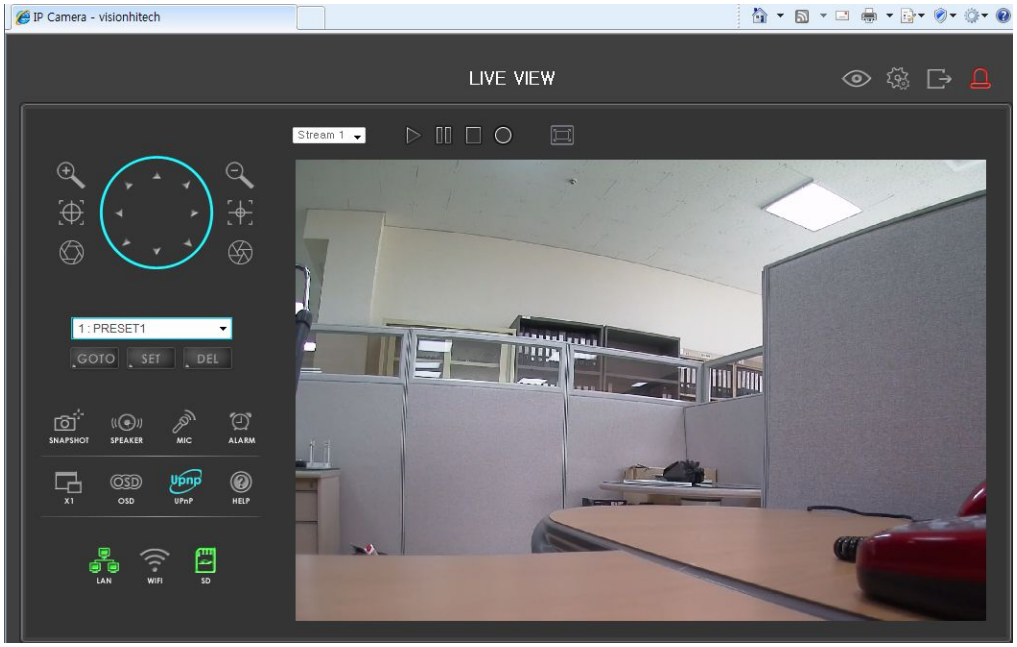
Network Camera & Video Server

USER MANUAL



Version 1.7.2

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VISIONHITECH Co., Ltd.

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About this Document

Thank you for purchasing VISION SMi- and i-Series Network Camera or Network Video Server. This user manual includes instructions for using and managing the camera on your network. Networking experience will be helpful when setting up and using this product. Updated versions of this document will be posted to www.visionipvideo.com as they become available.

Legal Considerations

Video and audio surveillance can be prohibited by laws that vary from country to country. Please check the laws in your local region before using this product for surveillance purposes.

Electromagnetic Compatibility (EMC)

This equipment generates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a different circuit than the receiver.
- Consult your dealer or an experienced radio/TV technician for help.
- Check that shielded (STP) network cables are being used with this unit to ensure compliance with EMC standards.

This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference. This digital equipment fulfills the requirements for radiated emission according to limit B of EN55022/1998, and the requirements for immunity according to EN55024/1998 residential, commercial and light industry.

Safety

This equipment complies with EN 60950, Safety of Information Technology equipment.

Radio Transmission Regulatory Information

This equipment generates and radiates radio frequency energy, and must be installed and operated while maintaining a minimum body-to-camera distance of 3 feet (1 meter).
Tested to comply with FCC Standards FOR HOME OR OFFICE USE.
This product must be installed and used in strict accordance with the instructions given in the user documentation.
This product complies with the following radio frequency and safety standards:
Europe -EU Declaration of Conformity.
This device complies with the requirements of the R&TTE Directive 1999/5/EC with essential test suites as per standards EN 301489: General EMC requirements for radio equipment; and ETS 300328: Technical requirements for radio equipment.

USA -Federal Communications Commission (FCC): This device complies with Part 15 of FCC Rules. Operation of the device is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

Trademark Acknowledgments

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Video Standard and Product Classification

As the video standard varies from country to country, users are asked to check it first and choose the right model. The two most common video standards used are NTSC and PAL. NTSC is the video system or standard used in North America and most of South America. In NTSC, 30 frames are transmitted each second. Each frame is made up of 525 individual scan lines. PAL is the predominant video system or standard mostly used overseas. In PAL, 25 frames are transmitted each second. Each frame is made up of 625 individual scan lines.

To determine your video standard, refer to the lists below.
(Necessary only for *i-Series* IP Cameras)

PAL: Afghanistan, Algeria, Argentina, Austria, Australia, Bangladesh, Belgium, Brazil, China, Denmark, Finland, Germany, Hong Kong, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Liberia, Malaysia, Netherlands, Nigeria, Norway, New Guinea, Pakistan, Singapore, South Africa, Southwest Africa, Sudan, Sweden, Switzerland, Thailand, Turkey, Uganda, United Kingdom, United Arab Emirates, Yugoslavia, Zambia

NTSC: Canada, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, Japan, Mexico, Nicaragua, Panama, Peru, Philippines, Puerto Rico, South Korea, Taiwan, USA. Users are asked to read the following before using the Pro Series Network Camera.

Product Classification

Classification	Definition	Max. Resolution	Frame rate at max. resolution
i-Series	SD	D1	30 fps
Mi-Series	HD	1280 X 720	30 fps
M3i-Series	Full HD	1920 X 1080	15 fps
M3Ti-Series	3 Mega Pixel	2048 X 1536	20 fps

Important Notices

1. Camera surveillance laws may differ for each country. Contact the local authorities to avoid any surveillance law violations.
2. Note that the CCD sensor that equipped in Network Camera can be damaged permanently if exposed to direct sunlight. If your application demands prolonged exposure to sunlight, you should consider equipping it with a sun visor.
3. Indoor Network Camera is not weatherproof. Be aware of environmental specifications included in the manual. For outdoor use, use outdoor network camera or a weatherproof case to protect the camera from water, moisture or temperature (higher or lower than specifications). For camera cleaning, gently wipe with a clean, dry cloth.
4. Be sure to use only the DC adapter or AC adaptor provided with your camera. Connecting the camera directly to AC current may cause electrical damage to the camera.
5. Be careful when handling the camera. Physical shocks can cause serious damage.
6. Be sure to mount the camera securely to avoid any personal injuries. Keep the camera out of the reach of children.
7. If the camera does not operate properly, contact your local distributor. Do not disassemble the product, as that may void the warranty.
8. **Specifications are subject to change without prior notice to enhance the product quality and stability.**
9. **The contents of this manual may differ from actual products due to product upgrade or enhancement.**

1 Product Overview

1.1 About VISION Network Cameras and Video Servers

The VISION Network Cameras and Network Video Server are all-in-one networking devices that contain a digital color camera (or a connection for analog CCTV cameras), a powerful Web server, an optimized embedded operating system, hardware for image compression and a physical Ethernet connection. The products do not need any additional software or hardware. Simply provide power, connect an Ethernet cable and view from any computer on the network. For the Network Video Server, you need a conventional CCTV camera as your video input source. The VISION Network Cameras and Network Video Servers are ideal for surveillance applications that require high-quality, full-motion video and audio, as well as comparatively low bandwidth demands on the network. These products provide an easy user interface for remote access to receive the optimal synchronized video and audio from anywhere, anytime over the Internet with the popular Internet Explorer Web browser, as easy as surfing any regular Web sites. More than just a high-performance network camera, the VISION Network Cameras and Network Video Server also offer many advanced features to provide solutions such as remote surveillance, home/business security, audio/video conferencing, motion detection and more.

NOTE: This user manual includes the Network Video Server whenever it refers to VISION Network Cameras or Network Cameras.

1.2 Main Features and Benefits

Convenient Operation
The VISION Network Camera does not need any additional software or interaction with any other server. The only software needed is a common Web browser, such as Microsoft Internet Explorer 5.x or above.

Open Standards
The VISION Network Camera supports TCP/IP networking, SMTP e-mail, FTP, HTTP and other Internet-related protocols. The camera can be used in a standard Web Browser and it integrates easily into other www/Intranet applications and CGI scripts.

Simple Administration
Using a standard Web browser, you can configure and manage the VISION Network Camera directly from its own embedded Web pages. The embedded operating system is upgradeable through the network; check with your local dealer or visit www.visionipvideo.com for firmware upgrades.

External Devices
The auxiliary Input/Output connector on the camera allows you to connect to a variety of external devices, such as IR sensors, switches and alarm relays.

Security
Your VISION Network Camera includes a self-contained Web server, which means that digital images can be secured like any other Internet host. Your network administrator, using the unit's security settings in combination with an organization's Internet firewall, normally implements data protection. The administrator can decide whether individuals, groups or the whole world may access the camera. The VISION Network Camera supports multi-user password protection.

Compression and Performance
With a variable frame rate dependent on the image quality and bit rate, the camera delivers H.264 video up to maximum 30 images per second at HD resolution (1280x720). (For M3i series, 15 frames per second at full HD)

Classification	Maximum Resolution	Frame rate at Max. Resolution
i-Series	D1	30 fps
Mi-Series	1280 X 720 (HD)	30 fps
M3i-Series	1920 X 1080 (Full HD)	15 fps
M3Ti-Series	2048 X 1536 (3 Mega Pixel)	20 fps

Dual Mode Compression
For application providers, system integrators and other APs, this camera supports two types of video:

1) H.264 video; 2) M-JPEG compression.

Full Duplex Two-Way Audio
Full duplex two-way audio is available by connecting an external microphone and speaker to the camera.

IEEE 802.3af Standard PoE (Power over Ethernet) Supported (For high speed dome camera and mini PTZ camera, IEEE 802.3at standard PoE is supported.)

Included Software

IP scan utility for quick installation

NVR software for for viewing and recording multi cameras up to 16 channels in a screen

User Manual pdf version (IP Camera Manual and NVR Manual)

Check http://www.visionipvideo.com for latest versions.

2: Physical Description

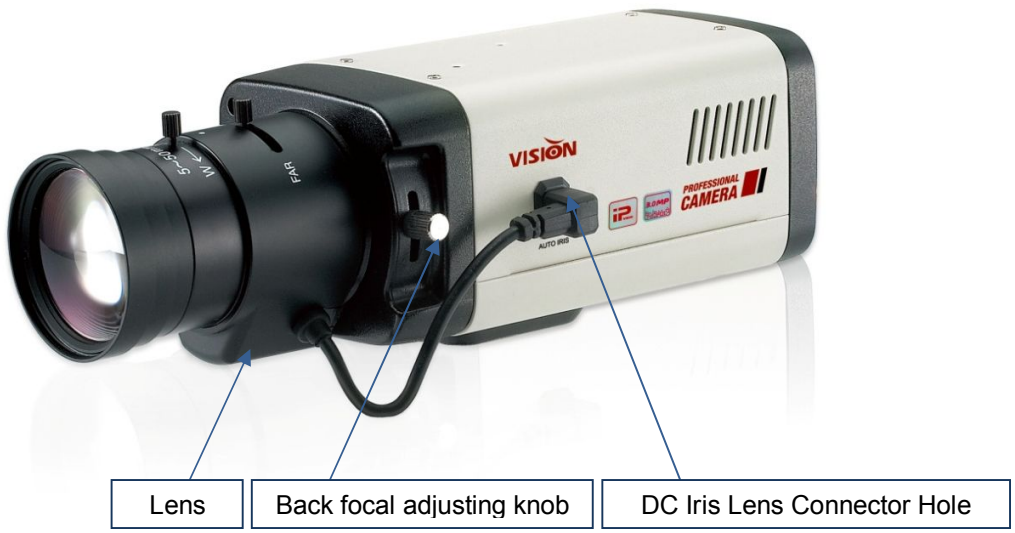
2.1 Package Contents

Check all items packed inside the box as listed below.

ITEM	DESCRIPTION
Network Camera or Video Server	H.264/M-JPEG dual mode Network Camera or Network Video Server
Installation CD	IP scan utility, IP Camera Manual, NVR software and manual
Power Supply	Power adapter and power cord
Bracket	Wall bracket & table stand*
User Manual	Printed copy manual

* You can use a standard camera stand or tripod for the box type VISION Network Camera.

2.2 Front View of Indoor Box Camera



Rear View

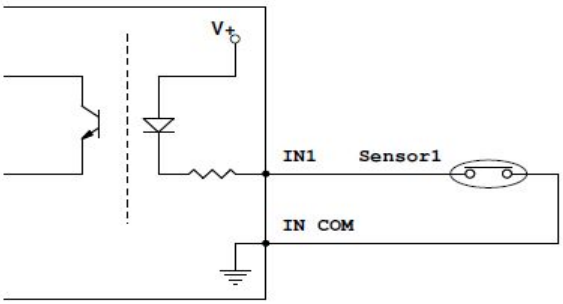
Power Connector: Only use the supplied AC adapter to avoid any possible damage from electric shock.

Network Connector: Connect 10Base-T Ethernet or 100Base-TX Fast Ethernet cable. When use PoE, connect Ethernet cable coming from PoE injector or switch.

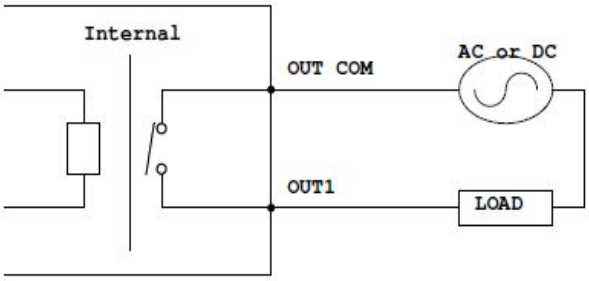
Sensor/Alarm Connector: To connect external devices such as infrared sensors, alarms or motion detectors.
Alarm Input
Sensor Input is detected by Short or Open between Sensor IN Terminal and COMMON Terminal.

If you want to use Alarm Input, the types of sensors must be selected. The sensor types are divided into Normal Open and Normal Close. If wrong sensor types are selected, alarms should be activated reversely to sensor inputs.

⊙ Normal Open	A sensor activates when a Sensor IN Terminal and COMMON Terminal are Short
⊙ Normal Close	A sensor activates when a Sensor IN Terminal and COMMON Terminal are Open



Relay Output



Audio-out: Use to connect to an external speaker for audio communication. The audio sent over the network from a connected client computer can be delivered through this externally connected speaker.

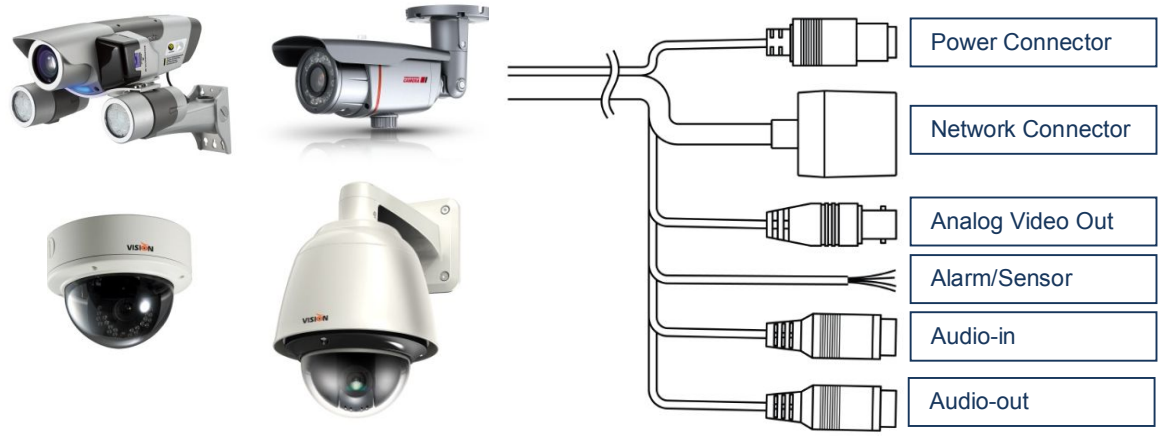
Audio-in: The external microphone for audio input. The live audio can be captured and transmitted to the connected camera client via the use of this MIC.
RESET: Restore the factory default settings.
Power LED (Green): Once power is supplied to the camera, the green LED will light.

Operating Status LED/Network Activity LED (Yellow): This LED indicates the camera's operating status. Once power is supplied and the camera is connected to network, the LED lights and then blinks very fast as long as the video is transmitted on the network during normal operation. When there is no video transmission, the LED stops blinking.
SD Card Insert Hole : Insert SD Card for local storage

Analog Video Out : Utilizes analog video by connecting to DVR or monitor, or can be connected to video tester when installing camera.

2.3 Other Network Camera and Connector

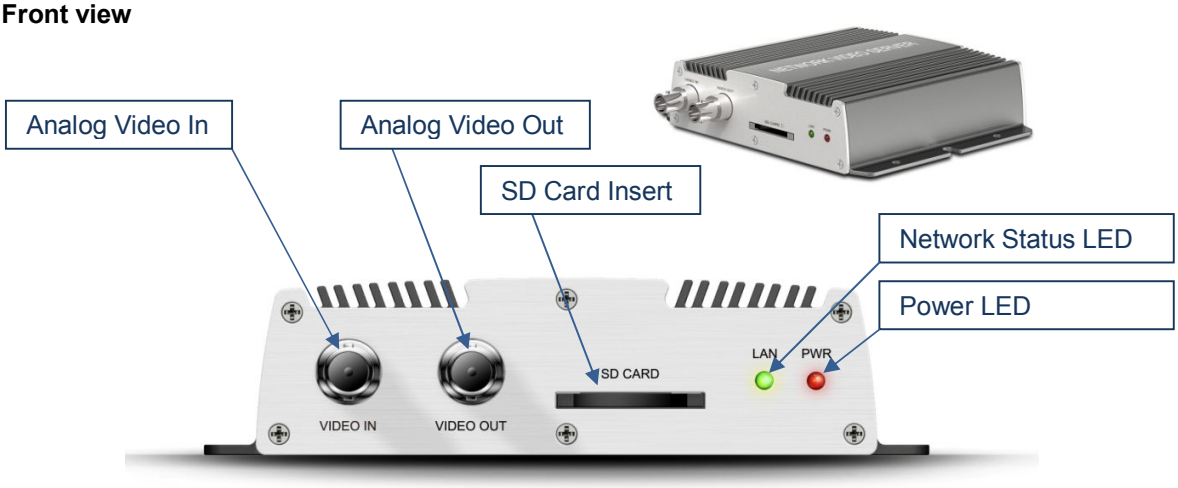
IR night vision cameras, dome cameras, speed dome cameras and mini PTZ cameras usually have connectors on the end of cable coming out of those cameras.
Before connecting, users are asked to check each label on the connector.



※ Connector specification may be different depending on the product.

2.4 Network Video Server

Front view

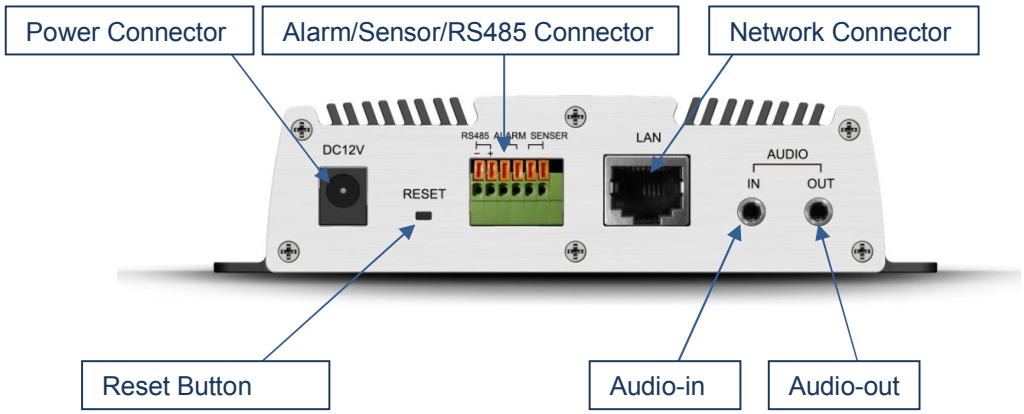


Video Input: To input video signal through a coaxial cable
Video Output: To output video signal through a coaxial cable. The output utilizes analog video by connecting to DVR or monitor.

Power LED (Red): Once power is supplied to the camera, the green LED will light.

Operating Status LED/Network Status LED (Green): This LED indicates the camera's operating status. Once power is supplied and the camera is connected to network, the LED lights and then blinks very fast as long as the video is transmitted on the network during normal operation. When there is no video transmission, the LED stops blinking.

SD Card Insert : Insert SD Card for local storage
Rear view



Power Connector: Only use the supplied AC adapter to avoid any possible damage from electric shock.

Alarm/Sensor/RS485 Connector: To connect external devices such as infrared sensors, alarms or motion detectors as well as camera RS485 line for remote control

Ethernet (Network Connector): Connect 10Base-T Ethernet or 100Base-TX Fast Ethernet cable.

Audio-out: Use to connect to an external speaker for audio communication. The audio sent over the network from a connected Video Server client can be delivered through this externally connected speaker.

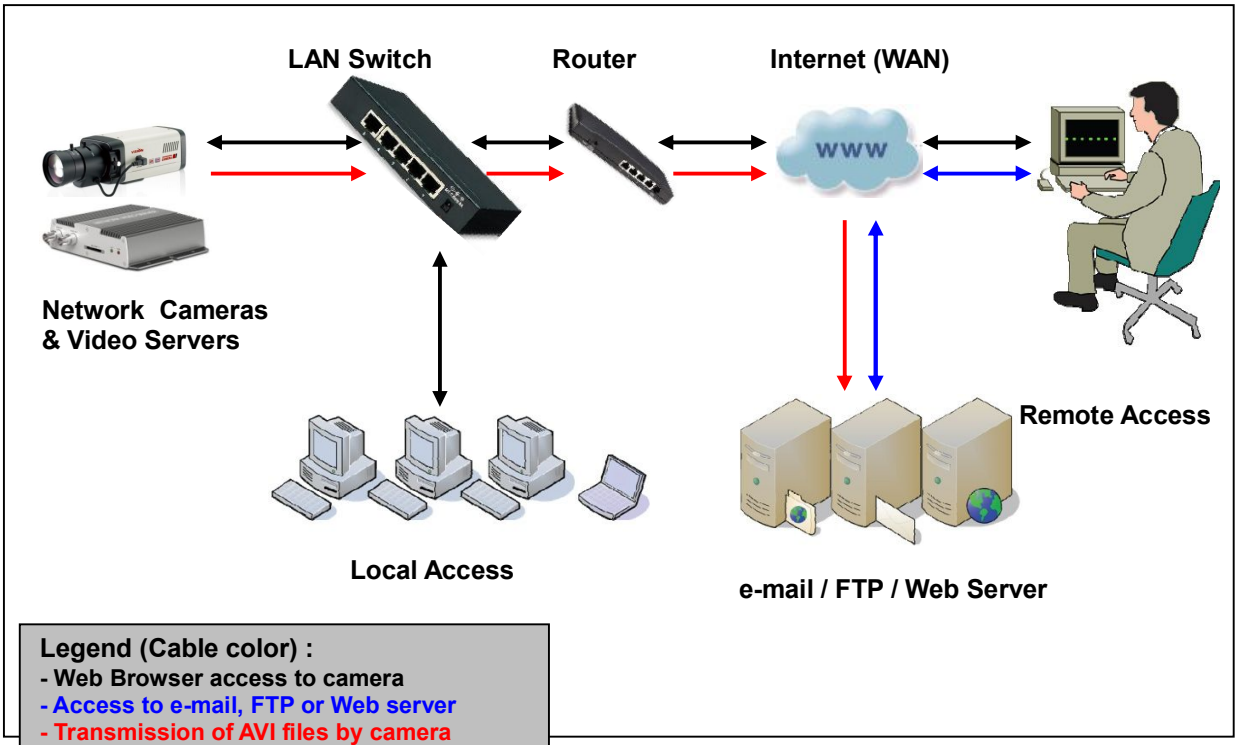
Audio-in: The external microphone for audio input. The live audio can be captured and transmitted to the connected Video Server client by using of this port.

RESET: Restore the factory default settings.

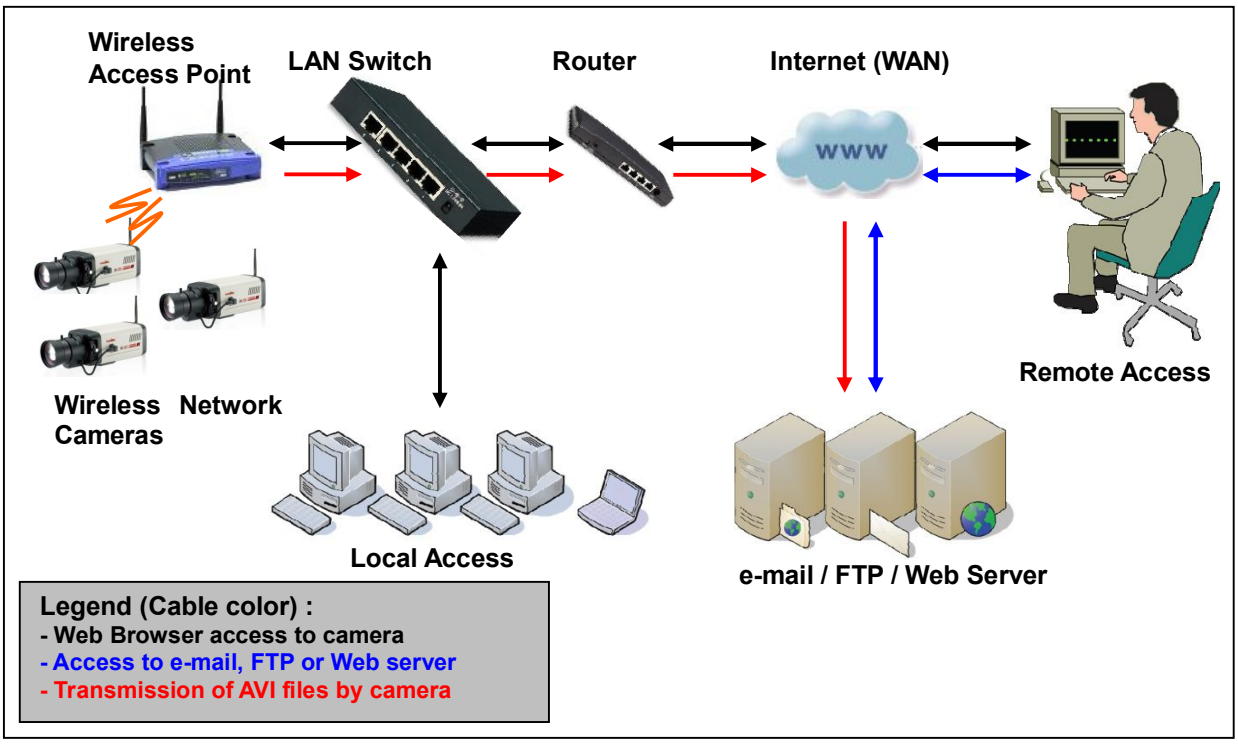
3: Installation Summary and Examples

1. Connect the Ethernet and power to the VISION Network Camera.
2. Install and launch the IP scan utility program on the enclosed CD.
3. Assign an IP address and network settings.
4. Securely mount the camera. Owners need to refer to the included Hardware Installation guide.
5. Adjust the lens focus.

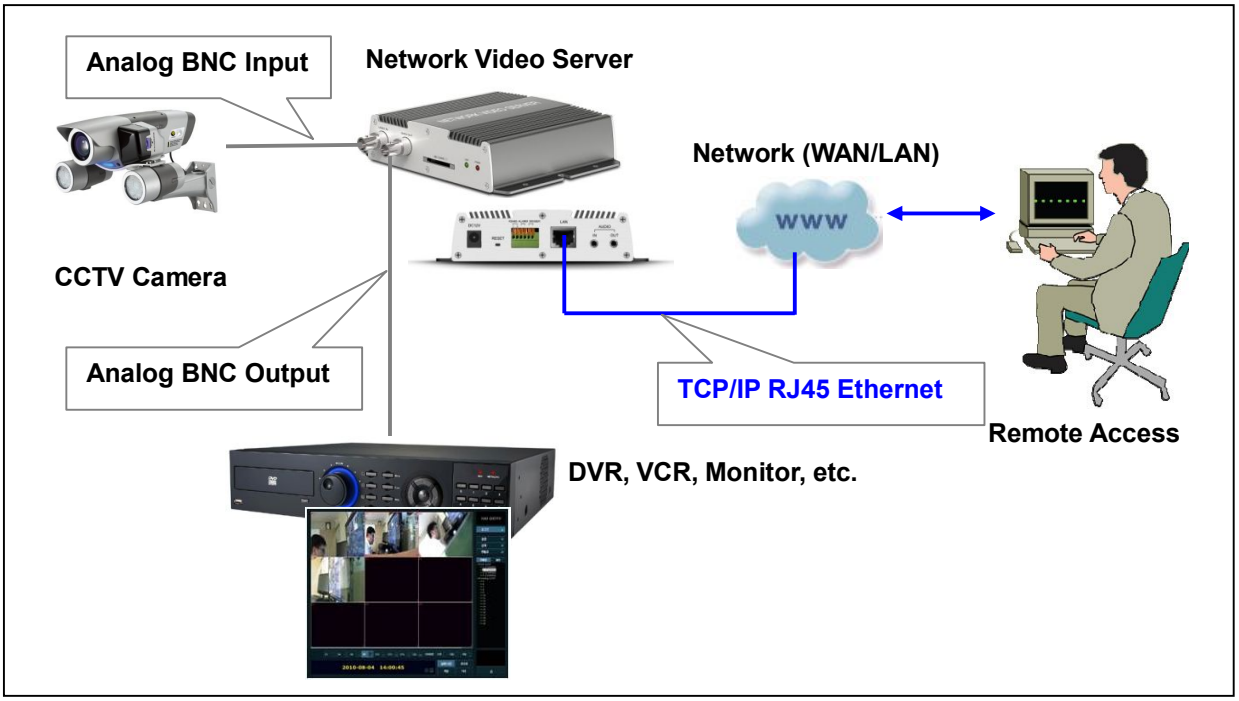
Installation Example: Wired Camera



Installation Example: Wireless Camera



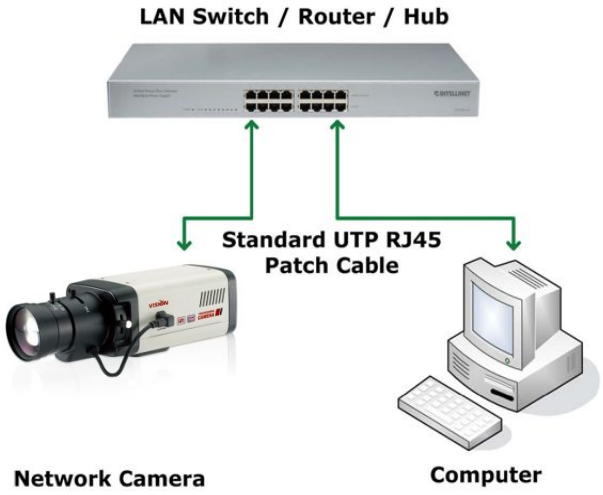
Installation Example: Network Video Server



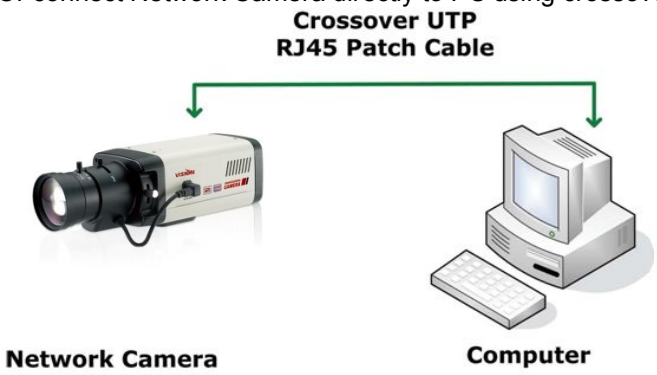
4. Assigning an IP Address and Accessing the Camera's Homepage

4.1 Connecting the Camera to a PC

Connect with a direct cable (non-crossover UTP cable) when connecting the camera to a switch, hub or router.



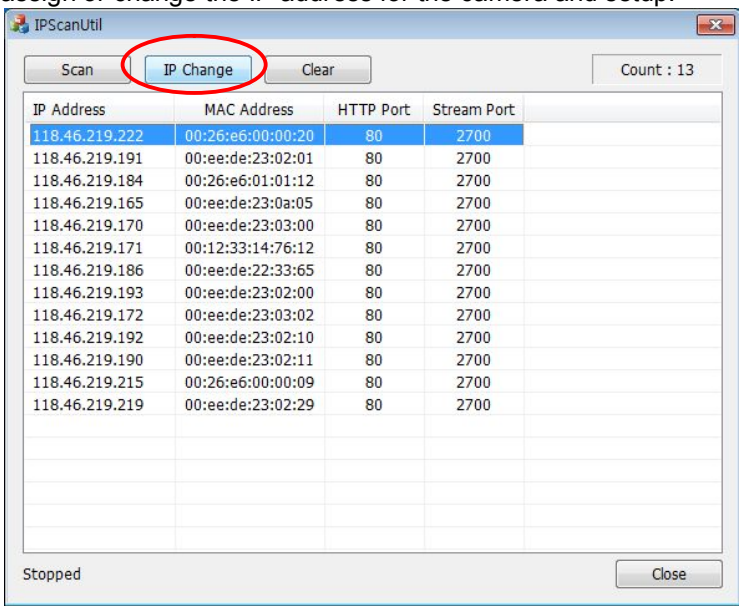
Or connect Network Camera directly to PC using crossover UTP cable.



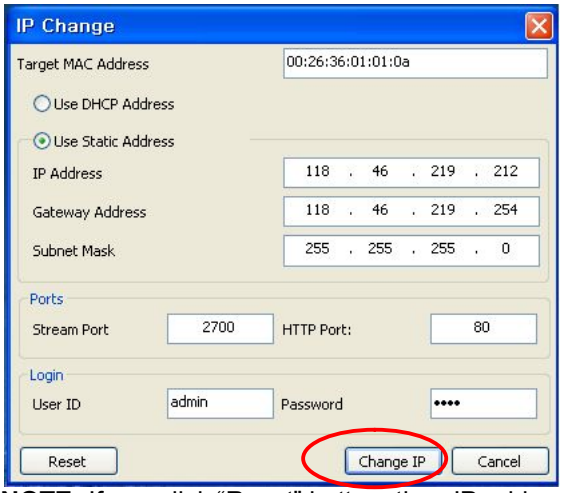
4.2 Setting up the IP Address Using IPScanUtil program in the packaged CD
To access the camera, you need to assign an appropriate network IP address. Run the IP address installation program (IPscanUtil.exe) on a PC that is connected to the same local network as the camera. You can download IPscanUtil program from http://www.visionipvideo.com.

1. Run IPscanUtil.exe after the camera is booted (wait until the Operating Status LED blinks very fast).
2. Click “Scan” button.
3. Once IPscanUtil program scanned, the panel shows every camera connected on the local network. From the cameras listed, select one and click “IP Change” (Or double click the selected camera on the list) to assign a new IP address (every VISION Network Camera has a factory default IP address. http://192.168.1.100 for wired cameras and http://192.168.10.100 for wireless cameras).

NOTE: The MAC address can be found on the label of the camera. To choose a camera, click on its MAC address on the list.
Enter the administrator ID and password in the blank (default ID and password are “admin" and “1234” respectively.) to assign or change the IP address for the camera and setup.

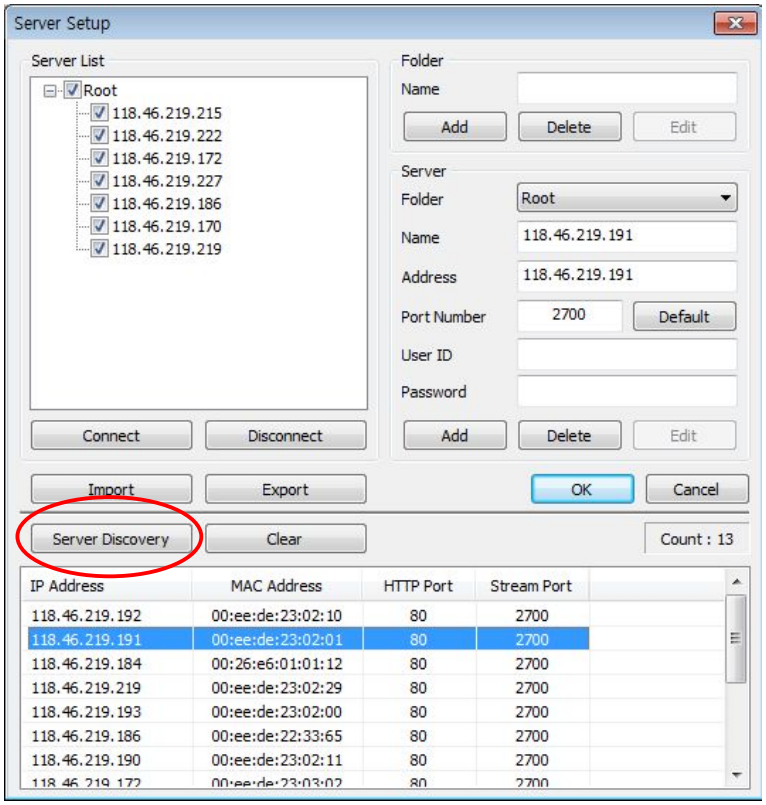


Enter the IP address, gateway address, subnet mask address, DNS server address and server IP address assigned by the network administrator. (When the addresses are not assigned properly, you cannot access the camera.) The server IP address does not need to be filled out at this time.
After entering all addresses for the camera, click on "Change IP" button.
The message shows up if all the information is set up properly.
Then click the "OK" button.



NOTE: If you click “Reset” button, then IP address turns back to factory default address.

NOTE: IP address can be set on the NVR software as well by clicking the “Server Discovery” button in “Server Setup”.

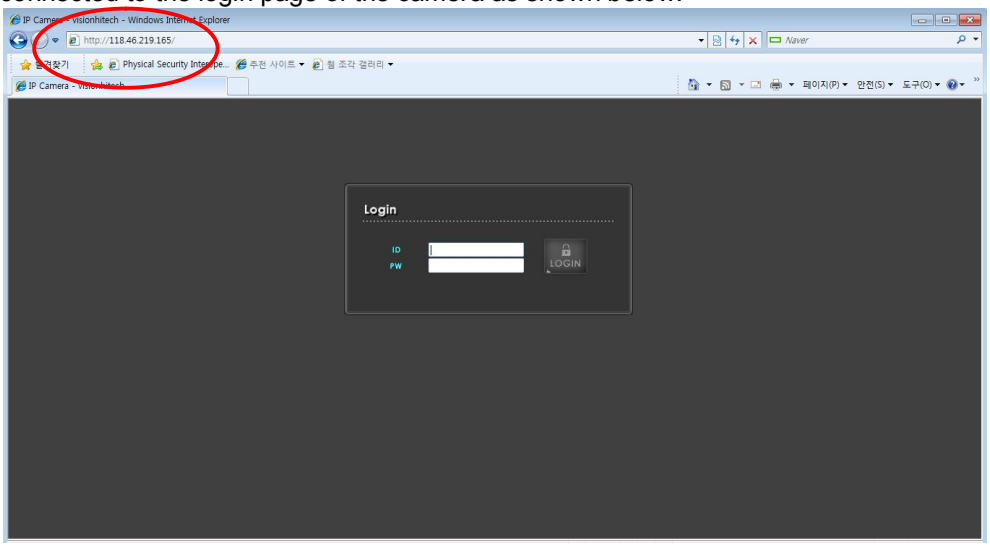


NOTE: After changing the network configuration, it may take a little time to reboot the camera in order to access the camera’s homepage.

4.3 Accessing the Camera's Homepage

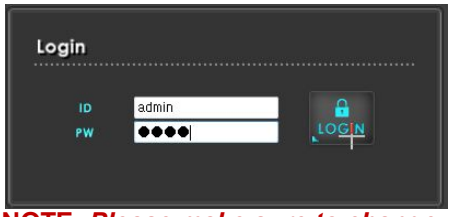
Login Page

After you assign IP address to your IP camera and enter that camera address on the Web Browser, you will be connected to the login page of the camera as shown below.



Username and Password

Enter a ID(username) and password to access the camera. The default ID and password are "admin" and "1234".



NOTE: ***Please make sure to change password after logging in.***

ActiveX Installation for MS Explorer Users (automatic)

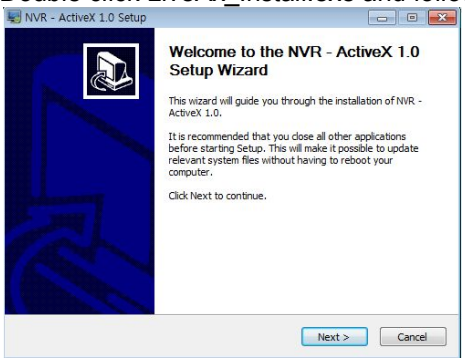
The first time you login to the camera using ActiveX, you are notified that a required plug-in / ActiveX control is required. You need to allow the installation of ActiveX by clicking "Yes" to the question "Do you want to install the program?" on the pop-up window. The installation will then take place. It is normal for this process to take up to 30 seconds. After the installation you will be taken to the Network Camera Homepage. If you do not see the message concerning the ActiveX installation, this can have different causes:

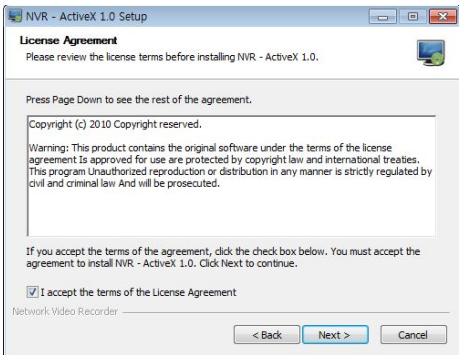
- you are not logged in to your computer as an administrator
- the security settings on your system (Internet Options) prevent the installation of signed ActiveX controls

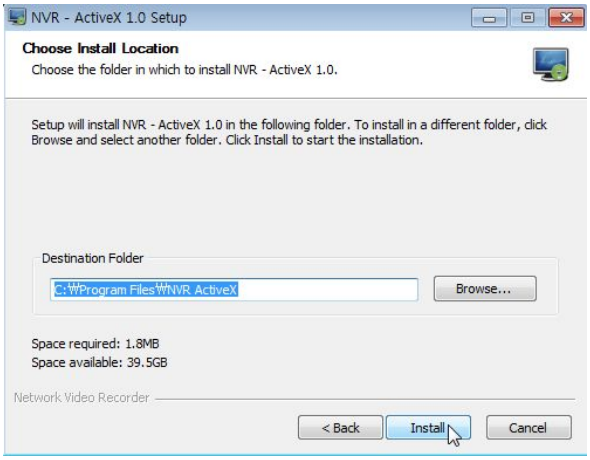
ActiveX Installation for MS Explorer Users (Manual installation)

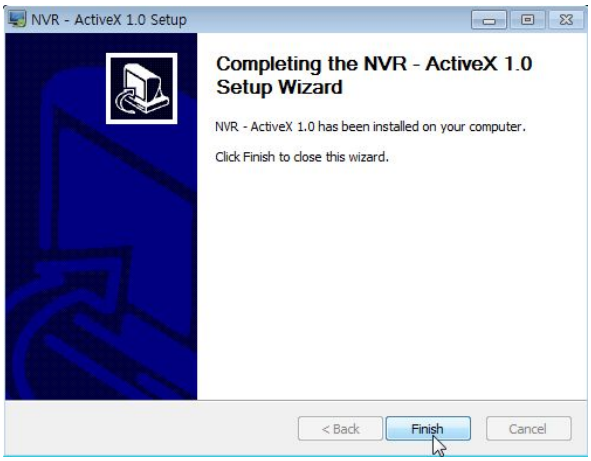
If the ActiveX program fails to install automatically, you can install it manually. Administrator rights are still required. To install ActiveX manually, please visit www.visionipvideo.com and download LiveAx_Install.exe onto your computer and install it.

Double click LiveAx_Install.exe and follow below process to finish manual installation.



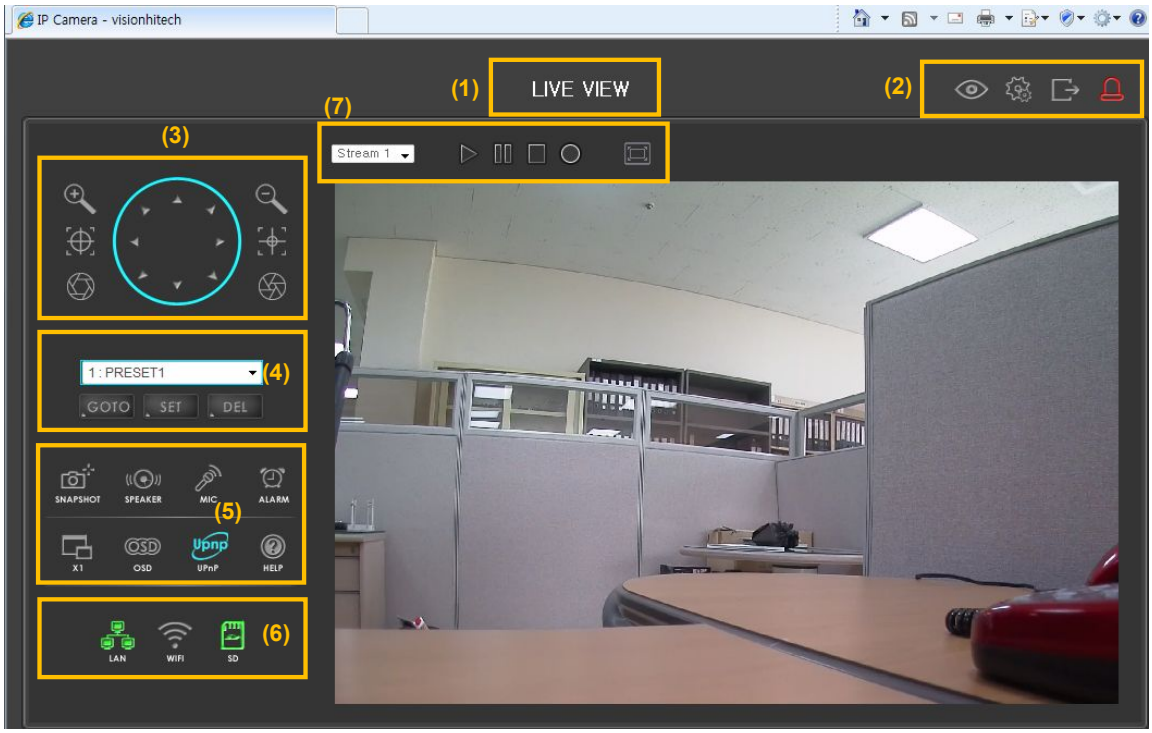






5. Main Page View and Function Icons

Once the login procedure is complete, you can view the VISION Network Camera homepage.



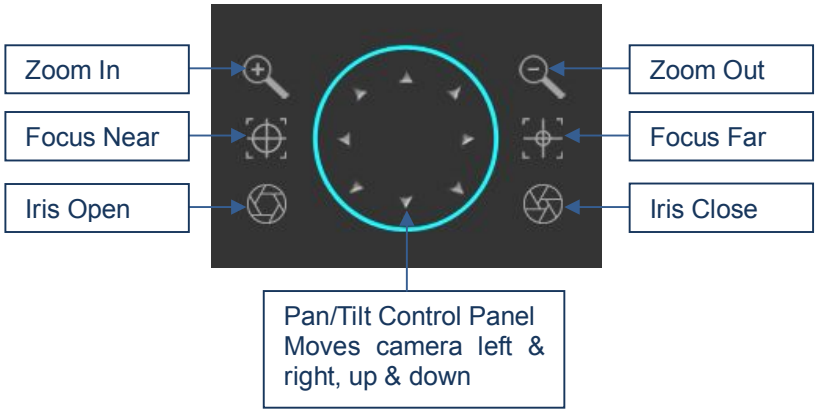
(1) Live View

Shows title message of existing page.

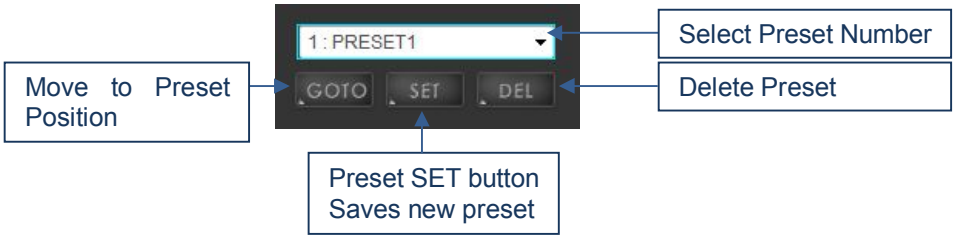
(2) Live / Setup / Log-out / Emergency Call

- Live : Moves to live view
- Setup : Moves to configuration page
- Logout : Stop existing session and move to login page
- Emergency Call : sends emergency event to CMA, FTP, SMTP.

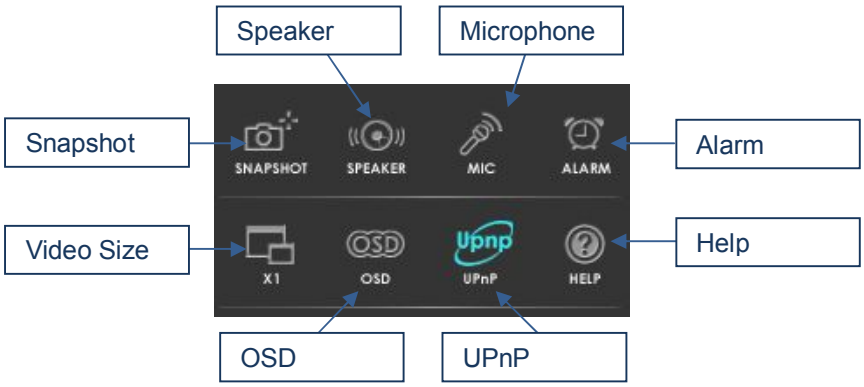
(3) Camera / Lens Control Panel



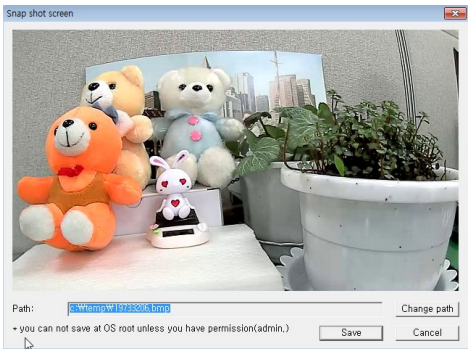
(4) Preset Panel



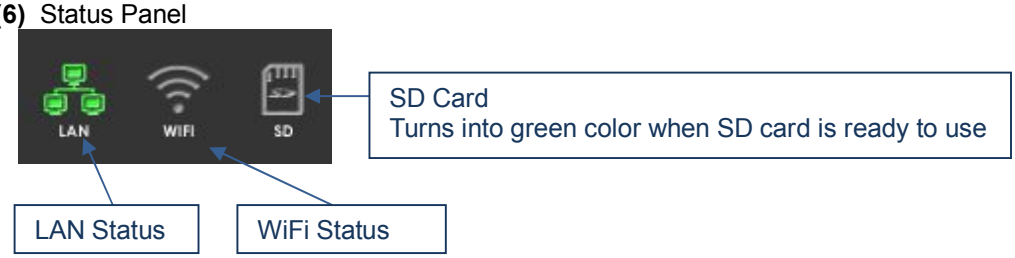
(5) Audio / Video Control Panel



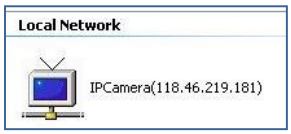
- Snapshot : Takes snapshot of live video. Default path is C:\Temp
  Click “Save” button after checking save path.
- Speaker : Turns on/ off audio
- Microphone : Turns on/off audio input from microphone.
- Alarm : Turns on/off alarm output
- Video Size : Enlarge or scale down video live window
- OSD : Turns on/off OSD on live video.
- UPnP : Turns on/off UPnP function
- Help : Shows help



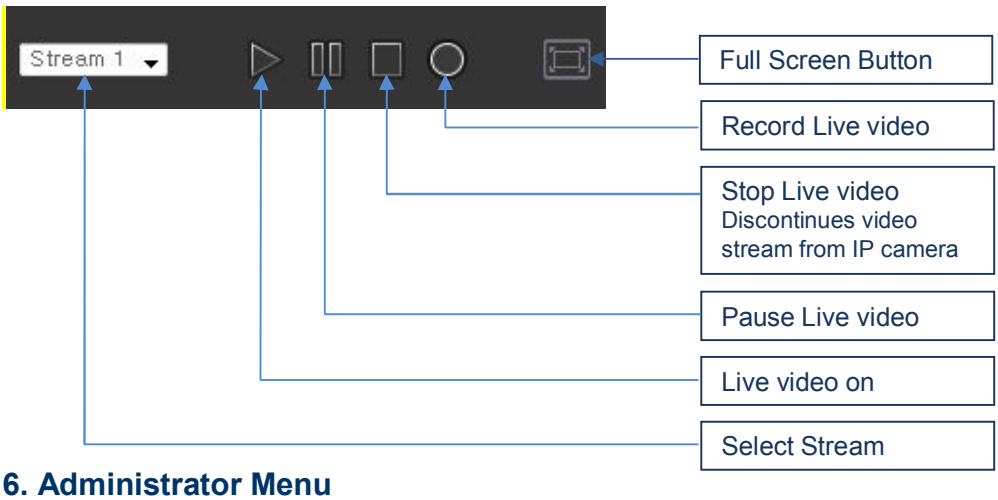
(6) Status Panel



NOTE : When UPnP function is turned on, IP camera on your network is shown on your network and share center(Network registration info in case of Windows XP) as follows.
When you click this device icon, then IP camera web page is opened.



(7) Other quick function buttons



6. Administrator Menu

You can control the configurations of the camera using the administrator tools, which can be accessed only by an authorized user. If non-authorized users try gaining access, you may see a warning message "ID or Password Mismatch."

6.1 Overview of the Administration Menu

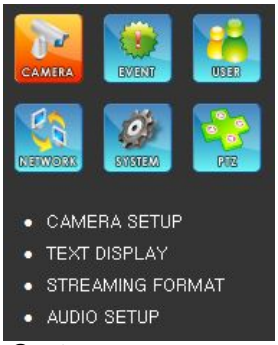
The access administrator menu, click setup button () on the top right of main page.
The table below provides a one-step overview of the Administrator Tools:

Camera Configuration	To Configure camera setup, text display on the live video, streaming format and audio
Network Configuration	To configure camera IP, Web server port, image transfer port, DNS, DDNS, HTTP/HTTPs, FTP server, SMTP, RTSP, QoS and wireless
User Configuration	To configure user ID and password, group management, etc.
System Configuration	To configure the camera name, location and time settings, system upgrade, restart, factory reset, local storage and system logs
Event Trigger Configuration	To configure trigger condition, image capture option, trigger output, recording on local storage, etc.
PTZ Configuration	To configure PTZ and preset

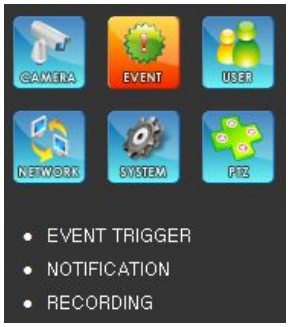
NOTE: *It is highly recommended that you change the administrator password for your camera as soon as possible to prevent unauthorized users from accessing the administrator menu. You can change the administrator password in the User Configuration.*

Overview of Menu Tree

Camera

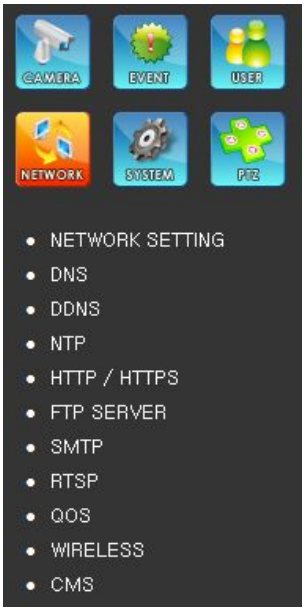


Event



User

Network

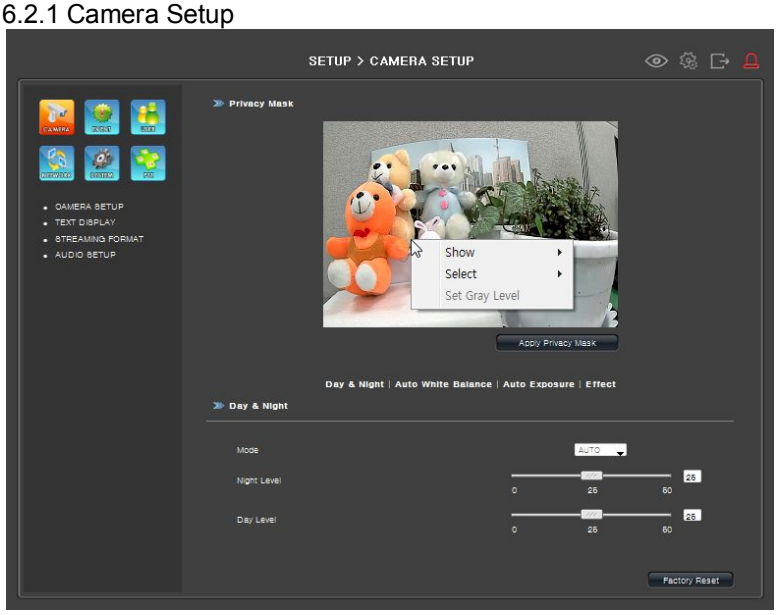


System

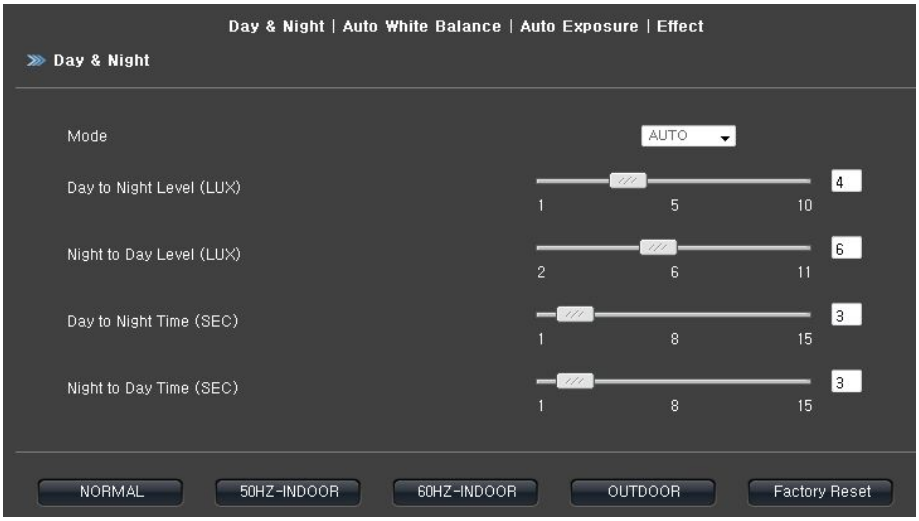
PTZ

6.2 Camera Configuration

6.2.1 Camera Setup



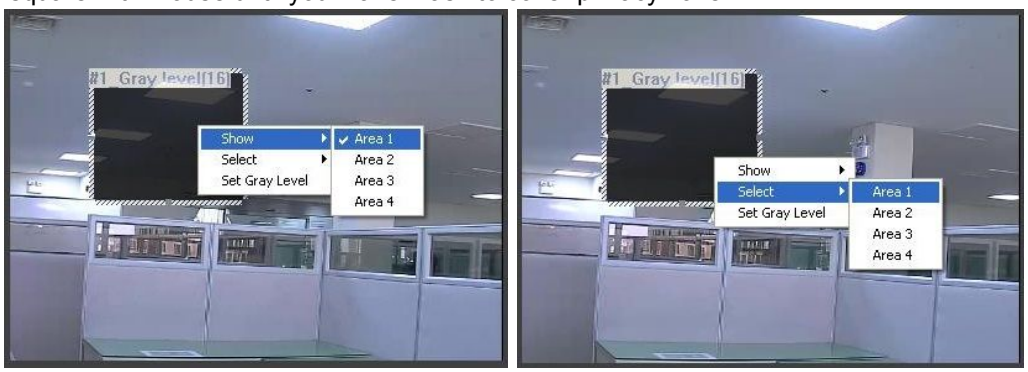
Camera setup window for ***i*** and ***Mi*** Series



Camera setup window for ***M3i*** Series

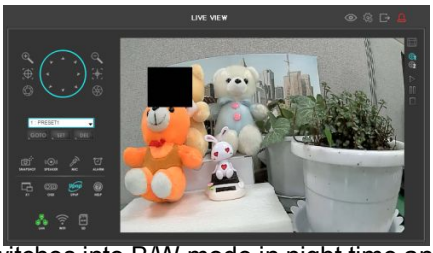
(1) Privacy Mask : Sets privacy zone on the video.

- To set privacy mask, click “CAMERA SETUP” and its sub menu will be shown on the right.
- On the video window, click right button of mouse and select show.
- Then choose mask number among 1~5, then black square will be shown on the video. Enlarge that black square with mouse until you make mask to cover privacy zone.



- To modify privacy mask, click “Select” and area number. By clicking “Set Gray Level”, you can adjust the gray scale of privacy mask to make it black or white gray.

- Click “Apply Privacy Mask” and go back to “LIVE VIEW”



- Then black colored privacy mask will be shown on the video.

(2) Day & Night

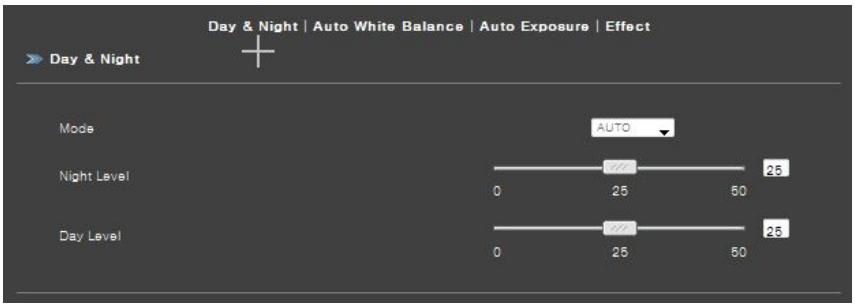
- Mode : 3 modes are selectable.

  Auto Mode – for IP cameras without CDS sensor. Automatically switches into B/W mode in night time and turns back to color mode in day time.

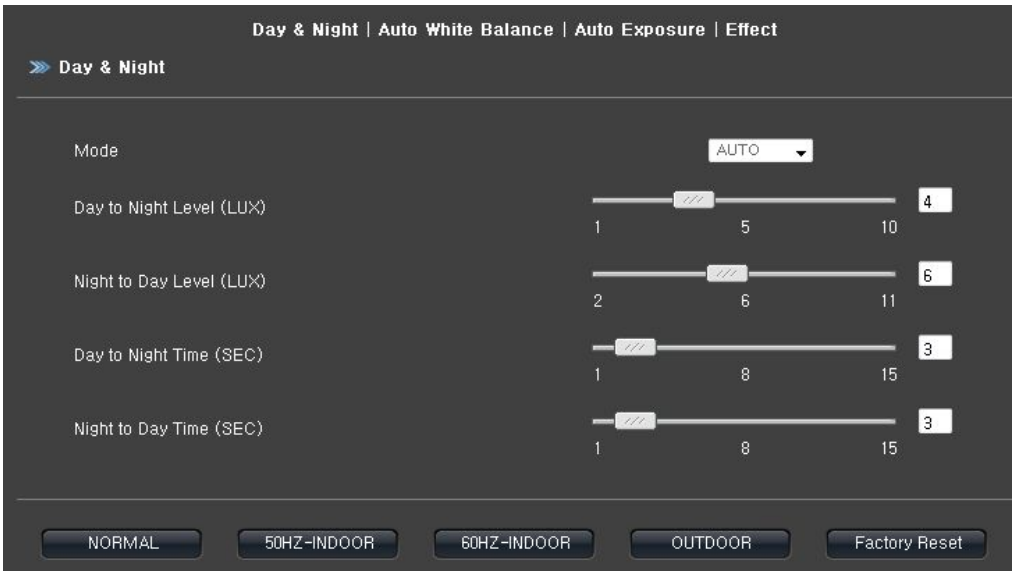
  Color Mode – Maintains color mode even in night time.

  IR Mode – for IP cameras with CDS sensor. VC58 series and all IR cameras are to be set as IR Mode.

- Night Level : Sets the level of illumination when camera turns into B/W mode from color mode.
- Day Level : Sets the level of illumination when camera turns into color mode from B/W mode.



For ***M3i*** Series, ‘Day & Night’ setup is as follows;



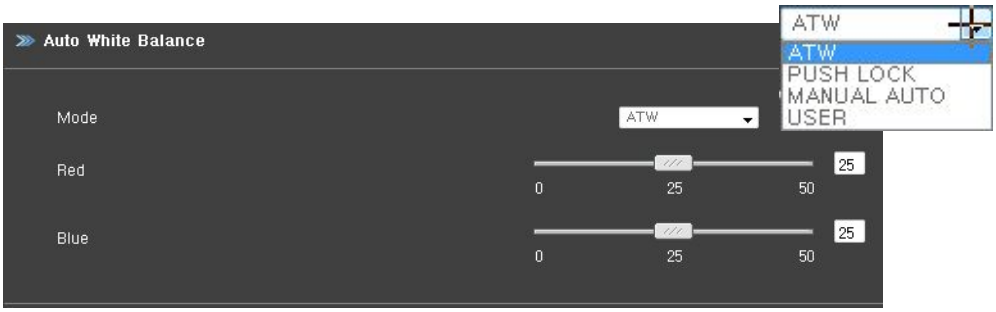
- Mode : same as Mi series
- Day to Night Level (LUX) : Defines the illumination level when IP camera turns into night mode from day mode.
- Night to Day Level (LUX) : Defines the illumination level when IP camera turns into day mode from night mode.
- Day to Night Time (SEC) : Defines the time in seconds for switching into night mode from day mode when the illumination level is Day to Night Level (LUX).
- Night to Day Time (SEC) : Defines the time in seconds for switching into day mode from night mode when the illumination level is Night to Day Level (LUX).
-

One click camera setup for user environment

The above menu's on the bottom of 'Day & Night' control window are for one click camera setup for several different user environment. Users can select one among those NORMAL, 50Hz-INDOOR, 60Hz-INDOOR and OUTDOOR according to their environment. If 'Factory Reset' button is clicked, all settings will go back to initial factory settings'.

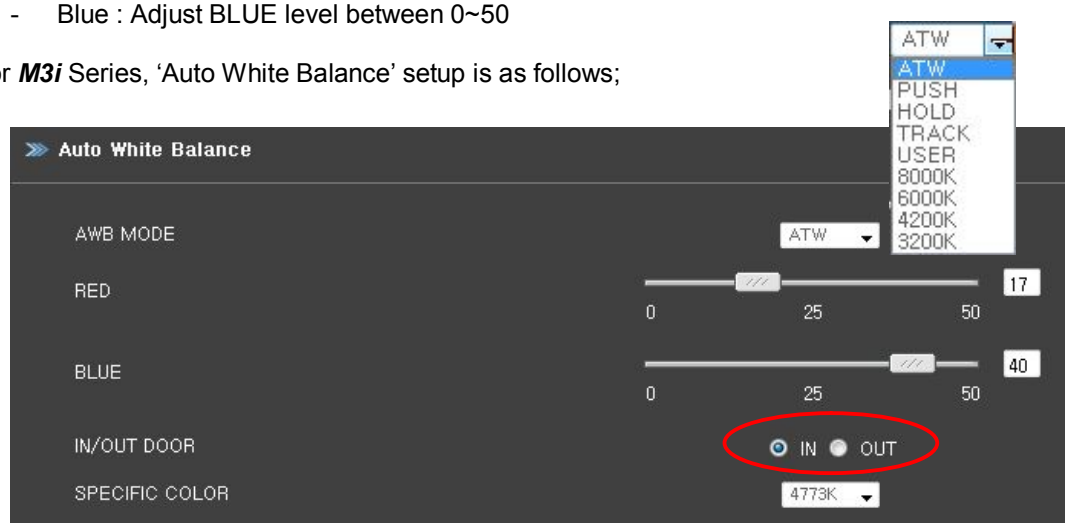
(3) Auto White Balance

This is useful when the cameras are installed in different artificial lighting conditions where a standard 'White Balance' condition is not suitable for all.



- ATW(Auto Tracking White Balance) : This mode can be used within the color temperature range of 2,500˚K~7000˚K. In case of indoor use, ATW mode is highly recommended. In ATW mode, color reproduction is better than other AWB mode.
- PUSH MODE : This mode can be used within the color temperature range of 1,800˚K~10,500˚K. In case of outdoor use, PUSH mode is recommended.
- MANUAL AUTO : This mode is used to set AWB for some specific color temperature. It is recommended to use where color temperature is even.
- USER MODE : USER MODE is suitable for enhanced users who want to set red and/or blue value manually according to user's environment.
- Red : Adjust RED level between 0~50
- Blue : Adjust BLUE level between 0~50

For ***M3i*** Series, 'Auto White Balance' setup is as follows;



- AWB MODE

1) ATW (Auto Tracking White Balance)
This mode can be used within the color temperature range of 2,500˚K~7000˚K for indoor and 1,800˚K~10,500˚K for outdoor. In ATW mode, color reproduction is better than other AWB mode. When you select ATW mode, please check on either 'IN' or 'OUT' on 'IN/OUTDOOR' menu as shown in the above. (See the red circled)

☞ NOTE : In case of indoor use, ATW(IN) mode is highly recommended.

2) PUSH MODE : This mode can be used within the color temperature range of 1,800˚K~10,500˚K.

☞ NOTE : In case of outdoor use, PUSH mode is recommended.

3) HOLD MODE : This mode is used to fix AWB in a specific environment.

☞ NOTE : When there are drastic movements of some specific colored features such as red, blue, green or yellow cars on the express road and when environment is volatile so much, HOLD MODE is strongly rcecommended.

4) TRACK MODE : Sets some specific range of color temperature. 23 types of color temperature can be set within 1,500˚K~15,000˚K range. Hence, when AWB mode is set as TRACK, users are asked to set specific color temperature among these 23 types according to enviroment on the "SPECIFIC COLOR'.

5) USER MODE : USER MODE is suitable for enhanced users who want to set red and/or blue value manually according to user's environment.
Set the appropriate color temperature, and then increase or decrease the red and blue color values while monitoring the color changes on the screen.
- RED : Adjust the level between 00 ~ 50(Default 17)
- BLUE : Adjust the level between 00 ~ 50(Default 40)

6) 8,000˚K/6,000˚K/4,200˚K/3,200˚K MODE : These modes are just for some specific environment with some specific color temperature.
- 8,000˚K : Shade
- 6,000˚K : Cloudy weather
- 4,200˚K : Fluorescent light
- 3,200˚K : Electric light blub

(4) Auto Exposure

- IRIS Mode : Selects Iris mode according to your lens type.

  a) DC : Selects for DC drive auto iris lens.
  b) ESC : Selects this mode for manual iris lens
  c) AE HOLD : Fixes the change of the brightness. This mode is useful when lots of motions are detected on the monitor.

- BRIGHTNESS : Adjusts the brightness in 00 ~ 50(Default 25)

- FLICKERLESS : This is used only when there is a difference in frequency between the power system (50Hz) and TV system (60Hz). In this case, flicker is occurred on the monitor. In most countries other than Japan, FLICKERLESS mode is not necessary.

☞ NOTE : When the power system (50Hz) and the TV system(60Hz) are different, 'Flickerless on' mode is recommended for indoor use. 'Flickerless off' mode is recommended for outdoor use.

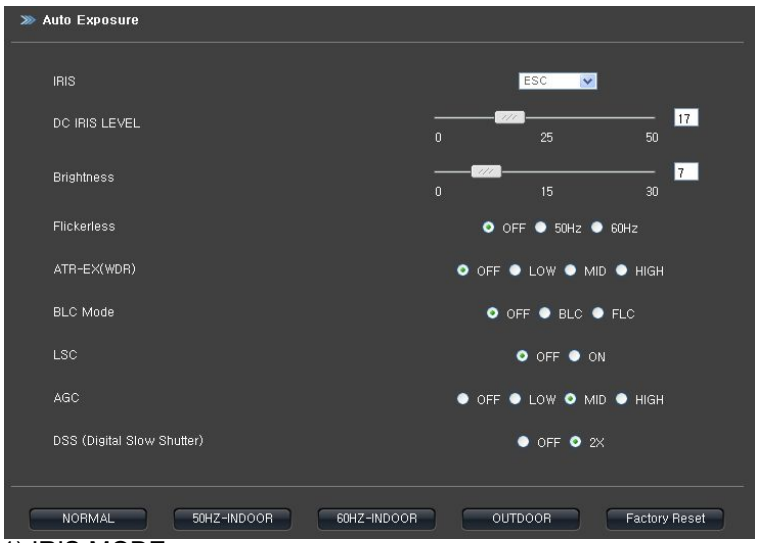
- BLC (Back Light Compensation) : Enables a user to directly select a desired area from a picture, and to view the area more clearly even under backlight environment.

- BLC Zone : Select zone to adopt BLC function mainly.

- BLC Level : Select level according to your environment.

- LSC (Lens Shading Correction) : Adjust the LEVEL 00 ~ 50(Default 00). This function compensates for the shading of the lens.
- AGC(Auto Gain Control) : The higher the gain level is, the brighter the screen becomes. But the higher gain level causes more noise. Adjust either analog gain or digital gain between 0~50 until you get best image quality.
- DSS(Digital Slow Shutter) : This is an electronically activated function to improve the sensitivity for viewing low light condition in addition to the original sensitivity from the sensor itself. Shutter level is adjustable x2 times. At night, DSS is set to x2 automatically.

For ***M3i*** Series, 'Auto Exposure' setup is as follows;



1) IRIS MODE
- DC : Selects DC drive auto iris lens.
- ESC : Selects manual iris lens
- AE HOLD : Fixes the change of the brightness. This mode is useful when lots of motions are detected on the monitor.

☞ NOTE

DC Mode is image quality will not be optimal under very bright lighting condition due to diffration and ND filter on lens

At Outdoor Condition, IRIS MODE is set to "ESC".

DC MODE

ESC MODE

2) DC IRIS LEVEL : Adjusts the mechanical Iris lens in 00 ~ 50(Default22)
3) BRIGHTNESS : Adjusts the brightness in 00 ~ 30(Default 07)
4) FLICKERLESS :
This is used only when there is a difference in frequency between the power system (50Hz) and TV system (60Hz). In this case, flicker is occurred on the monitor. In most countries other than Japan, FLICKERLESS mode is not necessary.

☞ NOTE

When the power system (50Hz) and the TV system(60Hz) are different,

- 'Flickerless on' mode is recommended for indoor use.
- 'Flickerless off' mode is recommended for outdoor use.

5)ATR-EX (WDR) : This mode functions like WDR.
4 modes of Off/Low/Mid/High can be selected based on the required Wide Dynamic Range Performance.
In general, it is very hard to see objects inside the buildings, etc. in case that there comes strong light from the outside. By using ATR-EX(WDR) mode, the difference in brightness between the bright area and the dark area can be minimized and consequently those objects inside and outside of the buildings or windows can be seen all together even though there is strong light or backlight from the outside.

☞ NOTE

- This mode is recommended for those environment with backlight or shade.
- When ATR-EX(WDR) is ON, DC IRIS LEVEL, BRIGHTNESS, BLC menu's are all inactivated.

6) BLC (Back Light Compensation) : Enables a user to directly select a desired area from a picture, and to view the area more clearly even under backlight environment.

- BLC : Used for backlight environment.(Indoor objects can be seen.)
- FLC : Compensates the saturation of image when camera faces toward the same direction as sunlight.

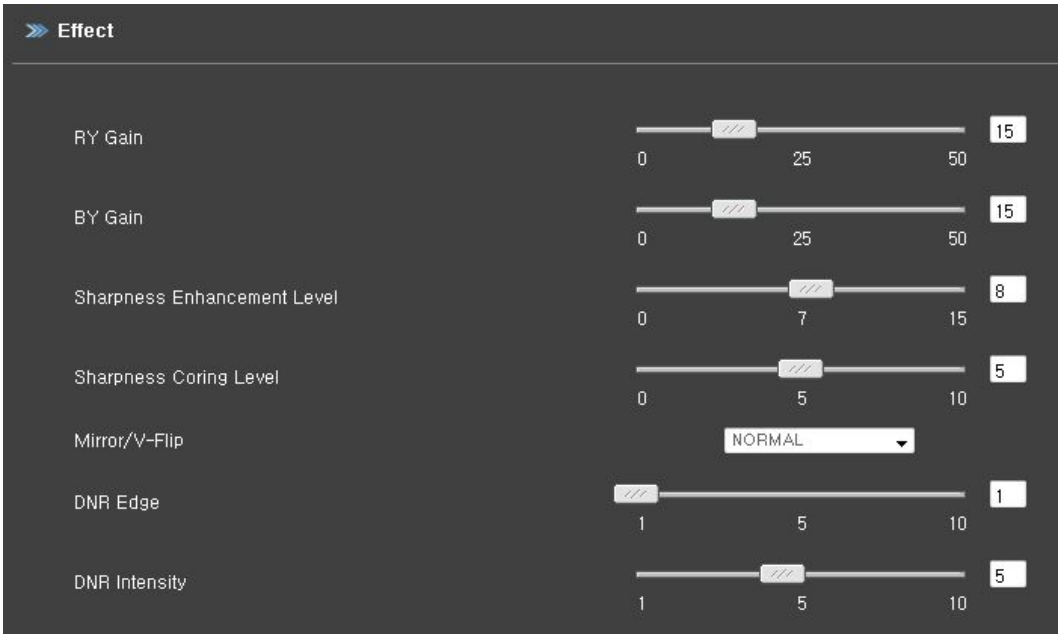
7) LSC (Lens Shading Correction) : Adjust the LEVEL 00 ~ 50(Default 00). LSC compensates for the shading of the lens.

8) AGC(Auto Gain Control) : The higher the gain level is, the brighter the screen becomes. But the higher gain level causes more noise.

- LOW : Allows automatic gain control from 0 to 20dB.
- MIDDLE : Allows automatic gain control from 0 to 30dB.
- HIGH : Allows automatic gain control from 0 to 42dB.

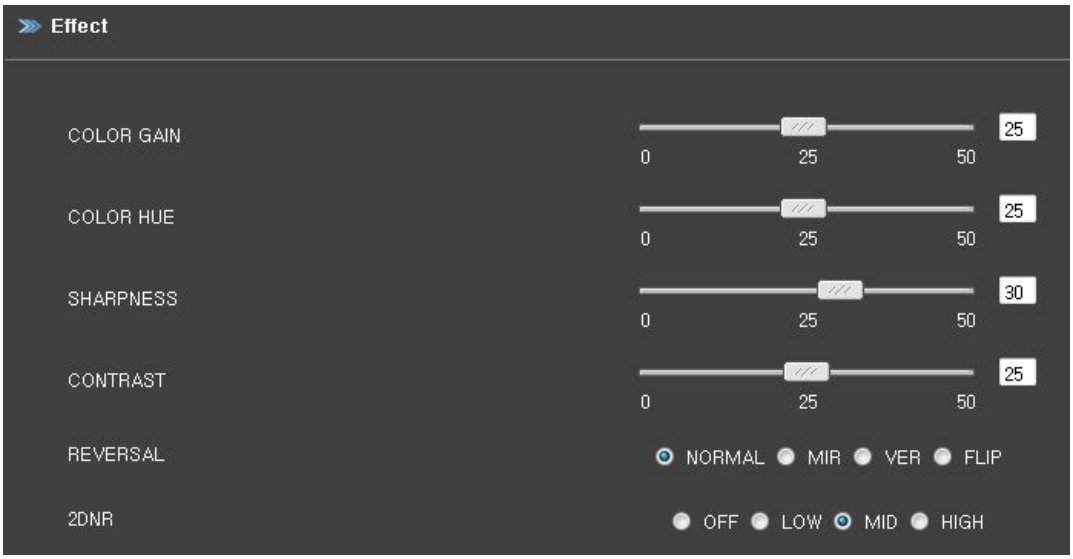
9) DSS(Digital Slow Shutter) : This is an electronically activated function to improve the sensitivity for viewing low light condition in addition to the original sensitivity from the sensor itself.
Shutter level is adjustable x2 times.
At night, DSS is set to x2 automatically.

(5) Effect



- RY Gain : Control red gain between 0~50
- BY Gain : Control blue gain between 0~50
- Sharpness Enhancement Level : Enhances sharpness by controlling the level between 0~15
- Sharpness Coring Level
- Mirror/V-Flip : Mirrors or vertically flips image
- DNR Edge : Cuts off the noise in low light condition by controlling the level between 1~10
- DNR Intensity : Higher DNR intensity follows with less clear edge.

Effect setup for ***M3i*** Series;



1) COLOR ADJUST
- COLOR GAIN : Adjusts the COLOR GAIN level in 00 ~ 50(Default 25)
- COLOR HUE : Adjusts the COLOR HUE level in 00 ~ 50(Default 25)

☞ NOTE

This function enables user to adjust the variation of Color Gain on the monitor when installing camera.

2) SHARPNESS : Adjusts the SHARPNESS level in 00 ~ 50(Default 25)

3) CONTRAST : Adjusts the CONTRAST level in 00 ~ 50(Default 25)

4) REVERSAL: Enables either normal image (NORMAL), mirrored Image (MIR), vertically reversed image (VER), vertically reversed and mirrored image(FLIP).

5) 2DNR : Cuts off the noise in low light condition.
4 modes of OFF/LOW/MID/HIGH are available.

☞ NOTE

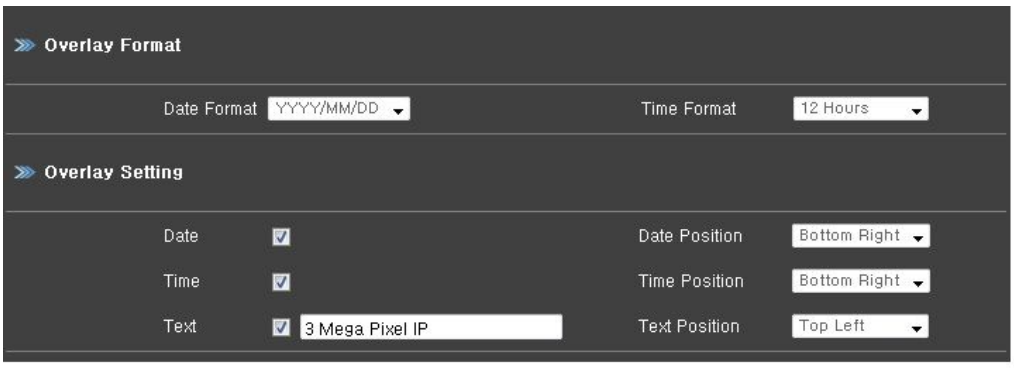
Higher 2DNR level reduces more low light noise but deteriorates resolution as well.

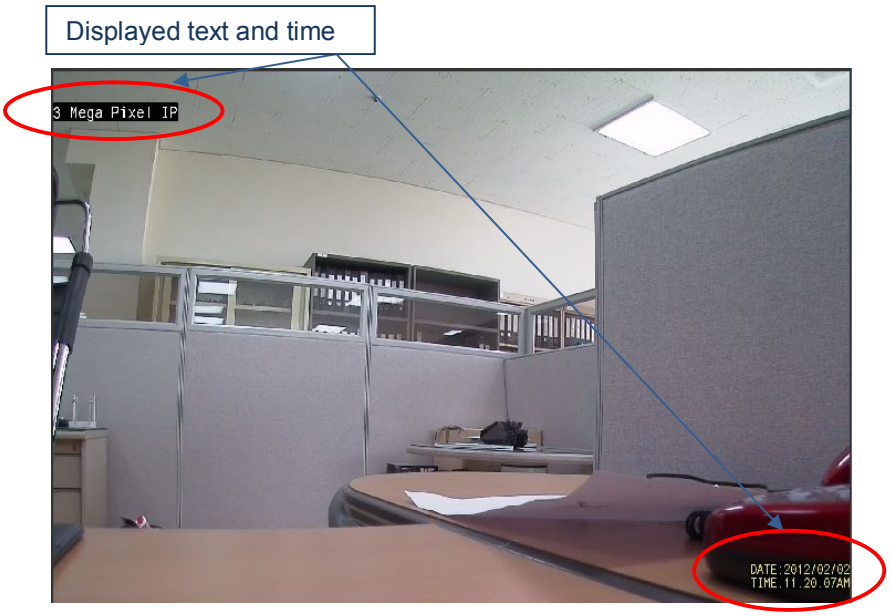
6.2.2. Text Display(for I,Mi,M3i Series)

In this menu, users can define camera name, time, etc to be displayed on the live image. To display text on the video image, fill in each items and input text, and then click save. After getting back to live image, input text and time can be displayed on the live image as shown below. Text and time can be displayed either on top or bottom of live image according to display position.

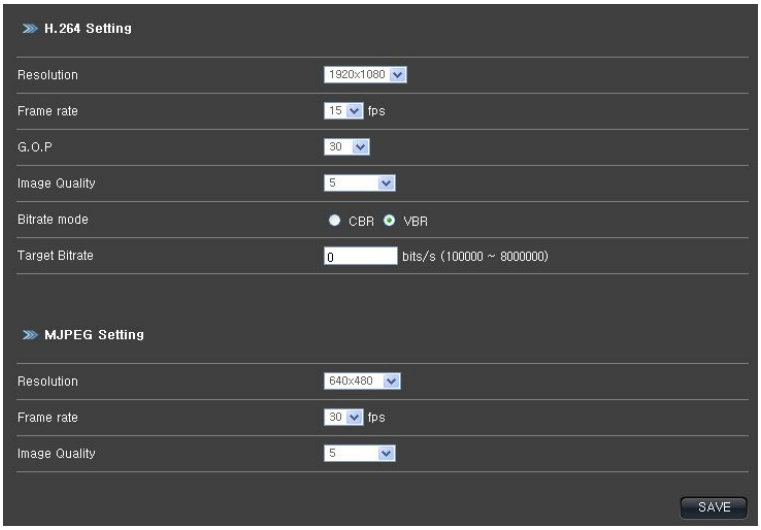
Text Display(for M3Ti Series)

In this menu, users can define camera name, time, etc to be displayed on the live image. To display text on the video image, fill in each items and input text, and then click save. After getting back to live image, input text and time can be displayed on the live image as shown below. Text and time can be displayed either on right or left of live image according to display position.





6.2.3. Streaming Format(for I,Mi,M3i Series)
In this section, users can define streaming format, resolution, frame rate and bit rate mode, etc.
Vision Network Cameras supports two streaming format. The one is H.264 and the other is M-JPEG.



H.264 Setting : This configures primary streaming format of H.264.
a) Resolution : Defines the resolution of output video. Three kinds of resolution are supported and they are 1920X1080, 1280X1024, 1280X720, 640X480 and 320X240.

b) Frame rate : Select the frame rate according to your preference. The higher value of frame rate ensures smoother video; but the higher the frame rate, the larger the network bandwidth usage. Frame rate can be selected between 1~30.

c) GOP : Set the size of GOP (group of pictures). H.264 video stream consists of continuous GOP, and one GOP consists of one "I" frame plus "P" frames. This value equals the period of one "I" frame. The more the GOP size, the less network bandwidth will be occupied. Higher GOP values will save considerable network bandwidth, but at the expense of image quality. The default value is "5" and works fine for most applications. GOP is selectable between 1~254.

d) Image Quality : Define the quality of the video output by assigning a value ranging from "7" = best quality to "1" = worst quality. Good values are 4 or 5, as they provide a good image quality at a relatively low network bandwidth usage.

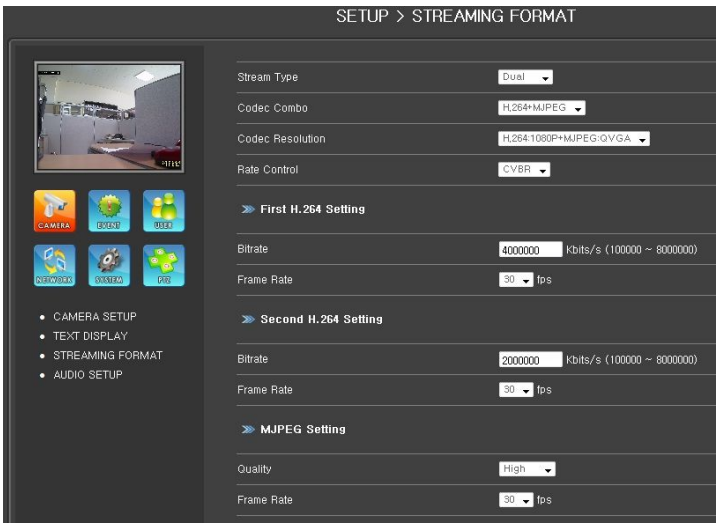
e) Bit rate Mode : The bit rate used in video encoding has a direct impact on the video quality and the bandwidth used to stream video over the network. As opposed to constant bit rate (CBR), VBR files vary the amount of output data per time segment. VBR allows a higher Bit rate (and therefore more storage space) to be allocated to the more complex segments of media files while less space is allocated to less complex segments. The advantages of VBR are that it produces a better quality-to-space ratio compared to a CBR file of the same size. The bits available are used more flexibly to encode the sound or video data more accurately, with fewer bits used in less demanding passages and more bits used in difficult-to-encode passages. CBR is the best option, if you have to limit the bandwidth available to the camera; e.g., in order to save valuable bandwidth in busy networks.

f) Target Bit rate : Set the target bit rate of the encoding video. This option is available in CBR mode only. A higher bit rate ensures higher quality of the live video at the expense of more network bandwidth usage. Controlling the maximum bit rate is good for controlling the bandwidth used by the H.264 video stream. As the bit rate is fixed, the frame rate and image quality can be affected adversely. The image quality can be reduced if complex image material requires more bandwidth than allowed by the bit rate settings.
Lowest Bit Rate/Quality smallest network bandwidth usage

- M-JPEG Setting : This is 2nd streaming setting in M-JPEG format. Resolution, Frame rate and Image quality can be set in this section

Streaming Format(for M3Ti Series)

In this section, users can define streaming format, resolution, frame rate and bit rate mode, etc.
Vision Network Cameras supports two streaming format. The one is H.264 and the other is M-JPEG.



a) Stream Type: Defines the video streaming mode. Three kinds of streaming mode are supported and they are Single, Dual, Triple.

b) Codec Combo: Defines the video codec mode. Four kinds of codec mode are supported and they are H.264, H.264+H.264, H.264+MJPEG, H.264+MJPEG+H.264. Available Codec Combos depend on Stream Type Settings.

c) Codec Resolution: Defines the resolution of output video. Five kinds of resolution are supported and they are 2048X1536, 1920X1080, 1280X720, 640X480 and 320X240. Available Codec Resolutions depend on Stream Type and Codec Combo Settings.

d) Rate Control: The bit rate used in video encoding has a direct impact on the video quality and the bandwidth used to stream video over the network. As opposed to constant bit rate (CBR), CVBR files vary the amount of output data per time segment. CVBR allows a higher Bit rate (and therefore more storage space) to be allocated to the more complex segments of media files while less space is allocated to less complex segments. The advantages of CVBR are that it produces a better quality-to-space ratio compared to a CBR file of the same size. The bits available are used more flexibly to encode the sound or video data more accurately, with fewer bits used in less demanding passages and more bits used in difficult-to-encode passages. CBR is the best option, if you have to limit the bandwidth available to the camera; e.g., in order to save valuable bandwidth in busy networks.

e) Bitrate: Set the target bit rate of the encoding video. This option is available in CBR mode only. A higher bit rate ensures higher quality of the live video at the expense of more network bandwidth usage. Controlling the maximum bit rate is good for controlling the bandwidth used by the H.264 video stream. As the bit rate is fixed, the frame rate and image quality can be affected adversely. The image quality can be reduced if complex image material requires more bandwidth than allowed by the bit rate settings.

Lowest Bit Rate/Quality ➔ smallest network bandwidth usage

f) Frame rate: Select the frame rate according to your preference. The higher value of frame rate ensures smoother video; but the higher the frame rate, the larger the network bandwidth usage. Frame rate can be selected between 1~30. But in the case of setting Codec Resolution to 3 Megapixel, framerate can be selected between 1~20.

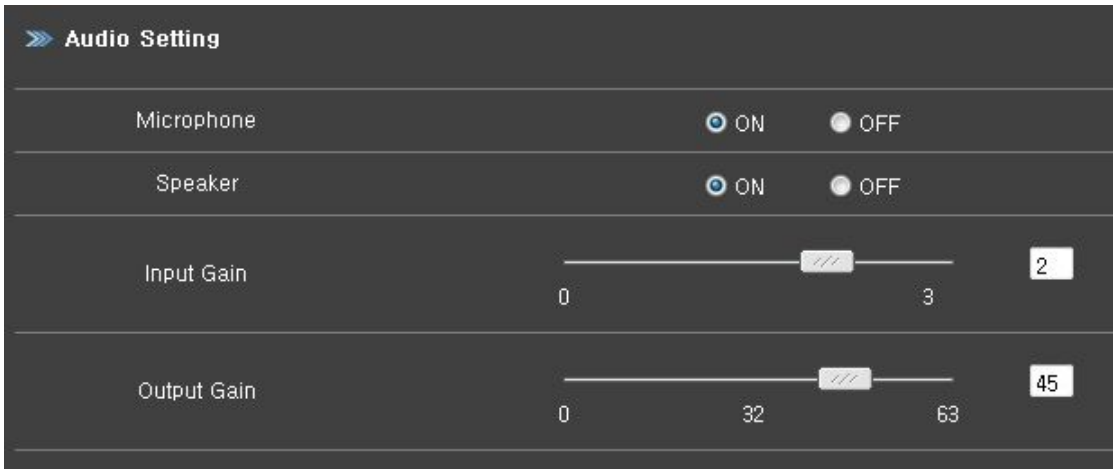
Quality : Define the quality of the MJPEG video output by assigning a value ranging from "High" = best quality to "Low" = worst quality.

First H.264 Setting : This configures primary streaming format of H.264. Bitrate and Frame rate can be set in this section.

- Second H.264 Setting : This configures secondary streaming format of H.264. Bitrate and Frame rate can be set in this section.
- M-JPEG Setting : This is streaming setting in M-JPEG format. Frame rate and quality can be set in this section.

6.2.4. Audio Setup

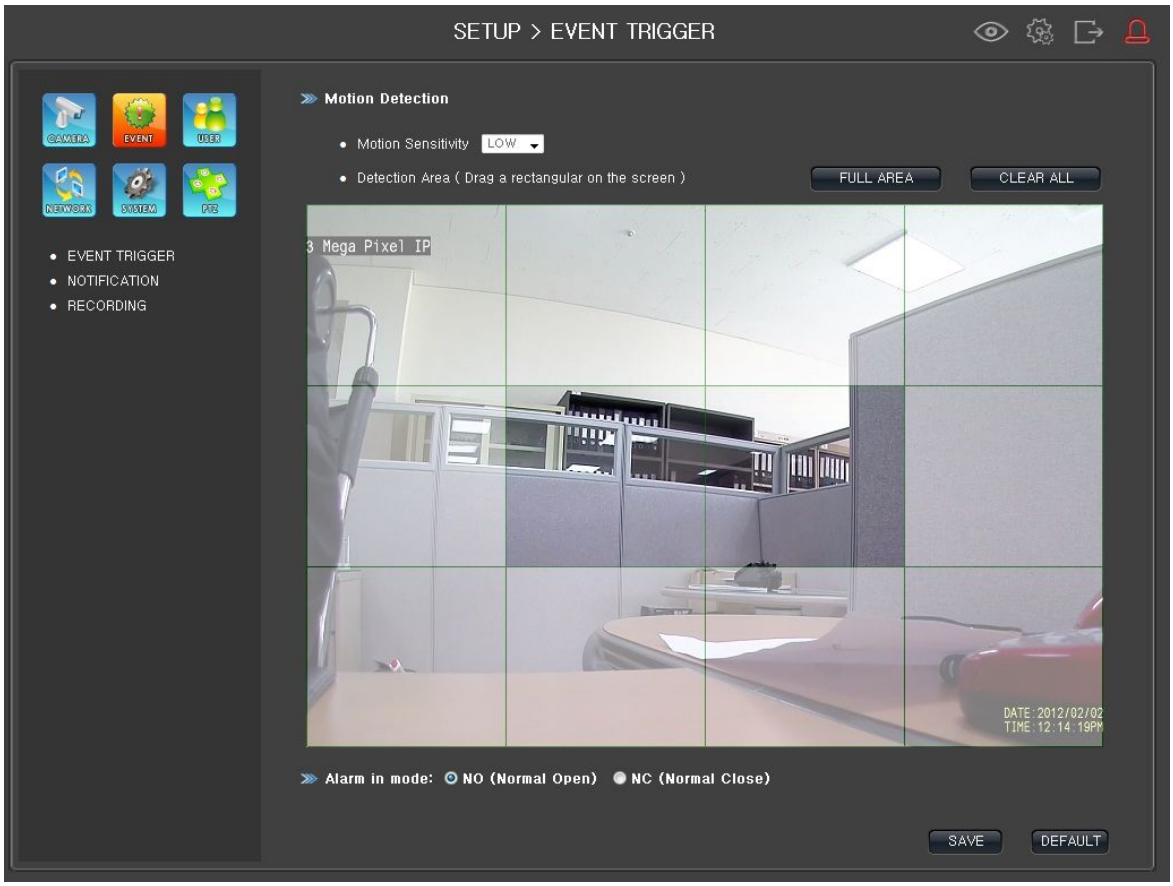
In this section, users can set up external microphone on/off, external speaker on/off and audio input/output gain.



6.3 EVENT Configuration

6.3.1. EVENT TRIGGER

In this section, users can set up motion detection sensitivity, motion detection area and alarm-in mode.



- **Motion Detection Sensitivity**: This is to configure the level of motion detection sensitivity. The level is composed of three levels. 'LOW' is the least sensitive setting. At this setting, the camera may "overlook" a lot of motion. 'HIGH' is the most sensitive setting. At this setting, the camera will likely cause a lot of false alarms because the tiniest movement – even the video compression – which can create compression artifacts, can trigger an alert. 'MID' is more suitable for real-life applications. Experiment with the different settings to find the right level of sensitivity for your application.

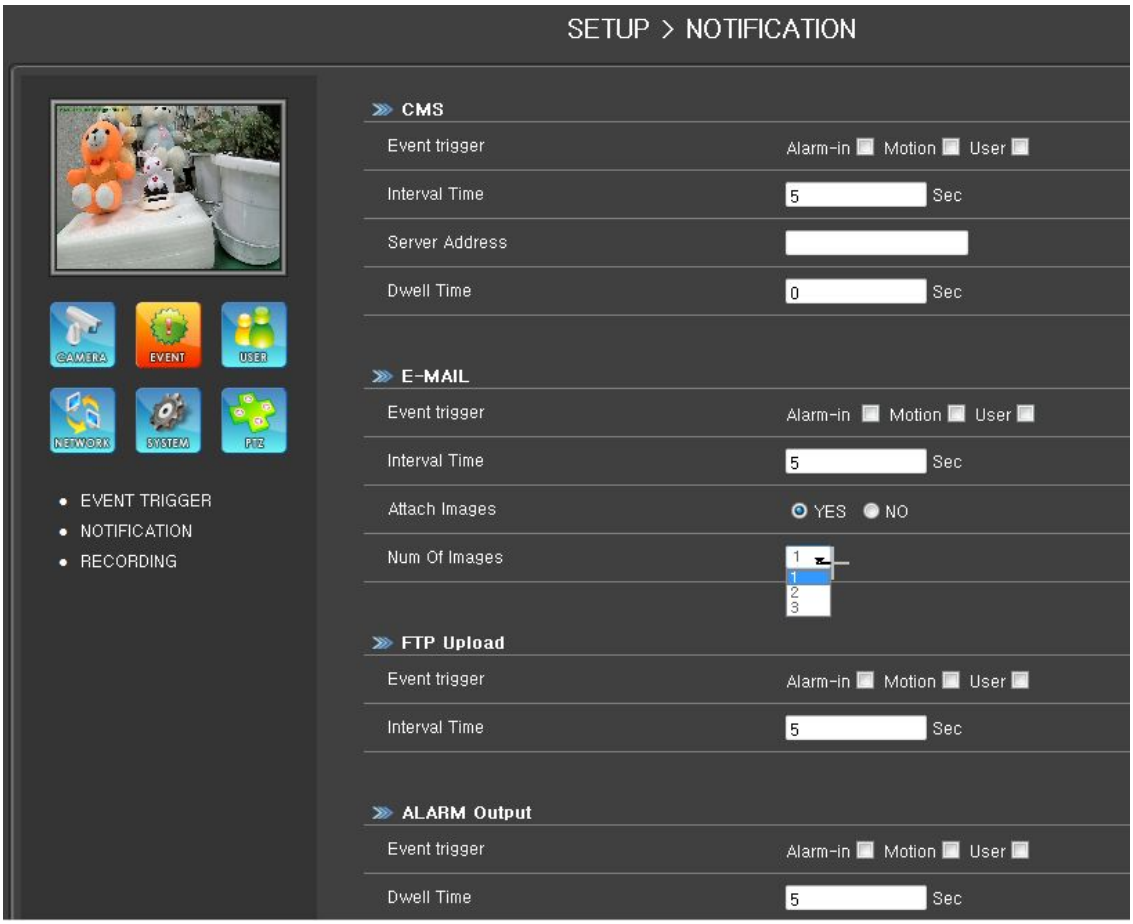
- **Motion Detection Area**: This is to configure the motion detection area in the images. To set motion detection area on the live video image, just drag a rectangular on the screen with your mouse and then click "SAVE" button before going back to "LIVE VIEW". If you click "FULL AREA", all area on the video will be set as motion detection area. If you want to erase off all defined motion detection area, just click "CLEAR ALL" button.

- **CAUTION:** It is not recommended that the motion detection function be used for security purposes. To perform security surveillance for the protection of high-value goods, it is suggested that infrared sensors or other insurance-approved sensors be used (and connected to the camera to make use of the event output options). It should also be mentioned that the motion detection delivers better results at lower image resolutions.

- Alarm In mode : This section defines the type of external alarm-in sensors, etc whether it is normal open(NO) type or normal close(NC) type. Event is triggered when alarm-in signal comes to network camera, hence setting the alarm-in type exactly as either NO or NC is very important.

6.3.2. NOTIFICATION

This section configures the action of network camera when event triggered whether by alarm-in, motion detection or user defined event.



- CMS : Defines the interoperation between network camera and CMS software.
  a) Event trigger : Check on the event trigger method among alarm-in, motion detection or user defined event.
  b) Interval time : Sets interval for notification.
  c) Server address : Enter IP address of computer where CMS is installed and operated.
  d) Dwell time : Sets the duration time

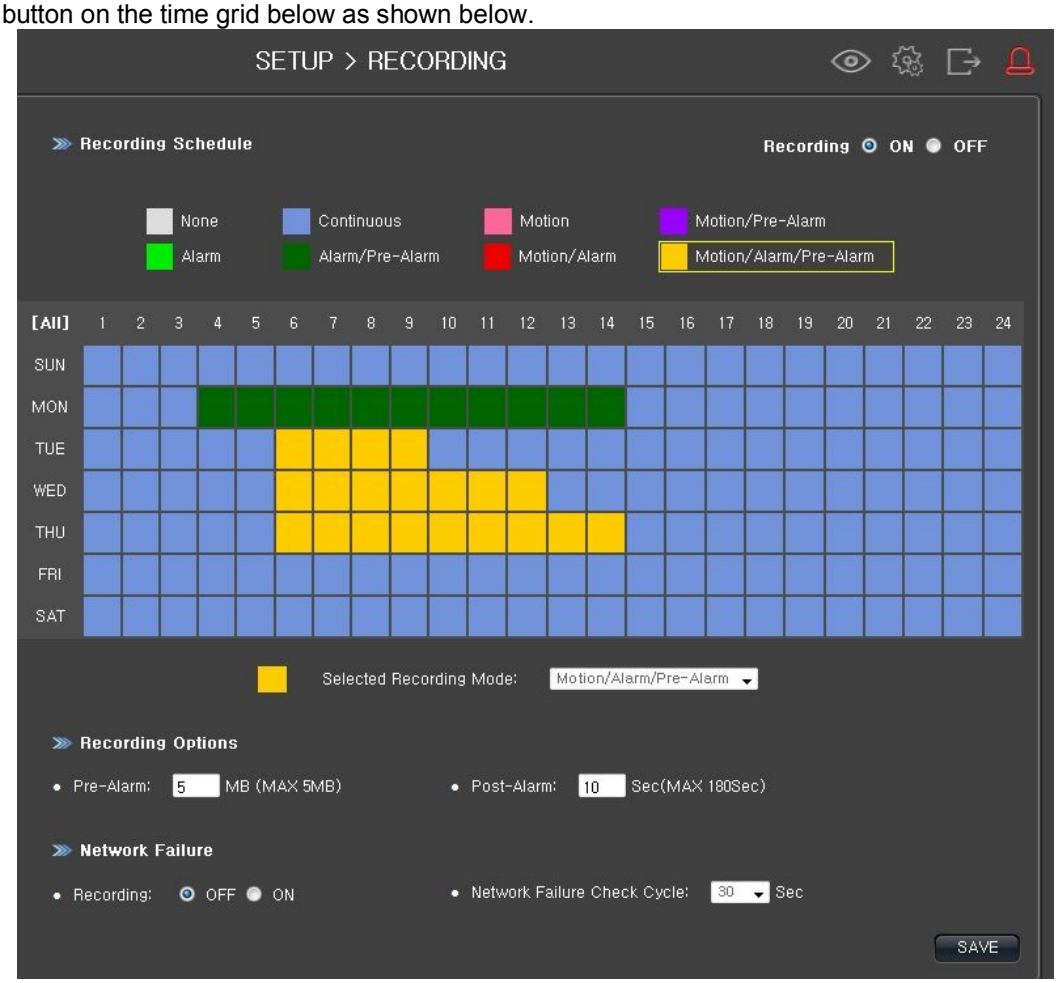
- E-Mail : Defines the e-mail action when event is triggered. Below is the sample of e-mail notification.
  a) Event trigger : Check on the event trigger method among alarm-in, motion detection or user defined event.
  b) Interval time : Sets interval for notification.
  c) Attach images : Decides whether images are to be attached in e-mail or not.
  d) Number of images : Defines number of images to be attached in notification e-mail. (1~3 images selectable)

- FTP Upload : Defines upload JPG image to user's ftp account when event triggered.
  a) Event trigger : Check on the event trigger method among alarm-in, motion detection or user defined event.
  b) Interval time : Sets interval for notification.

- Alarm Output : Defines alarm output when event triggered.
  a) Event trigger : Check on the event trigger method among alarm-in, motion detection or user defined event.
  b) Dwell time : Sets the duration time of alarm out

6.3.3. Recording Setup
This section explains how to record images into local starage(SD/SDHC Card). Scheduled, motion detected and or alarm-triggered recording are all available by users setting on the 'Recording Schedule'.

- Recording Schedule : There are eight kinds of check box in this section. Select one of them and click mouse button on the time grid below as shown below.



- Recording Options : Defines pre and post-event recording time. Pre-event recording can be set up to max. 20MB(SM3Ti is 5MB) while post-event recording up to max. 180 seconds.

***NOTE** : Be sure to click "SAVE" button before getting back to "LIVE VIEW".*

6.4. User Configuration

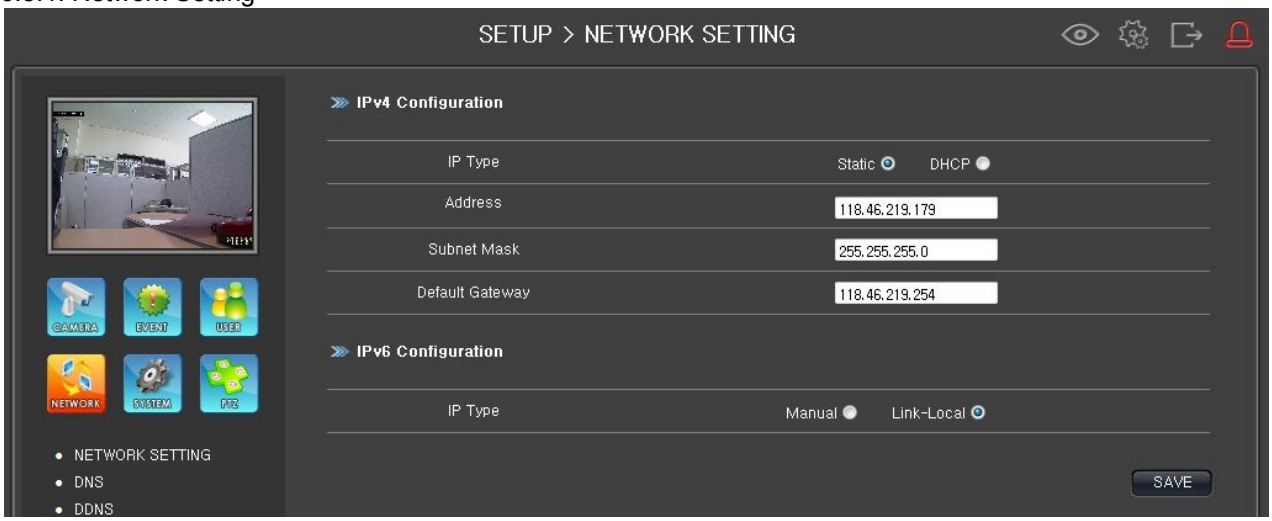
6.4.1. Password Change : Changes password of administrator.
***NOTE** : Be sure to change admin password upon finishing your network camera installation to protect privacy.*

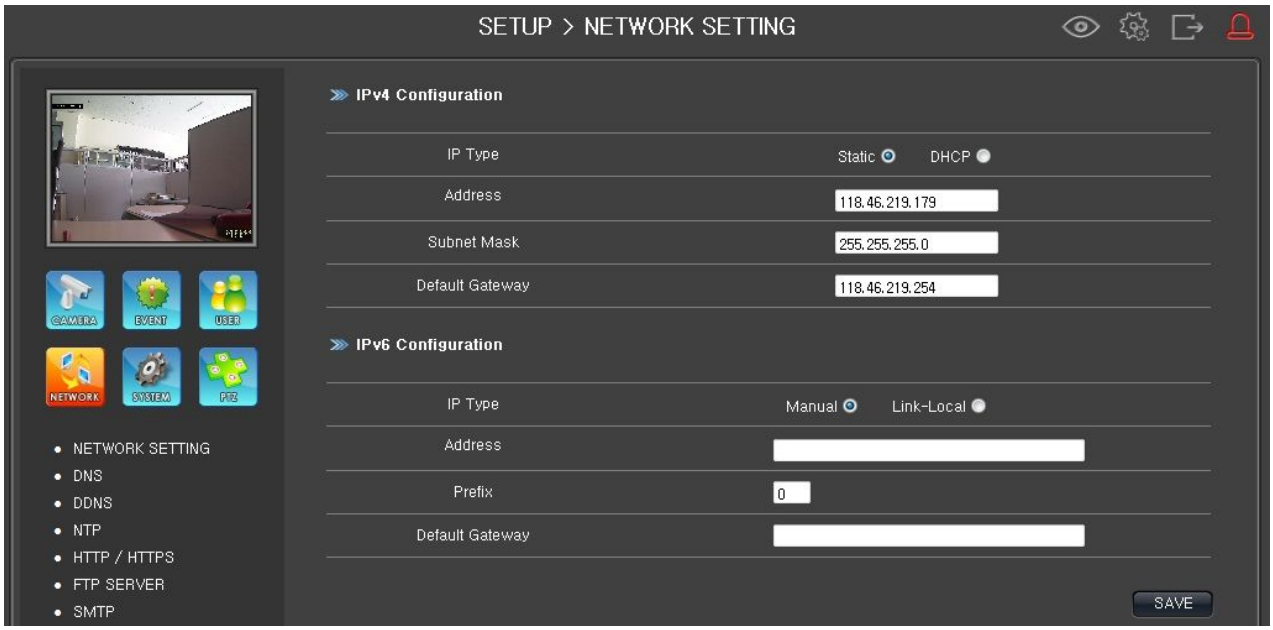
6.4.2. User Account : Defines each user's ID and password as well as group. Users can be classified and managed into 3 kinds of group. (Group1~Group3)

6.4.3. Group Management : Defines the authority of each group. By checking on the check box, administrator can allow each group to control your network camera functions.
***NOTE** : Be sure to click "SAVE" button before getting back to "LIVE VIEW".*

6.5. Network Configuration

6.5.1. Network Setting



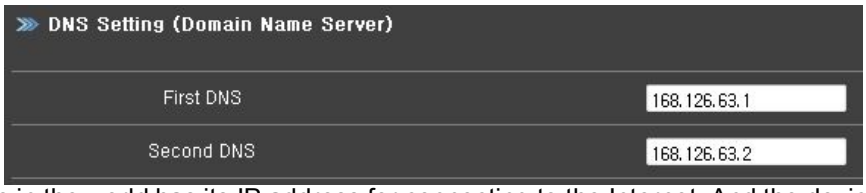


- **IPv4 Configuration** : Sets IPv4 address, Subnet Mask, Default Gateway Address. To set the IP address, subnet mask and gateway address manually, check on "Static" and enter each addresses in the blank. If you have any trouble configuring network system information, contact your network administrator. Knowledge about IP addresses and TCP/IP is required for the configuration task. When checking on "DHCP", click “SAVE” button, your network camera will be restarted immediately and IP address and subnet mask address and gateway address are being obtained from a DHCP server. Users in a local network area may check the IP address through IPScanUtil.exe.

- **IPv6 Configuration** : Sets IPv6 address, Prefix, Default Gateway Address. If you have a global IPv6 address, check on "Manual" and enter each addresses and prefix in the blank. If you have any trouble configuring network system information, contact your network administrator. Knowledge about IP addresses and TCP/IP is required for the configuration task. When checking on "Link-Local", click “SAVE” button, your network camera will be restarted immediately and set IPv6 address used for local area network automatically.

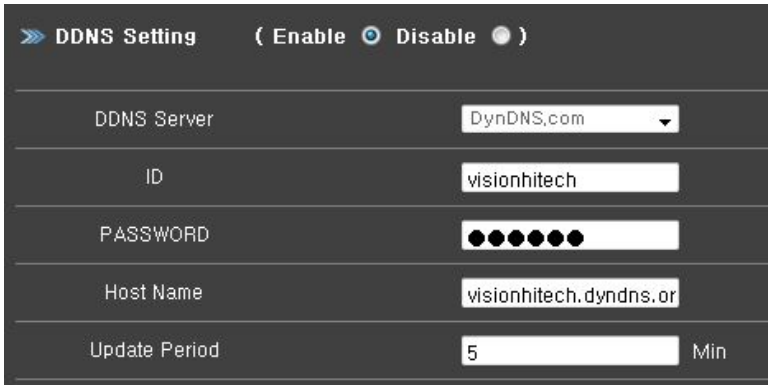
NOTE: If you select "DHCP," you may see the rebooting message "60 seconds remaining (System Restart)” on the Web browser. (Check the status LED to see rebooting process to ensure your new setting took effect.) To select DHCP, you must have a DHCP server in the network. It will take about 60 seconds for rebooting.

6.5.2. DNS Setting :
Registers your first and second domain name server address.



NOTE: A DNS (domain name system) is for mapping between an IP address and domain name. Every network device in the world has its IP address for connecting to the Internet. And the device is to be connected not with its domain name but with its IP address. Ordinary users may not be familiar with IP addresses, but know the domain names. If a user accesses a certain network device with its domain name, the DNS server translates the domain name into an IP address of the device and replies to the user with the result.

6.5.3. DDNS Setting
To register the camera to the DDNS (dynamic domain name system) server, check the "enable" box. A dynamic IP address complicates remote access since you may not know what your current WAN IP address is when you want to access your network over the Internet. The solution to the dynamic IP address problem comes in the form of a dynamic DNS server.



ID, Password : Enter the ID and password to find the registered camera on the DDNS server.

Hostname : Enter the hostname to find the registered camera on the DDNS server.

NOTE: *Enter a full domain name (such as "mynetworkcam.dyndns.org").*

DDNS Update Period (Hours): Enter any number in the blank.

CAUTION: *Repeated use of the function may lead to the blocking of your DDNS domain name.*

6.5.4. NTP Setting
The camera automatically configures the date and time through the NTP (network time protocol) server. The NTP server is based on Greenwich time. Select the NTP server host name and update period (by hour), then click "submit."

NOTE: If this procedure doesn't work, it could be due to a network error. Select another NTP server and IP address or set the date and time manually. Once the date and time configuration is set, you don't have to configure it again.

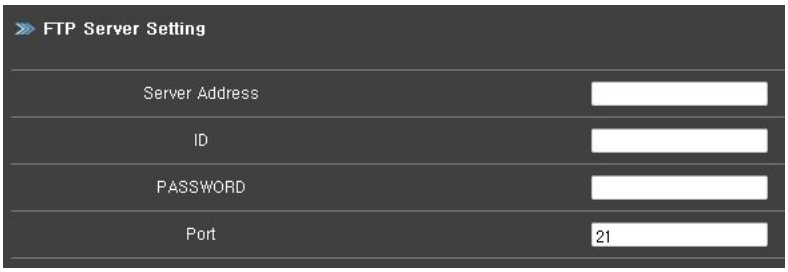
6.5.5. HTTP / HTTPs Setting
Enter port number for HTTP.
If you want to use HTTPs, check on the "HTTPS USE" check box.(HTTPs is checked by default)

NOTE : Vision Network Cameras are equipped with SSL encryption, a safe way of accessing your camera. SSL encryption ensures that the data traffic between your camera and the computer is encrypted.

NOTE : When click "SAVE" button after changing HTTP port, connection through this new port will be taken effect in 30 seconds.

6.5.6. FTP Server Setting

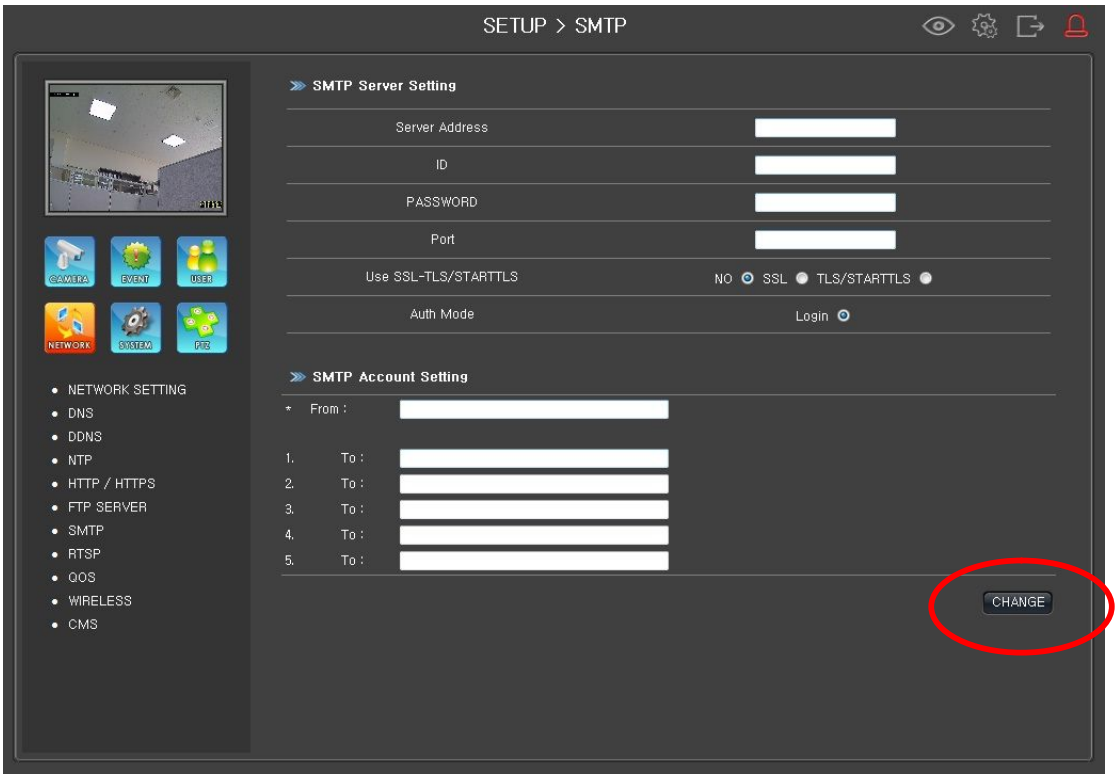
- **Server Address** : Enter your ftp server IP address or domain name. When you use ftp server domain name here, be sure to provide DDNS setting first. (ex : 118.46.219.100 or ftp.visionipvideo.com)
- **ID & Password** : User ID & Password to access the above ftp server.
- **Port** : Specific port to access ftp server



6.5.7. SMTP Setting

This section configures outgoing e-mail server, account and address. This setting will be used for notification when event triggered. Users can register e-mail sender's address and 5 receiver's address.

- SMTP Server Setting
  a) Server Address : Type in the address (IP address or domain name) of the outgoing mail server. This is typically the same mail server you have set up in your mail client settings. (e.g., MS Outlook profile).
  b) ID & Password : User's ID and password registered to the above outgoing e-mail server.
  c) Port : e-mail sending port
  d) Use SSL-TLS/STARTTLS : Check on the Use SSL-TLS/STARTTLS method among NO(Not Use), SSL, TLS/STARTTLS encryption modes.(Only SM3Ti)
  a) Auth Mode : Authentication mode. Most SMTP servers are password protected to prevent illegal access (anti-spam). If your SMTP server requires authentication, enter the username and password required for this server. Those are the same values you normally use for the Email Client (Outlook, Thunderbird) on your PC. The authentication method should be set to LOGIN in most cases. Unless your server specifically requires different settings, LOGIN is the preferred choice. (Check on "Login")



- SMTP Account Setting
  a) From : Enter e-mail sender's address such as admin@visionipvideo.com
  b) To : Enter e-mail notification receiver's e-mail address. Receiver's address can be registered up to 5.

NOTE : *Be sure to click " CHANGE" button before leaving SMTP Setup window.*

6.5.8. RTSP Server Setting

RTSP stands for **Real time Streaming Protocol** and allows RTSP enabled video playback clients such as VLC Media Player or MPlayer to play back the live video from the network camera. We recommend using the default port " 554".

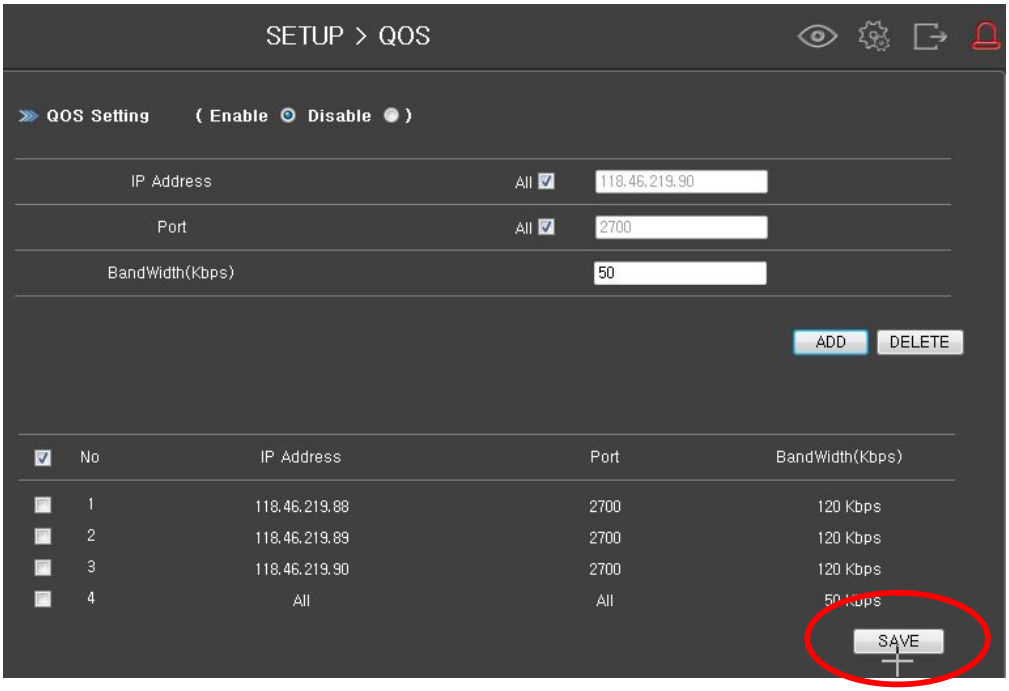
- Streaming Type : Check on either “Unicast” or “Multicast”. Unicast sends real time streaming to one destination while Multicast to multiple destination. Multicast can cause traffic to your network environment.

6.5.9. QoS (Quality of service) Setting

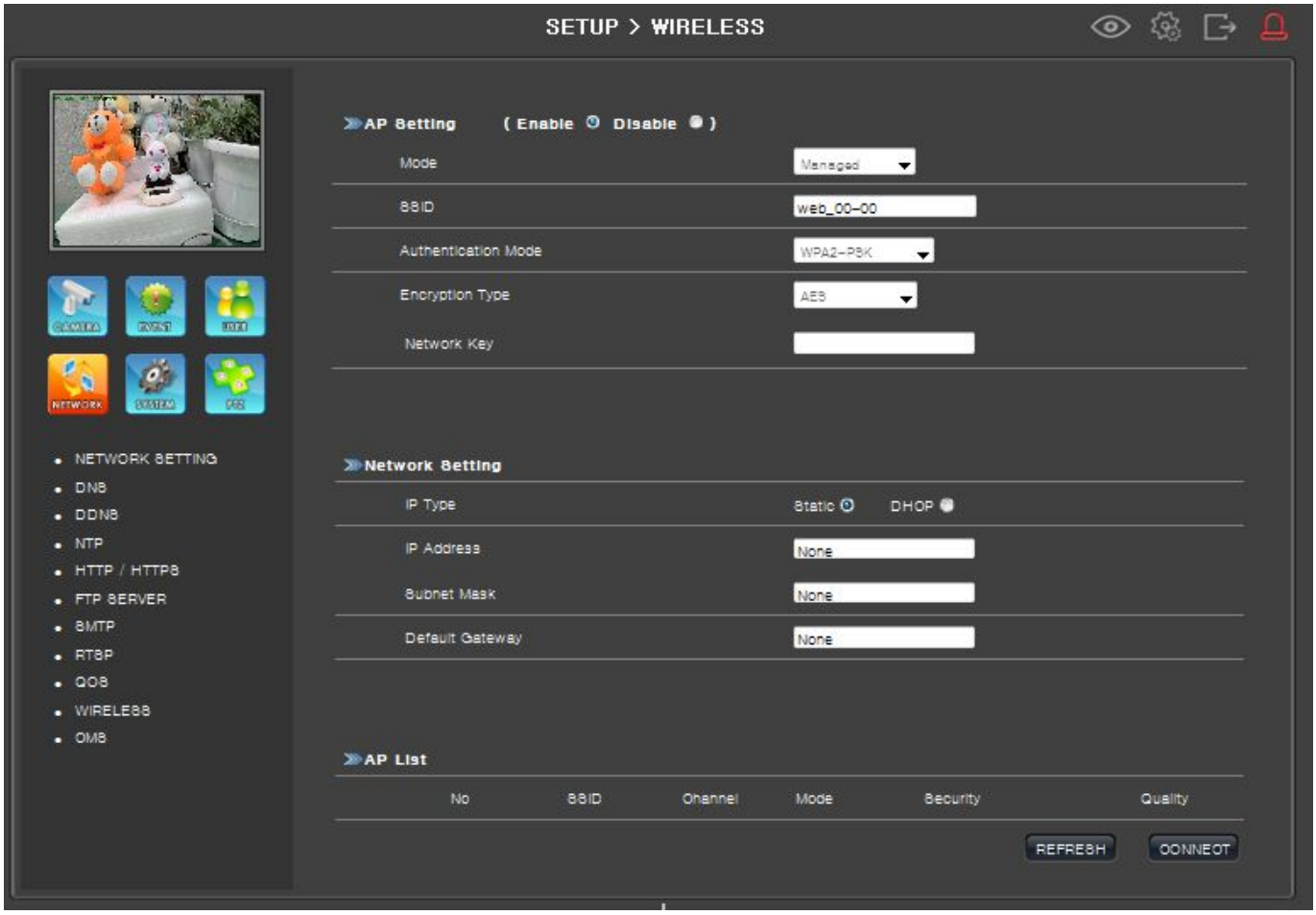
This section shows how to configure QoS(Quality of service) against limited network bandwidth.
To do QoS setting, first of all, check QoS “Enable” and follow below process.

a) Enter IP address of destination. If you check “ALL”, then all IP address connected to this network camera will be served QoS as defined.
b) Enter port number of destination. If you check “ALL”, QoS will be adopted to every port.
c) Enter target bandwidth in Kbps and click “ADD” button, then your new registration will be shown on the list.
d) Check on the number and click “SAVE” button to start QoS.
e) When you delete specific IP address from QoS list, check on the number on the list and click “DELETE” button.

NOTE : *Up to 10 IP address, QoS is supported.*



6.5.10. Wireless Configuration
This screen is used to configure wireless settings to match your access point for a wireless network connection.



Wireless Setup

1. When you click “Wireless Configuration” menu, your wireless network camera immediately scans available AP’s and shows them on the list as shown below. If you cannot find any AP, please click “REFRESH” button.

2. Select on AP from the list as shown above, then AP information will be filled in the “AP Setting” automatically. Please make sure to check on “Enable”.

3. Enter “Network Key” and fill in each blank in the “Network Setting”.

4. Click “CONNECT” button to finish wireless setting.

5. When you get back to “LIVE VIEW”, you can find “WIFI” is enabled.

NOTE : VISION Wireless Network Camera supports wired and wireless simultaneously.

6.5.11. CMS Port Setting

This section defines port information with which network camera and CMS or NVR communicate.
AV Stream Port, Event Port and Two-way Audio Port can be defined as below.

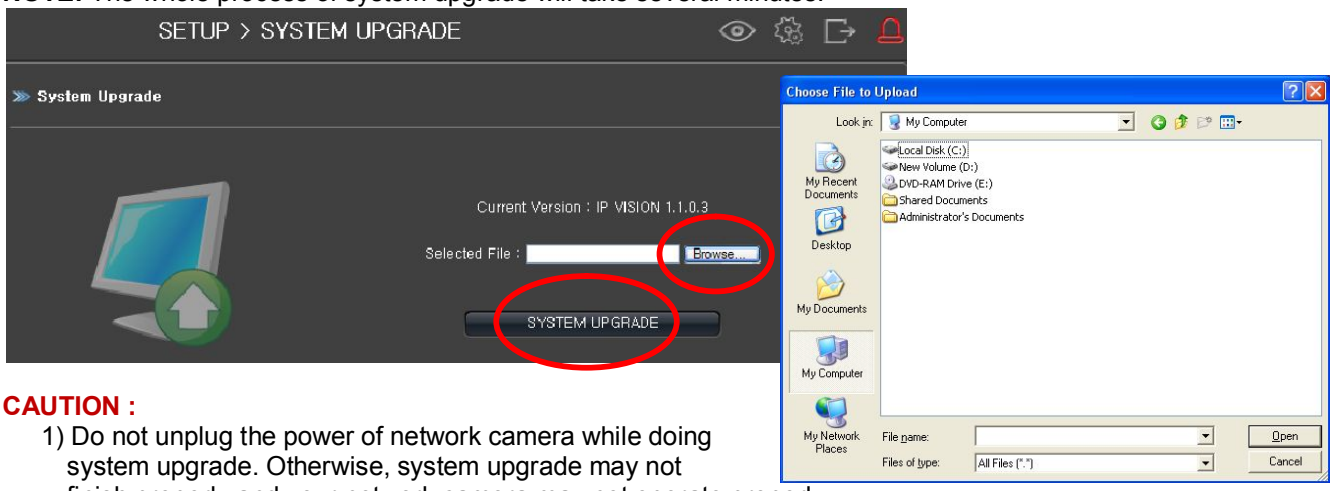
NOTE: If there is any problem in communication with CMS or NVR, it is necessary to check the router settings, firewall environment, etc.

6.6. System Configuration

6.6.1. System Upgrade

1) Download latest firmware to your PC. (Please visit www.visionipvideo.com for latest firmware.)
2) Click “Browse” button and select firmware from the Windows Explarer, then click “Open”.
3) Click “SYSTEM UPGRADE”

NOTE: The whole process of system upgrade will take several minutes.

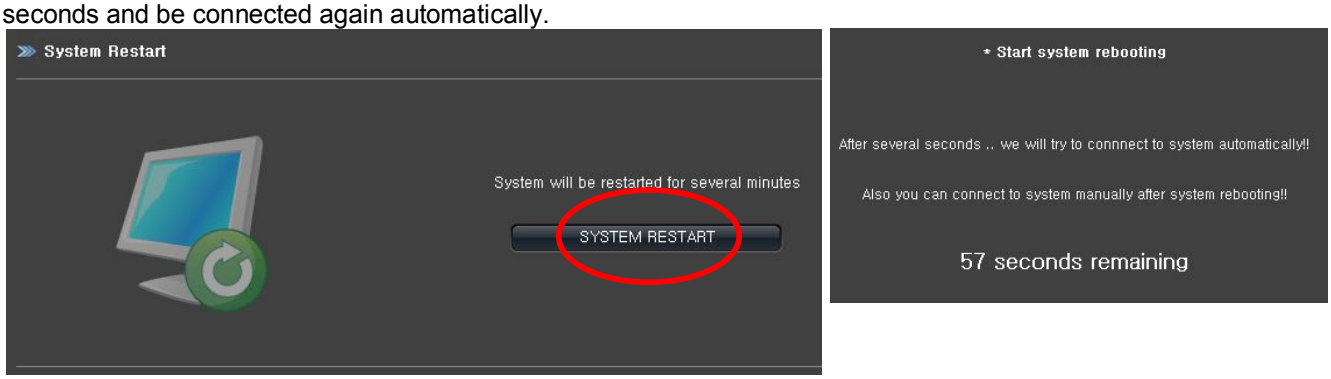


CAUTION :

1) Do not unplug the power of network camera while doing system upgrade. Otherwise, system upgrade may not finish properly and your network camera may not operate properly.
2) Check the network camera model and its relevant version of firmware first before upgrade.
3) Upgrade with improper file may cause improper operation or disorder.

6.6.2. System Restart

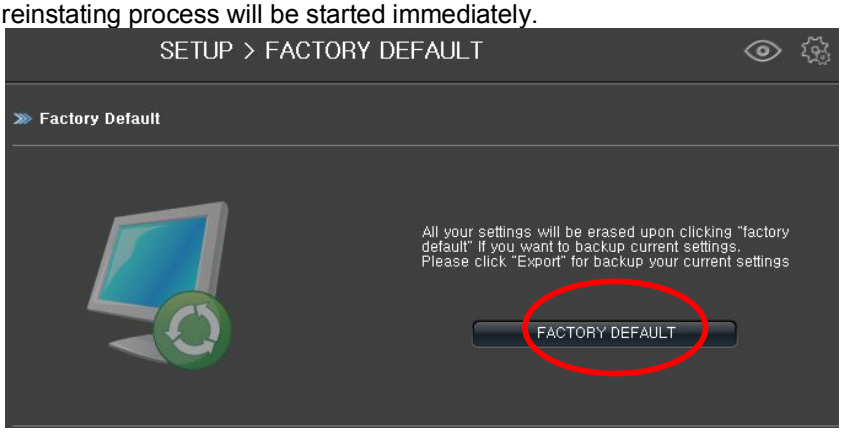
If you click “SYSTEM RESTART” button, your network camera will be restarted with message shown below in about 60 seconds and be connected again automatically.



NOTE: After system restart, you should log again with ID and password.

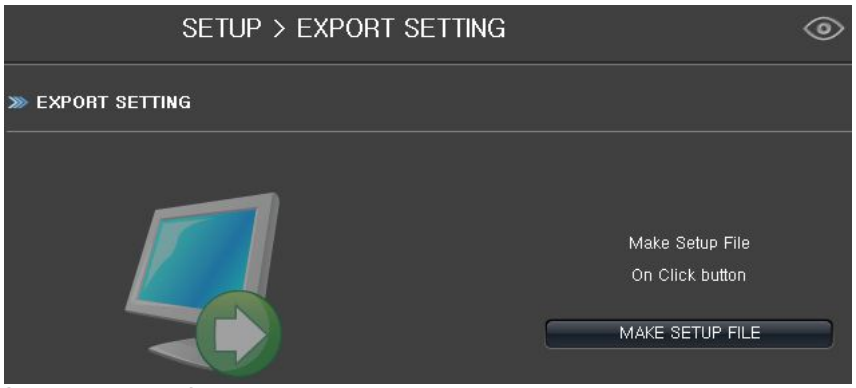
6.6.3. Factory Reset

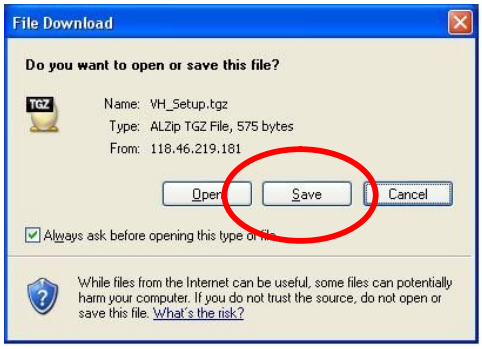
This function reinstates your network camera as factory default status. By clicking “FACTORY DEFAULT” button, this reinstating process will be started immediately.



CAUTION : All your network camera settings will be erased upon clicking “Factory Default” button. If you want to backup current settings, please click “EXPORT” button for backup of your current settings. For more details of “Export”, refer to 6.6.4. EXPORT SETTING.

6.6.4. Export Setting
This is useful function for backup the current settings of your network camera. To start “Export”, click “MAKE SETUP FILE” button. Then all your current settings will be made into setup file as shown below.

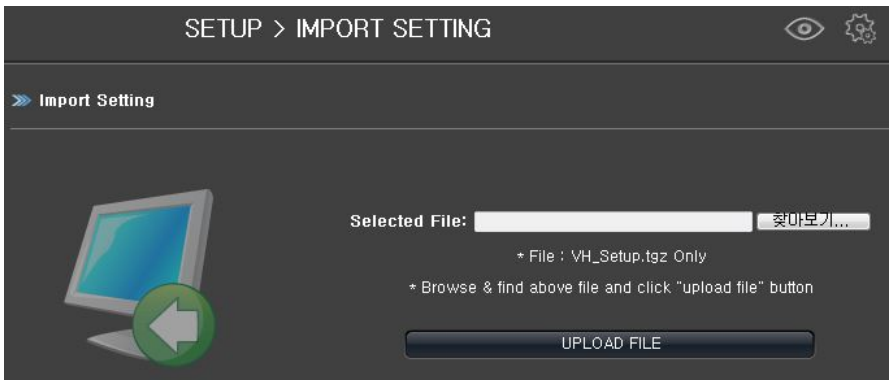




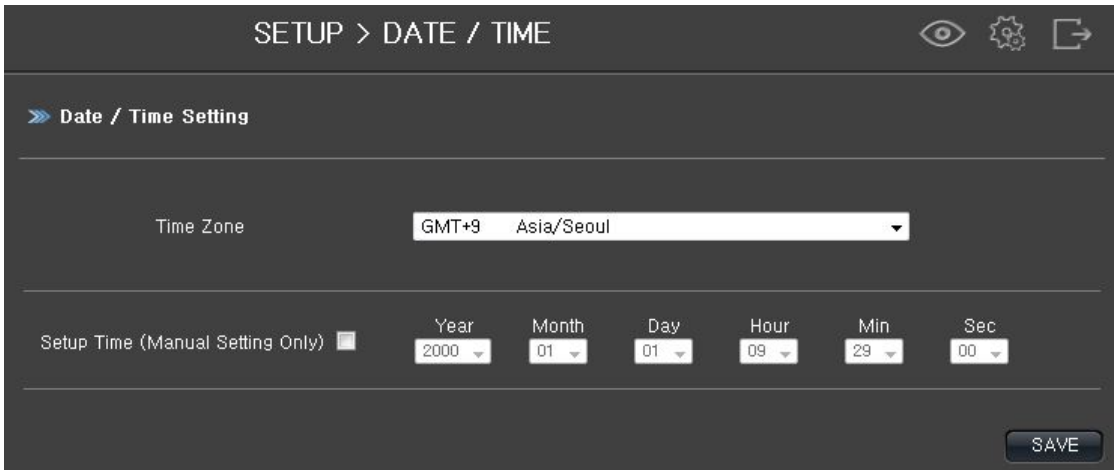
Save this setup file at proper location to use later.

NOTE : If the file name is changed, this setup file is not available any more.

6.6.5. Import Setting
This function is to adopt your saved settings into your existing network camera.
To start “Importing”, just click “Browse” button and select your saved setup file, then “UPLOAD FILE” button. When uploading is finished, the saved settings will be adopted into your network camera and then system will reboot after import.



6.6.6. Date/Time Setting
Select time zone from the combo box and click “SAVE” button to apply.
Manual setting is used only when NTP server is not set up.



6.6.7. Storage Setting
This section shows SD card status and recorded data search and playback.

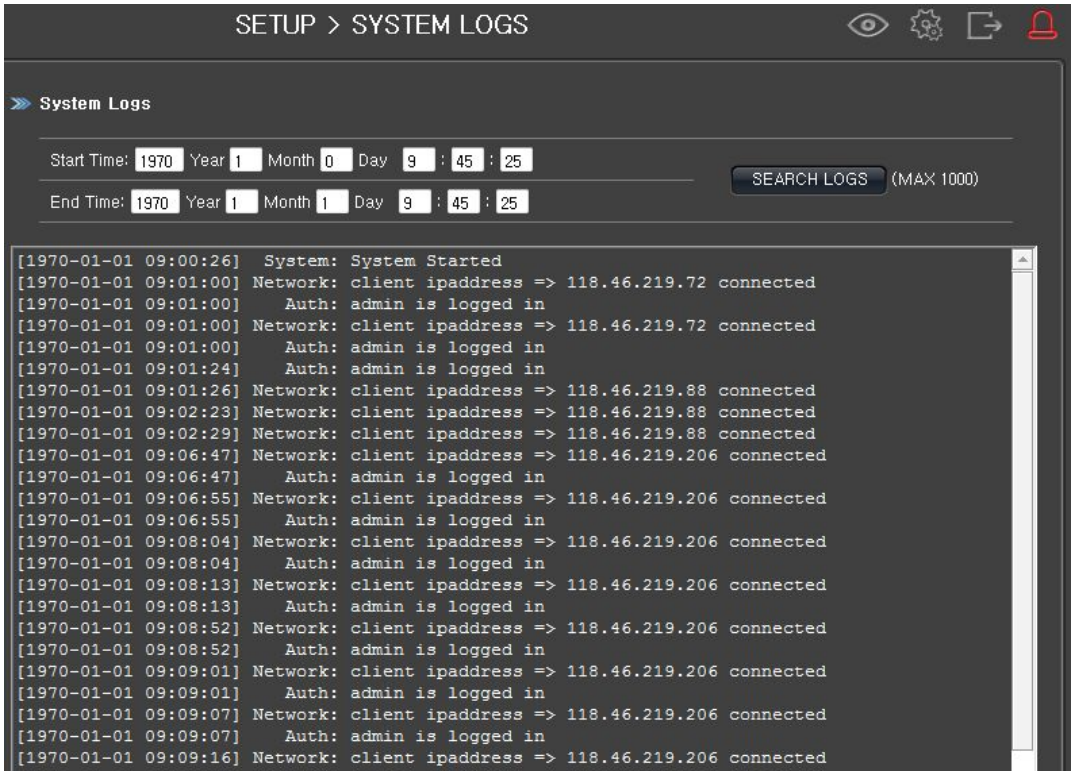
- **SD Status** : Shows total capacity of SD card in your network camera as well as used size and free size. Recording data will be overwritten onto oldest data when SD card is full. “FORMAT” button starts formatting of your SD card.

- **Recording data** : Search and playback or backup recorded data from SD card.
  1) Select specific date from the list.
  2) Click “SEARCH” button
  3) Select avi file from the combo box
  4) Click left button of your mouse and playback the recorded video data
  5) Or click right button of your mouse and select “Save As” to backup selected video data.

6.6.8. System Logs

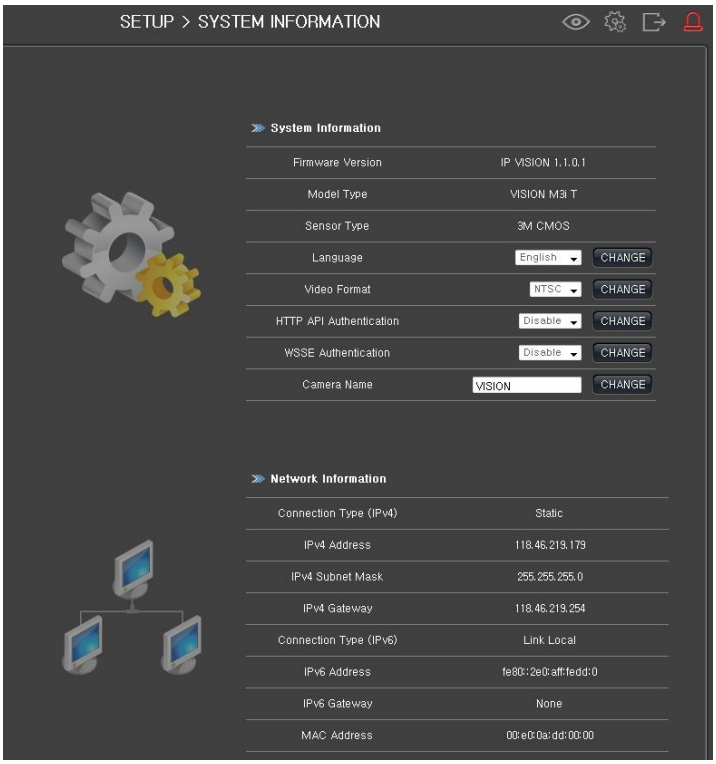
With this function, you can check all the system logs to see what happened in your network camera system. Max. 1000 system logs can be displayed.

1) Select start time
2) Select end time and click “SEARCH LOGS” button.
3) System logs will be displayed sequentially in the window as shown below.



6.6.9. System Information

System information shows the detailed information of your network camera such as firmware version, model, network information, etc.



6.7. PTZ Configuration

6.7.1. PTZ Setting

- ID : Enter camera ID. Skip if your camera doesn't have ID.
- Baud Rate : Choose baud rate in the combo box. Baud Rate can be selected from 600 to 115200 Kbps. Check your network camera or video server baud rate and select that baud rate.
- Protocol : Standard Pelco-D and Pelco-P protocol can be supported.
- Pan/Tilt Speed : Adjust pan and tilt speed. The higher, the faster.
- Zoom/Focus Speed : Adjust zoom/focus speed. The higher, the faster.
- AF Mode :
  * MANUAL
  FOCUS is adjustable manually.
  * AUTO
  FOCUS is adjustable automatically.
  * One push
  Whenever ZOOM is changed, FOCUS is also changed.
- IR Correction : Only VN7XSMi,SM3i,SM3Ti series

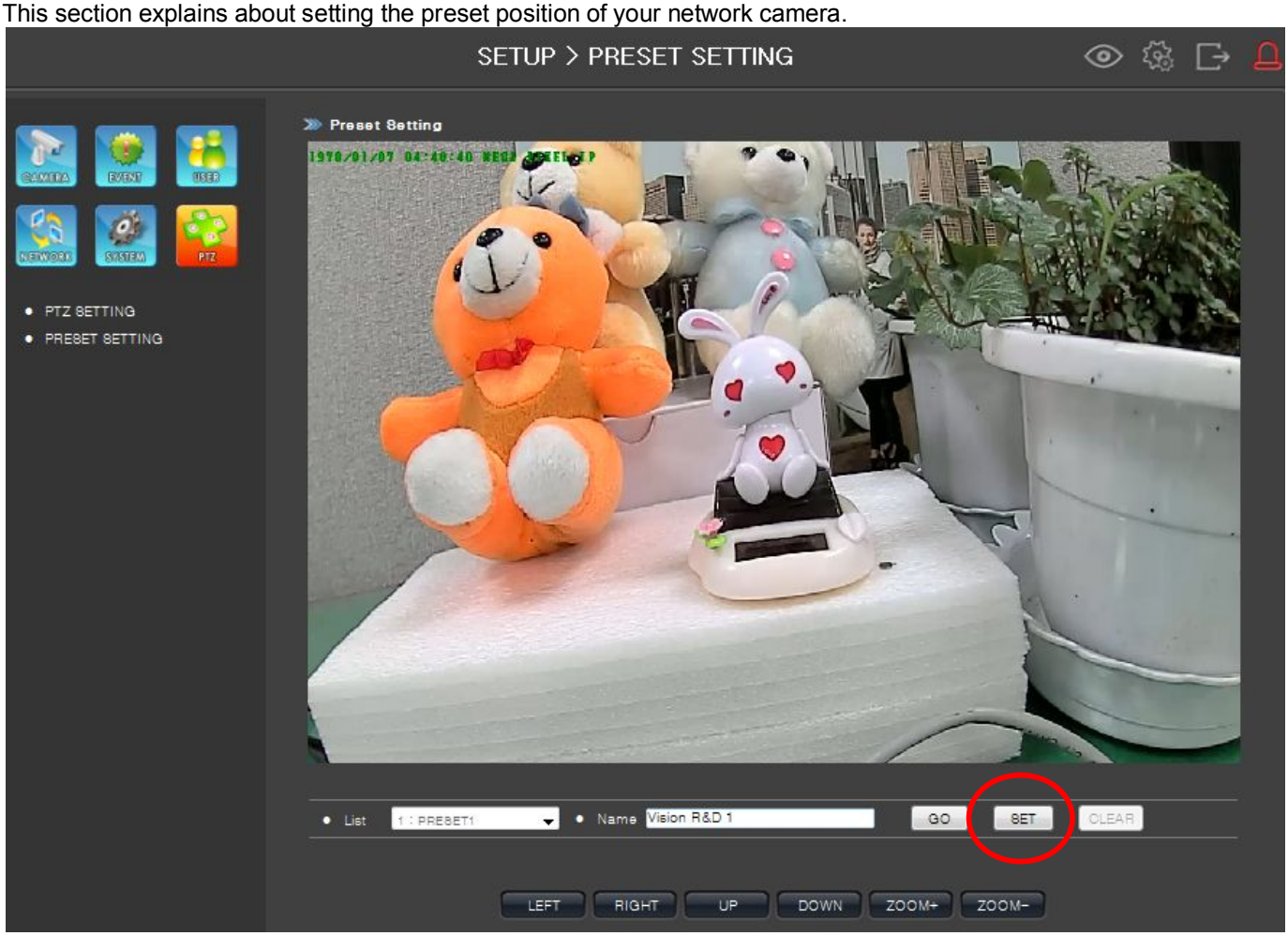
  IR correction ON : If the surroundings are dark(e.g. Countryside, Warehouse)

  IR correction OFF: If the surroundings are bright (e.g. Town, Bright lighting conditions)

NOTE : Click "SAVE" button before leaving "PTZ Setting" page to let your new settings become effective.

6.7.2. Preset Setting

This section explains about setting the preset position of your network camera.



How to set preset position

1) Select preset position number from the combo box. Totally 256 preset positions are available.
2) Enter preset position name, for example, my office entrance cam, etc.
3) Move your network camera using 6 buttons on the bottom.
4) Click “SET” button to save this position into your preset position number.
5) If you select any specific preset position number and click “GO” button, your network camera moves and zooms immediately as you saved position information.
6) When you delete saved preset position, select preset position number an click “DELETE” button.

7. Glossary of terms

ActiveX - A control (or set of rules) used by a browser. ActiveX controls are often downloaded and installed automatically as required.
API - Application Programming Interface. The Vision API can be used for integrating Vision products into other applications.
ARP - Address Resolution Protocol. Used to associate an IP address to a hardware MAC address. A request is broadcasted on the local network to find out what the MAC address is for the IP address.
Aspect ratio - A ratio of width to height in images. A common aspect ratio used for television screens and computer monitors is 4:3. High-definition television (HDTV) uses an aspect ratio of 16:9.

BOOTP - A protocol that can automatically configure a network device (give it an IP address).

CGI - Common Gateway Interface. A set of rules (or a program) that allows a Web Server to communicate with other programs.
Client/Server - Describes the network relationship between two computer programs, in which one, the client makes a service request from another - the server.

DC-iris - The iris, a mechanism that automatically regulates the amount of light allowed entering to CCD, is electrically controlled by the camera
dB (Decibels) - A unit to measure sound level changes. A 3dB change is the smallest level change we can hear. A gain of 0dB will leave the signal level unchanged.
De-interlacing - De-interlacing is the process of converting a stream of interlaced frames to a stream of progressive frames.
DSL(ADSL) - Digital Subscriber Line. A means of transferring data via standard phone line.

Ethernet - A widely used networking standard.

Firewall - A virtual barrier between a LAN (Local Area Network) and other networks, e.g. the internet.
FTP - File Transfer Protocol. Used for the simple transfer of files to and from an FTP server.
Full-duplex - Transmission of data, e.g. audio, in two directions simultaneously.

G.711 - G.711 is the international standard for encoding telephone audio on 64 Kbps channel. It is a pulse code modulation (PCM) scheme operating at 8 kHz sample rate.
G.726 - Frequently used speech-compression algorithm in telecommunications due to its high perceived speech quality and low resource requirements.

Half-duplex - A half-duplex link communicates in one direction at a time only, Just like a walkie-talkie. Two way communications is possible, but not simultaneously.
HTTP - Hypertext Transfer Protocol. The set of rules for exchanging files (text, images, sound, video, and other files) on the World Wide Web.
HTTP-S (HTTPS) - An extension to the HTTP protocol to support the transmitting data securely over the World Wide Web.

Intranet - A private network limited to an organization or corporation. Usually closed to external traffic.
IP - Internet Protocol.
IP address - A unique set of numbers used by a computer on the network to allow it to be identified and found.

JPEG - A standard image format, used widely for photographs. Also known as JPG.

LAN - A local area network (LAN) is a group of computers and associated devices that typically share common resources within a limited geographical area.
Linux - A popular operating system that is “open source” and practically free of charge.
Lux - A standard unit for light measurement.

Mbit/s - Megabits per second. A unit for measuring speeds in networks. A LAN might run at 10 or 100 Mbit/s
MPEG4 - A video compression standard that makes good use of bandwidth. It can provide DVD-quality video streams at less than 1 Mbit/s.
Multicast - A bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients.

Ping - A small utility used for sending data packets to network resources to check that they are working and that the network is intact.
Pre/post alarm image - The images from immediately before and after an alarm.
Protocol - A special set of rules governing how two entities will communicate. Protocols are found at many levels of communication, and there are hardware protocols and software protocols.

Router - A device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router is often included as part of a network switch.
RTP - Real Time Transfer Protocol. A transfer protocol designed for the delivery of live content, e.g. MPEG4.
RTSP - Real Time Streaming Protocol is a network control(e.g. play, stop, etc) protocol used in multimedia, and a starting point for negotiating transports such as RTP, multicast and Unicast. RTSP can be considered a “remote control” for controlling the media stream delivered by a media server. RTSP servers typically use RTP as the protocol for the actual transport of audio/video data.

SMTP - Simple Mail Transfer Protocol is the protocol used to send e-mail across the Internet. SMTP authentication is a way of allowing people outside of a domain to use an SMTP server when sending e-mail.
SNMP - Simple Network Management Protocol. An application layer protocol that facilitates the exchange of management information between network devices. It is part of the TCP/IP (Transmission Control Protocol/Internet Protocol) protocol suite.
Subnet Mask - An IP address consists of two components: the network address and the host address. “Subnetting” enables a network administrator to further divide the host part of the address into two or more subnets. The subnet mask identifies the subnet to which an IP address belongs.
Switch - Whilst a simple hub transmits all data to all devices connected to it, a switch only transmits the data to the device it is specifically intended for.

TCP/IP - Transmission Control Protocol/Internet Protocol. A suite of network protocols that determine how data is transmitted. TCP/IP is used on many networks, including the Internet. TCP keeps track of the individual packets of information and IP contains the rules for how the packets are actually sent and received.

UDP - The User Datagram Protocol is a communication protocol that offers a limited amount of service when messages are exchanged between computers in a network that uses the IP. UDP is an alternative to the TCP and, together with IP, is also known as UDP/IP.
Unicast - Communication between a single sender and a single receiver over a network.
URL - Uniform Resource Locator. An “address” on the network.

Varifocal - A varifocal lens provides a various range of focal length, as opposed to a lens with a fixed focal length, which only provides one.

WAN - Wide Area Network. Similar to a LAN, but on a larger geographical scale.
Web server - A program on a computer that delivers the resources requested by the web user.