

USER MANUAL

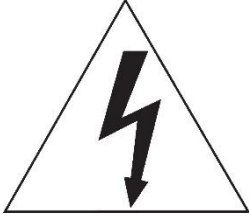
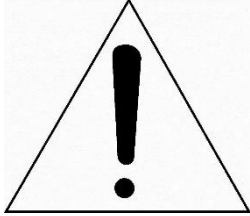
NETWORK CAMERA USER MANUAL

*Please read this manual thoroughly before use and keep it handy for future reference.
Design and specifications are subject to change without notice.*



WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

CAUTION

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL		

EXPLANATION OF GRAPHICAL SYMBOLS

	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CE COMPLIANCE STATEMENT

WARNING

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

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. CAUTION : These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.
16. ITE is to be connected only to PoE networks without routing to the outside plant.
17. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS"
18. The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL-62368.
19. Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.
20. CAUTION : Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.



ATTENTION: Il y a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Table of contents

Table of contents	5
1. Operation	6
1.1. Access from a browser	6
1.2. Live View Page	8
1.2.1. General controls	8
1.3. Network Camera Setup	9
1.3.1. Basic Configuration	9
1.3.2. Video & Image	10
1.3.3. Event	20
1.3.4. System	33
1.4. Help	48
2. Appendix	49
2.1. Troubleshooting	49
2.2. Preventive Maintenance	50
2.3. System Requirement for Web Browser	50
2.4. General Performance Considerations	50
2.5. Product Specification	51

1. Operation

The network camera can be used with Windows operating system and browsers. The recommended browsers are Internet Explorer, Safari, Firefox, Opera and Google Chrome with Windows

1.1. Access from a browser

1. Start a browser (Internet Explorer).
2. Enter the IP address or host name of the network camera in the Location/Address field of your browser.
3. You can see a log-in setup page. Set the ID and Password

Change administrator password

User Setting

· New password:

· New password confirmation :

A password can be used if it satisfies three or more in the following criteria:

1. It contains at least one lowercase English character, (a-z)
2. It contains at least one uppercase English character, (A-Z)
3. It contains at least one special character. The special characters are: !@#%&*()-+ ... (However, the special character '&' is restricted.)
4. It contains at least one digit, (0-9)

Its length must be at least 9 if it satisfies three or more of the above criteria.

SAVE

- **※NOTE:** A password can be used if it satisfies two or more in the following criteria:
 1. It contains at least one lowercase English character.
 2. It contains at least one uppercase English character.
 3. It contains at least one special character. The special characters are: !@#%&*()-+ ...
 4. It contains at least one digit.Its length must be at least 10 if it satisfies only two of the above criteria.

4. Enter the ID and password to enter web page

2M Network Dome Camera

ID

PW

Login

[Forgot Password](#)

To prevent network eavesdropping when setting the admin password, this can be done via an encrypted HTTPS connection, which requires an HTTPS certificate (see NOTE below). To set the password via a standard HTTP connection, enter it directly in the first dialog shown below. To set the password via an encrypted HTTPS connection, please see "3. 4.5 System > Security > HTTP & HTTPS" of User's Manual.

- **※NOTE:** HTTPS (Hypertext Transfer Protocol over SSL) is a protocol used to encrypt the traffic between web browsers and servers. The HTTPS certificate controls the encrypted exchange of information.

5. Two menu pop up appears when user enter ID, Password



6. Click the Setup menu, User can see a setup page.



7. If User forgot Password, click "Forgot Password" button.

※**NOTE:** Contact Distributor or Seller with **MAC address** and **Valid date**. They provide a One-time Password. Login with One-time password, User can change password. Please refer to " System>Security>User"



1.2. Live View Page

The Live View page is displayed on the screen as shown below

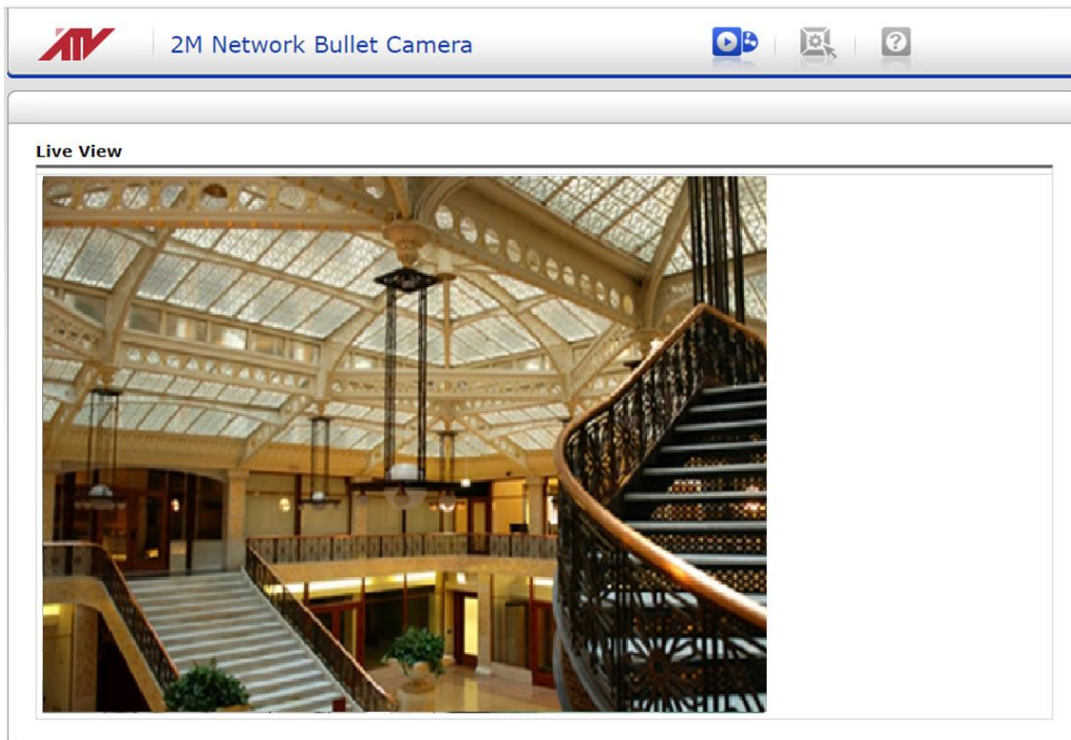





Figure 1-1 Live View Page

1.2.1. General controls

■ General controls

No.	Item	Description
1	 Live View Page	Show live view
2	 Setup Page	Set page all function of camera
3	 Help Page	Description of each icon

1.3. Network Camera Setup

1.3.1. Basic Configuration

You can see the device information in this information page.

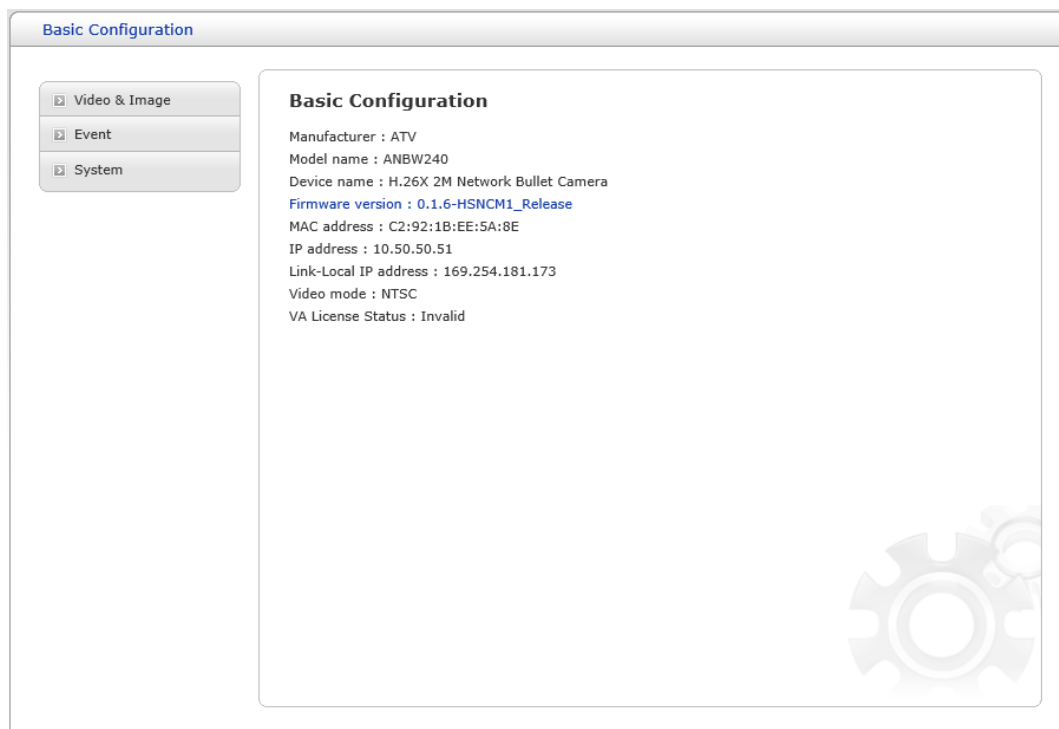


Figure 1-2 Basic Configuration

1.3.2. Video & Image

■ Basic

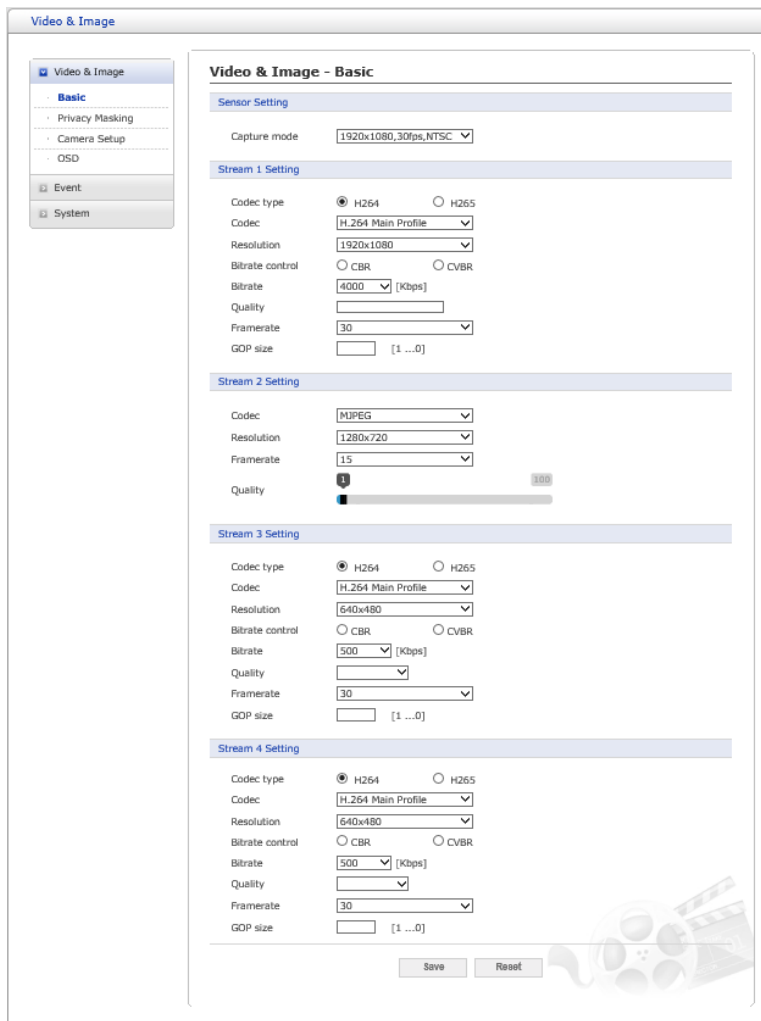


Figure 1-3 Video & Image Basic

No.	Item	Description
1	Sensor Setting	<p>Capture mode User can select sensor capture mode between 1920x1080(2MP) and NTSC/PAL (Some models are fixed to NTSC or PAL).</p>
2	Stream 1 Setting	<p>Codec The codec supported in Stream 1 is H.264 and H.265. There are 3 pre-programmed stream profiles available for quick set-up. Choose the form of video encoding you wish to use from the drop-down list:</p> <ul style="list-style-type: none"> - H.264 High Profile Primary profile for broadcast and disc storage applications, particularly for high-definition television applications (for example, this is the profile adopted by the Blu-ray Disc storage format and the DVB HDTV broadcast service). - H.264/H.265 Main Profile Primary profile for low-cost applications that require additional error robustness, this profile is used rarely in videoconferencing and mobile applications; it does add additional error resilience tools to the Constrained Baseline Profile. The importance of this profile is fading after the Constrained Baseline Profile has been defined.

No.	Item	Description
2	Stream 1 Setting	<p>- H.264 Baseline Profile: Originally intended as the mainstream consumer profile for broadcast and storage applications, the importance of this profile faded when the High Profile was developed for those applications.</p> <p>Resolution This enables users to determine a basic screen size when having an access through the Web Browser or PC program. The screen size control comes in several modes. Users can change the selected screen size anytime while monitoring the screen on a real-time basis.</p> <p>Bitrate control The bit rate can be set as Constrained Bit Rate (CBR) or Constrained Variable Bit Rate (CVBR). Limiting the maximum bit rate helps control the bandwidth used by the H.264 or H.265 video stream. Leaving the Maximum bit rate as unlimited maintains consistently good image quality but increases bandwidth usage when there is more activity in the image. Limiting the bit rate to a defined value prevents excessive bandwidth usage, but images are degraded when the limit is exceeded.</p> <ul style="list-style-type: none"> - CBR: Constrained bitrate. - CVBR: VBR with maximum bitrate which is set in Bitrate. - Bitrate: Maximum bitrate for CBR in the range of 100kbps ~ 10Mbps. <p>Frame rate Upon the real-time play, users should select a frame refresh rate per second. If the rate is high, the image will become smooth. On the other hand, if the rate is low, the image will not be natural but it can reduce a network load.</p> <p>GOP size Select the GOP (Group of Picture) size. If users want to have a high quality of fast image one by one, please decrease the value. For the purpose of general monitoring, please do not change a basic value. Such act may cause a problem to the system performance. For the details of GOP setting, please contact the service center.</p>
3	Stream 2 Setting	<p>Sometimes the image size is large due to low light or complex scenery. Adjusting the frame rate and quality helps to control the bandwidth and storage used by the Motion JPEG video stream in these situations. Limiting the frame rate and quality optimizes bandwidth and storage usage, but may give poor image quality. To prevent increased bandwidth and storage usage, the Resolution, Frame rate, and Frame Quality should be set to an optimal value.</p> <ul style="list-style-type: none"> - MJPEG Resolution: Same as the stream 1 setting. - MJPEG Frame rate: Same as the stream 1 setting. - MJPEG Quality: Select the picture quality. If users want to have a high quality of fast image one by one, please decrease the value. For the purpose of general monitoring, please do not change a basic value. Such act may cause a problem to the system performance.
4	Stream 3, Stream4 Setting	Same as the Stream 1 settings
5	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Privacy Masking

The privacy masking function allows you to mask parts of the video image to be transmitted. You can set up to four privacy masks. Select "Enable privacy masking" first and click Add Mask. User can set up to four privacy masks

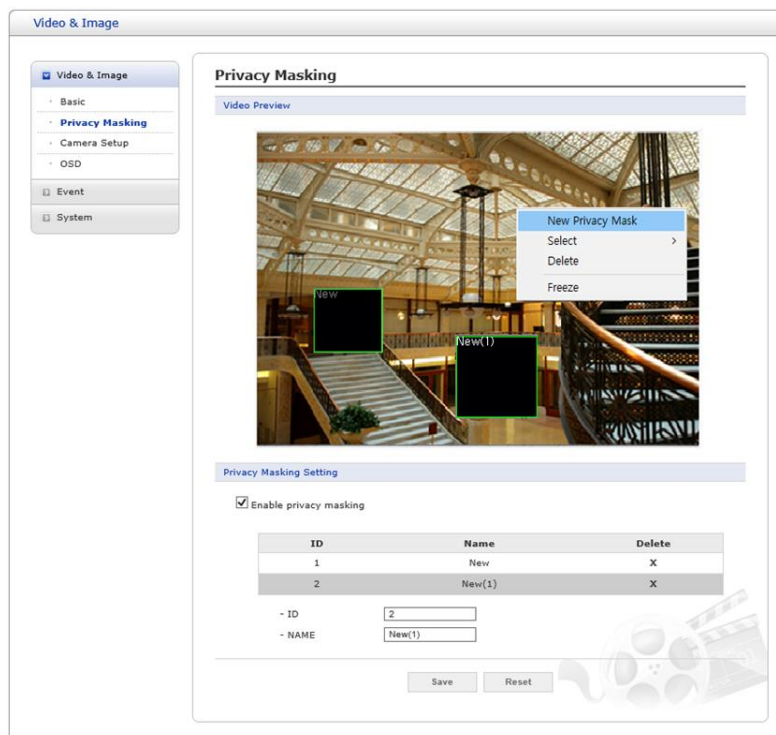
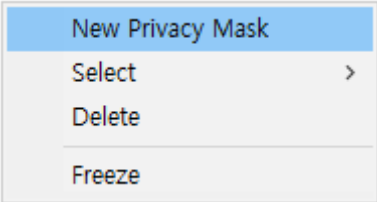


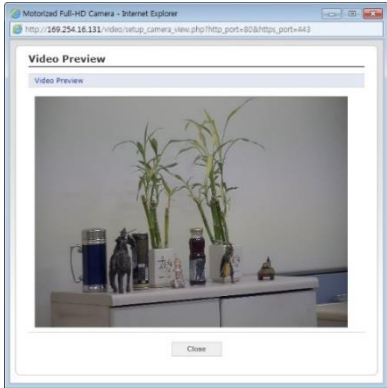
Figure 1-4 Privacy Masking

No.	Item	Description
1	Privacy masking Setting	Select "Enable privacy masking" first and Save Button
2	New Privacy Mask	<p>Click right mouse button on the preview window shows selection pop-up of New Privacy, Select, Delete and Freeze.</p>  <p>Select New Privacy Mask generates an Include Black box of green line. Drag corner or line resizes and drag inside moves the box.</p> <p>User can select any box by clicking name on the preview window or click on the list. User can delete selected zone via right mouse click selection for a selected box, or click any one of X button in the zone list.</p>
3	ID/NAME	User can change privacy mask ID/NAME.
4	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Camera Setup

In this page, user can setup Exposure Control, White Balance Control, Image Appearance, and Day & Night control

Figure 1-5 Camera Setup

No.	Item	Description
1	Video Preview	User can check the setting via video preview pop-up window. 

■ Exposure Control

The screenshot shows the 'Exposure Control' menu with the following settings:

- Mode:** Automatic, Flicker-free 50Hz, Flicker-free 60Hz
- Value:** A slider bar is shown with a value of 5, and a 'Default' button.
- Max. gain:** Low, Middle, High
- Shutter:** Automatic, Fixed
- Max. shutter:** 1/10 [s]
- Min. shutter:** 1/10000 [s]
- Enable DC-IRIS

Figure 1-6 Exposure Control

No.	Item	Description
1	Mode	Determines exposure mode among automatic and flicker-free modes. Users can use Automatic mode with full shutter speed or Flicker-free mode with a limited range of shutter due to an anti-flicker function.
2	Value	Sets exposure value between 1 and 10 using slide bar or manual type in.
3	Max. gain	Sets maximum gain threshold.
4	Shutter	Sets shutter speed of the sensor. If users set Automatic, Max shutter and Min shutter can be selected. If the object is as fast as a car, please change the Max shutter to a faster value (e.g. 1/10 -> 1/120). If users set Manual, fixed shutter speed can be selected. – Max. shutter: Users can set the limit for slow shutter speeds used in dark environments. – Min. shutter: Users can set the limit for fast shutter speeds used in bright environments.
5	Enable DC-IRIS	Check this box to activate the DC-IRIS lens model. ※NOTE : This menu appears for motorized lens model only.

■ Image Appearance

This provides access to the advanced image settings for the network camera.

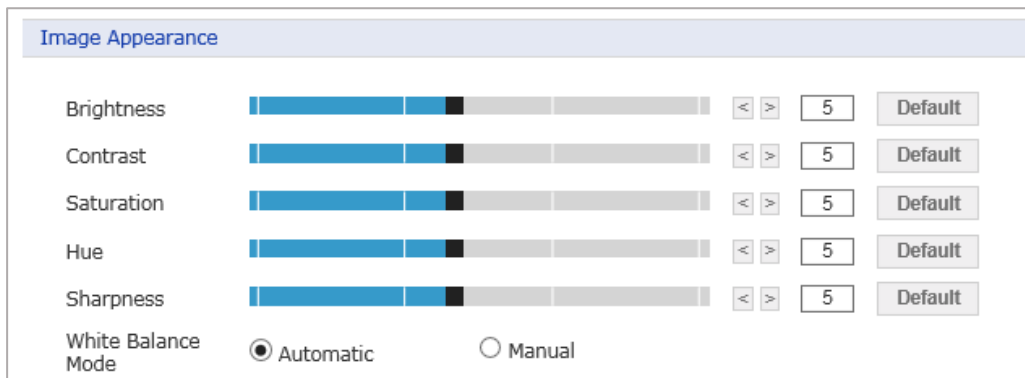


Figure 1-7 Image Appearance

No.	Item	Description
1	Brightness	The image brightness can be adjusted in the range 1-10, where a higher value produces a brighter image.
2	Contrast	Adjust the image's contrast by raising or lowering the value in this field.
3	Saturation	Set an appropriate value in the range 1-10. Lower values mean less color saturation.
4	Hue	Set an appropriate value in the range 1-10. The value distinguishes color, such as red, yellow, green, or violet.
5	Sharpness	Set the amount of sharpening applied to the image. A sharper image might increase image noise especially in low light conditions. A lower setting reduces image noise, but the image would be less sharp.
6	White Balance Mode	Select white balance mode which fits camera installation environment. In case of Manual mode, user can set R, G, B gain manually.

■ Enhance Control

Enhance Control

Enable wide dynamic range

Enable flip horizontally

Enable mirror image

Enable noise reduction

Level Low Middle High

Enable defog

Enable aisle

Metering Mode Spot Center Average

Left Right Bottom

Figure 1-8 Enhance Control

No.	Item	Description
1	Enable wide dynamic range	Activates WDR which cannot be used with Defog function. If WDR is activated, shutter mode becomes automatic only.
2	Enable flip horizontally	Check this box to flip the image.
3	Enable mirror image	Check this box to mirror the image.
4	Enable noise reduction	Check this box to activate the noise reduction. Once enabled, you can select noise reduction level.
5	Enable defog	Check this box to activate the defog function.
6	Enable aisle	Check this box to rotate image from 90 ° to 270°.
7	Metering Mode	Users can change the metering mode. * Metering Mode: Method of measuring the intensity of the light hitting and reflected by a subject in order to determine the exposure required.

■ Day & Night Control

User can setup Day & Night operation mode among Automatic, Day, and Night.

Day & Night Control

Mode	<input checked="" type="radio"/> Automatic	<input type="radio"/> Day	<input type="radio"/> Night
Threshold	<input type="radio"/> Low	<input checked="" type="radio"/> High	

Figure 1-9 Day & Night Control

No.	Item	Description
1	Mode	<p>Automatic Normally displays color image, and switches automatically to black & white image after the ambient light level reaches a pre-defined Threshold.</p> <p>Day Always displays color image.</p> <p>Night Always displays black & white image.</p>
2	Threshold	<p>Low/High Adjusts the level of light which the camera automatically switches between color and black & white image.</p>

■ IR Control

User can enable/disable built-in IR LED.

The figure shows two screenshots of the IR Control interface. The top screenshot displays the 'IR Control' settings with 'Enable IR' checked, 'Static IR' selected, and 'Max. Strength' set to 3. The bottom screenshot displays the same interface with 'Smart IR' selected and 'Speed' set to 5.

Figure 1-10 IR Control

No.	Item	Description
1	Static IR	When switching to Night, IR is ON with the set value. Max Strength : Users can specify the intensity of the IR to prevent saturation of the image.
2	Smart IR	This function adjusts IR for appropriate brightness if it is dark even using the set Gain at Night switching. Speed : Users can adjust the control speed of the smart IR.
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ **OSD**

This camera provides two OSD's (on screen display) on each stream, title and date & time. User can drag green "OSD Title" and "Date & Time" to the desired position and check at preview window.

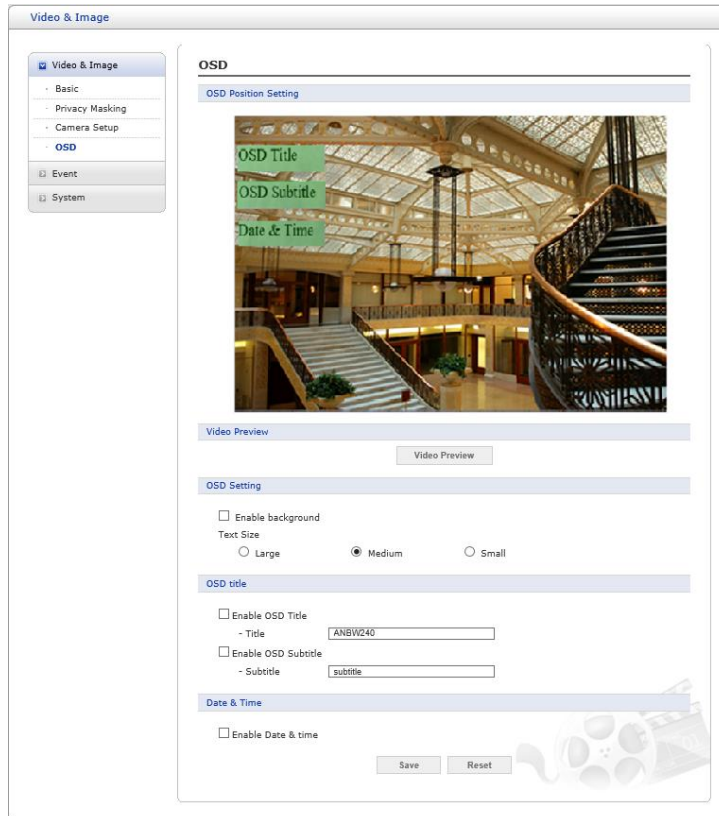


Figure 1-11 OSD

No.	Item	Description
1	OSD Position Setting	Click and move mouse to position OSD area.
2	Video Preview	User can check the position of OSD on actual video via preview pop-up window.
3	OSD Setting	User can determine show or hide OSD for each stream. - Enable background: Since the OSD color is white, user can set background for visibility in black. - Text size: User can set text size between Large, Medium and Small.
4	OSD title	- Enable OSD Title: User can show or hide OSD title, and can change OSD title by type in. The default is the model name of the camera. Select "Enable OSD Title" to activate the OSD title. - Enable OSD Subtitle: User can show or hide OSD subtitle and can change OSD subtitle by type in. The default is the Subtitle.
6	Date & Time	Select "Enable Date & Time" User can show or hide date & time on OSD.
7	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

1.3.3. Event

■ Event In

1. On Boot

This is used to trigger an event every time the network camera is started.

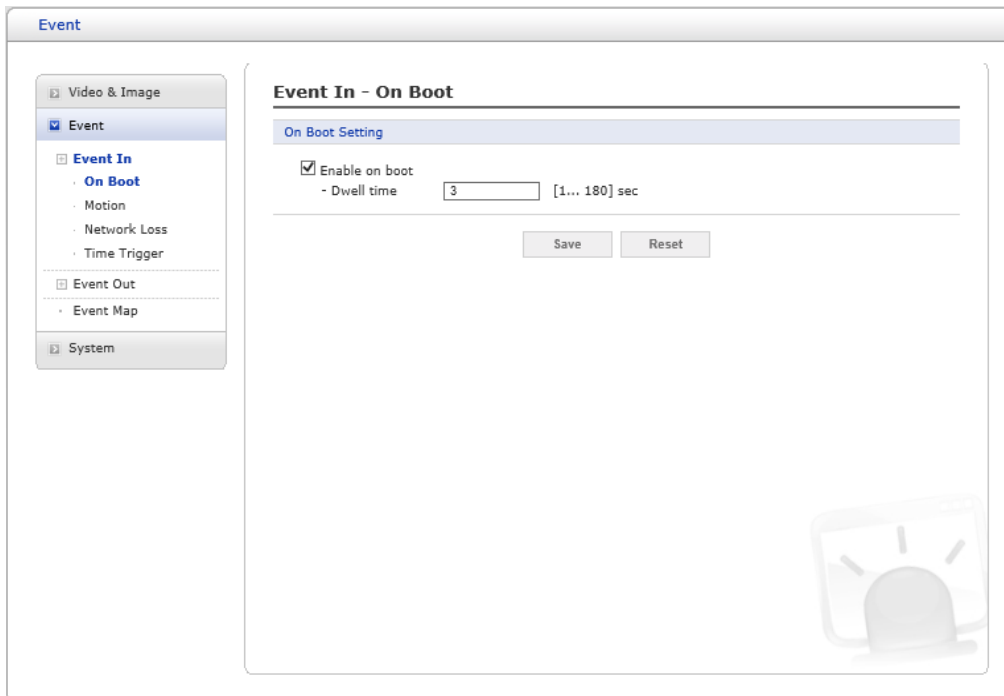


Figure 1-12 Event In - On Boot

No.	Item	Description
1	Enable on boot	Select to activate the On Boot event.
2	Dwell time	Enter the Dwell time the event lasts from the point of detection, 1-180 seconds.
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

2. Motion

This option makes use of the motion detection function click right button of the mouse. **Include, Exclude** zones each Max 4.

Event In - Motion

Video Preview

Video Motion Detection Setting

Enable video motion detection

ID	Name	Type	Threshold	Sensitivity	Dwell	Delete
1	New	Include	20	60	3	X
2	New(1)	Include	20	60	3	X

- ID:

- Name:

- Type:

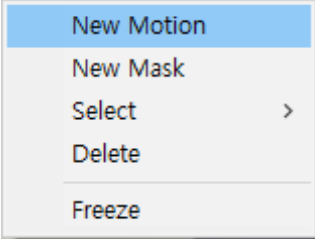
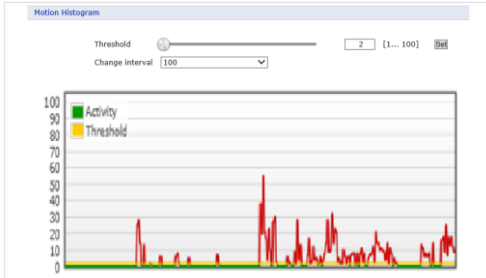
- Threshold: [1... 100]

- Sensitivity: [1... 100]

- Dwell time: [1... 180] sec

Save Reset

Figure 1-13 Event In - Motion

No.	Item	Description
1	Video Preview	<p>Click right mouse button on the preview window shows selection pop-up of New Motion, New Mask, Select, Delete and Freeze.</p>  <p>Select New Motion and click & drag generates an Include box of green color, New Mask and click & drag generates an Exclude box of orange color. Drag corner or line resizes and drag inside moves the box.</p> <p>User can select any box by clicking name on the preview window or click on the list. User can delete selected zone via right mouse click selection for a selected box, or click any one of X button in the zone list.</p>
2	Video Motion Detection Setting	Select "Enable video motion detection" to activate motion detection.
3	ID	Order of generation, Include 1~8, Exclude 9~16.
4	Name	User definable zone name.
5	Type	<p>Shows zone type and cannot be changed.</p> <ul style="list-style-type: none"> - Threshold: Determines how large the motion in the zone can trigger event in percentage. - Sensitivity: User can change sensitivity of this function, where large value sets more sensitive detection. - Dwell time: Determines how long the triggered event holds from the last triggering.
6	Show Histogram	<p>This camera provides live histogram for easy setup of threshold level in motion window. The pop-up window shows activity strength and threshold level, and user can determine threshold level for triggering motion event by slide bar or type in number.</p>  <ul style="list-style-type: none"> - Threshold: Determines how large the motion in the zone can trigger event in percentage. - Change interval: Determines the interval of the Sensitivity scale.
7	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

3. Network Loss

This is used to trigger an event every time the network connection is failed.

Select "Enable network loss" to activate the Network Loss event. Select a dwell time for how long the event will last from the point of detection.

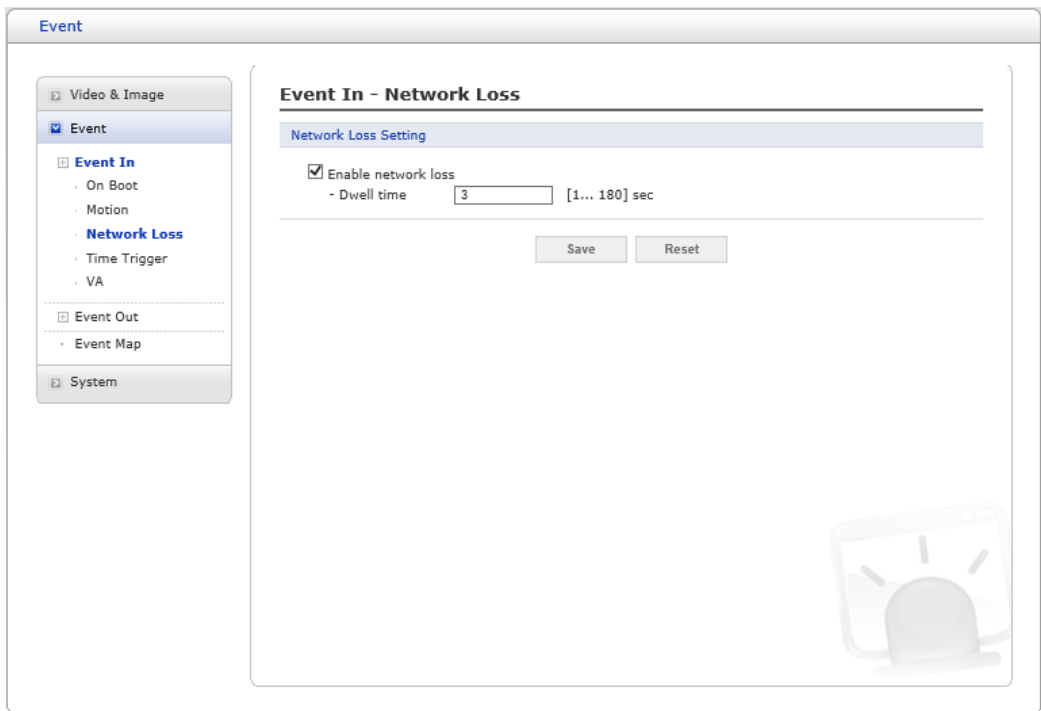


Figure 1-14 Event In – Network Loss

No.	Item	Description
1	Enable network loss	Select to activate the Network Loss event
2	Dwell time	Select a dwell time for how long the event will last from the point of detection, 1-180 seconds.
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

4. Time Trigger

Time Trigger is to set alarms at specific time. User can set up to four time triggers and each time trigger can be set to specific date in the calendar, every day, day of the week, or date of every month.

Select "Enable time trigger" to activate the Time Triggerfunction.

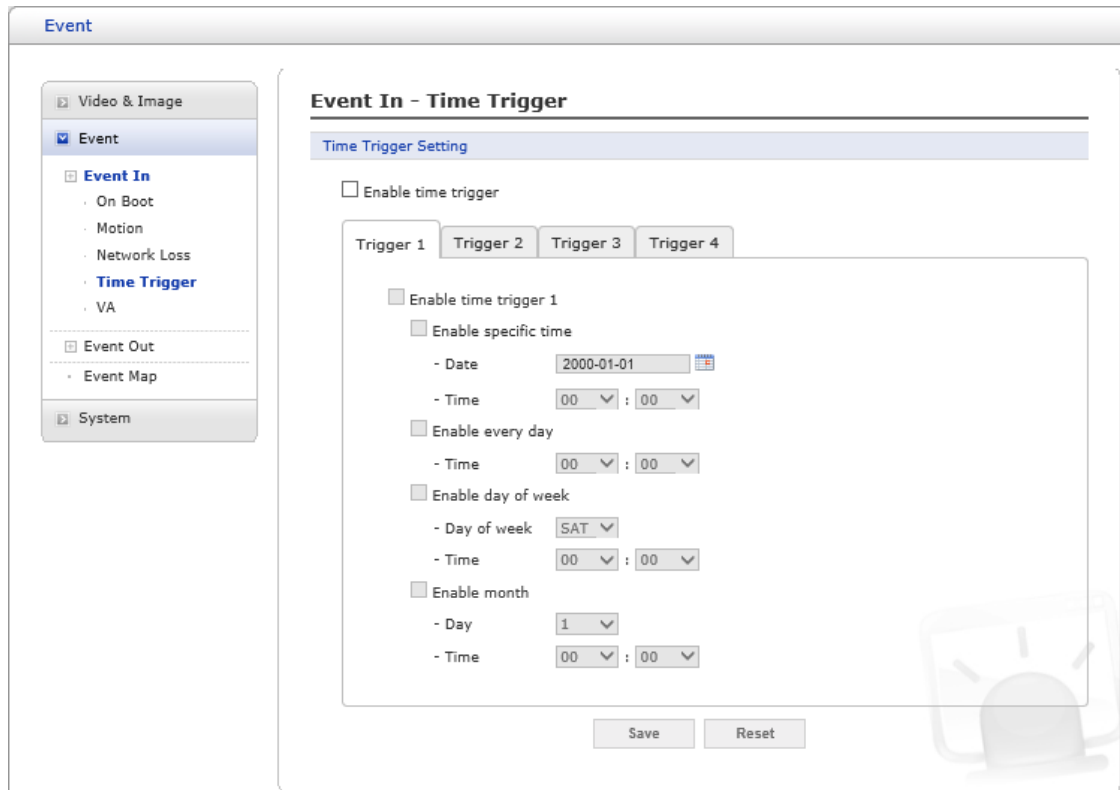


Figure 1-15 Event In – Time Trigger

No.	Item	Description
1	Enable specific time	User can select a date in the calendar or type in date, and specify time for event trigger.
2	Enable every day	Trigger event every day at specified time.
3	Enable day of week	Trigger event at the day of every week at specified time.
4	Enable month	Trigger event at the date of every month at specified time.
5	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Event Out

1. SMTP (E-Mail)

The network camera can be configured to send event and error email messages via SMTP (Simple Mail Transfer Protocol).

The screenshot shows the 'Event Out - SMTP(E-Mail)' configuration page. On the left is a navigation menu with 'Event' selected. The main content area is divided into three sections: 'SMTP(E-Mail) Setting', 'SMTP(E-Mail) Receiver', and 'SMTP(E-Mail) Test'. The 'SMTP(E-Mail) Setting' section includes options for enabling SMTP, image attachment, interval (60), aggregate events (50), mail server, port (25), connections security (None), user name, password, and login method (AUTH LOGIN). The 'SMTP(E-Mail) Receiver' section has eight input fields for Receiver 1 through Receiver 8. The 'SMTP(E-Mail) Test' section has a 'Receiver' input field and a 'Test' button. At the bottom are 'Save' and 'Reset' buttons. A camera icon is visible in the bottom right corner of the interface.

Figure 1-16 Event Out – SMTP (E-Mail)

No.	Item	Description
1	SMTP (E-Mail) Setting	<p>Enable SMTP Select "Enable SMTP" to activate the SMTP operation.</p> <p>Sender Enter an email address to be used as the sender for all messages sent by the network camera.</p> <p>Interval Represents the time interval of the email notification when events occur several times.</p> <p>Aggregate events Shows the maximum number of emails sent within each interval.</p> <p>Use Mail Server Check the box if you are using a mail server to receive event notification and image email.</p> <ul style="list-style-type: none"> - Mail Server: Enter the host names (or IP addresses) for your mail server. - Port: Enter the port number for your mail server. - Connection security: Select a connection security type in the drop-down. (None / Start TLS / SSL) - Enable use (SMTP) authentication: Check the box if your mail server requires authentication. - User name/Password: Enter the User name and Password as provided by your network administrator or ISP (Internet Service Provider). - Login method: Choose a log-in method in the drop-down (AUTH LOGIN / AUTH PLAIN)
2	SMTP (E-Mail) Receiver	<p>Receiver # User can assign up to 8 receivers Enter an email address.</p>
3	SMTP (E-Mail) Test	<p>Receiver User can check the SMTP setting via a sample email. Enter an email address and click the Test button to test that the mail servers are functioning and that the email address is valid.</p>
4	Save/Reset	<p>When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.</p>

2. FTP & JPEG

When the network camera detects an event, it can record and save images to an FTP server. Images can be sent as e-mail attachments. Check the "Enable FTP" box to enable the service. This camera can support multiple FTP servers and user can configure each server settings separately.

The screenshot displays the configuration interface for 'Event Out - FTP & JPEG'. On the left, a sidebar shows a tree view with 'Event' selected, containing sub-items like 'Event In', 'Event Out' (with 'SMTP(E-Mail)', 'FTP & JPEG', and 'Record' sub-items), and 'Event Map'. The main panel is titled 'Event Out - FTP & JPEG' and is divided into two main sections: 'FTP Setting' and 'Server 1'.

FTP Setting

- Enable FTP

Server 1

Server 1 FTP Setting

- Enable FTP
- Server 1: [text input]
- Passive mode
- Port: [text input] 21
- Remote directory: [text input]
- User name: [text input]
- Anonymous login
- Password: [text input]
- Enable time folder
- Time type: Day Hour Minute

Server 1 JPEG Setting

Pre-event	Time :	[text input] 5 [0... 30] sec	FPS :	[text input] 1 [1... 2] fps
Event			FPS :	[text input] 1 [1... 2] fps
Post-event	Time :	[text input] 5 [0... 30] sec	FPS :	[text input] 1 [1... 2] fps

Prefix file name: [text input] basename_

Additional suffix: Date/Time Sequence number

Buttons: Save, Reset

Figure 1-17 Event Out – FTP & JPEG

No.	Item	Description
1	FTP Setting	<p>Server Enter the server's IP address or host name. Note that a DNS server must be specified in the TCP/IP network settings if using a host name.</p> <p>Port Enter the port number used by the FTP server. The default is 21.</p> <p>Passive mode Under normal circumstances the network camera simply requests the target FTP server to open the data connection. Checking this box issues a PASV command to the FTP server and establishes a passive FTP connection, whereby the network camera actively initiates both the FTP control and data connections to the target server. This is normally desirable if there is a firewall between the camera and the target FTP server.</p> <p>Remote directory Specify the path to the directory where the uploaded images will be stored. If this directory does not already exist on the FTP server, there will be an error message when uploading.</p> <p>User name/Password Provide your log in information</p> <p>Anonymous login Check the box if you want to use anonymous login method and the server supports it.</p> <p>Time type The name of the folder where the uploaded image will be saved can be set as the date, time, and minute of the event.</p>
2	JPEG Setting	<p>Pre-event A pre-event buffer contains images from the time immediately preceding the event trigger. These are stored internally in the server. This buffer can be very useful when checking to see what happened to cause the event trigger. Check the box to enable the pre-trigger buffer, enter the desired total length in seconds, minutes or hours, and specify the required image frequency.</p> <p>Post-event This function is the counterpart to the pre-trigger buffer described above and contains images from the time immediately after the trigger. Configure as for pre-event.</p> <p>Prefix file name This name will be used for all the image files saved. If suffixes are also used, the file name will take the form <prefix> <suffix>.<extension></p> <p>Additional suffix Add either a date/time suffix or a sequence number, with or without a maximum value.</p>
3	Save/Reset	<p>When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.</p>

3. Record

When the network camera detects an event, it can record the video stream onto the Micro SD Memory (not supplied) or NAS (Network Attached Device) as a storage device. Check the "Enable Record" box to enable the service.

Event Out - Record

Record Setting

Enable Record

Overwrite

Continuous Record

*** Note**
Using continuous recording may shorten life time of SD card.

- Stream Type: Stream 1

- Pre-event: 0 [0... 10] sec

- Post-event: 0 [0... 60] sec

Audio Record

Record schedule

No Recording Recording

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
SUN																								
MON																								
TUE																								
WED																								
THU																								
FRI																								
SAT																								

All Select All Delete

Device Setting

Device Type: SD

Format

Device Status: Unformatted **Format**

Device Remove

Remove

Device Information

Total	Used	Available	Used Percent	Bad Sector
29.72GB	0.00MB	0.00MB	0.00%	<0.00%

Save Reset

Figure 1-18 Event Out - Record

No.	Item	Description
1	Record Setting	<p>Overwrite Click checkbox to overwrite the storage device; Continuous Record is available when not using an SD card.</p> <p>Stream Type You can select Stream 1, Stream 3, or Stream 4. - Stream 1, 3, 4: H.264 data</p> <p>Pre-event Enter pre-event time value for the storage device pre-recording.</p> <p>Post-event Enter post-event time value for the storage device pre-recording.</p> <p>Audio Record Check the box if you want to record audio with video.</p> <p>※ NOTE: Stream 2 MJPEG data cannot be recorded.</p>
2	Record Schedule	<p>You can set the weekly recording schedule for each day. Drag or click area by a box unit at first. Clicking the block toggles the recording between on and off. Click the All Select button to set a schedule for the entire week or a whole day, respectively.</p>
3	Device Setting	<p>SD: Mounted SD card.</p>
4	Format	<p>Click the Format button to format SD card.</p>
5	Device Remove	<p>Click the Device Remove button before detaching SD card for data safety in the SD card.</p>
6	Device Information	<p>Show current SD card information.</p>

■ Event Map

The event map allows you to change the settings and establish a schedule for each event trigger from the network camera.

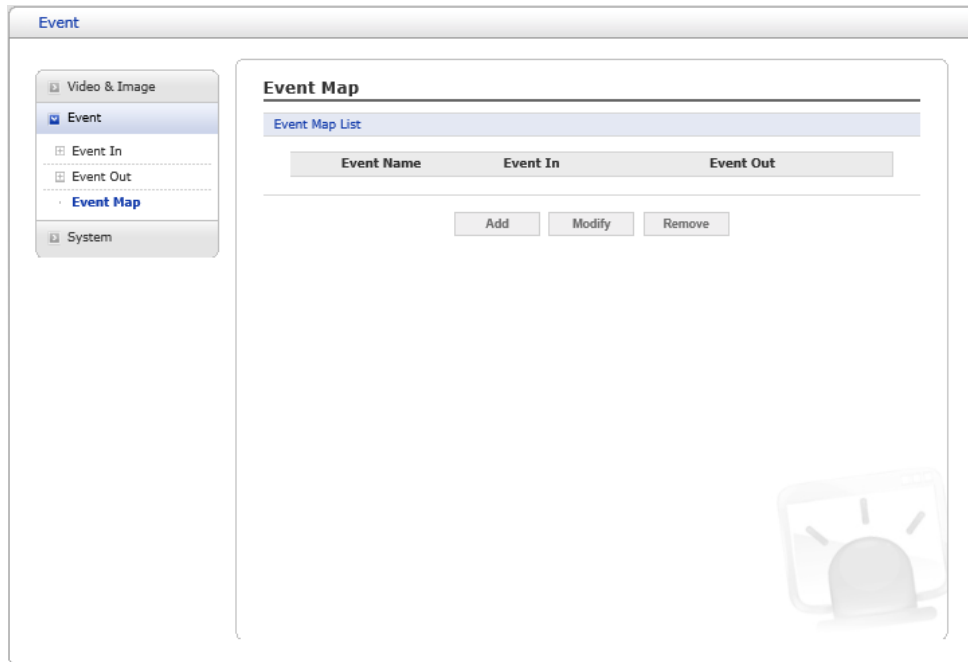


Figure 1-19 Event Map

Click the **Add** button to make a new event map; a popup window displays as below. To change an existing event, select that event and click the **Modify** button; this same window will display and the information can be changed as required. Selecting an event and clicking **Remove** deletes the event.

Figure 1-20 Event Map – Add Event Map

No.	Item	Description
1	General	Enter the name for a new event map.
2	Event In	Select an event type in the drop-down list.
3	Event Out	<p>E-mail Select the email addresses you want to notify via email that an event has occurred.</p> <p>FTP Select checkbox beside FTP to record and save images to an FTP server when an event has occurred.</p> <p>Record Record video stream when an event has occurred. The Record option must first be configured on the Event Out page.</p>
4	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

1.3.4. System

■ Information

You can enter the system information. This page is very useful when you require device information after installation.

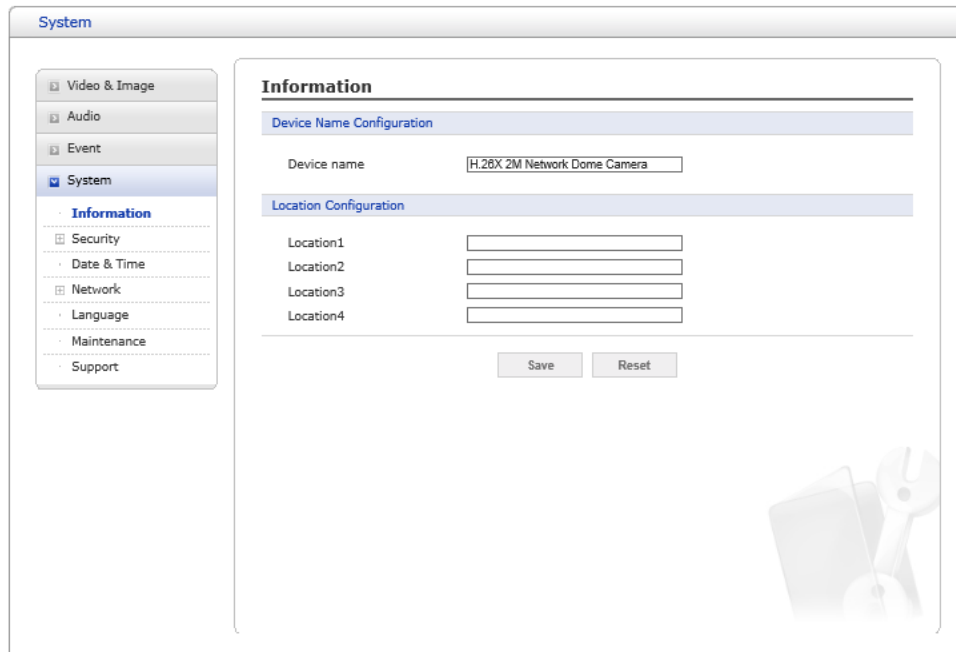


Figure 1-21 Information

No.	Item	Description
1	Device Name Configuration	Enter the device name
2	Location Configuration	Enter the location information. You can enter up to four locations.
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Security

1. Users

User access control is enabled by default when the administrator sets the root password on first access. New users are authorized with user names and passwords.

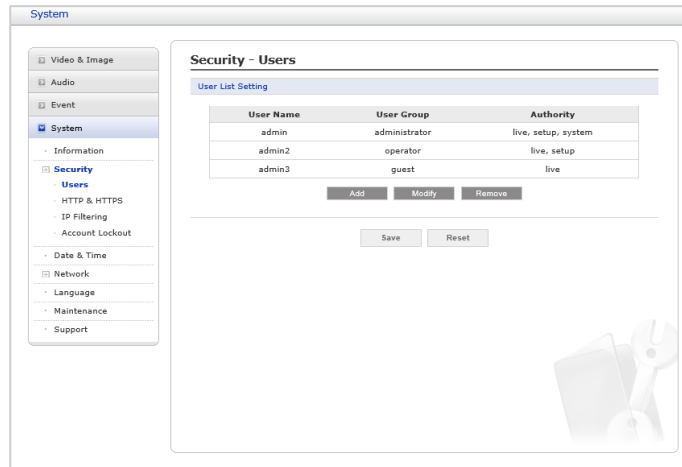


Figure 1-22 Security - Users

No.	Item	Description
1	User List Setting	<p>This section shows how to register a user account. Enter a user name and password to be added. User can select Authority between administrator, Operator and Guest. Each User group has different Authority.</p> <ul style="list-style-type: none"> - Administrator: Live, Setup, System - Operator: Live, Setup - Guest: Live <p>Register them by pressing the Add button. You will see the pop-up window as below.</p>

Figure 1-23 Security – Users – Add User

No.	Item	Description
1	Add User	Enter all information, user click OK button to save the setting or click Cancel Button to clear all of the information.
2	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

2. HTTP & HTTPS

For greater security, the network camera can be configured to use HTTPS (Hypertext Transfer Protocol over SSL (Secure Socket Layer)). Then all communication that would otherwise go via HTTP will instead go via an encrypted HTTPS connection.

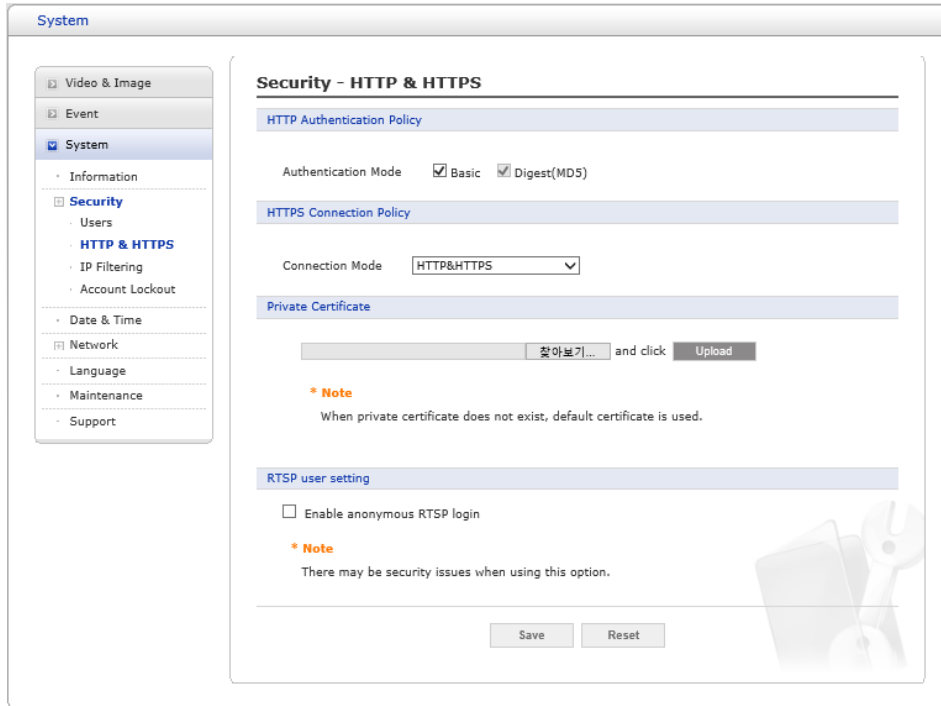


Figure 1-24 Security – HTTP & HTTPS

No.	Item	Description
1	HTTP Authentication Policy	<p>Basic It is a form of encoding with Base64 by combining ID and password during authentication.</p> <p>Digest(MD5) It is a form of encoding with MD5 (128bit hash value) by combining ID and password during authentication.</p>
2	HTTPS Connection Policy	<p>Choose the form of connection you wish to use from the drop-down list for the administrator, Operator and Viewer to enable HTTPS connection (set to HTTP by default).</p> <p>- HTTPS / HTTP & HTTPS</p>
3	Privacy Certificate	<p>To use HTTPS for communication with the network camera, an official certificate issued by a CA (Certificate Authority) must be uploaded from your PC. Provide the path to the certificate directly, or use the Browse button to locate it. Then click the Upload button.</p>
4	RTSP user setting	<p>Select enable anonymous RTSP login.</p>
5	Save/Reset	<p>When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.</p>

※NOTE : Please refer to the home page of your preferred CA for information on where to send the request. For more information, please see the online help.

3. IP Filtering

When the IP address filter is enabled, addresses added to the list are set as allowed or denied addresses. All other IP addresses not in this list will then be allowed or denied access accordingly, that is, if the addresses in the list are allowed, then all others are denied access, and vice versa. Also see the online help for more information.

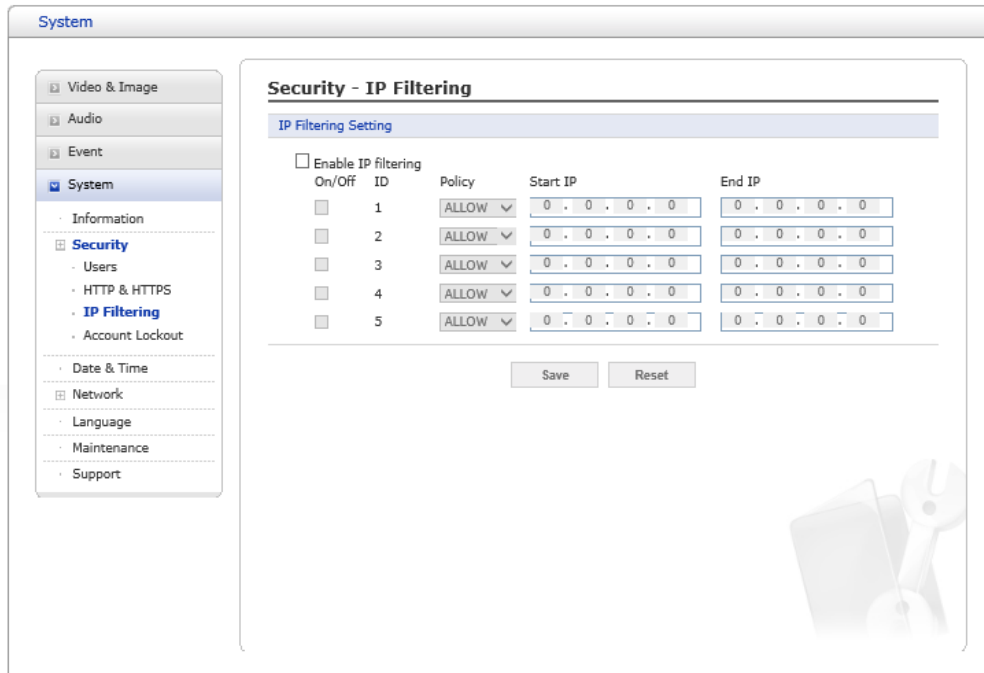


Figure 1-25 Security – IP Filtering

No.	Item	Description
1	Enable IP address filtering	Checking the box enables the IP address filtering function. Up to 256 IP address entries may be specified (a single entry can contain multiple IP addresses)
2	Add	Click the button to add new filtered addresses.
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

※ **NOTE:** Users from IP addresses that will be allowed must also be registered with the appropriate access rights. This is done from **“Setup > System > Security > Users”**.

4. Account Lockout

Check the "Enable Account Lockout" box to enable the service

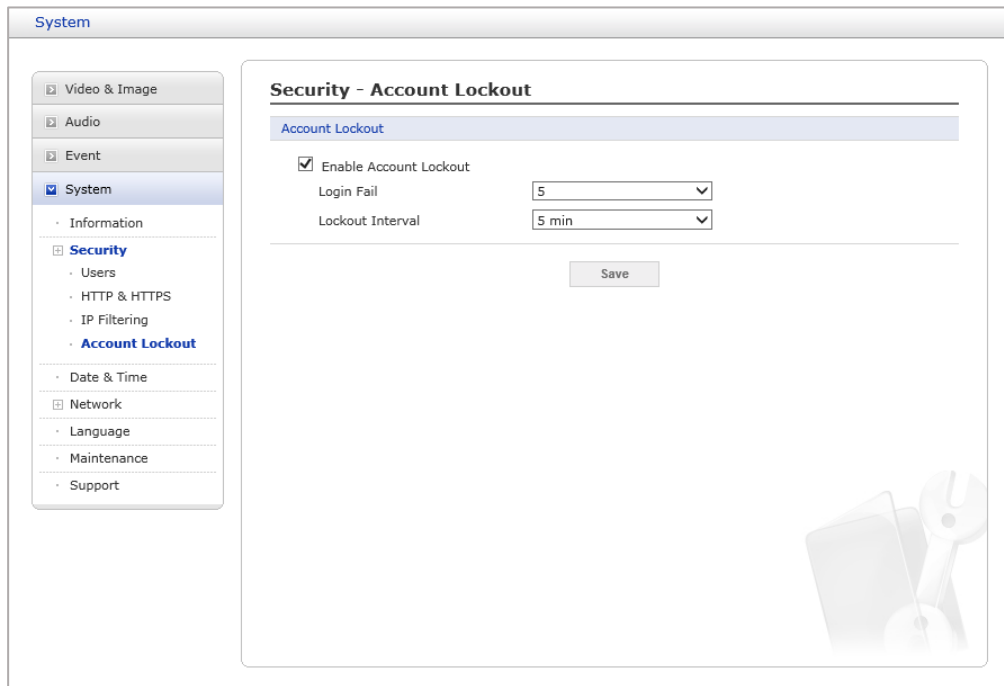


Figure 1-26 Security – Account Lockout

No.	Item	Description
1	Account Lockout	Login Fail User can set the number of login failures from 1 to 10. If you fail to log in more than the set number of times, user cannot log in for a Lockout Interval time period. Lockout Interval If user fail more than the set number of Login Failures, User cannot log in for the set amount of time. User can choose between 1, 2, 3, 5, and 10 minutes.
2	Save	When the settings are complete, click Save button to save the settings.

■ Date & Time

Figure 1-27 Date & Time

No.	Item	Description
1	Current Server Time	This displays the current date and time (24h clock). The time can be displayed in 12h clock format (see below).
2	New Server Time	<p>Time zone Select your time zone from the drop-down list. If you want the server clock to automatically adjust for daylight savings time, check the box "Automatically adjust for daylight saving time changes".</p> <p>Time mode Select the preferred method to use for setting the time:</p> <ul style="list-style-type: none"> - Synchronize with computer time: Sets the time from the clock on your computer. - Synchronize with NTP Server: The network camera will obtain the time from an NTP server every 60 minutes. - Set manually: Allows you to manually set the time and date. <p>※ NOTE: If using a host name for the NTP server, a DNS server must be configured under TCP/IP settings.</p>
3	Date & Time Format	<p>Specify the formats for the date and time (12h or 24h) displayed in the video streams.</p> <p>Select Date & Time format from the drop-down list.</p> <ul style="list-style-type: none"> - Date Format Specify the date format. YYYY: Year, MM: Month, DD: Day. - Time Format Specify the date format. 24 Hours or 12 Hours AM/PM.
4	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Network

1. Basic

Figure 1-28 Network – Basic

No.	Item	Description
1	IP Address Configuration	<p>Obtain IP address via DHCP Dynamic Host Configuration Protocol (DHCP) is a protocol that lets network administrators centrally manage and automate the assignment of IP addresses on a network. DHCP is enabled by default. Although a DHCP server is mostly used to set an IP address dynamically, it is also possible to use it to set a static, known IP address for a particular MAC address. To obtain IP address via DHCP, check the radio button.</p> <p>Use the following IP address To use a static IP address for the network camera, check the radio button and then make the following settings:</p> <ul style="list-style-type: none"> - IP address: Specify a unique IP address for your network camera. - Subnet mask: Specify the mask for the subnet the network camera is located on. - Default router: Specify the IP address of the default router (gateway) used for connecting devices attached to different networks and network segments.
2	IPv6 Address Configuration	Check this " Enable IPv6 " box to enable IPv6. Other settings for IPv6 are configured in the network router.

No.	Item	Description
3	DNS Configuration	<p>DNS (Domain Name Service) provides the translation of host names to IP addresses on your network. Check the radio button to obtain DNS server via DHCP or set the DNS server.</p> <p>Obtain DNS Server via DHCP Automatically use the DNS server settings provided by the DHCP server.</p> <p>Use the following DNS server address To enter the desired DNS server by specifying the following:</p> <ul style="list-style-type: none"> - Domain name: Enter the domain(s) to search for the host name used by the network camera. Multiple domains can be separated by semicolons (;). The host name is always the first part of a Fully Qualified Domain Name, for example, my server is the host name in the Fully Qualified Domain Name myserver.mycompany.com where mycompany.com is the Domain name. - DNS servers: Enter the IP addresses of the primary and secondary DNS servers.
4	Host Name Configuration	<p>Host Name Enter the host name to be used as device information in the client software or Smart Manager.</p>
5	Services	<p>HTTP port Enter a port to receive a service through the HTTP. Default port number is "80".</p> <p>HTTPS port Enter a port to receive a service through the HTTPS. Default port number is "443".</p> <p>RTSP port Enter a port to receive a service through the RTSP. Default port number is "554".</p>
6	Link Speed Control	<p>LAN Interface Select the transmission method: Auto/Half-Duplex/Full-Duplex.</p> <p>Link Speed User can select either 10Mbps or 100Mbps.</p>
7	Save/Reset	<p>When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.</p>

2. DDNS

When using the high-speed Internet with the telephone or cable network, users can operate the network camera on the floating IP environment in which IPs are changed at every access. Users should receive an account and password by visiting a DDNS service like <http://www.dyndns.com/>.

Figure 1-29 Network - DDNS

No.	Item	Description
1	Internet DDNS (Dynamic Domain Name Service)	<p>Enable DDNS: Check to have DDNS service available.</p> <p>DDNS Server: Select the DDNS server.</p> <p>Registered host: Enter an address of the DDNS server.</p> <p>Username: Enter an ID to access to the DDNS server.</p> <p>Password: Enter a password to be used for accessing the DDNS server.</p> <p>Confirm password: Enter the password again to confirm it.</p> <p>Maximum time interval Set a time interval to synchronize with the DDNS server. Select the time interval from the drop-down list.</p> <p>Register local network IP address Register a Network Video Server IP address to the DDNS server by checking the box and enter the Registered IP address.</p>
2	DVRNS Configuration	<p>Enable DVRNS: Check to have DVRNS service available.</p> <p>Dashboard Username: Enter an Username to access to the DVRNS server.</p> <p>Dashboard Password / Register: Enter and Register a password to be used for accessing the DVRNS server</p> <p>Network ID: Enter an ID to access to the DVRNS server.</p> <p>Result: Connect status of DVRNS server.</p>
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

3. RTP

Create a setting for sending and receiving an audio or video on a real-time basis. These settings are the IP address, port number, and Time-To-Live value (TTL) to use for the media stream(s) in multicast H.264 format. Only certain IP addresses and port numbers should be used for multicast streams.

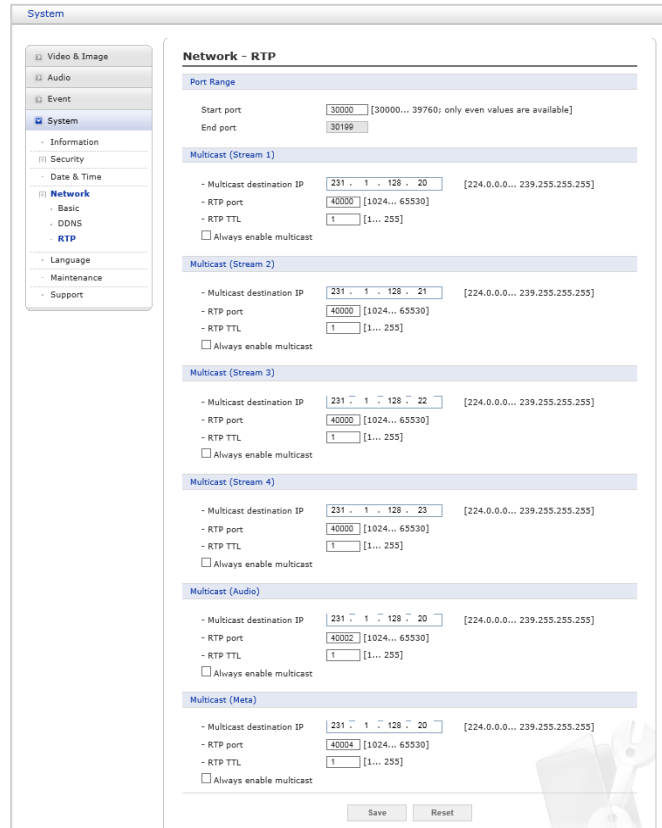


Figure 1-30 Network – RTP

No.	Item	Description
1	Port Range	Start/End port: Enter a value between 1024 and 65532.
2	Multicast (Stream 1/Stream 2/Stream 3/ Stream 4/Audio/Meta)	<p>This function is for sending Video and Meta Data to Multicast group.</p> <ul style="list-style-type: none"> - Multicast destination IP: Enter an IP between 224.0.0.0 and 239.255.255.255. - RTP port Enter a value between 1024 and 65532. - RTP TTL Enter a value between 1 and 255. If a network status is smooth, enter a lower value. However, if a network status is poor, enter a higher value. When there are many network cameras or users, a higher value may cause a heavy load to the network. Consult with a network manager for detailed information. <p>Always enable multicast Check the box to start multicast streaming without opening an RTSP session.</p>
3	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Language

Select a user language. The language choices are Chinese, German, French, Japanese, Korean, English and Russian.

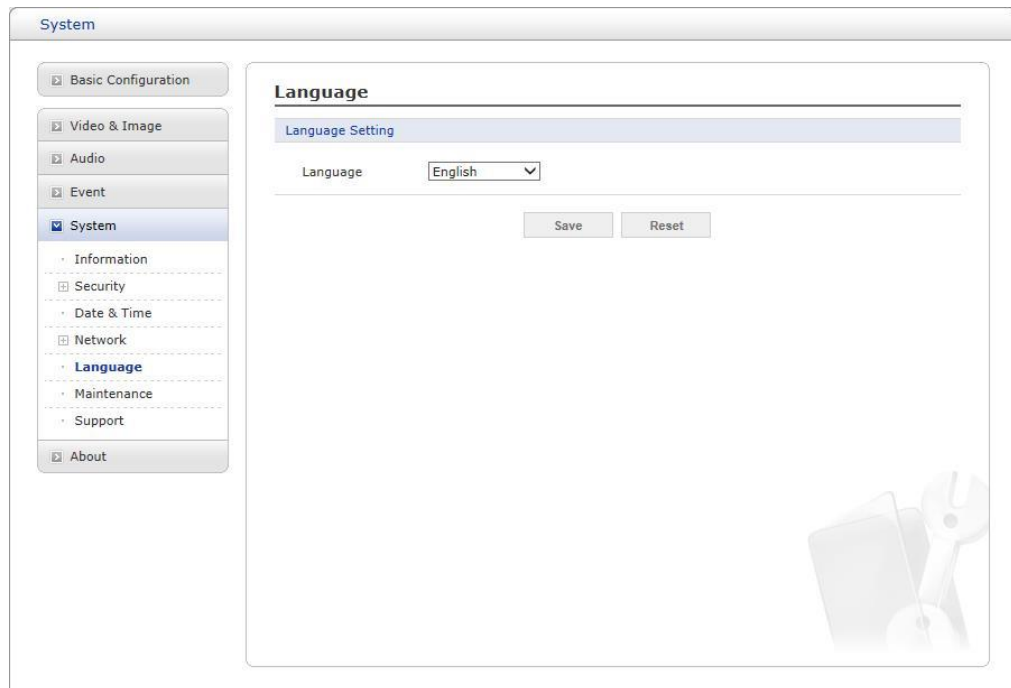


Figure 1-31 Language

No.	Item	Description
1	Language Setting	The language choices are Chinese, German, French, Japanese, Korean, English and Russian.
2	Save/Reset	When the settings are complete, click Save button to save the settings, or click Reset button to clear all of the information you entered without saving it.

■ Maintenance

The screenshot shows a web interface for system maintenance. On the left is a sidebar with a tree view containing: Video & Image, Event, System (selected), Information, Security, Date & Time, Network, Language, Maintenance (highlighted), and Support. The main content area is titled 'Maintenance' and is divided into several sections:

- Maintenance**: Contains three buttons: 'Restart' (Restart the server.), 'Reset' (Reset all parameters, except the Network Basic parameters.), and 'Default' (Reset all parameters to the factory settings.).
- Cloud upgrade**: Shows a 'Version Check' button with the status 'Failed' and a 'Cloud upgrade' button.
- Upgrade**: Instructs to 'Upgrade the server with the new firmware.' and 'Specify the firmware to upgrade :'. It features a file selection button labeled '찾아보기...' and an 'Upgrade' button. A note states: '* Note Do not turn off the unit during flash upgrade. The unit will restart automatically when the upgrade is finished (1-5 minutes).'
- Backup**: Instructs to 'Save all parameters and user-defined script to a backup file.' and includes a 'Backup' button.
- Restore**: Instructs to 'Restore current configuration to backup file' and 'Specify the backup file to restore:'. It features a file selection button labeled '찾아보기...' and a 'Restore' button.
- IV License**: Instructs to 'Upload your IV license' and 'Specify the license key file'. It features a file selection button labeled '찾아보기...' and an 'Upload' button. A note states: '* Note Do not turn off the device while applying licenses. The device will restart automatically when the apply is finished (1-2 minutes).'

A faint watermark of a laptop and tools is visible in the bottom right corner of the interface.

Figure 1-32 Maintenance

No.	Item	Description
1	Maintenance	<p>Restart The unit is restarted without changing any of the settings. Use this method if the unit is not behaving as expected.</p> <p>Reset The unit is restarted and most current settings are reset to factory default values. The settings that are not affected are: (the boot protocol (DHCP or static), the static IP address, the default router, the subnet mask, the system time)</p> <p>Default The Default button should be used with caution. Pressing this will return all of the network camera's settings to the factory default values (including the IP address).</p>
2	Cloud upgrade	Upgrade your camera by importing an upgrade file from cloud server. Click Version Check to check upgrade file and pressing the Cloud upgrade button. During the upgrade, do not turn off the power of the network camera. Wait at least five minutes and then try to access the camera again.
3	Upgrade	Upgrade your camera by importing an upgrade file from PC and pressing the Upgrade button. During the upgrade, do not turn off the power of the network camera. Wait at least five minutes and then try to access the camera again.
4	Backup	Save the setting values that users have entered to the network camera to a user PC.
5	Restore	Import and apply a setting value previously saved to a user PC. * NOTE: Backup and Restore can only be used on the same unit running the same firmware. This feature is not intended for multi-configurations or for firmware upgrades.
6	IV License	Import and apply Intelligent Video analytics license file.

■ Support

The support page provides valuable information on troubleshooting and contact information, should you require technical assistance.

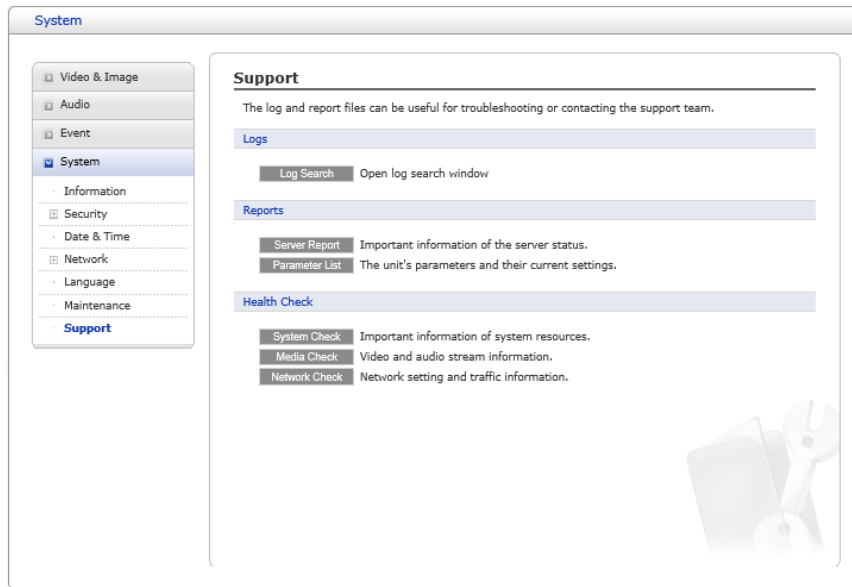


Figure 1-33 Support

No.	Item	Description
1	Logs	<p>Log Search The network camera supports system and event log information. Click the log Search button to search the Access, Event, Setup or Control log data.</p>
2	Reports	<p>Server Report Click the Server Report button to get the important information about the server's status; this should always be included when requesting sup-port.</p> <p>Parameter List Click the Parameter List button to see the unit's parameters and their current settings.</p>

No.	Item	Description
-----	------	-------------

3

Health Check

System Check

Click the **System Check** button to get the important information about the cameras system resources. You can see the pop-up window below.

System Check

Model

Firmware

Date & Time

. Date : 2000-01-23

. Time : 03:10:46

. Running time : 21 day, 28 min

CPU

. Usage : 56 %

Media Check

Click the **Media Check** button to get the information about the cameras video and audio stream. You can see the pop-up window below.

Video stream

Stream	On/Off	Codec	Size	FPS	Bitrate
Stream1	On	H.264 Main Profile	1920x1080	30	644 Kbps
Stream2	On	MJPEG	640x480	15	2445 Kbps
Stream3	On	H.264 Main Profile	640x480	30	163 Kbps
Stream4	On	H.264 Main Profile	320x240	15	55 Kbps

Audio stream

Type	On/Off	Codec	Sample	Volume	Bitrate
Input	Off	-	-	-	-

Network Check

Click the **Network Check** button to get the information about the cameras network setting and traffic. You can see the pop-up window below.

Network Check

Wired configuration

. Current Status : Connected

. DHCP : Off

. IP address : 192.168.30.227

. Subnet mask : 255.255.255.0

. Gateway : 192.168.30.1

. DNS : 168.126.63.1

Wireless configuration

. Current Status : Disconnected

Traffic

. Wired : 1912 Kbps

Streaming service

. Number of users currently live : 0

. Number of users currently playback : 0

Server connection

. Live Push : Disconnected

. Event Push : Disconnected

1.4. Help

The Help information window will be provided as a popup window so that users can open and read it without needing to log-in. It will offer a description of the setting and Help page so that users can manipulate the network camera without a reference to the manual.

The screenshot shows a help window titled "Help" with a sidebar on the left containing five menu items: "View" (checked), "Playback", "Video & Image", "Event", and "System". The main content area is titled "View" and contains the following text:

View

Through 'Live View' page, user can watch the display of live video stream from camera (or transmitter).
In addition, this page provide 'Basic Setting' and 'Control Toolbar'.
* For access this page, it is necessary that enable anonymous viewer login setting or account having authority.

▶ **Basic Setting**

- **Stream Type**
- **View Size**
- **Connect Type**

The 'Video drop-down list' allows you to select a customized or preprogrammed video stream on the 'Live View' page.
* Stream profiles are configured under 'Setup' > 'Basic Configuration' > 'Video & Image'.

The 'Resolution drop-down list' allows you to select the most suitable one out of video resolutions to Live View page.

The 'Protocol drop-down list' allows you to select which combination of protocols and method to use depending on your viewing requirements, and on the properties of your network.

- **UDP (RTP over UDP)**
UDP uses a simple transmission model, it is not considered a reliable service.
- **TCP (RTP over TCP)**
TCP provides reliable stream, but in lower bandwidth networks, the stream can be delayed.
- **HTTP (RTP over TCP over HTTP)**
HTTP works in a similar way as TCP, it is very useful in the firewall environment.

Figure 1-34 Help

2. Appendix

2.1. Troubleshooting

Troubleshooting if problems occur, verify the installation of the network camera with the instructions in this manual and with other operating equipment. Isolate the problem to the specific piece of equipment in the system and refer to the equipment manual for further information.

Problem / Symptoms	Possible Causes or Corrective Actions
The camera cannot be accessed by some clients.	If using a proxy server, try disabling the proxy setting in your browser. Check all cabling and connectors.
The camera works locally, but not externally.	Check if there are firewall settings that need to be adjusted. Check if there are router settings that need to be configured.
Poor or intermittent network connection.	If using a network switch, check that the port on that device uses the same setting for the network connection type (speed / duplex).
The camera cannot be accessed via a host name.	Check that the host name and DNS server settings are correct.
Not possible to log in.	When HTTPS is enabled, ensure that the correct protocol(HTTP or HTTPS) is used. When attempting to log in, you may need to manually type in http or https in the browser's address bar.
No image using Refresh And / Or slow updating of images.	If images are very complex, try limiting the number of clients accessing the camera.
Images only shown in Black & White.	Check the Video & Image setting
Blurred images.	Refocus the camera.
Poor image quality	Increased lighting can often improve image quality. Check that there is sufficient lighting at the monitored location. Check all image and lighting settings.
Rolling dark bands or flickering in image	Try adjusting the Exposure Control setting under AE and AWB part.
H.264 not displayed in the client.	Check that the correct network interface is selected in the Video & Image / Stream.
Multicast H.264 not displayed in the client.	Check with your network administrator that the multicast addresses used by the camera are valid for your network. Check that the Enable multicast checkbox are enabled in the System / Network / RTP tab. Checks with your network administrator to see if there is a firewall preventing viewing.
Multicast H.264 only accessible by local clients.	Check if your router supports multicasting, or if the router settings between the client and the server need to be con-figured. The TTL value may need to be increased.
Color saturation is different in H.264 and Motion JPEG.	Modify the settings for your graphics adapter. Please see the adapter's documentation for more information.
Video cannot be recorded.	Check that the Micro-SD card is inserted properly. Check that the Micro-SD card is formatted properly.

2.2. Preventive Maintenance

Preventive maintenance allows detection and correction of minor that faults before they become serious and cause equipment failure.

Every three-month, perform the following maintenance.

1. Inspect all connection cables for deterioration or other damage.
2. Clean components with a clean damp cloth.
3. Verify that all the mounting hardware is secure.

2.3. System Requirement for Web Browser

Item	Recommended	Minimum
OS	Microsoft® Windows 10 (Home, Professional)	Microsoft® Windows 7(x86, x64) (Home Premium)
CPU	intel® Core™ i5-6500	intel® Core™ i3-6100
RAM	8GB or Higher	4GB or Higher
VGA	NVIDIA GeForce GTX 960 or AMD Radeon R9 280X	NVIDIA GeForce GTX 670 or Radeon HD 7970
HDD	-	-
LAN	Gigabit Ethernet	Gigabit Ethernet

2.4. General Performance Considerations

When setting up your system, it is important to consider how various settings and situations will affect performance. Some factors affect the amount of bandwidth (the bit rate)required, others can affect the frame rate, and some affect both. If the load on the CPU reaches its maximum, this will also affect the framerate.

The following factors are among the most important to consider:

1. High image resolutions and/or lower compression levels (or high bitrates) result in larger images. Frame rate and Bandwidth affected.
2. Accessing both Motion JPEG and H.264 video streams simultaneously. Frame rate and bandwidth affected.
3. Heavy network utilization due to poor infrastructure. Frame rate and Bandwidth affected.
4. Heavy network utilization via wireless router due to poor infrastructure. Frame rate and bandwidth affected.
5. Viewing on poorly performing client PCs lowers perceived performance. Frame rate affected.

2.5. Product Specification

Model		VANDAL DOME	LOW PROFILE DOME	BULLET
IMAGE				
Lens		2.8, 4.0mm Fixed Lens		
Angle of View		115°(D), 106°(H), 57°(V) 92°(D), 87°(H), 46°(V)		
Image Sensor		1/2.8" CMOS sensor		
Min. Illumination		Color : 0.03 Lux @F2.0 BW : 0 Lux (IR LED On)		
Scanning Mode		Progressive Scan		
Wide Dynamic Range		True WDR		
Day and Night Mode		True D/N (Auto, Day, Night)		
Noise Reduction		2DNR, 3DNR		
Digital Zoom		Yes(ROI)		
Exposure Control		Auto		
White Balance Control		Auto, Manual		
Metering Mode		Center, Average, BLC, Spot		
Image Effect		Flip, Mirror, Defog		
Flicker Free Mode		50, 60Hz		
Shutter Speed		Auto (1/100,000 ~ 1sec), Manual		
IR Illuminator	Quantity	1 IR LED		
	Wavelength	850nm		
	Distance	30M		
VIDEO/AUDIO				
Compression		H.264(Baseline, Main, High Profile), H.265(Main Profile), MJPEG		
Bitrate Control		CBR, CVBR		
Resolution		1920x1080, 1280x720, 720x480, 640x480, 352x288		
Frame Rate		Max. 25/30fps(PAL/NTSC)		
Streaming		Quad Stream		
SYSTEM				
Video Contents Analysis		Tampering, Field Detector		
Motion Detection Area		8 Programmable Area (Include Area 4, Exclude Area 4)		
Privacy Mask Zone		4 Programmable Zone		
FTP Uploading		MJPEG		
Event Notification		E-mail, FTP		
Audio Alert		User-Defined 3 Audio files		
Login Authority		Administrator, Operator, Guest		
Event Buffering(SD Record)		Pre : 10sec, Post : 60sec		
Security		Multi User Authority, IP Filtering, HTTPS, SSL		
Network Time Sync		NTP Server, Synchronized Computer, Manual		
Software Reset		Restart, Reset, Factory Default		
Hardware Factory Reset		Supported	No	Supported
Auto Recovery		Backup, Restore		
Remote Upgrade		SmartManager, IPC Program (PC)		
SD Recording Mode		Event, Continuous		

Model	VANDAL DOME	LOW PROFILE DOME	BULLET
NETWORK			
Protocols	IPv4, IGMP, ICMP, TCP, UDP, DHCP, RTP, RTSP, RTCP, DNS, DVRNS, NTP, FTP, HTTP, HTTPS, SMTP, SSL, Zeroconf		
Client Software	SmartManager, Client S/W, IPC Program (PC)		
Max. User Connection	Live : 10 Users, Playback : 3 Users		
API Support	Open API, ONVIF Compliance		
EXTERNAL IN/OUT			
Ethernet	RJ-45(10/100/1000 Base-T)		
u-SD Card	SDXC		
ETC			
Operating Humidity	0 ~ 90% RH(Non-condensing)		
Operating Temperature	-20°C ~ 50°C		
Power Supply	PoE(IEEE802.3af compliance), 12VDC		
Power Consumption	420mA (5.0W) @ 12VDC 130mA (6.0W) @ PoE		
Dimensions	109.4mm(Φ) x 91.0mm(H)	110mm(Φ) x 61mm(H)	67.0mm(Φ) x 176.0mm(D)
Net Weight	Approx 420g	Approx 370g	Approx 420g
Ingress Protection	IP67 / IK10		

※ Specifications are subject to change without notice.

NETWORK CAMERA USER MANUAL