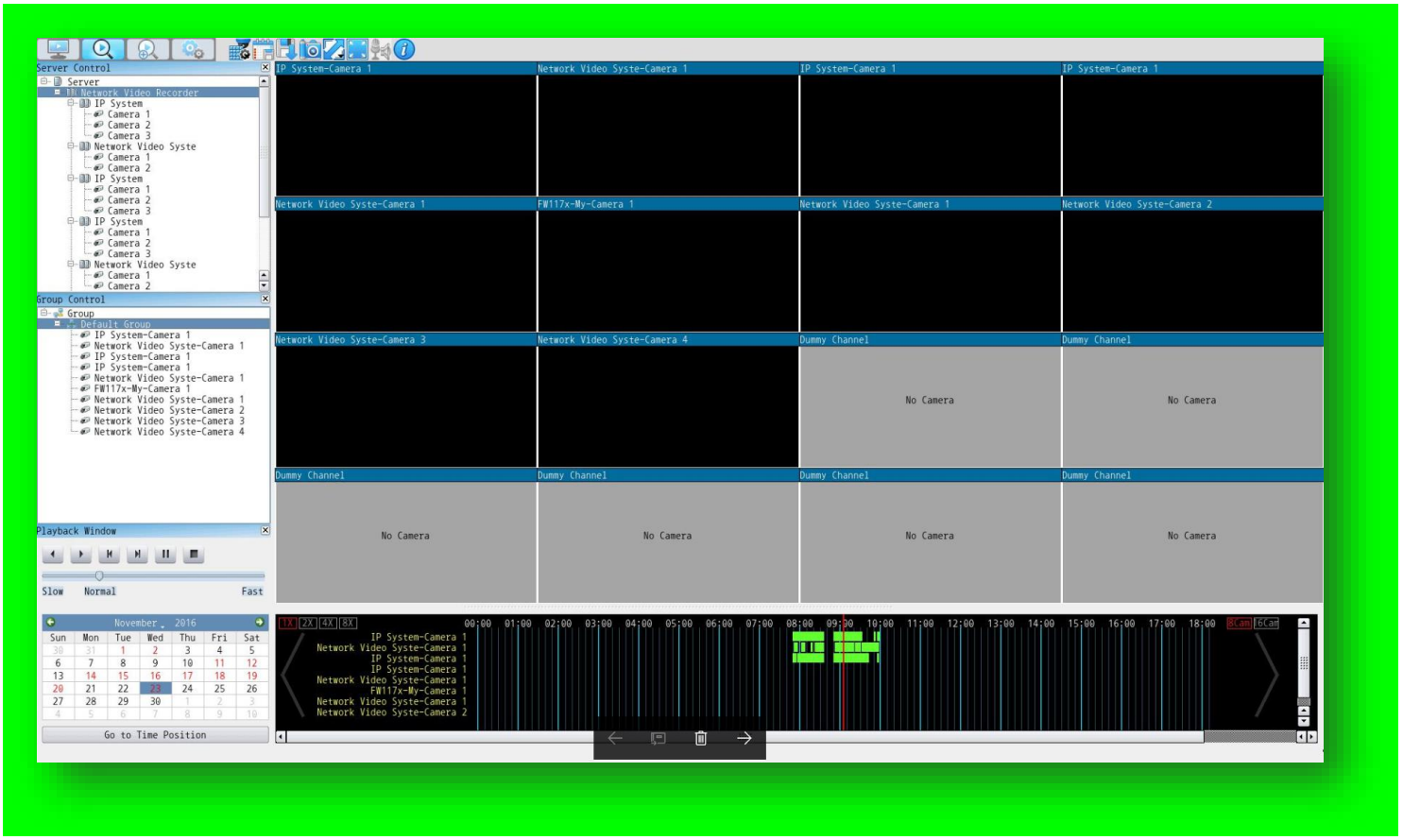
Speaker volume level could be controlled by moving cursor of Speaker Volume control bar on the top of Audio control window.

Once the audio connection by clicking the Connect button is completed, microphone volume level is also adjustable by moving cursor of Microphone Volum Control Bar below the speaker volum control bar if the camera or encoder supports two-way audio.

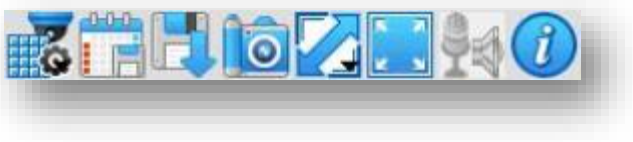
The audio option of FlexWATCH cameras and encoder models must be enabled in advance to use audio.
If the Audio is not Enabled, the following pop-up message will be appeared.

7. Player A (Time Search)

Recorded data can be searched and played visually and quickly using calendar and timeline.



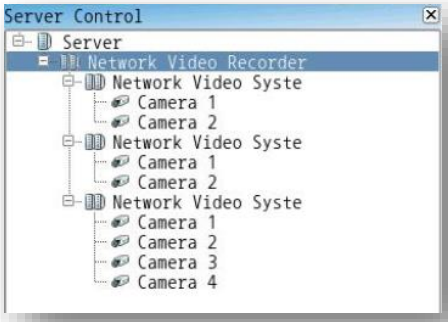
7.1 Search Tool Bar



Search Too Bar is located at the top of the Player A (Time Search) Page and it provides the following features.

Icon	Menu	Description
	Control Bar Layout	Show or Hide following Control Bars: Server Control Bar, Group Control Bar, Playback Bar, Date (Calendar & Timeline) window Bar
	Recording Period	Displays the latest recording Start and End time for each channel or stream.
	Backup	Back up recorded datato USB Drive.
	Snapshot	Captures the current image of the selected channel.
	Display ratio	Select one of the following display options: Original Ratio, Stretch
	Full screen	Displays the camera images in full screen.
	Audio	Control the recorded Audio.
	Information	Display NVR System information such as model number, firmware, and license.

7.2 Server Control Bar



Server Control Bar is located on the top left side of Player A (Time Search) Page and it can be displayed or hidden by clicking ***Server Window*** on Pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

All devices registered in the NVR system properly are displayed in the server list as shown on the left.

If registered device is not displayed in the list,

*check the registration process again and click Apply (

) icon on the configuration tool bar.*

7.3 Group Control Bar

Group Control Bar is located on the middle left side of Player A(Time Search) Page and it can be displayed or hidden by clicking ***Group Window*** on Pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

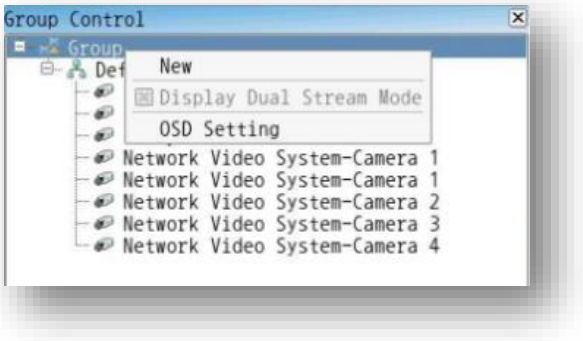
A group is a collection of multiple channels or video streams for playback in one screen.

Up to 16 channels can be registered in a single group and the groups can be generated as much as need.

When registration process is completed, primary streams for all registered cameras are registered to Default Group automatically for convenience.

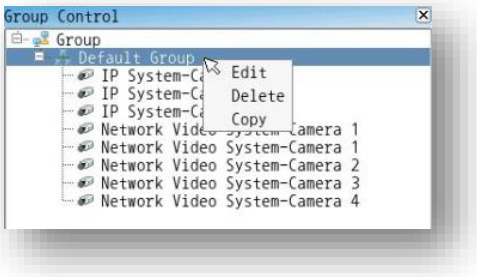
7.3.1 Creating/Modifing/Deleting Group

Group can be created as much as need through the Creating Group Window as shown below, and that can be opened by clicking ***New*** on the popup menu appears after right-click the desired group as shown on the right.



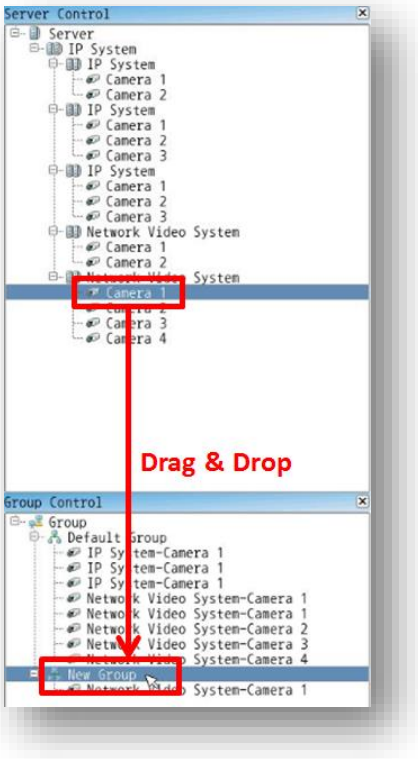
Item	Description
Group Name	Name for the viewing group.
Circulation	As known as auto sequence, the NVR system automatically switches between groups in sequence.
Circulation Period	Set the time interval for auto sequence.

Default Group or Existing Group can be edited, deleted or copied. These functions are available via the popup menu that appears after right-click the desired group as shown on the right.



7.3.2 Adding IP device into a Group

There are two ways to adding IP devices to the desired group.

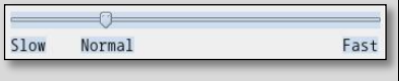


After selecting the desired channel or stream of the IP device in the server control window, **Drag & Drop** to the desired group as shown on the left.

Or **double click** the desired channel or stream in the server control window after selecting the desired group.

7.4 Playback Window/Bar

Play Window is located on the left side of Time Search Mode screen and it can be displayed or hidden by clicking *Play window* on pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

Icon	Name	Description
	Reverse Play	Plays in reverse.
	Play	Plays normally.
	Frame Reverse	Moves back one frame.
	Frame Forward	Moves forward one frame.
	Pause	Pauses playing.
	Stop	Stop playing.
	**Playback Speed**	Adjusts playback speed.

7.5 Date (Calendar / Timeline) Window/Bar

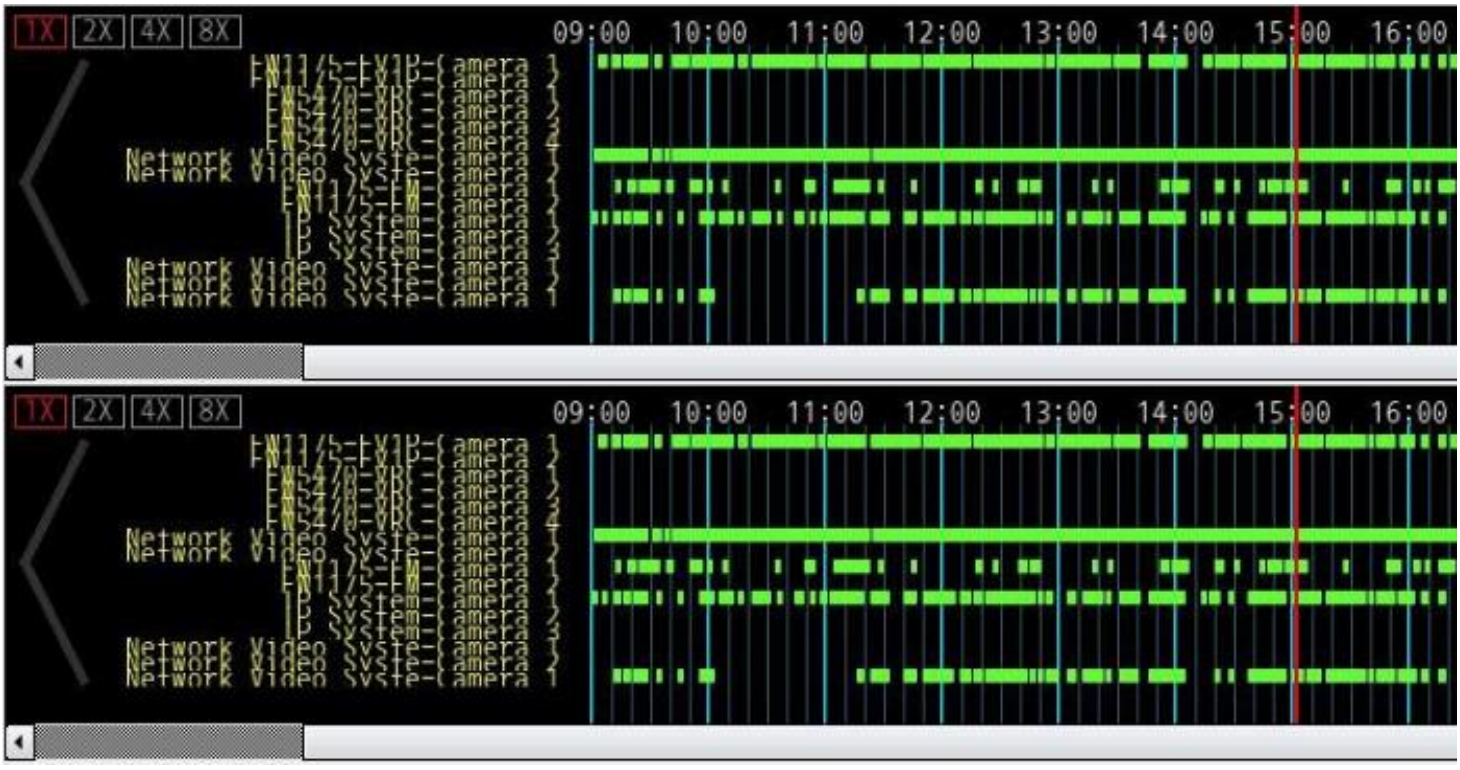
7.5.1 Calendar

Calendar Window is located on the bottom left side of Time Search Mode screen and it can be displayed or hidden with timeline window by clicking *Daily Window* on pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

Through the text color on calendar, the presence or absence of data can be determined quickly as below.

Gray: Displays the previous month and next month days.
Black: Displays the date that data is not recorded.
Red: Displays the data recorded date
Bold Red (Blue Background): Displays the selected Date.

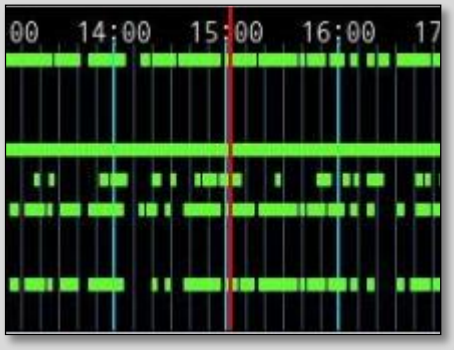
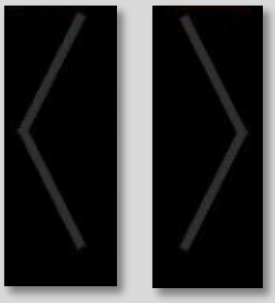
7.5.2 Timeline



Timeline Window is located on the bottom of Time Search Mode screen and it can be displayed or hidden with calendar window by clicking *Daily Window* on pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

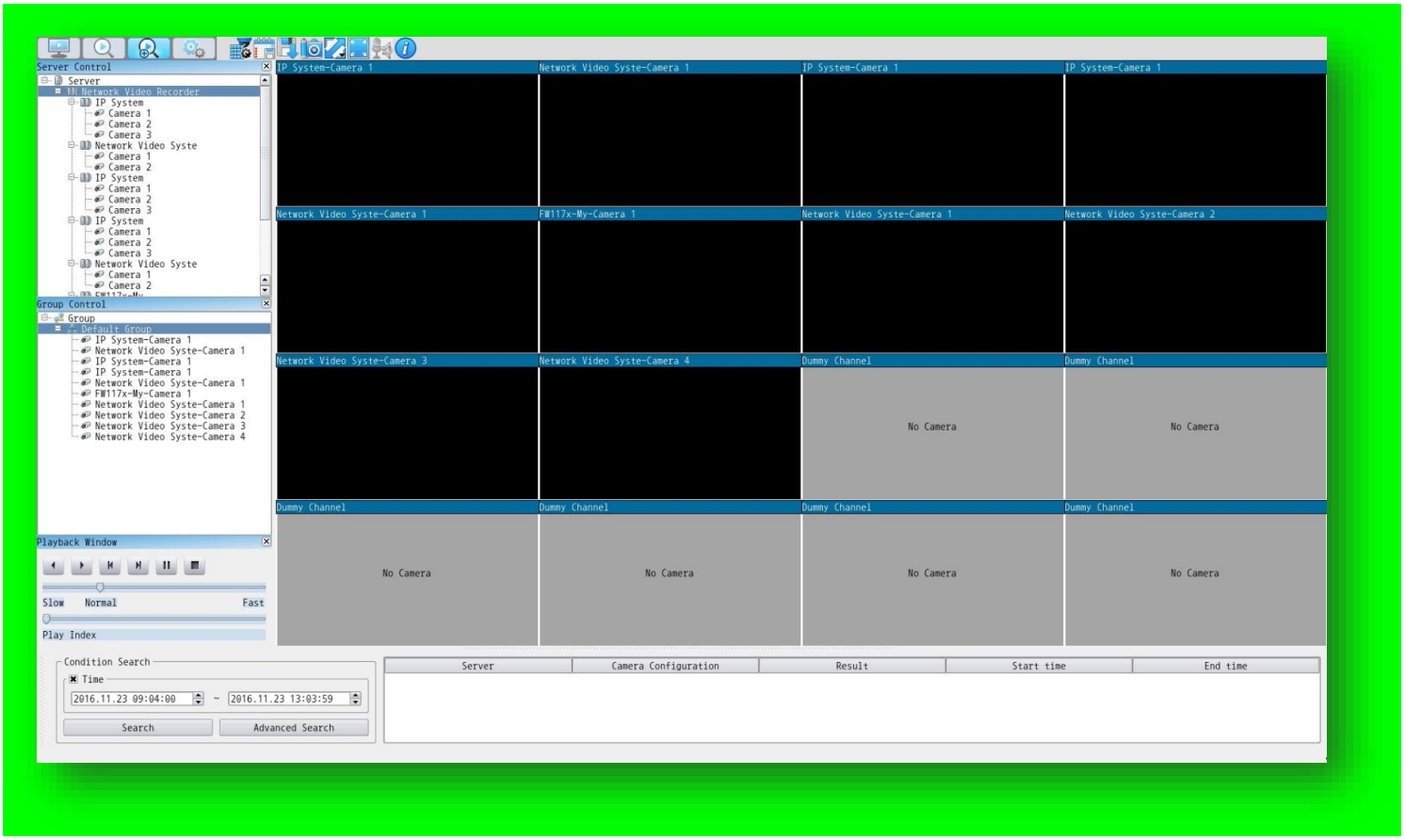
Through the vertical green bars on timeline, the presence or absence of data can be determined over time quickly.

7.5.2.1 Timeline Item Descriptions

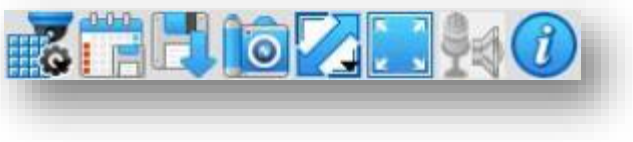
Item	Description
	Zoom buttons are located at left top in timeline window. Timeline can be zoomed In/Out for easy and fast data searching with these buttons.
	The scale of the timeline is made up of a 24-hour system can be enlarged by using the zoom buttons to quickly search the recorded data of a desired time down to the minute timeline. Desired time can be selected by clicking on the timeline and the selected time is displayed in red vertical line.
	Channel list is located at left in Timeline Window and it lists cameras of selected group to determine presence or absence of data. *For more information about the group, please refer to [Pg.30, 6.3 Group Control Bar].*
	The number of cameras that are displayed on one screen of channel list can be limited to 8 or 16 with these buttons. If number of cameras in selected group is greater than the display limit of the channel list, vertical scroll bar located at the right side of timeline window can be used to navigate the rest of the cameras.
	Navigation buttons which are located at left and right side of timeline is used to move the timeline to the left or right.

8. Player B (Condition Search)

Recorded data can be searched and played based on condition specified by the user.



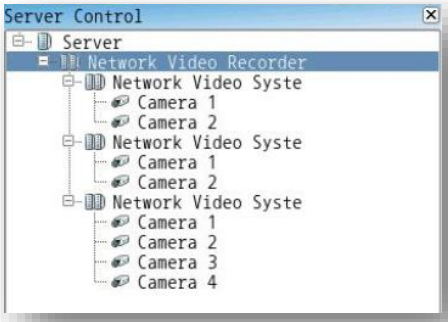
8.1 Search Tool Bar



Search Too Bar is located at the top of the Player B (Time Search) Page and it provides the following features.

Icon	Menu	Description
	Control Bar Layout	Show or Hide following Control Bars: Server Control Bar, Group Control Bar, Playback Bar, Date (Calendar & Timeline) window Bar
	Recording Period	Displays the latest recording Start and End time for each channel or stream.
	Backup	Back up recorded datato USB Drive.
	Snapshot	Captures the current image of the selected channel.
	Display ratio	Select one of the following display options: Original Ratio, Stretch
	Full screen	Displays the camera images in full screen.
	Audio	Control the recorded Audio.
	Information	Display NVR System information such as model number, firmware, and license.

8.2 Server Control Bar



Server Control Bar is located on the top left side of Player B (Condition Search) Page and it can be displayed or hidden by clicking ***Server Window*** on Pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

All devices registered in the NVR system properly are displayed in the server list as shown on the left.

If registered device is not displayed in the list,

*check the registration process again and click Apply (

) icon on the configuration tool bar.*

8.3 Group Control Bar

Group Control Bar is located on the middle left side of Player A(Time Search) Page and it can be displayed or hidden by clicking ***Group Window*** on Pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

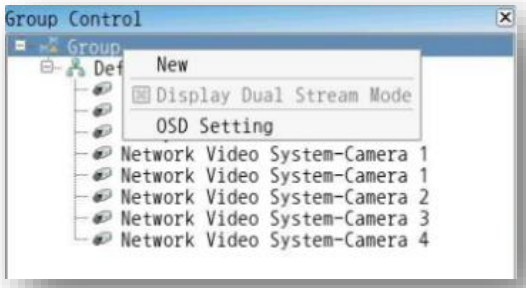
A group is a collection of multiple channels or video streams for playback in one screen.

Up to 16 channels can be registered in a single group and the groups can be generated as much as need.

When registration process is completed, primary streams for all registered cameras are registered to Default Group automatically for convenience.

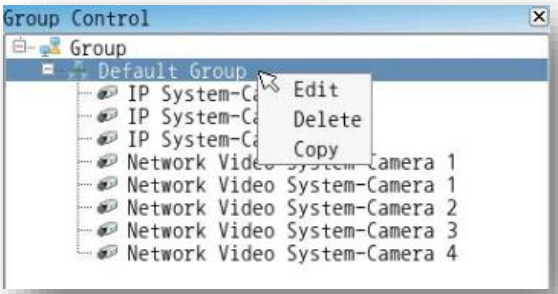
8.3.1 Creating/Modifing/Deleting Group in Player A

Group can be created as much as need through the Creating Group Window as shown below, and that can be opened by clicking ***New*** on the popup menu appears after right-click the desired group as shown on the right.



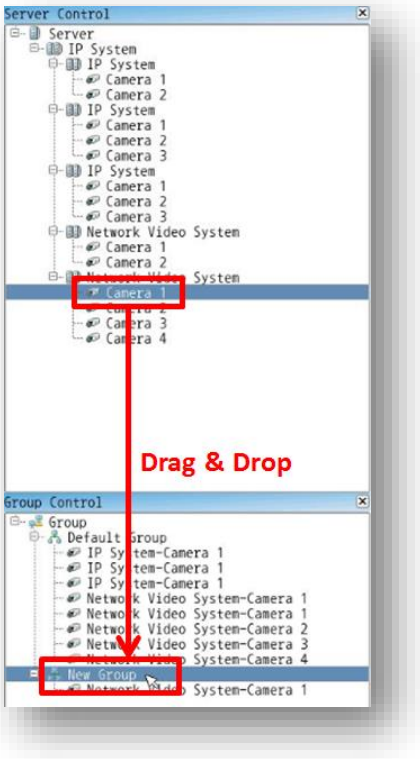
Item	Description
Group Name	Name for the viewing group.
Circulation	As known as auto sequence, the NVR system automatically switches between groups in sequence.
Circulation Period	Set the time interval for auto sequence.

Default Group or Existing Group can be edited, deleted or copied. These functions are available via the popup menu that appears after right-click the desired group as shown on the right.



8.3.2 Adding IP device into a Group in Player A

There are two ways to adding IP devices to the desired group.

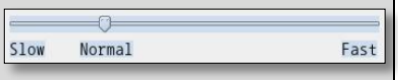
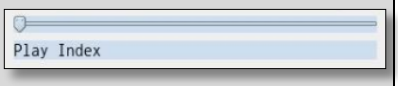


After selecting the desired channel or stream of the IP device in the server control window, **Drag & Drop** to the desired group as shown on the left.

Or **double click** the desired channel or stream in the server control window after selecting the desired group.

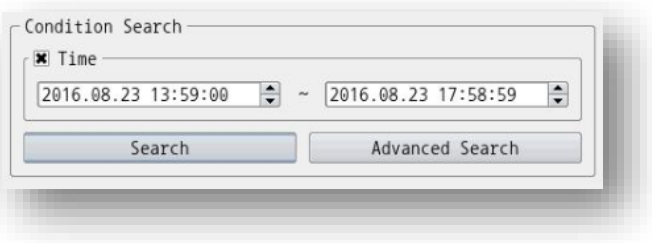
8.4 Playback Window

Play Control Window is located on the left side of Time Search Mode screen and it can be displayed or hidden by clicking *Play window* on pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

Icon	Name	Description
	Reverse Play	Plays in reverse.
	Play	Plays normally.
	Frame Reverse	Moves back one frame.
	Frame Forward	Moves forward one frame.
	Pause	Pauses playing.
	Stop	Stop playing.
	Playback Speed	Adjusts playback speed.
	Play Index	Searched data can be navigated through the Play Index.

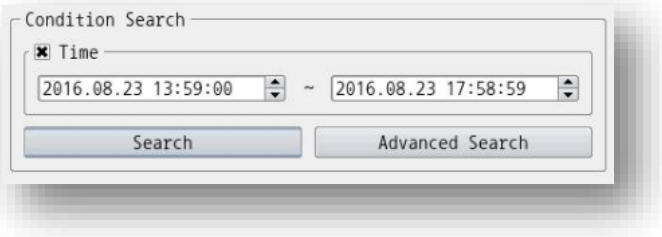
8.5 Condition Window

8.5.1 Condition Search



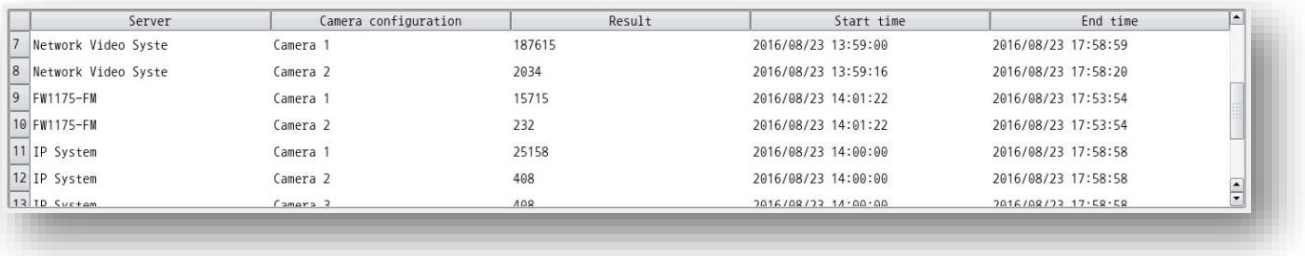
Condition Search Window is located on the bottom left side of Time Search Mode screen and it can be displayed or hidden by clicking *Condition Window* on pull-down menu that appears by clicking Layout icon ( ) on search tool bar.

8.5.1.1 Time Search



When entering the desired searching time rage and click the search button, Search result will be listed as shown below.

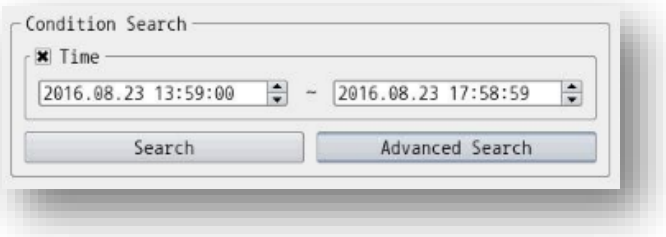
Search result shows the recorded data information per each camera channel.



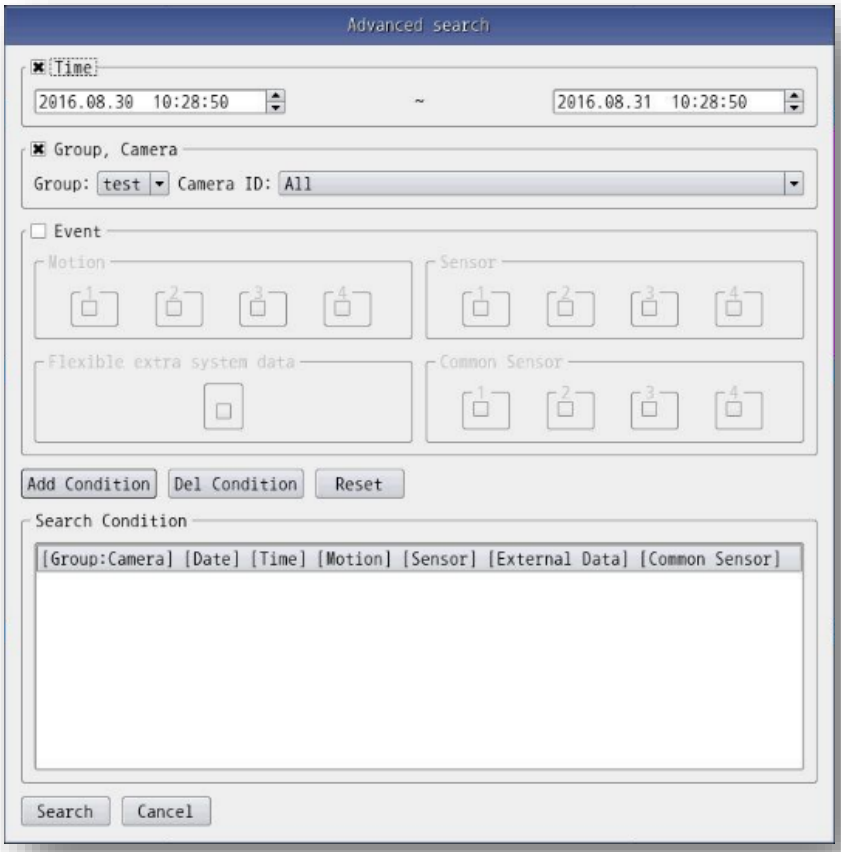
	Server	Camera configuration	Result	Start time	End time
7	Network Video Syste	Camera 1	187615	2016/08/23 13:59:00	2016/08/23 17:58:59
8	Network Video Syste	Camera 2	2034	2016/08/23 13:59:16	2016/08/23 17:58:20
9	FW1175-FM	Camera 1	15715	2016/08/23 14:01:22	2016/08/23 17:53:54
10	FW1175-FM	Camera 2	232	2016/08/23 14:01:22	2016/08/23 17:53:54
11	IP System	Camera 1	25158	2016/08/23 14:00:00	2016/08/23 17:58:58
12	IP System	Camera 2	408	2016/08/23 14:00:00	2016/08/23 17:58:58
13	IP System	Camera 3	408	2016/08/23 14:00:00	2016/08/23 17:58:58

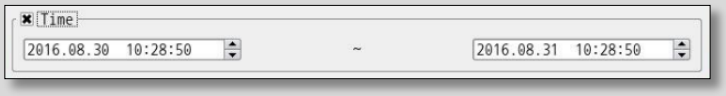
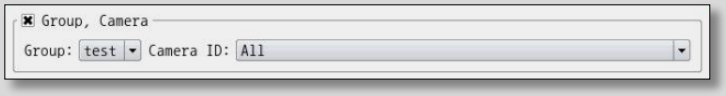
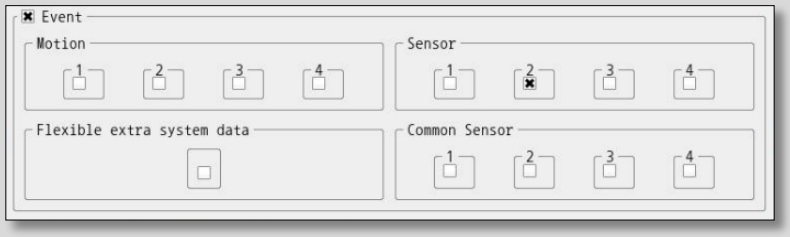
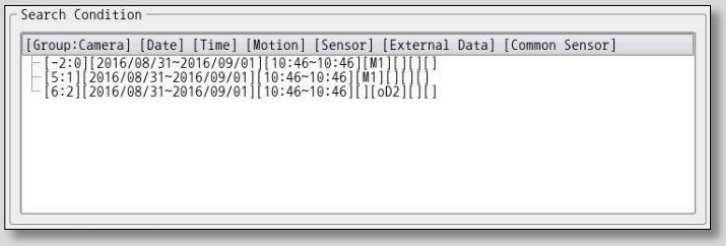
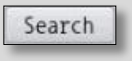
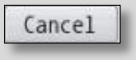
Searched data can be played back of desired time data using the play index on Play Window.

7.5.1.2 Advanced Search



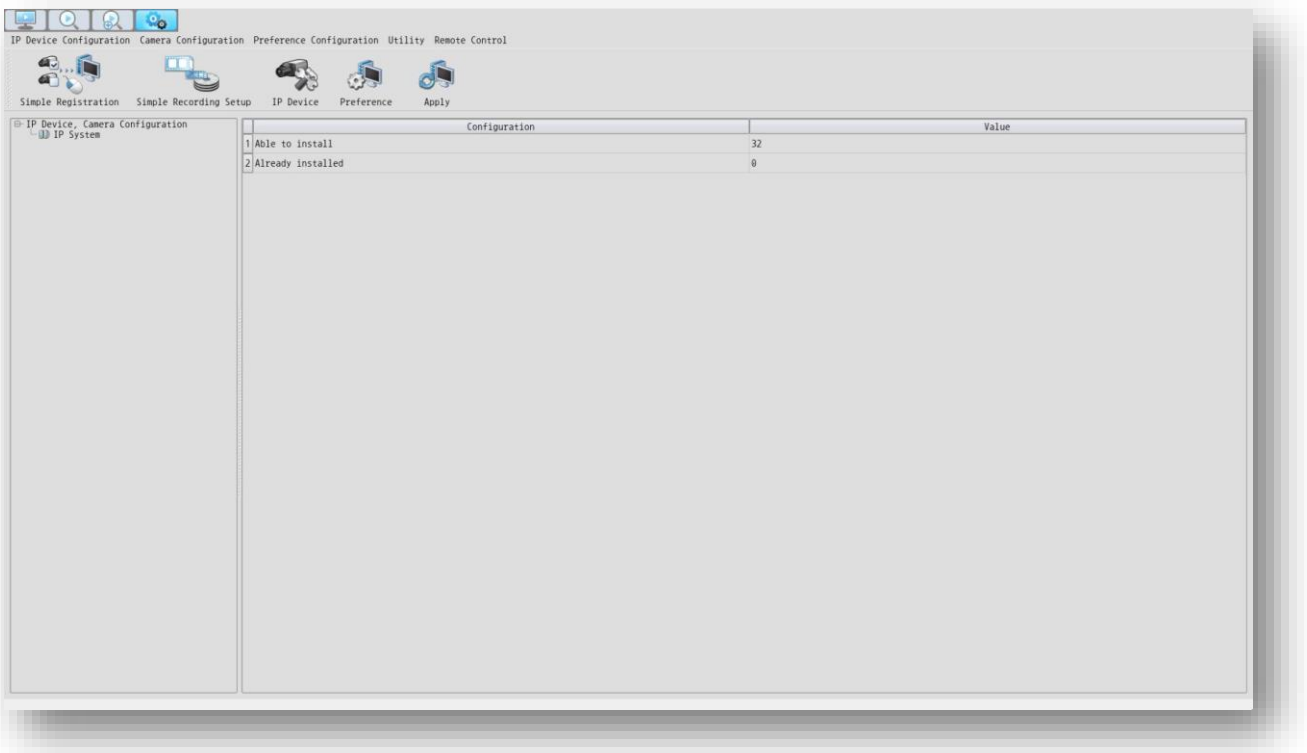
Advanced search box will appear when clicking Advanced Search button on condition search window as shown below.



Item	Description
	Enter desired time rage to search.
	Select desired camera to search.
	Select Event Types and/or Channels to search. If multiple event type and channels are selected, only results that meet all of the conditions will be searched. Motion: Motion Detection Sensor: Sensor Detection Flexible Extra System Data: FlexWATCH Integration data detection Common Sensor: Common Sensor Detection
	Add entered search condition to the search condition list.
	Delete desired search condition from the search condition list.
	Delete all search conditions from the search condition list.
	The search condition list, which lists the added search conditions.
	Search for recorded data based on entered search conditions.
	Cancel and close the Advanced Search window.

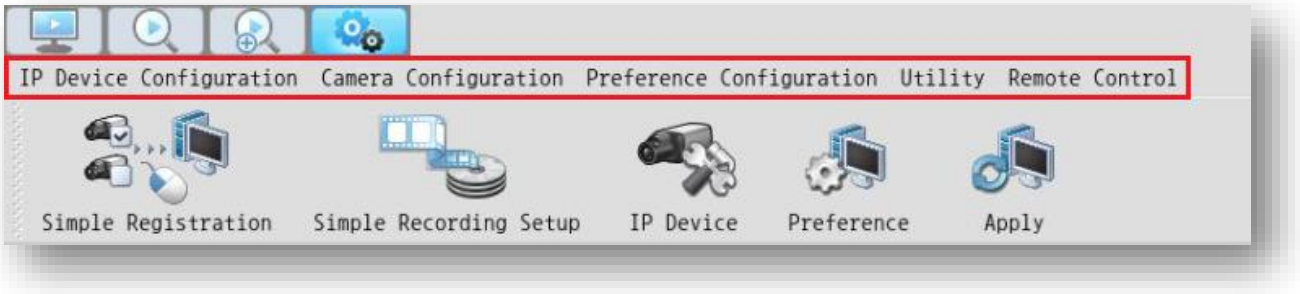
9. Configuration Page

All settings of the NVR system are provided in this **Configuration Page**, and frequently used camera settings are also available.



9.1 Menu Bar

The menu bar is located at the top of the Settings page and consists of five menus as shown below.



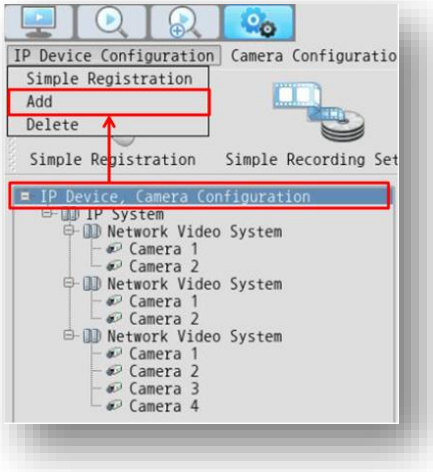
- IP-Device Configuration
- Camera Configuration
- Preference Configuration
- Utility
- Remote Control

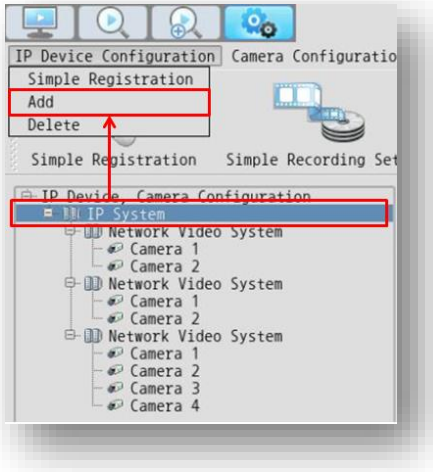
Through the menu bar, all settings of NVR and frequently used camera settings are available.

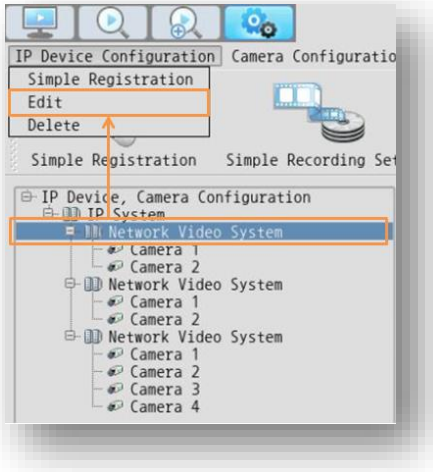
9.2 IP-Device Configuration

Provides IP device registration related settings.

Configurations of the sub-menu or pull-down menu depend on the selection of the server control window in Configuration Mode as shown below.

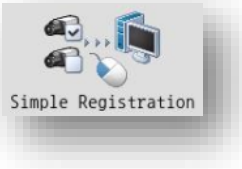




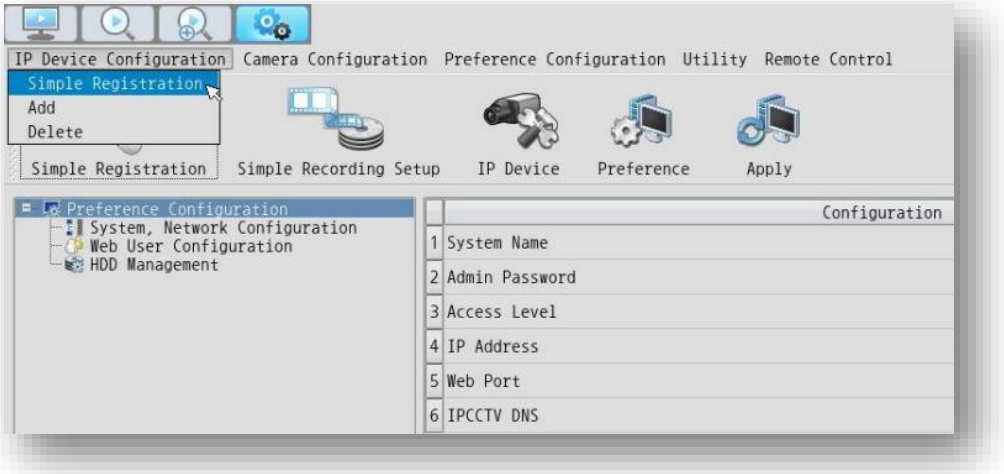


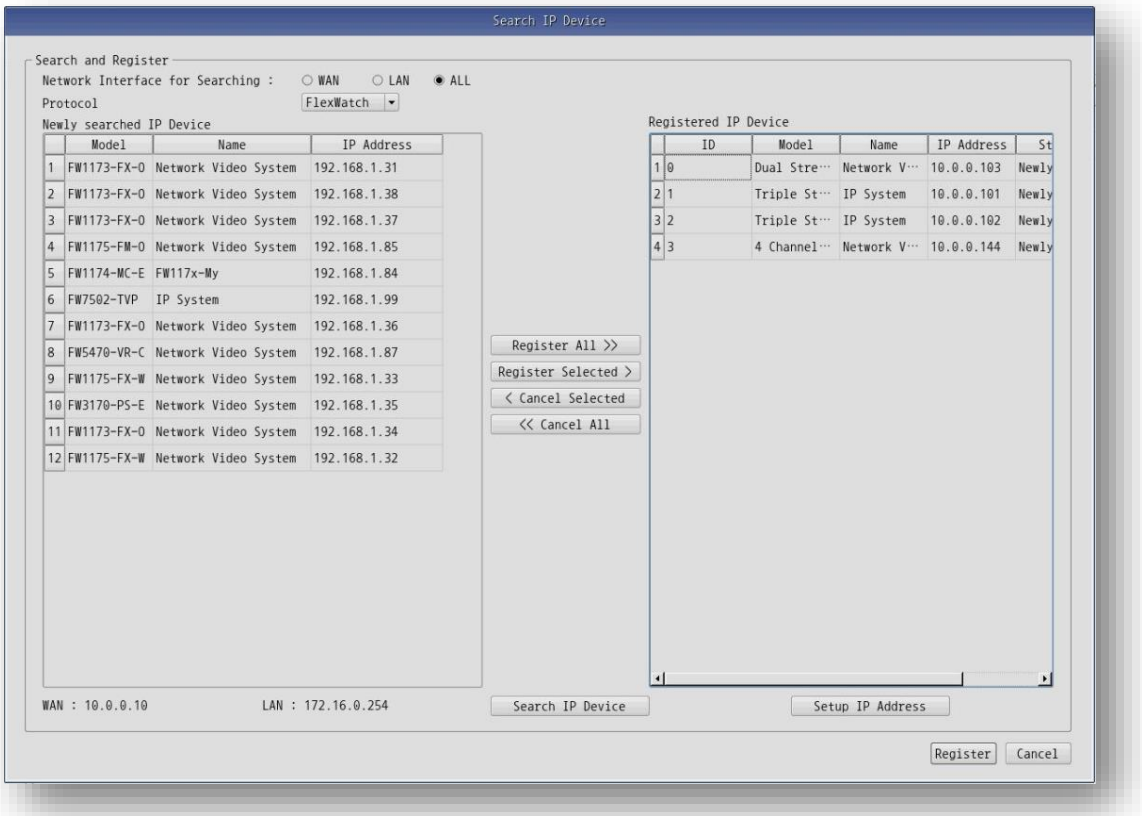
9.2.1 Simple Registration

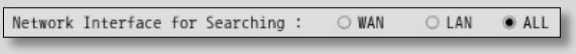
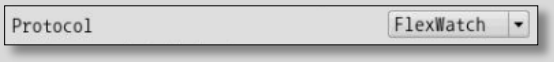
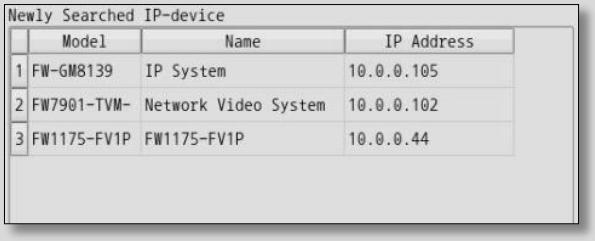
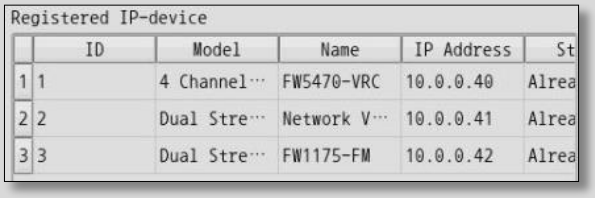
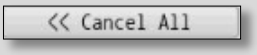
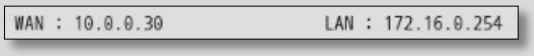
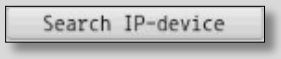
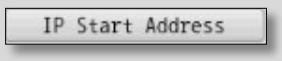
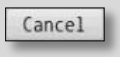
Registration of IP devices is available through the ***Search IP-device*** window which can be run by clicking ***Simple Registration*** icon or go thourgh the menu bar.



or





Item	Description
	Selects network interface WAN, LAN or both to search IP devices.
	Select the protocol to be used for searching and registering IP devices.
	Newly Searched IP-Device section on the left of Simple Registration window lists the IP devices that are not registered in the connected network.
	Registered IP-Device section on the right of Simple Registration window lists the IP devices that are already registered and moved by user from Newly Searched (left) section for registration.
	Moves all IP devices found from the Newly Searched IP-Device (Left) to the Registered IP-Device section (Right). If the number of camera units is exceed license of the system, the system register only the number of units allowed by license.
	Moves selected IP Devices to the right section or list.
	Moves selected IP Devices back to the Newly Searched IP-Device list from the Registered IP- Device list.
	Moves all IP Devices back to the Newly Searched IP-Device list from the Registered IP- Device list.
	Displays current NVR IP on WAN and LAN.
	Searchs for available IP devices on the network connected to the DVR.
	Cancel the search.
	IP addresses can be assigned to the selected cameras in the Registered IP-Device list. *For more information about the feature,* *Please refer to [Pg.49, 8.2.1.1 Auto IP Assigning (IP Start Address)].*
	Save Registered IP-Device list.
	Close the search window without saving.

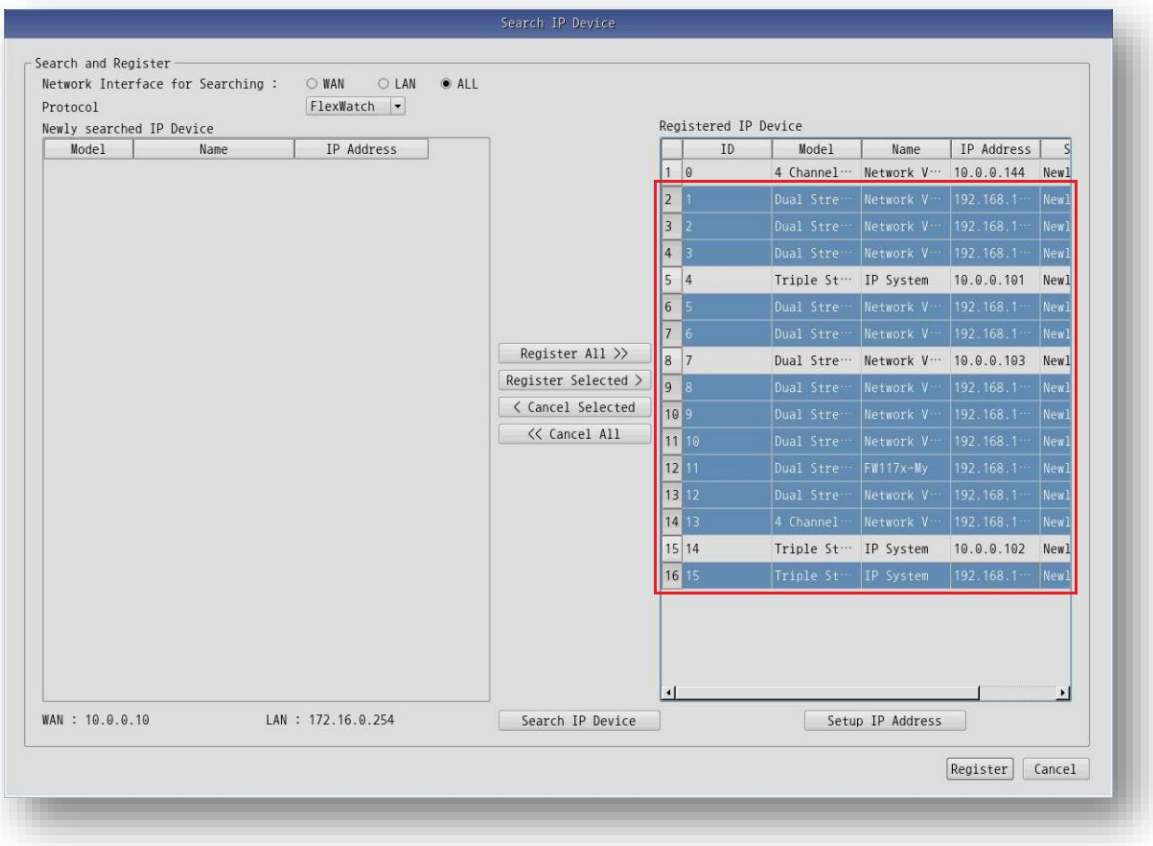
9.2.1.1 Auto IP Assigning (IP Start Address)

IP address can be assigned to the IP devices without any software or tools.

This feature supports only FlexWATCH® camera models, and does not apply to IP devices that are already registered to the NVR system.

Frequently used camera settings like resolution, FPS, motion detection area are also available without any other software or tools.
For more information, please refer to [Pg.69, 8.6 Remote Control].

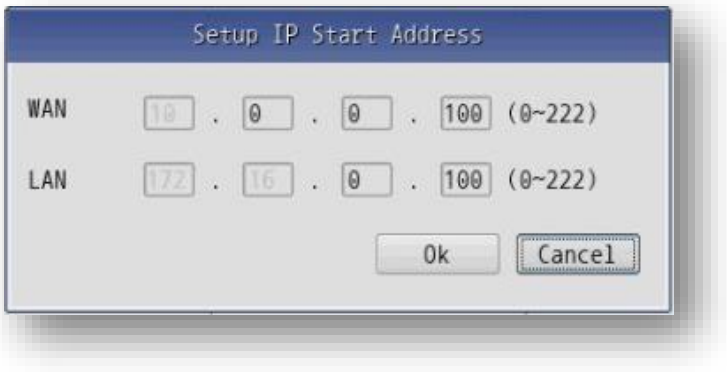
To use automatic IP assigning feature, **Select** desired IP devices to assign IP address in the list on the right, and then click ***IP Start Address*** at bottom of the list.



If a keyboard is connected, multiple devices can be selected by clicking mouse while holding down the ctrl or shift key.

Click ***IP Start Address*** located at the bottom of Registered IP-Device list.

When *Setup IP Start Adddress* window appears, Enter desired **Starting IP address** in the field of WAN/LAN that IP deices found.



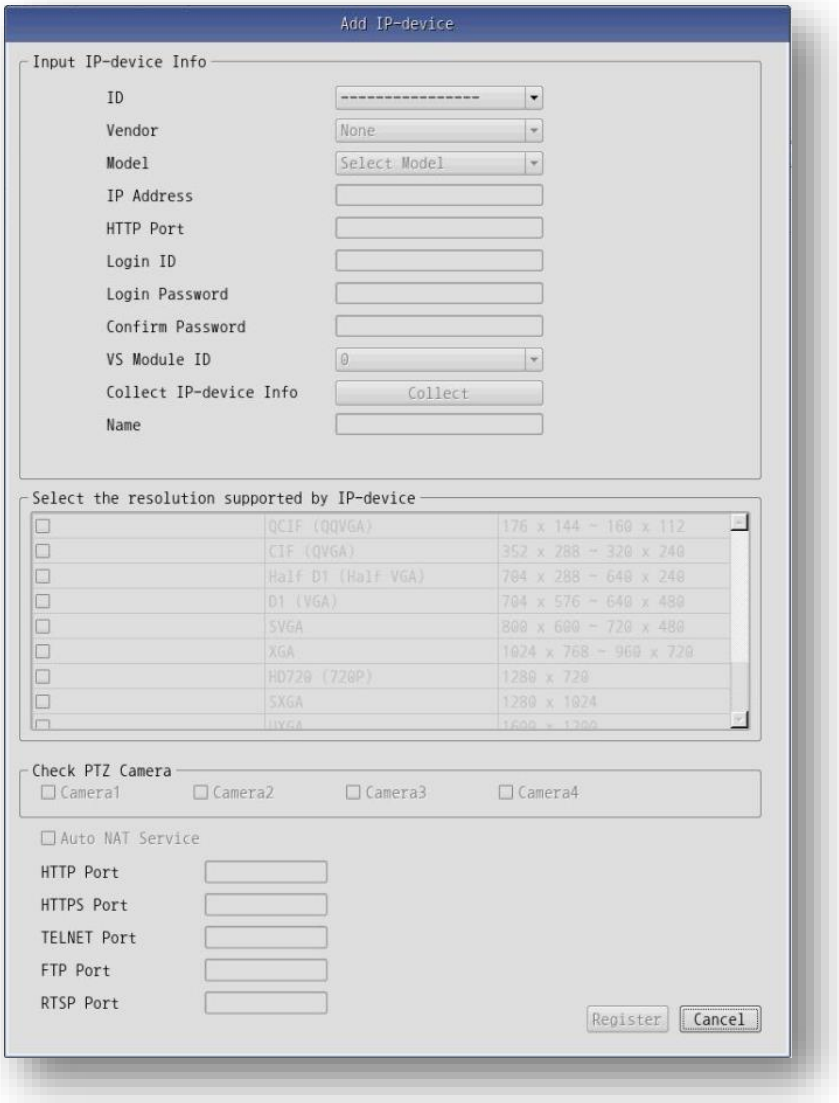
Item	Description
WAN 10 . 0 . 0 . 100 (0~222)	Enter starting IP address for the selected cameras which found in WAN port.
LAN 172 . 16 . 0 . 100 (0~222)	Enter starting IP address for the selected cameras which found in LAN port.

Start with the IP address entered is the number of the last octet increases by 1 and is assigned to each camera.

Ex) If starting IP is “192.168.1.100”,
Camera 1 = 192.168.1.10**0**
Camera 2 = 192.168.1.10**1**
Camera 3 = 192.168.1.10**2**

9.2.2 ADD (Manual IP device Registration)

Manual IP device registration (Add IP-Device) window for entering IP device information manually can be opened by clicking "Add" on IP-device Configuration pull down menu as shown on the left.

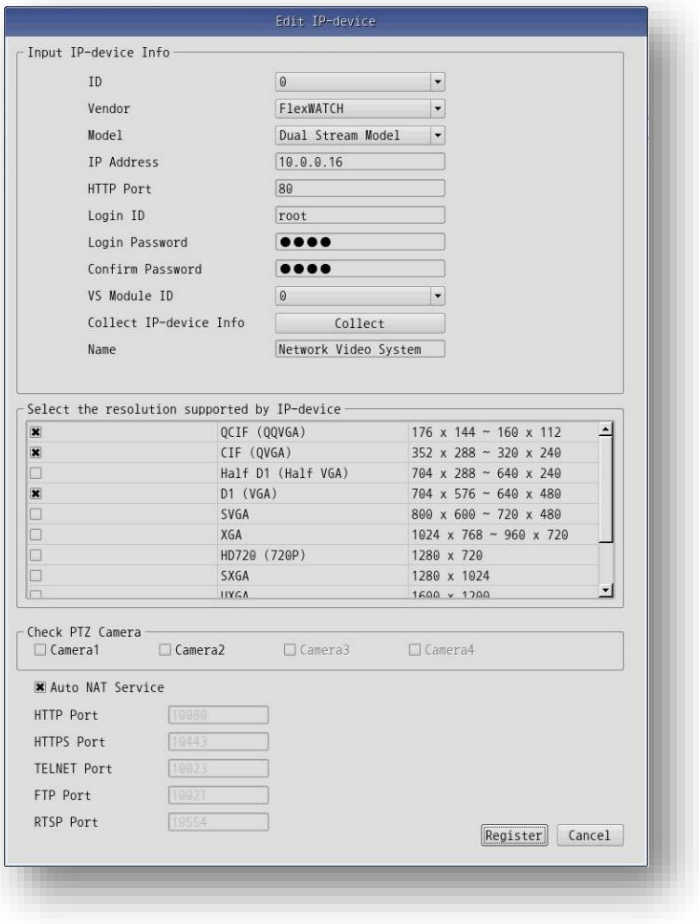


<Add IP-Device Window>

Item	Description
ID	Device ID is the registration number of NVR for IP devices. According to the order of registration of IP NVR equipment, the ID number is assigned in the order from 0. If selecting ID that already registered and assigned, registration information will be displayed. In this case, modification of registration information is available.
Vender	Select vendor of device to register.
Model	Select Model based on the number of streams or channels supported by device.
IP Address	Enter IP Address or domain name of device to register.
HTTP Port	Enter HTTP port number of device to register.
Login ID	Enter login ID of device to register.
Login Password	Enter login Password of device to register.
Confirm Password	Enter the password again to confirm.
VS Module ID	Select the **VS Module ID** - VS Module **ID 0**: Select for the FlexWATCH® camera models, 4 channel server models or 1~4 camera channels of 8 channel server models - VS Module **ID 1**: Select for the camera channel 5~8 of FlexWATCH® 8channel server models
Collect IP-Device Information	Download IP-Device information such as Device Name.
Name	Enter Device name for the identification.
Select the Resolution Supported by IP-Device	Select resolutions supported by device.
Check PTZ Camera	If the device supports Pan, Tilt, or zoom, select channel or steam for controlling.
Auto NAT Service	Select whether to use NAT function. NAT function allows direct connection to registered device via the NVR. The ports used for direct camera connection are automatically mapped by the NVR when NAT is enabled.
Register	Save entered registration information and close the window.
Cancel	Close the window without saving.

9.2.3 Edit (Editing IP Device Information)

To modify the IP information of registered device, select desired IP device in Server Control Window and click edit on IP-Device Configuration pull down menu.



<Edit IP-Device Window>

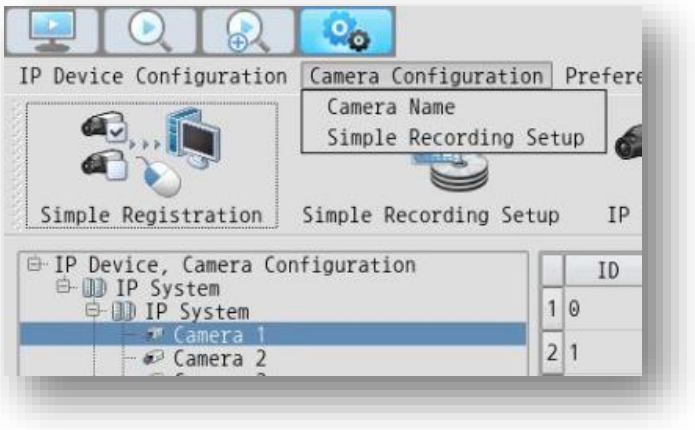
Item	Description
ID	Device ID is the registration number of NVR for IP devices. According to the order of registration of IP NVR equipment, the ID number is assigned in the order from 0. If selecting ID that already registered and assigned, registration information will be displayed. In this case, modification of registration information is available.
Vender	Select vendor of device to register.
Model	Select Model based on the number of streams or channels supported by device.
IP Address	Enter IP Address or domain name of device to register.
HTTP Port	Enter HTTP port number of device to register.
Login ID	Enter login ID of device to register.
Login Password	Enter login Password of device to register.
Confirm Password	Enter the password again to confirm.
VS Module ID	Select the **VS Module ID** - VS Module **ID 0**: Select for the FlexWATCH® camera models, 4 channel server models or 1~4 camera channels of 8 channel server models - VS Module **ID 1**: Select for the camera channel 5~8 of FlexWATCH® 8channel server models
Collect IP-Device Information	Download IP-Device information such as Device Name.
Name	Enter Device name for the identification.
Select the Resolution Supported by IP-Device	Select resolutions supported by device.
Check PTZ Camera	If the device supports Pan, Tilt, or zoom, select channel or steam for controlling.
Auto NAT Service	Select whether to use NAT function. NAT function allows direct connection to registered device via the NVR. The ports used for direct camera connection are automatically mapped by the NVR when NAT is enabled.
Register	Save entered registration information and close the window.
Cancel	Close the window without saving.

9.2.4 Delete (Deleting IP Device)

To delete registered IP device from the NVR system, select desired IP device in Server Control Window and click delete on IP-Device Configuration pull-down menu.

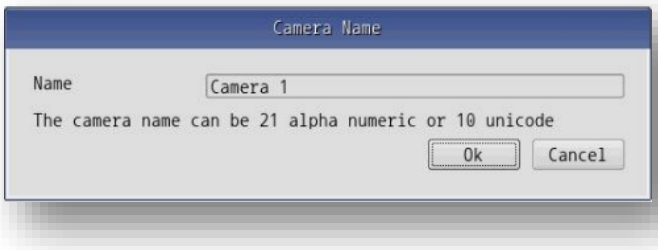
9.3 Camera Configuration

Provides each channel name and recording settings for the device registered in the system.

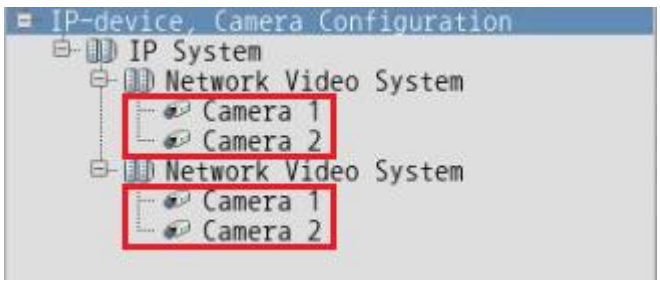


9.3.1 Camera Name

Set the camera name for the identification of each camera channel or stream within the alphanumeric 21 characters or 10 unicode characters.



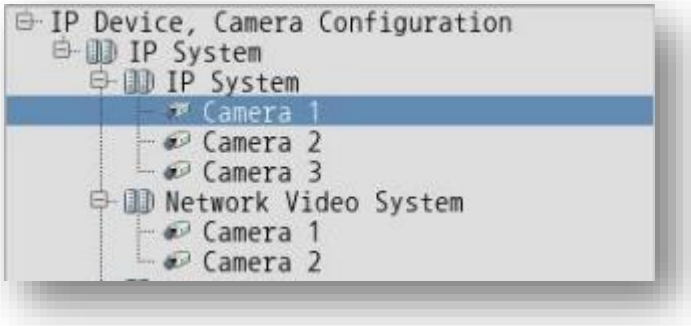
The camera name set here will apply to the server control window, top of the live and Playback screen as shown below.



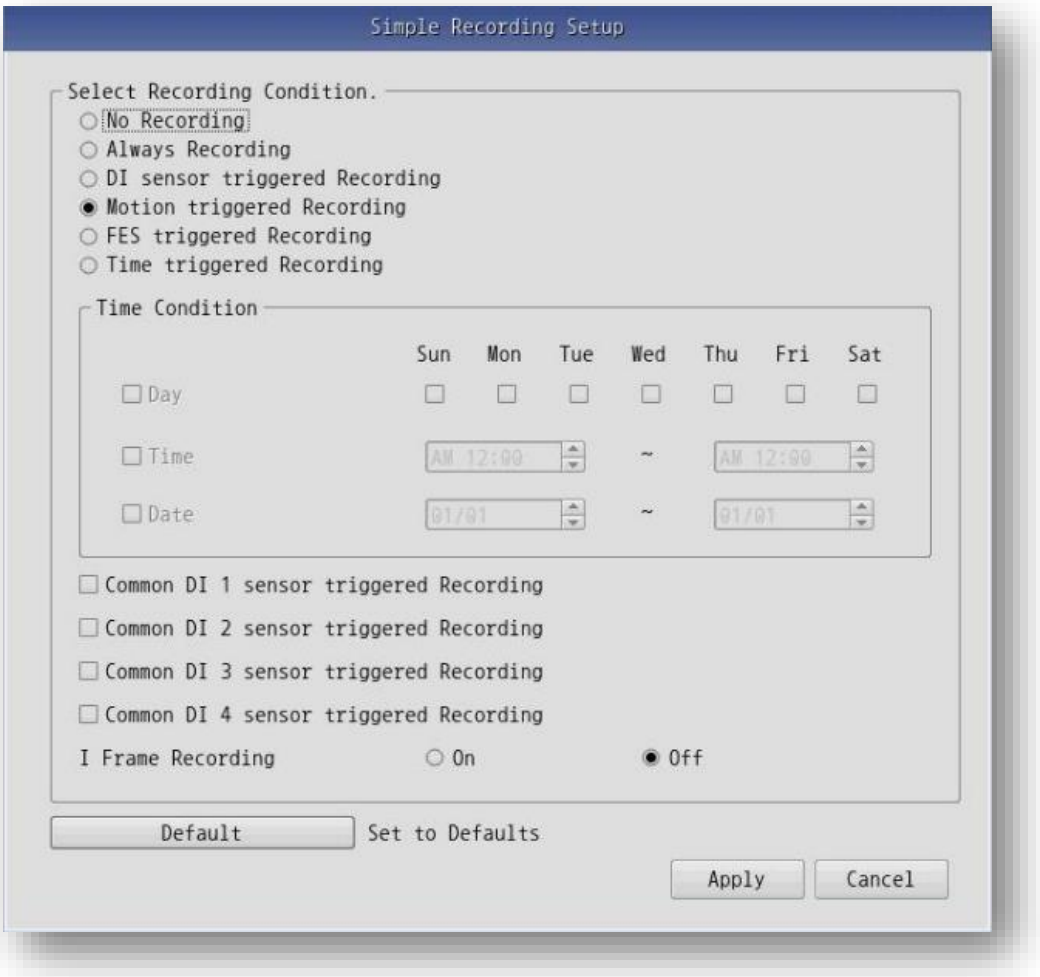
< Server Control Window>

<Live & Playback Screen>

9.3.2 Simple Recording Setup



To set up recording, select a channel or stream of desired IP device in Server control Window and click Simple Registration on Camera Configuration pull-down menu.

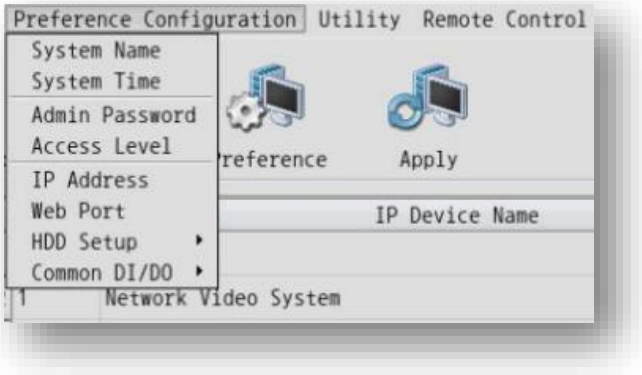


<Simple Recording Setup Window>

Item	Description
No Recording	No recording.
Always Recording	Always Recording.
DI Sensor Triggered Recording	Recording when DI sensor of IP Device is triggered.
Motion Triggered Recording	Recording when Motion is detected by IP device. *NVR system does not have a built-in motion detection feature.*
FES Triggered Recording	Recording when FES data is received from external device. FES (FlexWATCH Extra System) is an integration system to support external devices such as POS, Speeding Camera.
Time Triggered Recording	Rcording based on a schedule set by the user.
Time Condition	Time condition setting area is activated when the Time Triggered Recording is selected. Set the desired time for recording.
Common DI Sensor Triggered Recording	Recording when built-in DI sensor is triggered.
I Frame Recording	Select wether to record i frame only or not for the selected channel or stream.
Default	Resets to the default. (Default: Motion Triggered Recording)
Apply	Save and close the window.
Cancel	Close the window without saving.

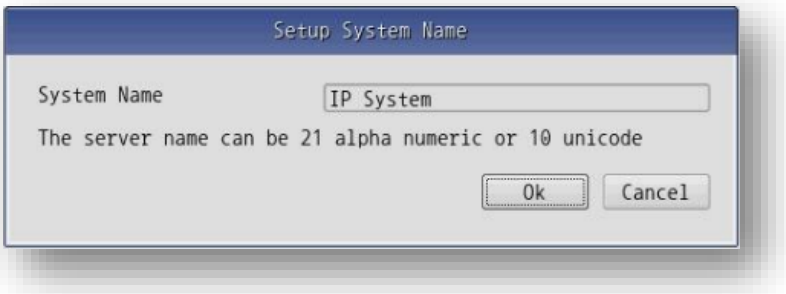
9.4 Preference Configuration

Provides general system setting, security, netowrk, storage, and alarm related settings.



9.4.1 System Name

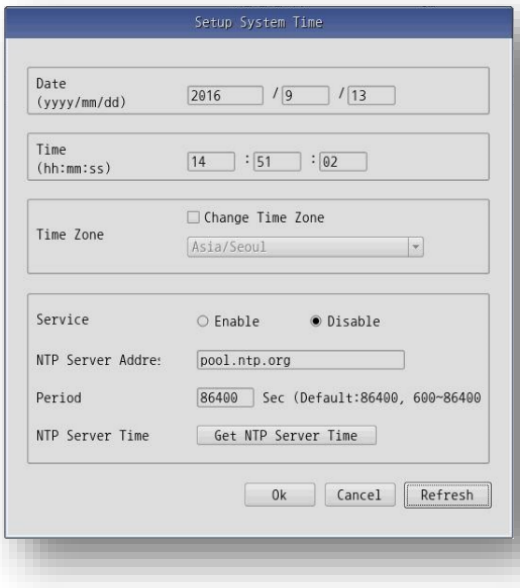
Set the NVR system name for efficient management of NVR and Network within the alphanumeric 21 chracters or 10 unicode characters.



9.4.2 System Time

Set the time of the NVR system.

Applying the correct date and time is strongly recommended to avoid any confusion or errors caused by time difference between the NVR system, IP Device, and client (remote access) PC.



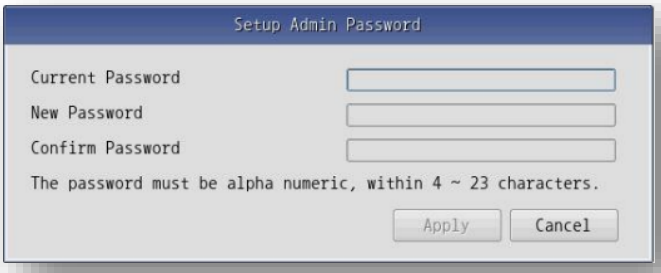
Item	Description
Date	Enter today's date.
Time	Enter the current time.
Time Zone	As needed, time zone can be changed after check mark on **Change Time Zone**.
Service	Select whether to use NTP service. NTP (Network Time Protocol) is a protocol for synchronizing the clocks of the Network devices. With NTP service, the NVR system can be synchronized to an internet time server.
NTP Server Address	Enter IP address or domain of NTP server.
Period	Enter the NTP synchronization cycle of the server in units of seconds. Default value is 86400 seconds = 24 hours.
NTP Server Time	Sync the time of NVR system with NTP server.

9.4.3 Admin Password

Set the NVR system administrator's password.

The administrator password must be 4-23 alphanumeric characters.

Administrator's password should be changed occasionally to secure the NVR System.

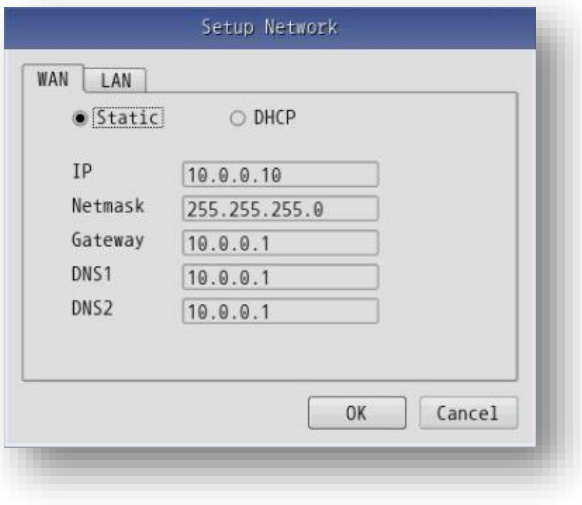


9.4.4 Access Level

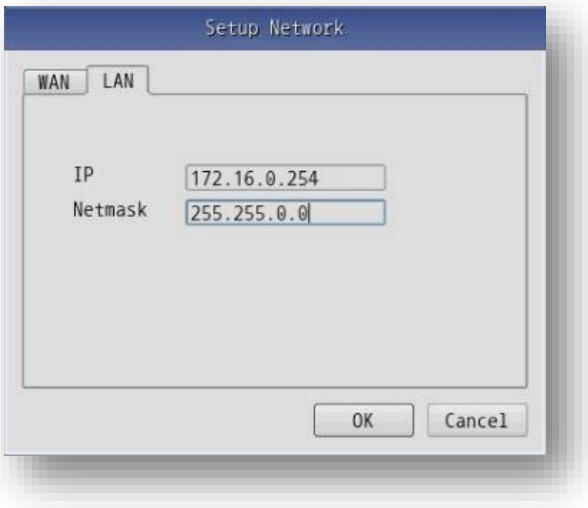
Select whether to use password authentication to access Live or Player A/B mode.

9.4.5 IP Address

NVR rear panel has WAN and LAN ports.



WAN port is used to Internet or remote access connection.
Select IP assigning type.
Then enter IP information if static is slected.



LAN port is used to configure private network for IP cameras and Video servers (Encoders).
Enter an IP for the NVR system and Netmask for subnetting.

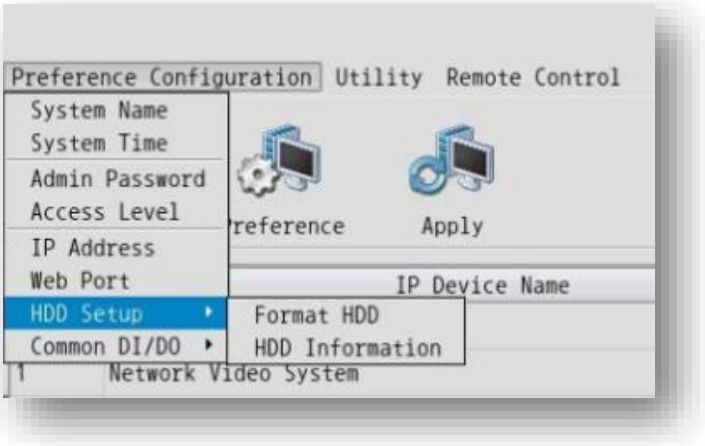
9.4.6 Web Port

Set Web Port for remote acces.

Web port number can be used in 80~65535.

9.4.7 HDD Setup

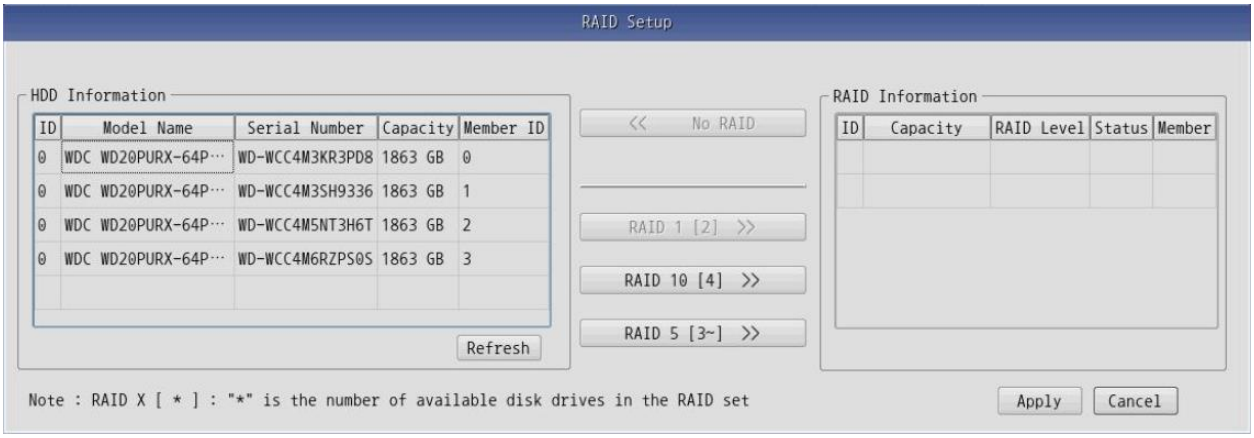
Storage status checking and storage formatting can be done in this menu.



9.4.7.1 Format HDD

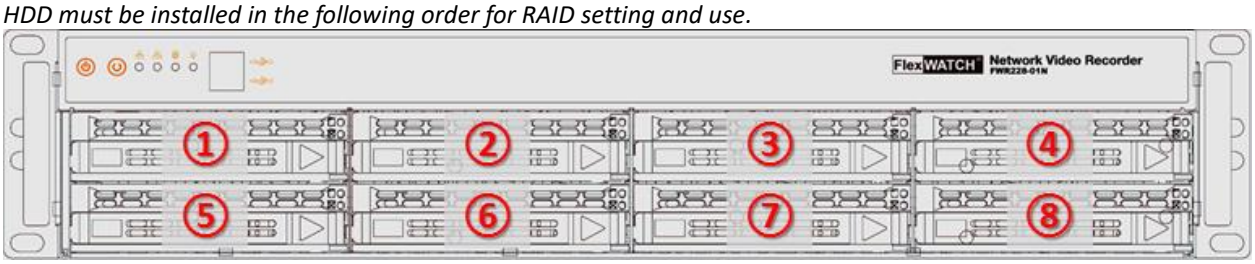
Item	Description
Storage Type	Show the SATA port number connected to the HDD.
Status	Shows HDD status.
Storage Size	Shows HDD size.
Option	Select whether to scan bad sectors during HDD format process.
Format	Selected HDD can be formatted. If bad sectors are found, the sectors do not used for recording.
Close	Close window without formatting.

9.4.7.2 RAID Setup



On the left side of the RAID setup window, information about the HDD installed in the NVR is displayed. Depending on the number of the HDD installed, supportable RAID options are activated in the center of the window.

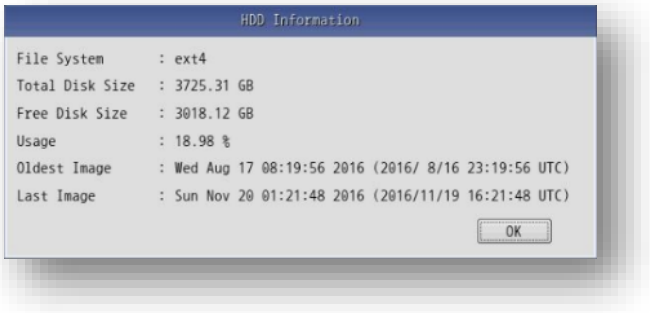
HDD must be installed in the following order for RAID setting and use.



If the hard disks are not installed in order, the RAID option will not be activated even if the number of installed storage devices meets the RAID option which required.

To use RAID feature, select the RAID option you want and click Apply to apply it.

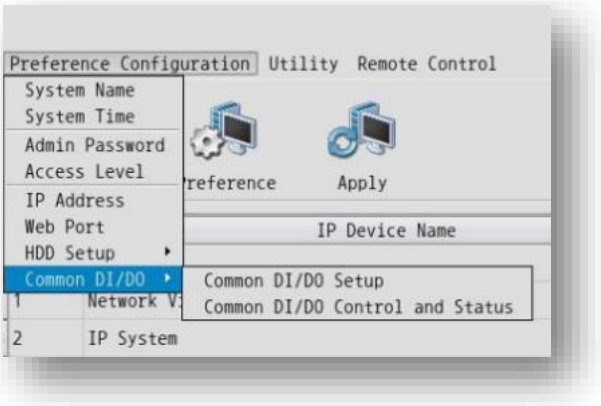
9.4.7.3 HDD Information



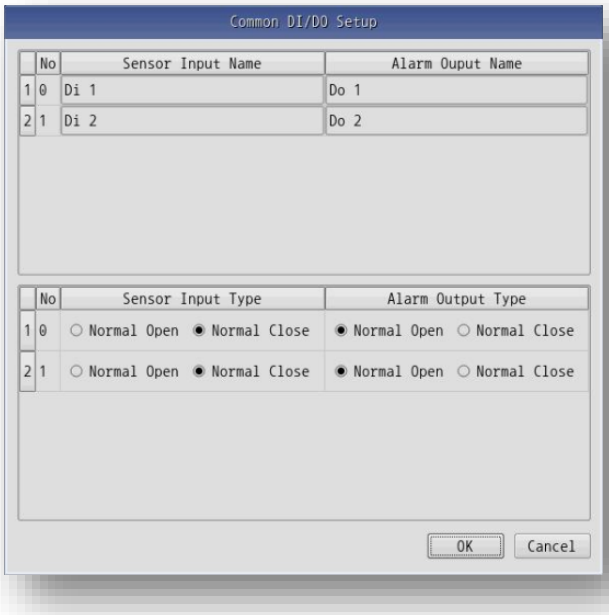
Item	Description
File System	Shows file system information of the storage.
Total Disk Size	Shows the storage capacity.
Free Disk Size	Shows available storage capacity.
Usage	Shows percentage of the storage usage.
Oldest Image	Shows the oldest data information in the storage.
Last Image	Shows the latest or newest data information in the storage.

9.4.8 Common DI/DO (Built-In Alarm)

DI/DO setting, alarm status checking and alarm control are available.

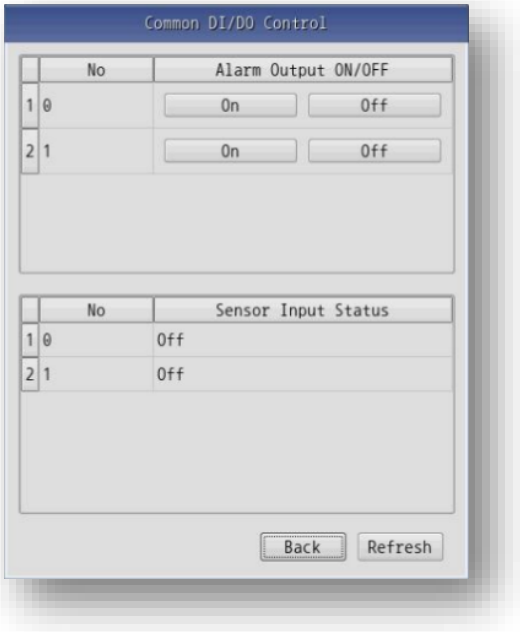


9.4.8.1 Common DI/DO Setup



Item	Description
No.	Indicates channel number of Sensor Input and Alarm Output.
Sensor Input Name	Change Sensor Input Name.
Alarm Output Name	Change Alarm Output Name.
Sensor Input Type	Select Sensor Input Type.
Alarm Output Type	Select Alarm Output Type.

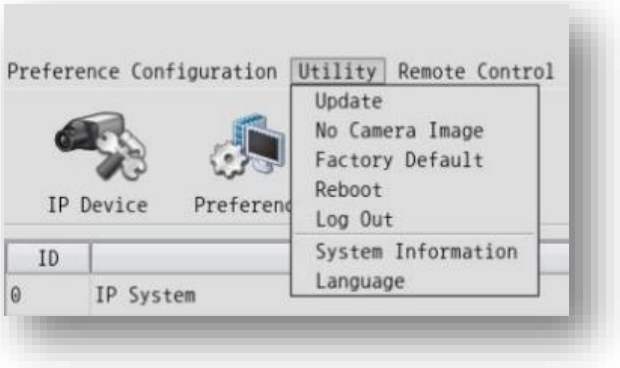
9.4.8.2 Common DI/DO Control and Status



Item	Description
No.	Indicates channel number of Sensor Input and Alarm Output.
Alarm Out ON/OFF	Turns the alarm on or off.
Seonsor Input Status	Check current status of the sensor input.

9.5 Utility

Provides the system software-related settings of the NVR system.

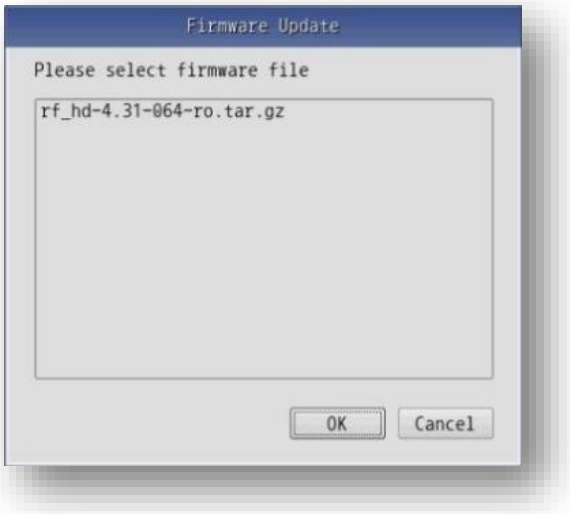


9.5.1 Update

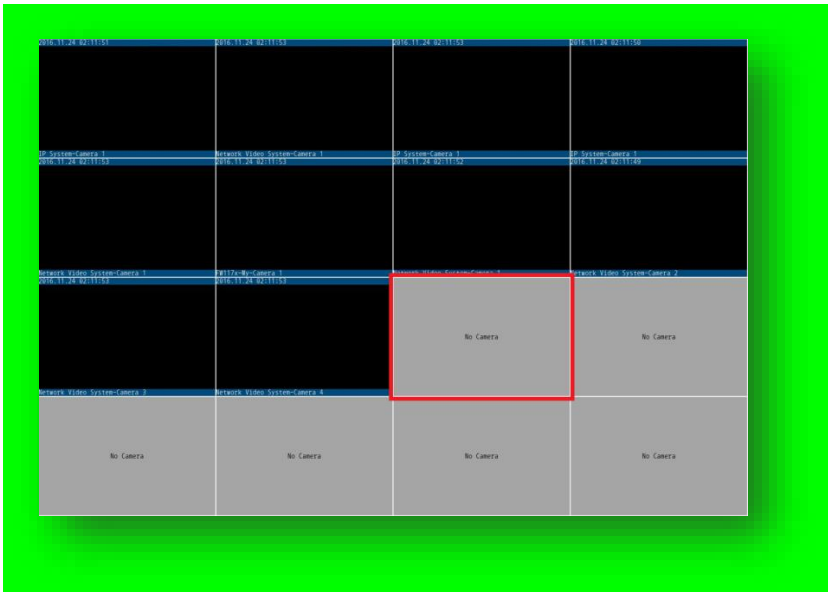
Updates NVR system firmware through USB Flash Drive.

Be sure to check the following before updating the firmware.

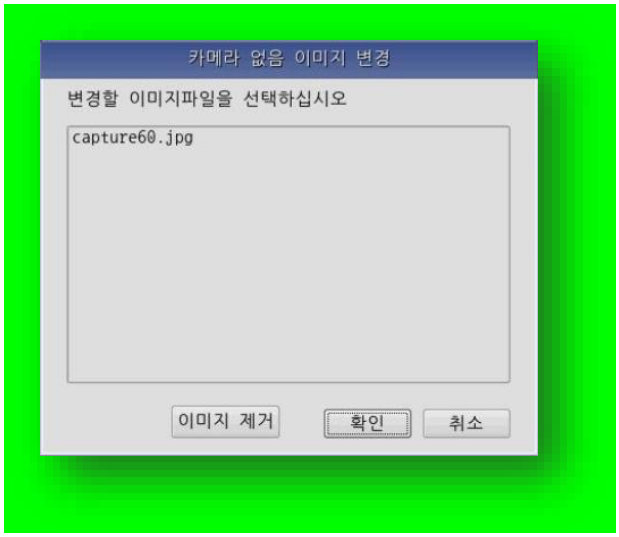
- Copy the firmware file to the root of USB
- USB Flash Drive should be connected before opening the Firmware Update Window.



9.5.2 No Camera Image



<Live Viewer>



<"No Cmaer Image" Update Window>

"No Camera" image is displayed on the blank channel as above on the live viewer page, which can be changed by updating the image file via USB drive.

The image file must be copied to the root directory of the USB drive, and the USB drive must be connected to the NVR before opening the Image Update window.

9.5.3 Factory Default

Restore all the settings to default except the network setting.

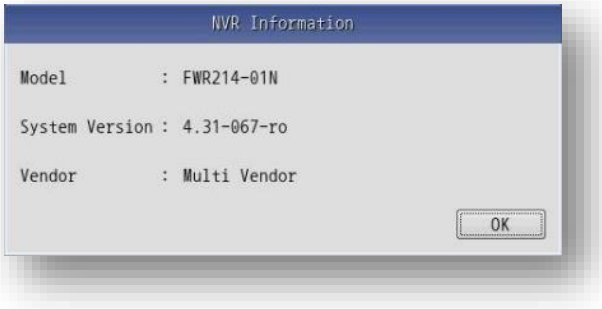
9.5.4 Reboot

Reboots the NVR system.

9.5.5 Log Out

Log out of NVR system.

9.5.6 System Information



Item	Description
Model	Shows model number of the NVR system.
System Version	Shows firmware version of the NVR system.
Vender	Shows whether supporting multi-vendor. ***Multi-Vendor*** - Supports FlexWATCH® devices and specific manufacturers IP devices. ***Single-Vendor*** - Supports FlexWATCH® devices only.

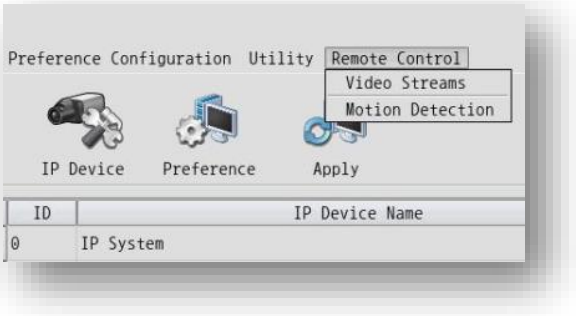
For more information about supported IP devices by the NVR systems, please contact your dealer or technical support.

9.5.7 Language

Item	Description
Language	User Interface language of the NVR System can be changed.
Region	Date and time formats can be changed by regional setting.

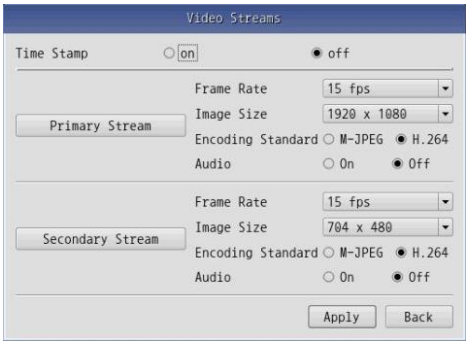
9.6 Remote Control

Supports remote setting of the registered FlexWATCH® device through the DVR system.

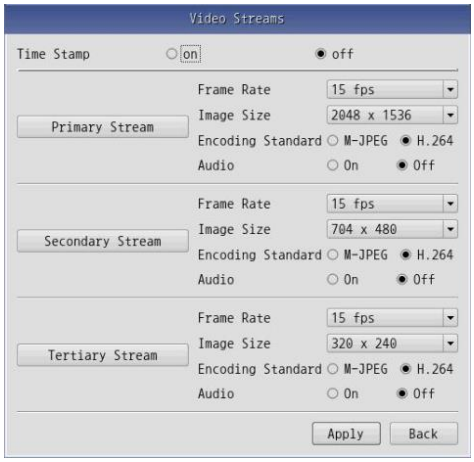


9.6.1 Camera Setting

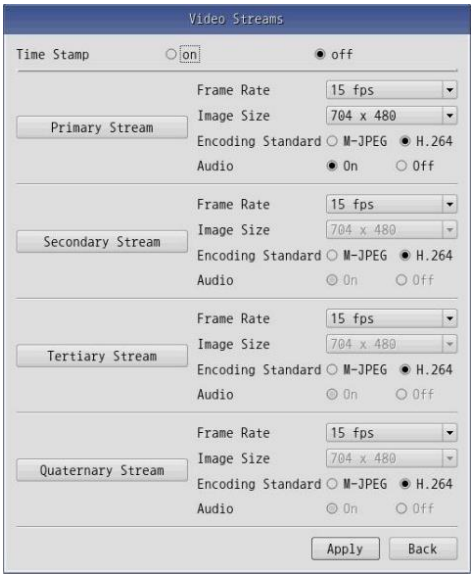
Camera settings page will vary as follows according to the number of channels /streams that is supported by the IP device.



<2 Channel, Dual Stream Camera Models>



<3 Channel, Triple Stream Camera Modles>

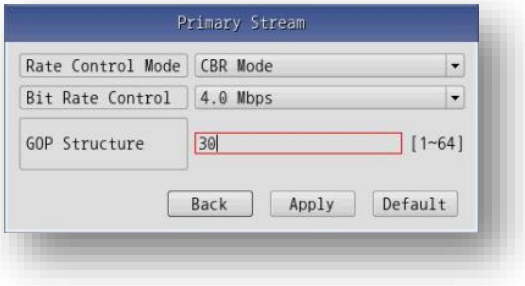


<4/8 Channel, Video Server Models>

Item	Description
Time Stamp	Display the date and time set in the camera at the top left corner of the camera screen.
Channel #	Open the encode settings window of each channel or stream. * For more information, please refer to *[Pg.70, 8.6.6.1 Channel/Streaming Setting]*.
Frame Rate	Select frame rate for each channel or stream of IP device.
Resolution	Select resolution for each channel or stream of IP device.
Codec	Select compression type for each channel or stream of IP device.
Audio	Select whether to use audio for each channel or stream of IP device.

9.6.1.1 Channel/Streaming Setting

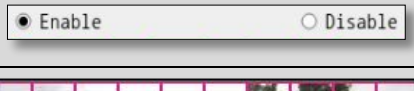
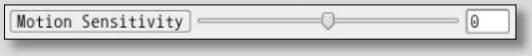
Remote encoding setting for each channel or stream is available.



Item	Description
Biterate Control Mode	Select bitrate mode. **CBR**: allows the user to fix the bit rate stream, regardless of scene activity, complexity and resolution. **VBR**: allows higher quality images regardless of the amount of bandwidth used.
Biterate Control	Set the bit rate value to be used in a constant bitrate (CBR) mode.
GOP Structure	Enter GOP value within 1 to 64. **GOP Structure**: The GOP value determines the sum total of P-frames and I-frames in a GOV. Setting the GOV-length to a high value saves considerably on bandwidth, but there may be noticeable image decay.
Back	Close window without saving.
Apply	Apply changes.
Restore	Restore to the previous setting.

9.6.2 Motion Detection

Remote Motion detection setting is available.

Item	Description
	Select wether to use motion detection feature in IP device.
	Select or deselect motion detection area using mouse. Green – indicates motion detection area. Pink – indicates non-motion detection area.
	Set the whole area as motion detection area or non-motion detection area.
	Set motion sensitivity level between -100 and 100. The higher the number, the more sensitive to changes in the image.
OK	Apply changes.
Cancel	Close window without saving.
Restore	Restore to the previous setting.

10. Appenddix

10.1 Specification

10.1.1 FWR424 Model

NVR	
Max Channel	**32Ch. IP cameras**
Video	
Max. Streaming Rate	**Max 120fps @ FULL-HD, Max 480fps @ D1**
Supported Codec	**H.264 / MJPEG**
Streaming Function	**Retransmission (Proxy)**
PTZ	**Remote PTZ control**

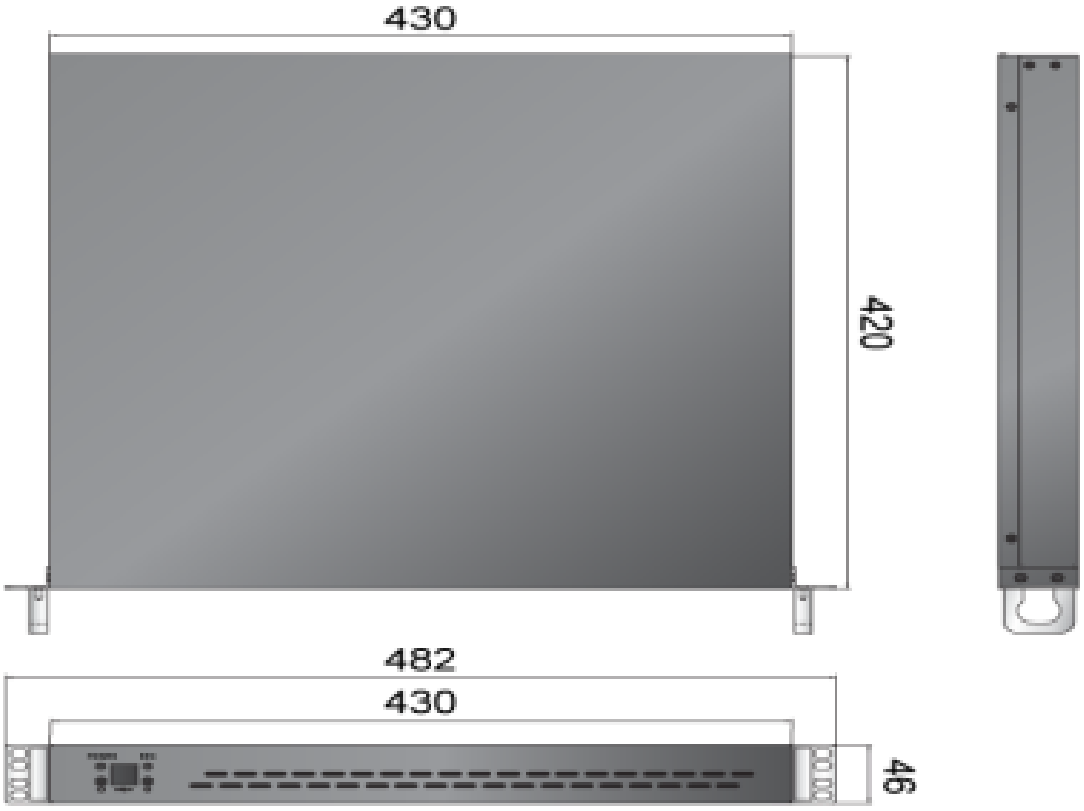
Recording	
Max. Recording Rate	Max 480fps @ Full HD
Stream	Video, Audio, Data
HDD Support	Supports 4 SATA HDDs up to 6TB / each (Max.24TB)
RAID	N/A
Condition	Always, Motion, Event, Schedule
Interface	
Video Out	1 HDMI, 1 VGA,
Audio In/Out	2 way (1 in, 1 out)
Audio Compression	8bit G.711, 8Khz, 8Kbyte/sec
Alarm In/Out	4DI, 1DO
Serial Port	(RS-232C), RS-485
Peripherals	USB 2.0 x 2 + USB3.0 x 1
Network	
WAN (Ethernet)	10/100/1000-base-T Ethernet (auto sensing)
Protocol	HTTP, TCP/IP, UDP, FTP, Telnet, RARP, PPPoE, PAP, CHAP, DHCP, NTP, SMTP client, uPNP and more.
Viewer	Browsers (IE, Firefox, Safari etc), CMS, Quick Time, VLC
Player	Browsers (IE, Firefox, Safari etc), CMS,
Dynamic IP	DDNS (www.ipcctvdns.com)
Smart Solution	IPCAMVISION (IOS, Android)
Security	Encrypted & Basic Authentication
Hardware	
System	32bit Embedded Linux, 2 G byte SDRAM, 128MBytes NAND Flash
Approvals	KC, FCC, CE, RoHS, UL
Working Condition	0℃ ~ +50℃ (32℉ ~ 122℉), 10% ~ 80% RH
Power Supply	INPUT : 100-240VAC, 50~60Hz OUTPUT : SMPS, 12VDC @ 7A
Power Consumption	Max. 40W
Dimension	430(W) x 420(D) x 45(H) mm
Weight	About 5,500g without HDD

10.1.2 FWR228 Model

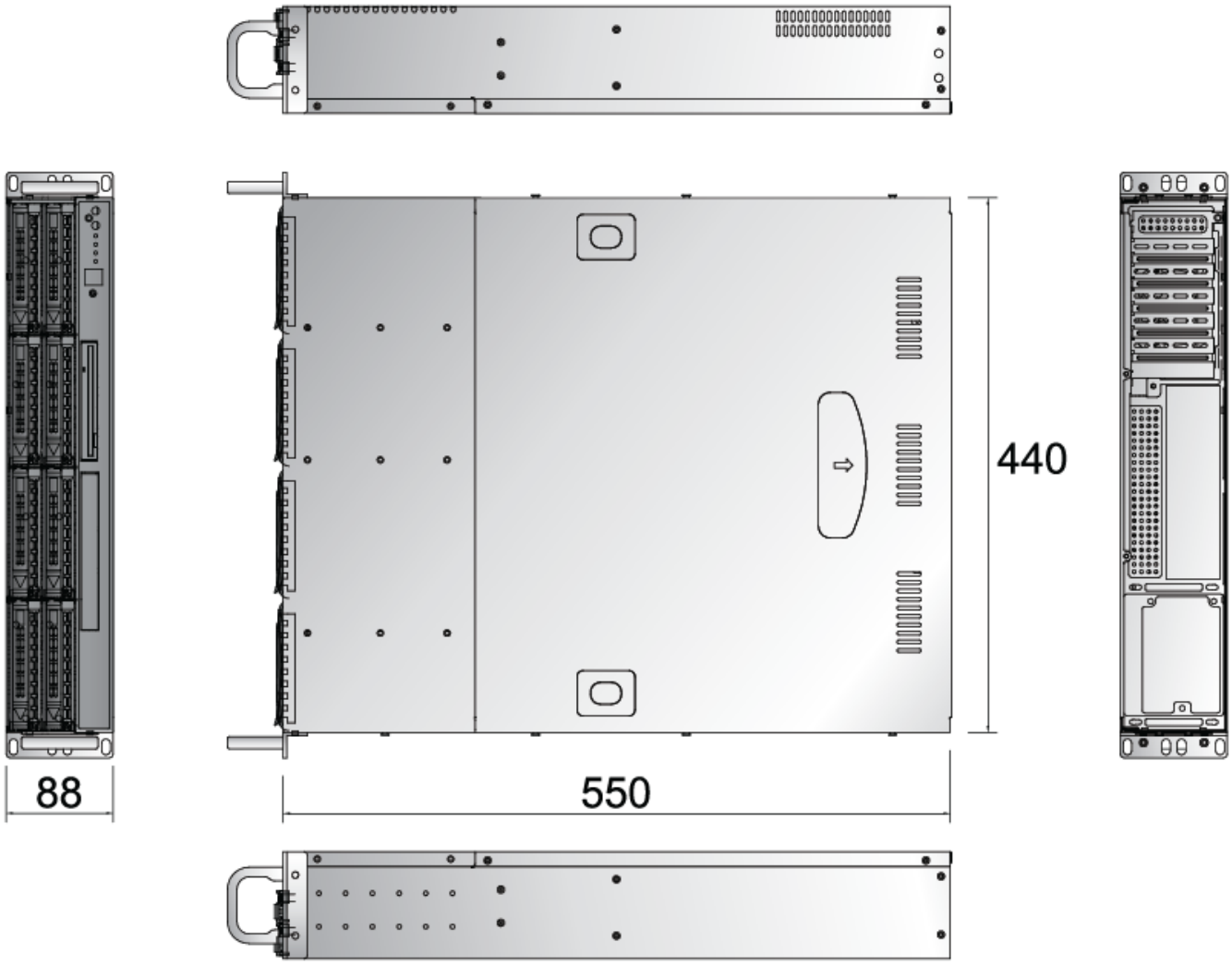
NVR	
Max Channel	64Ch. IP cameras
Video	
Max. Streaming Rate	Max 480fps @ FULL-HD, Max 1920fps @ D1
Supported Codec	H.264 / MJPEG
Streaming Function	Retransmission (Proxy)
PTZ	Remote PTZ control
Recording	
Max. Recording Rate	Max 1920fps @ Full HD or 4K
Stream	Video, Audio, Data
HDD Support	Supports 8 SATA HDDs up to 8TB / each (Max.64TB)
Condition	Always, Motion, Event, Schedule
Interface	
Video Out	1 HDMI, 1 VGA
Audio In/Out	2 way (1 in, 1 out)
Audio Compression	8bit G.711, 8Khz, 8Kbyte/sec
Alarm In/Out	16 DI, 4 DO
Serial Port	RS-232C
Peripherals	USB2.0 x 2 + USB3.0 x 1
Network	
WAN (Ethernet)	10/100/1000-base-T Ethernet (auto sensing)
LAN (Ethernet)	10/100/1000-base-T Ethernet (auto sensing)
Protocol	HTTP, TCP/IP, UDP, FTP, Telnet, RARP, PPPoE, PAP, CHAP, DHCP, NTP, SMTP client, uPNP And etc.
Viewer	Browsers (IE, Firefox, Safari etc), CMS, Quick Time, VLC
Player	Browsers (IE, Firefox, Safari etc), CMS,
Dynamic IP	DDNS (www.ipcctvdns.com)
Smart Solution	IPCAMVISION (IOS, Android)
Security	Encrypted & Basic Authentication
Hardware	
System	32bit Embedded Linux, ARM Cortex A17 quad-core@maximum 1.4 GHz, SDRAM 256Mbyte, NAND Flash 128MBytes
Approvals	KC, FCC, CE, RoHS, UL
Working Condition	0℃ ~ +50℃ (32˚F ~ 122˚F), 10% ~ 80% RH
Power Supply	INPUT : 100-240VAC, 50~60Hz / OUTPUT : ATX power 500W
Power Consumption	Max. 300W
Dimension	440(W) x 550(D) x 88(H) mm
Weight	About 8,500g without HDD

10.2 Product Overview

10.2.1 FWR424 Model



10.2.2 FWR228 Model



Seyeon Tech Co., Ltd.

HEAD OFFICE

- **Address** #404, Gayang Techno Town, 217, Heojun-ro, Gangseo-gu, Seoul, 157-193, South KOREA
- **PHONE** +82-2-2192-6800
- **FAX** +82-2-2659-0831
- **Email** sales@flexwatch.com

US Office

- **Address** 4050 N. Palm St. #501, Fullerton CA 92835, USA
- **PHONE** +1-323-262-3682
- **FAX** +1-714-994-1593
- **Email** support@flexwatch.com

www.FlexWATCH.co.kr
www.FlexWATCH.com