Network Camera

User's Manual

- 1/2.8" 5.14MP Sony Progressive scan CMOS Sensor
- 2592 x 1944 (5MP 4:3) / 2560 x 1440 (4mp 16:9)
- Triple Streaming (H.265, H.264, MJPEG)
- 2D & 3DNR (Digital Noise Reduction)
- D-WDR(digital - Wide Dynamic Range)
- Corridor Format (90°/270° Rotation)
- Lens Distortion Compensation (LDC)
- Min. Illumination 0Lux (IR LED On)
- Power DC12V, PoE (IEEE802.3af)

Important Information Before Using This Manual

This is a fundamental guide for operating a S&M Technology network camera. Whether you are a first-time user or someone with experience using similar devices, it is essential to read this manual carefully before using the product. Pay close attention to the warnings and precautions outlined in this manual to ensure safe and effective use of the product. Following these safety guidelines will help prevent accidents and damage to property.

- The manufacturer is not liable for any damage to the product caused by the use of unauthorized parts or accessories or by failure to follow the instructions in this manual.
- The information in this manual is believed to be accurate as of the publication date. However, some features may not be described, and the manufacturer cannot be held responsible for any issues arising from their use. The content may change without notice, and future editions may be issued to incorporate any revisions.
- First-time users and those unfamiliar with the network camera should seek assistance from their retailer for installation and use.
- For expansion, repair, or disassembly purposes, always contact the retailer and request professional help.
- Both retailers and users should be aware that this product has been certified for electromagnetic compatibility for commercial use. If the product was unintentionally sold or purchased, please ensure it is replaced with a consumer version.

Safety Symbols

In-Text Symbols

- **Caution:** Important information regarding a specific function.
- **Note:** Useful information about a specific function.

Safety Precautions

WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN

Warning: To reduce the risk of electric shock,
do not remove the cover or back.
There are no user-serviceable parts inside.
Refer servicing to qualified personnel.

Important Safety Instructions

1. **Read Instructions**
   All safety and operating instructions should be read before using the equipment.
2. **Retain Instructions**
   Keep the safety and operating instructions for future reference.
3. **Cleaning**
   Unplug the equipment before cleaning. Do not use liquid aerosol cleaners. Use a damp, soft cloth for cleaning.
4. **Attachments**
   Never add any attachments or equipment without the approval of the manufacturer, as such additions may result in fire, electric shock, or personal injury.
5. **Water and Moisture**
   Do not use this equipment near water or in contact with water.
6. **Placement and Accessories**
   Ensure the equipment is installed on a wall or ceiling strong enough to support it. Improper installation could cause the equipment to fall, resulting in injury or damage. Follow the manufacturer's instructions for mounting and use only approved mounting kits. When moving the equipment, do so carefully, as quick stops or excessive force can cause the equipment to overturn. Do not place the equipment in an enclosed space. Adequate ventilation is necessary to prevent overheating and reduce the risk of fire.
7. **Power Sources**
   The equipment should be powered only from the type of source indicated on the labeling. If unsure of the power requirements, consult the dealer or local power company. Consider installing an Uninterruptible Power Supply (UPS) system for safe operation, preventing damage from unexpected power outages.
8. **Power Cord**
   Always disconnect the power and cables before handling the equipment.
9. **Lightning**
   For added protection during lightning storms, or when the equipment is left unused for long periods, unplug it from the wall outlet and disconnect any antenna or cable system. This will prevent lightning and power surge damage. Use a surge protector if lightning is common in the area.
10. **Overloading**
    Avoid overloading wall outlets or extension cords, as this could result in fire or electric shock.
11. **Objects and Liquids**
    Never insert objects into the equipment's openings, as they may contact dangerous voltage points or cause a short circuit. Avoid spilling liquids on the equipment.
12. **Servicing**
    Do not attempt to service this equipment yourself. Refer servicing to qualified service personnel.
13. **Damage Requiring Service**
    If the equipment shows signs of damage such as the following, unplug it and consult qualified service personnel:
    A. Damage to the power supply cord or plug
    B. Spilled liquid or impact damage
    C. Exposure to rain or water
    D. If the equipment does not operate normally, follow the operating instructions to avoid unnecessary adjustments that could cause further damage.
    E. If the equipment has been dropped or the casing is damaged
    F. A noticeable change in performance indicates a need for servicing.
14. **Replacement Parts**
    When replacing parts, ensure that the service technician uses parts specified by the manufacturer or parts with equivalent characteristics. Unauthorized substitutions could result in fire, electric shock, or other hazards.

15. **Safety Check**
    After any service or repair, ask the service technician to perform safety checks to ensure the equipment is in proper working condition.
16. **Installation**
    Installation should be carried out by a qualified technician and must comply with local codes.
17. **Maximum Ambient Temperature (Tmra)**
    Ensure that the equipment's maximum recommended operating temperature (Tmra) is specified, so the customer and installer can determine a suitable operating environment.

WEEE (Waste Electrical & Electronic Equipment)

Proper Disposal of This Product
(Applicable in the European Union and countries with separate waste collection systems)

The symbol displayed on the product or its packaging indicates that this device should not be disposed of with household waste at the end of its life cycle. To prevent potential environmental harm or health risks from improper disposal, please separate it from other waste and recycle it responsibly. This will promote the sustainable reuse of materials.

For Household Users:
Contact the retailer from whom you purchased the product, or your local government office, for information on how to dispose of this product in an environmentally responsible manner.

For Business Users:
Consult your supplier to check the terms and conditions in the purchase agreement. This product should not be mixed with other commercial waste for disposal.

Contents

OVERVIEW

This camera is a megapixel motorized network camera module with a built-in web based viewer accessible by multiple browsers.

This camera supports dual compression formats and triple streaming simultaneously. The three standard compression formats include H.265, H.264 and MJPEG. The streams can be configured to a variety of resolutions, bit rates and frame rates.

**** NOTE***

The several features are dependent on camera model.

System Requirements

1. Operating System
    - Windows Vista (32 bit) Ultimate, Business Edition
    - Windows 7, 8 (32/64 bit), 10,11 (32/64 bit) Ultimate, Professional Edition

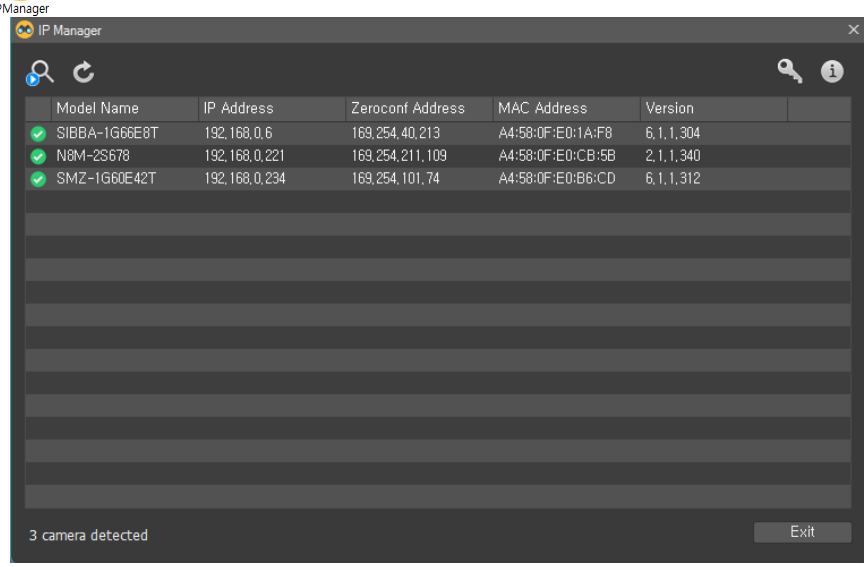
2. Processor
    - Intel Core i3 2.4 GHz or higher
    - Intel Core i5, i7 2.8 GHz or higher

3. Memory
    - 4 GB or more
4. Resolution
    - 1280X1024 pixels or higher (32 bit color)

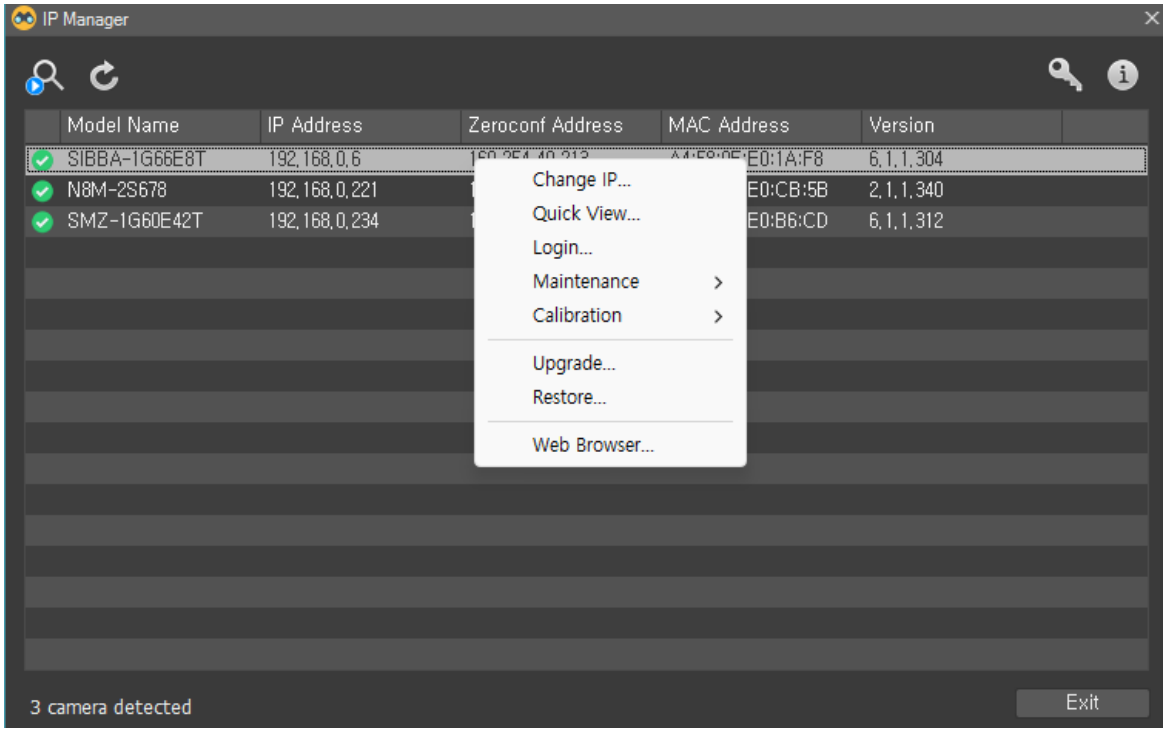
5. Web Browser
    - Microsoft Internet Explorer Ver. 9 or Higher
    - Safari (Plug-in free viewer only)
    - Google Chrome (Plug-in free viewer only)

IP Manager Setting

Run the IP Manager.exe



Designation	Function
Stop Discovery	Product Navigation stop or restart.
Start Discovery	
Refresh	
Default Login	You can control cameras that use the same account information by entering the ID and password.
Model Name	The model name of the connected camera.
IP Address	The IP address of the camera.
Zeroconf Address	Zero configuration networking (zeoconf) is a set of techniques that automatically creates a usable Internet Protocol (IP) network without manual operator intervention or special configuration servers. Zero configuration networking allows devices such as computers and printers to connect to a network automatically. Without zeroconf, a network administrator must set up services, such as Dynamic Host Configuration Protocol(DHCP) and Domain Name System(DNS), or configure each computer's network settings manually, which may be difficult and time-consuming.
MAC Address	IP camera MAC Address
Version	The firmware version of the product.



Change IP : When you select a product and click this button to reset the IP address of the product.

Quick View : Displays live video.

Login : The default user name / password are ***admin / admin***

Maintenance : Click on the "Scan" tab and click on the product from the "Maintenance" tab, you can restart or reset the camera settings.

- **Restart :** Restart the network camera.
- **Reset :** Reset all parameters, except the IP parameters to the original factory setting.
- **Default :** Reset all parameters to the orignal factory setting.

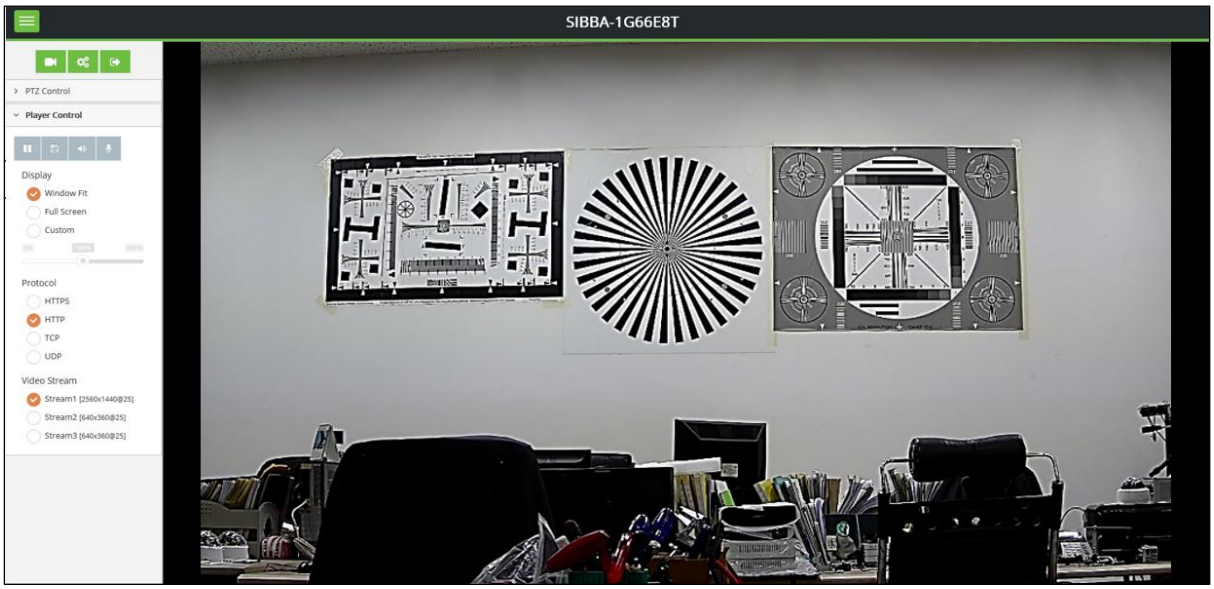
Calibration : Lens focus adjustment function that automatically adjusts the focus to maintain optimal image quality.

Upgrade : Provides the latest firmware into this camera. When you upgrade the firmware with a file, your camera receives the latest available functionality and unparalleled reliability.

Web Browser : Connected to the home page.

Accessing the IP camera

1. Open Web browser
2. Type IP address
    - Enter the camera's IP address in the Internet Explorer® address bar.
    - The default IP address is ***192.168.0.10***
    - The default User ID and Password is ***admin / admin***



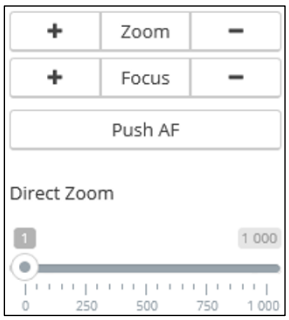
 Show Menu and Live Video

 Display Live Video.

 Enter Setup Menu.

 Exit Current Login and/or Enter New Login.

Player Control



Zoom +: Enlarges the screen to bring the subject closer.
Zoom -: Zooms out to provide a wider field of view.
Focus +: Decreases the focus distance to bring the subject into shaper focus.
Focus -: Increases the focus distance to make at different distances clearer.
Push AF: When the user presses the button, the camera automatically focuses on the subject
Direct Zoom: Allows direct control of the lens zoom, making it easy to zoom in and out.

Player Control

 **Pause:** Freeze the current windows.

 **Snapshot:** Take a picture of the video image currently on display.

 **Speaker:** Set the speaker volume.

 **Microphone:** Enable or Disable the microphone.

Display: Show the display mode

- **Window Fit:** Automatically fit the live video size into the current window size.
- **Full Screen:** Displays the current video size into full screen size.
- **Custom:** Adjusts the video size from Min.0% to Max.200%.

Protocol: Specify the protocol that is used

- **HTTPS:** Hypertext Transfer Protocol Secure (SSL/TLS)
- **HTTP:** Hyper Text Transfer Protocol
- **TCP:** Transmission Control Protocol
- **UDP:** User Datagram Protocol

Video Stream

Source: Specify the video source that is used

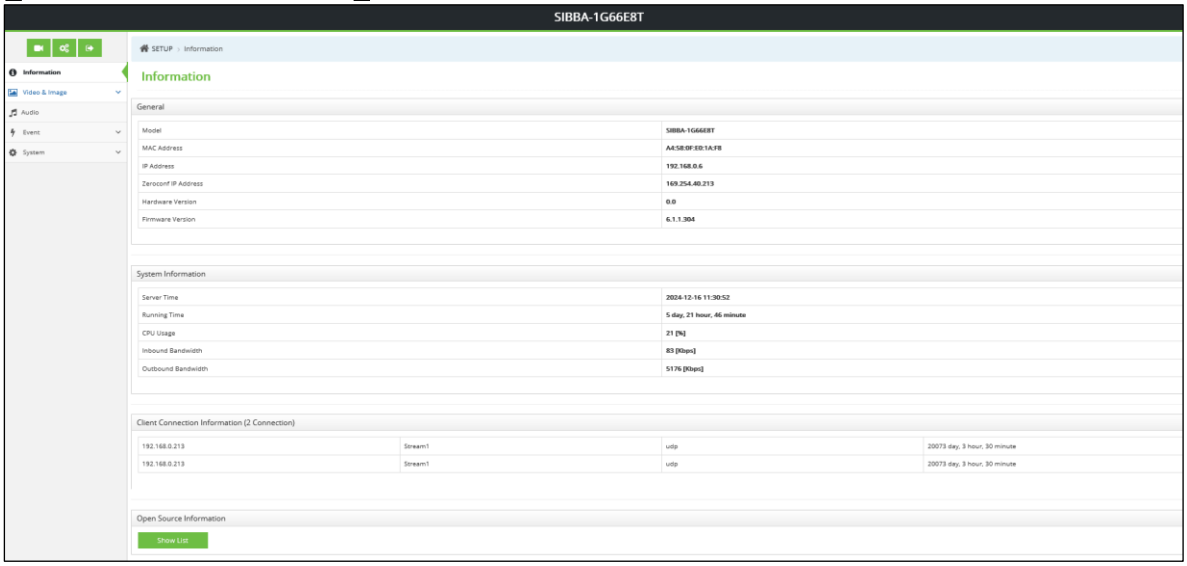
- **Stream1:** Show stream1 resolution and frame rate
- **Stream2:** Show stream2 resolution and frame rate
- **Stream3:** Show stream3 resolution and frame rate

**** NOTE***

The total number of stream is dependent on camera model.

SETUP

[Information]



General: Display basic information about the camera, such as Model name, MAC address, IP address, Zeroconf IP address, and Firmware version.

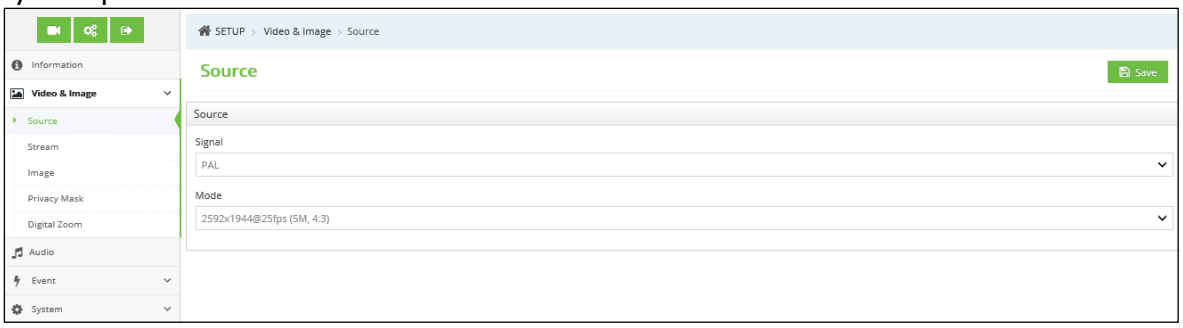
System Information: Display system information, including Server time, Running time, CPU usage, inbound bandwidth, and Outbound bandwidth.

Open Source Information: Display the list of open-source components used in this camera.

[Video & Image]

Source

Specify the video source. Depending on the source signal or mode, each stream configuration will be affected and the streaming will be automatically adjusted based on system performance.

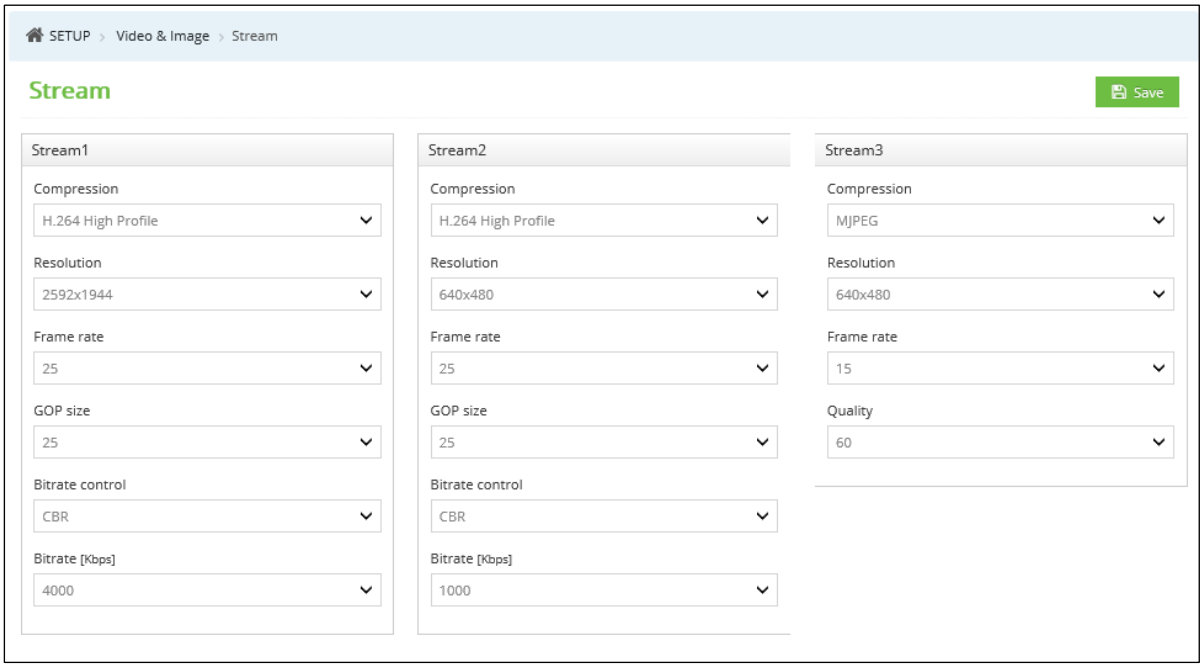


Signal: Select the video standard signal: NTSC or PAL.

Mode: Specify the video mode that is used.

Stream

Configure the setting for H.264, H.265, and MJPEG video streams.



Compression: Select the video compression standard for the stream (e.g., H.264, H265, or MJPEG)

Resolution: Specify the resolution as the width (pixel columns) by height (Pixel rows).

Frame rate: Set the frame rate for video stream in frames per second (fps).

GOP size: The Group of Pictures (GOP) setting determines the number of partial frames between full frames in the video stream. In a typical scene, such as a door opening and a person walking through, only the movement of the door and the person is encoded. The stationary background, which has not changed, is not encoded in the partial frames but is encoded in the full frames. By using partial frames, video compression is more efficient, reducing the overall size of the video file. As the GOP value increases, more partial frames are generated between full frames. This results in a lower video size and reduced bandwidth usage. However, higher GOP values can impact image quality, as less frequent full frames may reduce the sharpness of movement or detail. This setting is available only with H.264 or H.265 compression standards. A higher GOP value saves bandwidth but may negatively affect image quality, so it is recommended only for networks with high reliability. Before adjusting the GOP size, consult with your network administrator to ensure compatibility with your system and network conditions.

Bitrate control: The bitrate can be configured to either VBR (Variable Bit Rate) or CBR (Constant Bit Rate), depending on the needs.

- VBR (Variable Bit Rate): The bitrate is dynamically adjusted based on the complexity of the image. It allocates more bandwidth for scenes with higher activity, such as fast-moving objects, and less bandwidth for scenes with minimal movement or less detail. This helps optimize bandwidth usage while maintaining video quality.
- CBR: (Constant Bit Rate): This setting allows you to specify a fixed target bitrate, resulting in a consistent bandwidth consumption. While this ensures predictable network

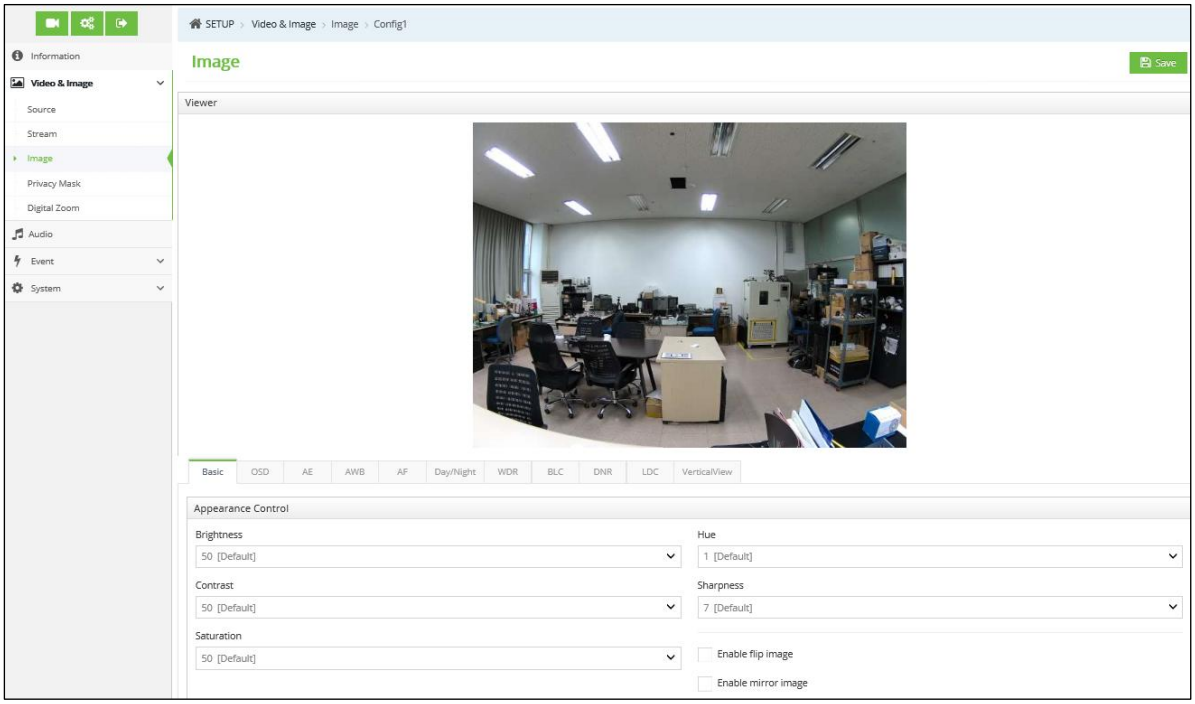
usage, the bitrate typically needs to increase for scenes with more activity. However, this can negatively affect frame rate and image quality in such cases, as the fixed bitrate may not be sufficient for high-motion or complex scenes.

Bitrate: This setting specifies the video stream quality in kilobits per second (kbps). A higher bitrate generally improves video quality but also increases the bandwidth requirement.

Image

Basic

The image appearance allows you to adjust the camera setting parameters and change the camera orientation. All of parameters are recommended to be modifying for good image quality suitable for installation place.



Brightness: Control the brightness of the image.

Contrast: Adjust the contrast of the image.

Saturation: Control the saturation of the image.

Hue: Adjust the hue of the image.

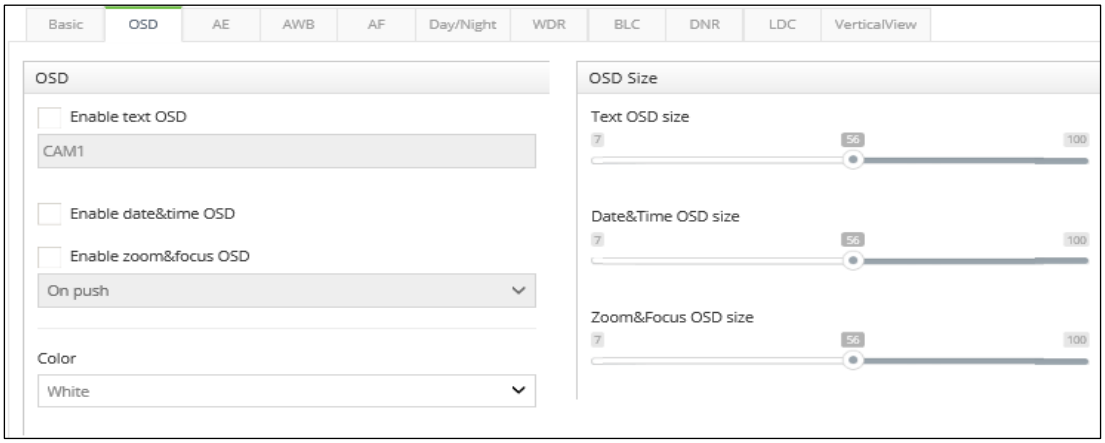
Sharpness: Control the sharpness of the image.

Enable flip image: Rotate the camera image 180 degrees vertically.

Enable mirror image: Rotate the camera image 180 degrees horizontally. Reflecting a duplicate of the camera image.

OSD

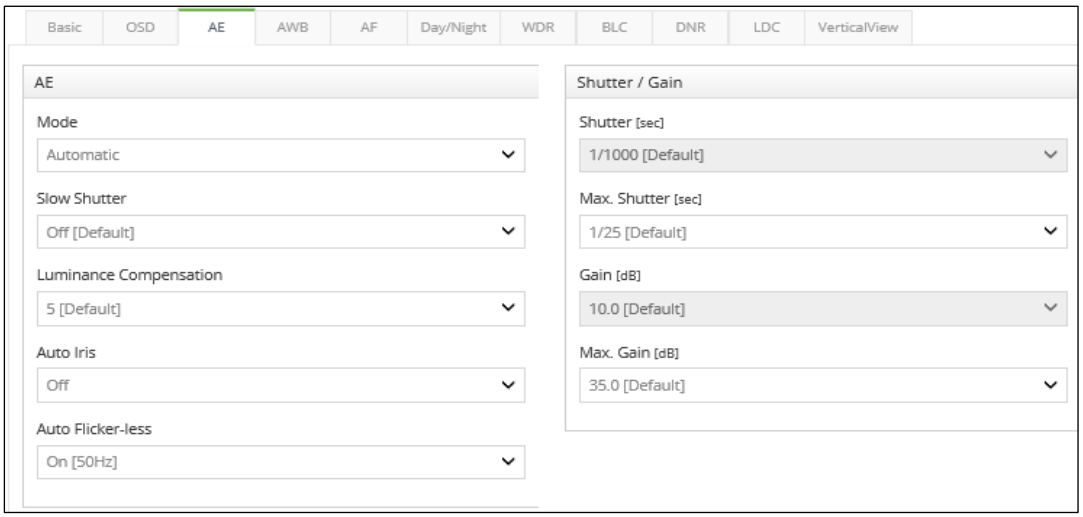
The On-Screen Display (OSD) displays camera status information on the video stream.



Enable text OSD: Display user-defined text, such as the camera name.
Enable day&time OSD: Display the current date and time information from the camera.
Enable zoom&focus OSD: Display current focus mode.
Color: Select the color for the OSD text.
Text OSD Size: Adjust the font size of the text OSD.
Day&Time OSD Size: Adjust the font size of the date and time OSD.
Zoom&Focus OSD Size: Adjust the font size of the zoom and focus OSD.

AE

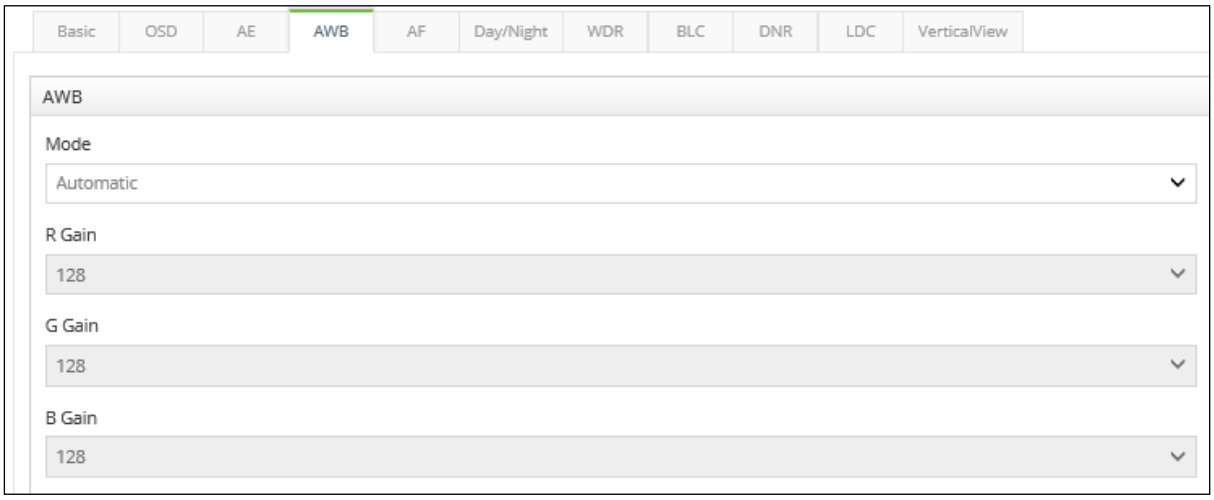
Configure the exposure control to meet image quality requirements based on lighting conditions. This camera supports both automatic and manual exposure control modes. The shutter and gain settings influence the level of motion blur and noise in the image. To adapt to different lighting, available storage space and bandwidth, it is often necessary to prioritize either low motion blur or low noise. This camera allows using different prioritization in normal light and in low light. Shutter speed determines how long the camera sensor is exposed to light and is measured in seconds (s).



Mode: The automatic mode adjusts the sensor's gain, shutter time, and aperture automatically to achieve optimal image brightness. The manual mode allows users to manually control the gain and shutter speed for more precise exposure.
Slow Shutter: A slow shutter allows more light to reach the sensor, helping produce a brighter image in low-light conditions. However, a slow shutter speed can cause moving objects to appear blurry.
Auto Iris: Controls the shutter speed, gain, and aperture of the mechanical iris lens to adjust the luminance. In this mode, luminance can also be adjusted using the gain and aperture while keeping the exposure time fixed.
Auto Iris: This function is used for controlling the shutter time, gain and diaphragm of the mechanical iris lens to adjust the luminance. In this mode, it is also possible to adjust the luminance using the gain and iris diaphragm while keeping the exposure time fixed.
Shutter: Controls the gain while keeping the shutter speed fixed to adjust luminance.
Max. Shutter: Adjusts the maximum shutter speed within the specified range.
Gain: The level of amplification applied to the image. A higher gain improves visibility in low-light conditions but may increase image noise.
Max. Gain: Adjust the maximum gain within the specified range.

AWB

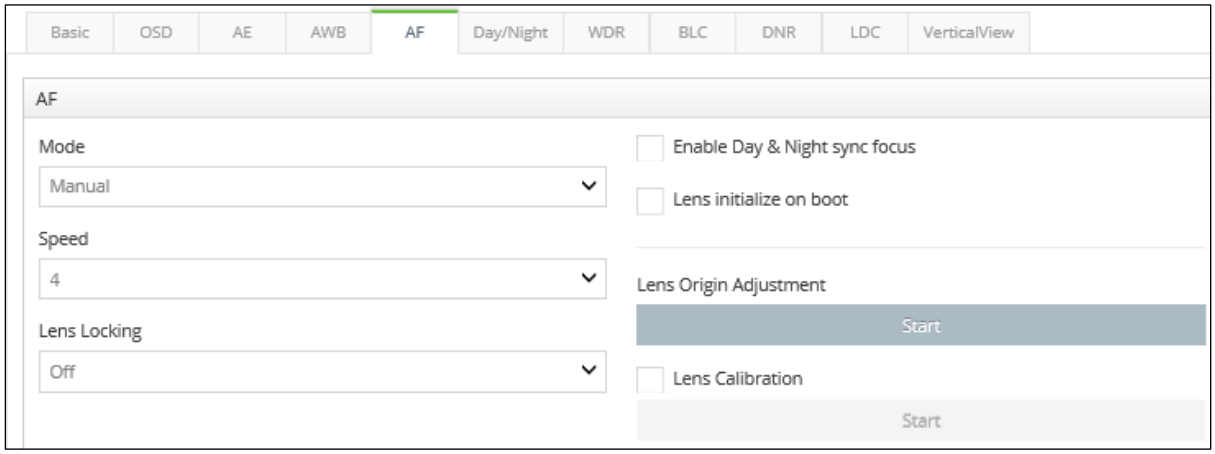
Auto White Balance (AWB) ensures colors appear the same regardless of the light source's color temperature. The camera can automatically identify the light source and adjust accordingly. Alternatively, select the light source type from the drop-down list.



Mode: Configure the options for White Balance. The default setting is ATW-Indoor.
Cb Gain: Adjust the picture output in the blue range. The White balance B gain can be adjusted in the range, where a higher value produces a higher blue image.
Cr Gain: Adjust the picture output in the red range. The White balance R gain can be adjusted in the range, where a higher value produces a higher red image.

AF

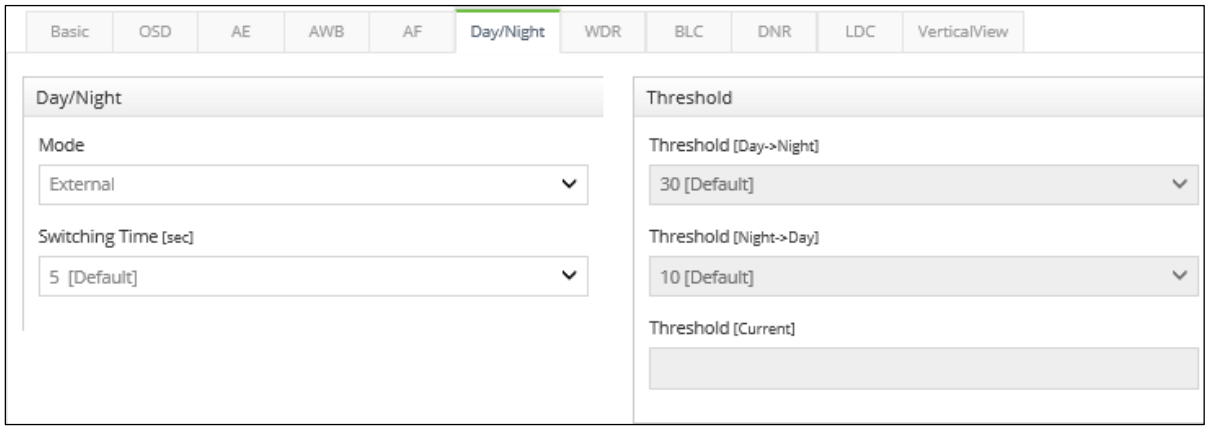
Auto Focus control adjusts the lens to achieve optimal image sharpness, either manually or automatically.



Mode: Select the focusing mode. The default setting is Manual.
Speed: Adjust the focus speed. The higher value results in faster focusing
Lens locking: Retain the current lens focus position to prevent unintended changes.
Enable Day & Night sync focus: Automatically adjusts the focus whenever the camera switches between day and night modes.
Lens initialize on boot: Activate automatic lens initialization every time the camera powers on.
Lens Origin Adjustment: Reset the lens settings to the default state.
Lens Calibration: Perform lens calibration during initial setup or after installation. This process is required to ensure proper operation and it must be completed before using the camera.

Day/Night

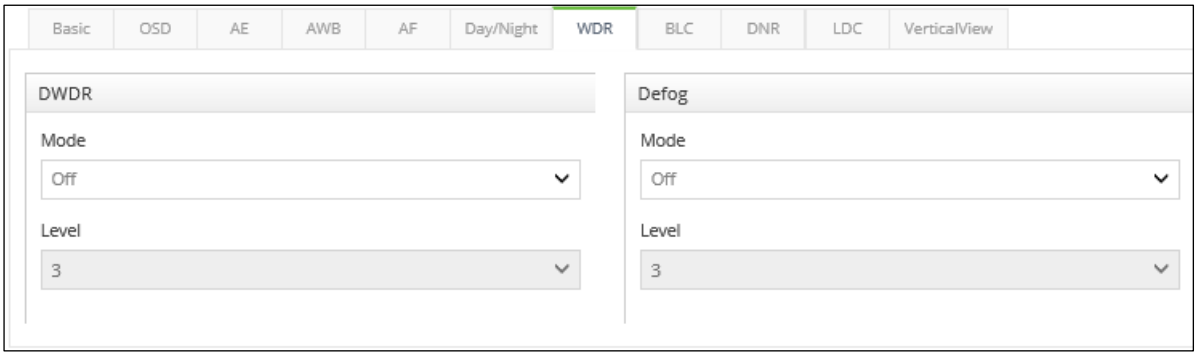
The IR cut filter prevents infrared (IR) light from reaching the image sensor. In low-light conditions, such as nighttime or when using an IR lamp, set the mode to Night to increase light sensitivity and allow the camera to capture infrared light. The image will be displayed in black and white in Night mode. Set the mode to Automatic to automatically switch between Day and Night based on lighting conditions.



Mode: Configure the IR cut filter transition mode.
Switching Time: Adjust the IR cut filter transition time to the desired dwell time after detecting the transition point.
Threshold: Set the threshold level for the IR cut filter based on the installation environment. Ensure the "Threshold [Night → Day]" value is higher than the "Threshold [Day → Night]" value to prevent Day / Night hunting.

WDR

Adjust the Wide Dynamic Range to improve image quality in scenes with both bright and dark areas. This feature adjusts brightness levels using slope and contrast adjustments on the tone curve.



DWDR: Digital-WDR is a digital technology that enhances image quality in scenes with both bright and dark areas by adjusting brightness and contrast.
Mode: Configure one of levels.

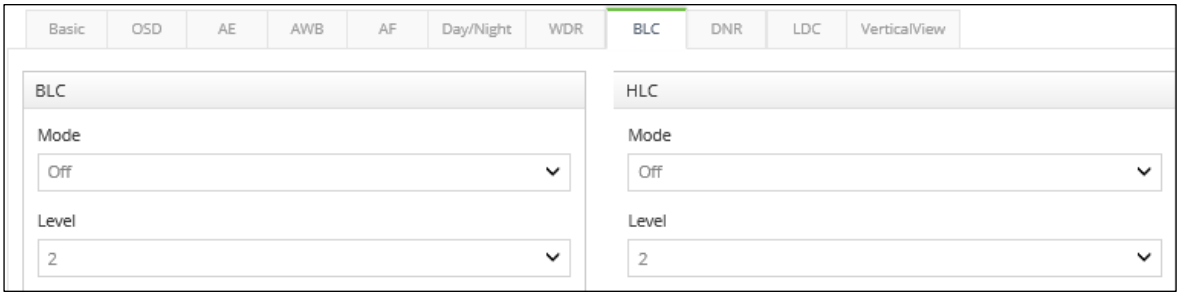
**** NOTE***

The function of WDR is dependent on camera model.

Defog: Automatically detects foggy conditions and provides hight contrast pictures. This feature improves visibility in foggy situations through intelligent image analysis.
Mode: Select the Defog mode.
Level: Adjust the level of the Defog effect.

BLC

It is used to solve the problem of the subject appearing dark due to strong backlighting.



BLC: Adjust the brightness of subjects that appear dark due to strong backlighting.
Mode: Select the BLC mode that is used.

Level: Adjust the BLC level to optimize subject brightness.

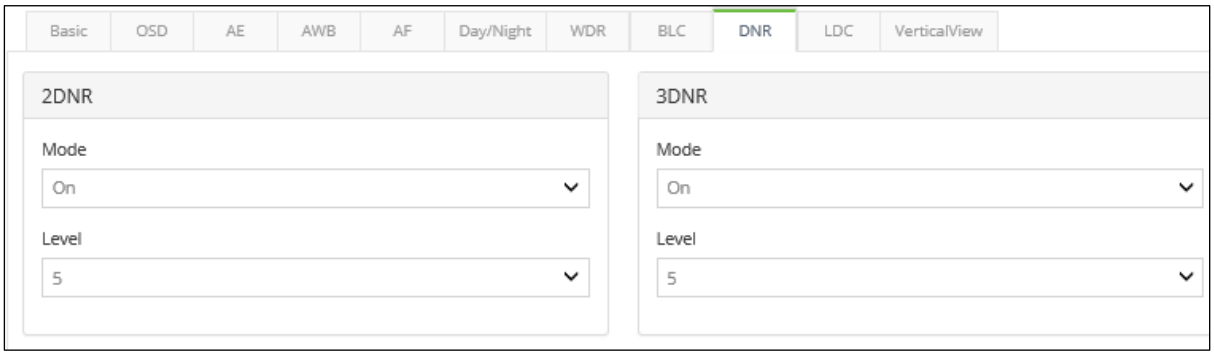
HLC: Reduce the impact of intense light sources, such as headlights or spotlights. The default setting is off.

Mode: Select the HLC mode to apply.

Level: Adjust the HLC level to achieve the desired balance between light and dark areas.

DNR

Reduce image noise to improve overall picture quality.



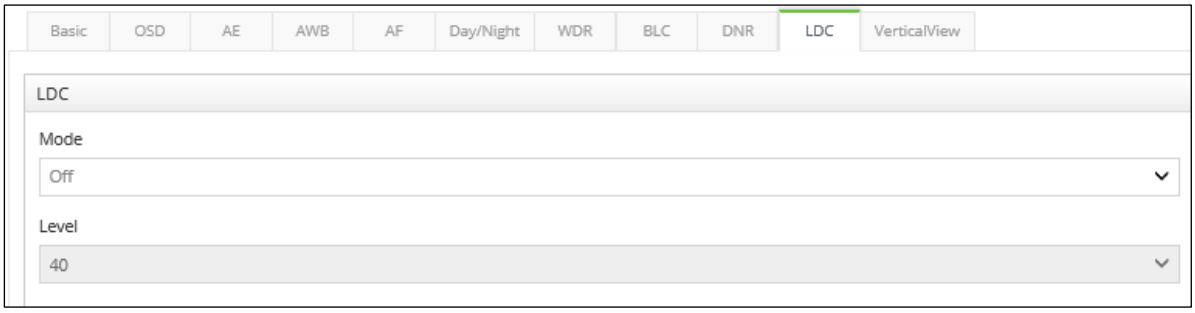
2D-NR / 3D-NR: The noise reduction (NR) feature reduces image noise to enhance the camera's video quality. The 2D-NR function removes noise within a single frame by analyzing pixel correlation, while the 3D-NR function minimizes noise across multiple frames by utilizing frame memory and analyzing inter-frame correlations.

Mode: The default setting is off.

Level: Select a noise reduction level from Level 1, Level 2, Level 3, or Level 4.

LDC

Corrects distortions caused by wide-angle lenses to produce a more natural image. Simple-LDC corrects vertical distortions but does not address horizontal distortions. Vertical lines are straightened, but horizontal lines may retain a curved appearance.



Mode: The default setting is off.

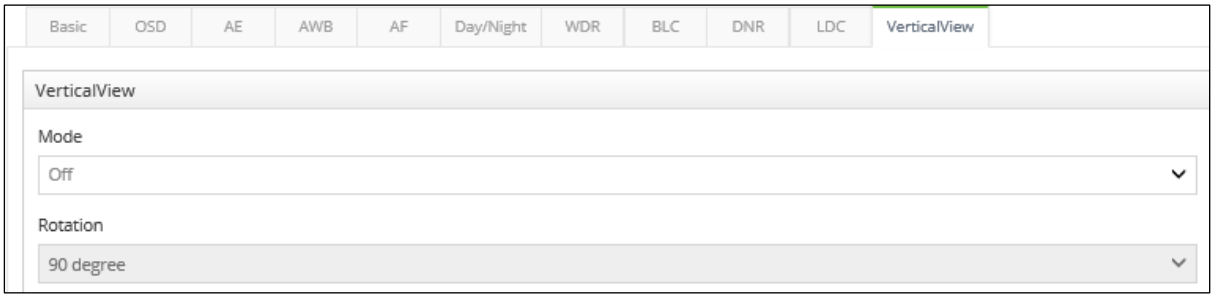
Level: Configure one of the available levels.

NOTE

The function of LDC is dependent on camera model.

Vertical View

The Vertical View format provides a vertically oriented video stream optimized for monitoring narrow spaces such as corridors, hallways, or aisles. This feature maximizes image quality and minimizes bandwidth and storage usage. For modern HDTV network cameras with a 16:9 aspect ratio, the Corridor Format adjusts the video to a 9:16 aspect ratio.



Mode: The default setting is off.

Rotation: Configure the rotation degree as required.

NOTE

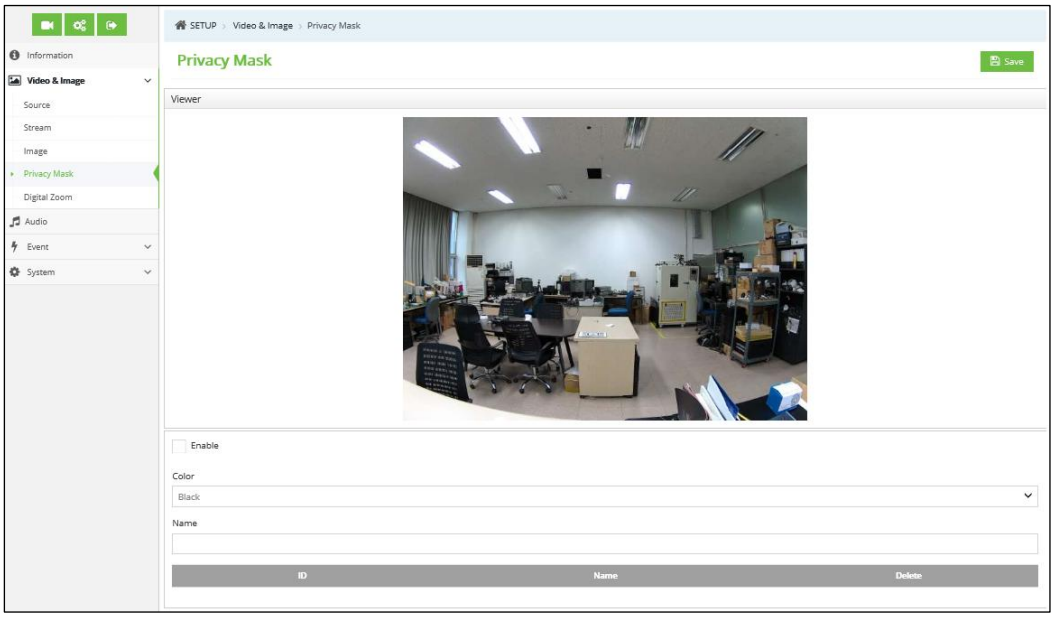
The function of Vertical View is dependent on camera model.

Privacy Mask

A privacy mask is an area of solid color that prohibits users from viewing parts of the monitored area. The Privacy Mask List shows all the masks that are currently configured in this product and indicates if they are enabled. New mask can be added, resized with the mouse, and given a mask name. The color of the privacy mask will be set automatically after Save. To set the privacy mask,

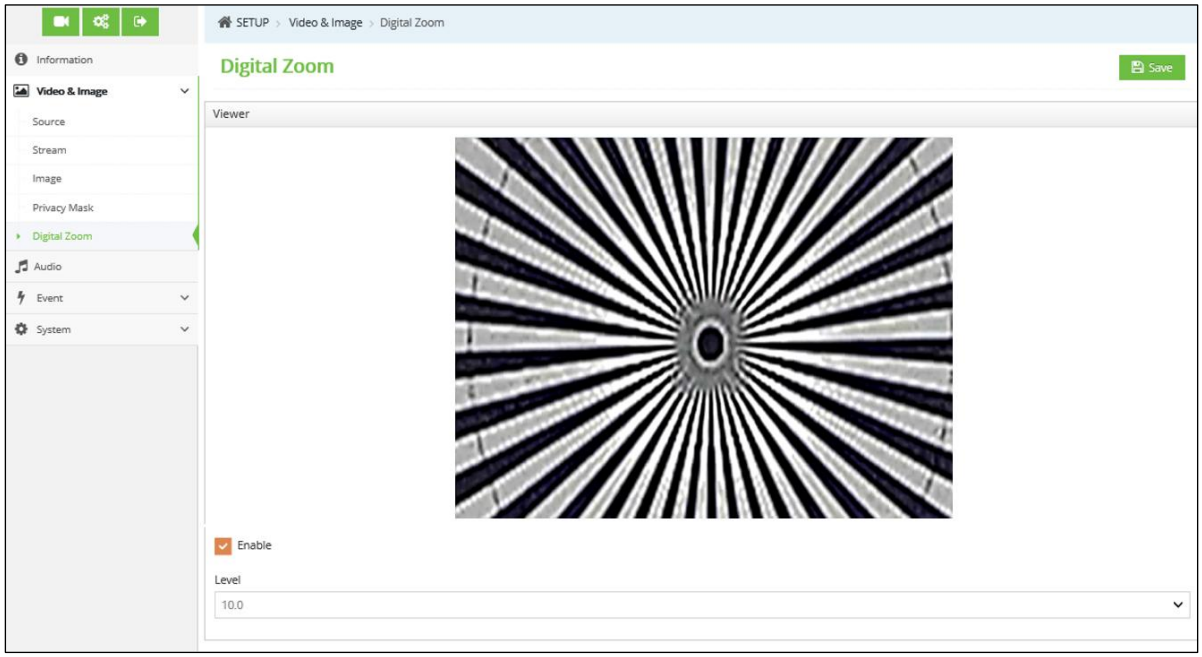
1. Check the 'Enable' privacy mask checking box.
2. Right-click on the screen and specify the area.
3. Enter the name and click Save.

To delete a mask area from the list, click the ⓧ icon

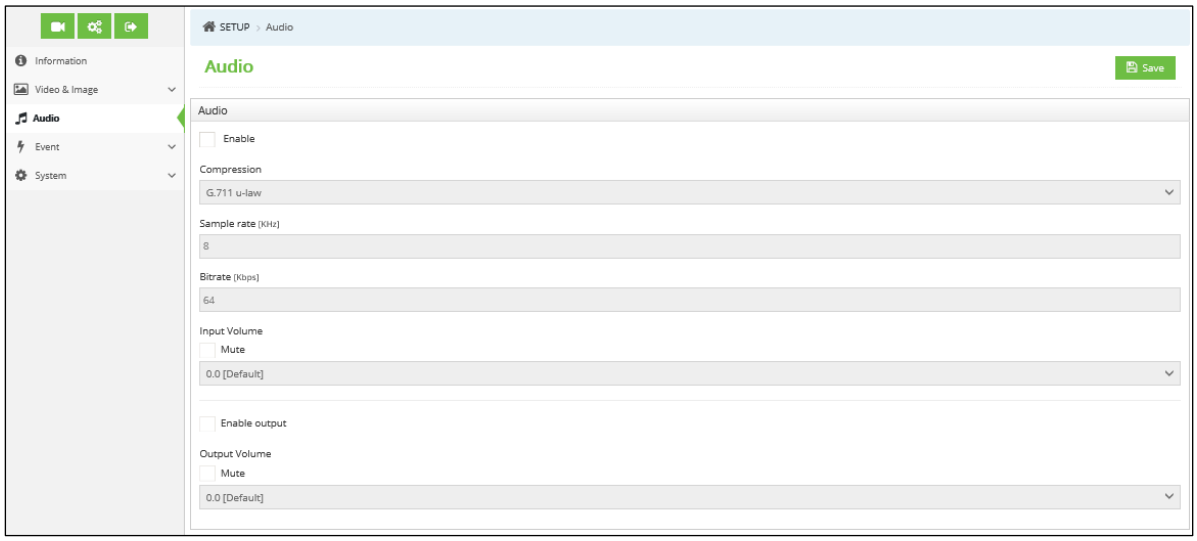


Digital Zoom

Click the 'Enable' checkbox to activate digital zoom. The digital zoom ratio can be set from x1 to x12. To adjust to the desired zoom level, click the 'Save' to finalize the setting.



[Audio]



Audio: Enable audio by clicking the enable audio checkbox. This page provides instructions for configuring the camera's basic audio settings. The camera supports full-duplex audio, allowing simultaneous transmission and reception of audio in both directions.

Compression: G.711 is the international standard for encoding wired-telephone audio on a 64kBit/s channel. It uses PCM (Pulse Code Modulation) with an 8 kHz sample rate. The default setting is G.711 μ-law.

Sample rate: Indicates the number of times per second the sound is sampled. The default setting is 8 kHz.

**** NOTE***

G.711, also known as Pulse Code Modulation (PCM), is a very commonly used waveform codec. G.711 uses a sampling rate of 8,000 samples per second, with the tolerance on that rate 50 parts per million (ppm). Non-uniform quantization (logarithmic) with 8 bits is used to represent each sample, resulting in a 64 kbit/s bit rate. There are two slightly different versions; μ-law, which is used primarily in North America, and A-law, which is in use in most other countries outside North America. G.711 μ- law tends to give more resolution to higher range signals while G.711 A-law provides more quantization levels at lower signal levels.

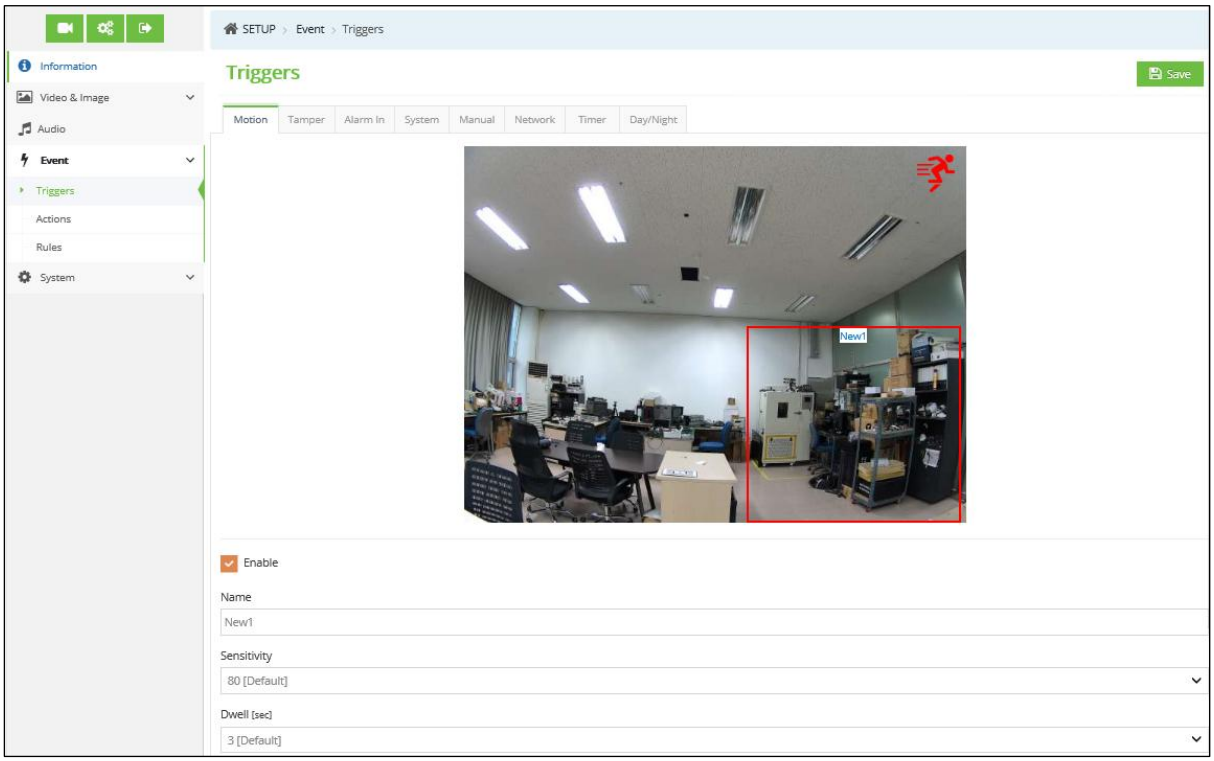
Input volume: The Input volume is adjustable within a range of -12.00 to 12.00 dB, with a default setting of 0 dB. Use the Mute box to disable the audio input if needed.
Output volume: The Output volume is adjustable within a range of 9 to -24 dB, with a default setting of 0 dB. Use the Mute box to disable the audio output if needed.

[Event]

Triggers

Motion

Motion detection generates an alarm whenever movement occurs (or stops) in the viewer. A total of 8 Motion/Mask areas can be created and configured.



Name: Enter the name of motion or mask area.

Sensitivity: Adjust the sensitivity level for motion detection.

Dwell time: Configure how long the motion or mask signal remains active as an input signaling source. Once motion detection areas are configured, this camera can perform actions when motion is detected. Possible actions include uploads, alarm out and emailing.

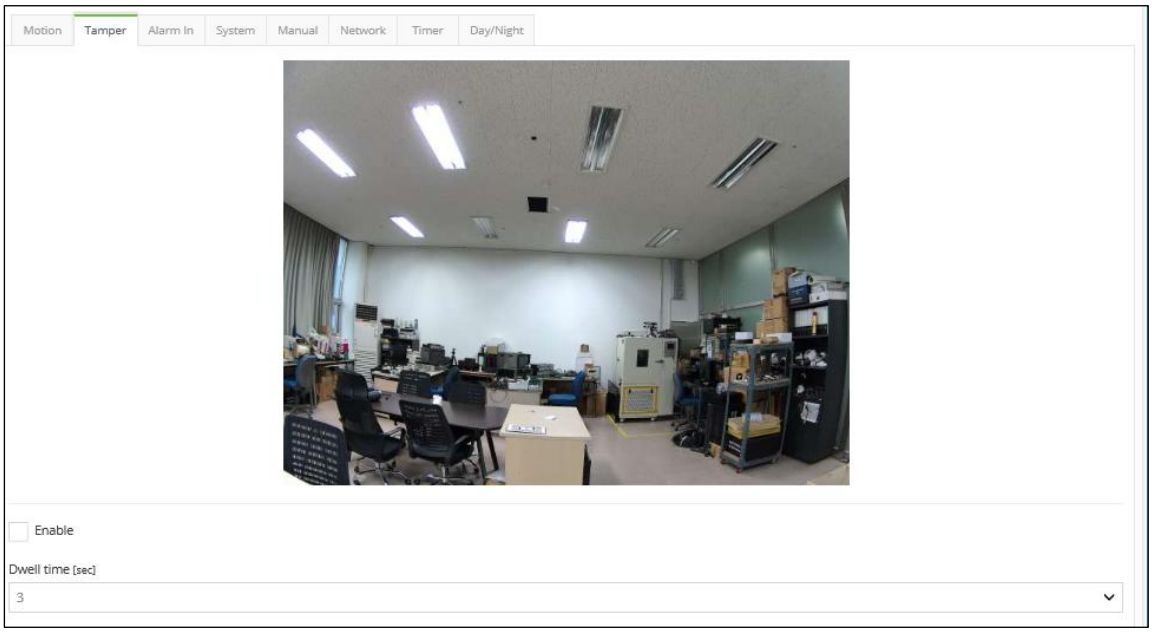
To create a motion or mask area, follow steps:

1. Right-click the mouse to access the menu.
2. Select Create detection area or Create masking area from the menu.
3. Click and drag the mouse to designate a motion area.
   - Create detection area — define areas where motion should be detected.
   - Create masking area — define areas where motion should be ignored.

   To delete a motion or mask area, click the delete button.

Tamper

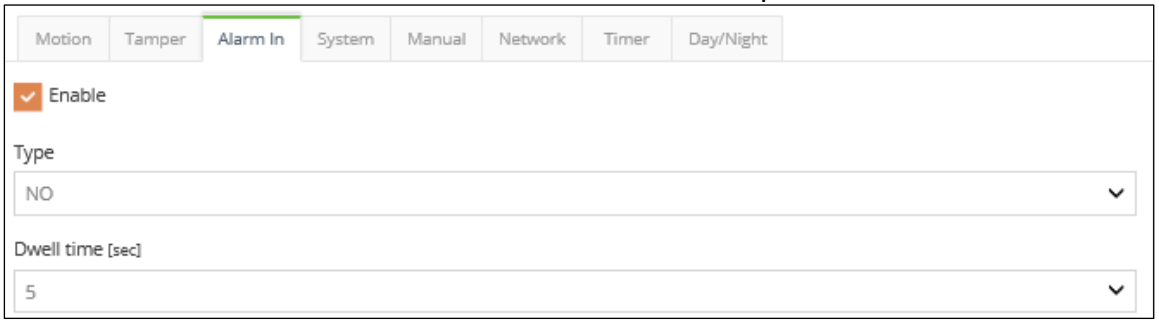
Detects if the camera's view is obstructed, rotated, or tampered with. When such an event occurs, a warning is immediately sent to the administrator.



Dwell time: Configure the duration that the tampering event must persist to trigger an alarm.

Alarm In

Click the Enable alarm in checkbox to enable the Alarm In port.



Type: The default setting is NO.

- **NO:** Normally Open

If the normal state of a pushbutton connected to an input is an open circuit, the input state remains inactive as long as the button is not pushed.

- **NC:** Normally Close

When the button is pushed, the circuit is grounded, and the input's state changes from its normal state (grounded circuit) to an active state. An input on the camera is in an open circuit state when disconnected or when there is a voltage.

Dwell time: Configure the duration that the alarm input signal must persist to act as a valid input signaling source.

**** NOTE***

The total number of alarm in is dependent on camera model.

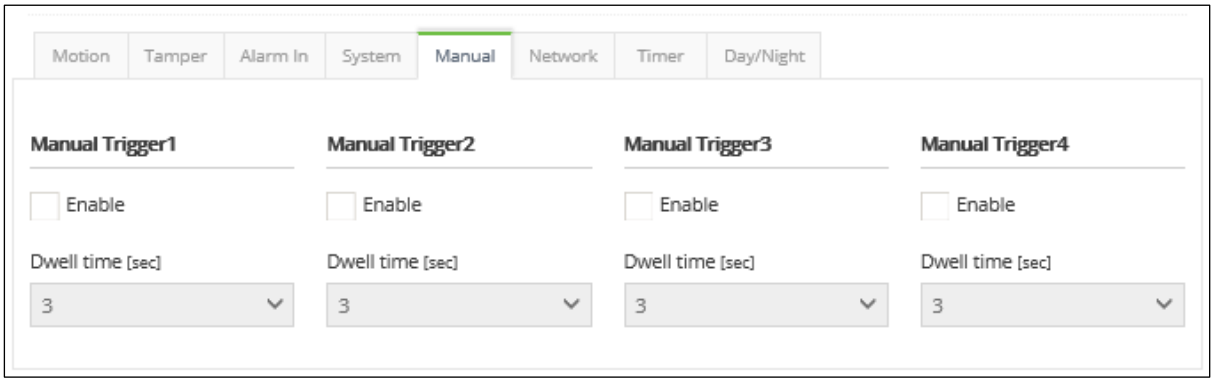
System

This is used to trigger the event every time the Network Camera is started.

Dwell time: The default setting is 3 seconds.

Manual

The Manual Trigger features an alarm out signaling, JPEG file transfer to FTP server, and sends email to SMTP server whenever operator clicks Manual Trigger button in the Live View window.



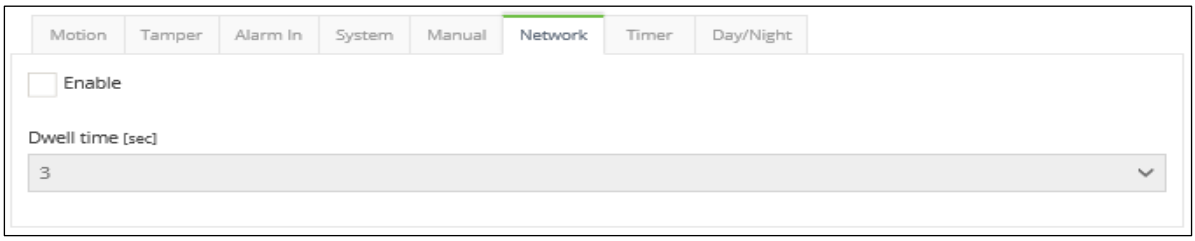
Dwell time: The default setting is 3 seconds.

**** NOTE***

Dwell time means how long time the alarm output signal hold on as an output signaling source.

Network

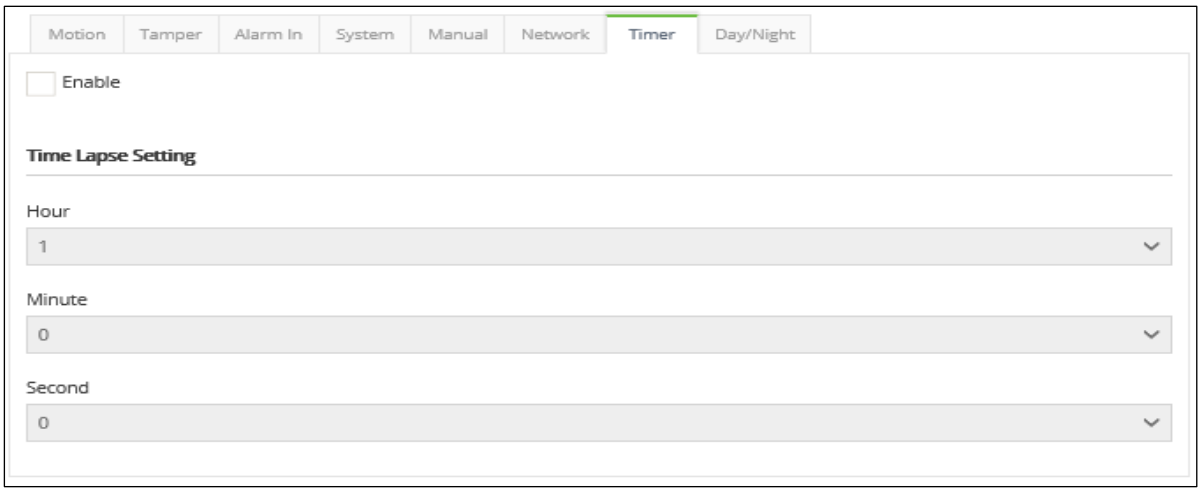
This is used to trigger the event every time the network connection fails. Click the checkbox to activate the Network Loss event.



Dwell time: The default setting is 3 seconds.

Timer

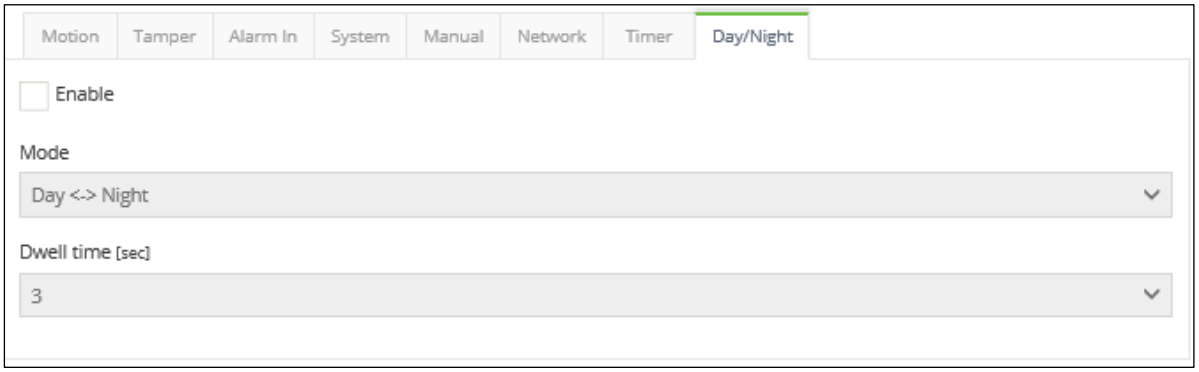
This is used to trigger the event according to time settings. Click the checkbox to activate the Time Laps Setting.



Time Laps Setting: The default setting is 3 seconds.

- **Hour:** Set the event trigger every hour.
- **Minute:** Set the event trigger every minute.
- **Second:** Set the event trigger every second.

Day/Night: This is used to trigger the event every time Day and Night exchange. Click the checkbox to activate the Day/Night event trigger.

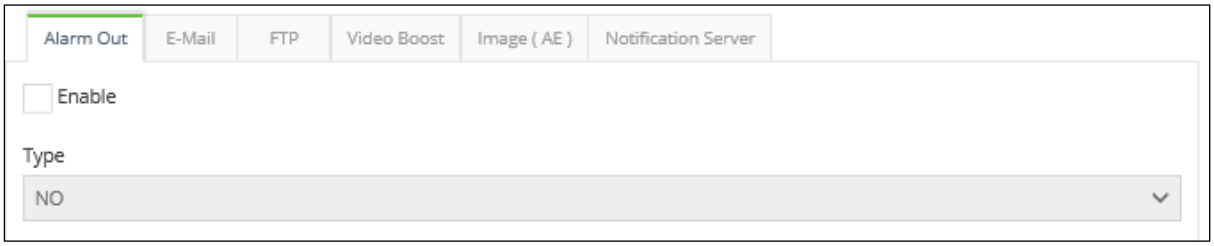


Dwell time: The default setting is 3 seconds.

Actions

Alarm Out

This page allows you to configure the alarm output supported by the camera. Port can be given as Normally Open or Normally Close state.



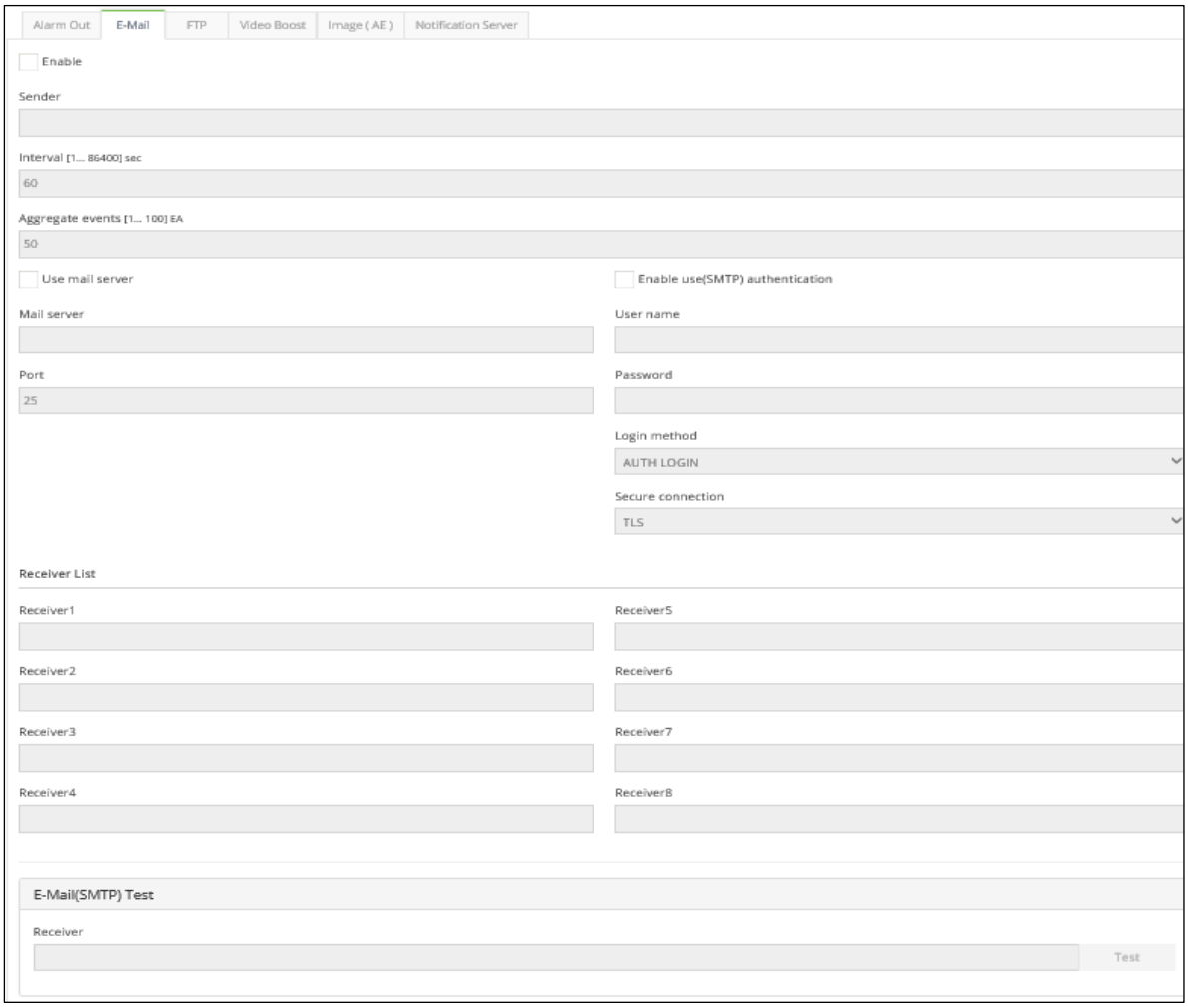
Type: The default setting is NO.

**** NOTE***

The total number of alarm out is dependent on camera model.

E-Mail

Use the Simple Mail Transfer Protocol (SMTP) server to send an email notification when an event server is activated. The camera can be configured to send event and email messages via SMTP.



Sender: Click in the Sender box and enter the E-mail address as the sender.
Interval: Enter the E-mail sending time interval after event occurred.
Aggregate events: Enter the number of events for E-mail sending. If the event numbers are reached the setting value, E-mail sending is available.
Use mail server: Click the Use mail server checkbox and provide the following information for E-mail server.
Mail Server: Enter the host names or IP addresses for your mail servers in the fields provided.

**** NOTE***
If a host name is used, a valid DNS server must be specified in the Network-Basic settings.

Port: Enter the SMTP server port number for the SMTP Server. The Port number can be adjusted in the range 1-65535. The default setting is 25.

**** NOTES***
- If your mail server requires authentication, click the Use (SMTP) authentication checkbox for use authentication to log in to this server.
- Please consult with your network administrator, if you want to change the port number.

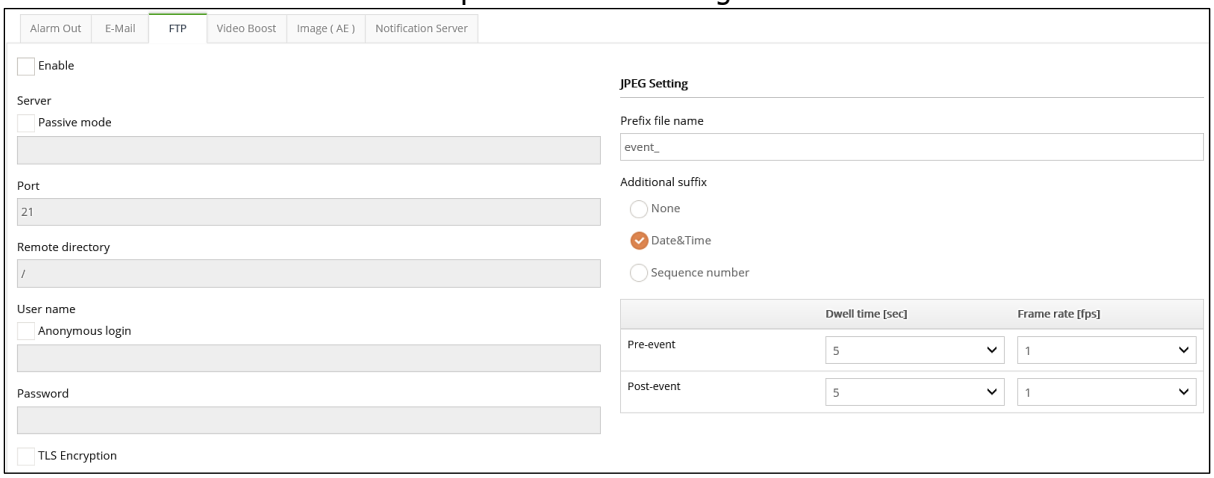
Enable use (SMTP) authentication: If your mail server requires authentication, click the Use (SMTP) authentication checkbox for use authentication to log in to this server.
User name: Enter the User name as provided by your network administrator.
Password: Enter the Password as provided by your network administrator.
Login method: Select one for SMTP authentication method allowed.

**** NOTES***
- If a PLAIN or LOGIN mechanism is negotiated, the camera sends user name and password to the SMTP server.
- The LOGIN mechanism is supported by Microsoft, as well as by some other clients. Most other clients support the PLAIN authentication mechanism.
- Since the vast majority of Email clients support only PLAIN or LOGIN, mail server administrators will probably want to consider using STARTTLS to provide an encryption "tunnel" between the client and server, to protect the user name and password.

Receiver List: Enter the recipient's E-mail address as the receivers.
Receiver1~8: Enter the recipient's E-mail address as the receiver to test.
E-Mail (SMTP) Test: Enter the recipient's E-mail address and click the Test button to test that the mail servers are functioning and that the E-mail address is valid. When the setup is complete, the connection can be tested by clicking the Test button.
Receiver: Enter the recipient's E-mail address as the receiver to test.

FTP

FTP notification will save a file on the specified FTP server.
Click the Enable FTP checkbox and provide the following information for FTP notification.



Server: Enter the IP address or host name of the target FTP server.

- **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 network camera and the target FTP server.

Port: Enter the port number used by the FTP server. The Port number can be adjusted in the range 1-65535. The default setting is 21.

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.

User name: Enter the User name as provided by your network administrator.

- **Anonymous login:** Click the Anonymous login checkbox to permit anyone to access FTP server.

Password: Enter the Password as provided by your network administrator.

**** NOTE***

If you permit to login FTP server by anyone without password, click the Anonymous login checkbox.

JPEG Setting: Configure the JPEG image to send the FTP server.

Prefix file name: Click in the Prefix file name box and type a name for JPEG image file (1 to 32 alphanumeric characters).

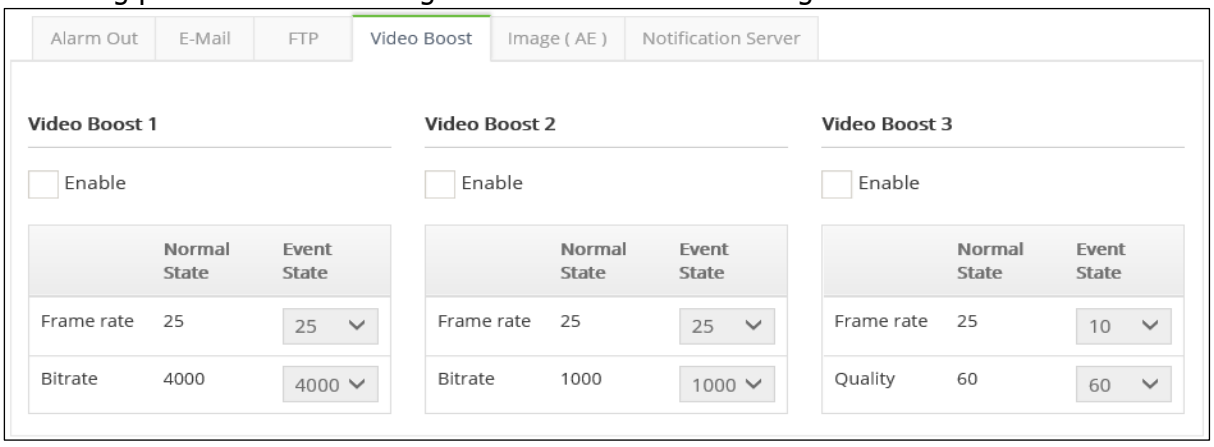
Additional suffix: Provide additional information for JPEG image file.

Pre-event: Defines how many JPEG file will be made Dwell time and Frame rate before the event is generated.

Post-event: Defines how many JPEG file will be made Dwell time and Frame rate after the event is generated.

Video Boost

When the camera detects an event based on the event rule settings, it will boost the streaming performance according to each video stream setting.



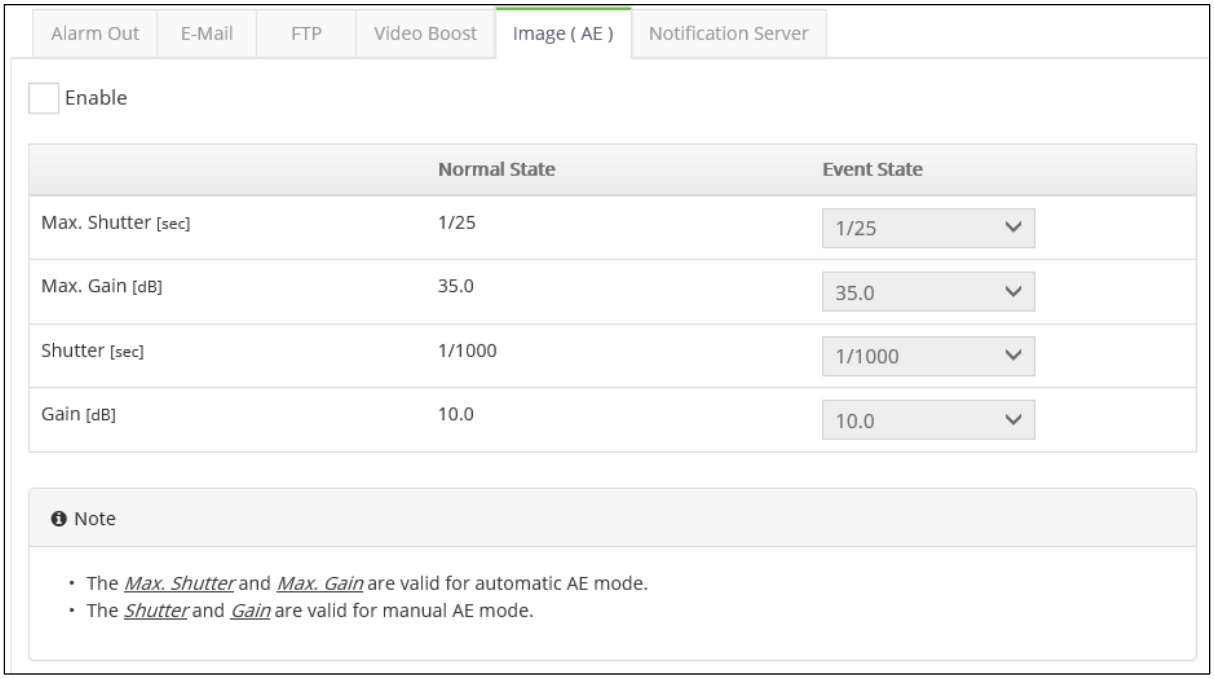
- **Normal State:** Show the current frame rate and bitrate.
- **Event State:** Set frame rate and bitrate in the video boost mode.

**** NOTE***

The total number of video boost is dependent on camera model.

Image (AE)

When this camera detects an event according to event rule setting, this camera will change the Shutter and Gain state.



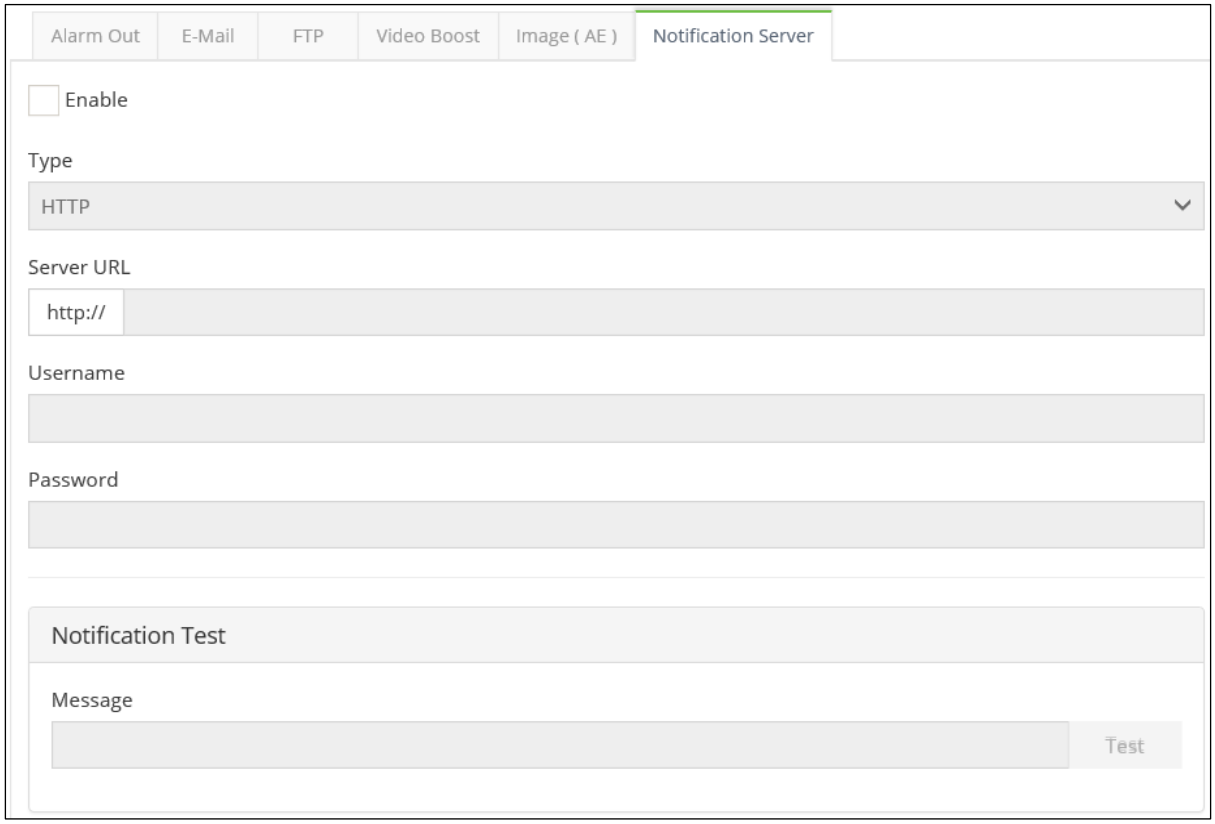
- **Normal State:** Show the normal state Shutter and Gain values.
- **Event State:** Set the Shutter and Gain values in the event state.

**** NOTE***

The function of Image (AE) is dependent on camera model.

Notification Server

When this camera detects an event, this camera will inform camera event into specified server.

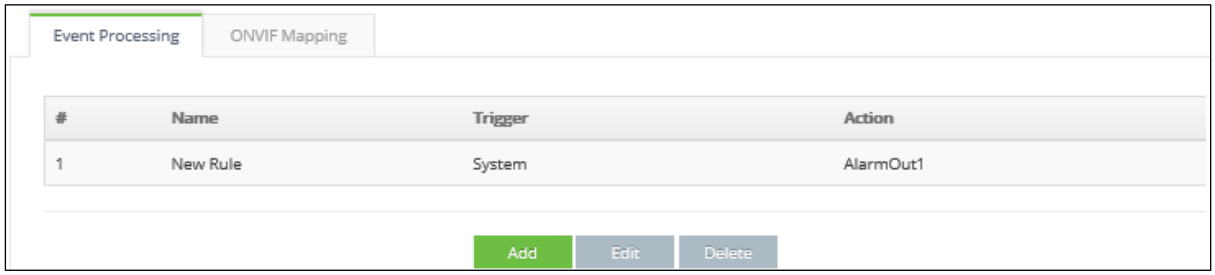


- **Type:** Select command type.
- **Server URL:** Enter server URL.
- **Username:** Enter server user name.
- **Password:** Enter password of the server.

Notification Test: Enter the message and click the Test button to check that the servers are functioning.

Rules

This page shows current configuration status when event is activated. The common event actions will upload images to a specified destination or send an email or active an output port.



Event Processing: An event processing is a set of parameters describing how the camera will perform certain actions. Event type may be set up as Triggered according to requirements.

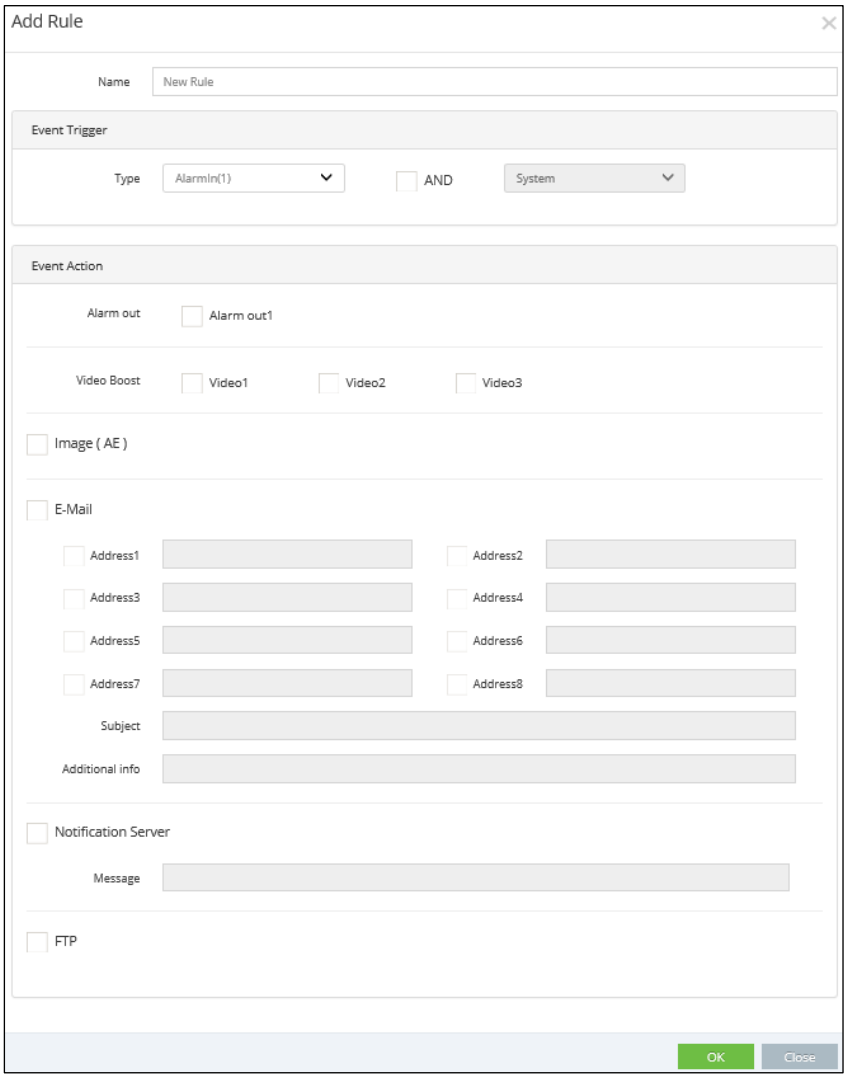
Name: Show the descriptive name provided by the user.
Trigger: Show the source of event type as Alarm-In, Manual Trigger, VMD, and Etc. configured by the user.
Action: Show the destination of event output as SMTP server, FTP server, Alarm-out port, Audio alert and SD record.

**** NOTE***
To add new event, click the Add button. This button opens new dialog window, which are used to make all the necessary settings for the new event map.

Add: To add a new event map list, select it and click the Add button.
Edit: To modify an existing event map list, select it and click the Modify button.
Delete: To delete an event map list, select it and click the Delete button.

Add Rule

Event Add Rule page provides how to configure the event action if there is event triggering such as Alarm-In, Manual trigger, Motion, and Etc. port.



Name: Enter a name for the event (1 to 31 alphanumeric characters).

Event Trigger: Display the type of event source to be configured.

Type: Select the event source type. To add a trigger condition for the event action, check the And box and select one or more tigger types.

Event Action: Specifies the actions the camera will perform when the event is triggered.

Alarm out: Enable the alarm output port by selecting the 'Alarm output1' checkbox.

Video Boost: Enable the Video Boost stream by checking the checkbox.

Image (AE): Enable the Shutter and Gain state change by selecting the checkbox.

E-mail: Enable email notifications by checking the 'Email' box. To include recipients, check the box next to each email address.

**** NOTE***

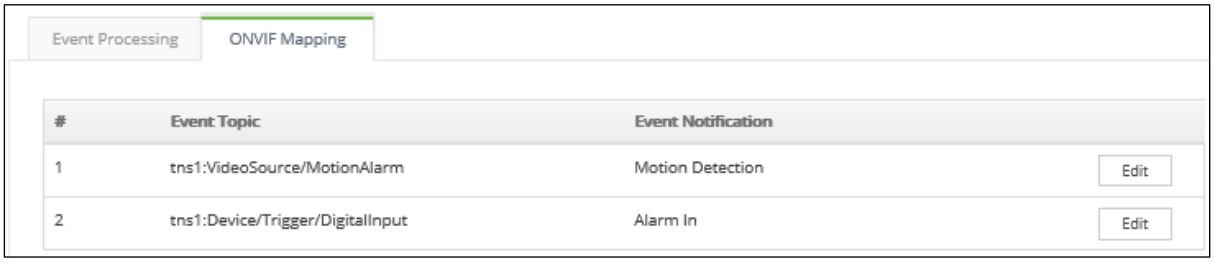
If you want to additional message when emailing, click in the Subject / Additional Info box and type a description for the text you are creating (0 to 255 alphanumeric characters).

Notification Server: Enter the message to inform a server.

FTP: Enable image uploading to an FTP server by checking the FTP box. Image will be uploaded in JPEG format.

ONVIF Mapping

An ONVIF mapping is a set of parameters describing ONVIF standard how the camera will perform certain actions.



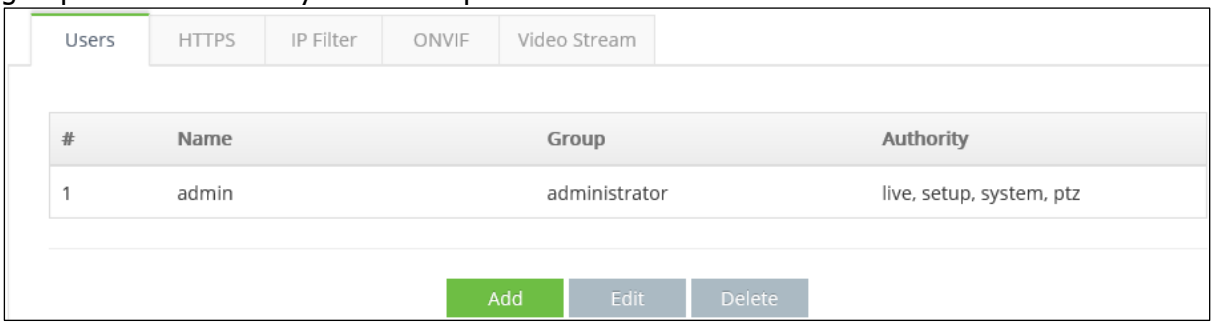
- **Event Topic:** Describe the event topic on this camera.
- **Event Notification:** Indicate the selected event type.
- **Edit:** Select one of the event notification types.

[System]

Security

Users

User accounts can be added or modified or removed. The authority depends on the user group and automatically shows the permission status to access the menus.



Name: Display the name which registered to access the camera.

Group: Display how the assigned permission given to users.

Authority: Display the permission status to access the menus.

- Click the Add, Edit, or Delete button for managing user account.

Add User

1. Click the Add tab. A new pop-up window appears.
2. Click in the Name box and type a new user name (1 to 14 alphanumeric characters).
   - User names are not case-sensitive.
3. Click in the Password box and type a password (1 to 8 alphanumeric characters).
   - Passwords are case sensitive.
4. Click in the Confirm password box and retype a password.
5. Click in the Group box and select one of the groups you wish to assign to the user.
6. Click the OK button to save the settings and add a new user.

Edit User

1. Select one of the User Name in the User List you want to modify.
2. Click the Edit tab. A new pop-up window appears.
3. Click in the Password box and type a password (1 to 8 alphanumeric characters).
   - Passwords are case sensitive.
4. Click in the Confirm password box and retype a password.
5. Click in the User Group box and select one of the groups you wish to assign to the user.
6. Click the OK button to save the settings and modify the user.

To delete a user:

1. Select one of the User Name in the User List you want to remove.
2. Click the Delete tab. A dialog box appears with confirmation message.
3. Click the OK button. The user profile is removed from the User List profile.

HTTPS

Connection mode: The default setting is HTTP&HTTPS.

- **HTTP**: The sensitive data will be transfer without encrypted during transmission. Support a URL that only starts with "HTTP: "
- **HTTPS**: HTTPS (Hypertext Transfer Protocol over SSL) is a protocol used to provide the encrypted transmission. Supports a URL that only starts with "HTTPS: "
- **HTTP&HTTPS**: Supports both HTTP and HTTPS simultaneously. You can access the camera using a standard "HTTP:" URL, but sensitive data is not encrypted during transmission. To ensure that sensitive data is encrypted, you must use a secure "HTTPS: " URL.

**** NOTES***

- *To ensure security on the internet, all web browsers provide several security levels that can be adjusted for site that use SSL (Secure Socket Layer) technology to transfer data. SSL encrypts communications, making it difficult for unauthorized users to intercept and view user names and passwords.*
- *SSL requires signed certificates to determine if the web browser accessing the camera has a required authentication. This camera can generate a self-signed certificate using Open SSL.*
- *If you select the HTTP connection policy to HTTP, you cannot access the camera using a URL beginning with "HTTPS:"*
- *SSL requires signed certificates to determine if the web browser accessing the camera has a required authentication. This camera can generate a self-signed certificate using Open SSL.*
- *Self-signed certificates are valid for 10 years.*

IP Filter

Provides the IP filtering elements such as On/Off, Priority, Policy and IP Ranges. The default setting is disabling.

Enable IP address filtering: Click the Enable IP filtering checkbox to enable the IP address filtering function. This dialog allows you to add new allowed/denied IP addresses. These can be added whole ranges (subnets) of IP address can be added directly.

On/Off: Click the checkbox to active the settings (Priority, Policy, and IP ranges).

Priority: The number means a priority if there are duplicated IP address each IP ranges.

Policy: Determines the filtering attribute of the IP address selected.

Start IP: Enters the start IP address to ALLOW/ DENY in the IP range selected.

End IP: Enters the end IP address to ALLOW/ DENY in the IP range selected.

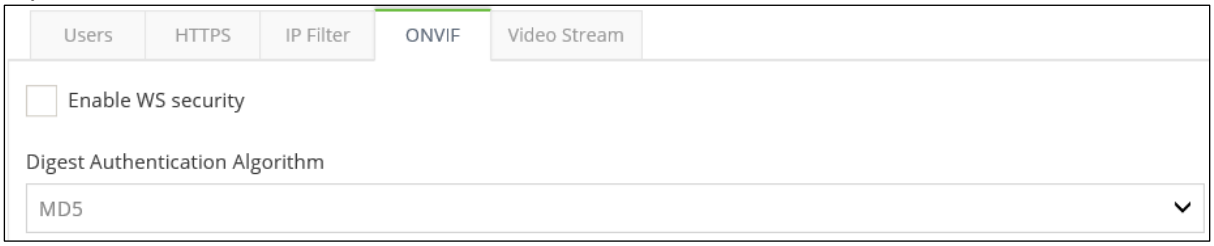
**** NOTES***

To add a subnet of network addresses, these must be added in CIDR (Classless Inter-Domain Routing) notation. For example: entering 192.168.1.0/24 will add all the addresses in the range 192.168.1.1 to 192.168.1.254. Please contact with your network administrator for more detail.

- *If you are accessing the network camera via a proxy server, the IP address for the proxy server must be added as an allowed address.*

ONVIF

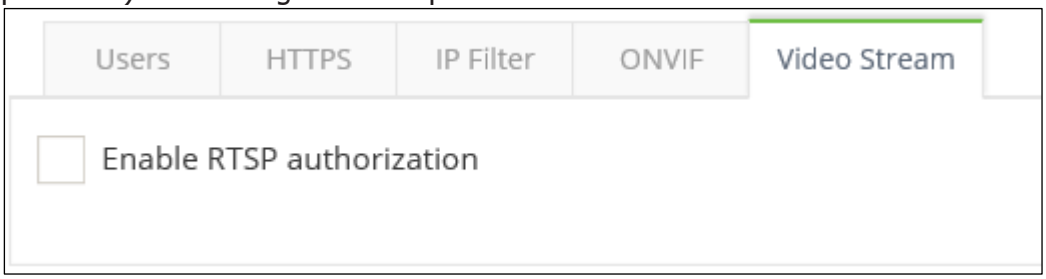
This camera supports an authentication process (Web Service security protocol) using a user ID/Password to connect to ONVIF devices.



Enable WS security: It defines a standard command set that can be used to provide Web Services message integrity and confidentiality. If you want to use this, click the check box. The default setting is off. It means this camera tries to connect with other ONVIF devices without user ID/Password.

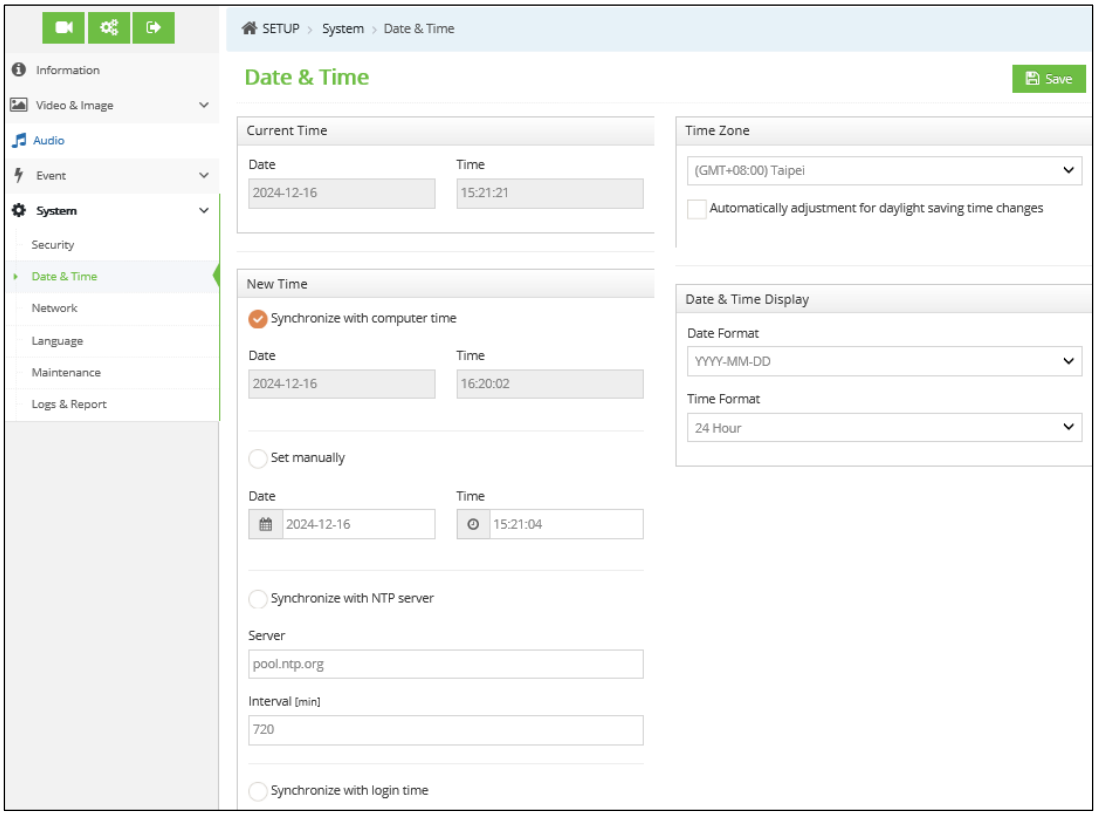
Video Stream

This camera allows secure video streaming by requiring user authentication (ID and password) when using the RTSP protocol.



Enable RTSP authorization: Activate this feature to require user authentication for RTSP video streaming . When enabled, clients such as video management systems or other devices must enter a user ID and password to access the camera's video stream.

Date & Time



Current Time: Display the current date and time.

Date: The default setting is 1970-01-01.

Time: The default setting is 00:00:00.

New Time: Select one of the server time.

Synchronize with computer time: Set the time according to the computer's clock.

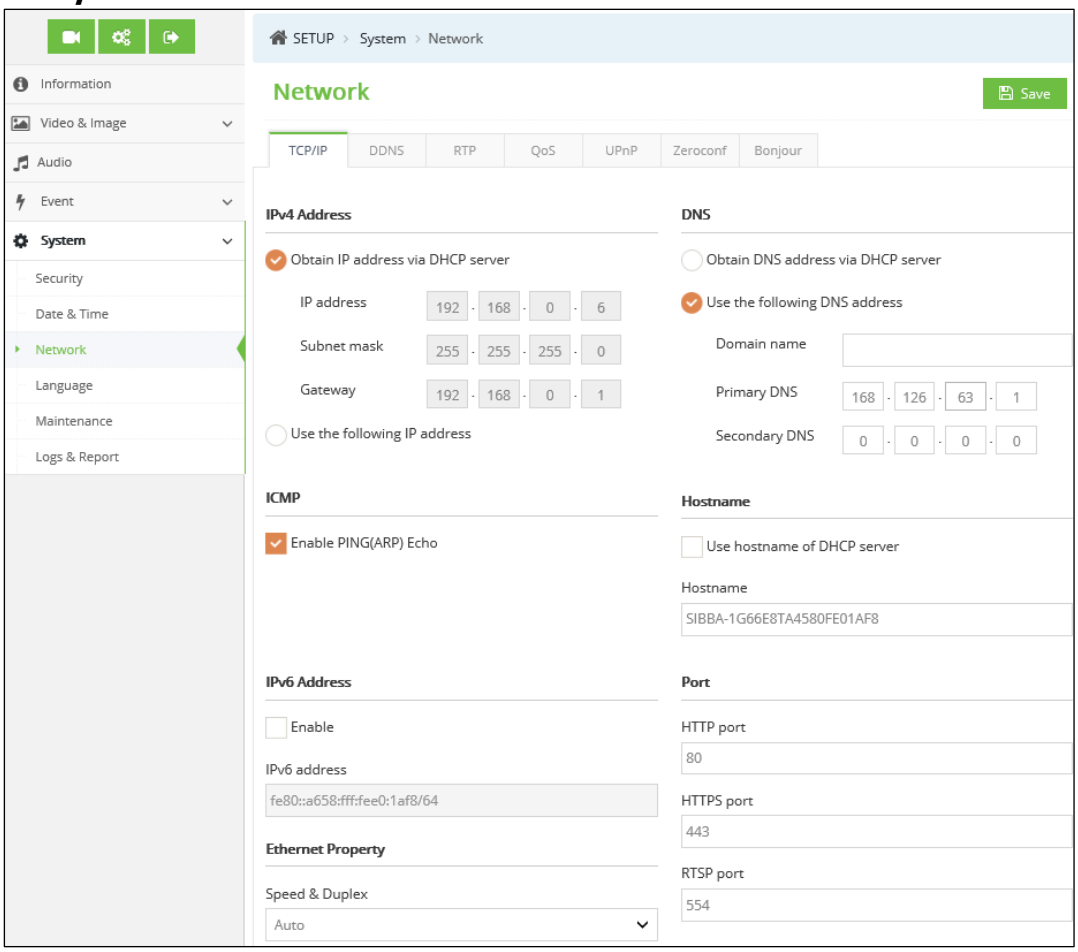
Set manually: Use this option to manually enter the date and time.

Synchronize with NTP Server: This option will obtain the correct time from an NTP server every 60 minutes. The NTP server's IP address or host name is specified in the time server.

Time Zone: Select the time zone where your camera is located.
Click the "Automatically adjust for daylight saving changes" checkbox to automatically update the time changes caused by daylight saving.
Time zone: The default setting is GMT.
Date & Time Display: Select one of the Date and Time format.
Date Format: The default setting is YYYY-MM-DD.
Time Format: The default setting is 24 hours.

Network

TCP/IP



IPv4 Address: The DHCP (Dynamic Host Configuration Protocol) server has a feature that automatically assigns an IP address to the device if there is a device on the network.
Obtain IP address via DHCP server: Select the choice box if you want to assign the IP address from DHCP server automatically, and then the remaining setting are read-only text.
IP address: The address of the camera connected to the network. Specify a unique IP address for this network camera.

Subnet mask: The address that determines the IP network that the camera is connected to (relative to its address). Specify the mask for the subnet the network camera is located on.

Gateway: The gateway that accesses other networks. Specify the IP address of the default router (Gateway) used for connecting devices attached to different networks and network segments.

Use the following IP address: Select the choice box if you want to assign the IP address manually.

ICMP (Internet Control Message Protocol): This protocol checks the status of network connections and provides error notifications.

Enable PING (ARP) Echo: Activate this feature to allow the camera to respond to PING or ARP Echo requests, which are commonly used for network diagnostics.

IPv6 Address: Enable IPv6 address configuration by checking this box. Other settings for IPv6 are configured in the network router.

DNS: DNS (Domain Name Service) translates host names to IP addresses.

Obtain DNS server via DHCP server: Select this option to use the DNS server settings provided by the DHCP server automatically. Once selected, the remaining settings are read-only.

Use the following DNS server address: Select this option to manually set the DNS server address.

Domain name: Enter the domain name used by the network camera.

Primary DNS server: Enter the IP address of the primary DNS server.

Secondary DNS server: Enter the IP address of the secondary DNS server.

Hostname: Access the camera using a host name instead of an IP address. The host name is usually the same as the assigned DNS name.

Port: Configure the communication ports for web access and video streaming.

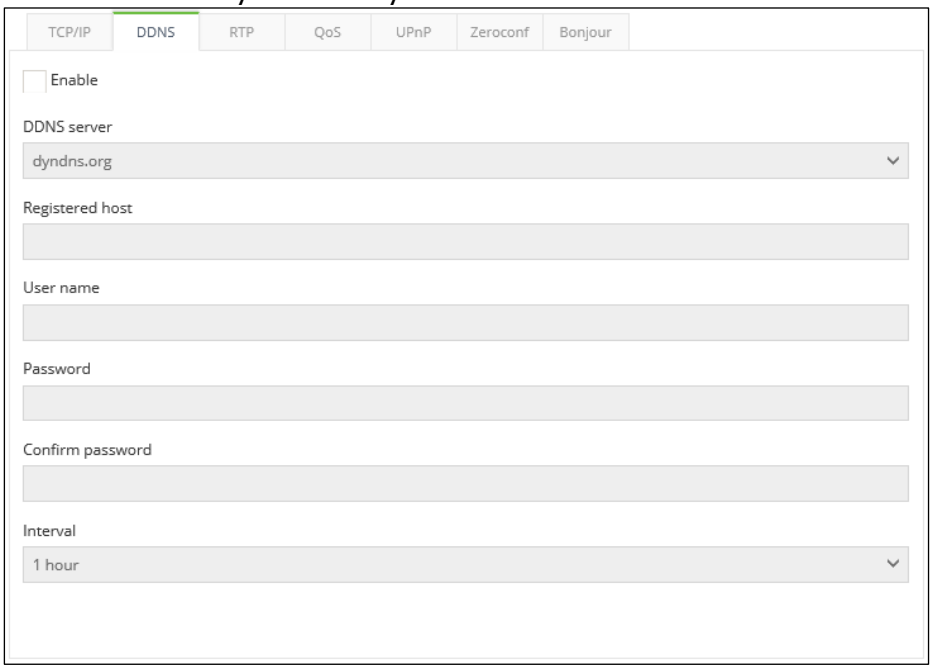
HTTP port: The default port is 80 and can be changed to any port within the range 1024-65535.

HTTPS port: The default port is 443 and can be changed to any port within the range 1024-65535.

RTSP port: The default port for RTSP is 554 and can be changed to any port within the range 1024-65535.

DDNS

The DDNS (Dynamic DNS) service can provide the camera with its own URL (web address), which can then be used to access it over the Internet. Use the DDNS service to assign a host name for easy access to your network camera.



**** NOTES***

• Registration at the Dynamic DNS service is required if it has not been previously completed.

• If the camera is already registered and its IP address changes, the DNS service must be updated with the new IP address.

• Regular updates occur at the set interval, regardless of whether automatic updates are configured. Enable DDNS service by selecting the checkbox.

DDNS server: Enter the DDNS server name.

Registered host: Enter the registered host name.

User name: Enter the registered user name for accessing the DDNS server.

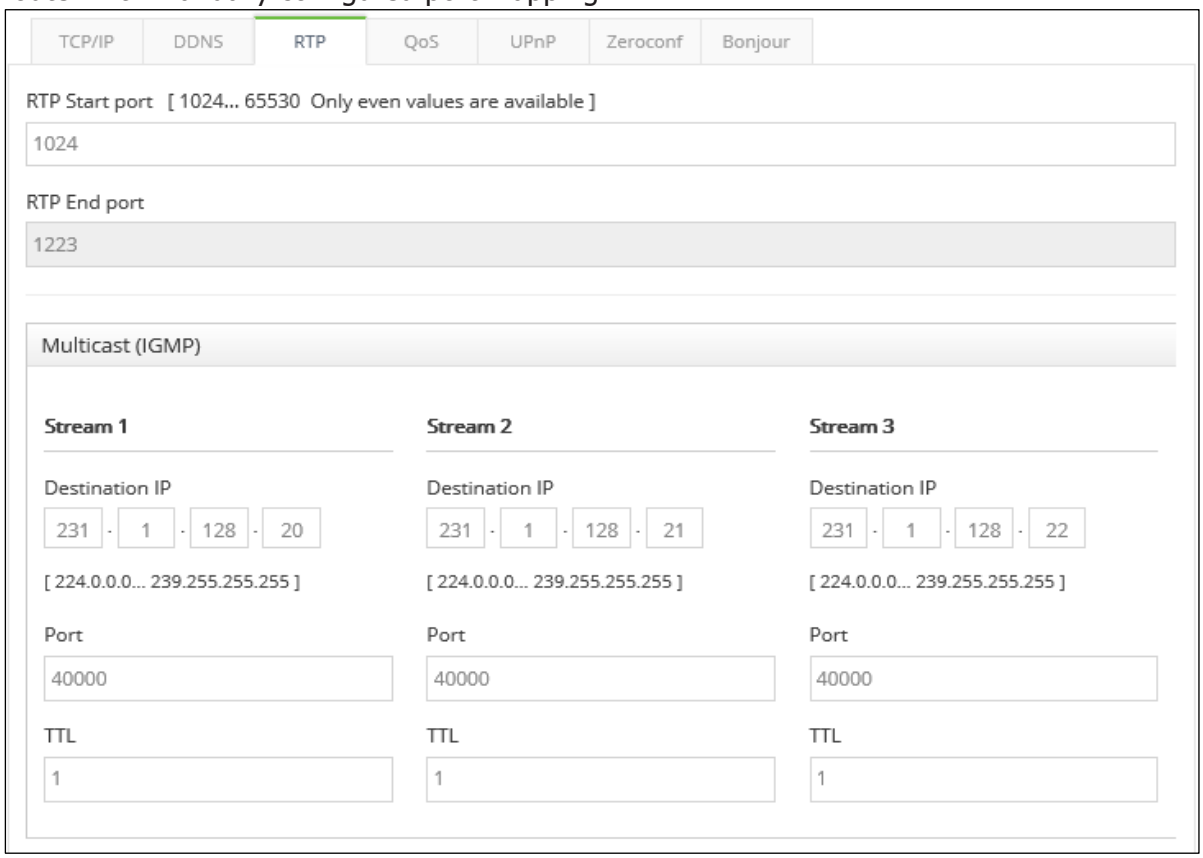
Password: Enter the user password for accessing the DDNS server.

Confirm password: Re-enter the user password for confirmation.

Interval: Set the interval for regularly updating the DDNS service. The default setting is 1 hour.

RTP

The RTP Port range specifies the range of ports from which the video/audio ports are selected automatically. This configuration is beneficial when connecting the camera to a NAT router with manually configured port mapping.



**** NOTE***

Limit the range of ports permitted for RTP unicast/multicast by entering the Start port and End port in the provided fields.

Start port: Specify the starting port number within the range of 3000-39800. The default value is 3000.

End port: Specify the ending port number within the range of 3000-39800. The default value is 30199.

- The value is usually measured in 'hops', i.e. the number of network routers that can be passed before the packet arrives at its destination or is dropped.

Multicast (IGMP): Enable multicast to send data to multiple devices simultaneously.

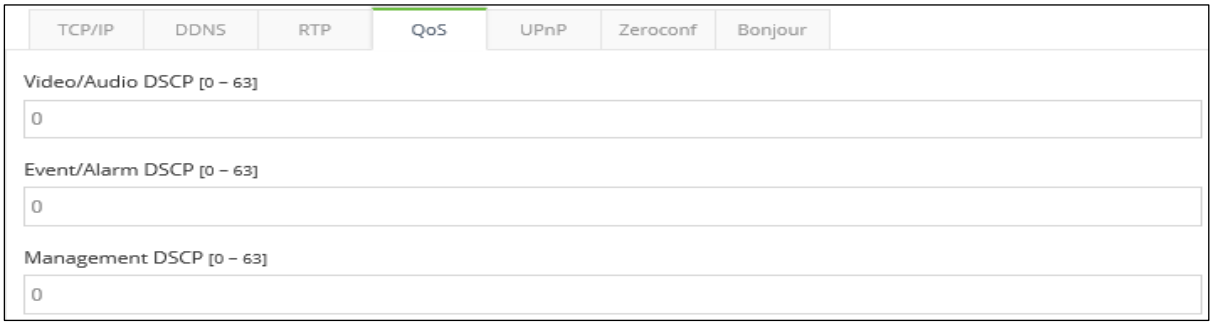
Destination IP: Enter the IP address where the multicast data will be sent.

Port: Enter the port number for receiving multicast data on the destination device.

TTL (Time To Live): Define the range (in hops) for how far multicast packets will travel through network routers to reach devices within the multicast group.

QoS (Quality of Service)

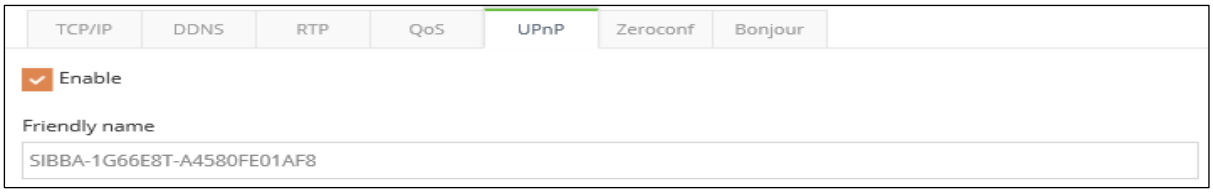
Prioritize network traffic to maintain smooth video streaming and reliable performance of other network services.



Video/Audio DSCP: Set traffic priority for video and audio data.
Event/Alarm DSCP: Set traffic priority for event and alarm notifications.
Management DSCP: Set traffic priority for network management and control data.

UPnP (Universal Plug & Play)

UPnP is enabled by default, and the network camera then is automatically detected by operating systems and clients that support this protocol.



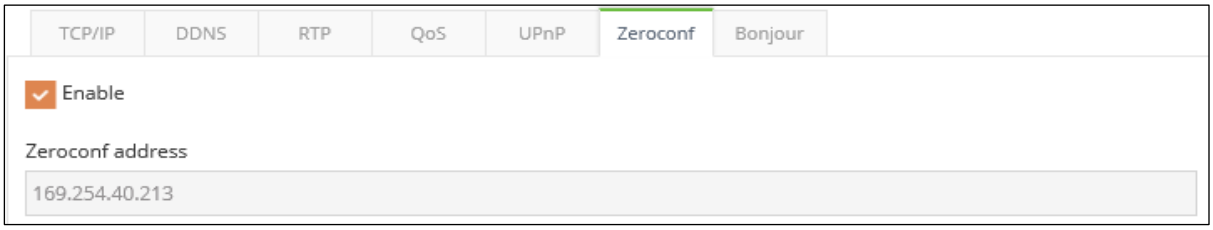
Friendly name: Enter a description (1 to 32 alphanumeric characters) in the Friendly name box. When UPnP is enabled, the camera is automatically detected, and a new icon is added in the format " Model Name-MAC address".

**** NOTE***

UPnP must also be enabled on your Windows computer. To do this, open the Control Panel from the Start Menu and select Add/Rename programs. Select Add/Remove Windows Components and open the Networking Services section. Click Details and then select UPnP as the service to add.

Zeroconf

Zero Configurations Networking (Zeroconf) is a set of protocols that allows devices to automatically create a functional IP network without requiring manual configuration or dedicated servers. Zeroconf enables devices, such as computers and printers to connect to a network without intervention. Without zeroconf, configuring services like Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) or setting network parameters manually can be complex and time-consuming. By default, zoroconf is enabled.



Zeroconf address: The default zeroconf ip is 169.254.xxx.xxx

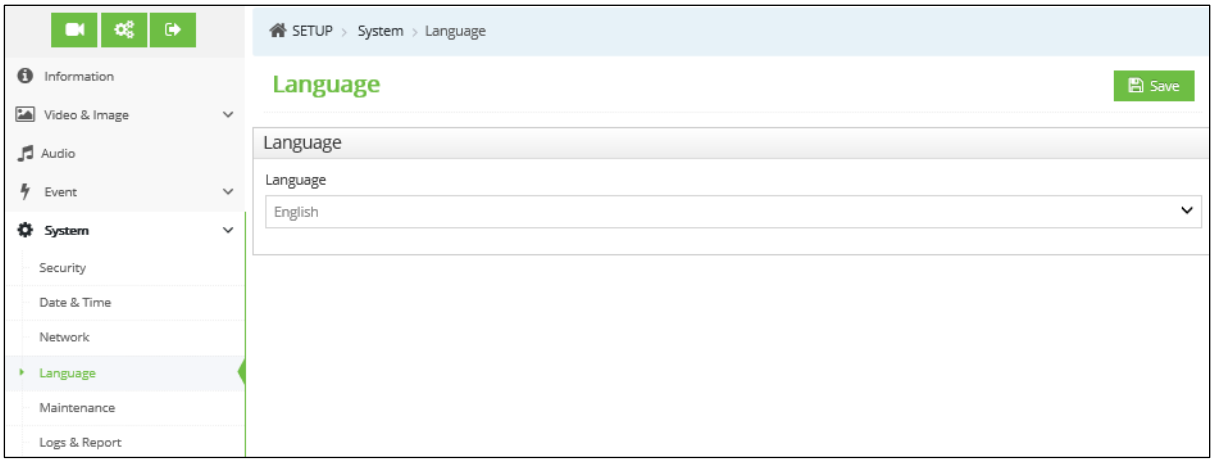
Bonjour

Bonjour is Apple's version of zero-configuration networking (zeroconf), a set of protocols that allows a network device to automatically recognize and communicate with other devices on the network. This streamlined technology enables users with no experience to easily set up and use devices on the network.

Friendly name: Enter your preferred name.

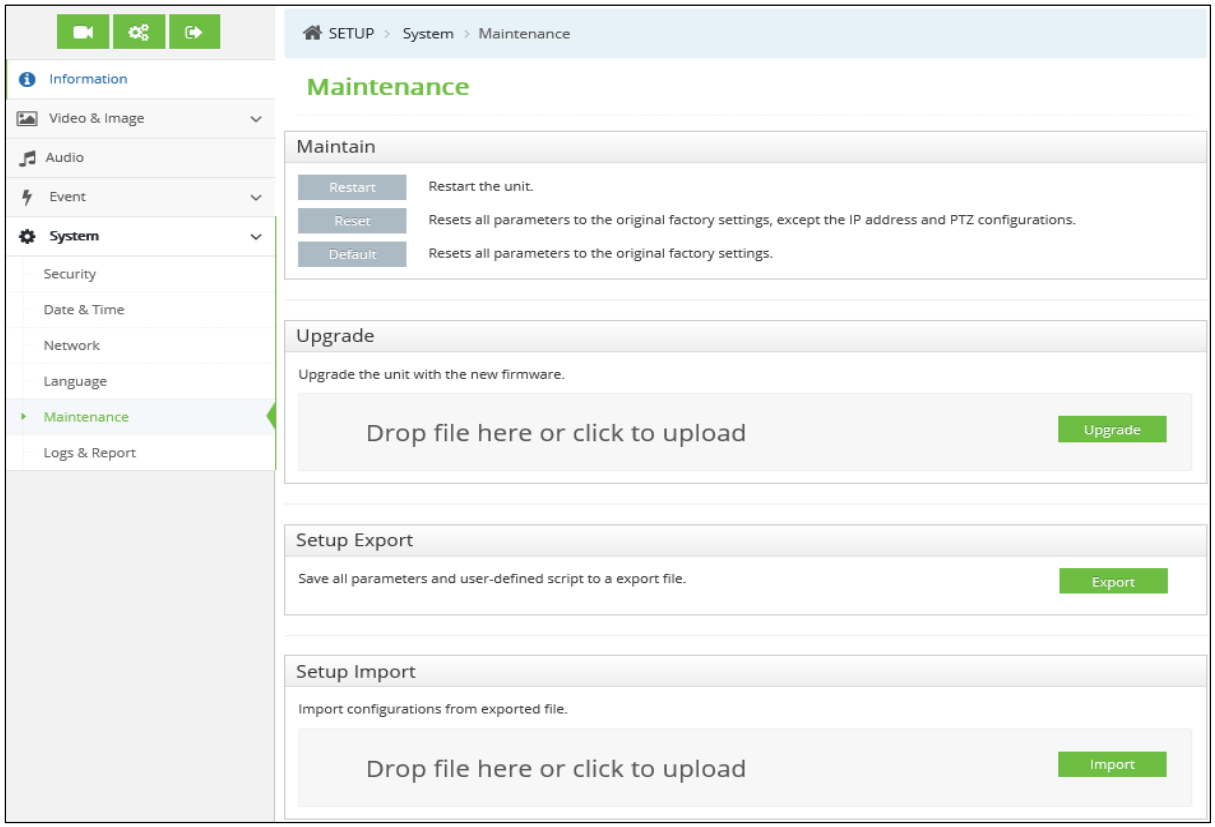
Language

The Language setting allows you to select the display language of the camera's web interface. Choose the desired language from the list, and the menus, messages, and configuration options will be displayed in that language.



Maintenance

Provide software reset of the camera when troubleshooting.



Restart: Camera is restarted without changing any settings. Use this method if the camera is not behaving as expected.

Reset: Camera is restarted and most current settings are reset to factory default values, but the following settings does not reset.

- The boot protocol (DHCP or static)
- The static IP address
- The default router
- The subnet mask
- The system time

Default: The Default button should be used with caution. Pressing this returns the camera's settings to the factory default values, including the IP address.

Upgrade: Provides the latest firmware for the camera. When you upgrade the firmware with a file, the camera receives the latest available functionality and enhanced reliability. Follow these steps to upgrade the firmware:

1. Click the Browse button.
2. Browse to the desired firmware file on your computer.
3. Click Upgrade button.

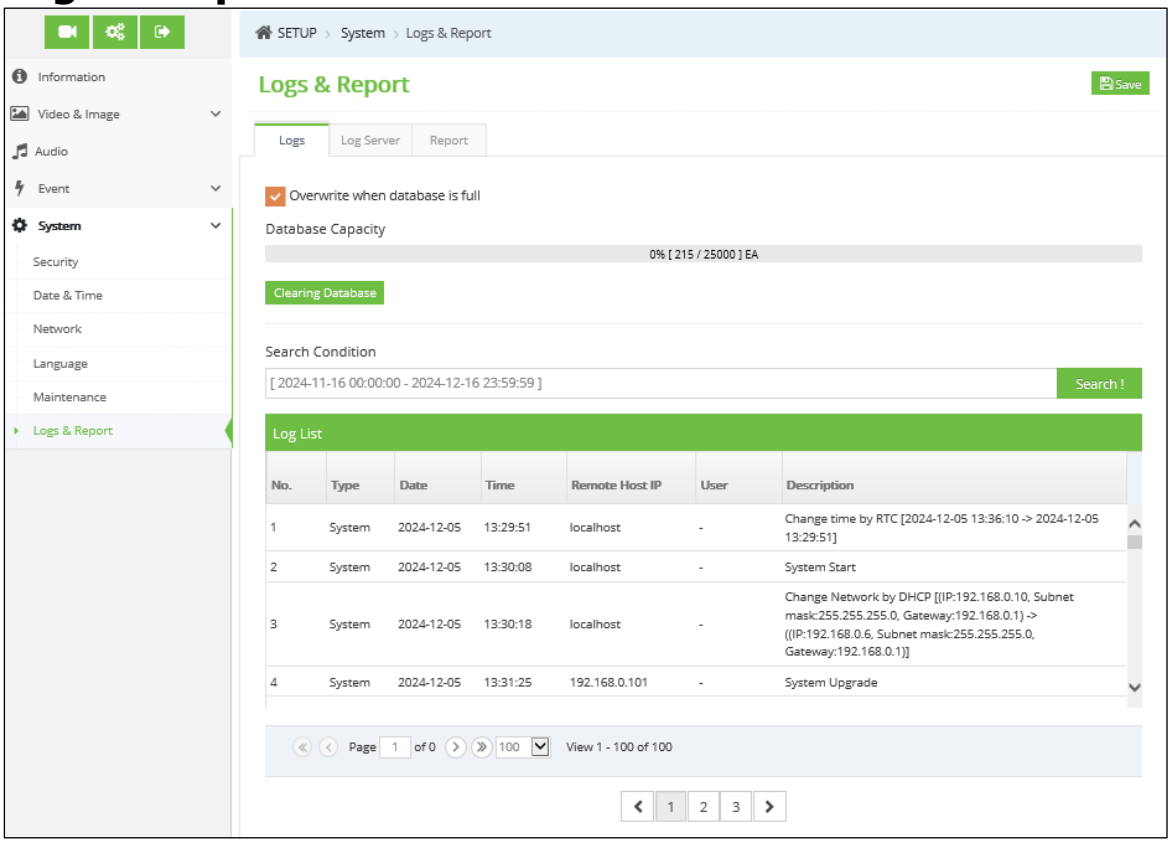
**** Note***

Do not disconnect power to the camera during the upgrade. The camera will restarts automatically after the upgrade has completed. (Approximately 2~3 minutes)

Setup Export: Save all parameters and user-defined scripts to a backup file. Click the Backup button to create a backup of all the parameters and any user-defined scripts.
Setup Import: Use a saved backup file to restore the unit to a previous configuration. Click the Browse button to locate the saved backup file and then click the Restore button.

**** Note***
The Setup Export and Import functions can only be used on the same unit running the same firmware.
This feature is not intended for the configuring of multiple units or for firmware upgrades.

Logs & Report



Logs: The log files record events in the unit since the last system restart and can be a useful diagnostic tool when troubleshooting. The Report contains important information about the system.
Database Capacity: Indicate the log file capacity.
Clearing Database: Delete log files in the database.
Search Condition: Enter a log parameter to search for specific log item.
Log List: Provides log information.
Report: Provides information about the server status and should be included when requesting a report. Information found here includes the camera's firmware version, MAC address, system information, IP address and network connections.

Troubleshooting

If you suspect a problem is being caused by incorrect configuration or some other minor problem, consult the troubleshooting guide below.

Upgrading the Firmware

Firmware is software that determines the functionality of the network camera. One of your first actions when troubleshooting a problem should be to check the current firmware. The latest version may contain a correction that fixes your particular problem. The current firmware version in your camera is displayed on the Basic Configuration or About. For the latest firmware of the camera, please contact with your product administrator.
Detailed instructions on how to perform the upgrade process are provided with each new release. See also the Maintenancen/ Upgrade for more information.

General Troubleshooting

The following list covers some of the problems that may be encountered and suggests how to remedy them:

Symptom → Possible Causes or Corrective Actions

1. 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.
2. 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.
3. 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).
4. The camera cannot be accessed via a host name.
→ Check that the host name and DNS server settings are correct.
5. 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.
6. No image using Refresh and/or slow updating of images.
→ if images are very complex, try limiting the number of clients accessing the camera.
7. Images only shown in black & white.
→ Check the Video & Image setting.

8. Blurred images.
→ Refocus the camera.
9. 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.
10. Rolling dark bands or flickering in image.
→ Try adjusting the Exposure Control setting under AE and AWB part.
11. H.264/H.265 not displayed in the client.
→ Check that the correct network interface is selected in the Video & Image/Stream.
12. Multicast H.264/H.265 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.
13. Multicast H.264/H.265 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 configured. The TTL value may need to be increased.
14. Color saturation is different in H.264/H.265 and Motion JPEG.
→ Modify the settings for your graphics adapter. Please see the adapter's documentation for more information.
15. Poor audio quality.
→ Too many users/clients connected to the camera may affect the sound quality adversely. Try limiting the number of clients allowed to connect.
16. Distorted audio.
→ Check that the correct Audio Input source is selected. Select Microphone for a connected external microphone. Select Line for a connected line in source.

NOTE

If you cannot find the help you require, please see the User's Manual, or contact with your network administrator.