Network Camera User Manual

4G Solar-powered Varifocal Security Camera

Version: V1.0

Date: 2026-07-22

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Chapter 1. Introduction

Thank you for purchasing our product. If there is any question or request, please do not hesitate to contact your dealer.

This manual may contain several technically incorrect places or printing errors, and the content is subject to change without notice. The updates will be added into the new version of this manual. We will readily improve or update the products or procedures described in the manual.

This Manual explains how to use and manage Milesight 4G Solar-powered Varifocal Security Camera. Please read this manual carefully before the operation and retain it for future reference.

1.1 Copyright Statement

This manual may not be reproduced in any form or by any means to create any derivative such as translation, transformation, or adaptation without the prior written permission of Xiamen Milesight IoT Co., Ltd (Hereinafter referred to as Milesight).

Milesight reserves the right to change this manual and the specifications without prior notice. The latest specifications and user documentation for all Milesight products are available on our official website https://www.milesight.com/security/

1.2 Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss. The precaution measures are divided into “Warnings” and “Cautions”

Warnings: Serious injury or death may be caused if any of these warnings is neglected.

- This installation must be conducted by a qualified service person and should strictly comply with the electrical safety regulations of the local region
- To avoid risk of fire and electric shock, do keep the product away from rain and moisture before installed.
- Do not touch components such as heat sinks, power regulators, and processors, which may be hot
- Please make sure the plug is firmly inserted into the power socket

• If the product does not work properly, please contact your dealer. Never attempt to disassemble the camera by yourself

Cautions: Injury or equipment damage may be caused if any of these cautions are neglected.

- Make sure that the power supply voltage is correct before using the camera
- Do not store or install the device in extremely hot or cold temperatures, dusty or damp locations, and do not expose it to high electromagnetic radiation
- Only use components and parts recommended by manufacturer
- Do not drop the camera or subject it to physical shock
- To prevent heat accumulation, do not block air circulation around the camera
- Laser beams may damage image sensors. The surface of image sensors should not be exposed to where a laser beam equipment is used
- Use a blower to remove dust from the lens cover
- Use a soft, dry cloth to clean the surface of the camera. Stubborn stains can be removed using a soft cloth dampened with a small quantity of detergent solution, then wipe dry
- Do not use volatile solvents such as alcohol, benzene or thinners as they may damage the surface finishes
- Save the package to ensure availability of shipping containers for future transportation

1.3 Revision History

Table 1.

Version	Revision Content	Release Date
V1.0	First release	July 2026

1.4 Related Resources

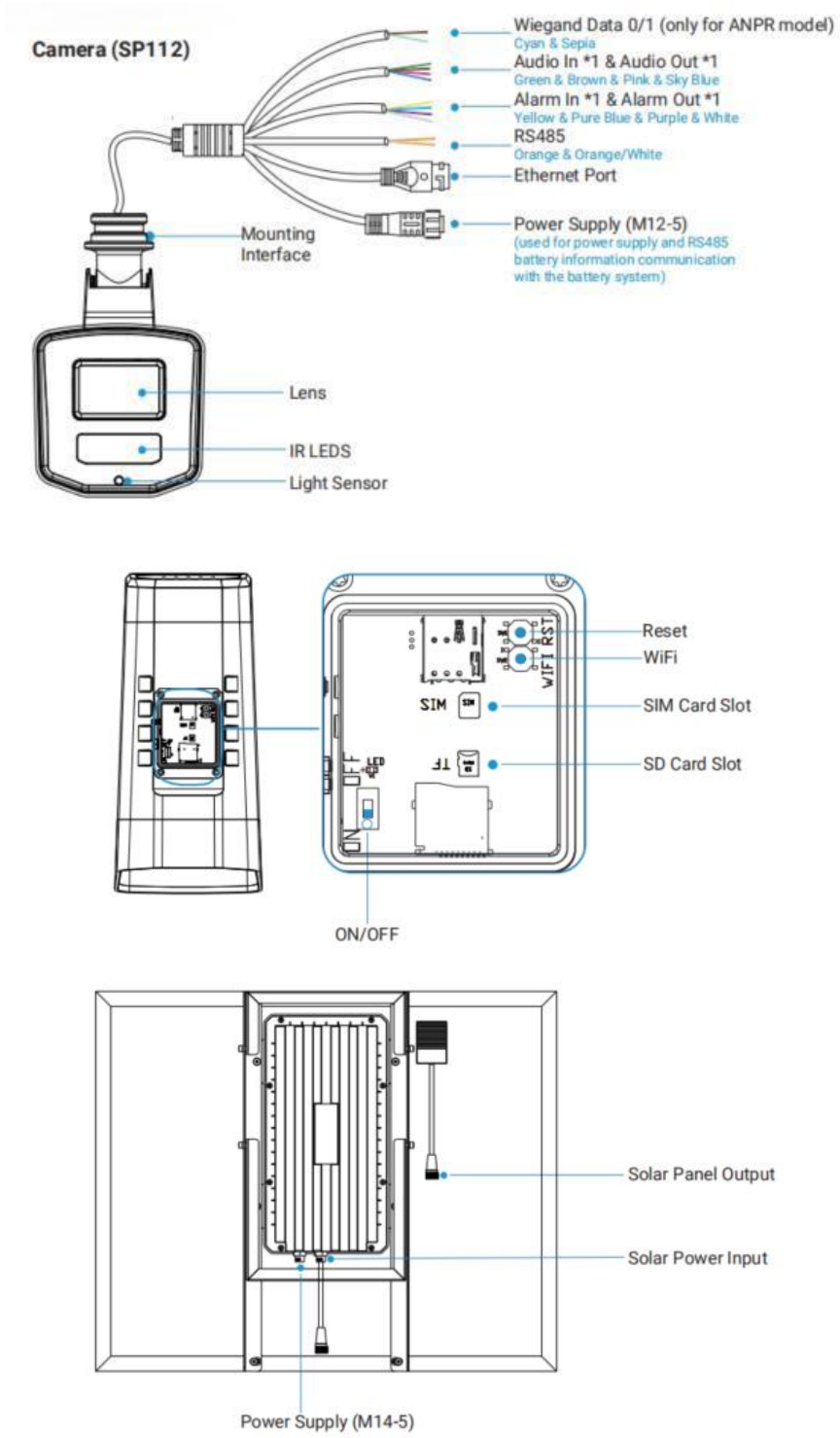
Table 1.

4G Solar-powered Camera Kit	
Resource Type	**Link**
Datasheet - Security	https://resource.milesight.com/milesight/security/document/datasheet/ipc/series-g1/milesight-4g-solar-powered-varifocal-security-camera-datasheet-en.pdf

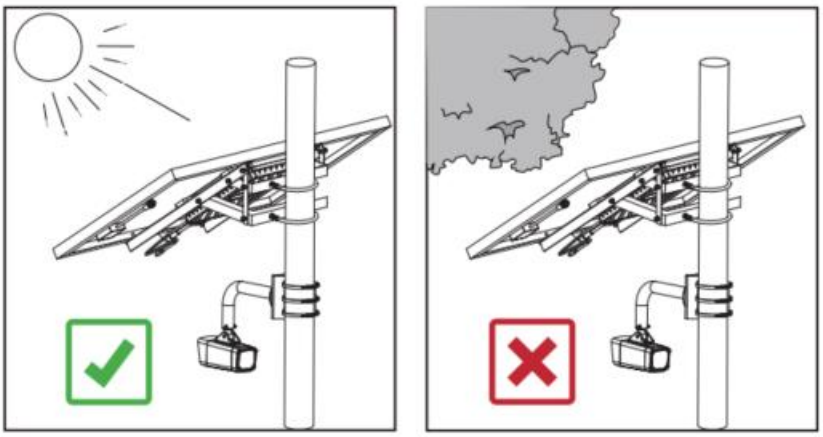
4G Solar-powered Camera Kit	
Quick Start Guide	https://resource.milesight.com/milesight/security/document/user-manual/ipc/milesight-4g-solar-powered-camera-kit-quick-start-guide.pdf

Chapter 2. Product Introduction

2.1 Hardware Overview



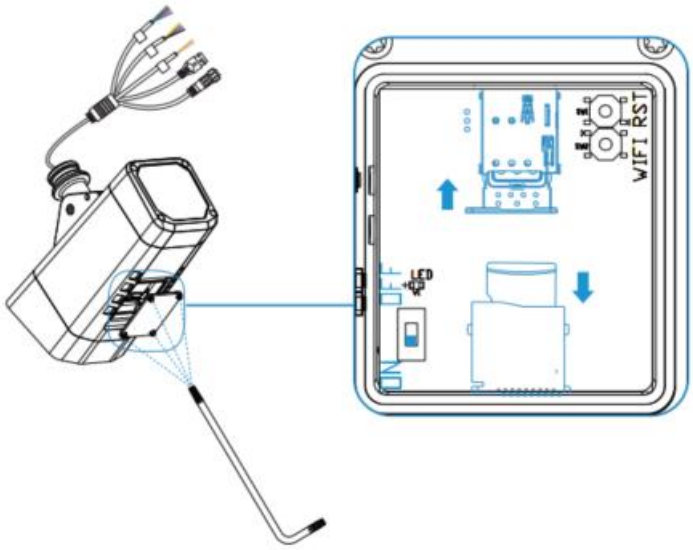
2.2 Installation



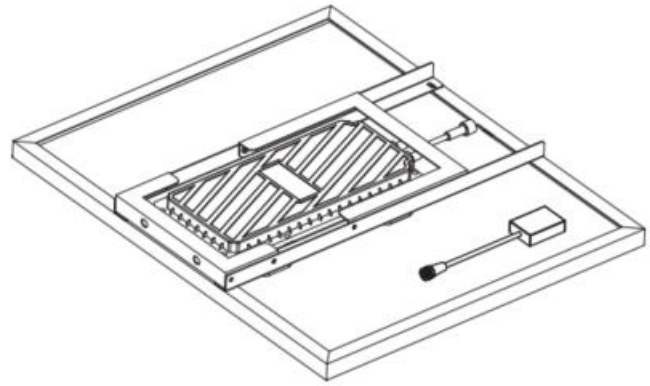
CAUTION

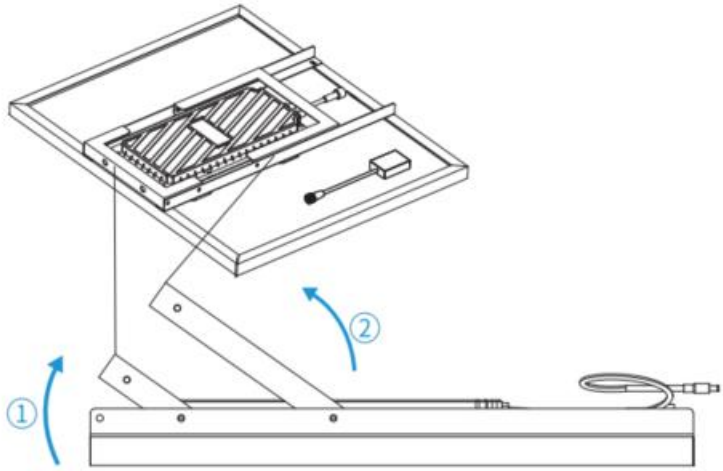
- The best installation direction for solar panels is due southin the northern hemisphere and due north in the southernhemisphere.A compass must be used for positioning
- Solar panels should be installed in an openunobstructedplace directly facing towards the sun for better pawer efficiency.
- Lithium-ion battery should be put through at least one charge-discharge cycle every 3 to 6 months to ensure properoperation.

Step 1: Use a screwdriver to open the back cover at the bottom of the camera. Insert the SD card and SIM card.

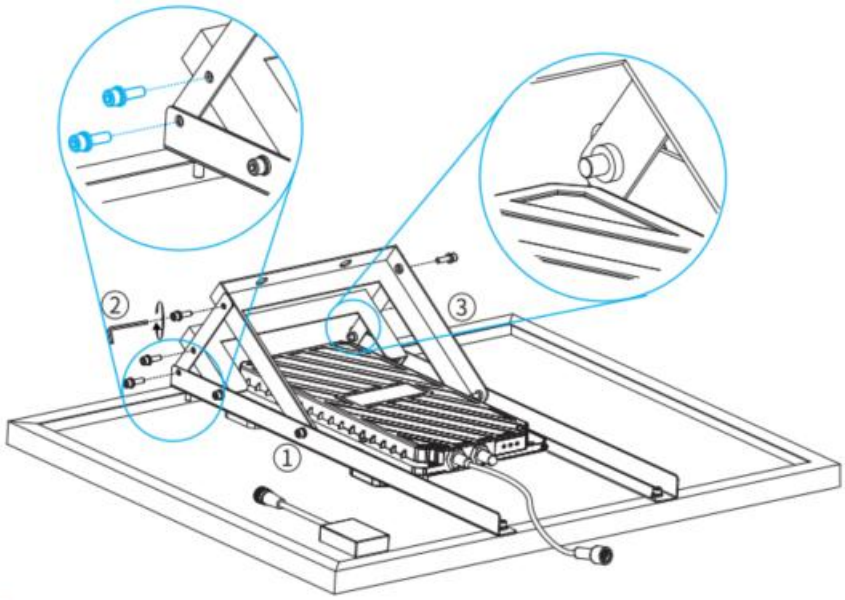


Step 2: Place the solar panel kit horizontally

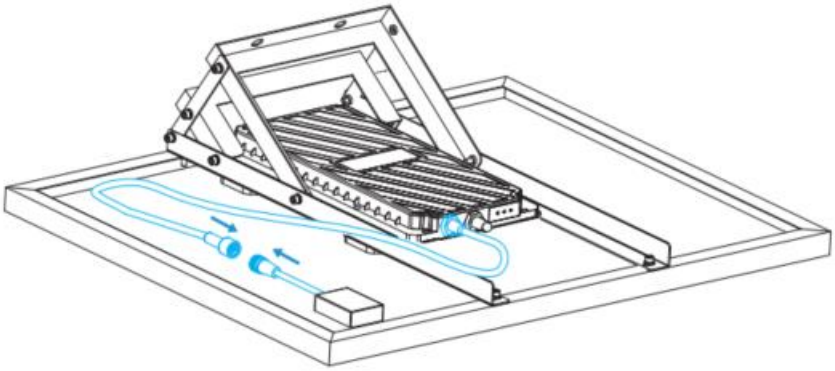




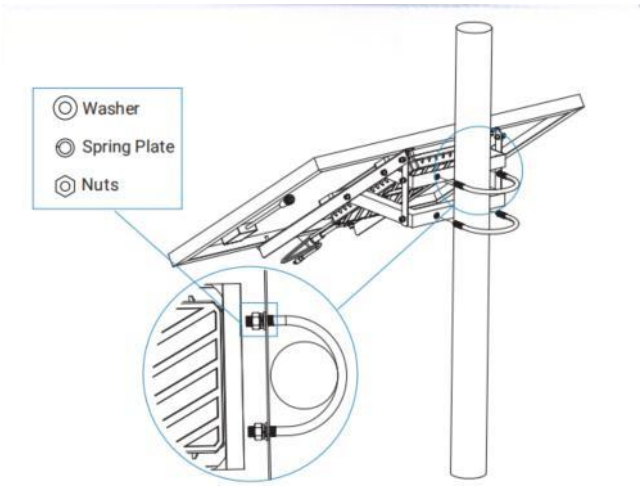
Step 4: Fasten the brackets on both sides. Make sure the screw holes on the top plate line up with the bracket's inner holes.



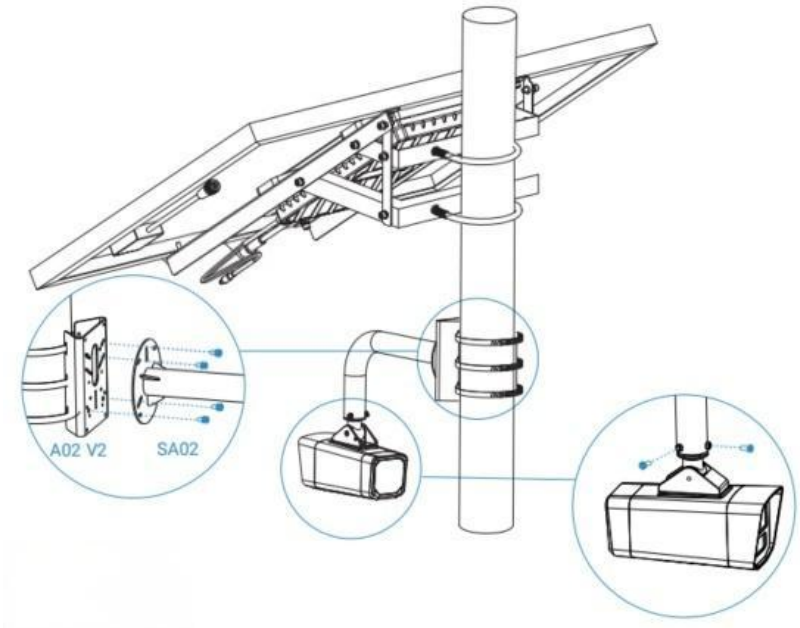
Step 5: Connect the Solar Panel Output to the Solar Power Input on the battery.



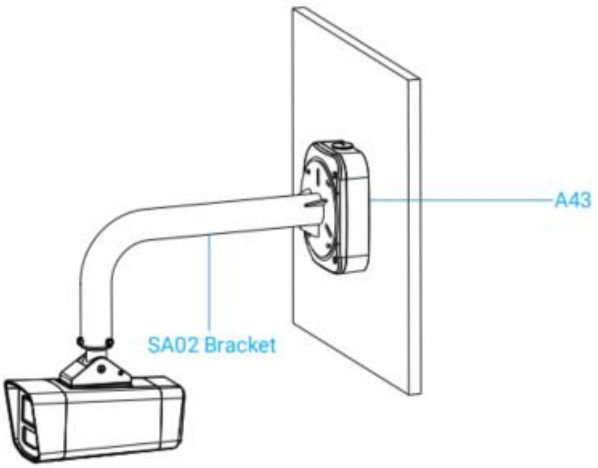
Step 6: Secure the equipment onto a vertical pole (diameter 80mm–114mm) using U-type hoops and the provided fastener sets (including nuts, washers, and spring washers).



Pole Installation

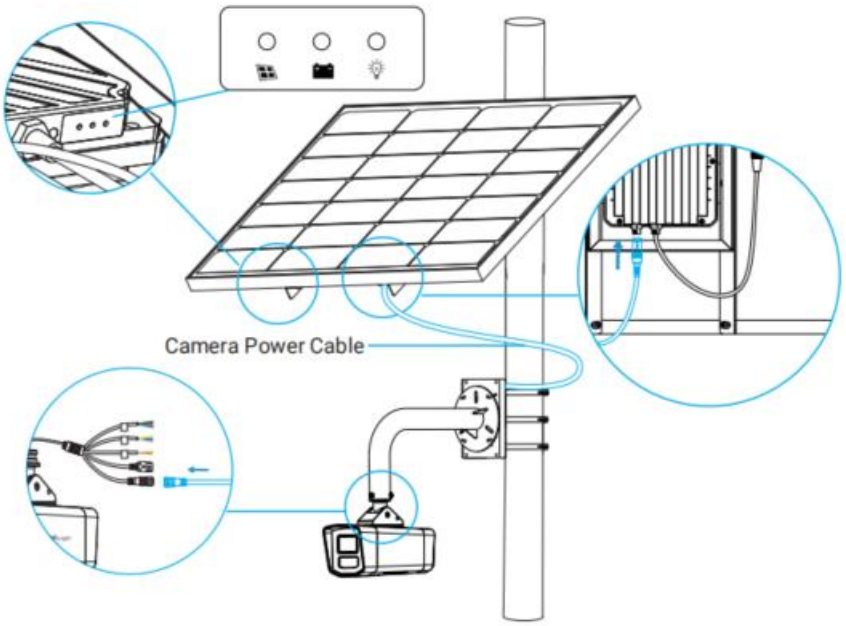


Wall Installation



Step8 :

Connect the power output interface of the solar panel to the Camera Power Cable, and then connect the other end of the cable to the camera. After installing and securing the camera, check the status of the indicator lights.



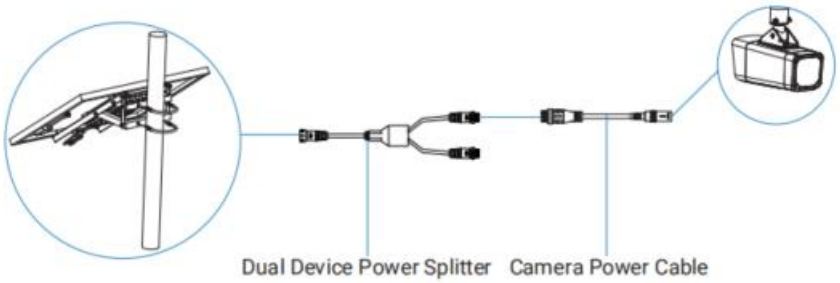
Indicator Light Status:

Indicator	Colour	Status
Solar panel indicator	Green	**ON:** Solar energy is charging the battery **OFF:** Solar energy did not charge the battery **Flashing:** Battery capacity exceeds 95% and the battery is fully charged
Battery indicator	Green	**ON:** Battery voltage is normal **Slow Flashing:** Battery voltage is insufficient and it flickersonce every 4 seconds **Quick Flashing:** Battery low voltage protection flashes onceevery 1 second
Load indicator	Red	**ON:** There is voltage output at the output terminal **OFF:** There is no voltage output at the output terminal

Cable Connection

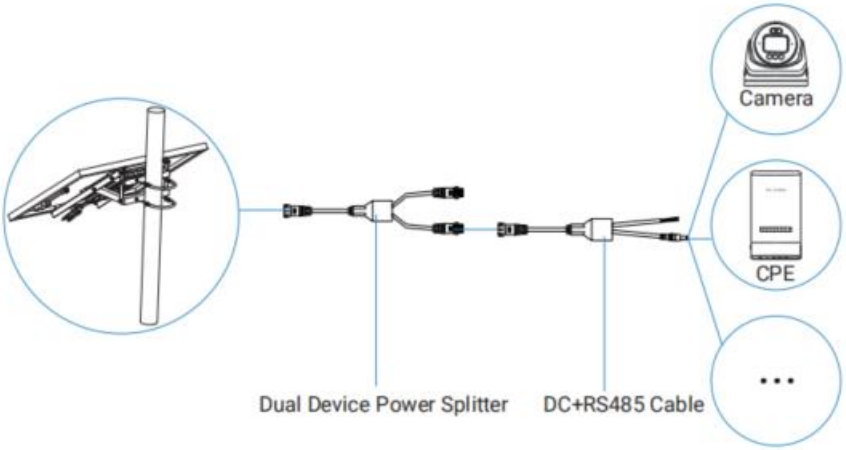
1.Dual Device Power Splitter

A 1-to-2 power cable. Used to simultaneously power two devices (e.g., a network bridge and a camera) from a single solar output.



2. Bridge Data & Power Cable

Supports various DC-powered devices (cameras, network bridges, etc.). Features RS485 data transmission for solar system status monitoring.



Chapter 3. Accessing and Activating the Device

This chapter describes how to activate and access the SP112 camera for the first time, including device activation methods, Web login, AP configuration, and the setup wizard.

3.1 Device Activation

SP112 supports three activation methods:

- Method 1: Wired network via Smart Tools or Web browser. Connect the camera to the network via Ethernet cable. Use Smart Tools to discover and activate the device, or access the camera's IP address directly via a Web browser to complete activation.
- Method 2: WiFi AP mode. Power on the camera and connect your PC to the camera's default WiFi AP (SSID printed on the device label). Open a browser and navigate to the default AP IP address to access the activation page.
- Method 3: Milesight Device Portal. For enterprise deployments, the camera can be activated remotely through the Milesight Device Portal.

Password Requirements:

Parameter	Requirement
Password Length	8-63 characters
Character Requirements	Must include uppercase, lowercase, numbers, and special characters
Password Strength	Weak/Medium: Not allowed to save. Strong (4 character types): Allowed to save
Format Prompt	Password must be between 8-63 characters and include uppercase, lowercase, numbers, and special characters.

Note: *The password must contain all four character types (uppercase, lowercase, numbers, and special characters) to be rated as Strong and allowed to save.*

3.1.1 Accessing and Activating the Device via Ethernet

The Network Camera must be assigned an IP address to be accessible. The default IP address of Milesight network cameras is **192.168.5.190**.

You can either change the IP address of the camera via Smart Tools or browser. Connect the camera in the same LAN of your computer first.

3.1.1.1 Via Smart Tools

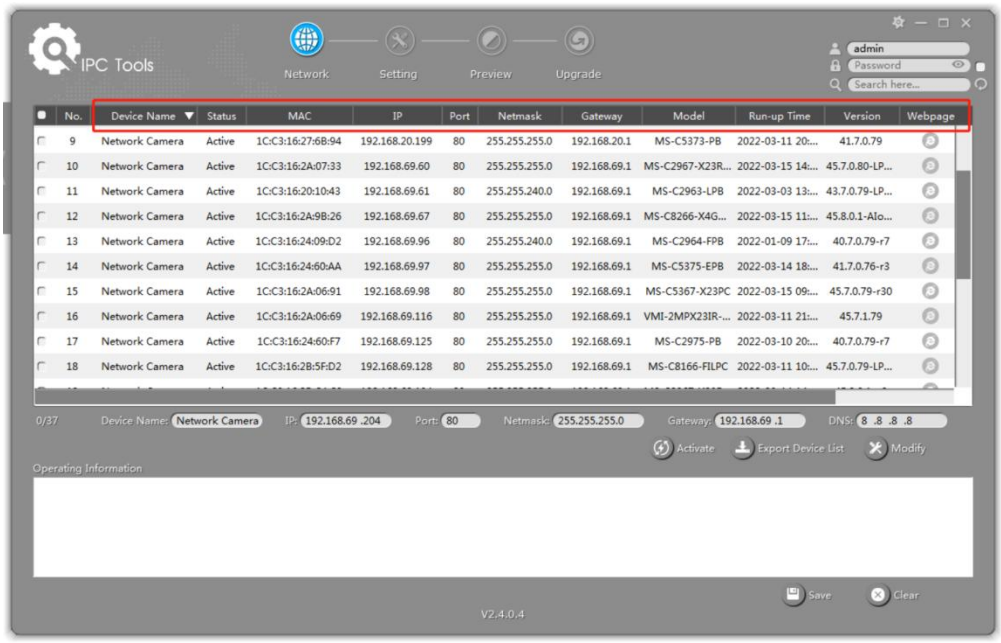
Smart Tools is a software tool which can automatically detect multiple online Milesight network cameras in the LAN, set IP addresses, and manage firmware upgrades. It's recommended to use when assigning IP addresses for multiple cameras.

You can refer to the following steps to assign an IP address via Smart Tools **Step1:** Install

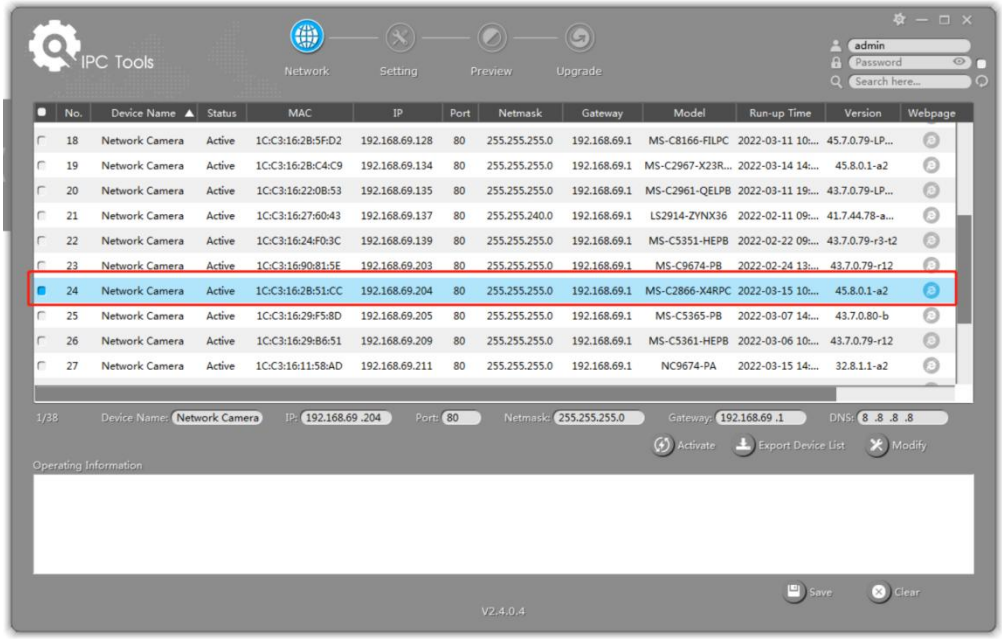
Smart Tools from the official website.

Step2: Start Smart Tools, choose the IPC Tools page, and enter the device information,

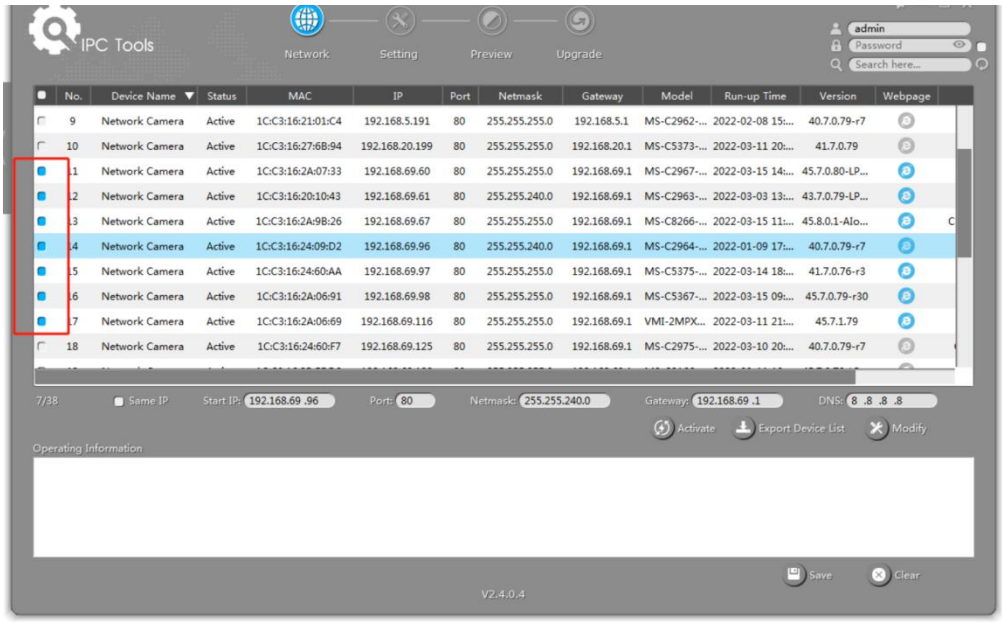
such as IP address, MAC address, Status, Port number, Netmask, and Gateway. All related Milesight network cameras in the same network will be displayed. Details are shown as the figure below.



Step3: Select one or more cameras according to the MAC addresses. *Select a single camera:*



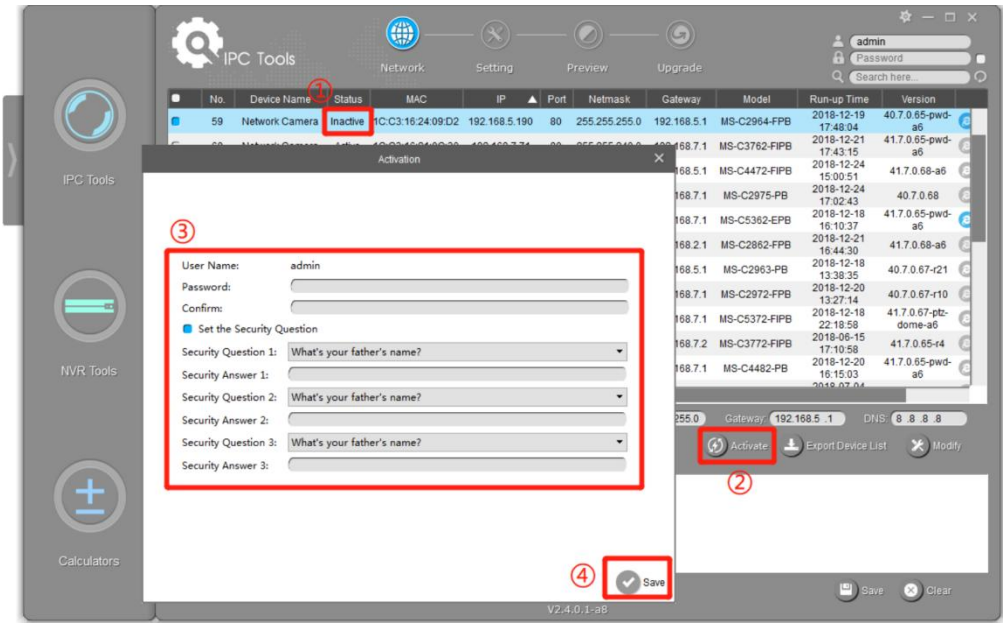
Select multiple cameras:



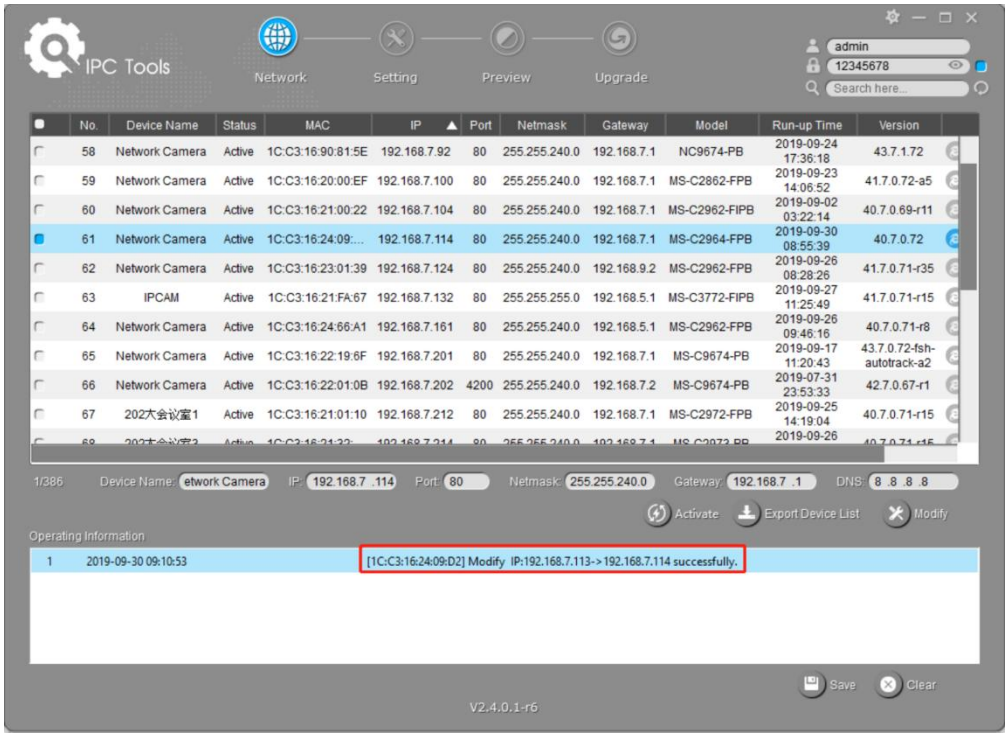
Step4: If the selected cameras show **Inactive** in the status bar, click **Activate** to set the password when using them for the first time. You can also set the security questions when activating the camera in case that you forget the password (You can reset the password by answering three security questions correctly). Click **Save** and it will show that the activation was successful.

Note:

- Upgrade the Smart Tools version to V2.4.0.1 or above to activate the camera.



Step5: After activation, you can change the IP address or other network values, and then click **Modify** button.



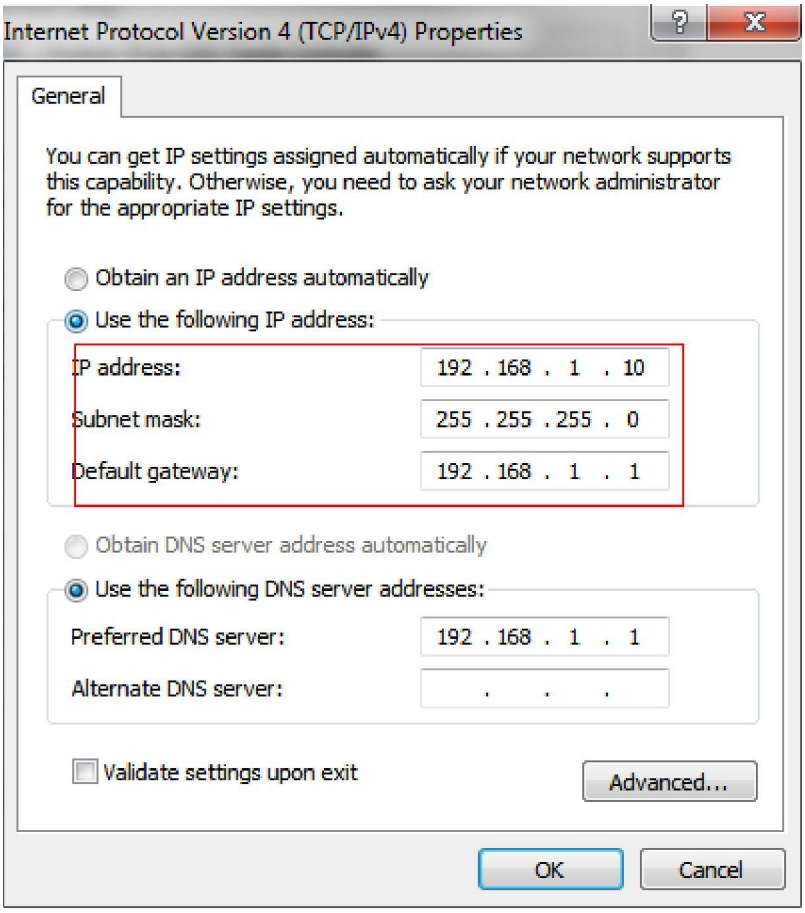
For more usage details about Smart Tools, refer to the ***Smart Tools User Manual***.

3.1.1.2 Via Browser

If the network segment of the computer and that of the camera are different, follow the steps to change the IP address:

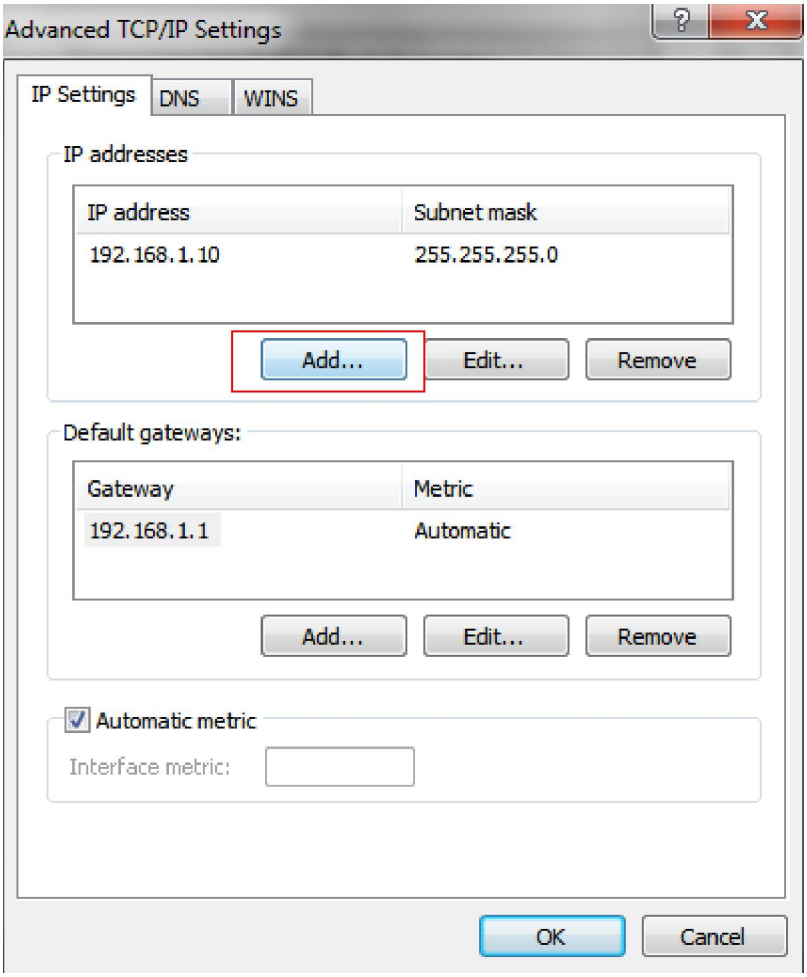
Step1: Change the IP address of computer to 192.168.5.0 segment, there are two ways as below:

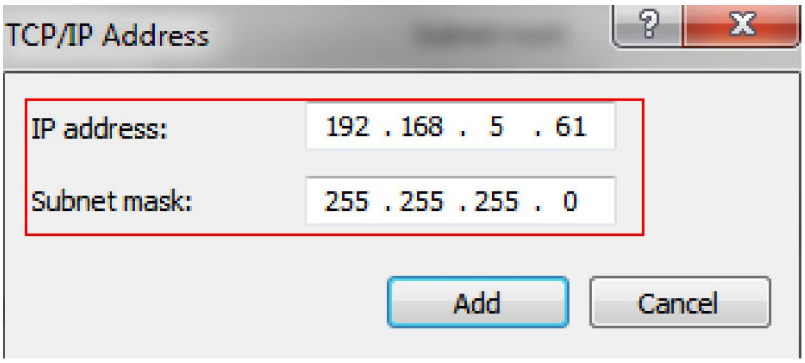
a. Choose **Start** > **Control Panel** > **Network and Internet Connection** > **Network Connection** > **Local Area Connection**, and double click it.



b. Click **Advanced** and choose **IP settings** > **IP address** > **Add**. In the pop-up window, enter an IP address that in the same segment with Milesight network camera (e.g.

192.168.5.61, but please note that this IP address shall not conflict with the IP address on the existing network).





Step2: Open your browser and enter the default IP address of the camera (http://192.168.5.190) in the address bar. On first login, you will be prompted to set a password to activate the device.

3.1.2 Accessing and Activating the Device via Wi-Fi AP

Step 1: Press the camera's WiFi button to turn on the WiFi.

Step 2: Step 2: Use mobile devices or laptop to connect to the device's Wi-Fi.

The Wi-Fi name is SP111_xxxxxx/ SP112_xxxxxx (xxxxxx is the last six bits of the MAC address).

Note:

When the device is powered on, the indicator light will slowly flash green until the device is fully booted, at which point it will remain solid green. The Wi-Fi of device is automatically enabled when the device is powered on.

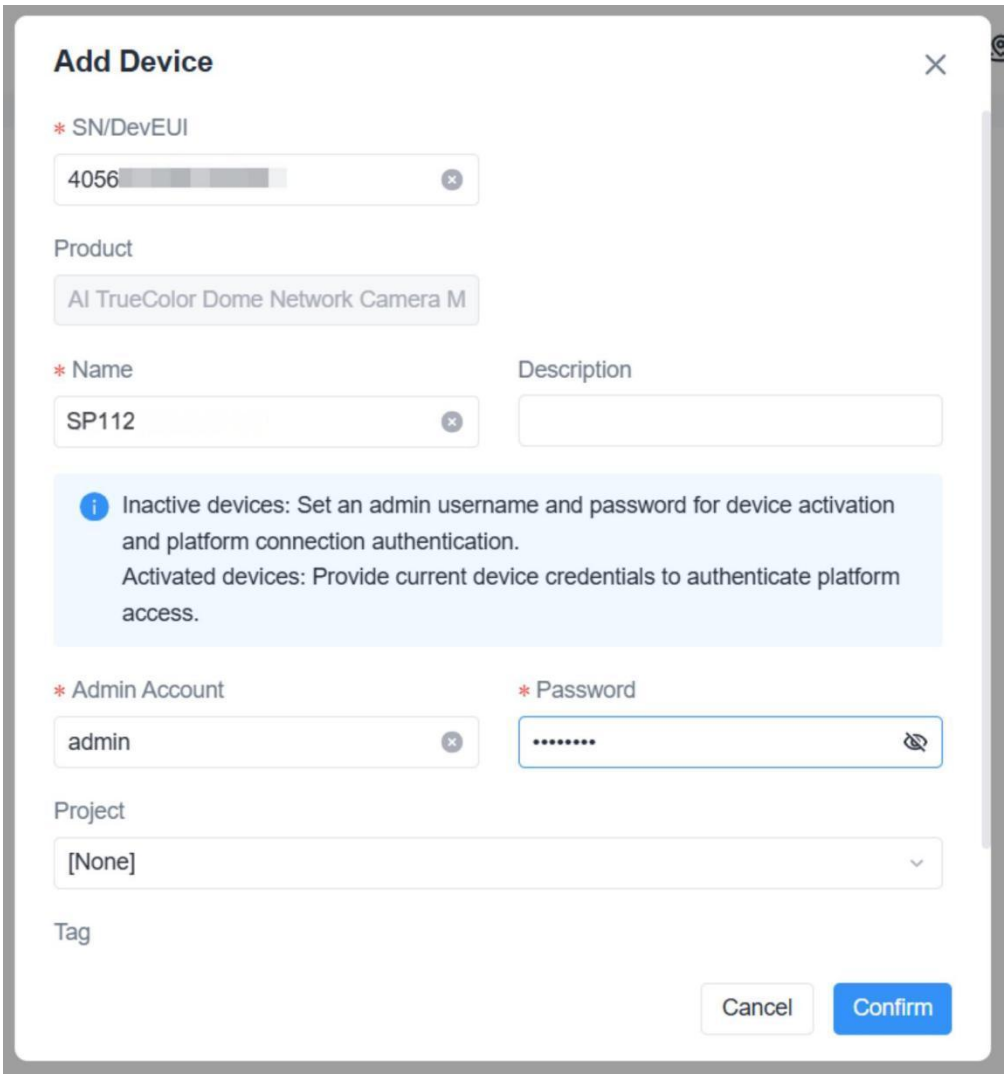
Step 3: Enter the IP address 192.168.1.1 in your browser. You will be prompted to set a password to activate the device upon first login.

3.1.3 Accessing and Activating the Device via Milesight Device Portal

Procedure

1. Log in to Milesight Device Portal.
2. On the top bar, select the **Device** tab.

3. Click **Add**.
4. In the pop-up window, fill in the basic information.



a. In the **SN/DevEUI** field, enter the device's SN (Serial Number) or EUI (Extended Unique Identifier).

If the SN/EUI is correct, the system automatically detects the device type.

b. In the **Name** field, specify a name to help you identify this device.

c. **Optional**: Enter the device description.

d. In the **Admin Account** and **Password** field, enter the admin username and password for adding the device.

- If the device has not been activated, the admin username and password are setting for device activation and platform connection authentication.
- If the device has been activated, the admin username and password are used to provide current device credentials to authenticate platform access.

Note: For more detailed information, please refer to the **Milesight Device Portal User Manual**.

3.2 Web Login

After device activation and AP configuration, access the camera's Web interface using a browser.

The login page provides the following features:

3.3.1 Login Page

Step1: Open a Web browser (Chrome 120+, Edge 120+, or Firefox 120+ recommended) and enter the camera's IP address in the address bar.

Step2: Enter the admin username and password configured during activation.

Step3: Click Login to access the Web interface.

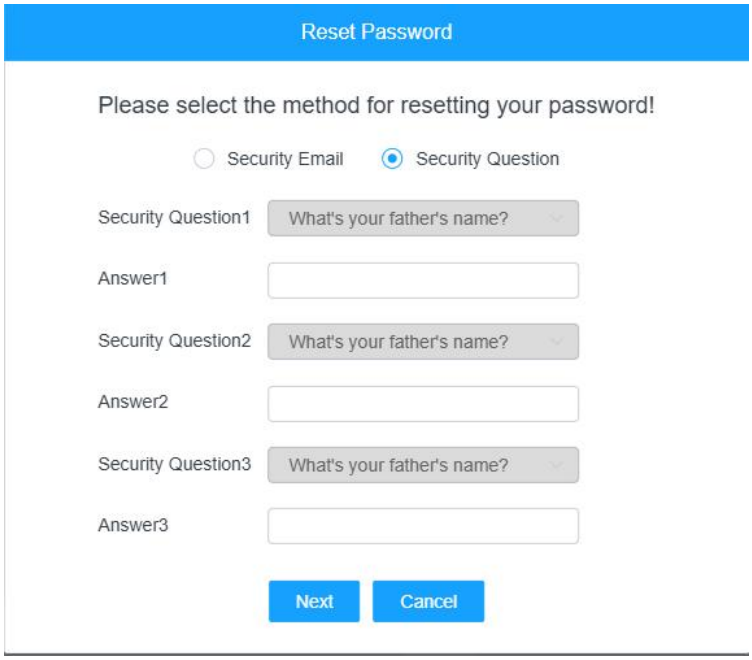
Password Lockout Policy:

- After 5 consecutive failed login attempts, the account will be locked for 10 minutes.

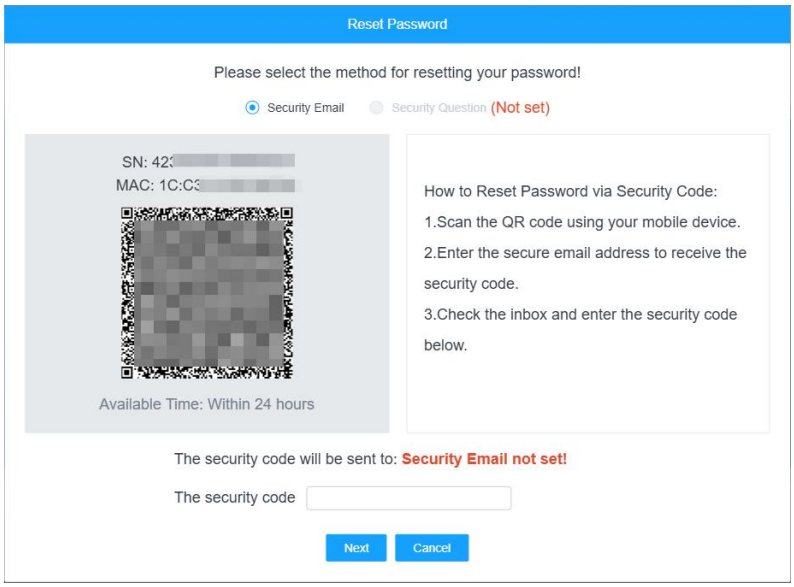
3.3.2 Password Reset

SP112 supports two password reset methods:

- **Security Question:** If a security question was configured, click "Forgot Password" on the login page, answer the security question correctly, and set a new password.



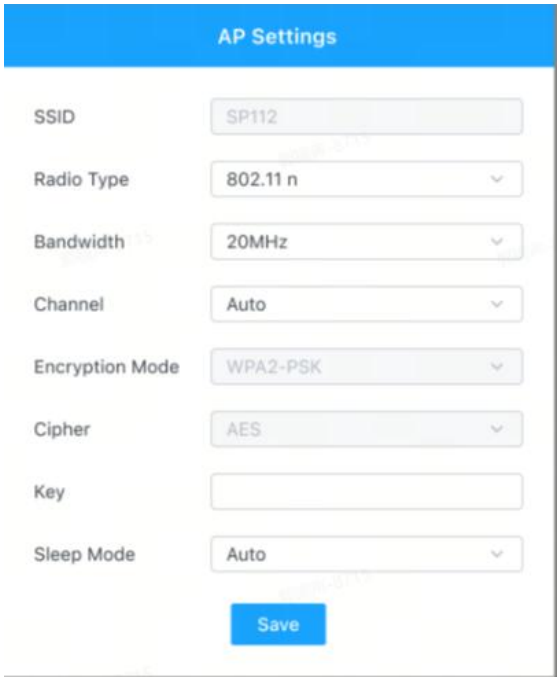
- **Security Email:** If a security email was configured, click "Forgot Password", enter the registered email address, and a password reset link will be sent to the email. Follow the link to set a new password.



Note: *At least one password recovery method (security question or security email) must be configured to enable password reset. It is strongly recommended to configure both methods for account security.*

3.3.3 AP Configuration

After successful activation and login, the system checks whether the AP (Access Point) has been configured with a password. If not, the AP Settings dialog will automatically appear. Users must complete the AP configuration before accessing the Web interface.



Parameter	Description	Notes
SSID	WiFi network name broadcast by the camera	Configurable, max 32 characters
Radio Type	Wireless radio standard (802.11g/n)	Auto-detected based on hardware
Bandwidth	Channel bandwidth (20MHz/40MHz)	20MHz recommended for stability
Channel	WiFi channel number	Auto or manual selection
Encryption Mode	WiFi security encryption	Fixed to WPA2-PSK
Cipher	Encryption algorithm	Fixed to AES

Key (AP Password): The AP password must be 8-63 characters and include uppercase, lowercase, numbers, and special characters. This password is required for wireless clients to connect to the camera's AP. The format validation is identical to the admin password requirements. If the AP password is not set or does not meet the requirements, the system will continue to display the AP Settings dialog on every Web access until properly configured.

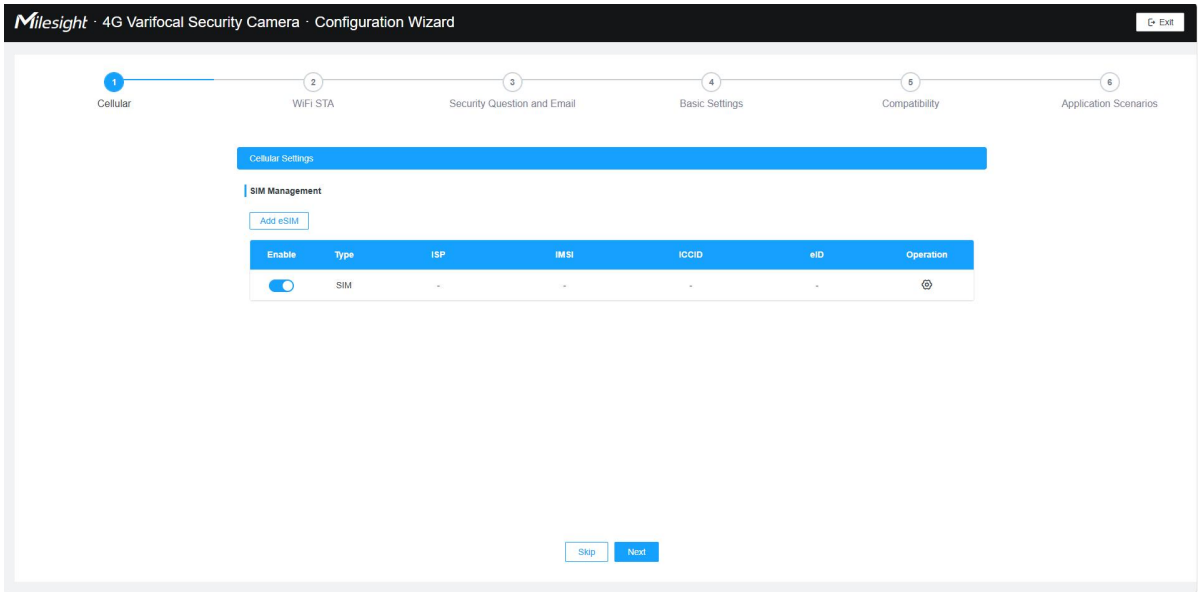
Step1: After activation login, if the AP Settings dialog appears, configure the above parameters and the Key fields.

Step2: Click Save. The system will display: "Wait for the device's Wi-Fi to restart, then reconnect and refresh the interface."

Step3: Wait for the WiFi to restart, then reconnect to the camera and refresh the browser.

3.3.4 Configuration Wizard

After first-time login, the Configuration Wizard automatically launches to guide users through essential device setup. The wizard consists of six steps, with all settings saved together on the final page (not individually per step).



Step	Content	Description
Step 1	Cellular	Configure Cellular settings (4G/5G network connection)
Step 2	WiFi STA	Configure WiFi client mode (connect camera to existing WiFi network)
Step 3	Security Question/Email	Set security question and/or security email for password recovery
Step 4	Basic Settings	Configure device name, date/time, system language, and admin password
Step 5	Compatibility	Enable ONVIF and other protocol compatibility settings
Step 6	Application Scenarios	Select deployment scenario template

Wizard Trigger Conditions:

- The wizard auto-launches after the first successful login following activation.
- The wizard also appears after factory reset when the user first logs in.
- Users can manually launch the wizard at any time by clicking the Wizard button in the top navigation bar.

• If the wizard was skipped during initial setup, it will not auto-appear on subsequent logins. Use the manual launch method instead.

Chapter 4. Live Video

After logging in the network camera web GUI successfully, user is allowed to view live video as follows.

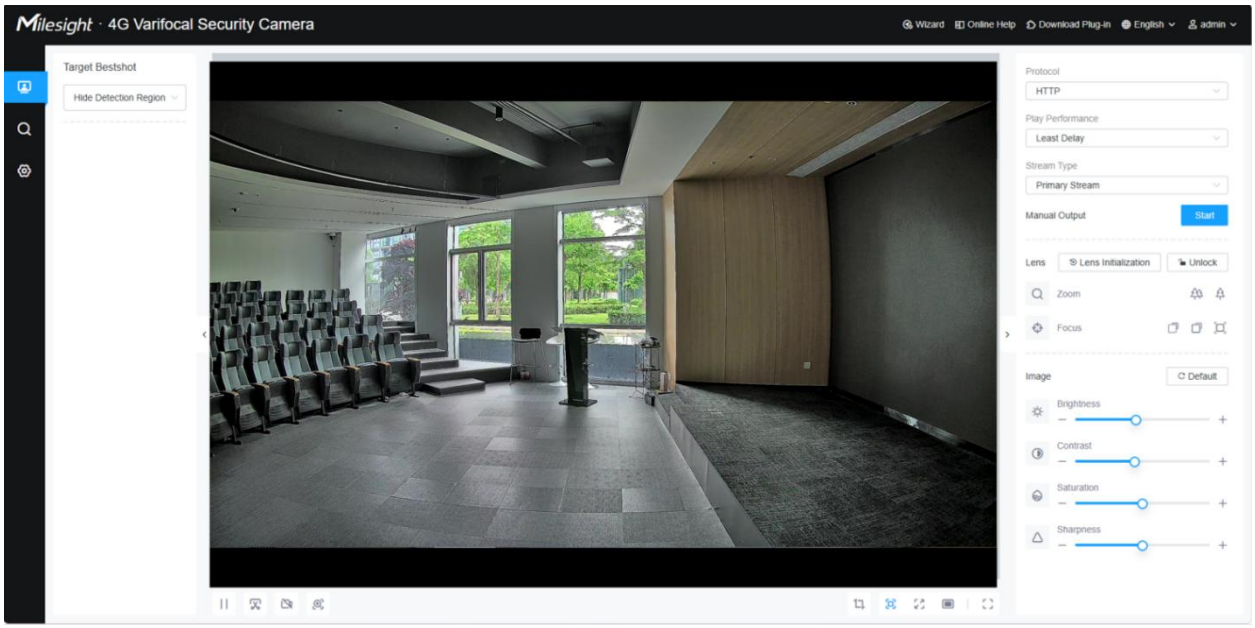
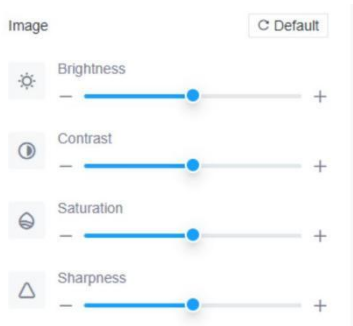


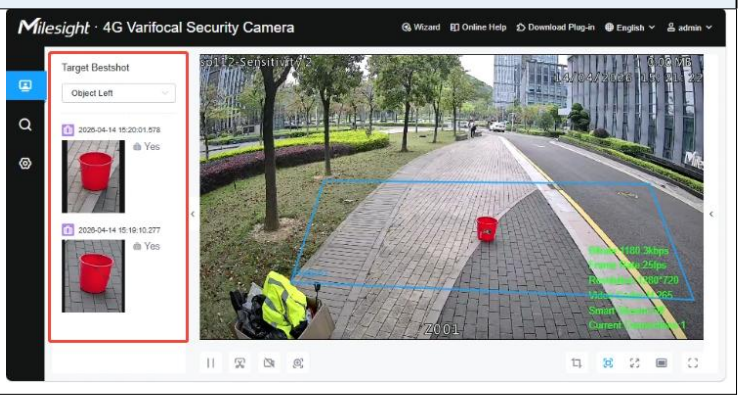
Table 2. Description of the buttons

No.	Parameter	Description
Navigation Bar	Wizard Wizard	After initial setup, users can manually launch the 6-step Configuration Wizard at any time to reconfigure multiple settings through a guided interface. Clicking the Wizard button opens the wizard from Step 1, with existing settings pre-filled.
	Online Help Online Help	Access online help documentation
	Download Plug-in Plugin Download	To enhance video preview quality, download and install the Mplayer browser plugin, which provides smoother and more reliable video playback. The plugin installation package is hosted on a cloud server; clicking the "Plugin Download" button will automatically download the latest compatible version. Please ensure your device is connected to the internet. If the device is offline, contact technical support to obtain the installation package. **Note:** This plugin is only compatible with Windows systems.

No.	Parameter	Description
	English Language	Interface language selection
	admin Logout	Display the user name and click to logout.
	Live Video	Click to access the live view page.
	Playback	Click to access the playback page.
	Settings	Click to access the configuration page.
General	Protocol HTTP Play Performance Least Delay Stream Type Primary Stream Manual Output Start	**Protocol:** Choose either UDP, TCP, or HTTP based on your specific needs and network conditions.
		Play Performance: Choose either **Least Delay**, **Balanced**, or **Best Fluency** based on your specific needs and network conditions.
		Stream Type: Choose the stream (**Primary/Secondary/Tertiary**) to show on the current video window.
		Manual Output: Manually trigger Camera Alarm Output.
Lens	Lens Initialization Lens initialization	Resets the lens to its default calibration state and re-initializes all lens control parameters.
	Lock / Unlock Lock/Unlock	Click to ebable or disable zoom and focus, and other lens configuration functions.

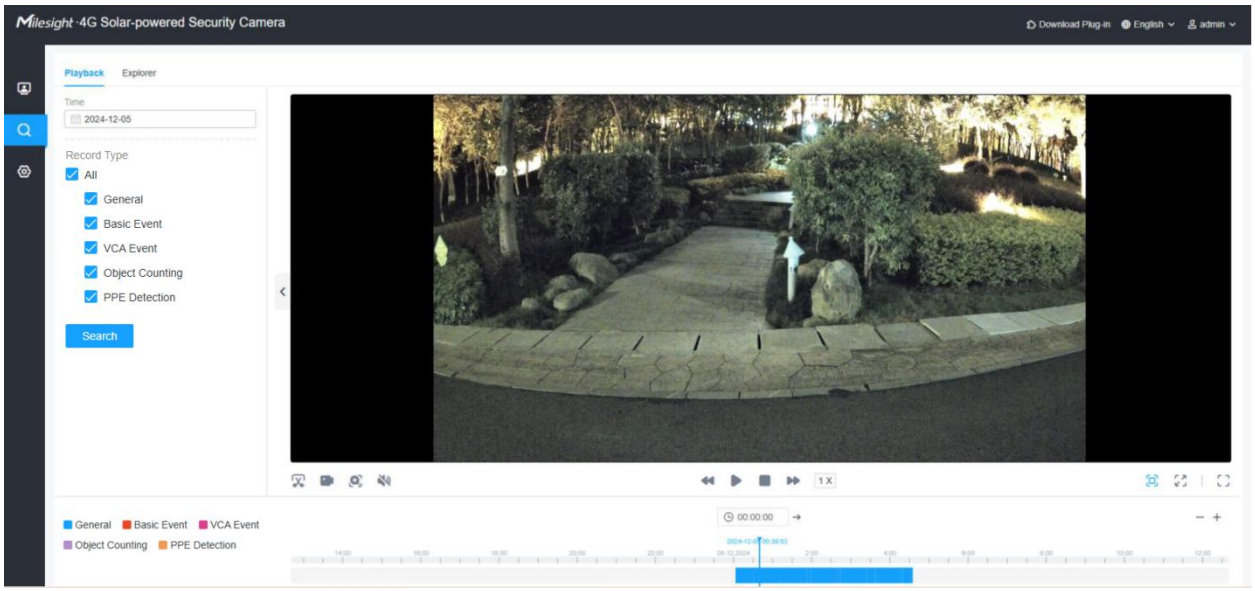
No.	Parameter	Description
	Zoom-/Zoom+	Adjust the lens focus to make the image clearer. Press **Focus +** or **Focus -** to fine-tune the sharpness until the target object is clearly visible.
	Focus-/Focus+	Adjust the lens focus to make the image clearer. Press **Focus +** or **Focus -** to fine-tune the sharpness until the target object is clearly visible.
	Auxiliary Focus	Assists in achieving precise focus with a single click. When manual focus adjustment fails to produce a clear image, click this button to automatically fine-tune the focus to the sharpest position.
Image		**Brightness**: Adjust the Brightness of the scene.
		Contrast: Adjust the color and light contrast.
		Saturation: Adjust the Saturation of the image. Higher Saturation makes colors appear more "pure" while lower one appears more “wash-out”.
		Sharpness: Adjust the Sharpness of image. Higher Sharpness sharps the pixel boundary and makes the image looks “more clear”.
Toolbar	Stop/Play	**Stop/Play** live view.
	Snapshot	Click to capture the current image and save to the configured path.
		Click to **Start Recording** video and save to the configured path. Click again to **Stop Recording**.
	Start/Stop Recording	Click to **Start Recording** video and save to the configured path. Click again to **Stop Recording**.

No.	Parameter	Description
	Digital Zoom	When enabled, you can zoom in a specific are a of video image with your mouse wheel.
	Pixel Counter	By clicking to enable the Pixel Counter function, you can either input the pixel value or draw on the live view to measure the object's size.
	Auto-Original Ratio	This setting maintains the original aspect ratio of the video feed. The video will be displayed in its native dimensions without any distortion.
	Auto-Resize	This setting automatically resizes the video to fit the display window while attempting to maintain the aspect ratio. It may introduce slight adjustments to ensure the video fits well within the available space.
	100%	This setting displays the video at its actual size (100% scale) without any resizing. The video will appear in its true pixel dimensions.
	Full Screen	Click to display images at full-screen.
Target Bestshot	Hide Detection Region	Supports the push and display of recognition information and images for AI applications.

No.	Parameter	Description
		

Chapter 5. Search

5.1 Playback



Click to enter playback interface. In this part, you can search and playback the recorded video files stored in SD cards or NAS. The Playback interface is as below:

Step1: Click the "**Search**" botton, choose the data and record type when the window pops up.

Step2: The timeline displays the video files for the day and show different colors according to selected record type. Drag the progress bar with the mouse to locate the exact playback point as needed.

Note: You can also input the time and click → to locate the playback point in the

filed. You can also click -+ to zoom out/in the progress bar.

Step3: Click to play the video files found on this date. The toolbar on the button of playback interface can be used to control playing progress.

Table 3. Description of the buttons

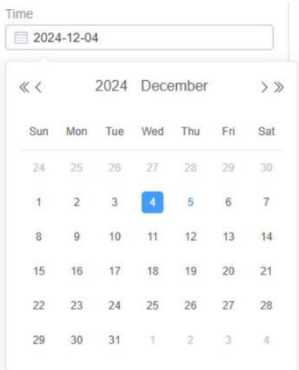
No.	Parameter	Description
		Search the recorded videos by record type (**All/General/ Basic Event/VCA Event/Object Counting/PPE Detection**). The timeline will show different colors according to selected record type as below: General Basic Event VCA Event Object Counting PPE Detection
1	/ / 1 X Speed Down/Speed Up/Speed	Adjust the speed of video playback. **Speed Down:** Includes 0.5X and 0.25X for Play. **Speed Up:** Includes 2X and 4X for Play. **Speed:** The default playback speed is 1X
2	/ Play/Pause	Play/Pause the video.
3	Stop	Stop the video.
4	00:00:00 Search Time	Select the time that want to locate.
5	→ Jump	Go To.

Table 4. Description of the buttons

No.	Parameter	Description
1	/ Mute	Click to enable the audio.

No.	Parameter	Description
2	Snapshot	Click to take a snapshot.
3	/ Start/Stop recording	Click to start/stop recording.
4	Digital Zoom	Click to zoom on/off .
5	Full Screen	Full Screen.
6	− + Time Expand/Narrow	Time narrow/expand.

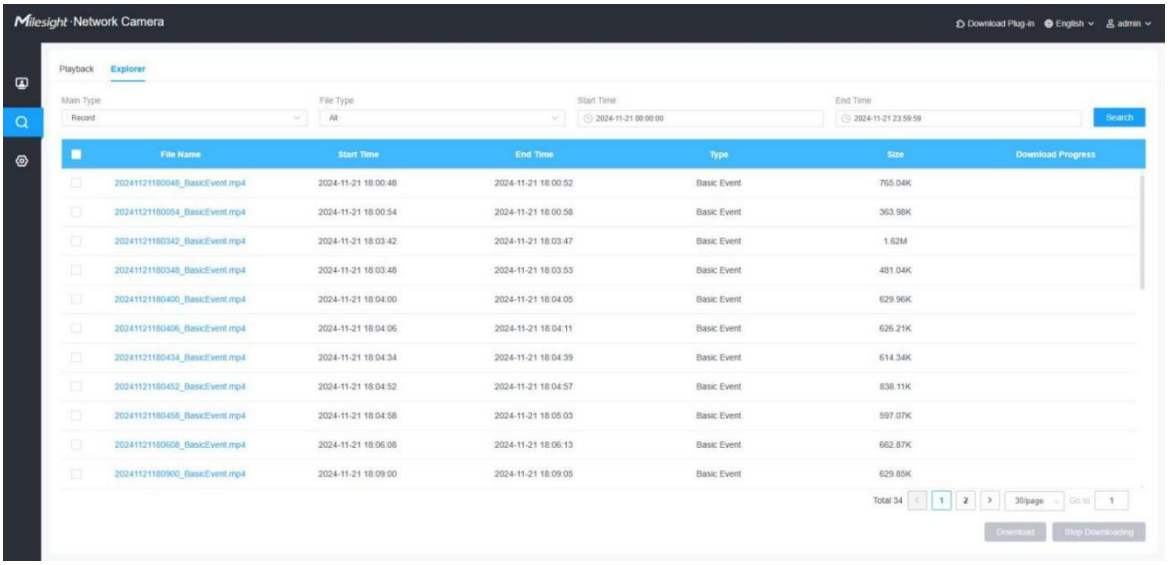
5.2 Explorer

Files will be seen on this page when they are configured to save into SD card or NAS. You can set time schedule every day for recording videos and save video files to your desired location.

Note: Files are visible once SD card is inserted. Don't insert or pull out SD card when power on

Video files are arranged by date. Set file type and start/end time to search out files. Each day files will be displayed under the corresponding date, from here you can

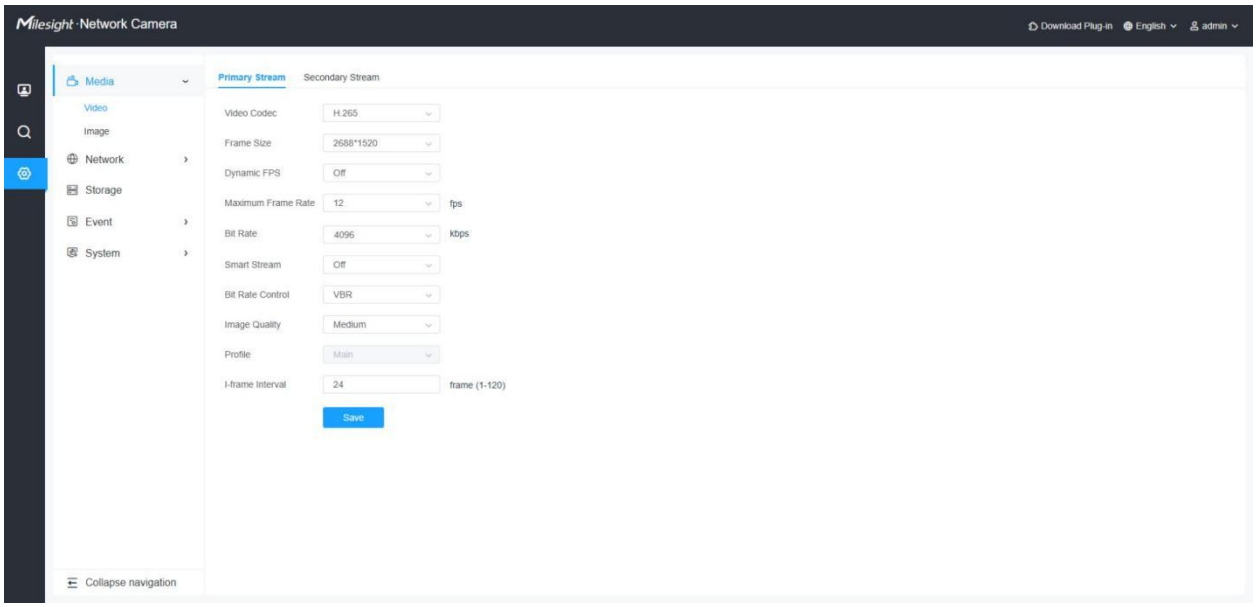
copy and delete files etc. You can visit the files in SD card by ftp, for example, ftp:// username:password@ 192.168.5.190(user name and password are the same as the camera account and the IP followed is the IP of your device.


Milesight · Network Camera
Download Plug-in
English
admin
Playback
Explorer
Main Type
Record
File Type
All
Start Time
2024-11-21 00:00:00
End Time
2024-11-21 23:59:59
Search
File Name
Start Time
End Time
Type
Size
Download Progress
20241121180048_BasicEvent.mp4 2024-11-21 18:00:48 2024-11-21 18:00:52 Basic Event 765.04K
20241121180054_BasicEvent.mp4 2024-11-21 18:00:54 2024-11-21 18:00:58 Basic Event 363.98K
20241121180342_BasicEvent.mp4 2024-11-21 18:03:42 2024-11-21 18:03:47 Basic Event 1.62M
20241121180348_BasicEvent.mp4 2024-11-21 18:03:48 2024-11-21 18:03:53 Basic Event 481.04K
20241121180400_BasicEvent.mp4 2024-11-21 18:04:00 2024-11-21 18:04:05 Basic Event 629.96K
20241121180406_BasicEvent.mp4 2024-11-21 18:04:06 2024-11-21 18:04:11 Basic Event 626.21K
20241121180434_BasicEvent.mp4 2024-11-21 18:04:34 2024-11-21 18:04:39 Basic Event 614.34K
20241121180452_BasicEvent.mp4 2024-11-21 18:04:52 2024-11-21 18:04:57 Basic Event 638.11K
20241121180458_BasicEvent.mp4 2024-11-21 18:04:58 2024-11-21 18:05:03 Basic Event 597.07K
20241121180608_BasicEvent.mp4 2024-11-21 18:06:08 2024-11-21 18:06:13 Basic Event 662.87K
20241121180900_BasicEvent.mp4 2024-11-21 18:09:00 2024-11-21 18:09:05 Basic Event 629.85K
Total 34
1
2
30/page
Go to
1
Download
Stop Downloading

Chapter 6. Media

6.1 Video

[Primary Stream]:



[Secondary Stream]:

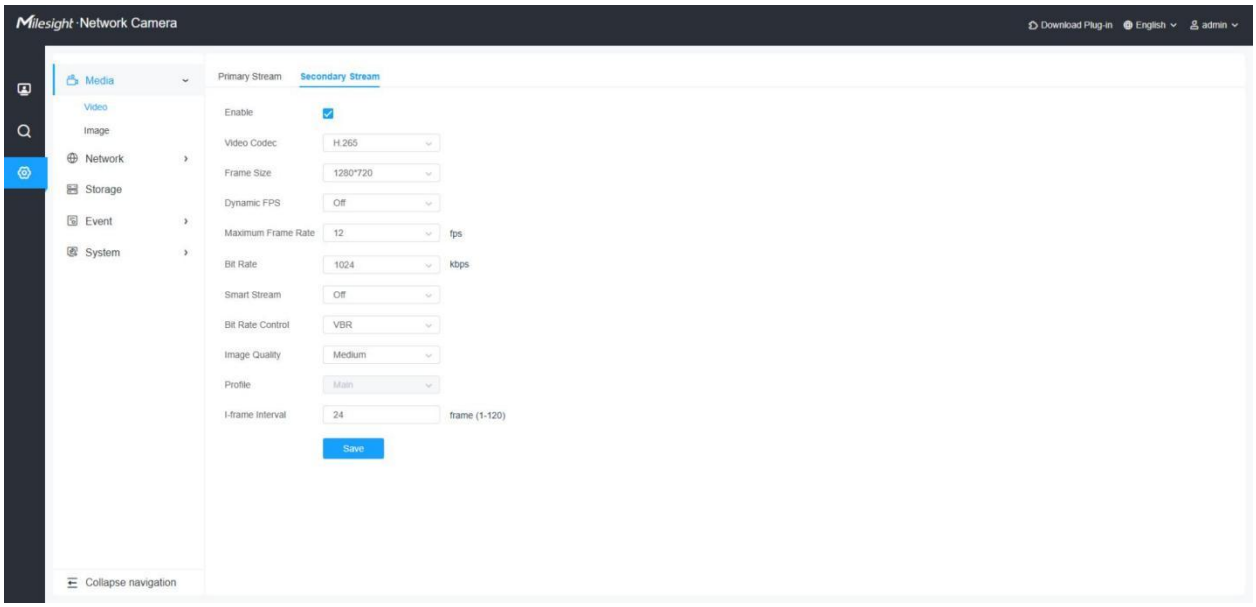


Table 5. Description of the buttons

Parameters		Function Introduction
Secondary Stream	Enable	Click the "Enable" checkbox to activate the secondary stream.
Video Codec		H.265/H.264 are available.
Frame Size		Choose a proper stream resolution. The higher the resolution is, the more details the image has.
Maximum Frame Rate		Maximum refresh rate per second. When Power Line Frequency is set to 50Hz, the supported range is 1-25 frames per second (fps). When Power Line Frequency is set to 60Hz, the supported range is 1-30 frames per second (fps). **Note:** You can change the Power Line Frequency in Image - General - Display - Power Line Frequency.
Bit Rate		Transmitting bits of data per second. Set the bitrate to 16~8192 Kbps. The higher value corresponds to the higher video quality, and the higher bandwidth is required as well.
Smart Stream		Optional to turn On/Off Smart Stream mode. Smart Stream mode remarkably reduces the bandwidth and the data storage requirements for network cameras while ensuring the high quality of images, and it is a 10-level adjustable codec. **Level**: Level 1~10 are available as needed.
Bit Rate Control		**CBR**: Constant Bitrate. The rate of CBR output is constant.
		VBR: Variable Bitrate. VBR files vary the amount of output data per time segment.
Image Quality		**Low/Medium/High** are available, this item is optional only if you select VBR.
Profile		The option is for H.264, Main/High/Base can be selected as needed.

Parameters	Function Introduction
I-frame Interval	Set the I-frame interval to 1~120. The number must be a multiple of the number of frames.

6.2 Image

General image settings can be configured in this module, including Image Adjustments, Day/Night Settings, and Image Enhancement. You can also set OSD (On-Screen Display) content, Privacy Masks, and ROI (Region of Interest) areas.

6.2.1 General

[Scene Setting]

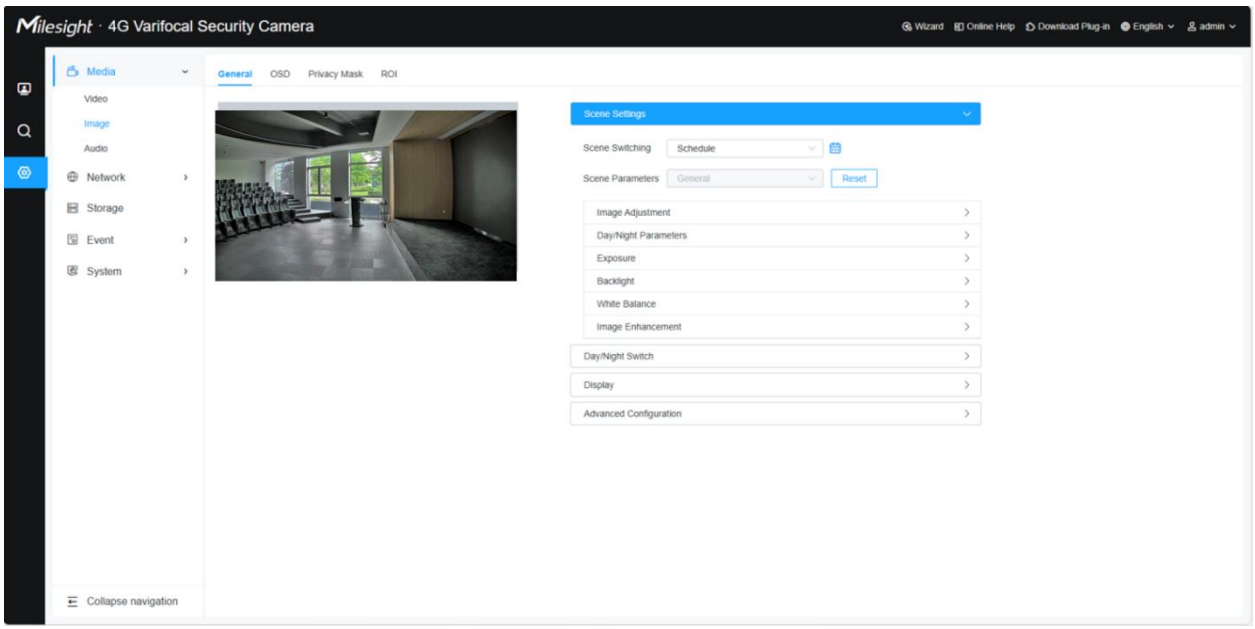


Table 6. Description of the buttons

Parameters	Function Introduction
Scene Switching	Select the scene parameter mode switch. You can choose General, Front Light, Low Light, Back Light, Customize 1, Customize 2, or Schedule as the image scene parameter mode. The default scene is Schedule.

Parameters	Function Introduction
Scene Parameters	Configure specific parameters for different scenes. After selecting a scene (General/Front Light/Low Light/Back Light/Customize 1/Customize 2), you can configure the parameters for that scene.

[Image Adjustment]

Table 7. Description of the buttons

Parameters	Function Introduction
Brightness	Adjust the Brightness of the scene.
Contrast	Adjust the color and light contrast.
Saturation	Adjust the Saturation of the image. Higher Saturation makes colors appear more "pure" while lower one appears more “wash-out”.
Sharpness	Adjust the Sharpness of image. Higher Sharpness sharps the pixel boundary and makes the image looks “more clear”.
Default	Click this button to restore to the default setting.

[Day/Night Parameters]

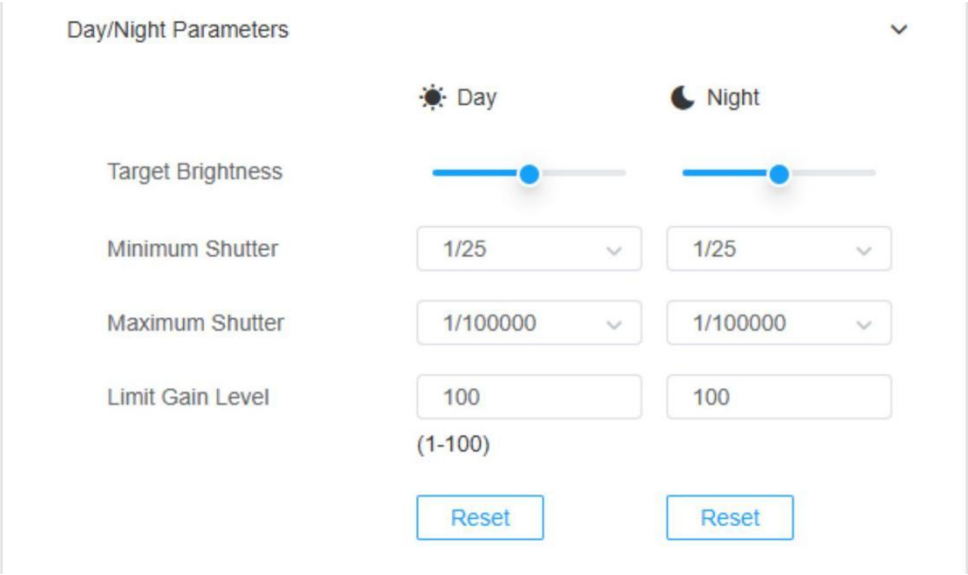


Table 9. Description of the buttons

Parameters	Function Introduction
Target Brightness	Move the slider to the left to decrease the brightness or to the right to increase the brightness. Adjust the slider until the desired brightness level is achieved for your specific environment. **Note:** It is recommended to test the brightness setting under different lighting conditions to find the optimal setting that provides clear and detailed images both during the day and at night.
Minimum Shutter	Minimum Shutter is the same as Maximum Exposure Time. Set the minimum Shutter to 1~1/100000s.
Maximum Shutter	Maximum Shutter is the same as Minimum Exposure Time. Set the maximum Shutter to 1~1/100000s.
Limit Gain Level	Set the Limit Gain Level to 1~100.

[Exposure]

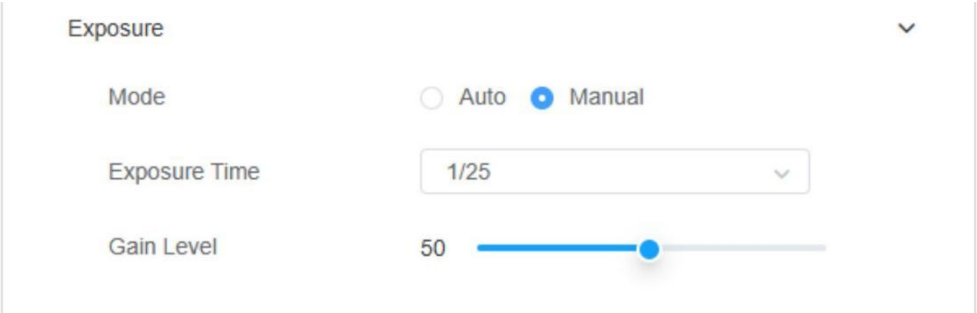


Table 10. Description of the buttons

Parameters	Function Introduction
Exposure Mode	Auto Mode, Manual Mode are available. **Auto Mode:** The camera will adjust the brightness according to the light environment automatically. **Manual Mode:** The camera will adjust the brightness according to the value you set, you can set the exposure time from 1~1/100000s, the higher the value is, the brighter the image is. **Gain Level:** You can manually adjust the gain level to achieve the desired image quality. Gain level refers to the amplification of the camera's signal to make the image brighter. Higher gain levels increase the image brightness but can also introduce more noise.

[Backlight]

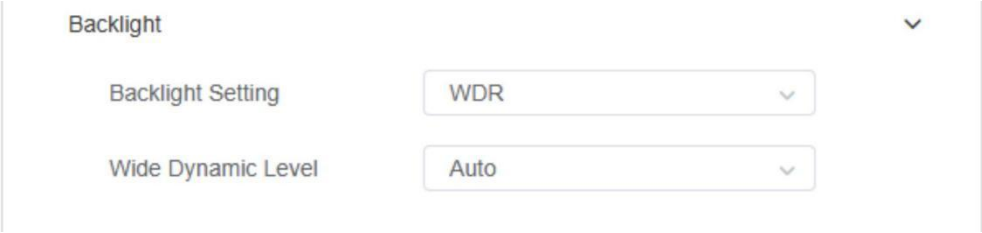
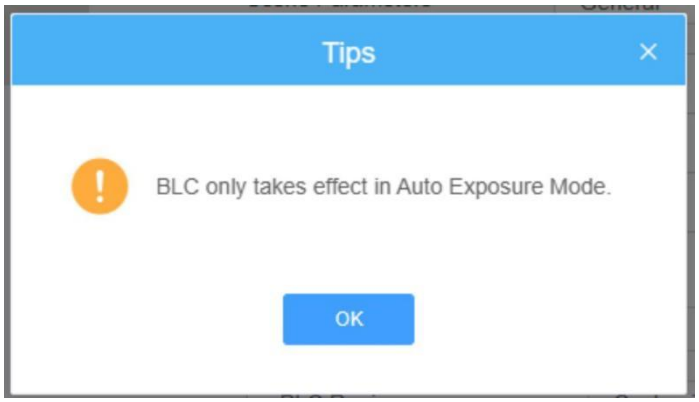


Table 11. Description of the buttons

Parameters	Function Introduction
Backlight	Backlight Setting: Off, BLC, WDR and HLC for detailed configurations. The default setting is "Off". Select BLC to customize its region or use the default center one;

Parameters	Function Introduction
	Select WDR to set its level to High, Low, or Auto; Select HLC to adjust its level from 0 to 100. Note: • To enable WDR, BLC, and HLC, you must set the exposure to Auto mode. 

Note:

- For more details about **Milesight WDR on & off Video**, you can click to the YouTube:

  https://www.youtube.com/watch?v=McoOL0Pyk0w

- For more details about **Milesight Ultra Low-light Video Demo - HLC**, you can click to the YouTube:

  https://www.youtube.com/watch?v=ly8uKWbii40

[White Balance]

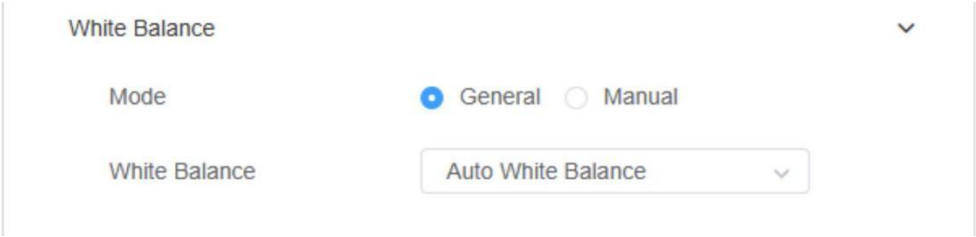
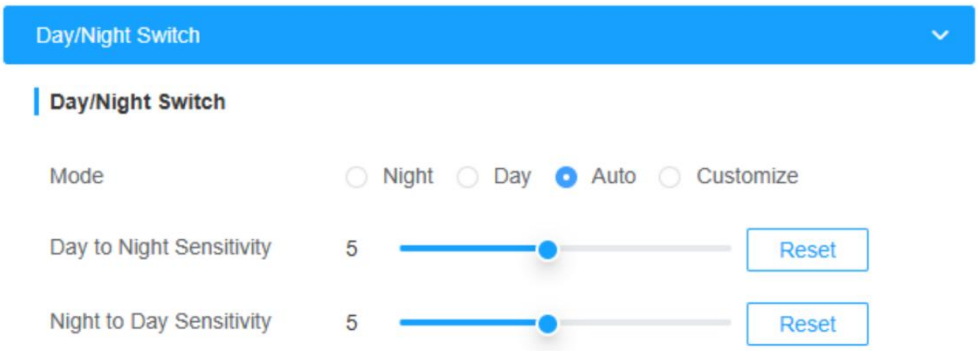


Table 12. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
White Balance	To restore white objects, removed color distortion caused by the light of the environment. **Mode:** General and Manual are available.
	General Mode: Select a white balance mode as required • **Auto White Balance:**This option will automatically enable the White Balance function. • **Incandescent Lamp:** Select this option when light is similar with incandescent lamp. • **Warm Light Lamp:** Select this option when light is similar with warm light lamp. • **Natural Light**: Select this option when there is no other light but natural light. • **Fluorescent Lamp:** Select this option when light is similar with Fluorescent Lamp.
	Manual Mode: Set Red Gain Level and Blue Gain Level manually.

[Day/Night Switch]



There are 4 modes for Day/Night Switch, including Night, Day, Auto and Customize.

Table 14. Description of the options

Parameters		Function Introduction
	Night	Switch to Night Mode according to the parameters of night mode. **Note:** There are several parameters such as Exposure Level, Maximum Exposure Time and IR-CUT Interval, etc, associated with

Parameters		Function Introduction
Day/Night Switch		the mode.
	Day	Switch to Day Mode according to the parameters of day mode. **Note:** There are several parameters such as Exposure Level, Maximum Exposure Time and IR-CUT Interval, etc, associated with the mode.
	Auto	Select this option to automatically switch the Day/Night Mode based on the image. • **Day to Night Value:** You can set the sensitivity for switching Day Mode to Night Mode. When IR Light Sensor Current Value is lower than this value, it will switch Day Mode to Night Mode. You can click Reset to reset the value to 5. • **Night to Day Value:** This is the sensitivity for switching Night Mode to Day Mode. When IR Light Sensor Current Value is higher than this value, it will switch Night Mode to Day Mode. You can click Reset to reset the value to 5.
	Customize	Select this option to customize the Start Time and End Time of Night. • **Start Time of Night:** You can set the time to start the Night Mode. • **End Time of Night:** You can set the time to start the Day Mode.

[Display]

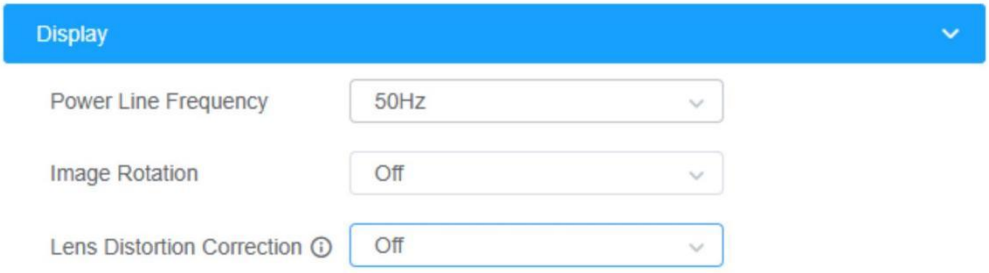


Table 15. Description of the buttons

Parameters	Function Introduction
Power Line Frequency	60Hz and 50Hz are available.
Image Rotation	There are six options available, you can select one to meet your need. **Off:** Keep the image in normal direction. **Clockwise 90°:** Rotate the image by 90° clockwise. **Anticlockwise90°:** Rotate the image by 90° anticlockwise. **Rotating 180°:** Upside down the image. **Flip Horizontal:** Flip the image horizontally. **Flip vertical:** Flip the image vertically.
Lens Distortion Correction	With this option enabled, the camera will prevent the image from distortion when resolution ratio is changed. **Note:** 1. Do not support LDC while EIS is enabled. 2. Enabling/Disabling lens distortion correction may cause slight displacement of the privacy masking area. 3. Do not support Lens Distortion Correction while Work Mode is set to Aov Mode.
Electronic Image Stabilization	**Enable this option to reduce image shake.** **Note:** 1. Do not support EIS while LDC is enabled. 2. Do not support EIS while Work Mode is set to Aov Mode.

Parameters	Function Introduction
Hybrid Zoom	Hybrid Zoom combines optical zoom and digital zoom to magnify surveillance details while maintaining image clarity. **1X**, **2X**, **4X**, and **8X** are available for hybrid zoom. The final zoom ratio is the ratio you set here and the optical zoom ratio. **Note:** Privacy mask is not supported during optical zoom when Hybrid Zoom is enabled.

[Advanced Configuration]

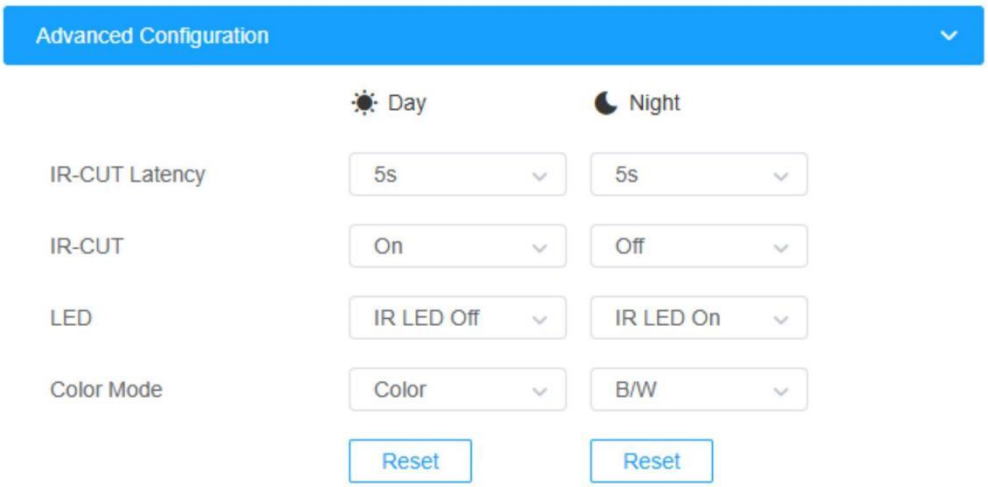


Table 16. Description of the buttons

Parameters	Function Introduction
IR-CUT Latency	Selectable from 1 to 20 seconds. Proper configuration of IR-CUT Latency ensures that the camera adapts smoothly to changes in lighting, avoiding abrupt changes in image quality. • **Short Latency**: Useful for environments with rapid changes in lighting. • **Long Latency**: Suitable for more gradual changes in lighting conditions, reducing the frequency of filter switching.
IR-CUT	On/Off IR-CUT. The IR-CUT filter is a mechanical filter that blocks infrared light during the day to produce true-to-life colors. At night, the filter is removed to allow infrared light to reach the camera sensor, enabling night vision.
LED	On/Off IR LED.
Color Mode	Color and B/W are available.

6.2.2 OSD

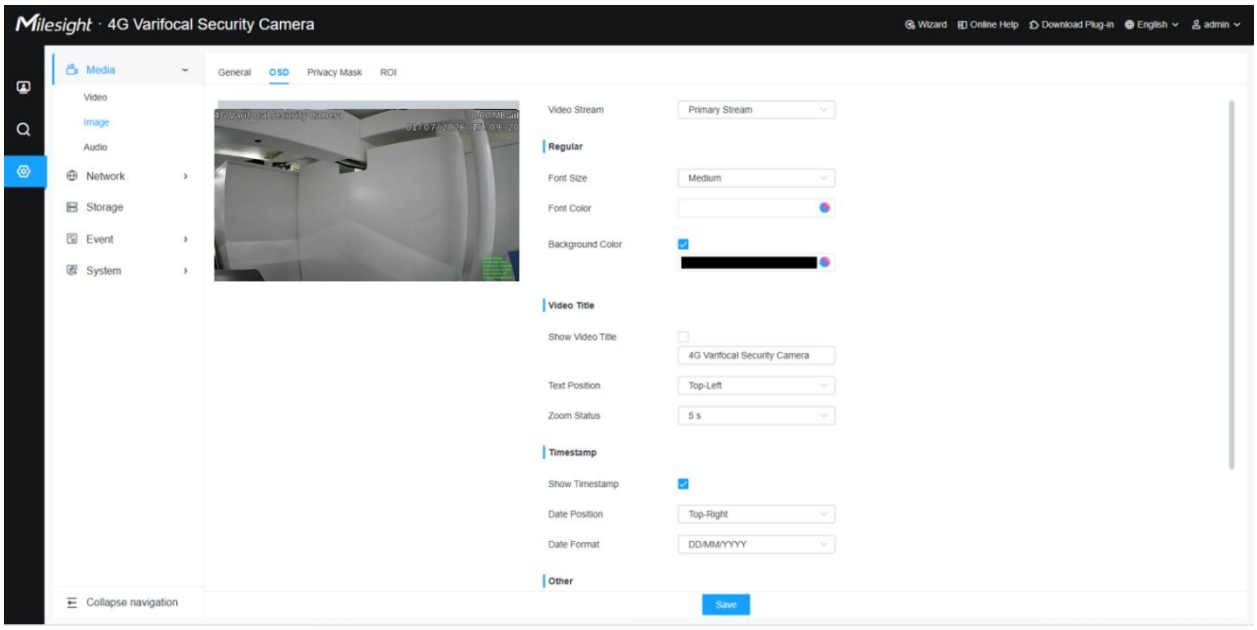


Table 17. Description of the buttons

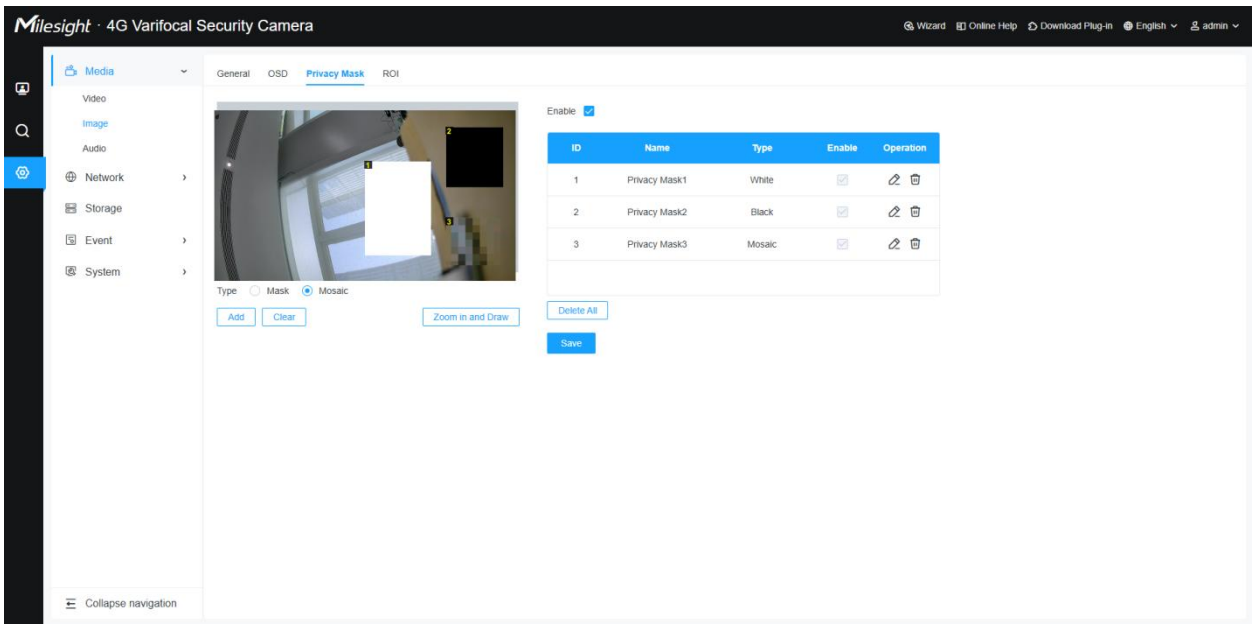
Parameters	Function Introduction
Video Stream	Enable to set OSD for primary stream and secondary stream.
Font Size	Smallest/Small/Medium/Large/Largest/Auto are available for title and date.
Font Color	Enable to set different color for title and date.
Background Color	Enable to set different colors for display information background on screen. You can set different colors for font and background of image.
Show Video Title	Check the check box to show video title.
Video Title	Customize the OSD content.
Text Position	OSD display position on the image.
Zoom Status	Zoom status. **2s**, **5s**, **10s**, **Always Open**, and **Always Close** are available.
Show Timestamp	Check the checkbox to display date on the image.
Date Position	Date display position on the image.
Date Format	The format of date.
Show Data Usage This Month	Click to display data usage for this month, signal strength, and battery

Parameters	Function Introduction
Show Signal Strength	level, and set the display position to top left, bottom left, top right, or bottom right.
Show Battery Level	
Position	
Copy to Other Streams	Copy the settings to other streams.

6.2.3 Privacy Mask

Privacy mask enables to cover certain areas on the live video to prevent certain spots in the surveillance area from being viewed and recorded.

Up to 8 mask areas are supported.



You can select the color to use for the cover certain areas on the live video.

Table 19. Description of the buttons

Parameters	Function Introduction
Enable	Check the check box to enable the Privacy Mask function.

Parameters	Function Introduction	
Type	Select the type to use for the privacy areas, there are two types available: Mask and Mosaic. Select the color to use for the privacy areas, there are eight colors available: White, Black, Blue, Yellow, Green, Brown, Red and Purple. When the privacy type is set to Mask, you can select a color for the privacy areas, eight colors are available: White, Black, Blue, Yellow, Green, Brown, Red and Purple. The Mosaic type is also available as an alternative privacy option.	
Add	Draw a privacy area on the live video as needed.	
Zoom in and Draw	By clicking the **'Zoom in and Draw'** button, you can activate a full-screen pop-up window to draw more accurate detection areas.	
Operation	/	Enable/disable the selected ROI areas.
Operation		Change the color of Mask area, there are eight colors available: White, Black, Blue, Yellow, Green, Brown, Red and Purple
		Delete the privacy mask area
Clear	Clear the area you drew on the live video.	
Delete All	Clear all areas you drew before.	

6.2.4 ROI

The Region of Interest (ROI) is a specific subset of a scene that is selected for focused analysis or monitoring. Users can select up to 8 key regions within a scene for attention, making the selected areas the focus of image analysis and further processing.

By using Milesight's ROI technology, more than 50% of the bit rate can be saved,

significantly reducing bandwidth demands and storage usage. This allows you to set a lower bit rate while maintaining high resolution for the selected regions.

Note: For more details about how to set ROI, please refer to https://milesight.freshdesk.com/a/solutions/articles/69000643441.

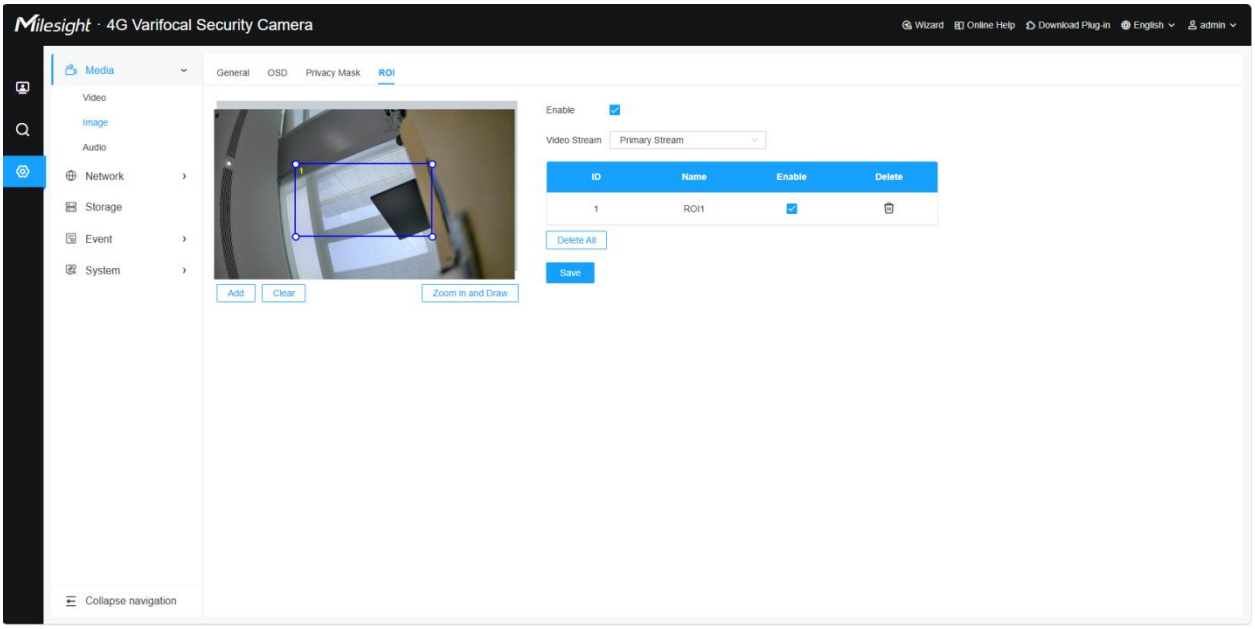


Table 19. Description of the buttons

Parameters	Function Introduction	
Enable	Check the checkbox to enable the ROI function.	
Video Stream	Choose the video stream. **Primary Stream** and **Secondary Stream** are supported.	
ROI	/	Enable/disable the selected ROI areas.
		Delete the selected ROI areas.
Add	Drew a ROI area on the live video as needed.	
Clear	Clear the area you drew on the live video.	
Zoom in and Draw	By clicking the **'Zoom in and Draw'** button, you can activate a full-screen pop-up window to draw more accurate detection areas.	
Delete All	Clear all areas you drew before.	

Note:

- You can set a low bit rate. For example, you can set a bit rate with 512Kbps and a resolution with 1080P, then you can see the image quality of ROI is more clear and fluent than the other region.

6.3 Audio

6.3.1 Audio

This audio function allows you to hear the sound from the camera or transmit your sound to the camera side. A two-way communication is also possible to be achieved with this feature. Alarm can be triggered when the audio input is above a certain alarm level you set, and

configured audio can be played when an alarm occurs.

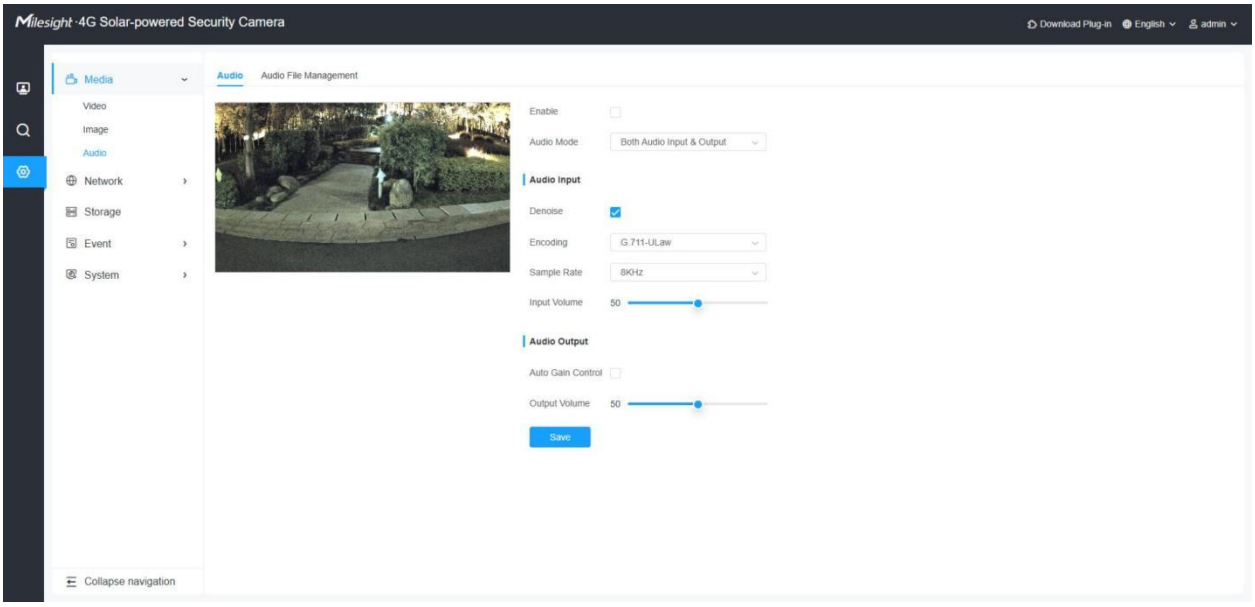


Table 20. Description of the buttons

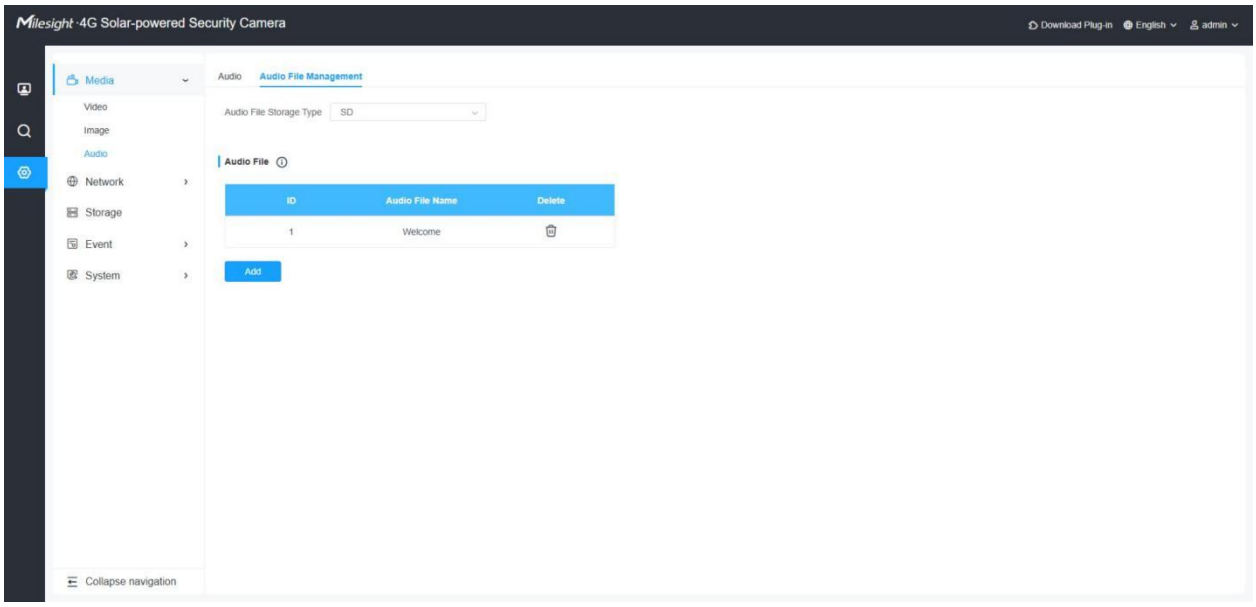
Parameters	Function Introduction
Enable	Check on the checkbox to enable audio feature.
Audio Mode	**Audio Input/Audio Output/Both Audio Input & Output** are optional.
Audio Input	**Denoise:** Set it as On/Off. When you set the function on, the noise detected can be filtered. **Encoding:** G.711-ULaw, G.711-ALaw, AAC LC, G.722 and G.726 are available **Audio Bit Rate:** The function is available only for AAC LC, and supports up to 48kbps. **Sample Rate:** 8KHz, 16KHz, 32KHz, 44.1KHz and 48KHz are available.

Parameters	Function Introduction
	Input Volume: Adjust volume of input.

Parameters	Function Introduction
Audio Output	**Auto Gain Control:** This function is only for H.265 series, improve the quality of audio. **Output Volume:** Adjust volume of output.

6.3.2 Audio File Management

You can upload up to 5 audio files manually to Flash or SD Card on the Audio web page and you can also edit the audio file's name when upload.



Note: Only support '.wav' audio files with codec type PCM/PCMU/PCMA, 64kbps or 128 kbps and no more than 500k.

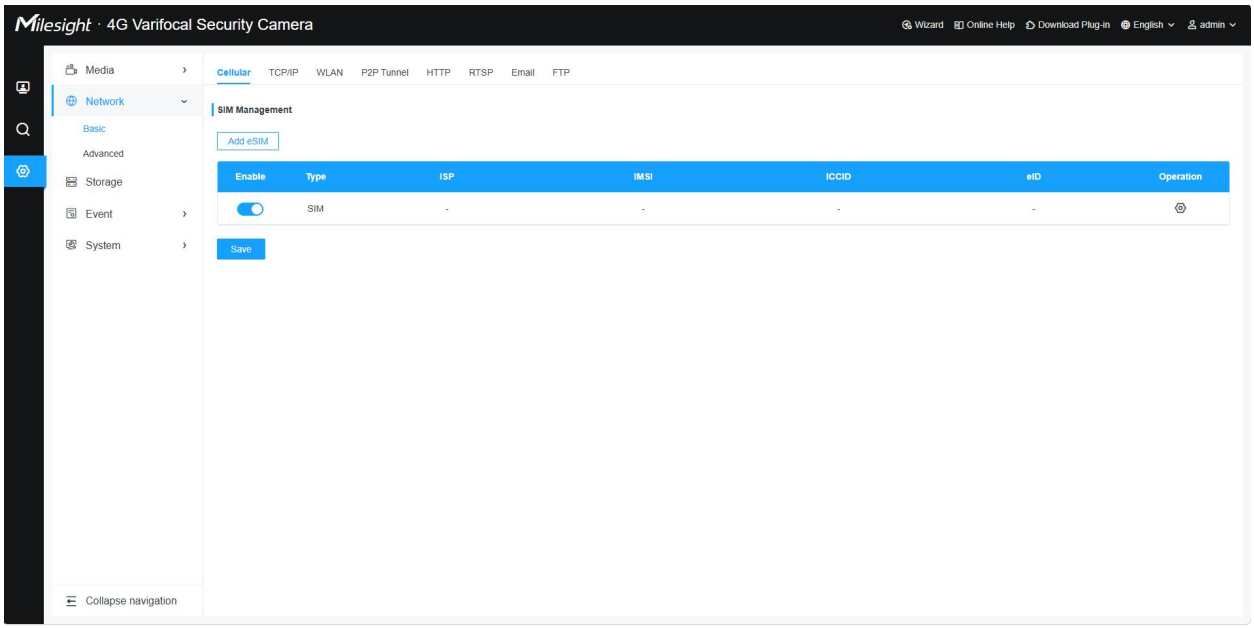
Chapter 7. Network

7.1 Basic

7.1.1 Cellular

The Cellular module manages mobile network connectivity for the SP112 device. It supports both physical SIM cards and eSIM profiles, allowing flexible cellular network access for remote locations where Ethernet or Wi-Fi is unavailable.

SP112 supports dual-SIM functionality with one physical SIM card slot and one built-in eSIM (embedded SIM). this system only one SIM/eSIM profile can be active at a time for data transmission.



7.1.1.1 SIM Management

The SIM Management section provides a centralized interface for managing all available SIM and eSIM profiles. Users can view, enable, disable, and switch between different SIM sources.

SIM List

The SIM List displays all available SIM/eSIM profiles in the system. Each entry shows:

Parameter	Description
Status	Enabled or Disabled — only one SIM can be enabled at a time
Type	Physical SIM or eSIM
ISP	Show the network provider which the SIM card registers on. **Note:** It will display "-" when the SIM card is not inserted or not recognized.

Parameter	Description
IMSI	International Mobile Subscriber Identity
ICCID	Integrated Circuit Card Identifier
eID	eSIM Identifier (displayed for eSIM profiles only)

Enable/Disable SIM

Users can manually enable or disable a SIM/eSIM profile. When enabling a SIM, the system will automatically disable the currently active SIM.

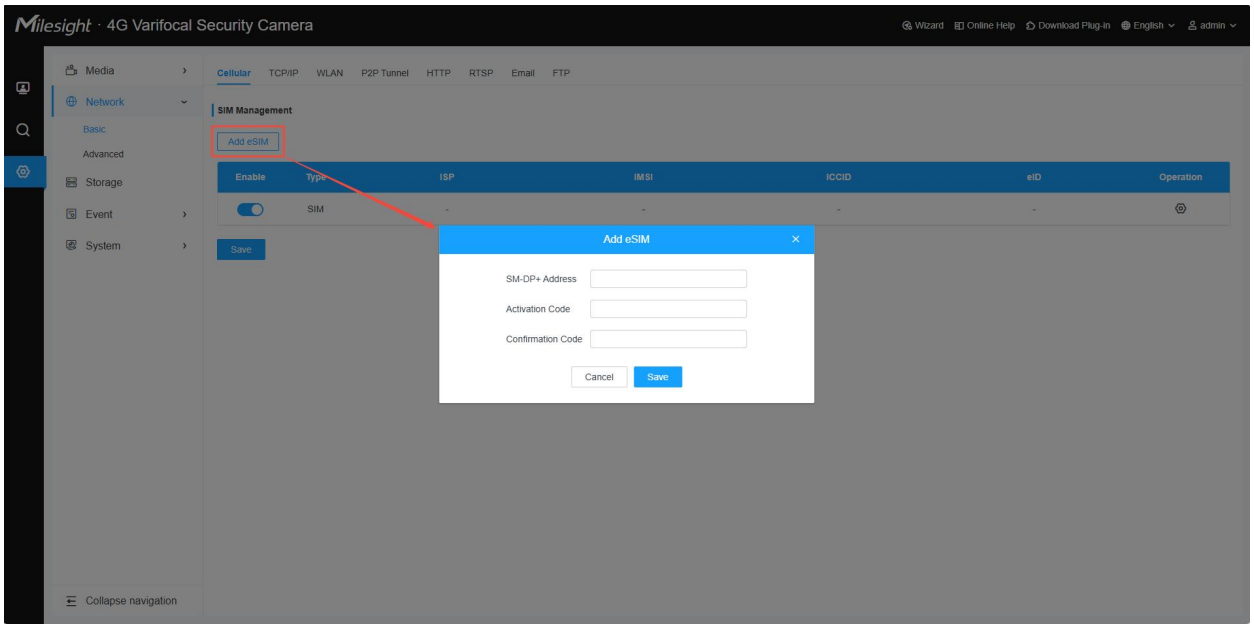
Note:

1. Only one SIM profile can be enabled. Please disable the other profile before enabling this one.

2. Switching between SIMs will interrupt the current network connection. Ensure no critical data transmission is in progress before switching.

Add eSIM

The eSIM Profile Management interface allows users to add, delete, and manage eSIM profiles downloaded from remote SIM provisioning servers.



Add eSIM Profile:

0. Click "Add Profile" button in the eSIM management area.
1. Enter the Activation Code provided by your eSIM carrier (SM-DP+ server address and Activation Code ID). According to the GSMA eSIM specification (SGP.22), the activation code format is: 1<SMDP+Address><SMDP+Address><activation code>.
   For example, as shown in the following figure, if the customer receives an activation code like this,

then t-mobile.idemia.io is the SMDP+ address, the string after the second "$" is the activation code, and the leading "1" indicates the version.

activation code: 1$t-mobile.idemia.io$[illegible]

2. Click "Save" to initiate the eSIM profile download process.
3. Wait for the profile download and installation to complete.
4. The new profile will appear in the SIM List after successful installation.

Delete eSIM Profile:

5. Select the eSIM profile you want to remove from the SIM List.
6. Click "Delete" button.
7. Confirm the deletion in the confirmation dialog.

Warning:

1. Up to 4 eSIM profiles storage and management.

2. Deleting an eSIM profile is irreversible. The profile cannot be recovered once deleted. You will need to obtain a new activation code from your carrier to reinstall.

7.1.1.2 Cellular Status

Click icon in the SIM list. The Cellular Status area displays real-time information about the current cellular connection.

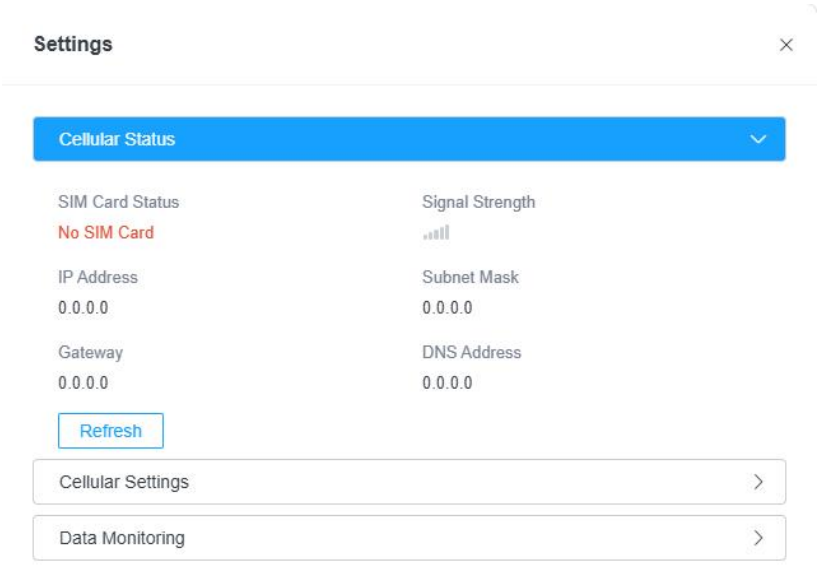


Table 22. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
SIM Card Status	Display the connection status of SIM card. **No SIM Card:** The system cannot detect a SIM card. (Applicable only to physical SIM cards) **Not Enabled:** This eSIM is not enabled. (Applicable only to eSIM cards) **SIM PIN Code Required:** The PIN code is missing or incorrect. **SIM PUK Code Required:** The SIM card is locked due to multiple incorrect PIN attempts; the user must contact the carrier to unlock it. **SIM Card Error:** The SIM card is abnormal (e.g., incompatible, damaged, or unreadable). **SIM Card Ready (Searching):** The SIM card is functioning normally and is searching for a network. **SIM Card Ready (Connected):** The SIM card is functioning normally and has successfully registered on the network. **SIM Card Ready (No Service):** The SIM card is functioning normally but failed to register on the network.
Signal Strength	Display the current signal strength of the network.
IP Address	Display the IP Address, Subnet Mask, Gateway and DNS Address of the current network. If the SIM card is not inserted or not recognized, it will display 0.0.0.0.
Subnet Mask	
Gateway	Display the IP Address, Subnet Mask, Gateway and DNS Address of the current network. If the SIM card is not inserted or not recognized, it will display 0.0.0.0.
DNS Address	
Refresh	Click this button to manually refresh the above status.

7.1.1.3 Cellular Settings

Click icon in the SIM list. The Cellular Settings section provides configuration options for the active SIM/eSIM connection.

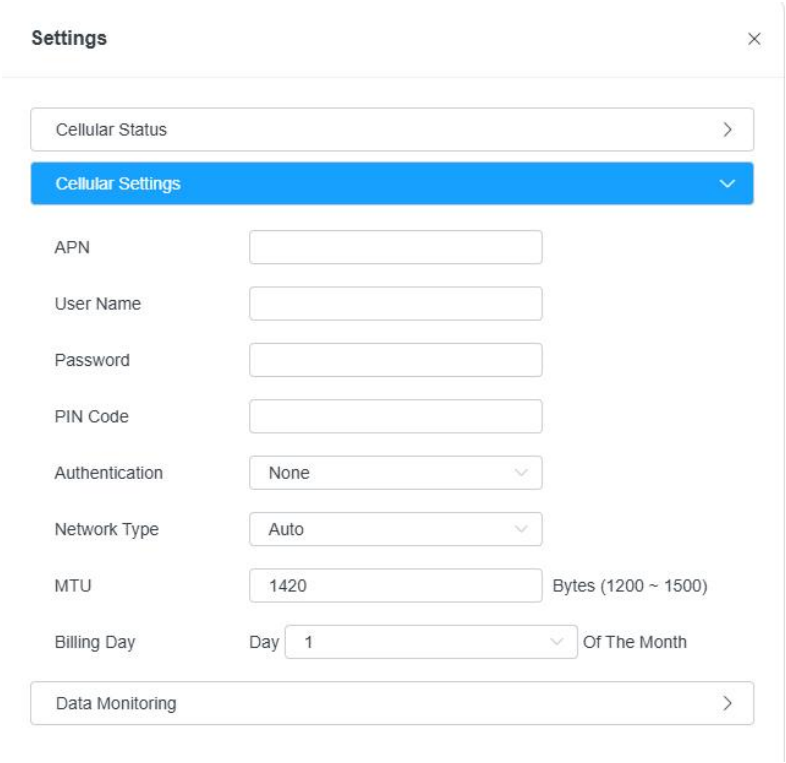


Table 21. Description of the buttons

Parameters	Function Introduction
APN	Enter the Access Point Name for cellular dial-up connection provided by local ISP.
User name	Enter the user name for cellular dial-up connection provided by local ISP.
Password	Enter the password for cellular dial-up connection provided by local ISP.
PIN Code	Enter a 4-8 characters PIN code to unlock the SIM.
Authentication	Select the Authentication Type. There are three options: **None, PAP and CHAP**, to match different Internet Service Providers. The default option is **None**.
Network Type	Select the network type of cellular network. There are three options including Auto, 4G and 3G. **Auto:** connect to the network with the strongest signal automatically.
MTU	Selectable 1200~1500 Bytes. MTU stands for Maximum Transmission Unit. It specifies the maximum size (in bytes) of each data packet that can be sent over the network.
Billing Day	Select the date for clearing the data each month. Users can choose from 1st to 31st, and the system will clear the data on the date you set

Parameters	Function Introduction
	each month.

7.1.1.4 Data Monitoring

.Click icon in the SIM list. SP112 provides per-SIM data usage monitoring to help users track cellular data consumption.

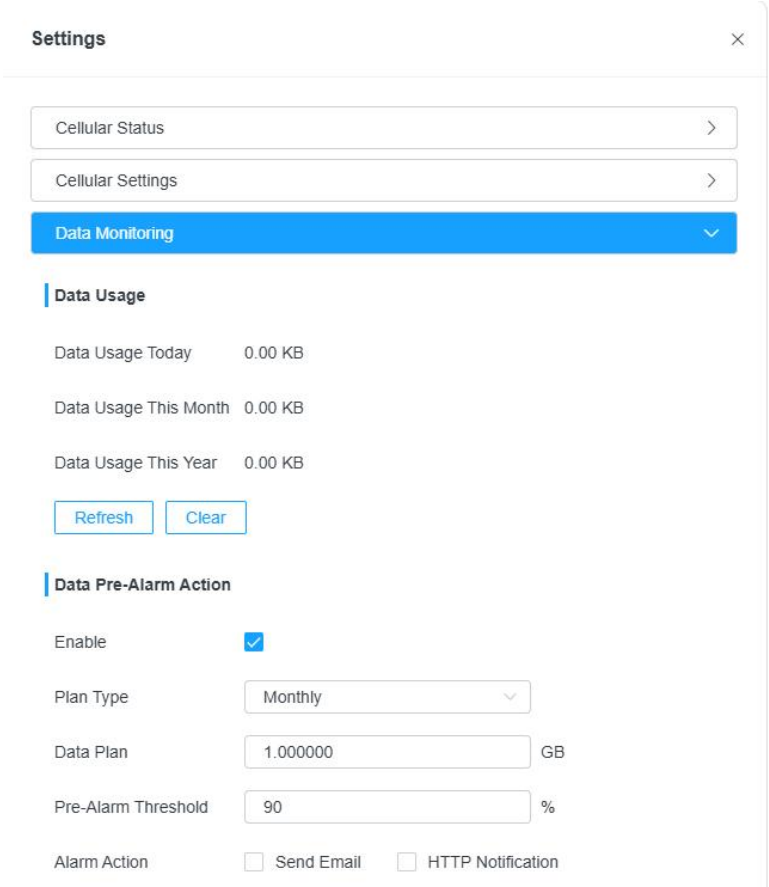


Table 23. Description of the buttons

Parameters	Function Introduction
Data Usage	Displays the total amount of cellular data used by the camera today/this month/this year. **Refresh:** Refresh Data. **Clear:** Clear all data usage, this action is irreversible.

Parameters	Function Introduction
Data Pre-Alarm Action	The Data Pre-Alarm Action feature allows you to set predefined actions that the camera will take when data usage approaches a specified limit. This helps in preventing data overages and managing data costs effectively. **Plan Type:** Select the data usage reporting range. Options available are Daily, Monthly, and Annually. **Data Plan:** Enter the total data plan allowance, ranging from 0.01 to 1024 GB. **Pre-Alarm Threshold:** Can be set between 50% and 99%. Enter the alarm threshold, used in conjunction with the Data Plan. An alarm is triggered when data usage exceeds Data Plan * Pre-Alarm Threshold. **Alarm Action:** Selectable alarm notification methods: Email or HTTP Notification.
Save	Click this button to manually refresh the above status.

7.1.2 TCP/IP

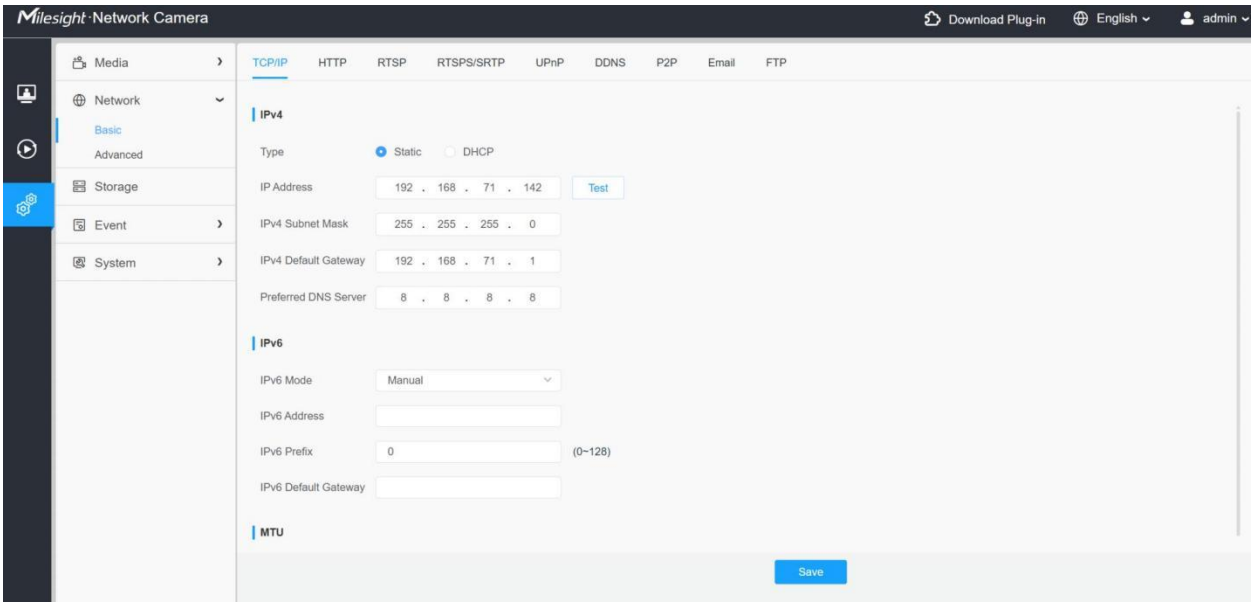


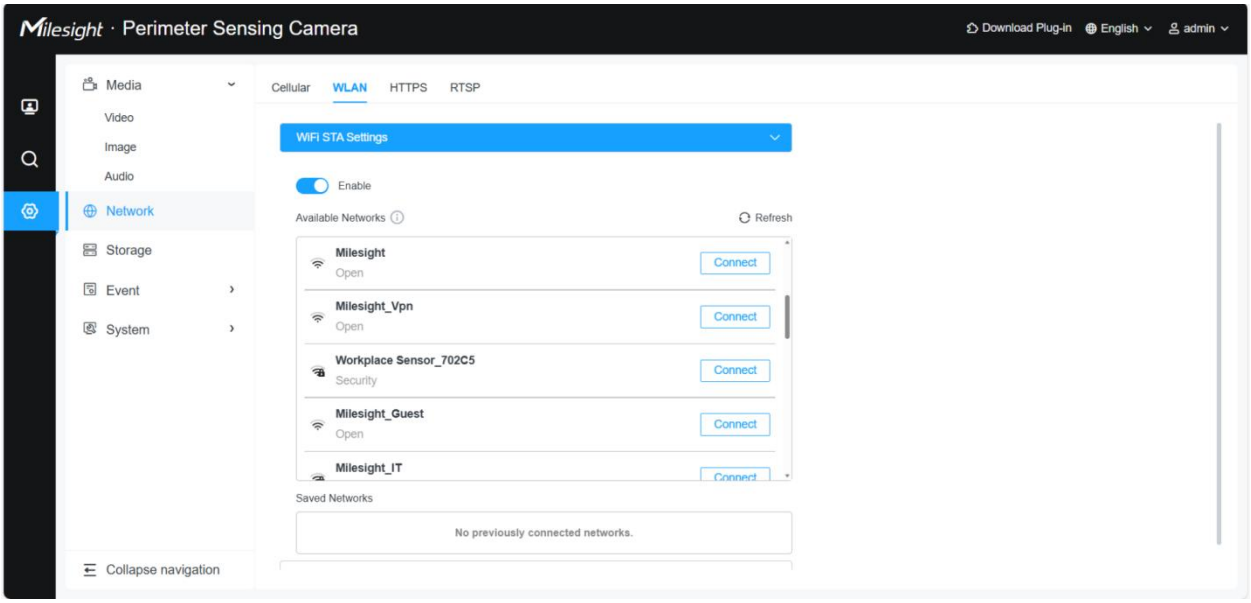
Table 24. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
IPv4	**Type:** You can choose between **Static** and **DHCP** types to obtain the IPv4 address. • **DHCP**: The camera automatically obtains an IP address from the DHCP server . • **Static**: Allows you to manually assign a fixed IP address to the camera. **IPv4 Address:** An address that used to identify a network camera on the network. **Note:** The **Test** button is used to test if the IP is conflicting. **IPv4 Subnet Mask:** It is used to identify the subnet where the network camera is located. **IPv4 Default Gateway:** The default router address. **Preferred DNS Server:** The DNS Server translates the domain name to IP address.
IPv6	**IPv6 Mode:** Choose different modes for IPv6: Manual/Route Advertisement/ DHCPv6. **IPv6 Address:** IPv6 Address used to identify a network camera on the network. **IPv6 Prefix:** Define the prefix length of IPv6 address: 0 to 128. **IPv6 Default Gateway:** The default router IPv6 address.
MTU	Maximum Transmission Unit. Enter a value from 1200 to 1500 as needed. The default value is 1500.
Save	Save the configurations.

7.1.3 WLAN

[Wi-Fi STA Settings]



Wi-Fi Station (STA) mode allows the camera to connect to an external Wi-Fi network for internet access and platform communication.

Enable Wi-Fi: Toggle this switch to turn the Wi-Fi client function on or off. **(Default: Enabled)**. When enabled, the camera will automatically scan for nearby signals.

Available Networks: This section lists all detectable Wi-Fi networks in the vicinity.

Table 13. Description of the buttons

Parameters	Function Introduction
SSID	Displays the names of available Wi-Fi networks.
Signal Strength	Represented by an icon showing the current reception quality.
Security Status	Indicates whether the network is encrypted (Padlock icon).
Connect	Click to initiate a connection to the selected network. A pop-up will appear requesting the **Wi-Fi Password** if the network is secured.

Connection Details (Status & Configuration)

Once the camera is successfully connected to a Wi-Fi network, the following information will be displayed for monitoring and advanced network configuration:

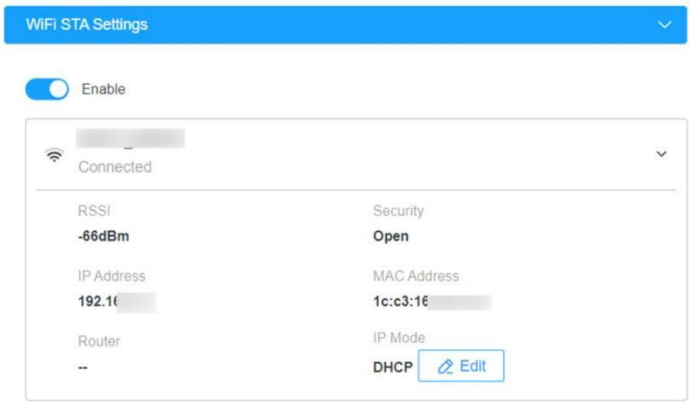


Table 14. Description of the buttons

Parameters	Function Introduction
RSSI	Displays the received signal strength indicator.
IP Address	The current IP assigned to the camera.
Router	The gateway or router index the device is connected to.
Security	Displays the encryption type of the current connection.
MAC Address	The unique hardware address of the Wi-Fi module.
IP Mode	You can switch between these modes: • **DHCP:** Automatically obtains an IP from the router. • **Static:** Allows you to manually assign a fixed IP address to the camera.

Saved Networks: This list displays networks that the camera has previously connected to or that have been manually added.

1. **Automatic Reconnection:** The camera will prioritize connecting to networks in this list if they are available.
2. **Management:** You can view the status of saved networks or click **[Delete]** to remove a network's credentials from the device memory.

[AP Settings]

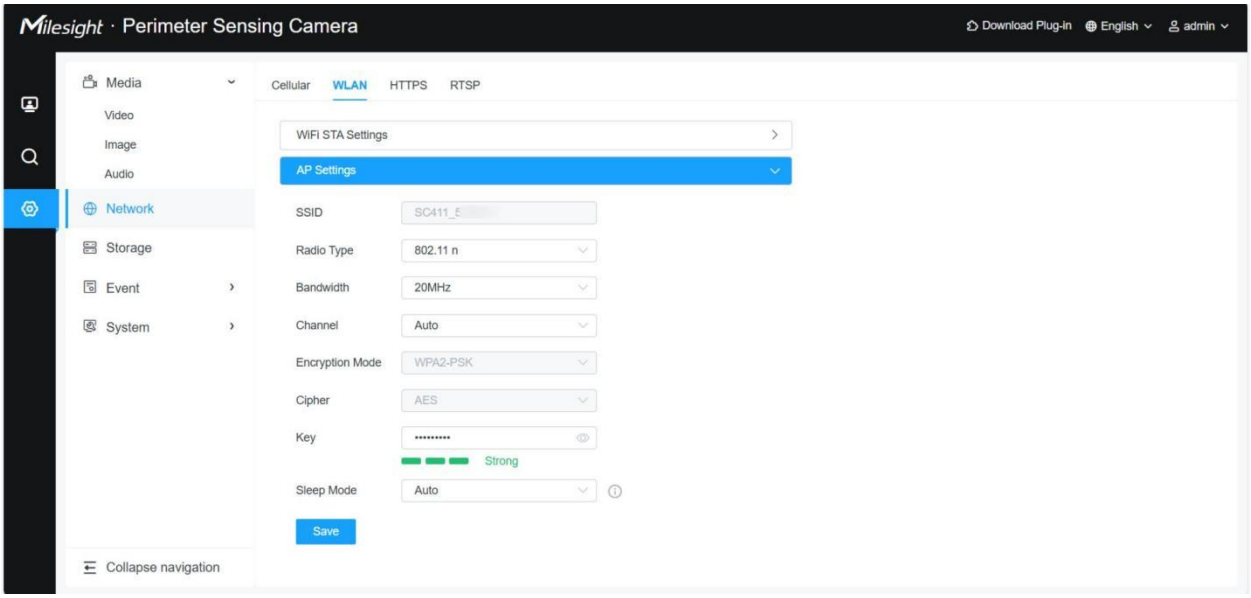


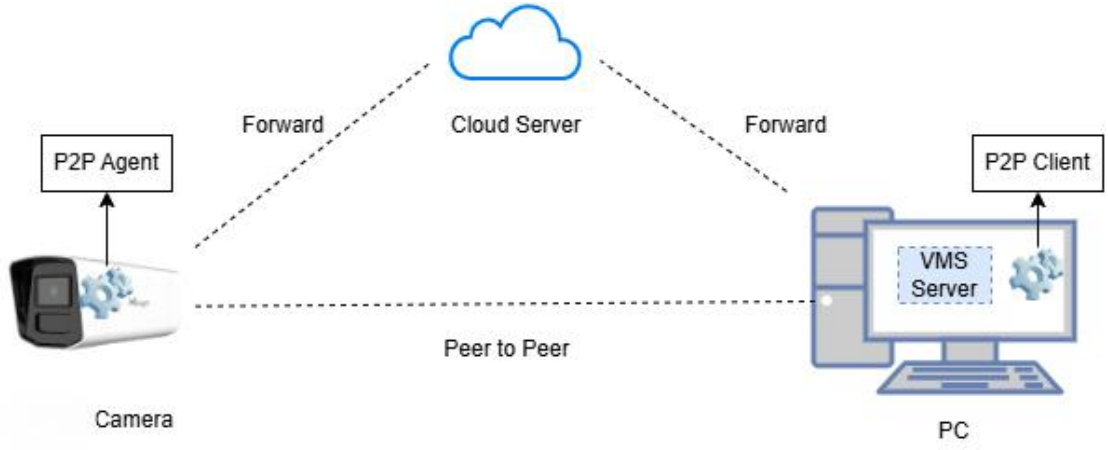
Table 15. Description of the buttons

Parameters	Function Introduction
SSID	Configure the wireless network name, default is SC411_XXXXXX (last six digits of the MAC address), not editable.
Radio Type	Select the radio type for Wi-Fi connection. Available options are 802.11n and 802.11g.
Bandwidth	Select the bandwidth for Wi-Fi connection. If Radio Type is set to 802.11n: 20MHz, 40MHz. If Radio Type is set to 802.11g: 20MHz.
Channel	Select the channel for Wi-Fi connection.
Encryption Mode	Fixed to **WPA2-PSK** (Required for GDPR compliance).
Cipher	Fixed to **AES**.
Key	**8–63 characters.** Must include uppercase, lowercase, numbers, and special characters. Must reach **Strong** status to save.
Sleep Mode	Configure the WiFi module to enter sleep mode, selectable options are Auto/Never. **Note:** Recommend selecting the 'Auto' mode, where the Wi-Fi will enter sleep mode after five minutes of inactivity between the device and the external environment. Choosing 'Never' mode will result in higher device power consumption.

Parameters	Function Introduction
Save	Click this button to manually refresh the above status.

7.1.4 P2P Tunnel

The Milesight P2P Tunnel solution allows you to connect your Solar-powered (SP111/SP112) cameras to your Video Management Software (VMS) through a secure, peer-to-peer (P2P) connection, even if the camera is on a private network or behind a firewall.

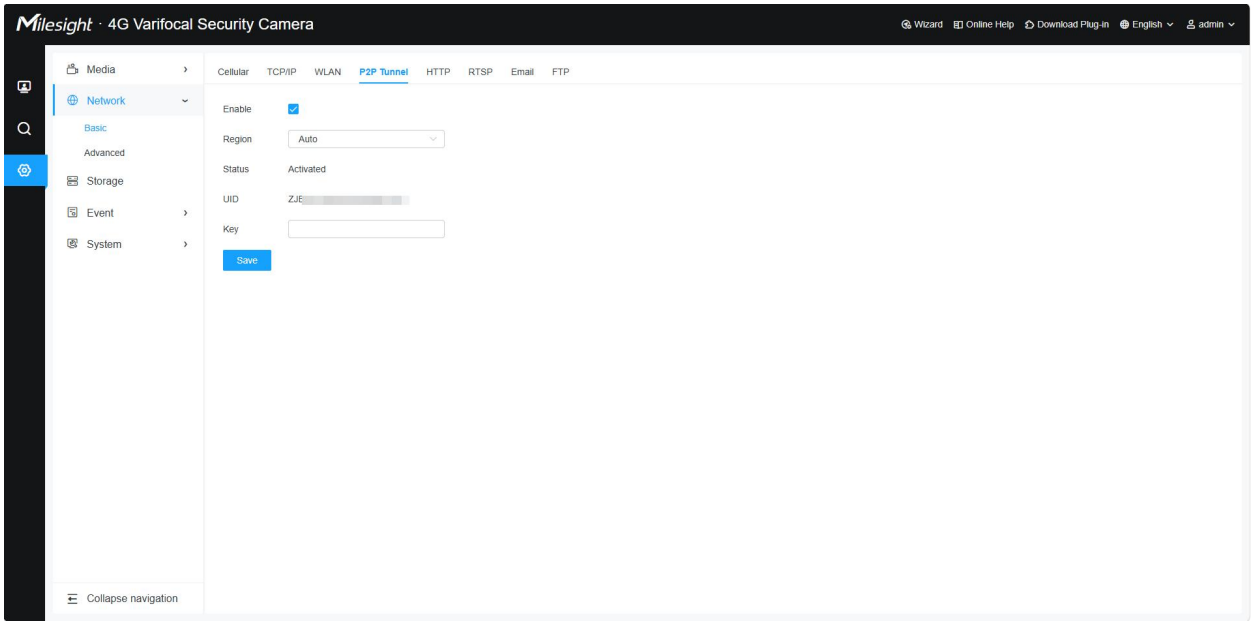


Note:

Data transmission is prioritized through peer-to-peer communication. If this link fails, data will be forwarded via the cloud server. (Depending on network conditions)

Component	Location	Role
P2P Tunnel Agent	Camera	A client pre-installed on the camera by default.
P2P Tunnel Client	VMS Server/PC	A client that needs to be manually installed on the same server or PC as the VMS.
UID & Key	Both	Unique identifier (UID) and optional security passphrase (Key) for device pairing.

7.1.4.1 P2P Configuration



Enable

Toggle the P2P Tunnel function on or off. When enabled, the camera will automatically contact the cloud server (using its MAC address) to check the license status and perform activation if necessary.

Note: Enabling P2P Tunnel requires an active internet connection (Ethernet or Cellular).

Region

You can select Africa, America, Asia, Europe, Middle East, Oceania, or choose Auto. When set to Auto, the system automatically detects and connects to the nearest available server for optimal performance. Auto is recommended.

Status

The Status field displays the current P2P tunnel connection state:

Status	Description
Offline	P2P Tunnel is disabled or not connected
Connecting	Attempting to establish P2P tunnel
Online	P2P tunnel is active and ready for remote access
Error	P2P tunnel connection failed (check network settings)

UID (Unique Identifier)

The UID is a unique device identifier assigned by the service. This identifier is used to establish P2P connections from remote clients.

The UID is auto-generated when P2P Tunnel is first enabled and cannot be modified.

Key (Optional)

The Key is the authentication credential used to verify remote access requests. It works together with the UID to ensure secure P2P connections. It must be entered when adding the device on the P2P Tunnel Client for verification.

> **Important:** Keep your UID and Key confidential. Anyone with access to these credentials can attempt to connect to your device remotely.

7.1.4.2 Milesight P2P Tunnel Client Setup (on VMS Server)

The P2P Tunnel Client software must be installed on the server where your VMS is running.

Supported Operating Systems

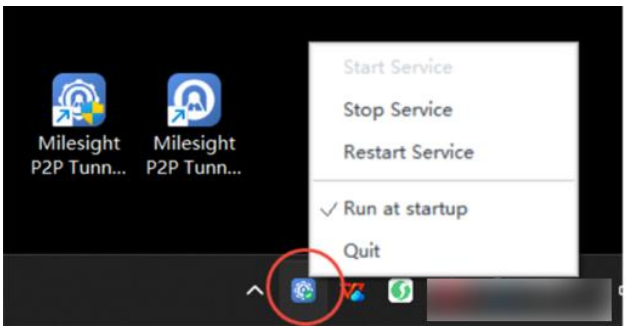
OS	Supported Versions
Windows	Windows 10, Windows 10 Enterprise, Windows 11, Windows Server 2016 (v1607), Windows Server 2019, Windows Server 2022
Linux	Ubuntu LTS 18.04, 20.04, 22.04, 24.04 (64-bit / amd64 only)

Installation and Access

Windows

After installation, use the Milesight P2P Tunnel Service shortcut to ensure the service is running.

Access the management interface via the Milesight P2P Tunnel Web Client shortcut.



Linux

Install the client using the following command:

dpkg -i p2pTunnel_amd64_V1.0.1.deb

Once installed, the service starts automatically on boot. Use the following commands to manage the service:

Action	Command
Check service status	systemctl status p2pTunnel.service
Start service	systemctl start p2pTunnel.service
Stop service	systemctl stop p2pTunnel.service
Restart service	systemctl restart p2pTunnel.service
Uninstall	dpkg -P p2ptunnel

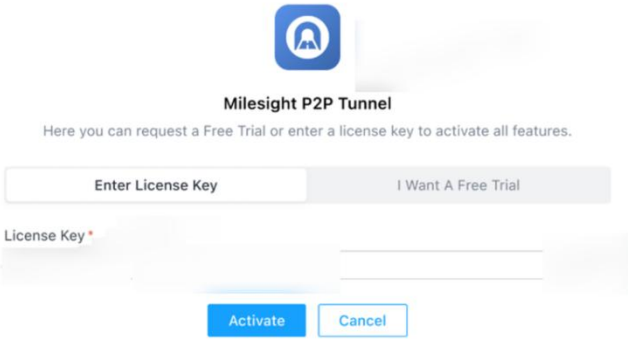
Access Address: The default access is http://127.0.0.1:18080/.

Security Note:

The web interface is accessible from the local machine only. The interface and operations are identical on both Windows and Linux.

License Management

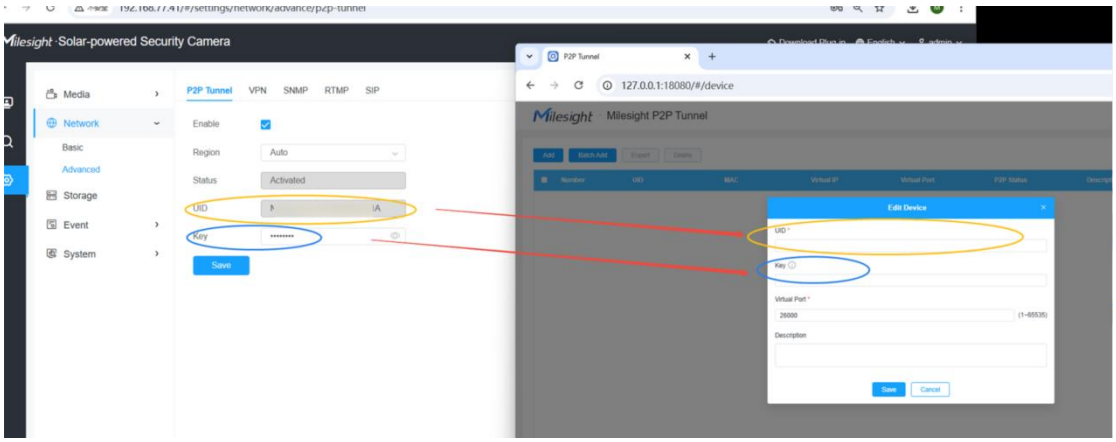
The client supports a 30-day Free Trial or Purchased Licenses (provided by the After-Sales team).



Trial Expiry: If the trial expires or the license is invalid, the P2P Tunnel functionality (like video forwarding) will stop. Re-enter the valid license in the System menu to restore service.

Adding the Device

You can add devices one-by-one or in bulk:



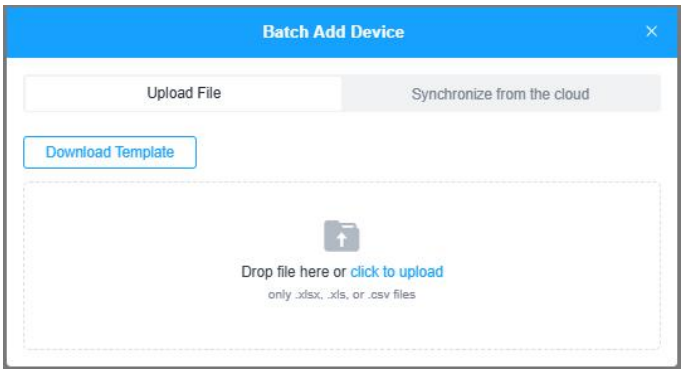
Method	Description
Single Add	Click Add and enter the device details.
Batch Add (File)	Select Batch Add Device → Upload File.
Batch Add (Sync)	Select Batch Add Device → Synchronize from CCTV Management Platform. (Requires Cloud Platform v11.15)

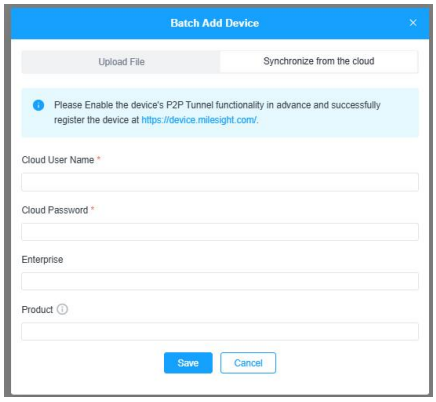
Device Input

①Enter the camera's unique UID.

②Enter the Key (if you set one on the camera).

③The client will assign a unique Virtual Port Number to this device.





7.1.4.3 Connecting the Camera to Your VMS

Once the device is added successfully to the Milesight P2P Tunnel Client, the camera is now accessible locally via the generated Virtual Port.

VMS Connection Format

When adding the camera to your VMS, use the following details:

IP Address: 127.0.0.1 (The local host IP address)

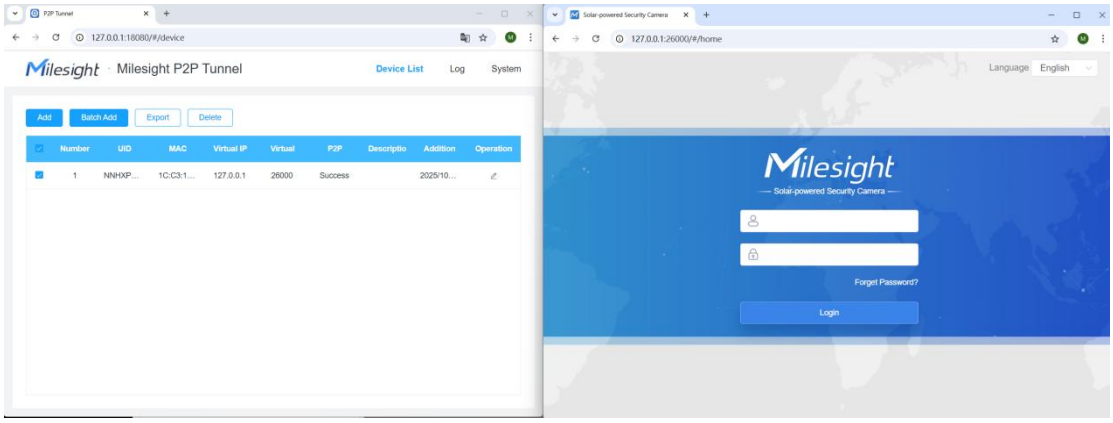
Port Number: [The Unique Virtual Port Number assigned by the Client]

Example: If the client assigns Virtual Port 55001, you add the camera to the VMS as 127.0.0.1:55001.

ONVIF: This local virtual port acts as the ONVIF port. The VMS will use the ONVIF protocol via this virtual port to automatically discover other stream ports (like the RTSP port).

Final Result

By connecting to 127.0.0.1:[Virtual Port], the camera can be managed and viewed in your VMS just like a standard, locally-wired camera.



7.1.5 HTTP

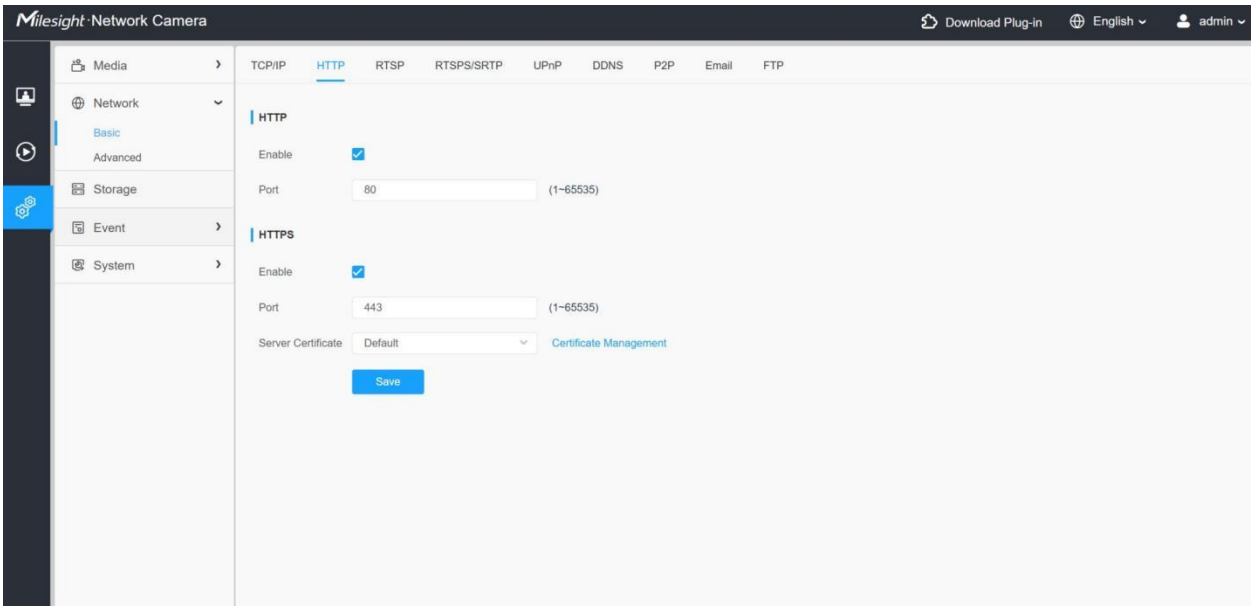


Table 25. Description of the buttons

Parameters	Function Introduction
HTTP	**Enable:** Start or stop using HTTP. **Port:** Enter a Web GUI login port from 1 to 65535. The default is 80, same with ONVIF port.
HTTPs	**Enable:** Start or stop using HTTPs. **Port:** Enter a Web GUI login port via HTTPS from 1 to 65535. The default is 443. **Note:** For more details about how to enable HTTPS access, see https:// milesight.freshdesk.com/a/solutions/articles/69000797384.
Server Certificate	You can select the certificates created in **Certificate Management**.
Save	Save the configurations.

Table 26. HTTP URL are as below:

Stream	URL
Main Stream	https://username:password@IP:port/ipcam/mjpeg.cgi
Secondary Stream	https://username:password@IP:port/ipcam/mjpegcif.cgi

7.1.6 RTSP

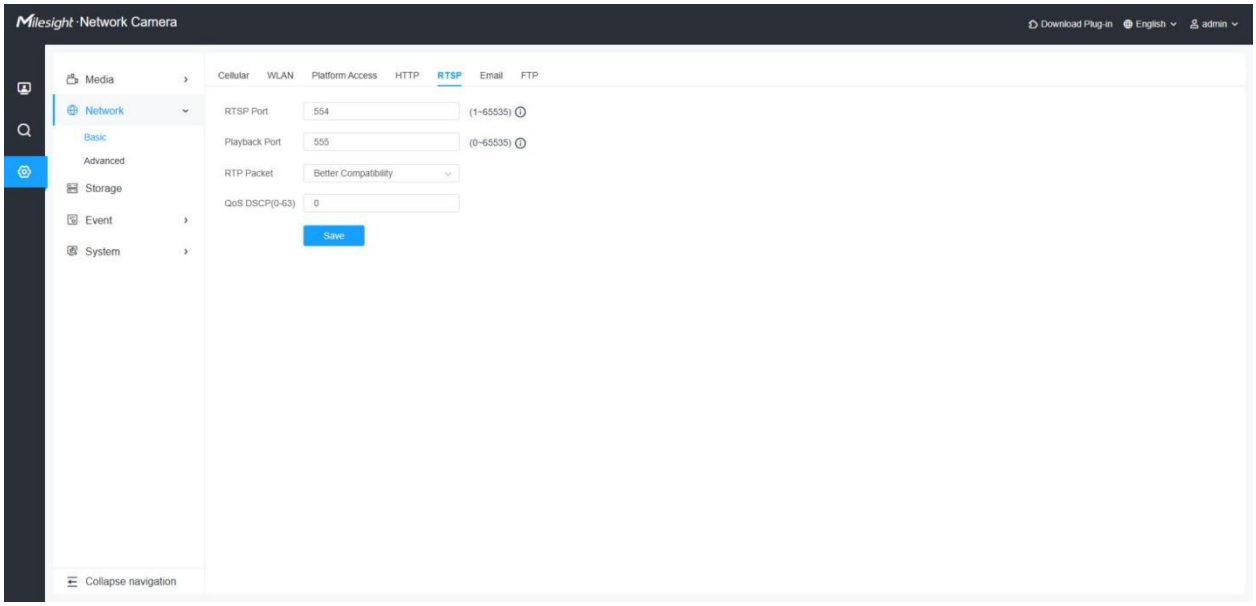


Table 26. Description of the buttons

Parameters	Function Introduction
RTSP Port	The port of RTSP, the default is 554.
Playback Port	Playback Port The port of playback, the default is 555. **Note:** Port 0 means closing playback function.
RTP Packet	There are Better Compatibility and Better Performance two options, if your camera's image mess up, please switch this option.
QoS DSCP	The valid value range of the DSCP is 0-63.
Save	Save the configuration.

Table 27. RTSP URL are as below:

Stream	URL
Primary Stream	rtsp://IP:RTSP Port/main
Secondary Stream	rtsp://IP:RTSP Port/sub

Note:

- DSCP refers to the Differentiated Service Code Point; and the DSCP value is used in the IP header to indicate the priority of the data.
- A reboot is required for the settings to take effect.

7.1.7 Email

Alarm video files can be sent to specific mail account through SMTP server. You must configure the email settings correctly before using it.

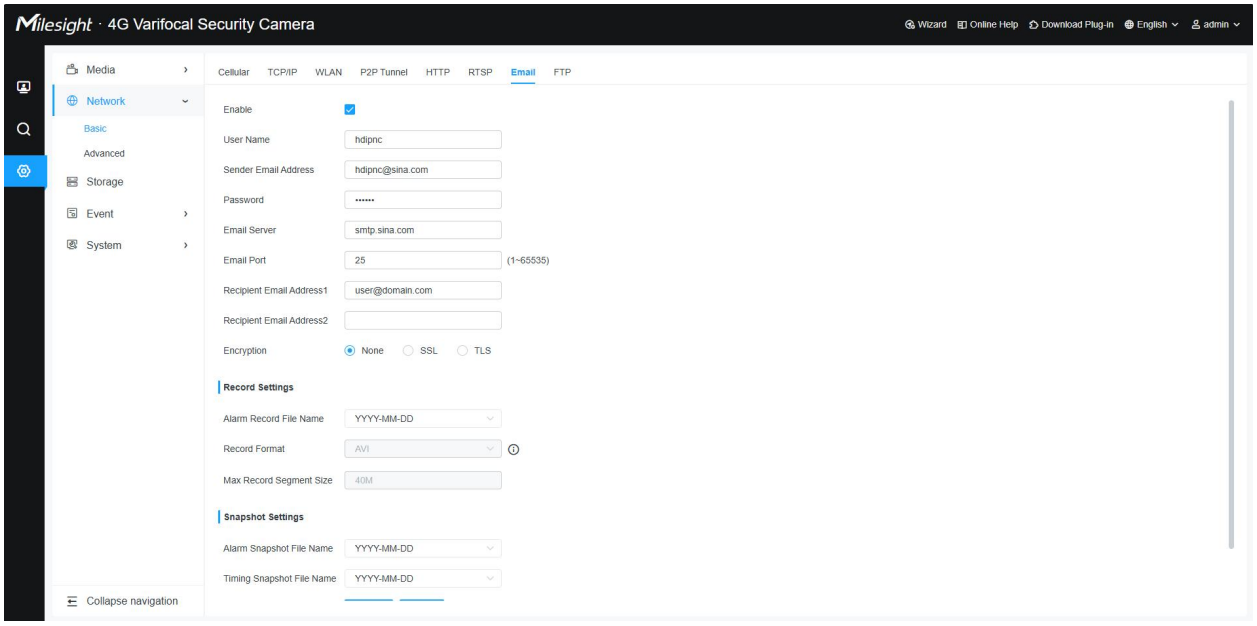


Table 32. Description of the buttons

Parameters	Function Introduction
Enable	Check the checkbox to enable Email function.
User Name	The sender's name. It is usually the same as the account name.
Sender Email Address	Email address to send video files attached emails.
Password	The password of the sender.
Email Server	The email server IP address or host name(e.g. smtp.gmail.com).
Email Port	The default TCP/IP port for SMTP is 25(not secured). For SSL/TLS port, it depends on the mail you use.
Recipient Email Address1	Email address to receive video files.

Parameters	Function Introduction
Recipient Email Address2	Email address to receive video files.
Encryption	Check the checkbox to enable SSL or TLS if it is required by the SMTP server. You can also select **None**.
Record Settings	**Alarm Record File Name:** Default(YYYY-MM-DD) /MM-DD-YYYY/ DD- MM-YYYY/ Add prefix/ Customize are available. **Record Format**: Selects the recording file format; MP4 and AVI are available. **Max Record Segment Size**: Limits the size of each recording file.
Snapshot Settings	**Alarm Snapshot File Name:** Default(YYYY-MM-DD) /MM-DD-YYYY/ DD- MM-YYYY/ Add prefix/ Customize are available. **Timing Snapshot File Name:** Default(YYYY-MM-DD) /MM-DD-YYYY/ DD- MM-YYYY/ Add prefix/ Customize are available.
Save	Save the configuration.
Test	Test whether the configurations are successful.

Note: You can refer to the following file name tip to customize the file name.

File Name Tip
&Device - Device Name
&Y - Year
&M - Month
&D - Day
&h - hour
&m - minute
&s - second
&ms - millisecond
&& - &

7.1.8 FTP

Alarm video files can be sent to specific FTP server. You must configure the FTP settings correctly before using it.

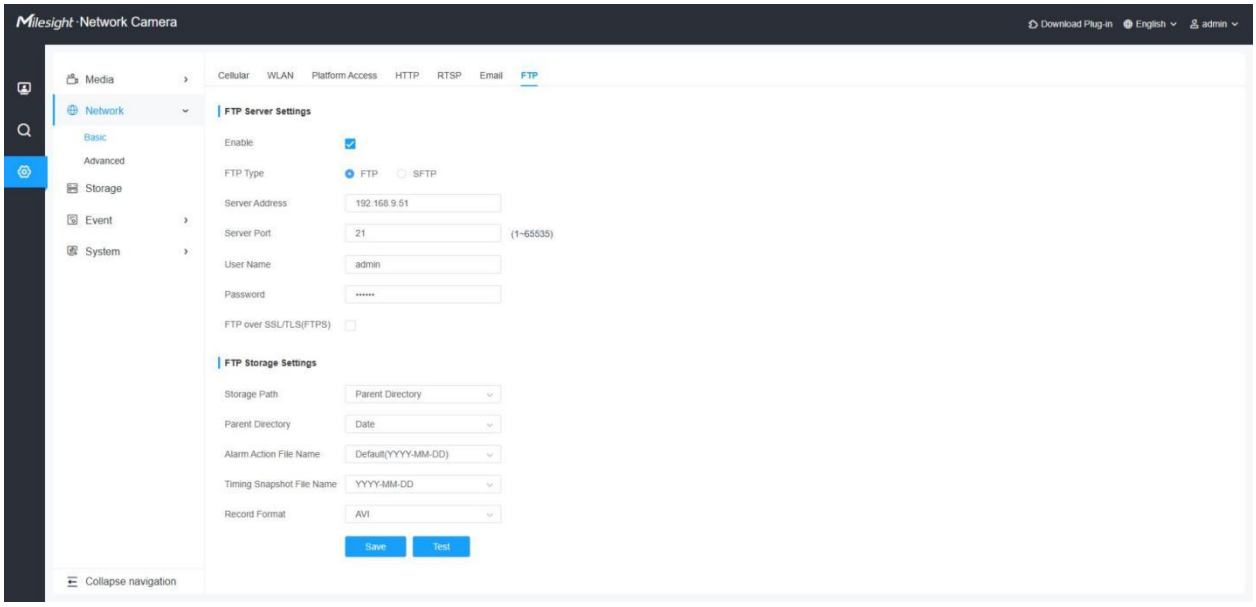


Table 29. Description of the buttons

Parameters		Function Introduction
FTP Server Settings	**FTP Type**	FTP and SFTP are optional.
	Server Address	FTP/SFTP server address.
	Server Port	The port of the FTP server. Generally it is 21. The port of the SFTP server. Generally it is 22.
	User Name	User name used to log in to the FTP/SFTP sever.
	Password	User password.
	Storage Path	Storage Path where video and image will be uploaded to the FTP server. Four FTP storage path types are available, including Root Directory, Parent Directory, Child Directory and Customize.
	Parent Directory	Choose IP Address/ Device Name/ Date as the folder name of Parent Directory, or customize the folder name.
	Child Directory	Choose IP Address/ Device Name/ Date as the folder name of Child Directory, or customize the folder name.

Parameters		Function Introduction
FTP Storage Settings	Multilevel Folder Name	If the storage path is more than two levels, enter Multilevel FTP storage path here manually.
	Alarm Action File Name	Choose the default(YYYY-MM-DD) or customize the alarm action file name.
	Video File Name	If you choose to customize the alarm action file name, YYYY-MM- DD/ MM-DD-YYYY/ DD-MM-YYYY/ Add prefix are available.
	Image File Name	If you choose to customize the alarm action file name, YYYY-MM- DD/ MM-DD-YYYY/ DD-MM-YYYY/ Add prefix are available.
	Timing Snapshot File Name	Default(YYYY-MM-DD) /MM-DD-YYYY/ DD-MM-YYYY/ Add prefix/ Overwrite with the base file name are available.
	Record Format	Optional AVI/MP4
Save		Save the configuration, 0s ~ 10s are optional.
Test		Test whether the configuration is successful.

Note:

- Parent Directory will be under Root Directory, and Child Directory will be under Parent Directory.
- You can refer to the following file name tip to customize the file name.

7.2 Advanced

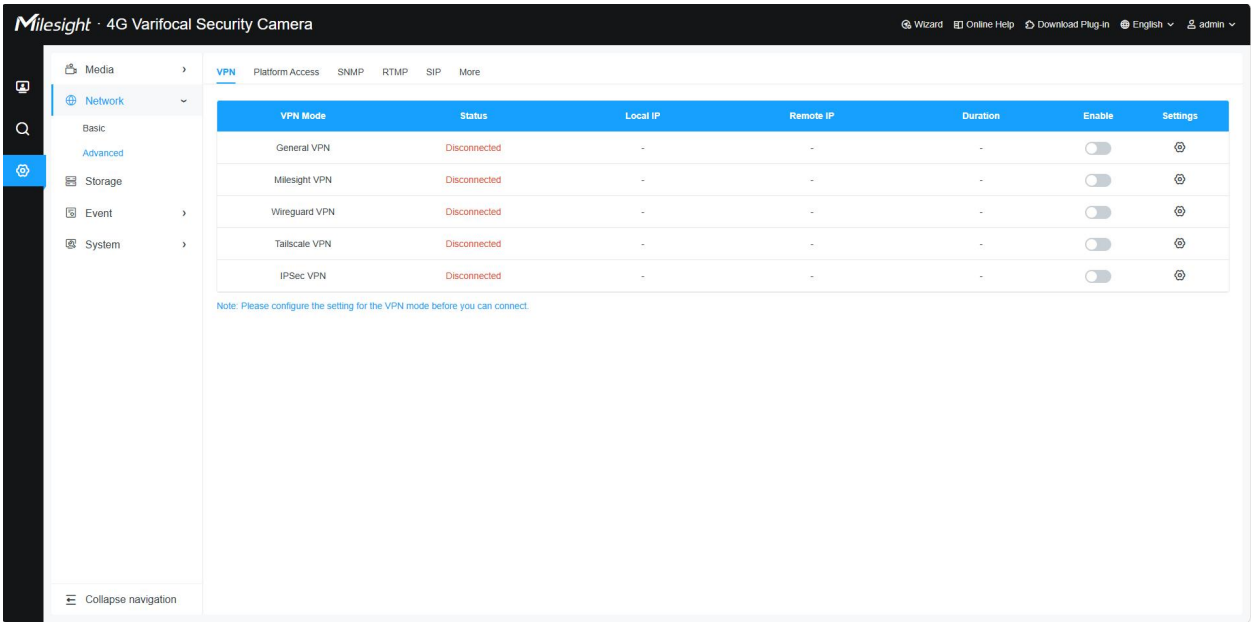
7.2.1 VPN

VPN stands for Virtual Private Network. It is a network protocol that can provide you secure encrypted connection over the public internet. It is a significant technology in surveillance industry. Imagine that you have a network camera connected via public IP address, it's

possible for others to log in or listen illegally if someone knows the specific IP address

and forwarded port. Via VPN the camera streams and data will be transferred through an encrypted tunnel. This encrypted VPN tunnel makes it appear as though you are directly connected to the private network, keeping your online activity (including your browsing history) hidden. For Milesight camera, VPN feature allows us to log in the camera via a virtual IP, which makes it easier to configure the camera remotely.

For more details about **How to use VPN on Milesight Camera**, please refer to https://milesight.freshdesk.com/support/solutions/articles/69000829102-how-to-use-vpn-on-milesight-network-camera.



Step 1: Select a VPN mode and click the button to configure its parameters.

Table 30. Description of the buttons

Parameters	Function Introduction	
VPN Mode	**General VPN**	**OpenVPN Configuration File:** Upload the .ovpn format OpenVPN client configuration file.
	Milesight VPN	Server Address: Specify the server address of Milesight VPN server. Server Port: ISpecify the server port of Milesight VPN server. Authorization Code: Copy the authentication code from Milesight VPN server. Device Name: Customize a unique device name to define the device.
	Wireguard VPN	**Wireguard VPN Configuration file:** Upload Wireguard VPN configuration file.

Parameters	Function Introduction	
	Tailscale VPN	Tailscale VPN is a zero-configuration, peer-to-peer VPN solution built on the WireGuard protocol. Its key advantage is that devices can communicate as if on the same local network without requiring public IP addresses, port forwarding, or complex network setup. With Tailscale VPN enabled, the SP112 can be accessed remotely from the customer's Tailscale network regardless of geographic location or network type, allowing the client platform to access each device via its VPN address for streaming, configuration, and data retrieval. To establish a Tailscale VPN connection: 1. Select "Tailscale VPN" from the VPN mode options, then click the settings button to configure it. 2. Enter the Tailscale Key in the input field. 3. Click the "Save" button to initiate the connection. **4.** The device will automatically register with the Tailscale network in the background and validate the key. **5.** If the key is valid, the connection will be established. If the key is incorrect, the Status will display a connection failure.
	IPSec VPN	IPSec VPN is a widely used enterprise VPN protocol. This implementation uses IKEv2 key exchange with AES256 encryption in Tunnel mode, providing strong security for mission-critical remote access scenarios. To establish an IPSec VPN connection: 1. Select "IPSec VPN" from the VPN Mode options, then click the settings button to configure it. 2. Enter the Server Address (IP or domain name of the IPSec VPN server). 3. Enter the Preshare Key for IKE authentication. 4. Optionally enter a Local ID to identify this device (recommended for cellular connections). **5.** Configure Local Subnet CIDR and Remote Subnet CIDR as needed (defaults are 0.0.0.0/24). **6.** Click the "Save" button to save all configuration and initiate the connection.

Step 2: Click the button to enable the VPN.

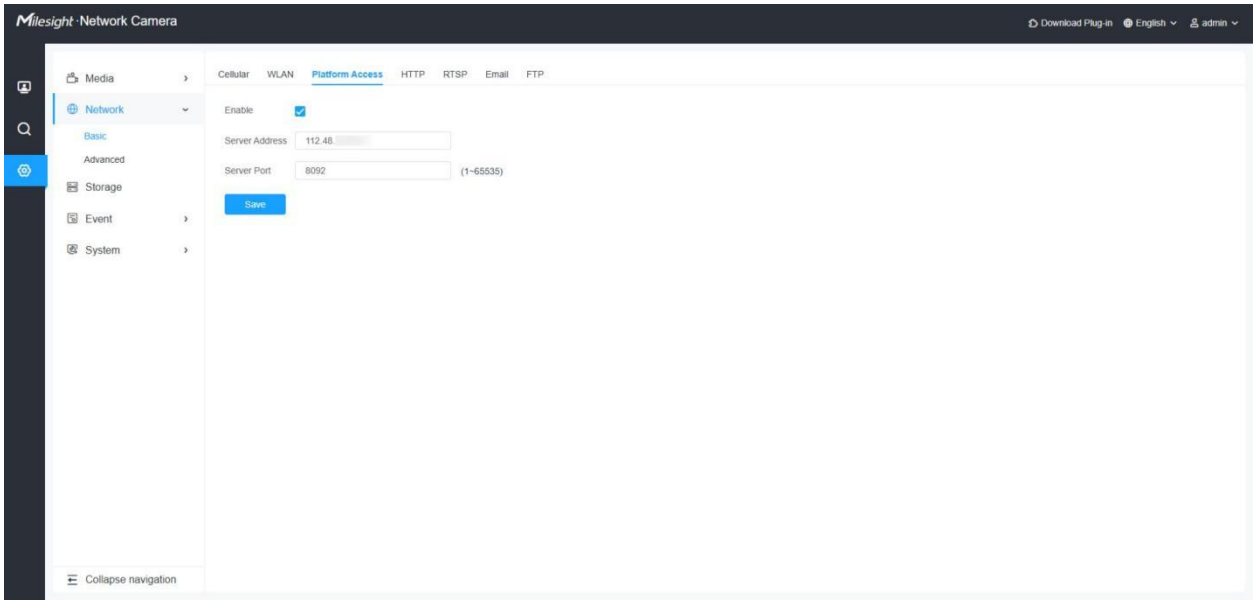
Note: Only one VPN mode can be active at a time.

Step 3: Check the VPN connection status and basic information.

Table 31. Description of the buttons

Parameters	Function Introduction
Status	Connection Status.
Local IP	IP Address Used by the User Device (also known as Local Host).
Remote IP	IP Address of the Remote Host Communicating with the User Device.
Duration	Connection Duration.

7.2.2 Platform Access



Platform access can be enabled to configure the external IP address and port of the backend VMS server.

For detailed instructions, please refer to the following two documents:

https://resource.milesight.com/milesight/security/document/troubleshooting/ipc/milesight-troubleshooting-how-to-connect-4g-solar-powered-cameras-to-milesight-vms.pdf

https://resource.milesight.com/milesight/security/document/troubleshooting/ipc/milesight-troubleshooting-how-to-use-milesight-vpn-to-connect-4g-solar-powered-camera-and-vms- network.pdf

7.2.3 SNMP

You can set the SNMP function to get camera status, parameters and alarm related information and manage the camera remotely when it is connected to the network.

Before setting the SNMP, please download the SNMP software and manage to receive the camera information via SNMP port. By setting the Trap Address, the camera can send the alarm event and exception messages to the surveillance center.

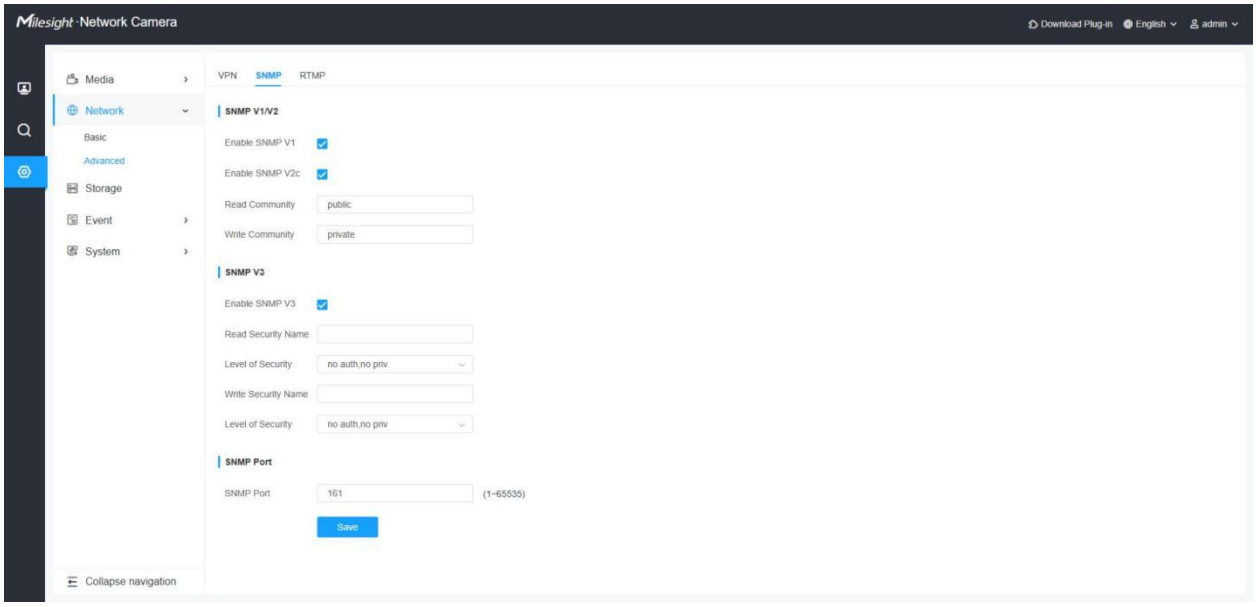


Table 32. Description of the buttons

Parameters	Function Introduction
SNMP v1/v2	The version of SNMP, please select the version of your SNMP software. **Enable SNMP v1:** Provide no security. **Enable SNMP v2:** Require password for access. **Write Community:** Input the name of Write Community. **Read Community:** Input the name of Read Community
SNMP v3	**Enable SNMP v3:** Provide encryption and the HTTPS protocol must be enabled. **Read Security Name:** Input the name of Read Security Community. **Level of Security:** There are three levels available: (auth, priv), (auth, no priv) and (no auth, no priv). **Write Security Name:** Input the name of Write Security Community. **Level of Security:** There are three levels available: (auth, priv), (auth, no priv) and (no auth, no priv).
SNMP Port	The port of SNMP, the default is 161.

Parameters	Function Introduction
Save	Save the configuration.

Note:

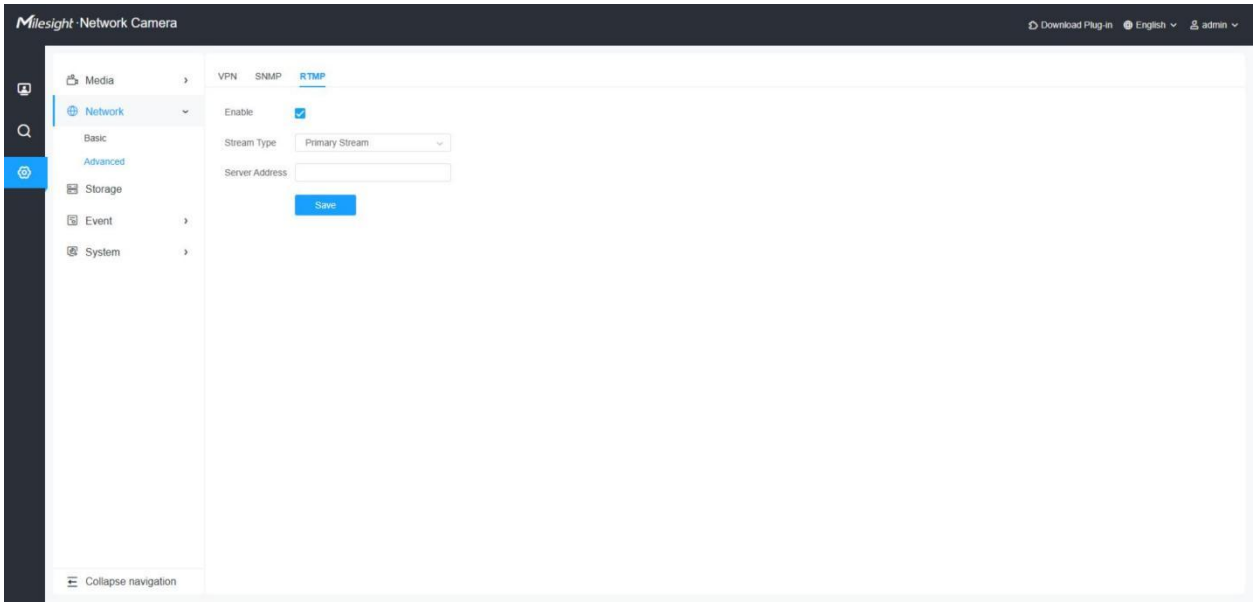
- The settings of SNMP software should be the same as the settings you configure here;
- A reboot is required for the settings to take effect.

7.2.4 RTMP

Real-Time Messaging Protocol (RTMP) was initially a proprietary protocol for streaming audio, video and data over the Internet, between a Flash player and a server. RTMP is

a TCP-based protocol which maintains persistent connections and allows low-latency

communication. It can realize the function of live broadcast so that customers can log in to the camera wherever there is a network.



Note:

- For YouTube live broadcast, if you use a newly created account to live broadcast, you need to wait for 24hrs to activate the account for using live function.
- For RTMP, since G.711 is not available for YouTube, so you can only play video from Milesight Network Camera with H.264 video coding and AAC audio coding on YouTube.

- Server Address in Network Camera RTMP interface needs to be filled with the format: rtmp://< Server URL >/< Stream key >, remember it needs '/'to connect between <

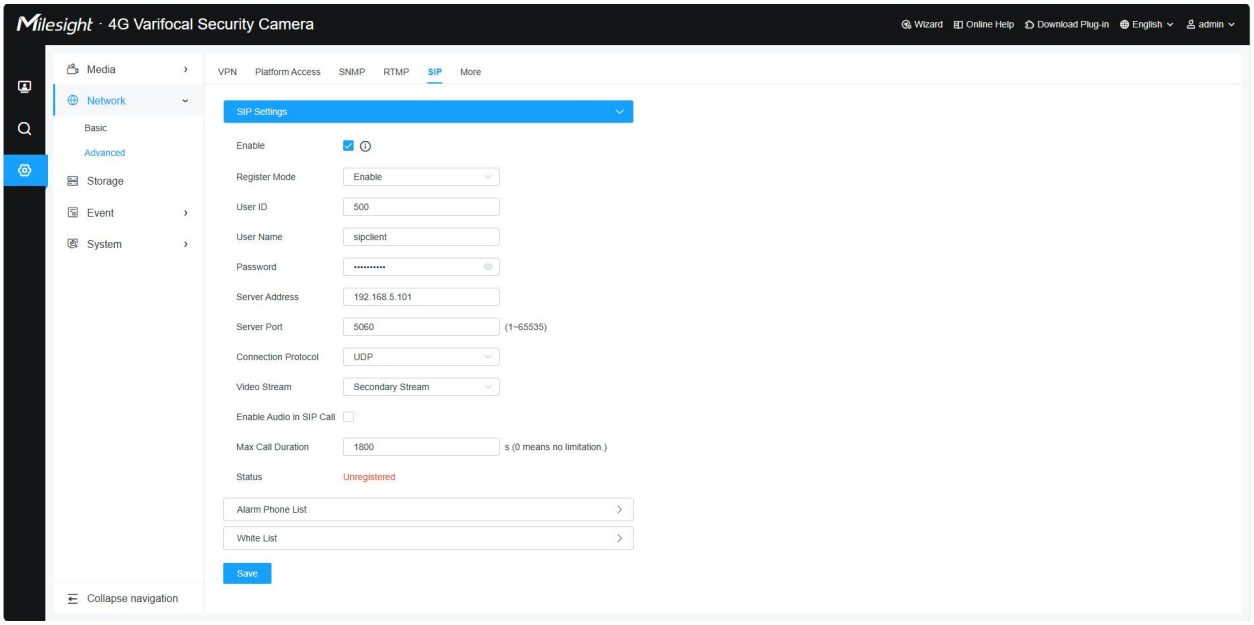
  Server URL > and < Stream key >.
- For more details about how to use RTMP for live broadcast, please refer to https://milesight.freshdesk.com/a/solutions/articles/69000643313.

7.2.5 SIP

The Session Initiation Protocol(SIP) is a signaling communications protocol, widely used for controlling multimedia communication sessions such as voice and video calls over Internet Protocol (IP) networks. This page allows user to configure SIP related parameters. Milesight Network cameras can be configured as SIP endpoint to call out when alarm triggered; or

allow permitted number to call in to check the video if the video IP phone is used.

Note: For more details about how to use SIP, please refer to https://milesight.freshdesk.com/a/solutions/articles/69000643391.



To use this function, the settings in SIP page must be configured properly. There are two ways to get video through SIP, one is to dial the IP address directly, the other is account registration mode. the details are as follows:

Method 1: IP Direct mode

Dial on the camera's IP address directly through SIP phone, so you can see the video.

Note: SIP phone and the camera should in the same network segment.

Method2: Account registration mode

- Before using the SIP, you need to register an account for the camera from the SIP server;
- Register another user account for the SIP device from the same SIP server;
- Call the camera User ID from the SIP device, you will get the video on the SIP device.

[SIP Settings]

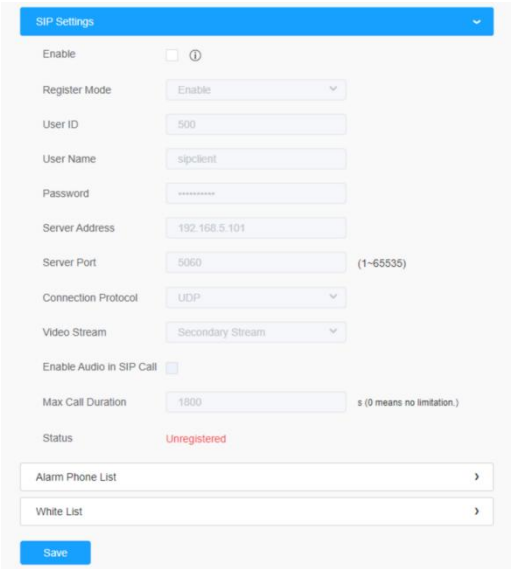


Table 37. Description of the buttons

Parameters	Function Introduction
Enable	Start or stop using SIP. **Note:** SIP supports Direct IP call.
Register Mode	Choose to use Enable mode or Disable mode. Enable mode means to use SIP with register account. Disable mode refers to use SIP without register account, just use the IP address to call.
User ID	SIP ID.
User Name	SIP account name.
Password	SIP account password.
Server Address	Server IP address.
Server Port	Server port.
Connection Protocol	UDP/TCP.
Video Stream	Choose the video stream.
Enable Audio in SIP Call	Enable/disable audio in SIP call.
Max Call Duration	The max call duration when use SIP.

Parameters	Function Introduction
Status	SIP registration status. Display “Unregistered” or “Registered” .

[Alarm Phone List]

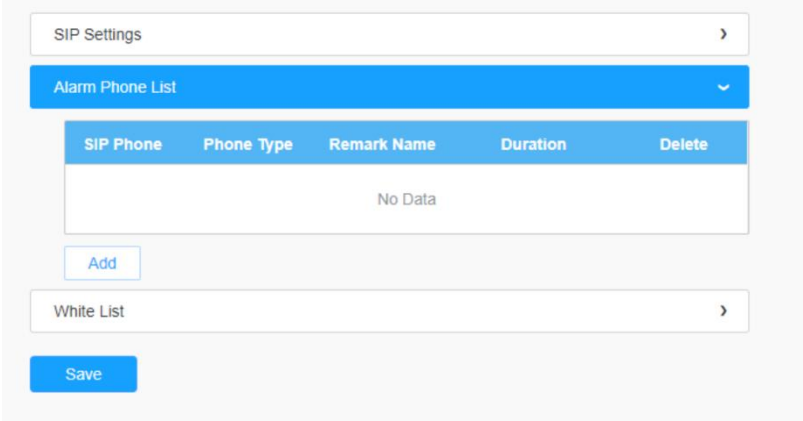


Table 38. Description of the buttons

Parameters	Function Introduction
Add	Add alarm phone to the camera. **Phone Type:** Phone Number(Call by phone number) & Direct IP Call(Check to accept peer to peer IP call). **To Phone Number/IP Address:** Call by phone number or IP address. **Remark Name:** Display name. **Duration:** The time schedule to use SIP.
	Delete the selected alarm phone.
Delete All	Delete all added alarm phone.

[White List]

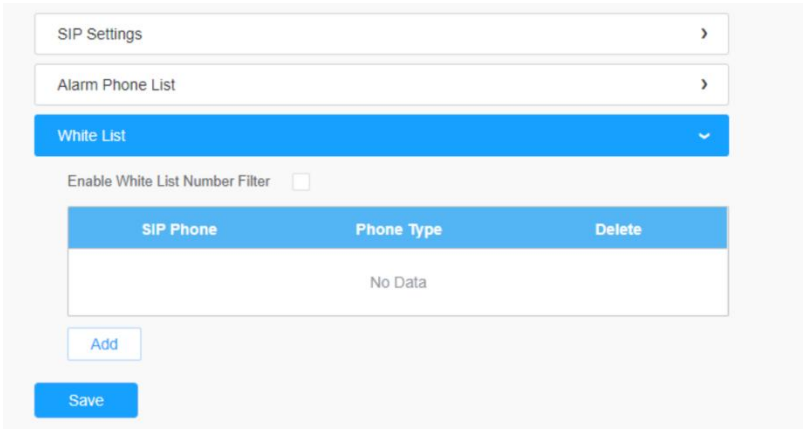


Table 39. Description of the buttons

Parameters	Function Introduction
Enable White List Number Filter	When enabled, only the designated phone number or IP address can visit
Add	**Phone Type:** Phone Number(Call by phone number) & Direct IP Call. **Phone Number/IP Address:** Including the phone number or IP address on the white list.

7.2.6 More

Here you can set more functions, like Push Message Settings and ONVIF Settings.

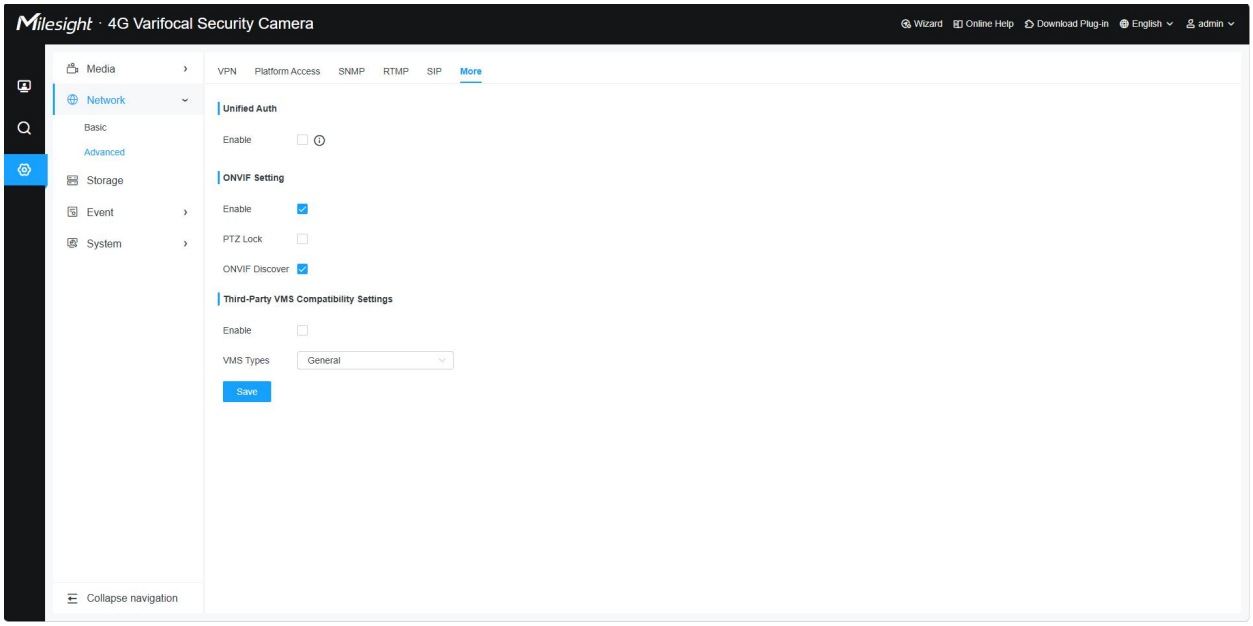


Table 40. Description of the buttons

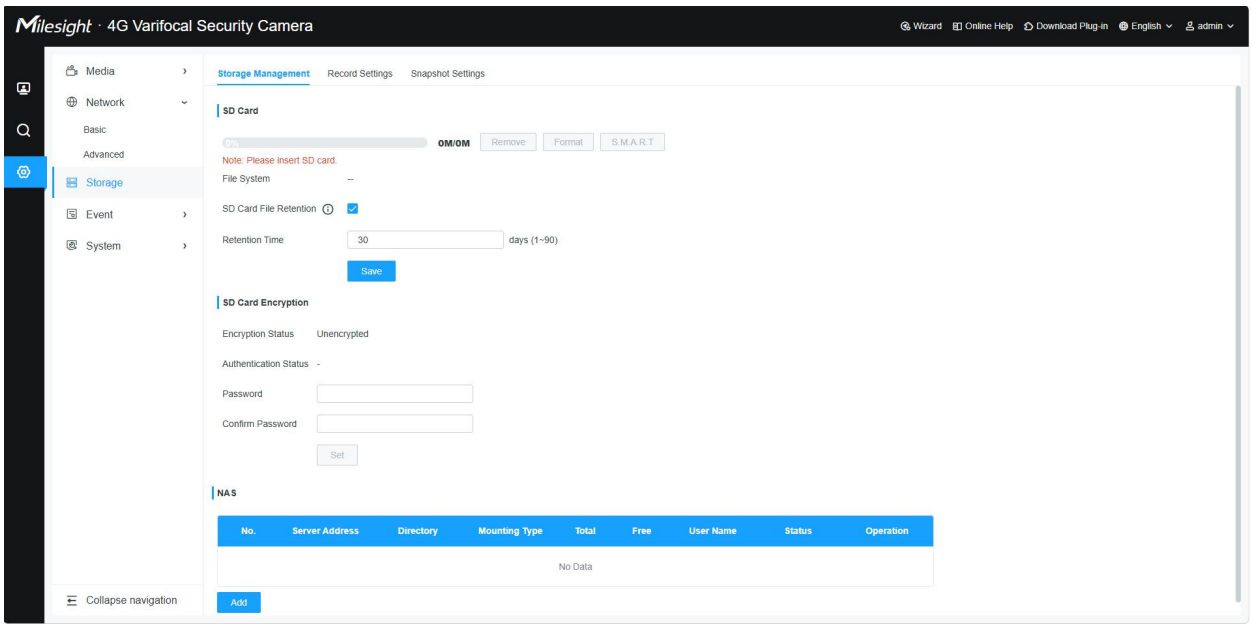
Parameters	Function Introduction
Unified Auth	Enable to let your browser remember login details for next time and enable passwordless login.
ONVIF Setting	**Enable:** Select to enable or disable the camera's ONVIF function. ONVIF is enabled by default, allowing third-party software to search for, add, and connect to the camera using ONVIF protocols. Disabling this option will completely turn off all ONVIF functions. **PTZ Lock**: Intercepts ONVIF-initiated PTZ commands (ONVIF is the main way for third-party devices to control the camera); select to enable/disable it, and enabling locks the camera's operating settings to avoid unintended zoom or focus changes **ONVIF Discover:**

Parameters	Function Introduction
	This option controls whether the camera can be discovered by third-party back-end systems via ONVIF. It is enabled by default to facilitate device addition and compatibility with third-party platforms. If you are using a cellular fixed IP and notice high data usage, you can disable ONVIF Discover to reduce traffic. When disabled, ONVIF discovery is turned off, but ONVIF functions remain available—you can still manually add the camera using its IP address.
Third-Party VMS Compatibility Settings	**Enable**: Check the checkbox to enable compatibility with third-party VMS systems. **VMS Types**: Select the desired third-party VMS type for compatibility.

Chapter 8. Storage

8.1 Storage Management

In this section, you can manage the SD card status, storage logic, and data security settings to optimize the device's performance and comply with privacy regulations.



Note: Before you start:

- Before using the SD card for the first time, please format the card on the camera.
- To configure record settings, please make sure that you have the SD card inserted in your camera.

Please refer to the meaning of the options as follows:

Table 19.

Item	Description
SD Card	**Format:** Format SD card, the files in SD card will be removed. **Remove:** Remove SD card. **S.M.A.R.T**: It is used to detect and display the SD card's health status. Click to view detailed health status information and the following window will displayed.

Item	Description
	 S.M.A.R.T Refresh Info / Data version: v0.9.0(4dff9b6) arm64 date: 2025-04-11T15:40:44.000 device: /dev/mmcblk0 addTime: FALSE signature: 0x70 0x58 Longsys: TRUE SMARTVersions: 2097152 sizeofDevSMART: 96 originalBadBlock: 80 increaseBadBlock: 0 writeAllSectNum: 13203026 Sector(512Byte) replaceBlockLeft: 80 degre0fWear: 0.03 Cycle sectorTotal: 1999749120 remainLifeTime: 100% remainWrGBNum: 3336.14TB lifeTimeTotal: 3000.00 Cycle phyWrGBNum: 0.03TB success: TRUE
File System	Displays the file system format (e.g., EXT4). If no SD card is inserted, it displays "-".
SD Card File Retention	Enable this to set a specific storage period for recordings and snapshots. Once the retention period is reached, files will be automatically deleted. **Retention Time:**Set the number of days to keep files on the SD card. **Range:** 1~90 days (Default: 30).
Save	Click to apply and save all configurations in the SD Card module.

[SD Card Encryption]

Provides advanced security mechanisms to protect stored data, ensuring compliance with **EU GDPR** privacy requirements.

Table 20.

Item	Description
Encryption Status	Displays whether the SD card file system is currently "Encrypted" or "Unencrypted".
Authentication Status	Shows the current password protection status.
Password / Confirm Password	Set or confirm the encryption password to secure the data on the SD card.

Note: Once the SD card is encrypted, the encryption cannot be removed directly. If you need to clear the encryption and return the card to an unencrypted state, the **SD card must be formatted**, which will erase all existing data.

[SD Card Decryption]

Supports decryption using third-party tools. The operation commands on Linux are as follows:

1. Install the decryption tool:
sudo apt install cryptsetup

2. Locate the newly inserted SD card, e.g., /dev/sdb:
ls -rlt /dev | grep disk

3. Decrypt and mount:
/opt/mmc is the mount point and must be an empty directory.
echo 'Enter the password set during SD card encryption here' | sudo cryptsetup --type=plain --cipher=aes-xts-plain64 --key-size=512 --hash=sha512 open /dev/sdb sd_encrypt
mkdir -p /opt/mmc
mount -t ext4 /dev/mapper/sd_encrypt /opt/mmc

4. Unmount:
umount -l /opt/mmc
cryptsetup close sd_encrypt
udisksctl power-off -b /dev/sdb

8.2 Record Settings

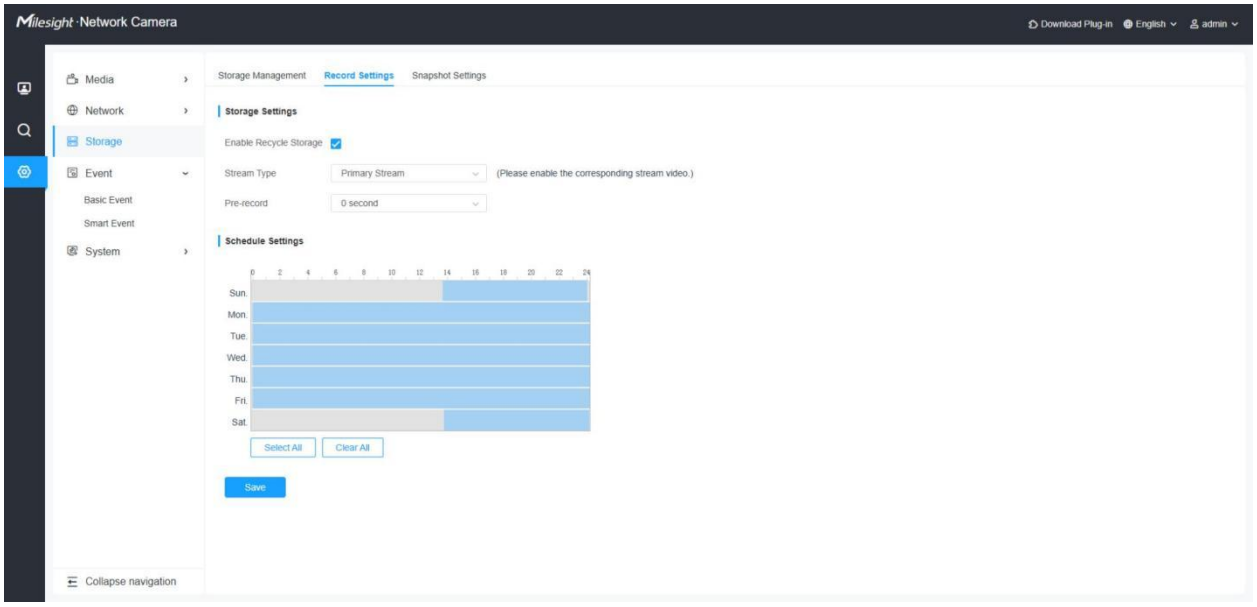
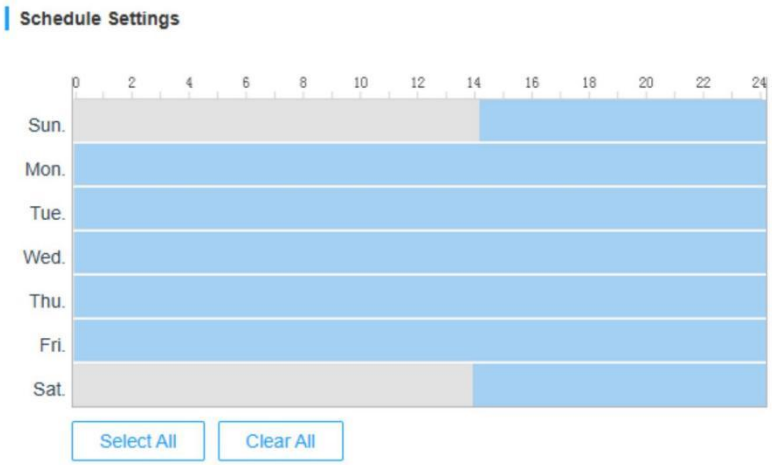
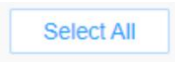


Table 34. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
Enable Recycle Storage	Enable/Disable Recycle Storage, if you enable this option, it will delete the files when the free disk space reaches a certain value.
Pre Second	Reserve the record time before alarm, 0~30 sec.
Schedule Settings	Edit record schedule as needed. Intuitive scheduling by drawing the time bar directly. 

Parameters	Function Introduction	
Schedule Settings		Copy the schedule area to another date.
		Select all schedule.
		Clear all schedule.
	Save the configuration.	

Note: SD Card or NAS are available.

8.3 Snapshot Settings

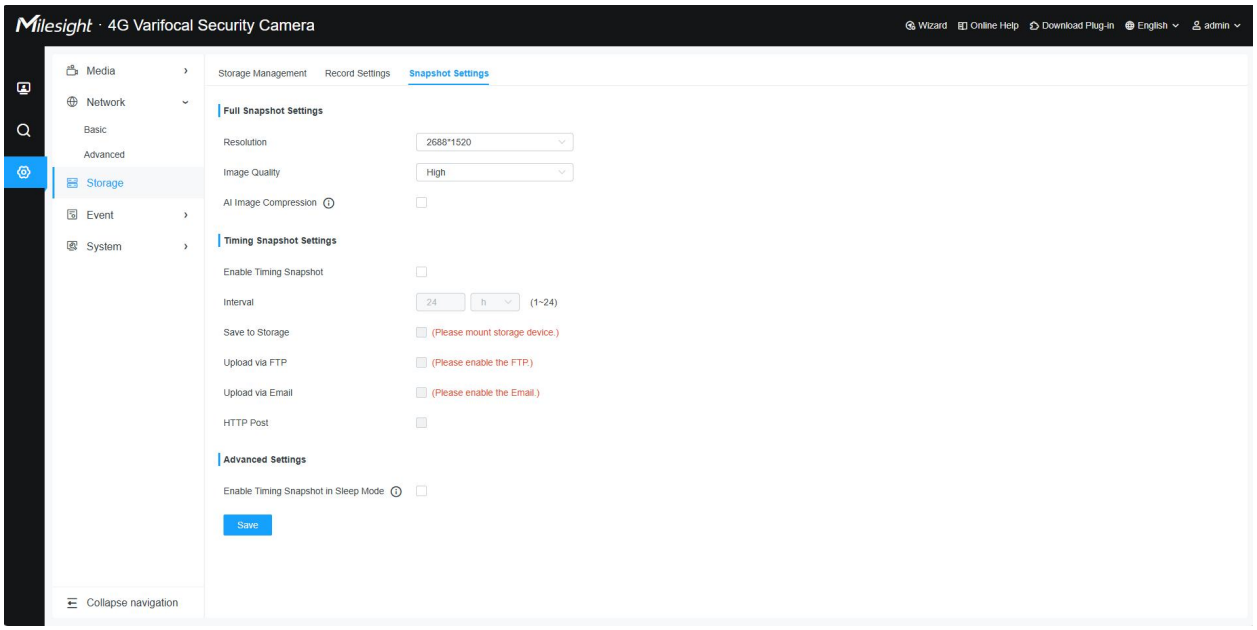


Table 35. Description of the buttons

Parameters	Function Introduction
Full Snapshot Settings	**Resolution:** Select the resolution for snapshots. It synchronizes with the main stream options: **2688*1520**, **2304*1296**, **1920*1080**,**1280*720**, **960*540**, **640*360**.

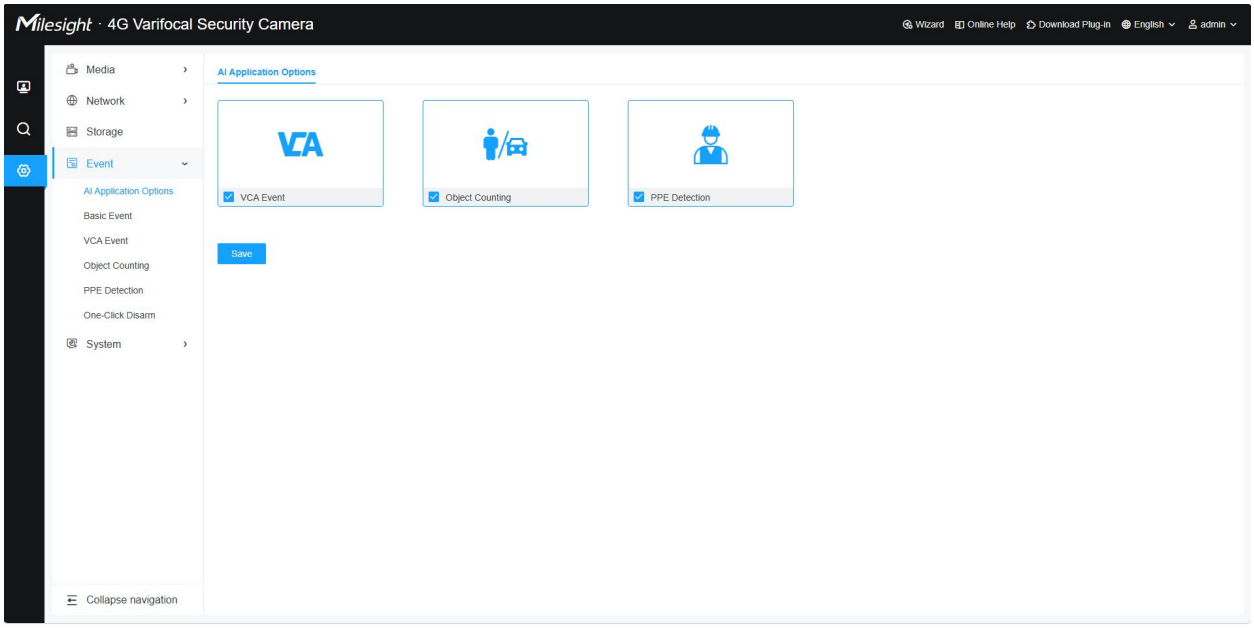
Parameters	Function Introduction
	Image Quality: Adjust the overall compression level for the entire image file. Options include **Low**, **Medium**, and **High**. (Default: High)
	AI Image Compress: Enable this to activate AI-based image processing. It focuses on maintaining target clarity (human/ vehicle) while optimizing background data to reduce file size.
Timing Snapshot Settings	**Enable Timing Snapshot**: Check the checkbox to enable the Timing Snapshot function. **Interval:** Set the snapshots interval, input the number and choose the unit(millisecond, second, minute, hour, day). **Save Into Storage:** Save the snapshots into SD card or NAS, and choose the file name to add time suffix or overwrite the base file name. **Upload Via FTP:** Upload the snapshots via FTP. **Upload Via Email:** Upload the snapshots via Email. **Note:** If you choose to add time suffix, every snapshot picture will be saved, but if you choose to overwrite the base file name, only one latest picture will be saved. When you choose add overwrite the base file name to SD Card or NAS, it will create a file named “Snapshot” to place the snapshot. **HTTP Post:** Upload the snapshots via HTTP Post. Support uploading the snapshots to specified HTTP URL.
Advanced Settings	**Enable Timing Snapshot in Sleep Mode:** Check the checkbox to allow the device to continue performing timing snapshots in Sleep Mode. **Note:** When the device enters Sleep Mode, enabling Timing Snapshot will accelerate battery consumption.
Save	Save the configuration.

Chapter 9. Event

Milesight event provides advanced, accurate smart video analytics for Milesight network cameras. It enhances the performance of network cameras through basic events and VCA events, enabling a comprehensive surveillance system and quicker response of cameras to different monitoring scenes.

Note:

1. Before you utilizing the corresponding function, enable it first in the AI Application Options interface.

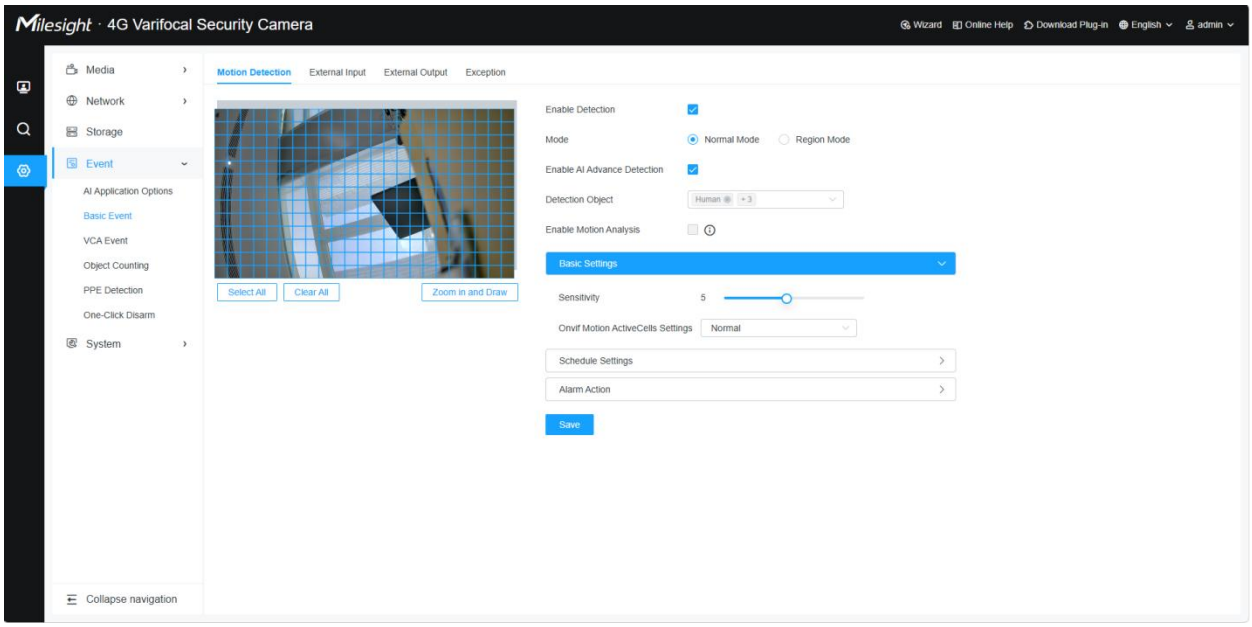


2. Different event types are supported in each working mode, as shown in the table below.

Event	Performance Mode	Power Saving Mode	AOV Mode	Standby Mode
Event-->AI Application Options	✔	✔	×	×
Event-->Basic Event-->Motion Detection	✔	✔	✔	×
Event-->Basic Event-->External Input	✔	✔	✔	✔
Event-->Basic Event-->External Output	✔	✔	✔	✔
Event-->Basic Event-->Exception	✔	✔	✔	✔

9.1 Basic Event

9.1.1 Motion Detection



Note: For details about how to configure Motion Detection, see https://milesight.freshdesk.com/a/solutions/articles/69000643423.

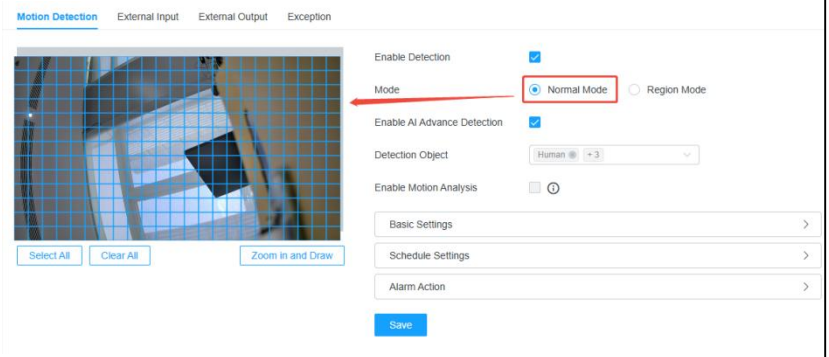
Configuration steps are shown as follows:

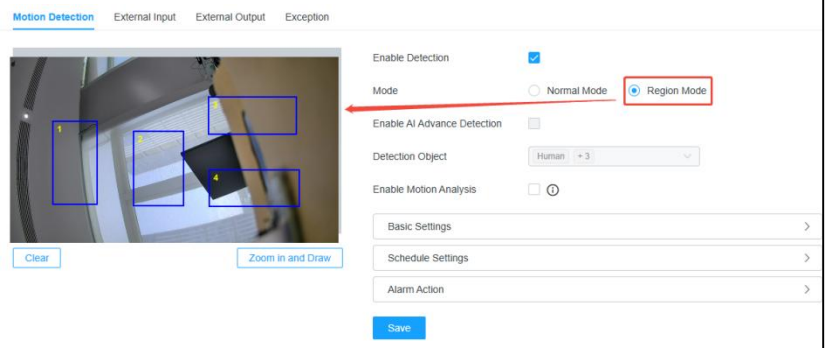
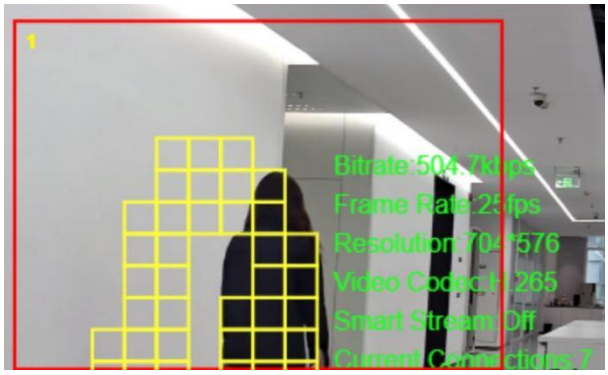
Step1: Choose Settings > Event > Basic Event > Motion Detection.

Step2: Check the check box to enable the function.

Step3: Select the detection mode and then draw the detection region.

Table 46. Description of the buttons

Parameters	Function Introduction
Enable Detection	Check the checkbox to enable the motion detection function.
Mode	Region Mode and Normal Mode are available. **Normal Mode** allows you to draw and customize detection zones freely across the entire live view  **Region Mode** allows you to configure up to four independent

Parameters	Function Introduction
	rectangular detection areas. To exclude specific zones from detection. Detection regions are marked with blue boxes, which turn red when an event is triggered. 
Enable AI Advanced Detection	When enabled, the system detects only the selected target ("Human", "Vehicle", or "Non-motor Vehicle"), ignoring background motion such as swaying leaves. Note: This option is only available in normal mode.
Enable Motion Analysis	When Motion Analysis is enabled, the moving region will turn yellow so that the user can know exactly where the motion occurred. Note: Only support when HTTP is selected in Live View. 
Select All	Click it to select the whole area.
Clear All	Click it to clear the selected areas.
Zoom in and Draw	Click it to draw more precise detection regions in the pop-up window.
Save	Click it to save the configurations.

[Basic Settings]

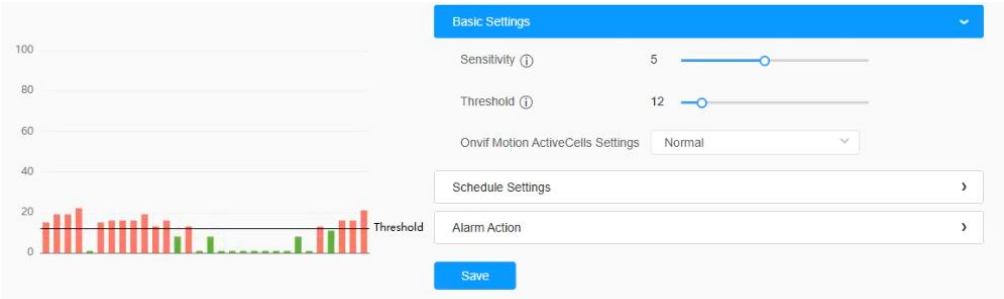


Table 47. Description of the buttons

Parameters	Function Introduction
Threshold	Higher threshold requires a greater amount of motion area change to trigger an alarm.
Sensitivity	Higher sensitivity detects smaller movement to trigger alarm. Sensitivity level: 1~10.
Threshold Curve	The threshold curve displays whether the detection value exceeds the preset threshold over time, helping you visualize and fine-tune the motion detection settings.
Onvif Motion ActiveCells Settings	**Normal** and **Compatible** are available for the option. If the setting of motion region of the third-party software is different from ours, select **Compatible** here.

[Schedule Settings]

Step4: Set a motion detection schedule.

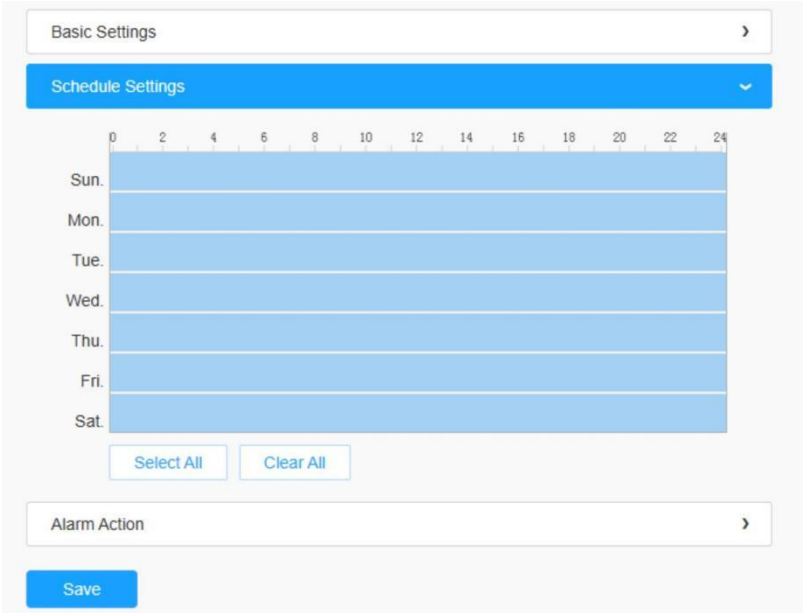
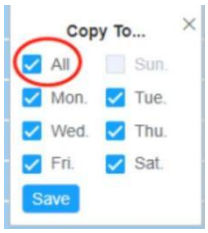
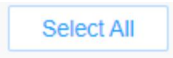


Table 48. Parameter Description

Parameter	Function Introduction

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
	Select all schedules.
	Clear all schedules.

[Alarm Action]

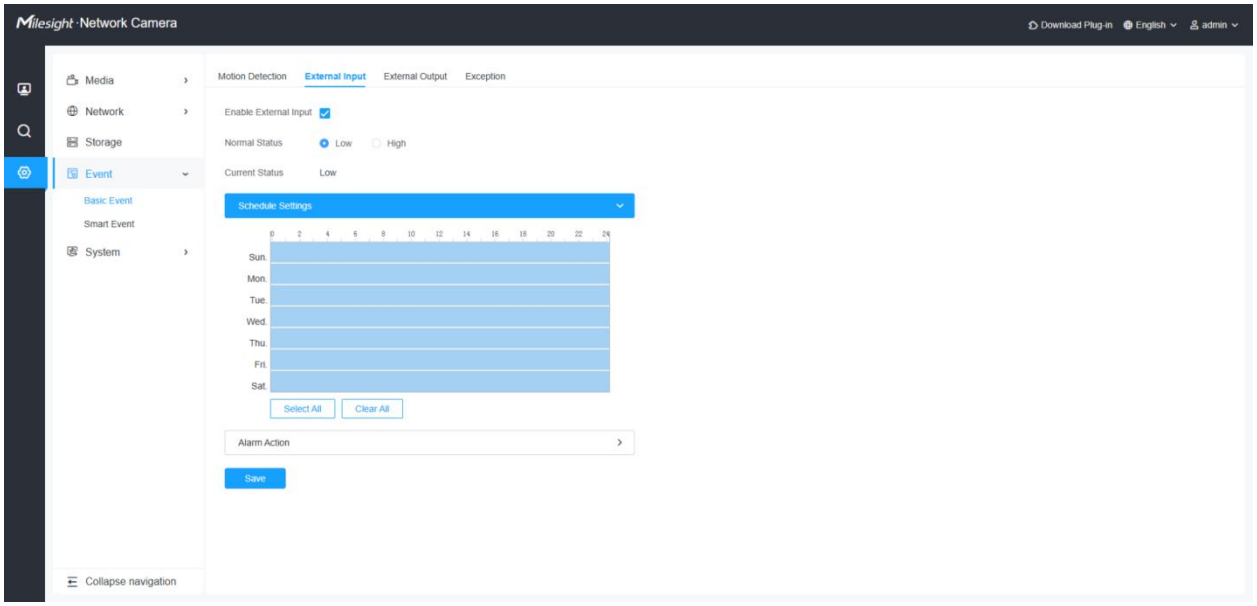
Step5: Set an alarm action.

Table 49. Description of the buttons

Parameters	Function Introduction
Record	Duration: Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. Linkage: Alarm recording files can be saved to SD Card or NAS, uploaded via FTP, or sent via email.
Snapshot	Number: The number of snapshot, 1~5 are available. Interval: This cannot be edited unless you choose more than 1 to Snapshot. Linkage: Save alarm recording files into an SD card or NAS, upload the recording files via FTP, and send an alarm email.
External Output	If the camera is equipped with external outputs, you can enable the action after configuring the trigger duration. Two external output interfaces are available and can be configured independently. Action Time: Customize, 10 s, 30 s, 1 min., 5 min., and Constant are available for each output.

Parameters	Function Introduction
Play Audio	Auto/10 seconds/30 seconds/1 minute/5 minutes/10 minutes are available. Note: Enable the Audio Speaker first.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to push the alarm news to specified HTTP URL. Note: • Three HTTP notifications at most can be added to the same event. • HTTP Notification supports Basic & Digest authentication.

9.1.2 External Input



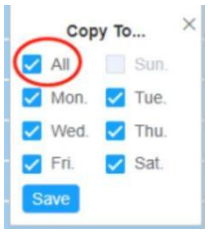
[Normal Status]

Please set the **Normal Status** firstly, when the **Current Status** is different with **Normal Status**, it will lead to the alarm.

[Schedule Settings]

Set motion detection schedule.

Table 40. Description of the buttons

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
Select All	Select all schedules.
Clear All	Clear all schedules.

[Alarm Action]

Set alarm action.

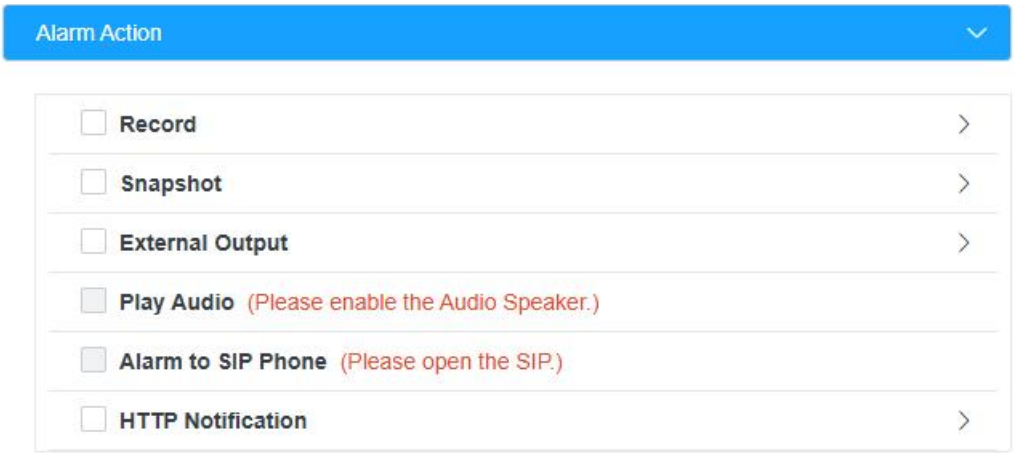
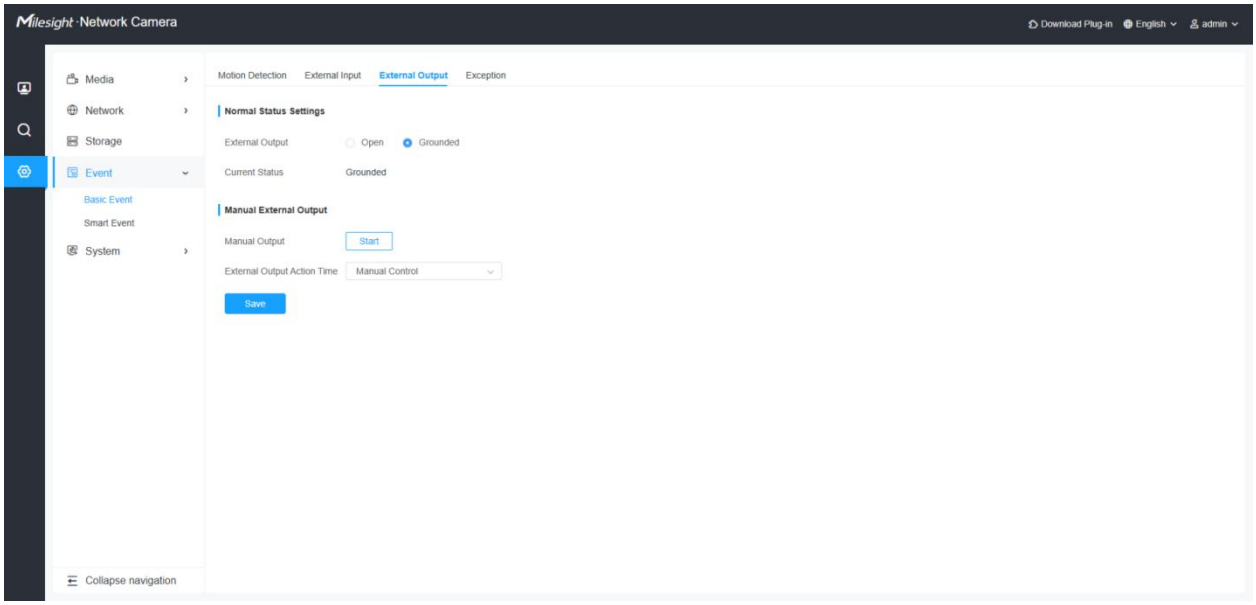


Table 41. Description of the buttons

Parameters	Function Introduction
Record	**Duration:** Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. **Linkage:** Save alarm recording files into SD Card or NAS or Upload the recording files via FTP.
Snapshot	**Number:** The number of snapshot, 1~5 are available. **Interval:** This cannot be edited unless you choose more than 1 to Snapshot. **Linkage:** Save alarm recording files into SD Card or NAS, Upload the recording files via FTP and send alarm email.
External Output	If the camera equips with External Output, you can enable the action after configuring the trigger duration.
Play Audio	**Audio Action:** Schedule the alarm activation time. **Interval:** Set different alarm trigger intervals. Options are Auto/10 s/30 s/1 min./5 min./10 min.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to pop up the alarm news to specified HTTP URL. **Note:** • Three HTTP notifications at most can be added to the same event. • HTTP Notification supports Basic & Digest authentication.

9.1.3 External Output



[Normal Status Settings]

Please set the **Normal Status** firstly, when the **Current Status** is different with **Normal Status**, it will lead to the alarm.

[Manual External Output]

You can set the manual external output.

Table 42. Description of the buttons

Parameters	Function Introduction
Manual Output	Click to Start/Stop manual external output.
External Output Action Time	Manual Control/Customize/10 s/1 min./5 min./10 min. are available.

9.1.4 Exception

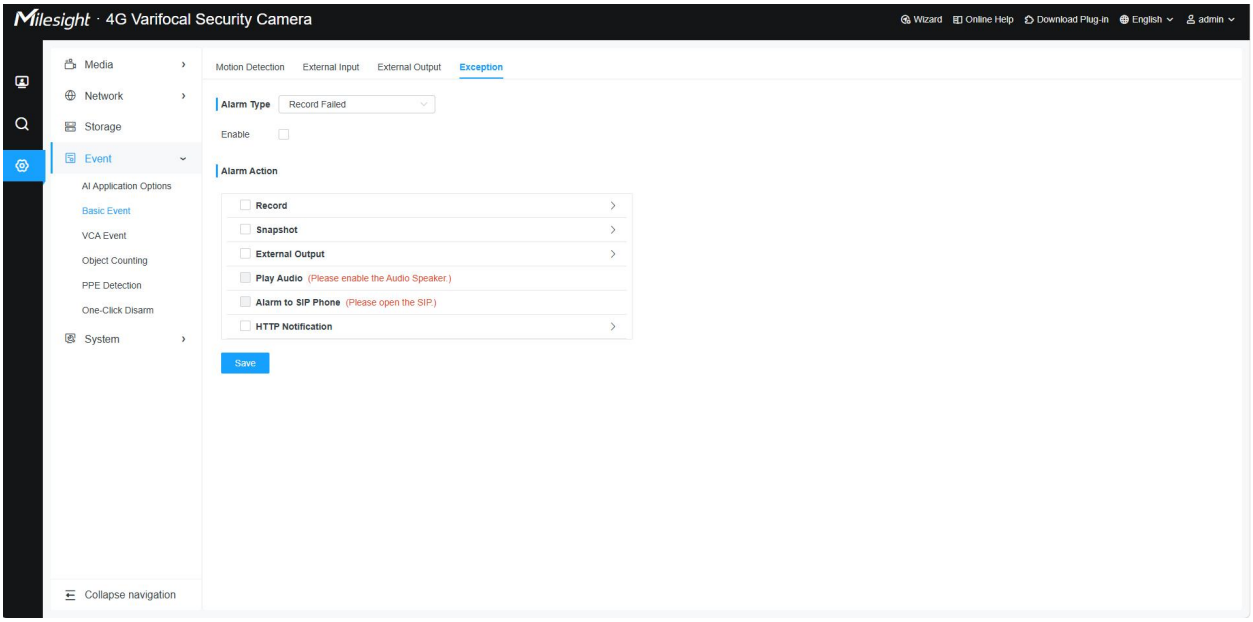


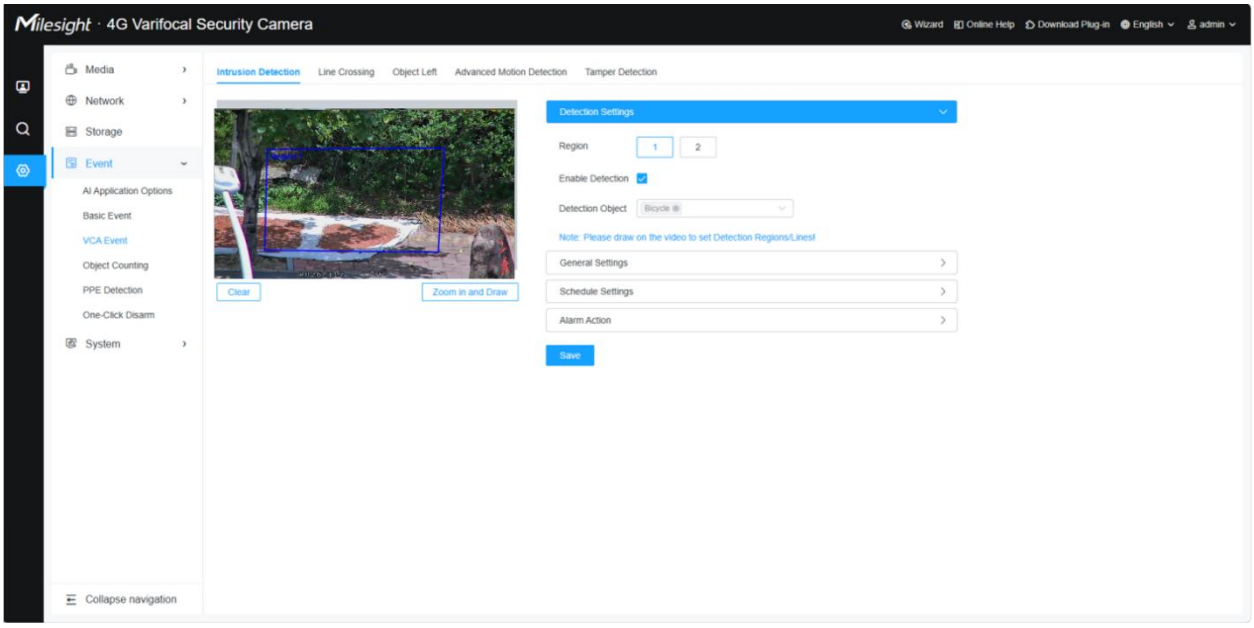
Table 43. Description of the buttons

Parameters	Function Introduction
Alarm Type	**Record Failed, SD Card Full, SD Card Uninitialized, SD Card Error** and **No SD Card** are available. Check the checkbox to enable the alarm type you selected.
Alarm Action	Please refer to the previous section for the meaning of the options; it will not be repeated here.

9.2 VCA Event

9.2.1 Intrusion Detection

Intrusion detection is used to protect a specific area from potential threats of intrusion by suspicious people or other objects. Whether it is an intrusion from outside the region or a sudden appearance within the region, an alarm action will be triggered.



Settings steps are shown as follows:

[Detection Settings]

Step1: Selected detection region and enable intrusion detection.

Step2: Choose detection object. Check Human, Vehicle or Non-motor Vehicle attribute, and the camera will alarm once detecting people or vehicle and triggering related events.

[General Settings]

Step3: Set detecting sensitivity and object size limits, and set the trigger mode with General Mode or Bottom Mode.

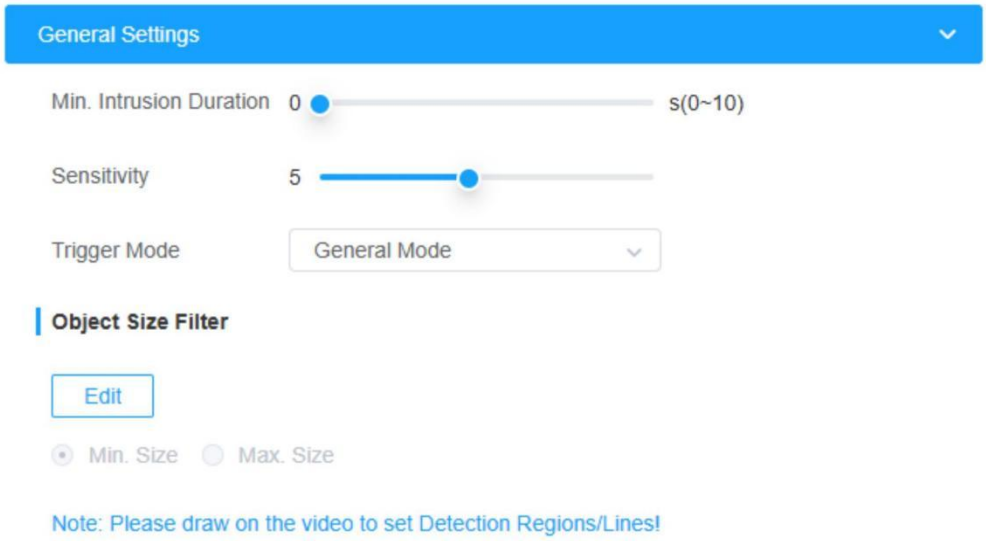


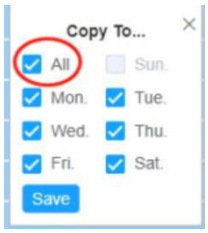
Table 44. Description of the buttons

Parameters	Function Introduction
Min.Intrusion Duration	Set the triggering interval for intrusion.
Sensitivity	Level 1~10 are available, the default level is 5. The higher the sensitivity, the easier it is for moving objects to be recorded in the results.
Trigger Mode	Set the desired mode of the trigger logic including General Mode and Bottom Mode. General Mode: The alarm is triggered when the object's body roughly enters the detection area. Bottom Mode: the alarm will be triggered as soon as the bottom of the object enters the detection area. Suitable for scenarios that require sensitivity to intrusion status/ bottom detection preference.
Min. Size	Draw on the screen to set the minimum size of the detected object. Objects smaller than this size will not be detected. The default minimum size is 8*8.
Max. Size	Draw the screen to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 608*352.

[Schedule Settings]

Step4: Set detection schedule.

Table 45. Description of the buttons

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
Select All	Select all schedules.
Clear All	Clear all schedules.

[Alarm Action]

Step5: Set alarm action.

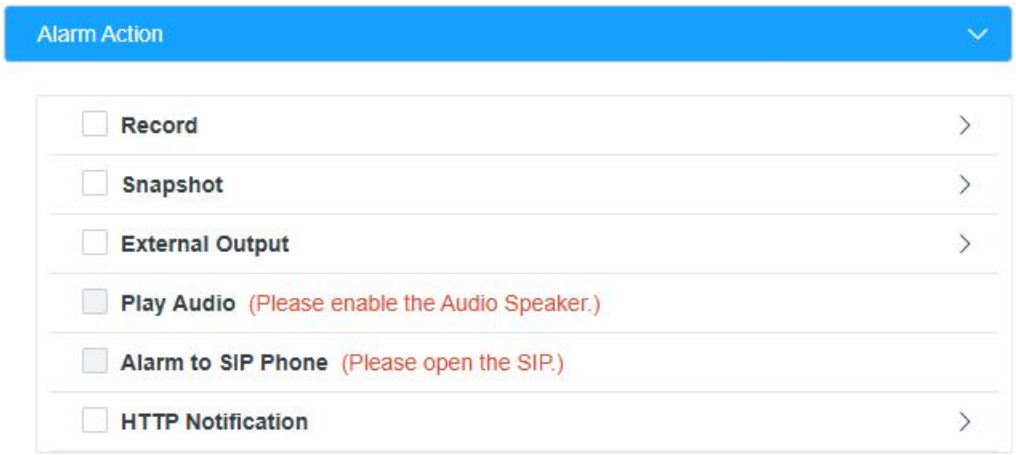


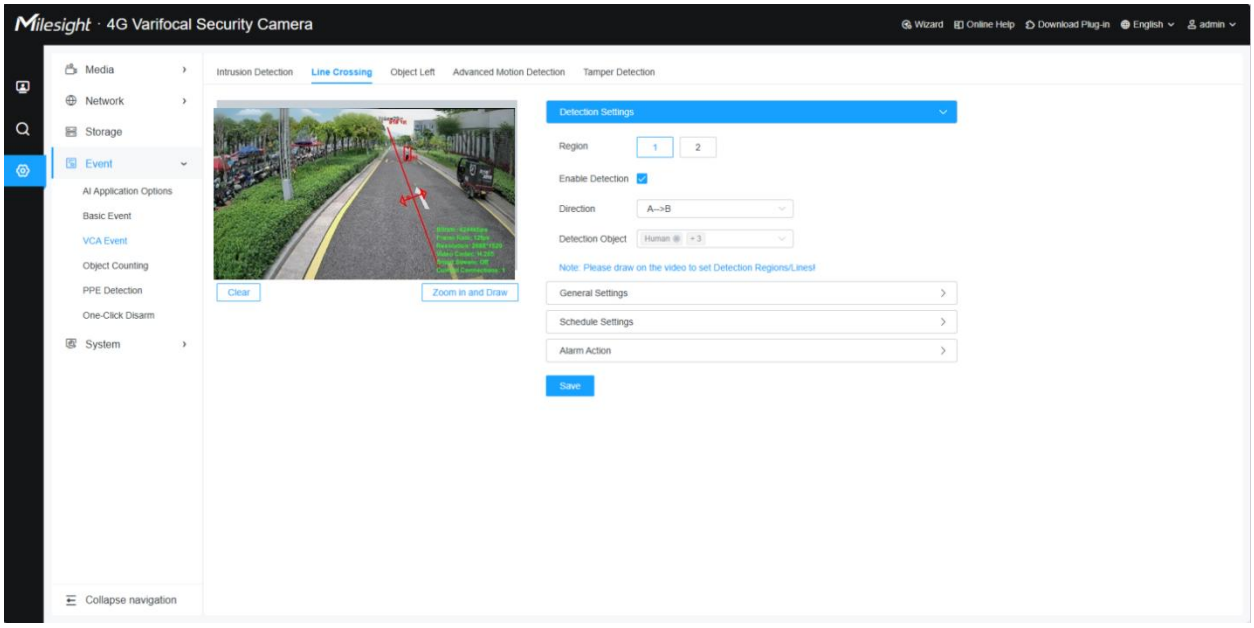
Table 46. Description of the buttons

Parameters	Function Introduction
Record	**Duration:** Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. **Linkage:** Save alarm recording files into SD Card or NAS or Upload the recording files via FTP.

Parameters	Function Introduction
Snapshot	**Number:** The number of snapshot, 1~5 are available. **Interval:** This cannot be edited unless you choose more than 1 to Snapshot. **Linkage:** Save alarm recording files into SD Card or NAS, Upload the recording files via FTP and send alarm email.
External Output	If the camera equips with External Output, you can enable the action after configuring the trigger duration. Action Time:Customize/10 seconds/30 seconds/1minute/5 minutes/Constant are available.
Play Audio	Auto/10 seconds/30 seconds/1 minute/5 minutes/10 minutes are available.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to pop up the alarm news to specified HTTP URL. After filling in the basic information, you can click the test button to test the HTTP connectivity.

9.2.2 Line Crossing

Line Crossing detection is designed to work in most indoor and outdoor environment. An event will be triggered every time when the camera detects objects crossing a defined virtual line.



Settings steps are shown as follows:

[Detection Settings]

Step1: Selected effective region;

Step2: Select detection line, enable line crossing detection and define its direction;

Note: Allows to set up to four lines at a time. There are three direction modes to choose for triggering alarm. “A-->B” means when there is any object crossing the line from the “A”

side to the “B” side, the alarm will be triggered. “B-->A” vice versa. “A-->B” means that the alarm will be triggered when objects cross line from either side.

Step3: Choose detection object. Check Human, Vehicle or Non-motor Vehicle attribute, and the camera will alarm once detecting people or vehicle and triggering related events.

[General Settings]

Step4: Set detecting sensitivity and object size limits.

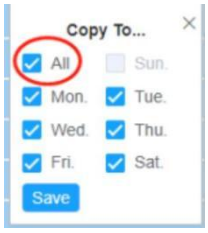
Table 47. Description of the buttons

Parameters	Function Introduction
Sensitivity	Level 1~10 are available, the default level is 5. The higher the sensitivity, the easier it is for moving objects to be recorded in the results.
Trigger Mode	Set the desired mode of the trigger logic including General Mode and Bottom Mode. General Mode: The alarm is triggered when the object's body roughly enters the detection area. Bottom Mode: the alarm will be triggered as soon as the bottom of the object enters the detection area. Suitable for scenarios that require sensitivity to intrusion status/ bottom detection preference.
Min. Size	Draw the screen to set the minimum size of the detected object. When the object is smaller than this size, it will not be detected. The default minimum size is 8*8.
Max. Size	Draw the screen to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 608*352.

[Schedule Settings]

Step5: Set detection schedule;

Table 48. Description of the buttons

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
	Select all schedules.
	Clear all schedules.

[Alarm Action]

Step6: Set alarm action.

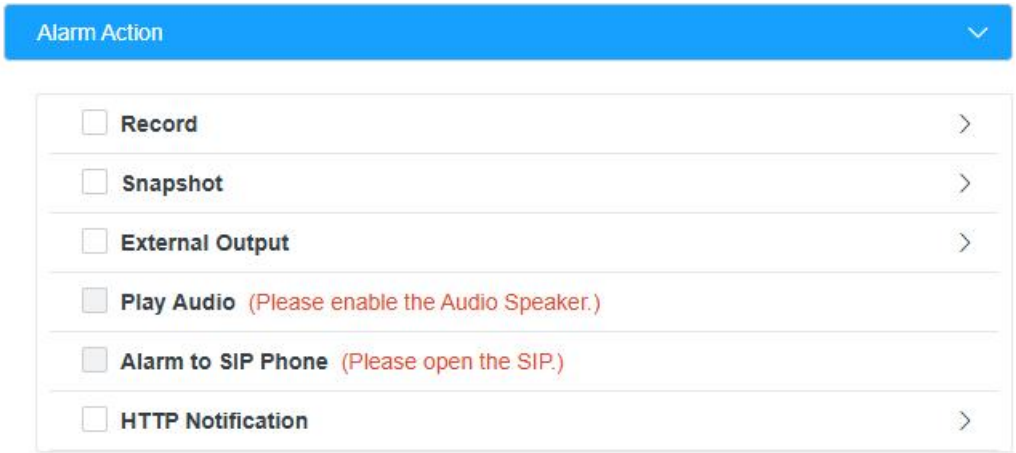


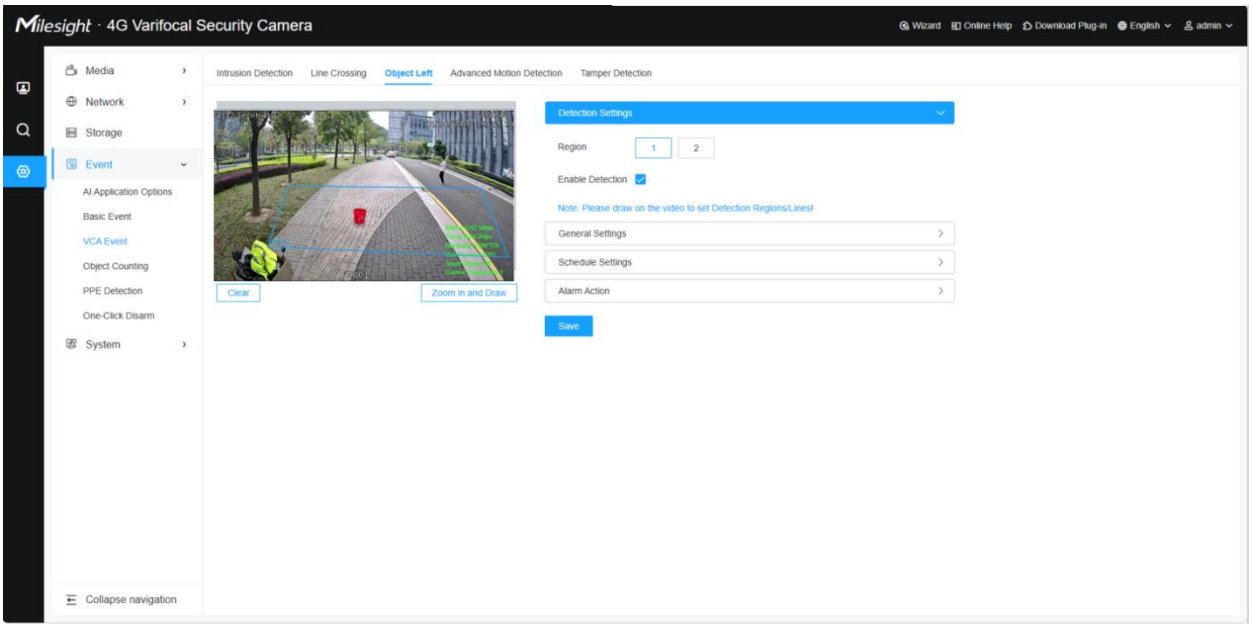
Table 49. Description of the buttons

Parameters	Function Introduction
Record	**Duration:** Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. **Linkage:** Save alarm recording files into SD Card or NAS or Upload the recording files via FTP.
Snapshot	**Number:** The number of snapshot, 1~5 are available. **Interval:** This cannot be edited unless you choose more than 1 to Snapshot. **Linkage:** Save alarm recording files into SD Card or NAS, Upload the recording files via FTP and send alarm email.
External Output	If the camera equips with External Output, you can enable the action after configuring the trigger duration. Action Time:Customize/10 seconds/30 seconds/1minute/5 minutes/Constant are available.
Play Audio	Auto/10 seconds/30 seconds/1 minute/5 minutes/10 minutes are available.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to pop up the alarm news to specified HTTP URL. After filling in the basic information, you can click the test button to test the HTTP connectivity.

Note: If you enable External Output and choose Constant External Output Action Time, when objects cross a defined virtual line, External Output Action alarm time will be always constant till the alarm is released.

9.2.3 Object Left

Object Left can detect and prompt an alarm if an object is left in a pre-defined region. Settings steps are shown as follows:



[Detection Settings]

Step1: Selected detection region and enable object left detection.

[General Settings]

Step2: Set detecting sensitivity and object size limits.

Table 50. Description of the buttons

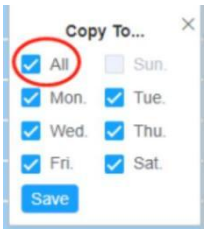
Parameters	Function Introduction
Sensitivity	Level 1~10 are available, the default level is 5. The higher the sensitivity, the easier it is for moving objects to be recorded in the results. **Note:** The sensitivity can be configured to detect various movement according to different requirements. When the level of sensitivity is low, slight movement won't trigger the alarm.
Min. Size	Draw on the screen to set the minimum size of the detected object. Objects smaller than this size will not be detected. The default minimum size is 8*8.
Max. Size	Draw the screen to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 608*352.

[Schedule Settings]

Step3: Set detection schedule;

Table 51. Description of the buttons

Parameter	Function Introduction

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
Select All	Select all schedules.
Clear All	Clear all schedules.

[Alarm Action]

Step4: Set alarm action;

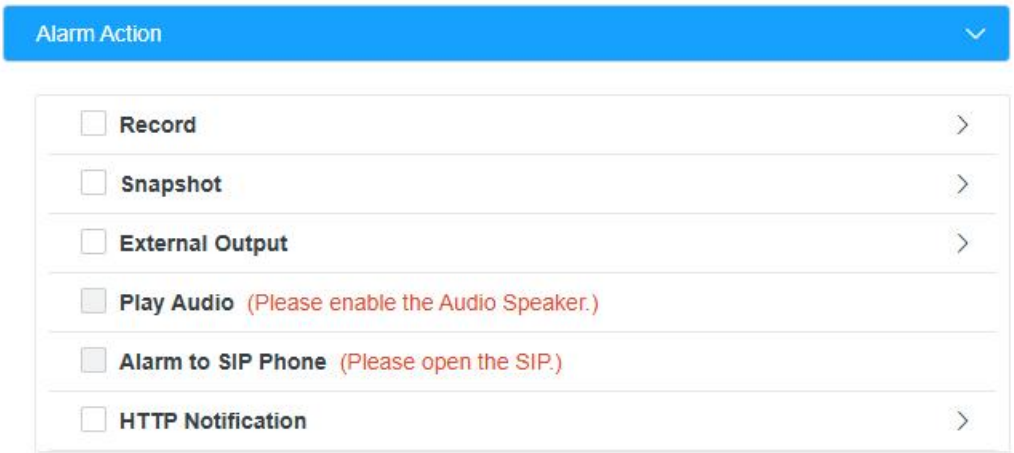


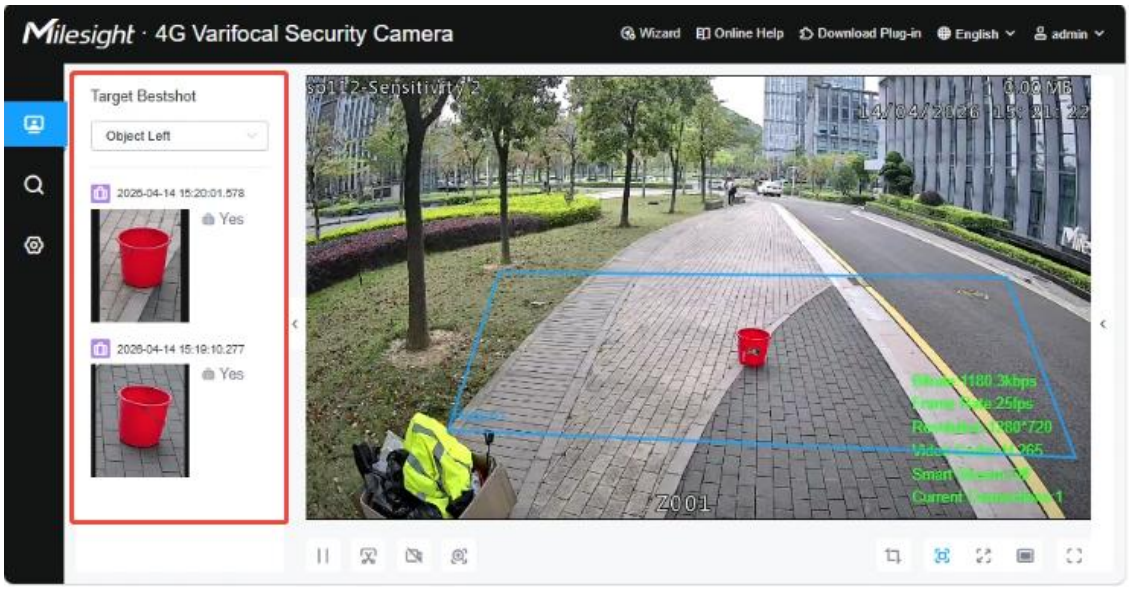
Table 52. Description of the buttons

Parameters	Function Introduction
Record	**Duration:** Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. **Linkage:** Save alarm recording files into SD Card or NAS or Upload the recording files via FTP.

Parameters	Function Introduction
Snapshot	**Number:** The number of snapshot, 1~5 are available. **Interval:** This cannot be edited unless you choose more than 1 to Snapshot. **Linkage:** Save alarm recording files into SD Card or NAS, Upload the recording files via FTP and send alarm email.
External Output	If the camera equips with External Output, you can enable the action after configuring the trigger duration. Action Time:Customize/10 seconds/30 seconds/1minute/5 minutes/Constant are available.
Play Audio	Auto/10 seconds/30 seconds/1 minute/5 minutes/10 minutes are available.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to pop up the alarm news to specified HTTP URL. After filling in the basic information, you can click the test button to test the HTTP connectivity.

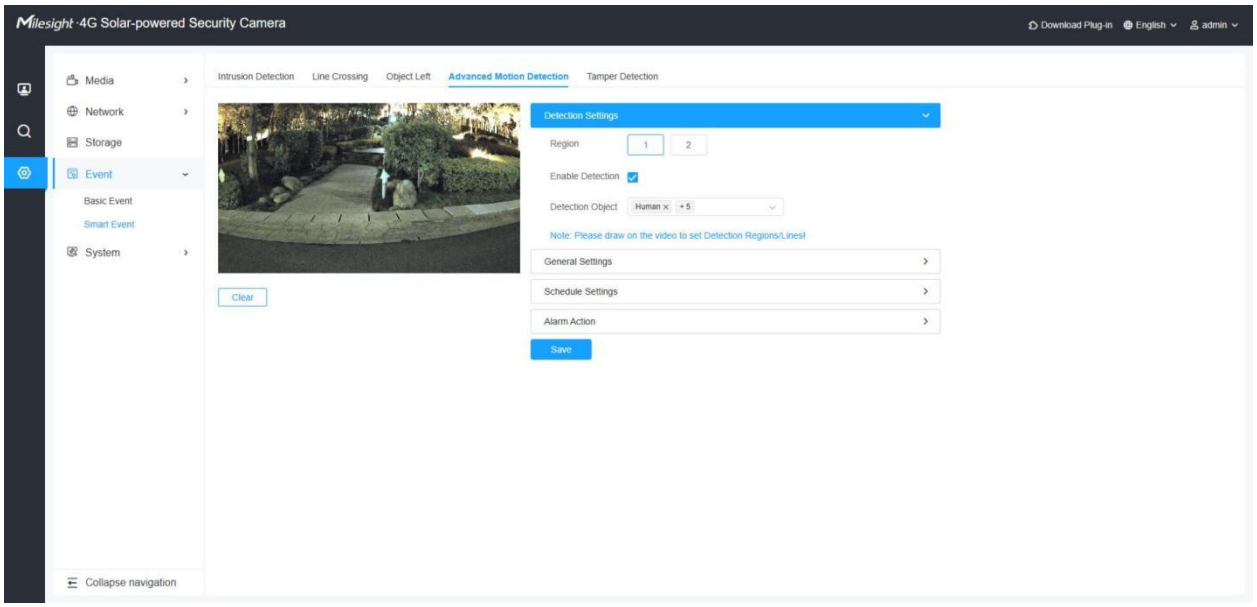
Note: If you enable External Output and choose Constant External Output Action Time, when an object is left from the selected regions, External Output Action alarm time will be always constant till the alarm is released.

Step5: **You can check the push images of left items in the BestShot module on the Live View interface.**



9.2.4 Advanced Motion Detection

Different from traditional motion detection, advanced motion detection can filter out “noise” such as lighting changes, natural tree movements, etc. When an object moves in the selected area, it will trigger alarm.



Settings steps are shown as follows:

Step1: Selected detection region.

Step2: Enable advanced motion detection.

Step3: Choose detection object. Check Human, Vehicle or Non-motor Vehicle attribute, and the camera will alarm once detecting people or vehicle and triggering related events;

[General Settings]

Step4: Set Ignore Short-Lived Motion time. If you set the time, when the moving duration of an object is within the setting time, the alarm will not be triggered;

Step5: Set detecting sensitivity and object size limits;

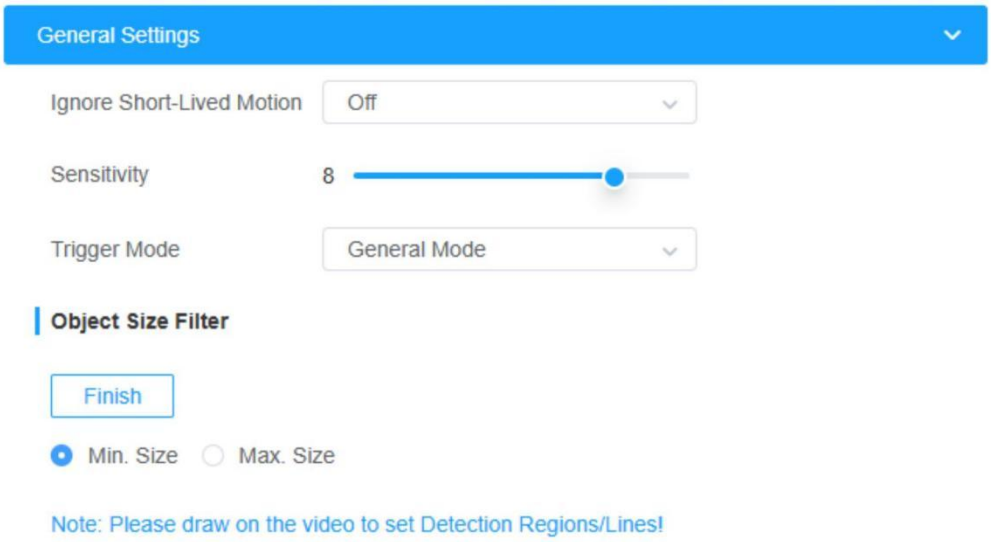


Table 53. Description of the buttons

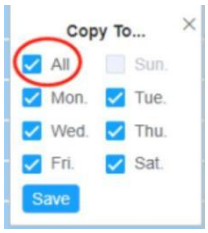
Parameters	Function Introduction
Ignore Short-Lived Motion	The alarm will not be triggered when the moving duration of an object is within the setting time. Off/1s/2s/3s/4s/5s are available. **Note:** Ignore Short-Lived Motion time is to avoid false alarm caused by instant object movement within time setting.
Sensitivity	Level 1~10 are available, the default level is 5. The higher the sensitivity, the easier it is for moving objects to be recorded in the results. **Note:** The sensitivity can be configured to detect various movement according to different requirements. When the level of sensitivity is low, slight movement won't trigger the alarm.
Trigger Mode	Set the desired mode of the trigger logic including General Mode and Bottom Mode. General Mode: The alarm is triggered when the object's body roughly enters the detection area. Bottom Mode: the alarm will be triggered as soon as the bottom of the object enters the detection area. Suitable for scenarios that require sensitivity to intrusion status/bottom detection preference.
Min. Size	Draw the screen or input pixel number to set the minimum size of the detected object. When the object is smaller than this size, it will not be detected. The default minimum size is 3*3.

Parameters	Function Introduction
Max. Size	Draw the screen or input pixel number to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 320*240.

[Schedule Settings]

Step6: Set detection schedule;

Table 54. Description of the buttons

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
	Select all schedules.
	Clear all schedules.

[Alarm Action]

Step7: Set alarm action;

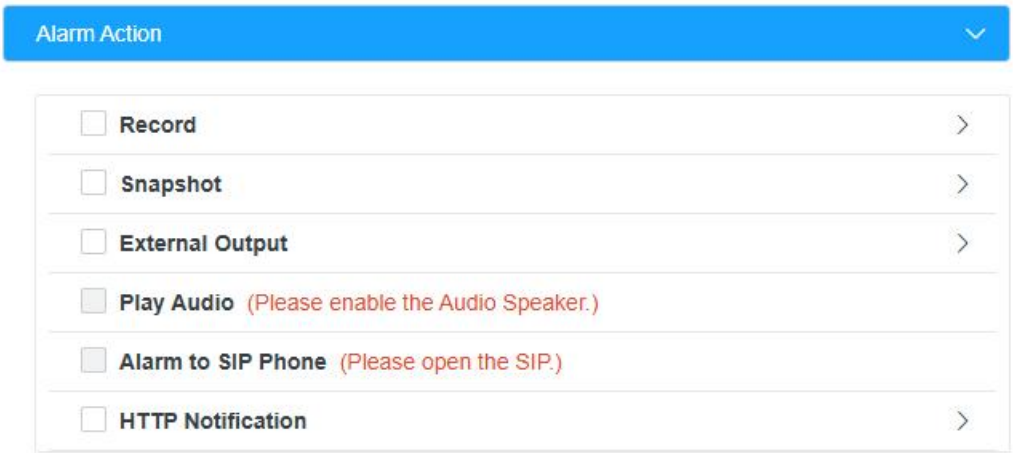


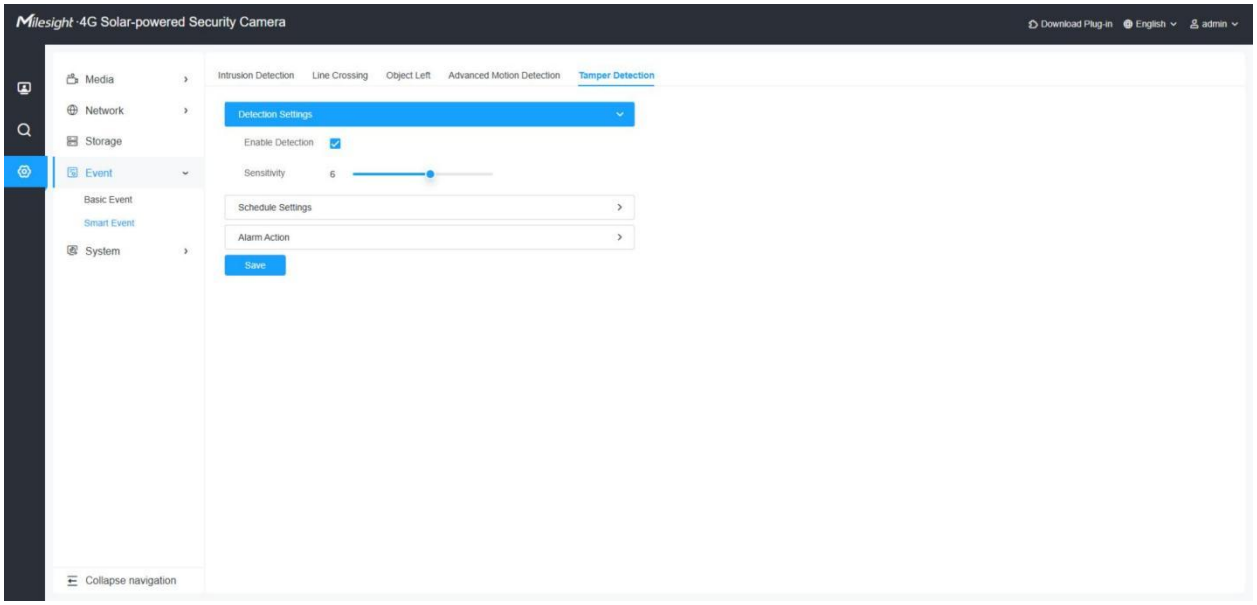
Table 55. Description of the buttons

Parameters	Function Introduction
Record	**Duration:** Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. **Linkage:** Save alarm recording files into SD Card or NAS or Upload the recording files via FTP.
Snapshot	**Number:** The number of snapshot, 1~5 are available. **Interval:** This cannot be edited unless you choose more than 1 to Snapshot. **Linkage:** Save alarm recording files into SD Card or NAS, Upload the recording files via FTP and send alarm email.
External Output	If the camera equips with External Output, you can enable the action after configuring the trigger duration. Action Time:Customize/10 seconds/30 seconds/1minute/5 minutes/Constant are available.
Play Audio	Auto/10 seconds/30 seconds/1 minute/5 minutes/10 minutes are available.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to pop up the alarm news to specified HTTP URL. After filling in the basic information, you can click the test button to test the HTTP connectivity.

Note: If you enable External Output and choose Constant External Output Action Time, when object motion time is longer than the Ignore Short-Lived Motion time which you set in the selected regions, External Output Action alarm time will be always constant till the alarm is released.

9.2.5 Tamper Detection

Tamper Detection is used to detect possible tampering like the camera being unfocused, obstructed or moved. This functionality alerts security staff immediately when any above- mentioned actions occur.



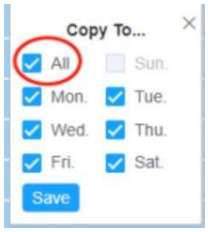
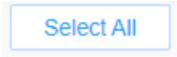
Settings steps are shown as follows:

Step1: Enable Tamper Detection and set detecting sensitivity;

[Schedule Settings]

Step2: Set detection schedule;

Table 56. Description of the buttons

Parameter	Function Introduction
	Copy the schedule area to another date. The All button is handy to copy today's schedule to all days.
	Select all schedules.
	Clear all schedules.

[Alarm Action]

Step3: Set alarm action;

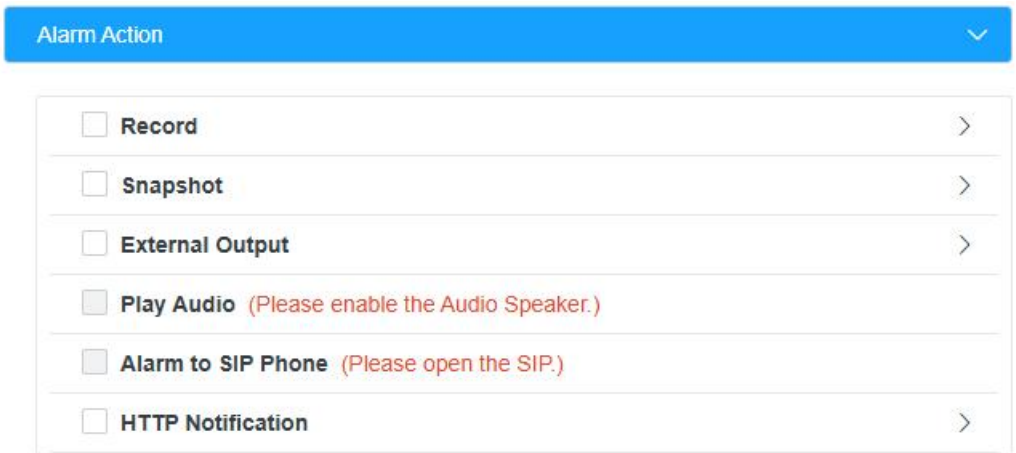


Table 57. Description of the buttons

Parameters	Function Introduction
Record	**Duration:** Selected the duration time of alarm. 5s/10s/15s/20s/25s/30s are available. **Linkage:** Save alarm recording files into SD Card or NAS or Upload the recording files via FTP.

Parameters	Function Introduction
Snapshot	**Number:** The number of snapshot, 1~5 are available. **Interval:** This cannot be edited unless you choose more than 1 to Snapshot. **Linkage:** Save alarm recording files into SD Card or NAS, Upload the recording files via FTP and send alarm email.
External Output	If the camera equips with External Output, you can enable the action after configuring the trigger duration. Action Time:Customize/10 seconds/30 seconds/1minute/5 minutes/Constant are available.
Play Audio	Auto/10 seconds/30 seconds/1 minute/5 minutes/10 minutes are available.
Alarm to SIP Phone	Support to call the SIP phone after enabling the SIP function.
HTTP Notification	Support to pop up the alarm news to specified HTTP URL. After filling in the basic information, you can click the test button to test the HTTP connectivity.

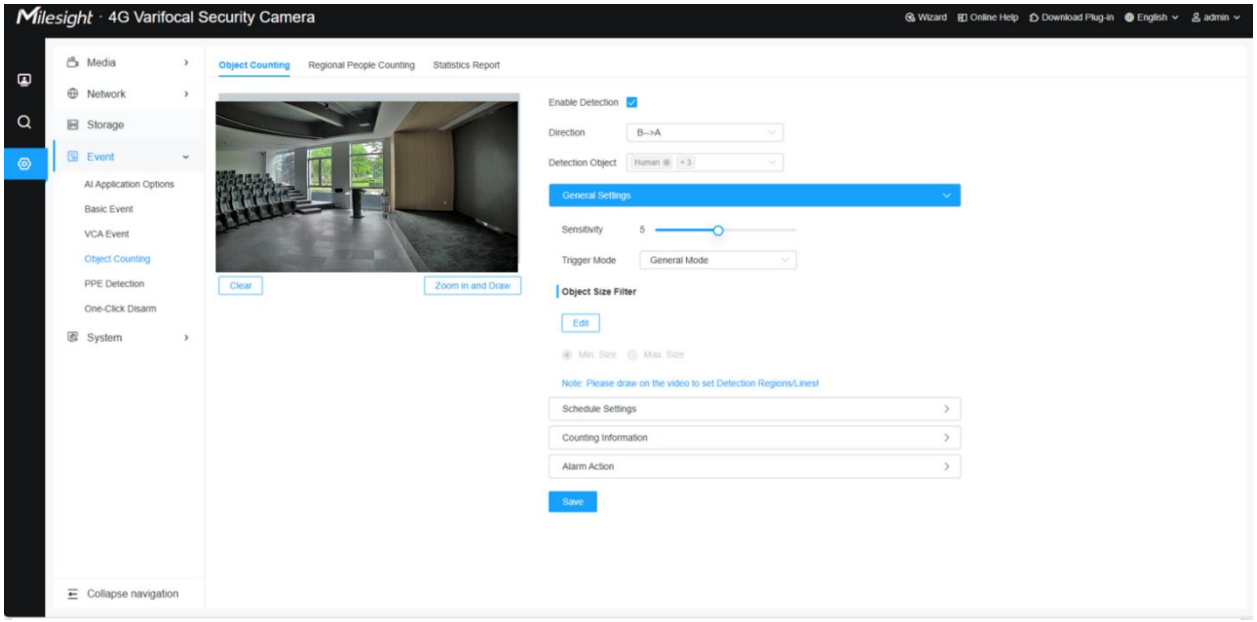
Note:

- If you enable External Output and choose Constant External Output Action Time, when possible tampering is detected, External Output Action alarm time will be always constant till the alarm is released.

9.3 Object Counting

9.3.1 Object Counting

Object counting is able to count how many object enter or exit during the setting period.



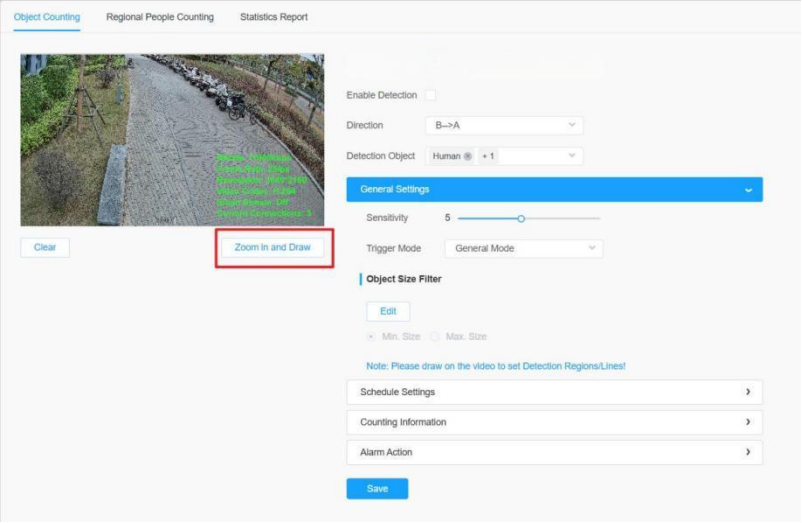
Settings steps are as shown below:

Step1: Choose **Settings** > **Event** > **AI Application Options** > **Object Counting**.

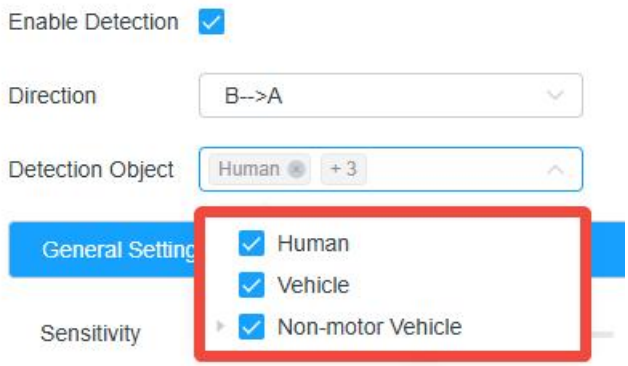
Step2: Enable Object Counting.

Step3: Set a detection line and direction.

By clicking the **'Zoom in and Draw'** button, you can activate a full-screen pop-up window to draw more accurate detection lines or areas.

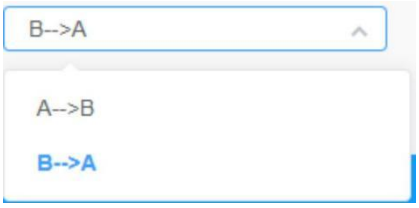


Step5: Select a detection object including human, vehicle and Non-motor Vehicle.



Note:

- Crossing along the direction of the arrow will record as “In”, opposite is “Out”.



[General Settings]

Step6: Set sensitivity and object size limits.

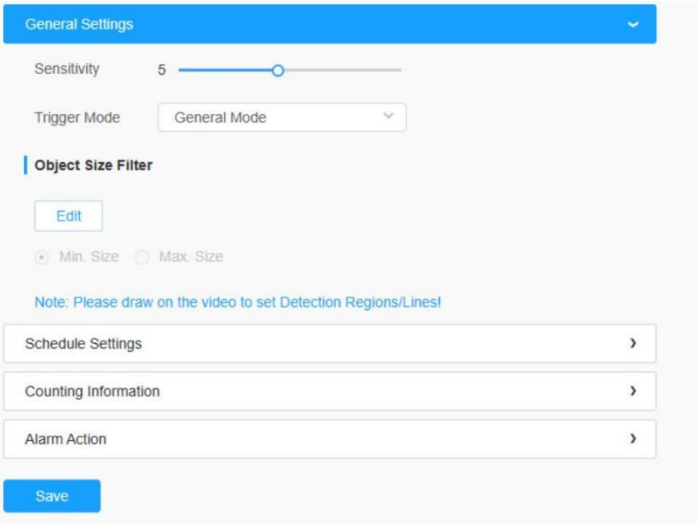


Table 58. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
Trigger Mode	Set the desired mode of the trigger logic including General Mode and Bottom Mode. **General Mode:** The alarm is triggered when the object's body roughly enters the detection area. **Bottom Mode:** the alarm will be triggered as soon as the bottom of the object enters the detection area. Suitable for scenarios that require sensitivity to intrusion status/bottom detection preference.
Sensitivity	Level 1~10 are available, the default level is 5. The higher the sensitivity, the easier it is for moving objects to be recorded in the results.
Min. Size	Draw the screen to set the minimum size of the detected object. When the object is smaller than this size, it will not be detected. The default minimum size is 3*3.
Max. Size	Draw the screen to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 320*240.

[Schedule Settings]

Step7: Set a detection schedule.

Note: This part is the same as the regular schedule settings. You can refer to 9.1.1 Motion Detection

[Counting Information]

Step8: Set counting information.

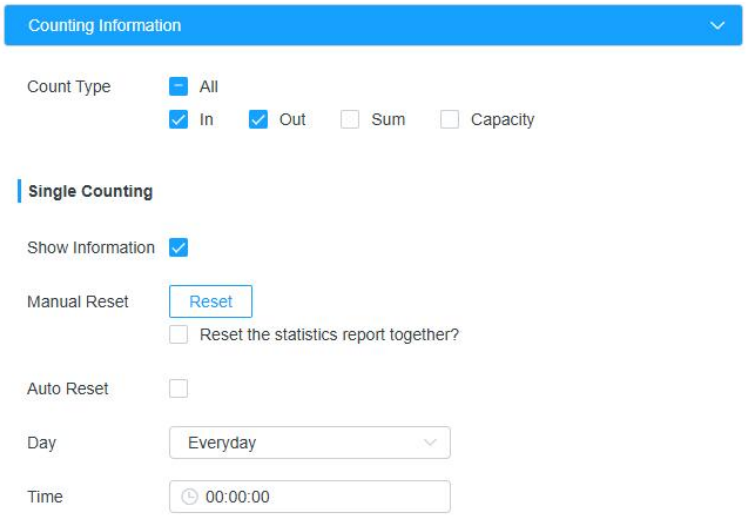
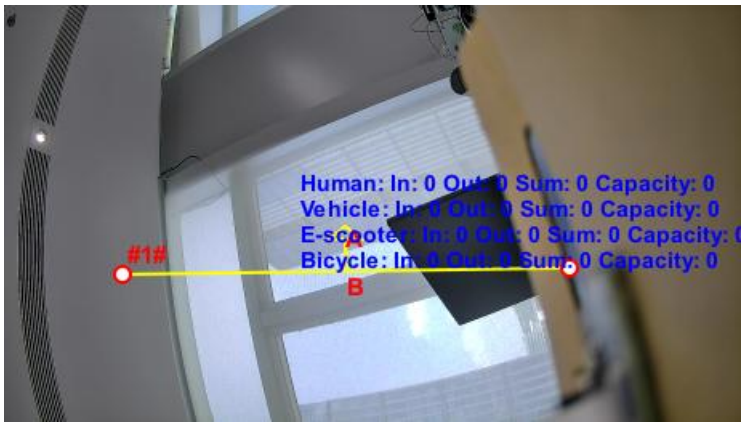


Table 59. Description of the buttons

Parameters	Function Introduction
Count Type	Choose the information you want to display in Live Video.
Single Counting	Set Single Counting. **Show Information:** Click it to show the information. **Note:** • **If the detection object is set to "Human", "Vehicle", "E-scooter", or "Bicycle" only, the Line OSD will display the corresponding label to indicate the count. Otherwise, this data will not be shown.**  **Manual Reset:** Reset the counting of each single line. You can choose to reset the statistics report together. **Auto Reset:** It is used to automatically clear the single counting information. **Day:** The day of Auto Reset. **Time:** The time of Auto Reset.

[Alarm Action]

Step9: Set alarm trigger and alarm action.

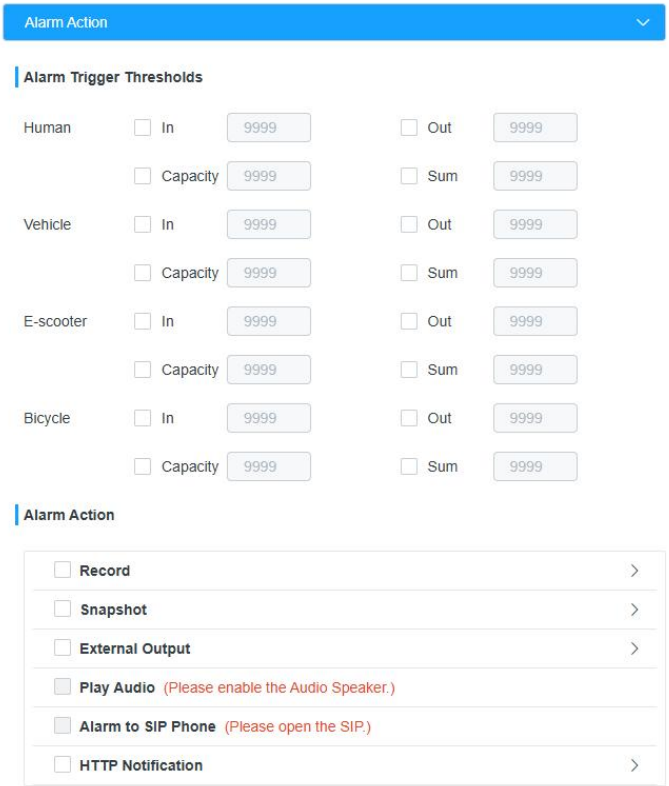


Table 60. Description of the buttons

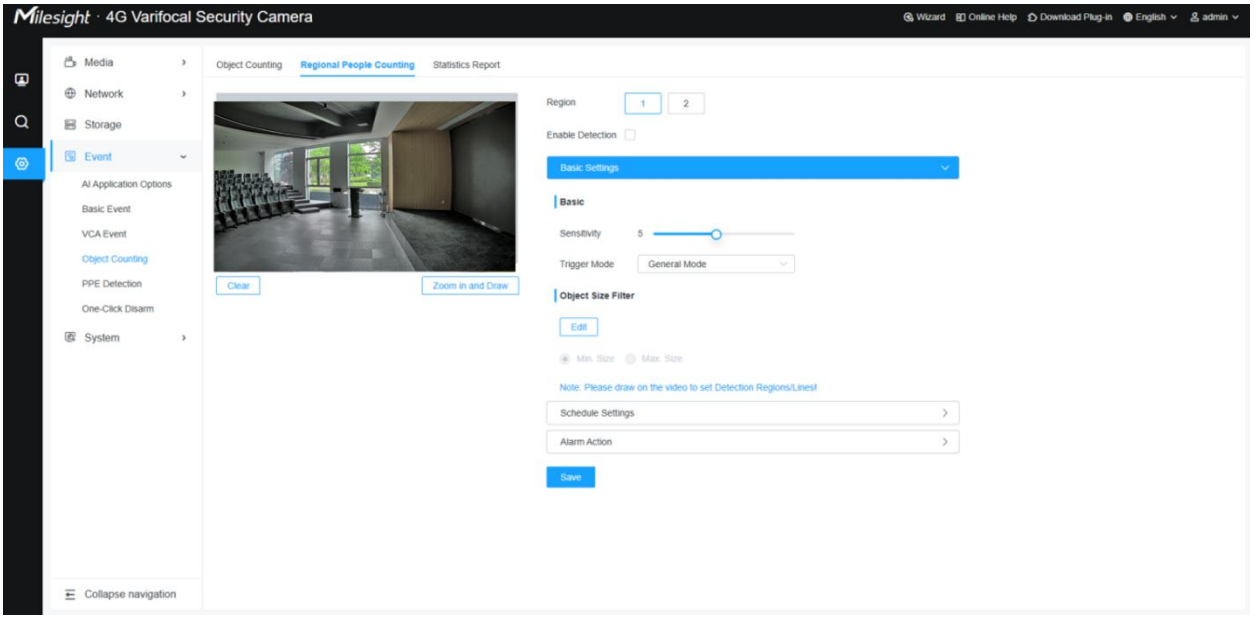
Parameters	Function Introduction
Alarm Trigger	Alarm will be triggered when the thresholds reaches to a certain value from 1 to 9999. You can set the Alarm Thresholds of In/Out/Capacity/Sum.
Alarm Action	This part is the same as the regular alarm settings. You can refer to 9.1.1 Motion Detection **Note:** • If you enable External Output and choose Constant External Output Action Time, when the thresholds reach to a certain value you set, External Output Action alarm time will be always constant till the alarm is released.

9.3.2 Regional People Counting

When enabling Regional People Counting, users can check the real-time number of people and the time of each person's stay in the detection region.

Note:

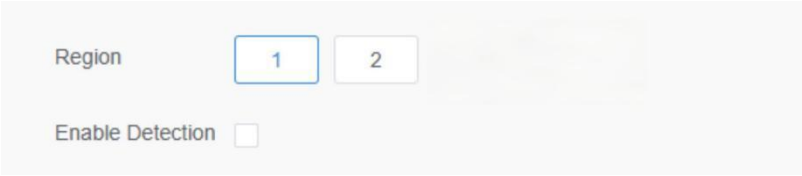
• You can check the real-time number of people and the time of each person's stay in the detection region on Live View interface.



Settings steps are as shown below:

Step1: Choose **Settings** > **Event** > **AI Application Options** > **Object Counting** > **Regional People Counting**.

Step2: Select a detection region and enable regional people counting detection.



Note: Support up to 2 detection regions. **[Basic Settings]**

Step3: Set sensitivity and object size limits.

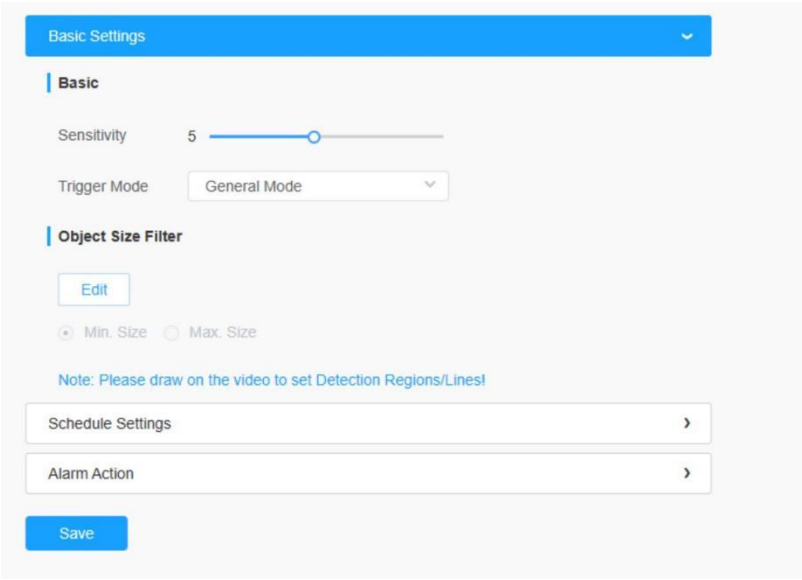


Table 61. Description of the buttons

Parameters	Function Introduction
Trigger Mode	Set the desired mode of the trigger logic including General Mode and Bottom Mode. **General Mode:** The alarm is triggered when the object's body roughly enters the detection area. **Bottom Mode:** the alarm will be triggered as soon as the bottom of the object enters the detection area. Suitable for scenarios that require sensitivity to intrusion status/bottom detection preference.
Sensitivity	Level 1~10 are available, the default level is 5. The higher the sensitivity, the easier it is for moving objects to be recorded in the results.
Min. Size	Draw the screen or input pixel number to set the minimum size of the detected object. When the object is smaller than this size, it will not be detected. The default minimum size is 3*3.
Max. Size	Draw the screen or input pixel number to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 320*240.

[Schedule Settings]

Step4: Set a detection schedule.

Note: This part is the same as the regular schedule settings. You can refer to 9.1.1 Motion Detection.

[Alarm Action]

Step5: Set alarm trigger and alarm action.

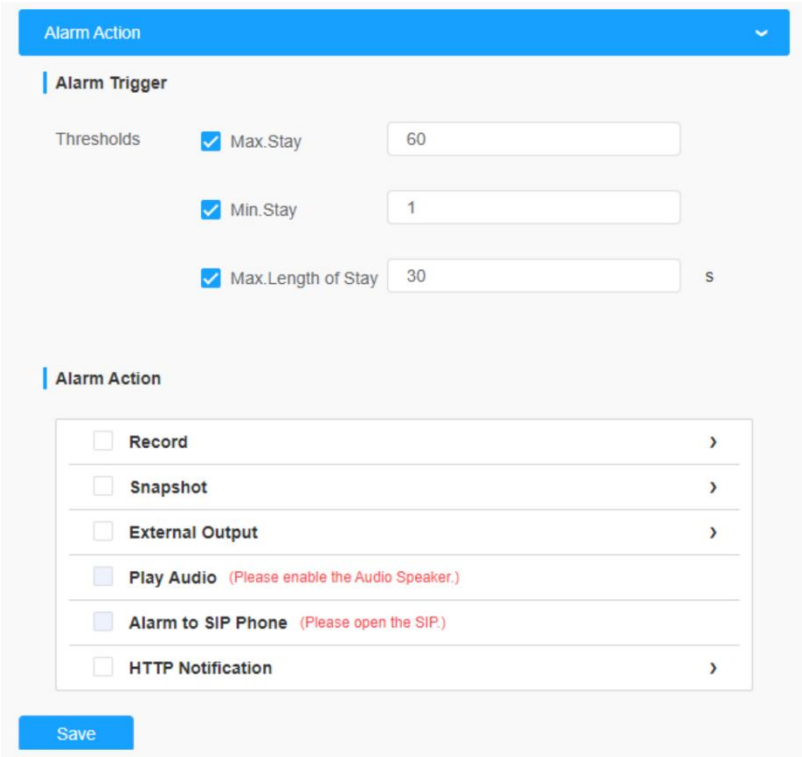
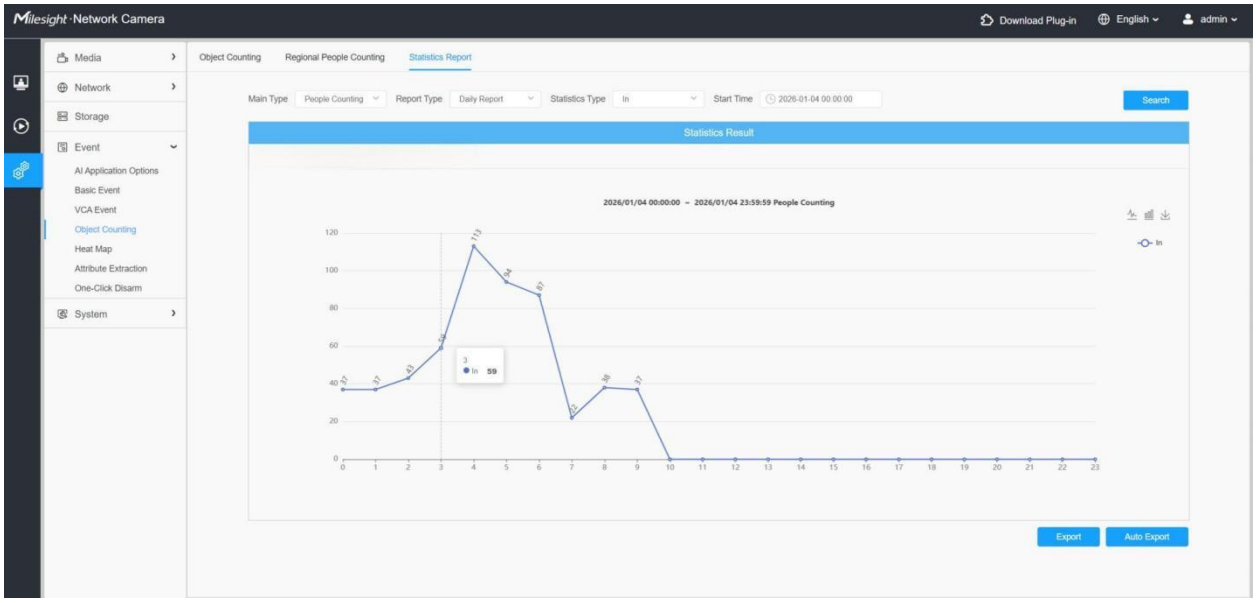


Table 62. Description of the buttons

Parameters	Function Introduction
Alarm Trigger	Alarm will be triggered when the Max./Min. Stay/Max. Length of Stay thresholds reaches to the value. **Note:** The value must be in the range of 1 to 60.
Alarm Action	This part is the same as the regular alarm settings. You can refer to 9.1.1 Motion Detection **Note:** • The alarm action is effective on 2 detection regions simultaneously. • If you enable External Output and choose Constant External Output Action Time, when the thresholds reach to a certain value you set, External Output Action alarm time will be always constant till the alarm is released.

9.3.3 Statistics Report

The results during the enabling period will be displayed on "**Statistics Report**" interface.



Step 1: Select Main Type.

Step2: Select Report Type including Daily Report, Weekly Report, Monthly Report and Annual Report.

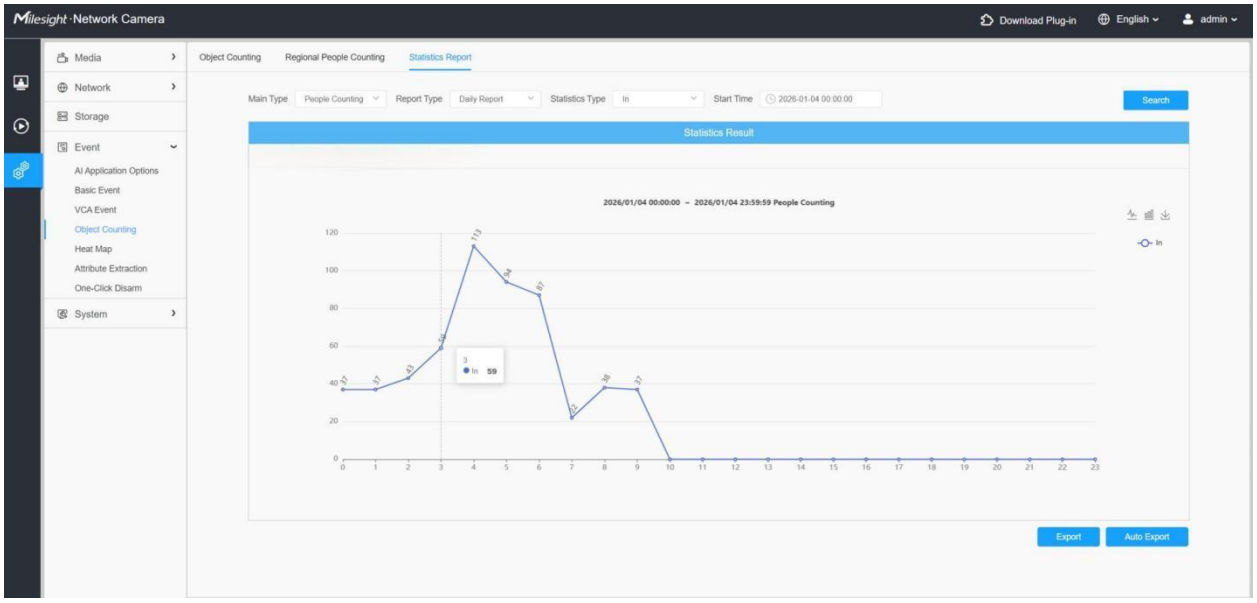
Step3: For people counting, select Statistics Type including In, Out and Sum. For regional people counting, select Length of Stay including All, More Then and Less Then and set the time of more then/less then.

Note: For regional people counting, check the check box to search the report of regions as needed.

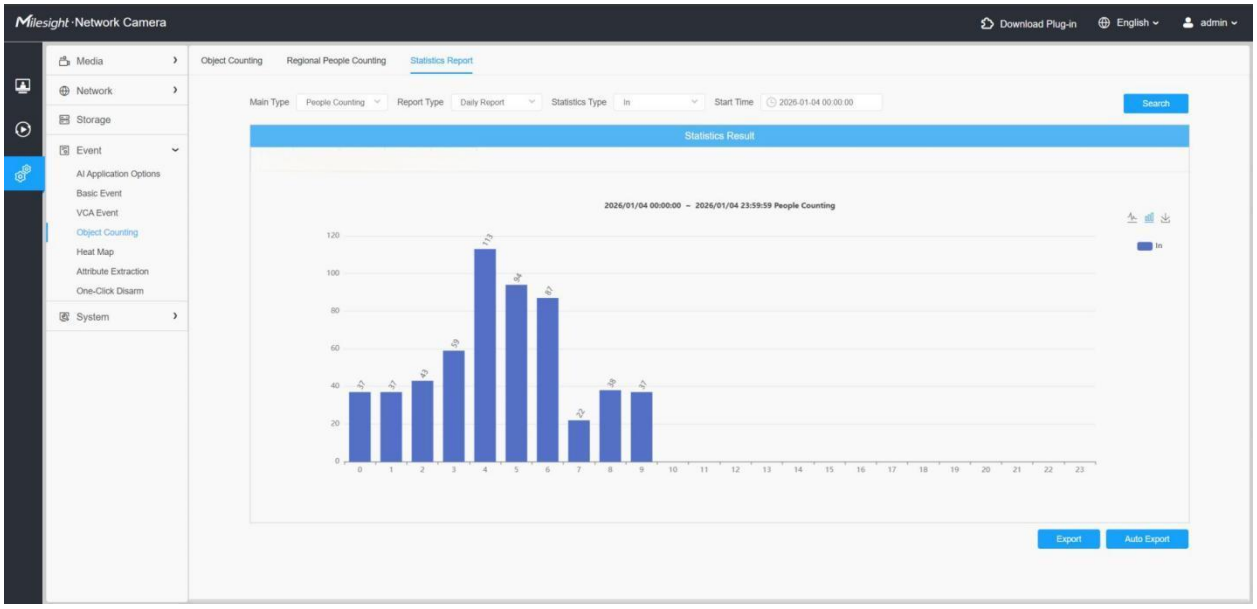
Step4: Select Start Time, then click "Search" button, the camera will automatically count the data for the day/ week/ month/ year (based on the report type selected by the user) from the start time and generate the corresponding report.

Step5: Moreover, you can also click "Line Chart" or "Bar Chart" to switch display mode of Statistics Report as shown below.

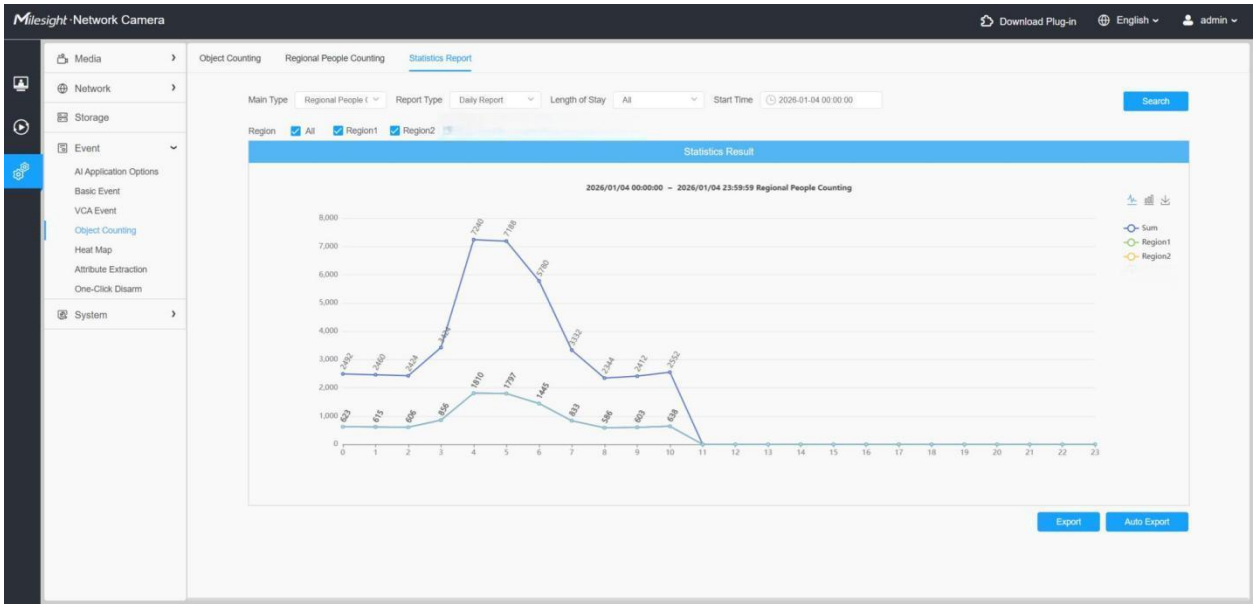
People Counting-Statistics Report (Line Chart)



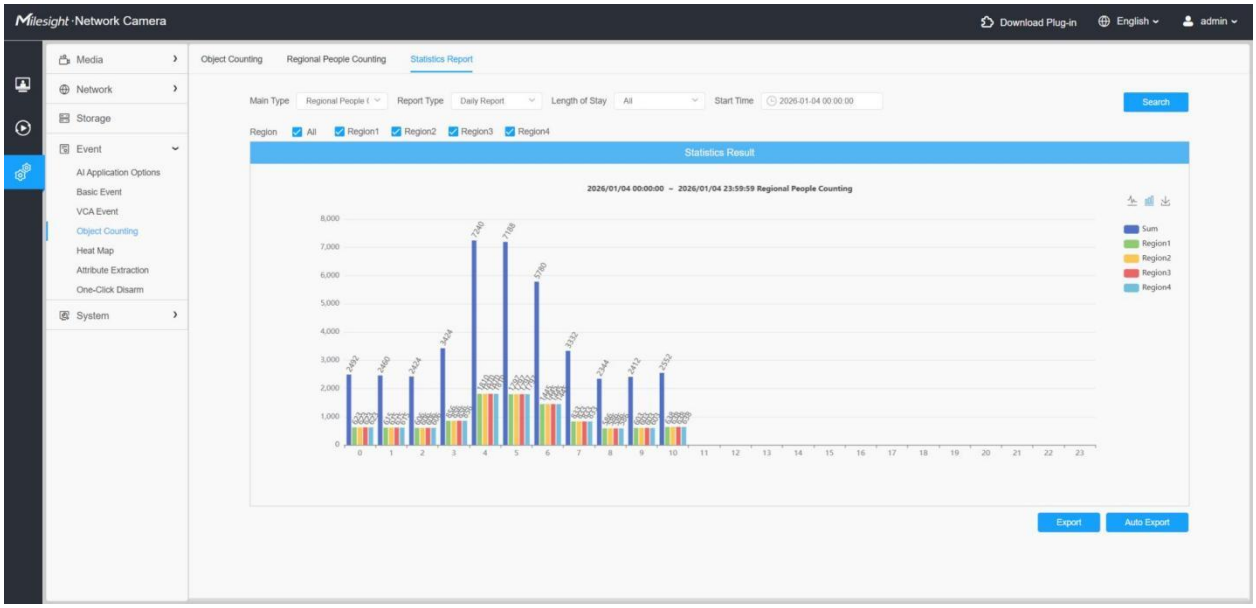
People Counting-Statistics Report (Bar Chart)



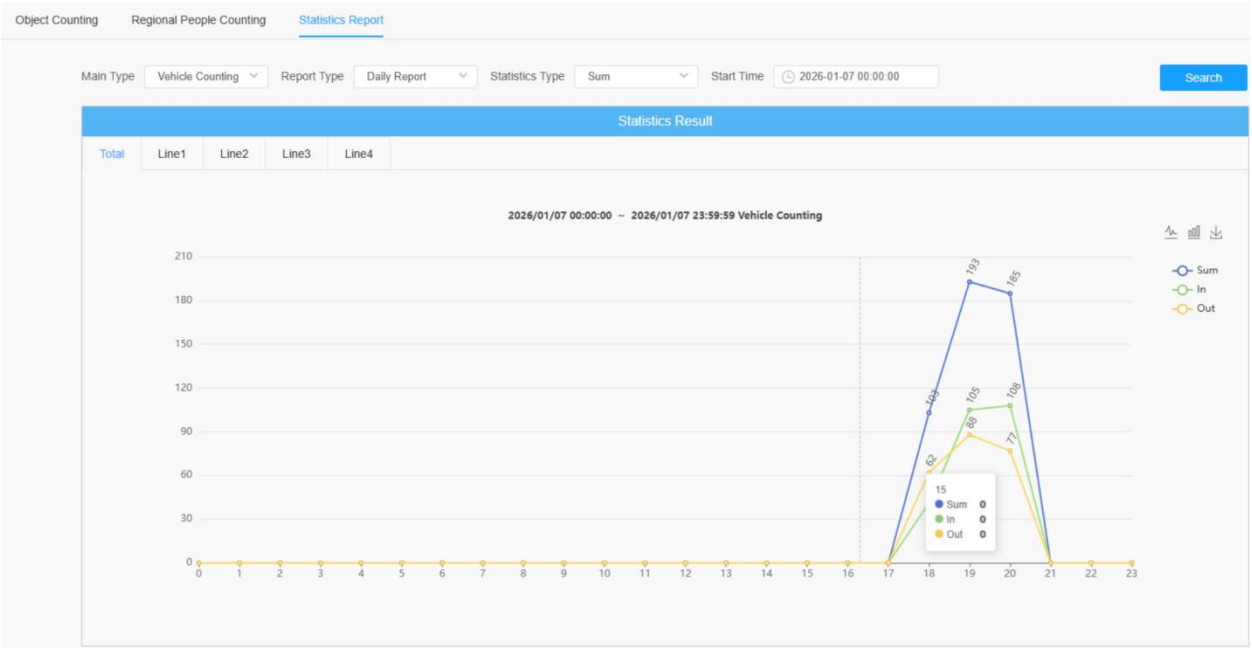
Regional People Counting-Statistics Report (Line Chart)



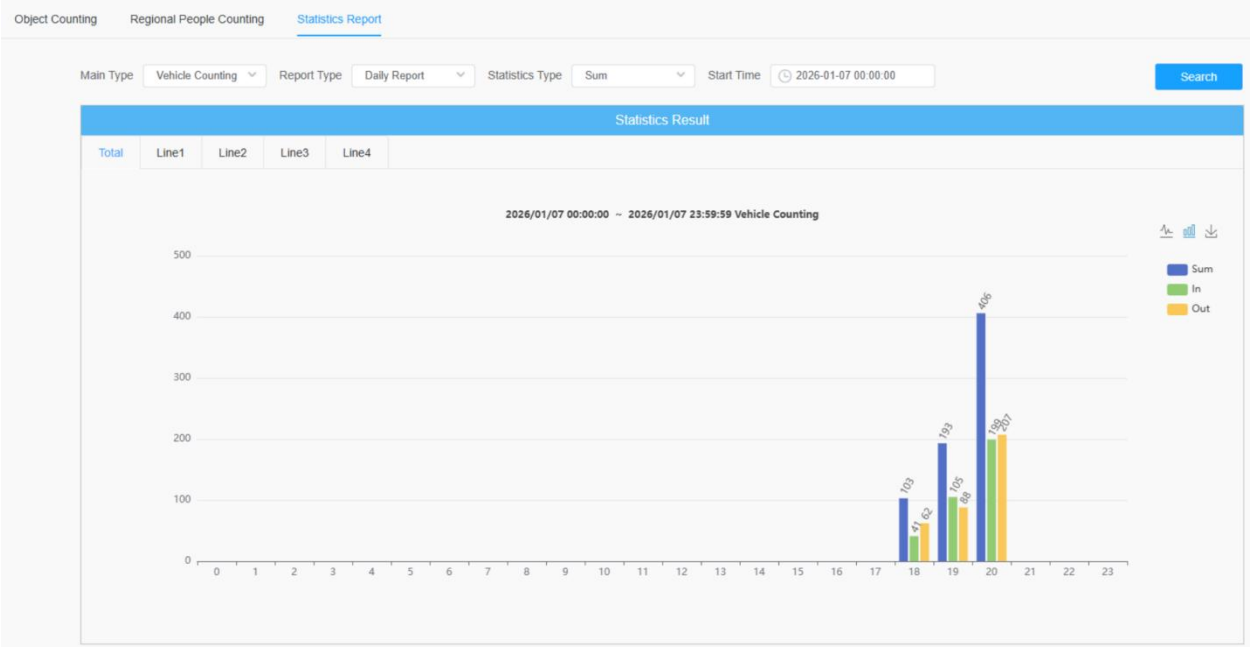
Regional People Counting-Statistics Report (Bar Chart)



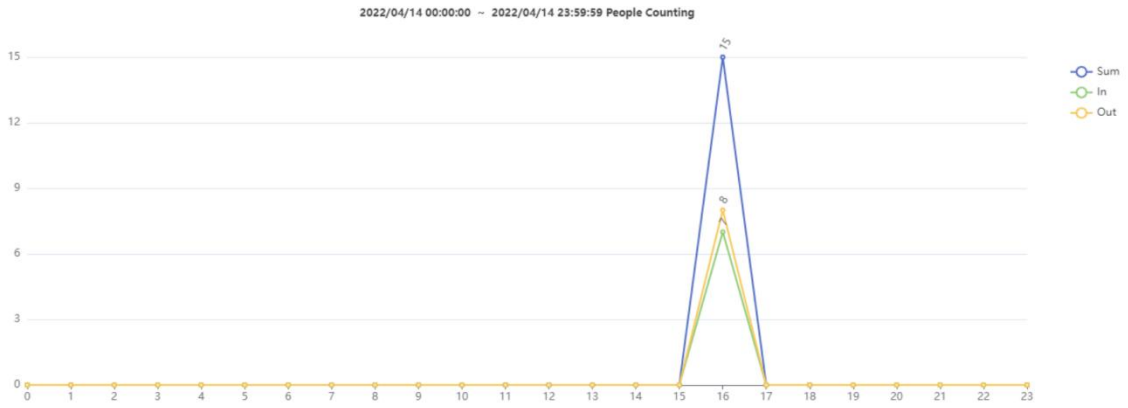
Vehicle Counting-Statistics Report (Line Char)



Vehicle Counting-Statistics Report (Bar Chart)



Step6: Click the **Download** button to download the screenshot of the statistical report chart.

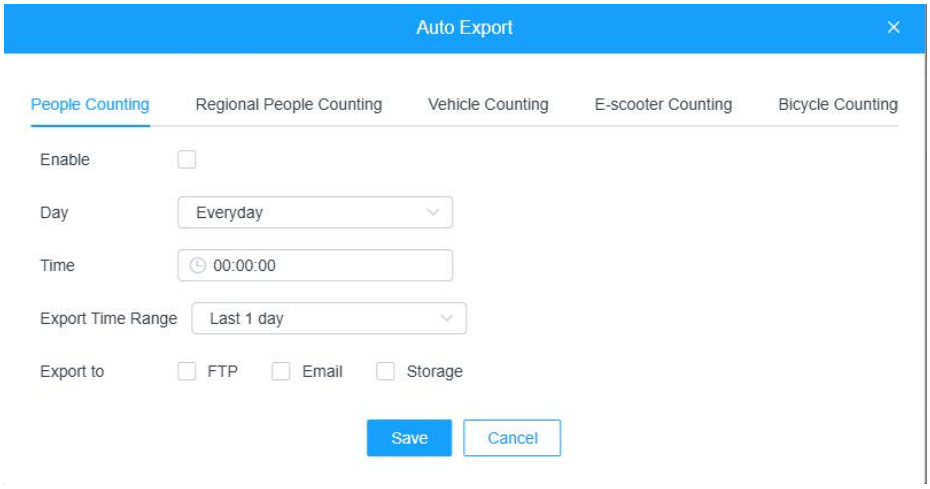


Step7: Click "Export" button to pop up the Export window as shown below, and you can choose File Format to export the report to local. For people counting Statistics Report, you can check the check box to export the report of different lines as needed.

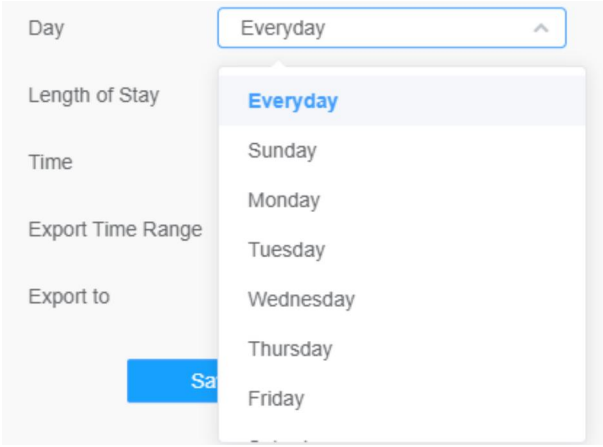
People Counting-Export, Vehicle Counting-Export

Regional People Counting-Export

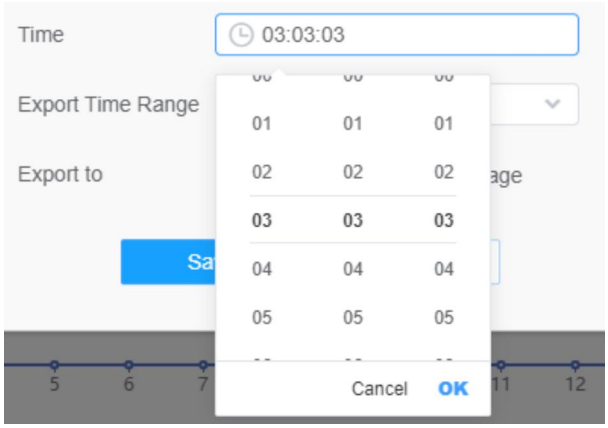
Step8: Click "Auto Export" button to pop up the Statistics Report Settings as shown below. *People Counting-Auto Export*



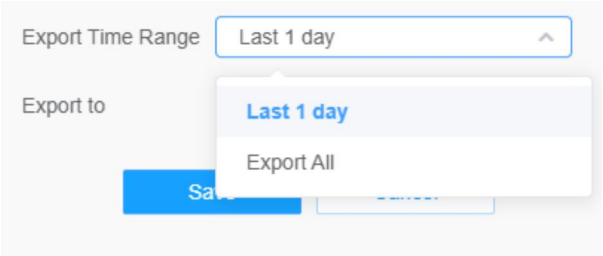
- Check the check box to enable the auto export of people counting.
- Set Day. User can choose Everyday to export daily reports, while choosing others to export reports on a specific day of the week;



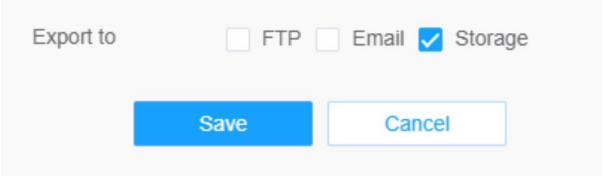
- Set Time. User can choose the time of day to export the Statistics Report automatically, click the calendar icon to pop up the following Quick Selection;



- Set Export Time Range;

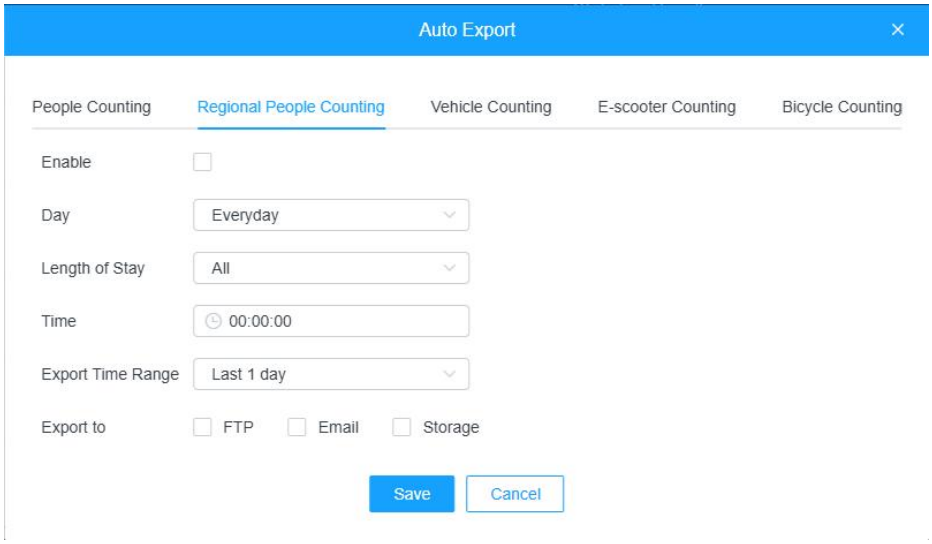


- Set the destination path of the automatically exported report. The report can be exported to FTP/Email/Storage automatically as the form of an Excel spreadsheet according to the day, time and export time range you set. Then click "Save".

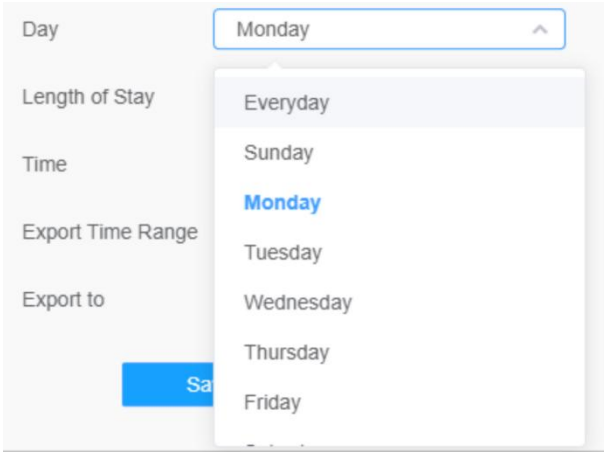


Note: If the current Statistics Report is generated, it will be saved as a csv form.

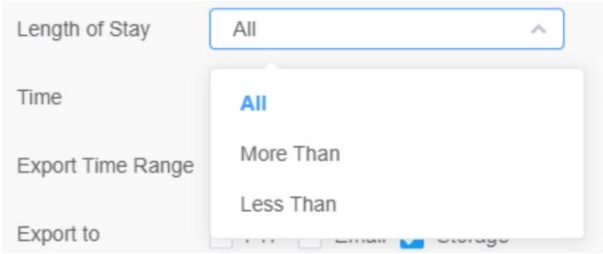
Regional People Counting-Auto Export



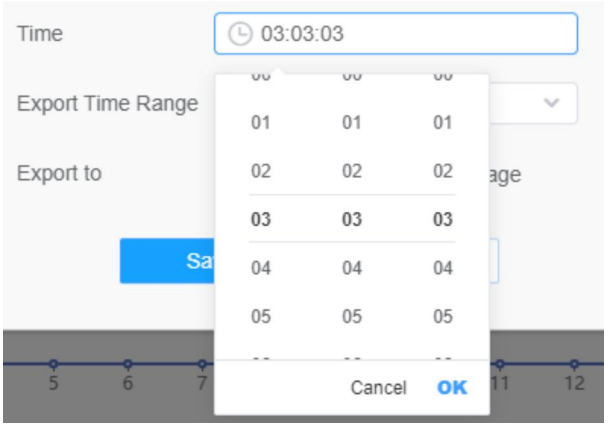
- Check the check box to enable the auto export of regional people counting.
- Set Day. User can choose Everyday to export daily reports, while choosing others to export reports on a specific day of the week;



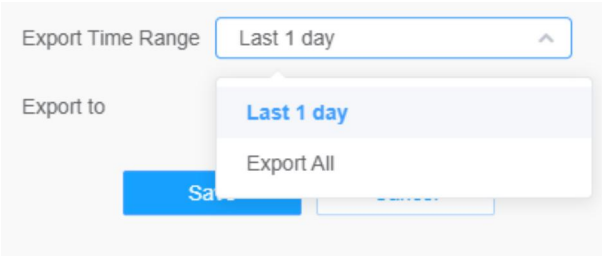
• Set Length of Stay.



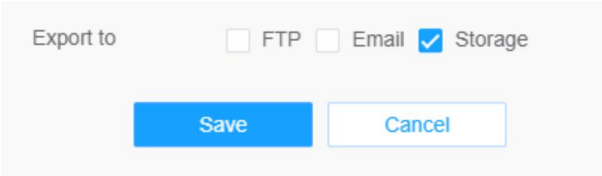
• Set Time. User can choose the time of day to export the Statistics Report automatically, click the calendar icon to pop up the following Quick Selection;



• Set Export Time Range;

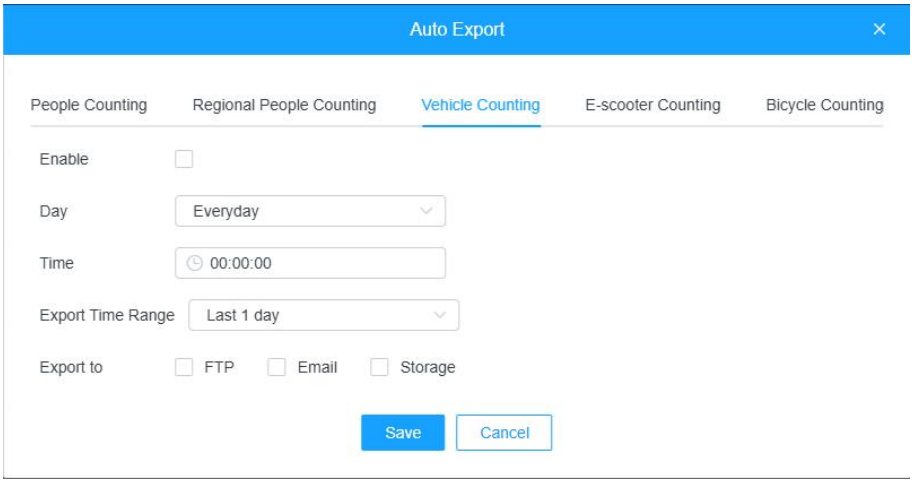


- Set the destination path of the automatically exported report. The report can be exported to FTP/Email/Storage automatically as the form of an Excel spreadsheet according to the day, time and export time range you set. Then click "Save".

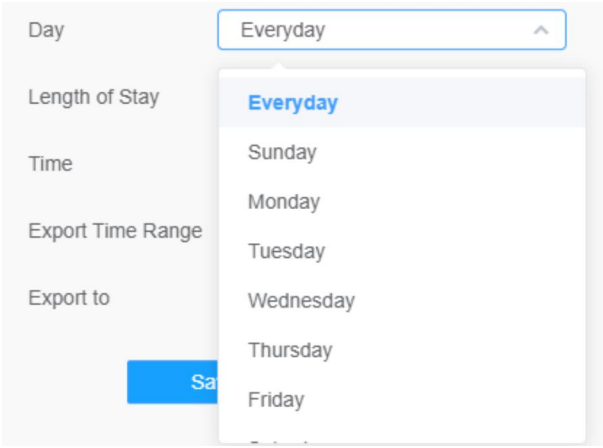


Note: If the current Statistics Report is generated, it will be saved as a csv form.

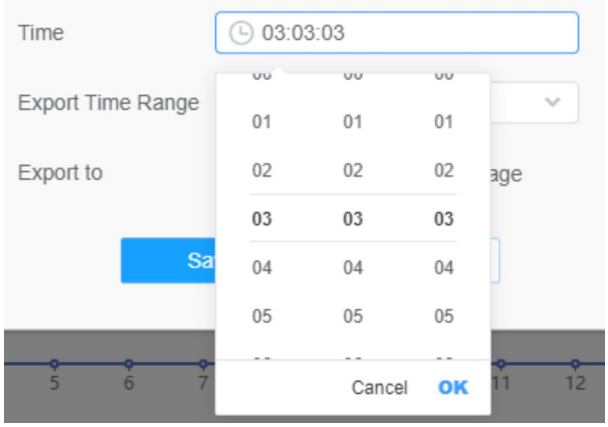
Vehicle/E-scooter/Bicycle Counting-Auto Export



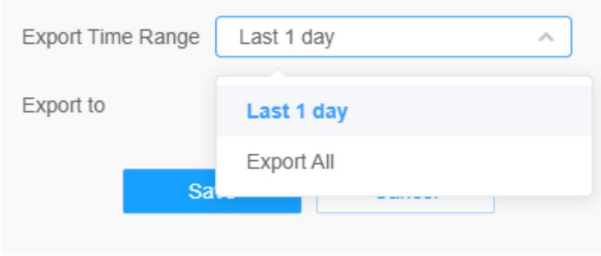
- Check the check box to enable the auto export.
- Set Day. User can choose Everyday to export daily reports, while choosing others to export reports on a specific day of the week;



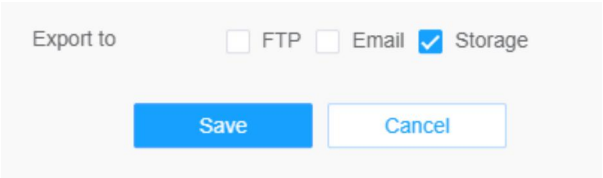
- Set Time. User can choose the time of day to export the Statistics Report automatically, click the calendar icon to pop up the following Quick Selection;



- Set Export Time Range.



- Set the destination path of the automatically exported report. The report can be exported to FTP/Email/Storage automatically as the form of an Excel spreadsheet according to the day, time and export time range you set. Then click “Save”.



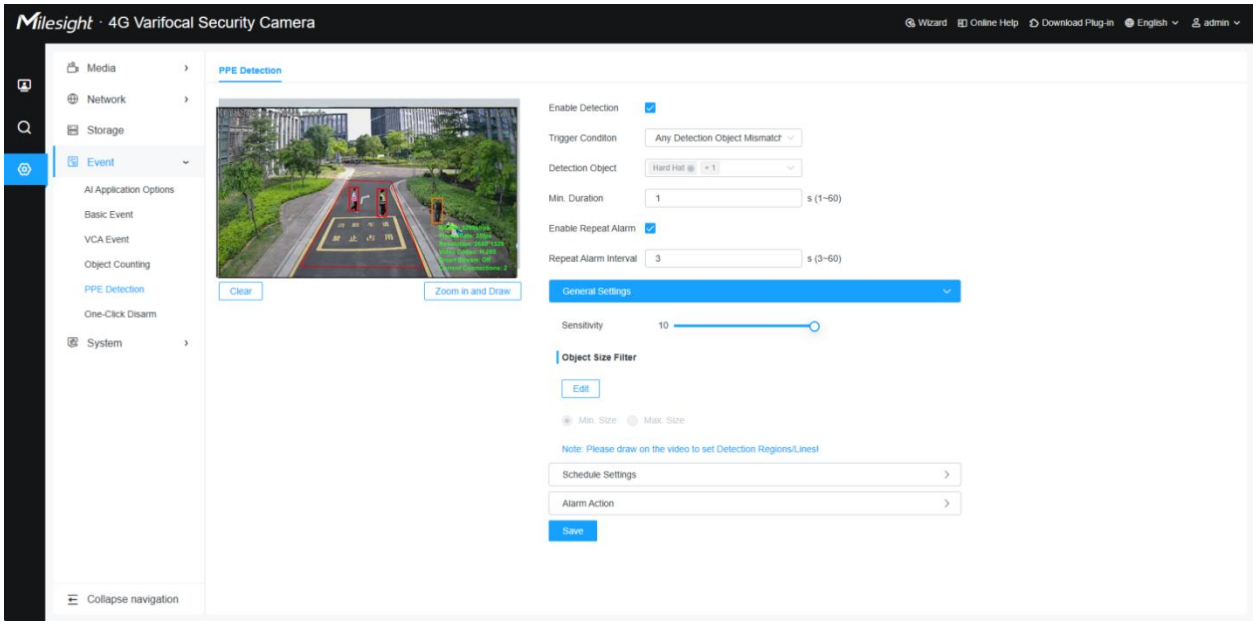
Note: If the current Statistics Report is generated, it will be saved as a csv form.

9.4 PPE Detection

PPE Detection ensures the safety of construction workers. If a worker is detected **without** safety vest or a hard hat, an alarm action will be triggered.

Note:

- For more details about how to use PPE Detection, see https://www.youtube.com/ watch?v=9AYwzheLoCE.



Settings steps are as shown below:

Step1: Choose **Settings** > **Event** > **AI Application Options** > **PPE Detection**.

Step2: Enable PPE Detection.

Step3: Draw detection regions on the live video.

Step4: Set the Trigger Condition

- **Any Detection Object Mismatch:** An alarm will be triggered if either a safety vest or a hard hat is missing.
- **Match All Detected Objects:** An alarm will be triggered only if both a safety vest and a hard hat are missing at the same time.

Step5: Set the Minimum Duration. Configure the **Min. Duration** from 1 to 60 seconds. An alarm will be triggered only if the absence of a safety vest or hard hat exceeds this duration.

Step6: Enable Repeat Alarm. Check the **Enable Repeat Alarm** option to allow the system to trigger repeat alarms.

Step7: Set the Repeat Interval. Enter the repeat interval (from 3 to 60 seconds) to specify how often the repeat alarm will be triggered.

[General Settings]

Step8: Set sensitivity and object size limits.

Table 68. Description of the buttons

Parameters	Function Introduction
Sensitivity	Levels 1–10 are available. The default level is 5. The higher the sensitivity, the easier it is for people without **a** hard hat to be detected in the results.
Min. Size	Draw on the screen or enter pixel values to set the minimum size of the detected object. When the object is smaller than this size, it will not be detected. The default minimum size is 3*3.
Max. Size	Draw the screen or input pixel number to set the maximum size of the detected object. When the object is larger than this size, it will not be detected. The default maximum size is 320*240.

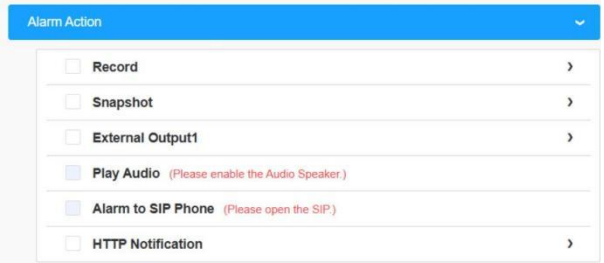
[Schedule Settings]

Step9: Set a detection schedule.

Note: This part is the same as the regular schedule settings. You can refer to 9.1.1 Motion Detection

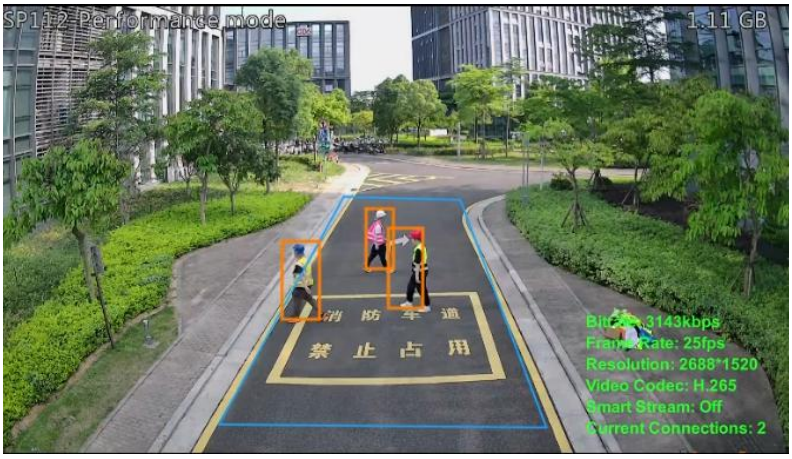
[Alarm Action]

Step10: Set an alarm action. This part is the same as the regular alarm settings. You can refer to 9.1.1 Motion Detection

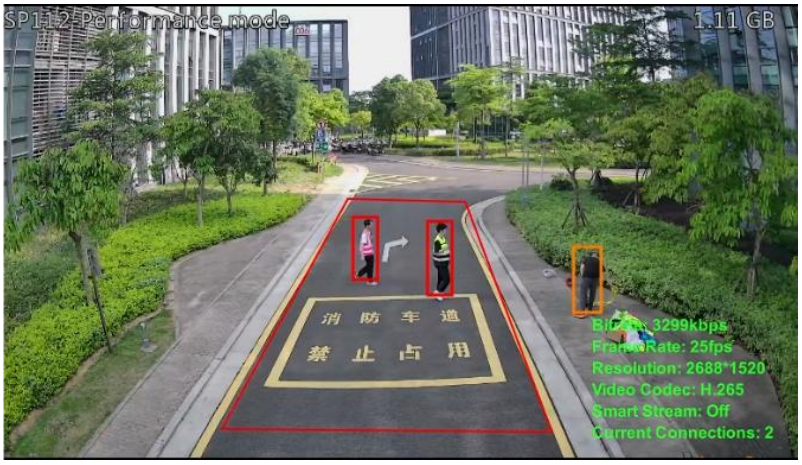


Click **Save** to finish the configurations.

According to the above settings, when a person within the detection box is wearing both a hard hat and a safety vest, they will be highlighted with an orange bounding box, and no alarm will be triggered.



If the person within the detection box is missing either the hard hat or the safety vest, they will be highlighted with a red bounding box and an alarm will be triggered.



9.5 One-Click Disarm

Easily control alarm linkage actions with a single click. Enabling this triggers an alarm and generates logs while disabling the specified alarm linkage actions.

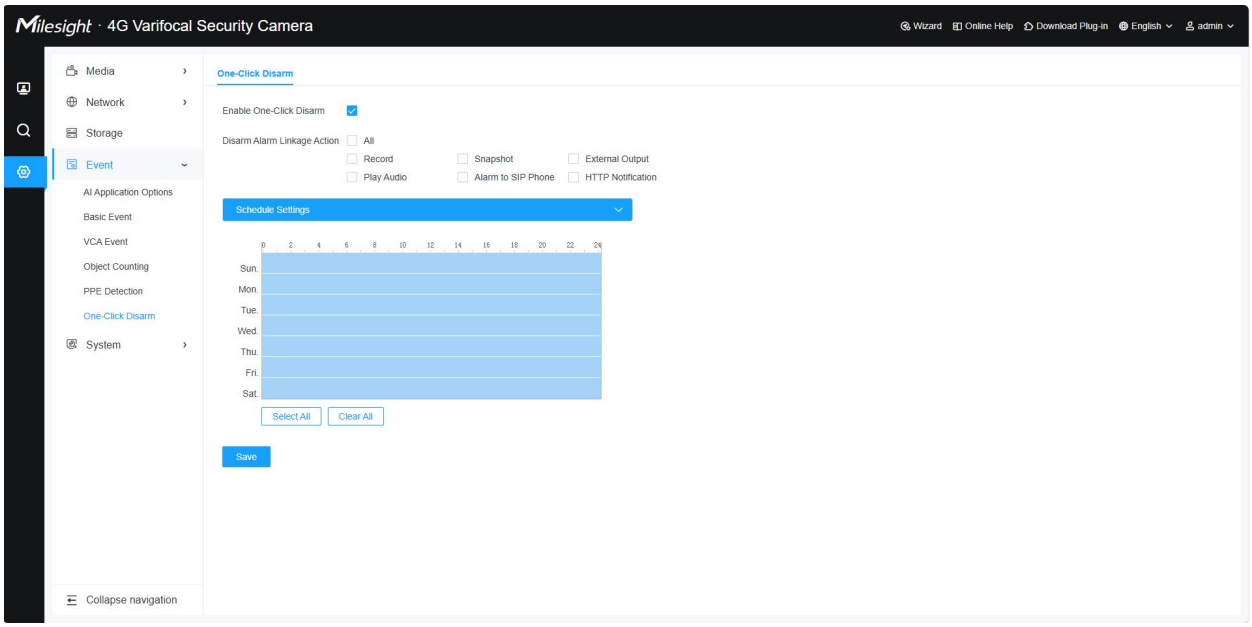
- **Enable One-Click Disarm**: Specified alarm linkage actions will be disabled temporary , original Alarm Action configurations will not be deleted.
- **Disarm Alarm Linkage Action:** To temporarily disable configured alarm actions, simply check the checkbox and set a disarm schedule.

Table 75. Description of the buttons

Parameters	Function Introduction
Record	Do not record when the event is triggered.
Snapshot	Do not take a snapshot when the event is triggered.
External Output	Do not trigger the external output when the event is triggered.
Play Audio	Do not play the audio file when the event is triggered.
Alarm to SIP Phone	Do not call the SIP phone after enabling the SIP function.
HTTP Notification	Do not send alarm notifications to the specified HTTP URL.

- **Disarm by Schedule**: Alarm linkage actions are disabled during the specified time periods.

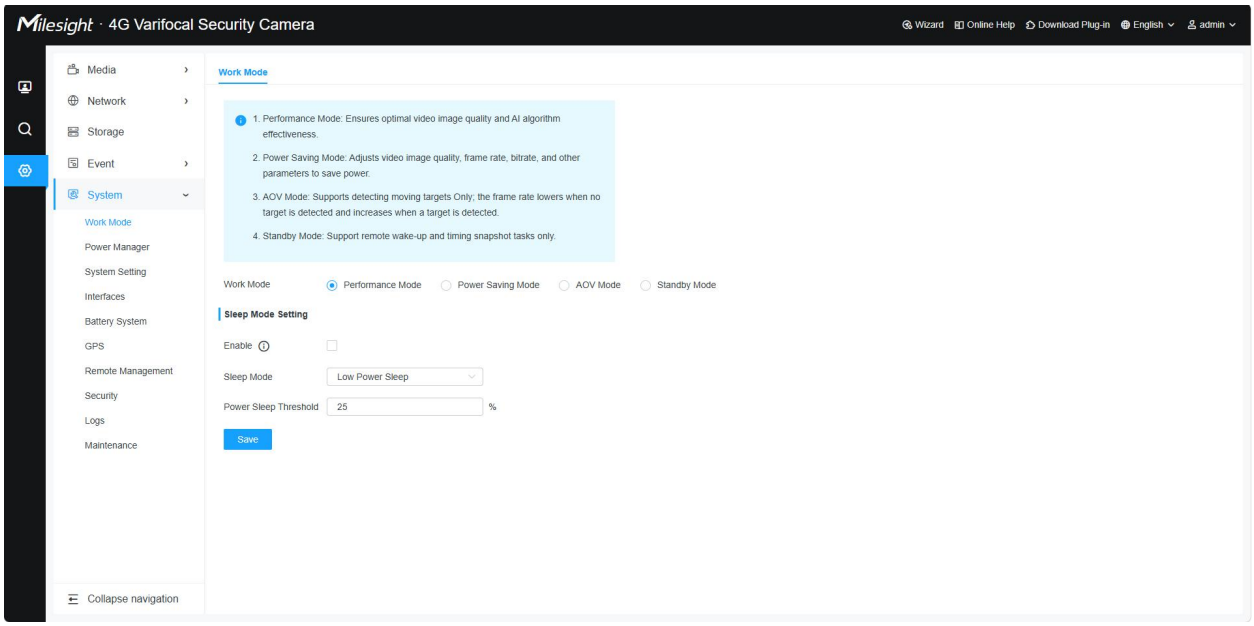
For the schedule settings, please refer to 9.1.1 Motion Detection



Chapter 10. System

10.1 Work Mode

The Work Mode module allows users to switch the camera between different operating modes optimized for various scenarios. Each mode balances video quality, AI performance, and power consumption differently to suit specific application requirements.



10.1.1 Overview

SP112 supports the following work modes:

Work Mode	Description
Performance Mode (Default)	This mode ensures optimal video image quality and enhances AI algorithm performance, making it suitable for high-security areas and critical monitoring scenarios.
Power Saving Mode	Adjusts video image quality, frame rate, bitrate, and other parameters to reduce power consumption. This mode is recommended for battery-powered or solar-powered installations where power conservation is a priority while maintaining full AI functionality.
AOV Mode	Supports detection of moving targets only. The frame rate decreases when no target is detected and increases when a target is detected, making it ideal for applications such as perimeter monitoring.
Standby Mode	Supports remote wake-up and timing snapshot tasks only. This mode is recommended for scenarios requiring minimal power consumption with periodic check-in capabilities.

10.1.2 Work Mode Comparison

Event Type	Performance Mode	Power Saving Mode	AOV Mode	Standby Mode
Frame Rate (60Hz)	Up to 30fps	Up to 15fps	1fps (no target) /	Up to 15fps

Event Type	Performance Mode	Power Saving Mode	AOV Mode	Standby Mode
			15fps (target detected)	
Frame Rate (50Hz)	Up to 25fps	Up to 12fps	1fps (no target) / 12ps (target detected)	Up to 12fps
Bit rate	3072 Kbps	2048 Kbps	2048 Kbps	2048 Kbps
VCA (Intrusion/Line Crossing/Object Left/AMD/Tamper)	√	√	×	×
Object Counting (Human/Vehicle/E-Scooter/Bicycle)	√	√	×	×
Regional People Counting	√	√	×	×
PPE (Hard Hat/Hi-vis Vest)	√	√	×	×
Motion Detection	√	√	√	×
External Input	√	√	√	√
External Output	√	√	√	√
Exception	√	√	√	√

Note:

1. NAS is unavailable in both AOV and Standby modes.
2. EIS cannot be enabled in AOV mode.

10.1.3 Switching Work Modes

To switch between work modes:

8. Navigate to System > Work Mode in the web interface.
9. Select the desired work mode from the available options.
10. Click "Save" to apply the selection.
11. A confirmation dialog will appear with the message: "Work Mode switch takes effect after restarting. Restart it now?"
12. Click "OK" to restart the device immediately, or "Cancel" to return without restarting.

If "OK" is selected, the device will restart. During restart, the following message is displayed:

"Restarting (1~3 mins estimated). Checking the device's network is working after restart, then re-access the current page."

10.1.4 Sleep Mode Setting

The Sleep Mode Setting allows the camera to enter Sleep Mode under specific conditions while operating in either Performance Mode or Power Saving Mode, providing greater flexibility and improved power efficiency.

Note:

Under Low Power Sleep mode, only remote access wake-up and scheduled wake capture are supported.

Remote wake-up is only available when the network connection is functioning properly.

Step 1: Enable the Function

Check the **Enable** option.

Step 2: Select Sleep Mode

Low Power Sleep:
In this mode, you can configure the power sleep threshold. When the detected battery level falls below the specified threshold, the camera will automatically enter sleep mode.
Note: The Low Power Sleep function requires access to external battery level information. If this information is unavailable, the function will not be triggered even if configured.

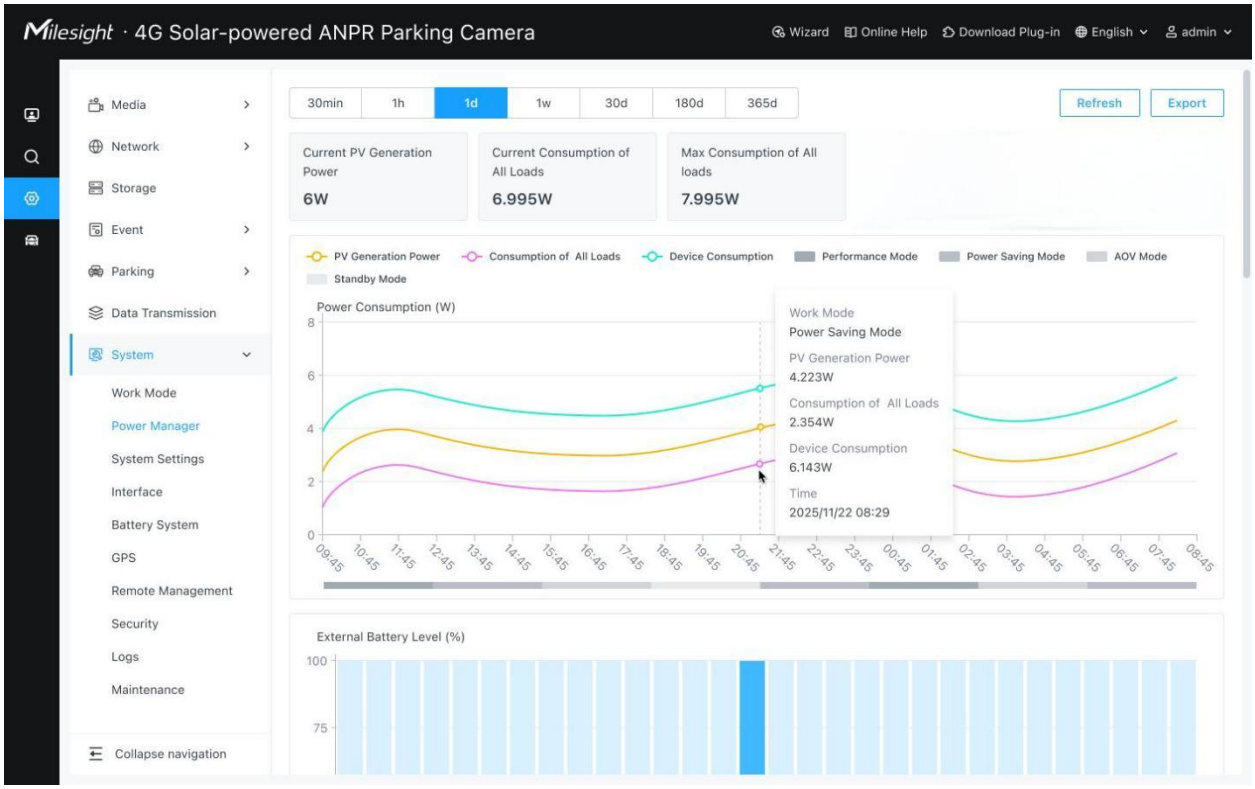
Scheduled Sleep:
Allows you to configure scheduled sleep periods. The camera will enter sleep mode according to the defined schedule.

Step 3: Save Settings

Click the **Save** button to apply the settings.

10.2 Power Manager

The Power Manager module provides comprehensive power monitoring and management capabilities for the SP112 device. It tracks power generation, consumption, and battery status in real time, helping users accurately assess battery specifications and estimate device runtime under various conditions.



10.2.1 Overview

The Power Manager module serves two primary purposes:

- Track power consumption statistics at the camera to help users accurately evaluate battery sizing based on actual measured data.
- Track current battery level information.

10.2.2 Quick Query

The Quick Query buttons allow you to quickly select predefined time ranges for data viewing. The following preset options are available:

Quick Query Button	Time Range
30min (Default)	Last 30 minutes from current time
1h	Last 1 hour from current time
1d	Last 1 day from current time
1w	Last 1 week from current time
30d	Last 30 days from current time
180d	Last 180 days from current time
360d	Last 360 days from current time

The time range is calculated from the current moment backward. For example, selecting "30min" displays data from the most recent 30 minutes.

Note: Custom time range queries are not supported. For more granular data analysis, export the data to CSV and perform calculations using external tools.

10.2.3 Power Statistics Panel

The Power Statistics Panel displays key power metrics for the selected query period.

Attribute	Description
Current PV Generation Power	Displays the current photovoltaic (solar) generation power.
Current Consumption of All Loads	Displays the current total power consumption of all loads connected to the battery system.
Max Consumption of All Loads	Displays the maximum power consumption of all loads within the selected query time period.
Daily Average Consumption of All Loads	Displays the daily average power consumption of all loads within the selected query time period.

10.2.4 Power Consumption Curves

The Power Consumption Curves graph displays power data over time with the following characteristics:

Attribute	Description
X-axis	Time (time scale adjusts based on query range)
Y-axis	Power Consumption (W); range: 0 to max data value (minimum 8W)
Display Type	Line chart with reference grid lines at 2W, 4W, 6W, 8W
Update	Page load and Refresh button

Curve Legend

The following curves are displayed on the power consumption chart:

Curve	Description
PV Generation Power (W)	Photovoltaic (solar) power generation
Consumption of All Loads (W)	Total power consumption of all battery system loads
Device Consumption (W)	Power consumption of the camera device itself
Performance Mode	Time periods when the device was in Performance Mode
Power Saving Mode	Time periods when the device was in Power Saving Mode
AOV Mode	Time periods when the device was in AOV Mode

Curve	Description
Standby Mode	Time periods when the device was in Standby Mode

Work Mode Markers

The work mode markers are displayed along the time axis to indicate which mode the device was operating in during each time period.

Work mode data does not participate in power calculations. If work mode data is unavailable for a period, the marker area may be empty or display "-". Missing mode markers do not affect power data or subsequent user calculations.

10.2.5 Battery Level Curve

The Battery Level Curve displays the external battery charge level over time.

Attribute	Description
X-axis	Time (same time scale as power curves)
Y-axis	External Battery Level (%); range: 0~100%
Display Type	Bar chart with reference grid lines at 25%, 50%, 75%, 100%
Precision	Up to 2 decimal places
Hover Detail	Hovering over the chart displays battery level information with time granularity matching the power curve
Update	Page load and Refresh button

Legend

External Battery Level — represents the charge percentage of the external battery connected to the battery system.

10.2.6 Refresh

The Refresh button immediately updates the following displayed data:

- [B]Current PV Generation Power
- [B]Current Consumption of All Loads
- [B]Max Consumption of All Loads (for the selected query period)
- [B]Power consumption curves (PV Generation, All Loads, Device Consumption)
- [B]External Battery Level curve

The page automatically refreshes once when first loaded. Click Refresh at any time to update the data display.

10.2.7 Data Export

The Power Manager supports exporting data in CSV format. The exported file contains the data corresponding to your current query selection.

CSV File Format

Column	Description
Column 1: Date	Timestamp for each data point
Column 2: PV Generation Power (W)	Photovoltaic generation power in Watts
Column 3: Consumption of All Loads (W)	Total power consumption of all loads in Watts
Column 4: Device Consumption (W)	Power consumption of the device itself (measured by internal power meter) in Watts
Column 5: External Battery Level (%)	External battery charge level as a percentage

File Naming

Exported files are named using the following convention:

PowerHistoryData-YYYY_MM_DD

Example: PowerHistoryData-2025_11_10

The date corresponds to the query date.

Data Granularity in Export

The exported CSV file uses the same time granularity as the power curve display, which depends on the selected query range (see Section X.3).

10.3 System Setting

10.3.1 System Info

All information about the hardware and software of the camera can be checked on this page.

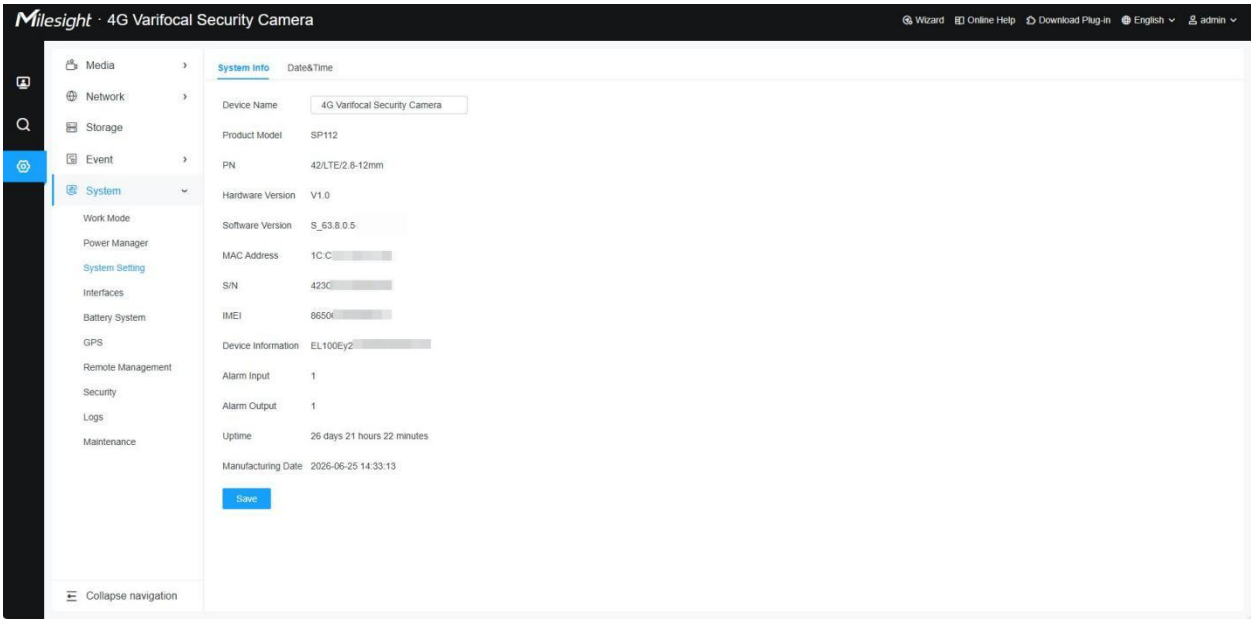


Table 58. Description of the buttons

Parameters	Function Introduction
Device Name	The device name can be customized.
Product Model	The product model of the camera.
Hardware Version	The hardware version of the camera.
Software Version	The software version of the camera can be upgraded.
MAC Address	Media Access Control address.
S/N	Stock Number.
Device Information	The device information, including information about alarm I/O and clipper chip.
Alarm Input	The number of Alarm Input interface. **Note:** The Alarm Input will appear only when the camera have alarm input/ output interface.
Alarm Output	The number of Alarm Output interface. **Note:** The Alarm Output will appear only when the camera have alarm input/ output interface.
GPS	The device's current GPS information
Uptime	The elapsed time since the last restarted of the device.
Save	Save the configuration.

10.3.2 Date&Time

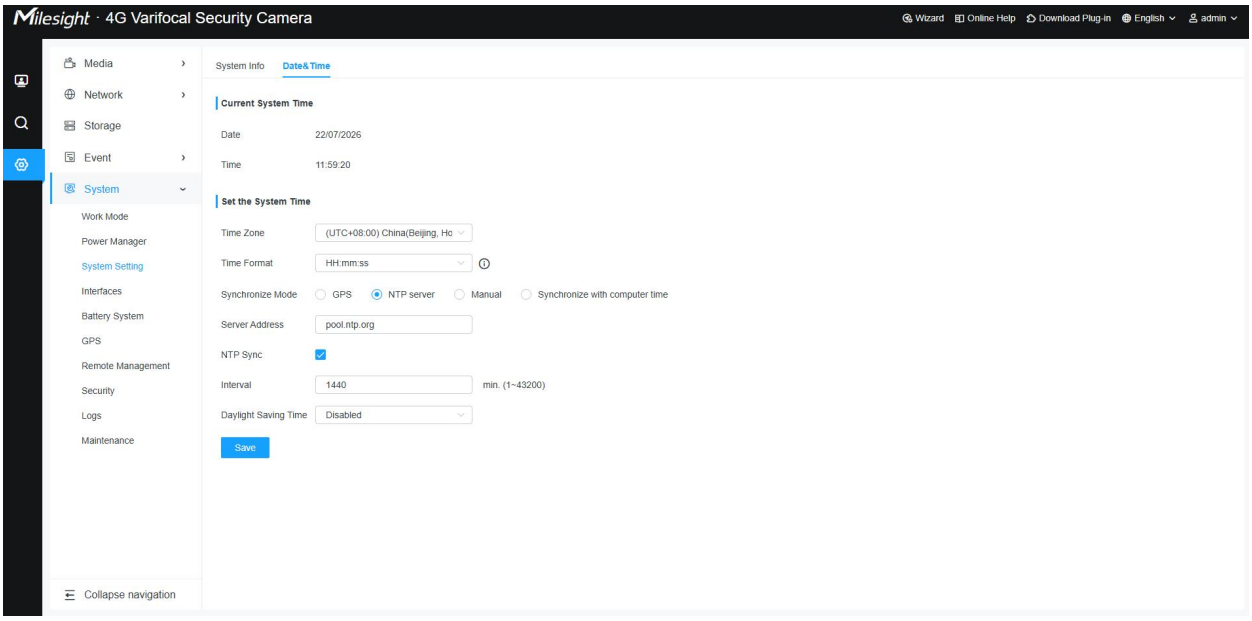


Table 59. Description of the buttons

Parameters	Function Introduction
Current System Time	Current date&time of the system.
Set the System Time	**Time Zone:** Choose a time zone for your location.
	Time Format: h/H=12/24 Hour; tt=AM or PM; mm=Minute; ss=Second
	Synchronize Mode: GPS, NTP server, Manual and Synchronize with computer time are optional. **GPS:** Synchronizing GPS Time. In addition to providing location coordinates, GPS also offers a highly accurate time source. All GPS satellites are equipped with atomic clocks and continuously broadcast precise time information, enabling terminal devices to achieve time synchronization. **Enable NTP Retry:** After multiple failed attempts to obtain time via GPS, retries via NTP are allowed. **NTP server:** Input the address of NTP server. **NTP Sync:** Regularly update your time according to the interval time. **Manual:** Set the system time manually. **Synchronize with computer time:** Synchronize the time with your computer. **Daylight Saving time:** Enable the daylight saving time.

Parameters	Function Introduction
Save	Save the configuration.

10.4 Interfaces

10.4.1 RS485

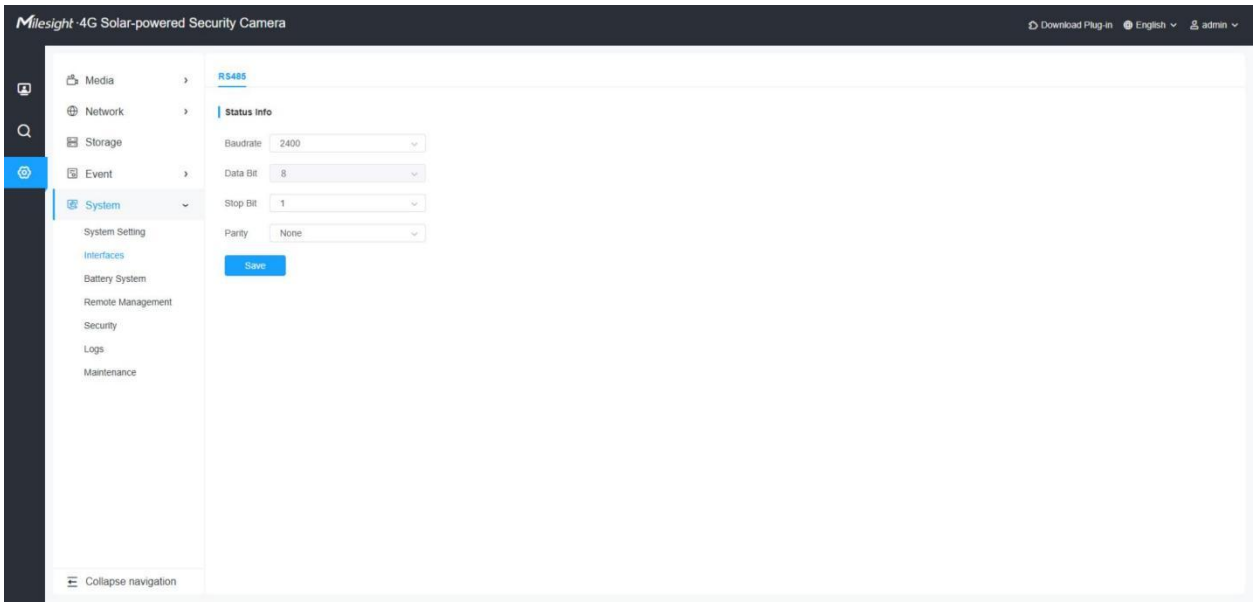


Table 60. Description of the buttons

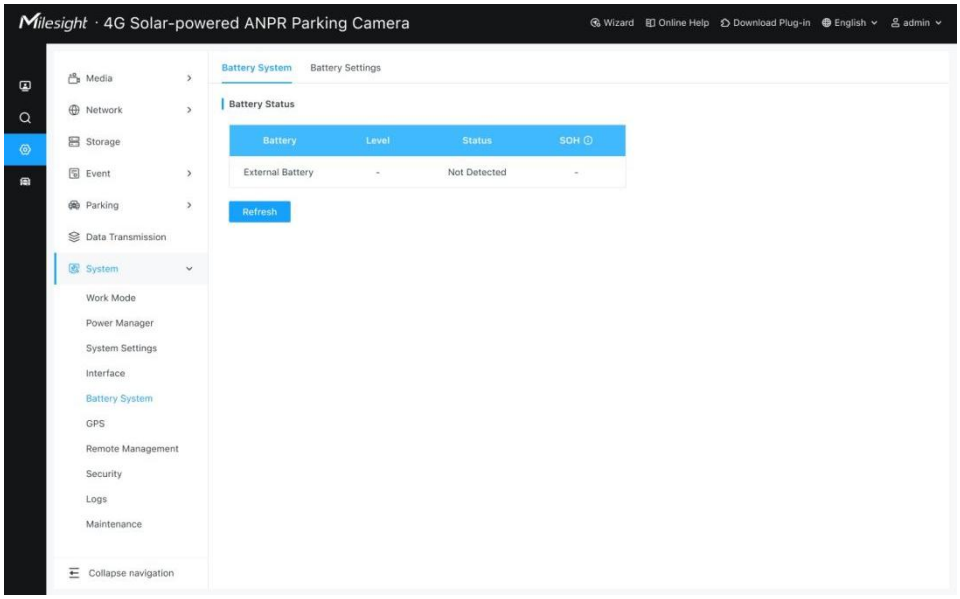
Parameters	Function Introduction
Baudrate	The available baudrate options for this device are: 2400 bps/4800 bps/9600 bps (default)/19200 bps/38400 bps.
Data Bit	The RS485 Data Bit setting is fixed at 8 bits and cannot be adjusted. This means that each data frame will contain 8 data bits.
Stop Bit	Select the desired number of stop bits from the available options: 1 stop bit/2 stop bits. **Note:** Ensure that the stop bit setting on your camera matches the setting on the connected RS485 device to ensure proper communication.

Parameters	Function Introduction
Parity	The available parity options for this device are: **None** (default)/**Odd Parity**/**Even Parity**. Select the desired parity option from the available choices: • **None**: No parity bit is used. • **Odd Parity**: The parity bit is set to ensure that the total number of 1-bits is odd. • **Even Parity**: The parity bit is set to ensure that the total number of 1-bits is even.
Save	Save the configuration.

10.5 Battery System

10.5.1 Battery System

You can check the battery status and battery health in this module.



[Battery Status]

Table 61. Description of the buttons

Parameters	Function Introduction
Level	This column indicates the current battery level. It shows the remaining charge as a percentage, helping you monitor when the battery needs recharging or replacing.
Status	This column indicates the current status of the battery. • **Running:** The battery is operating normally. • **Low Power:** The battery is running low on charge and needs recharging soon. • **Malfunction:** There is a problem with the battery, and it may not be functioning correctly. • **Not Detected:** The battery is not detected by the system. • **HighTempProtect:** The battery is in a high-temperature protection mode to prevent overheating. • **LowTempProtect:** The battery is in a low-temperature protection mode to prevent damage from cold temperatures.
SOH	SOH (State of Health) refers to the health status of a battery.

10.5.2 Battery Setting

You can configure the battery sleep mode and battery health alarms in this module.

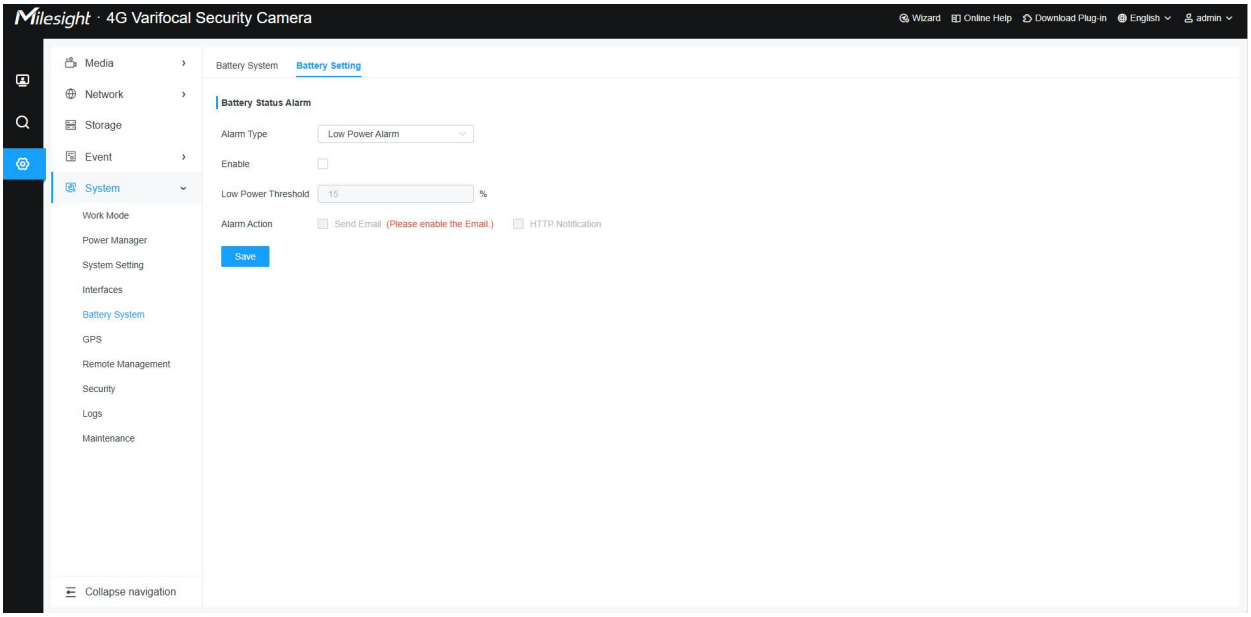


Table 63. Description of the buttons

Parameters	Function Introduction
Alarm Type	Select different alarm types for alarm configuration. The available battery status alarm types are: Low Battery Alarm, Malfunction Alarm, and Low Battery Health Alarm.
Enable	Click the enable checkbox to activate the Battery Status Alarm.
Low Power Threshold	The configuration for setting the low battery alarm threshold is available when the Alarm Type is set to Low Battery Alarm. When the battery level falls below the set value, the device will trigger the alarm.
	Send Email: Send alerts via email. For detailed email settings, please configure under Network - Basic - Email.

Parameters	Function Introduction
Alarm Action	**HTTP Notification:** When the battery status triggers an alarm, the security camera can send an HTTP notification to a specified server. To configure the HTTP notification for battery status alarms, please fill in the following information. **URL:** Enter the URL of the server that will receive the HTTP notification. This should be a fully qualified URL, including the protocol (e.g., http:// or https://). **Enable:** Enable or disable HTTP notification for battery status alarms. **HTTP Method:** Choose the HTTP method to be used for sending the notification. Common methods include POST and GET. **User Name:** If the server requires authentication, enter the user name here. This is typically used for basic authentication. **Password:** Enter the password associated with the user name for authentication purposes.
Save	Save the configuration.

10.6 GPS

The GPS module provides the camera's geographical coordinates (Latitude, Longitude, and Altitude). This data is essential for asset tracking, map integration, and synchronized event reporting.

Note:

1. **Outdoor Use Only:** The GPS module requires a clear, unobstructed view of the sky to lock onto satellite signals. It will **not function indoors** or in areas with significant overhead obstructions (such as deep canyons or under heavy metal roofing).
2. **Initial Positioning:** When the camera is first powered on outdoors, it may take a few minutes to acquire a satellite fix and update the coordinates in the interface.

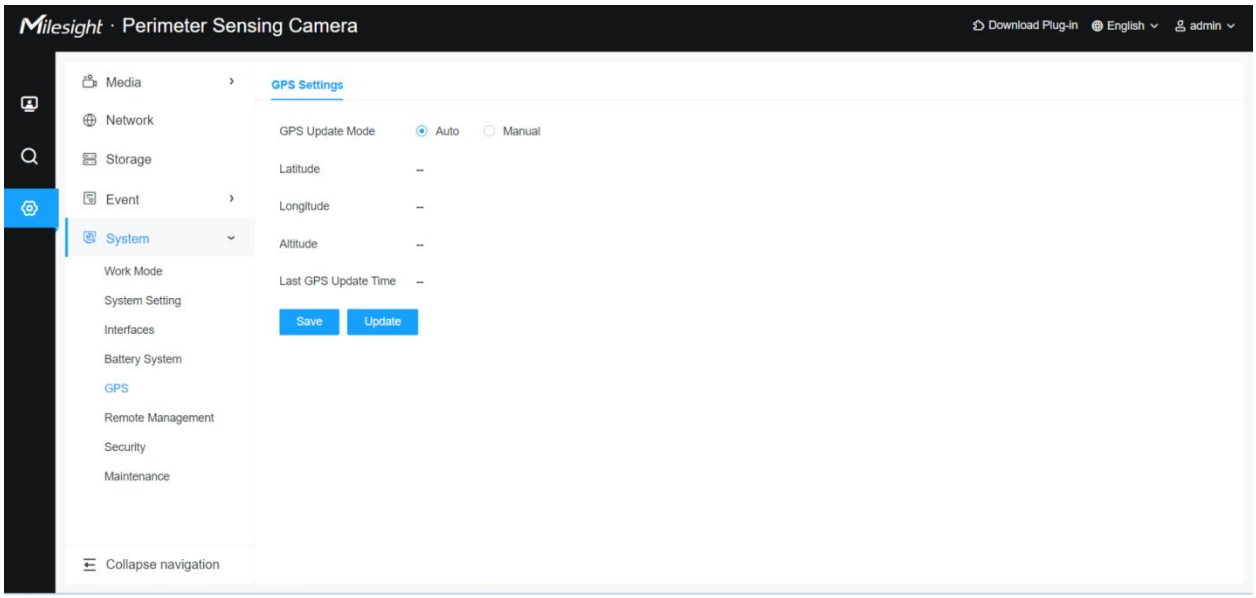
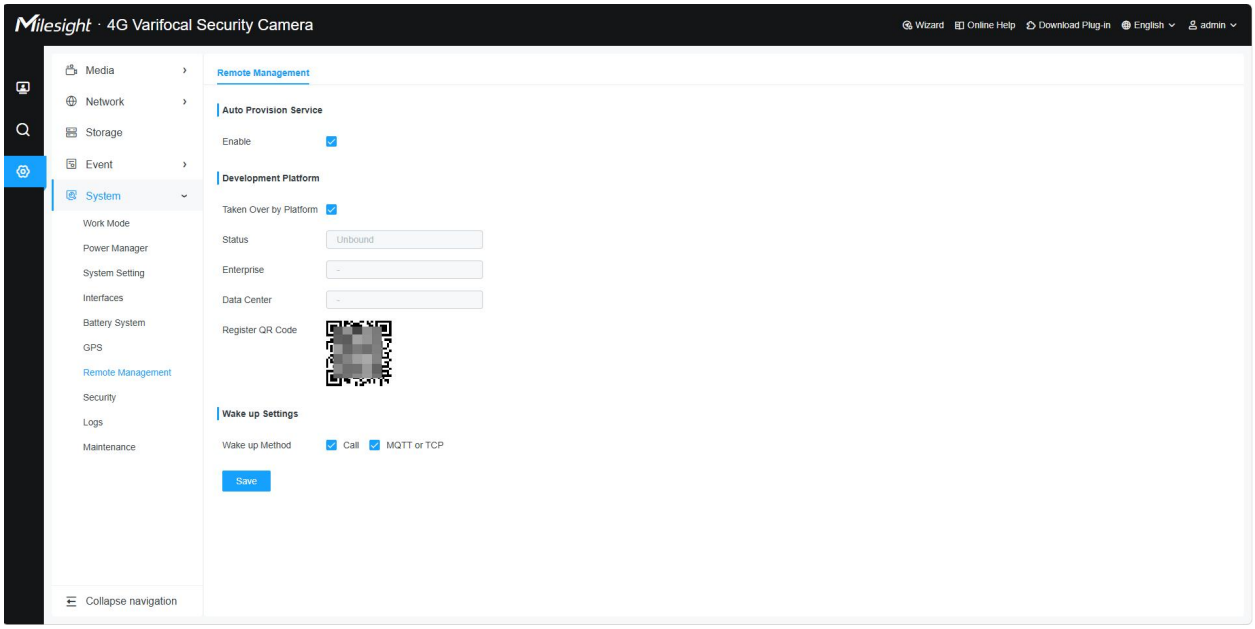


Table 62. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
GPS Update Mode	Choose how the camera acquires its location data. **Auto**The system automatically retrieves the latest location data from the built-in GPS module. Recommended for mobile installations or initial setups. In Auto mode, all coordinates are read-only and updated by the system. • **Latitude / Longitude:** Displays the current horizontal and vertical coordinates in degrees (°). • **Altitude:** Displays the elevation above sea level. • **Last GPS Update Time:** Shows the timestamp of the most recent successful GPS fix. • **[Update] Button:** Click to trigger an immediate GPS refresh. The system will display *"Operating, Please wait..."* while it re-acquires the signal. **Manual** Allows you to manually input specific coordinates. This is ideal for stationary installations where GPS signals may be unstable or where specific professional mapping data is required. In Manual mode, you can customize the location data. The system uses a **decimal degree format** (consistent with Google Maps) for easier data entry. **Latitude**-90.000000 ~ 90.000000 **Longitude**-180.000000 ~ 180.000000 **Altitude**-11000.0 ~ 90000.0
Save	Save the configuration.

10.7 Remote Management



The Remote Management section allows you to configure various settings that enable

remote control and management of your security camera. This includes enabling the Auto Provision Service, Development Platform, and configuring Wake Up Settings.

You can use the Milesight Development Platform for remote and bulk management of devices.
Platform address:

https://account.milesight.com/login

For instructions on how to add a device, please refer to the platform manual:

https://www.milesight.com/docs/en/development-platform/introduction/connect-a-device.html

Auto Provision Service

- **Enable Auto Provision Service:**
  - Enabling this option means that the camera will automatically obtain pre-configuration from the Milesight Development Platform after rebooting.

Development Platform

- **Enable Development Platform:**
  - Enabling this option allows the Milesight Development Platform to modify camera settings. Users can then more conveniently modify camera settings remotely in bulk via the Milesight Development Platform.

Table 63. Description of the buttons

Parameters	Function Introduction
Taken Over by Platform	Toggle to allow or restrict the device from connecting to the management platform. **(Default: Enabled)**
Status	Displays the real-time connection status: • **Unbound:** Device has not been added to any account. • **Online:** Device is successfully connected to the platform. • **Offline:** Device is registered but currently disconnected.
Enterprise	Displays the enterprise.
Taken Over by Platform	Toggle to allow or restrict the device from connecting to the management platform. **(Default: Enabled)**
Data Center	Displays the region of the connected server (e.g., **EU**).

Wake Up Settings

- **Wake Up Method:**
  - This setting determines how the camera will wake up from a low-power state.
  - **Call:** The camera can be woken up by making a call.
  - **MQTT or TCP:** The camera can be woken up using MQTT (Message Queuing Telemetry Transport) protocol.

10.8 Security

10.8.1 User

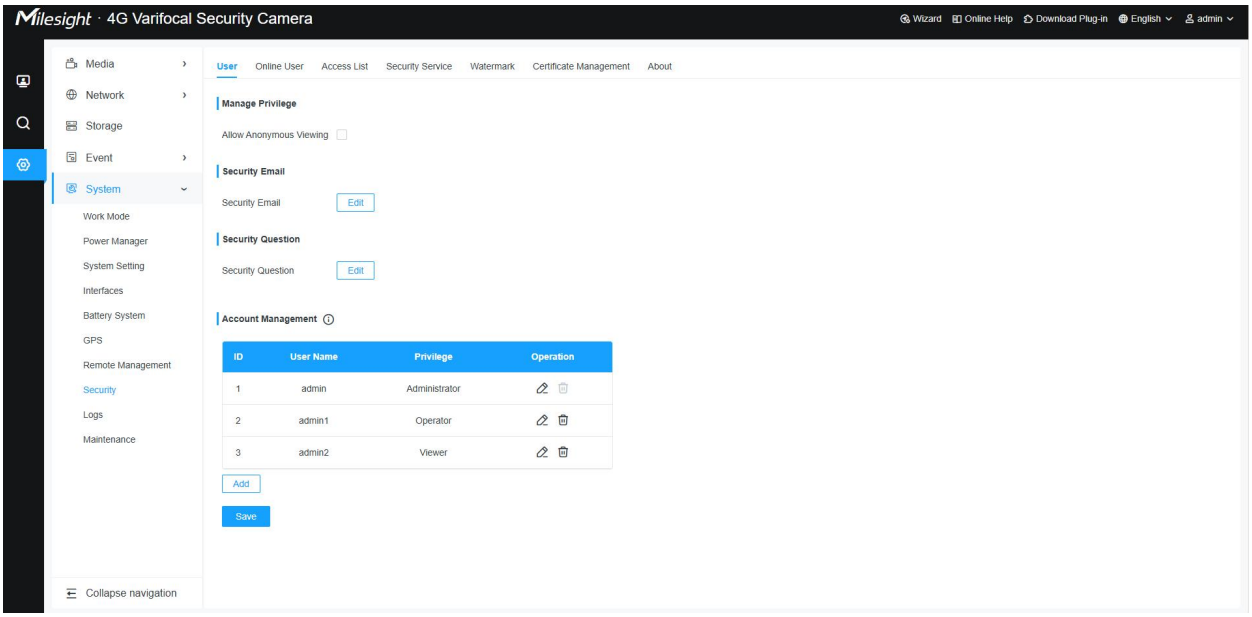
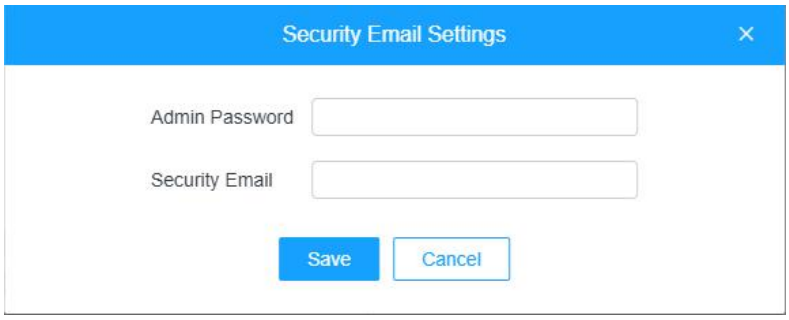
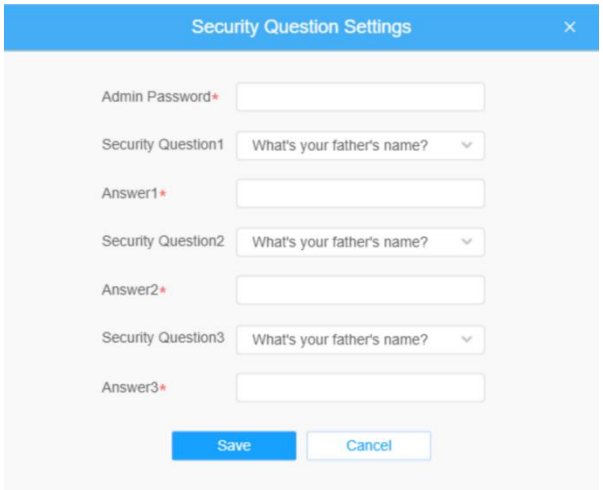
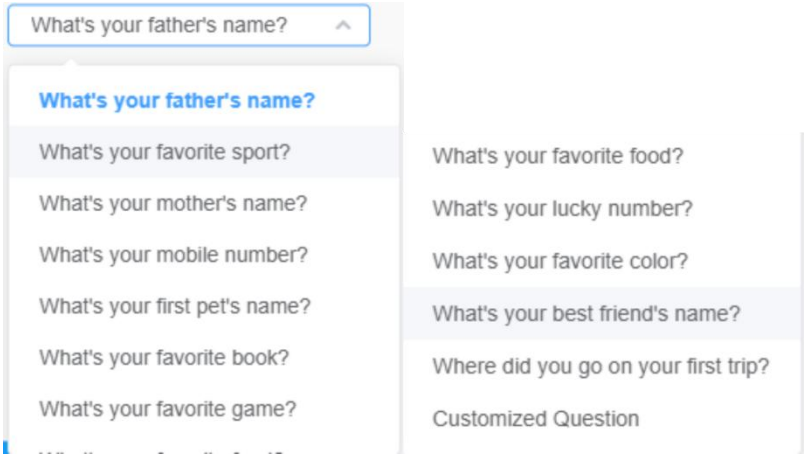


Table 64. Description of the buttons

Parameters	Function Introduction
Manage Privilege	**Allow anonymous viewing:** Check the checkbox to enable visit from whom doesn't have account of the device.
Security Email	Set a security email for your camera. If you forget your password, click "Forg ot Password" on the login page. A security code will be sent to your email. En ter the code to reset your password. 
Security Question	Click "Edit" button to set three security questions for your camera. In case that you forget the password, you can click "Forget Password" button on login page to reset the password by answering three security questions correctly.

Parameters	Function Introduction
	 There are twelve default questions below, you can also customize the security questions. 
Account Management	Click "**Add**" button, it will display Account Management page. You can add an account to the camera by entering Admin Password, User Level, User Name, New Password, Confirm, and edit user privilege by clicking . The ad ded account will be displayed in the account list. **Admin Password:** You can add an account only after you enter the correct admin password. **User Level:** Set the privilege for the account. **User Name:** Input user name for creating an account. **New Password:** Input password for the account.

Parameters	Function Introduction
	Confirm: Confirm the password. You can edit and delete the account in the account list under the admin account. For the default admin account, you can only change the password, and it cannot be deleted. **Note:** • Support up to 20 users, including a default user and 19 custom added users. • The operator privilege is all checked by default.

10.8.2 Online User

Here real-time status of user logging in camera will be shown.

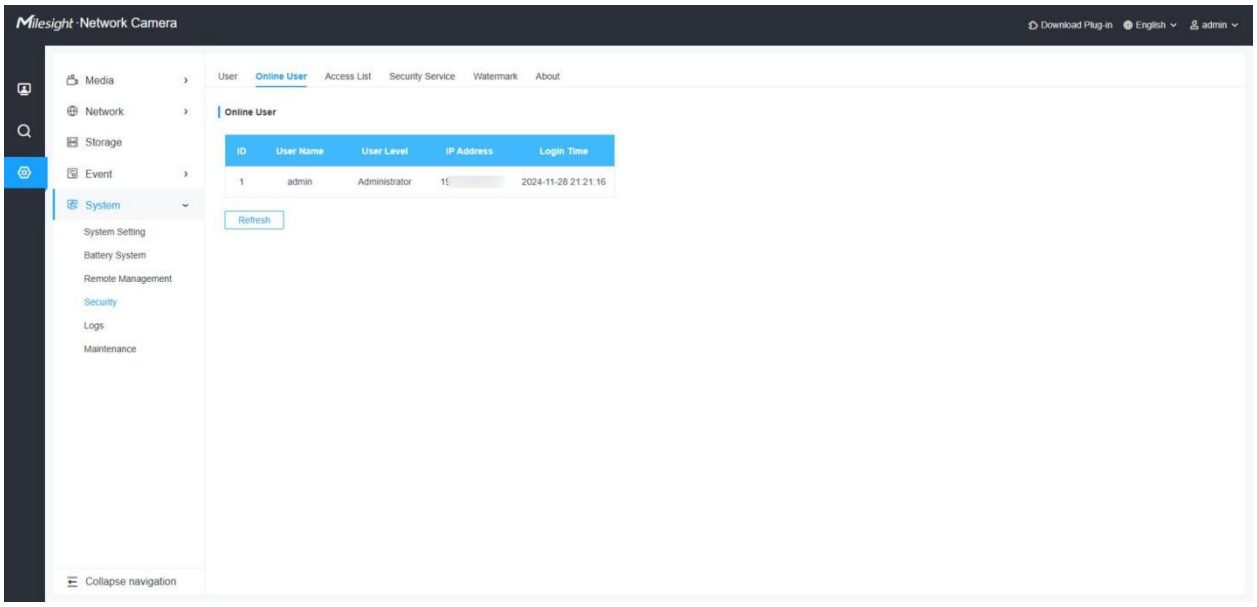


Table 65. Description of the buttons

Parameters	Function Introduction
Refresh	Click to get latest status of user accessing to camera.
ID	Record serial number of user logging in camera. **Note:** • There are at most 30 records shown at the list. • There is only one record if the same user logs in camera by the same IP address.
User Name	Name of user logging in camera.
User Level	Level of user logging in camera.
IP Address	Device IP address where user logging in camera web located.
Login Time	Camera system time of user logging in camera.

10.8.3 Access List

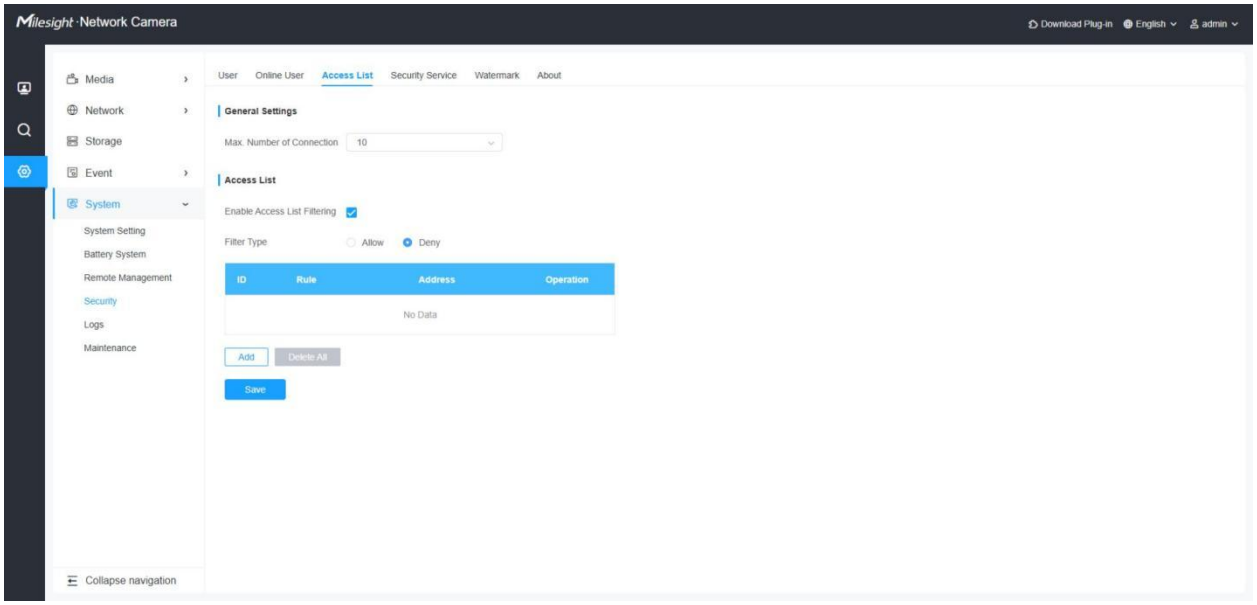


Table 66. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
General Settings	**Max. Number of Connection:** Select the maximum number of concurrent streaming. Options include No Limit, 1~10.
Access List	**Enable Access List Filtering:** Able to access or restrict access for some IP address.
Access List	**Filter type:** Allow or deny access.
Add	**Rule: Single, Network and Range** are available. **IP address:** Input the address to get the access to the device.
Delete All	Delete all the access list.
	Edit the selected IP on access list.
	Delete the selected IP on access list.
Save	Save the configuration.

10.8.4 Security Service

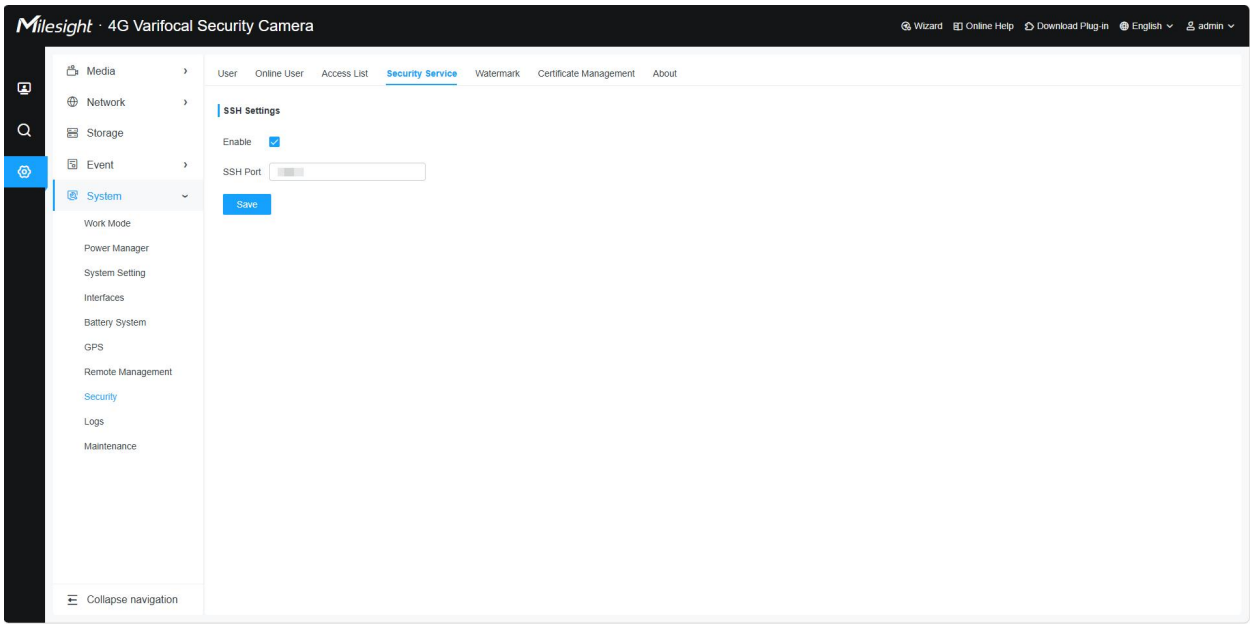
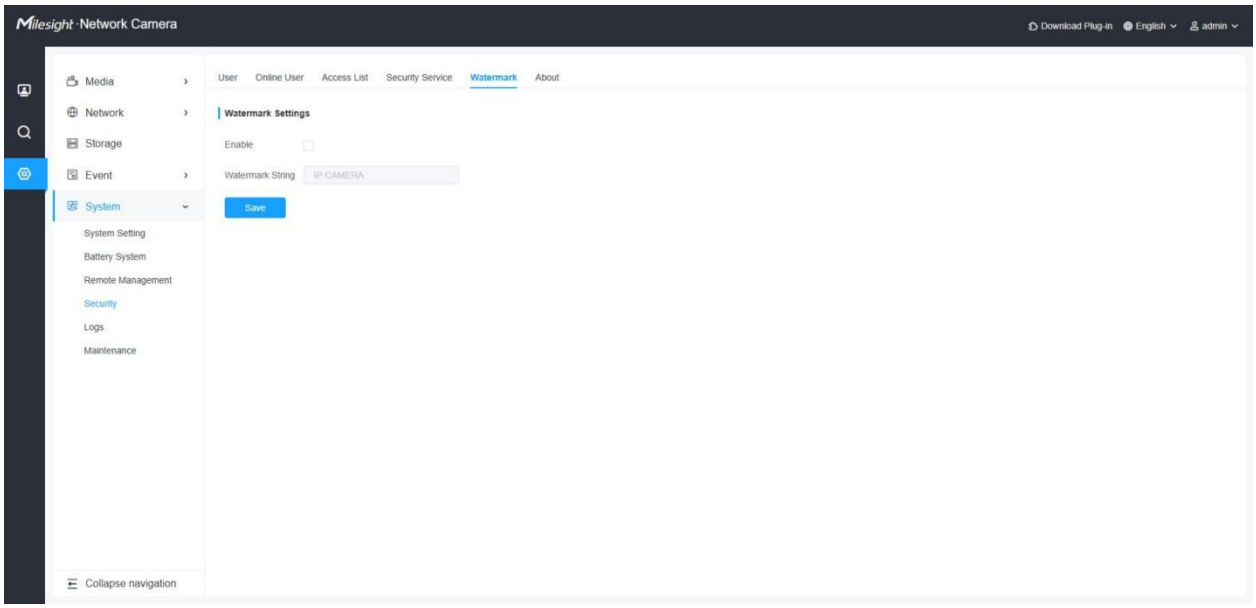


Table 67. Description of the buttons

Parameters	Function Introduction

Parameters	Function Introduction
SSH Settings	Secure Shell (SSH) has many functions: it can replace Telnet and also provides a secure channel for FTP, POP, even for PPP.

10.8.5 Watermark



Watermarking is an effective method to protect information security, realizing anti-counterfeiting traceability and copyright protection. Milesight Network cameras supports Watermark function to ensure information security.

10.8.6 Certificate Management

This section describes the information about certificate management.

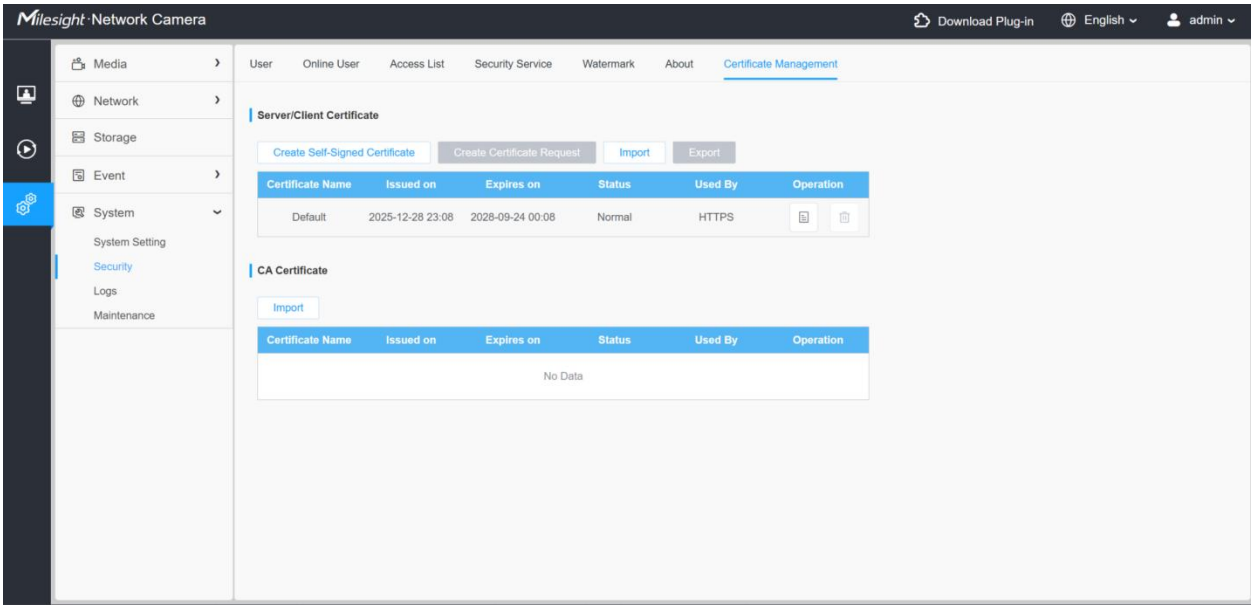
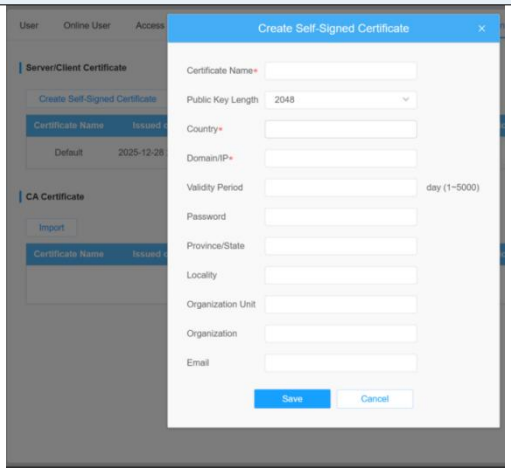
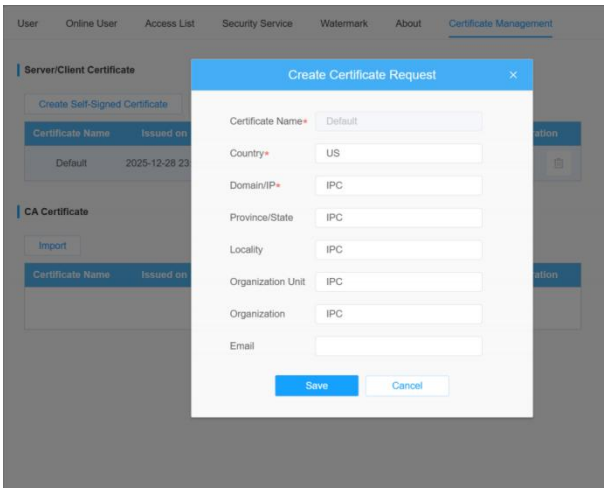
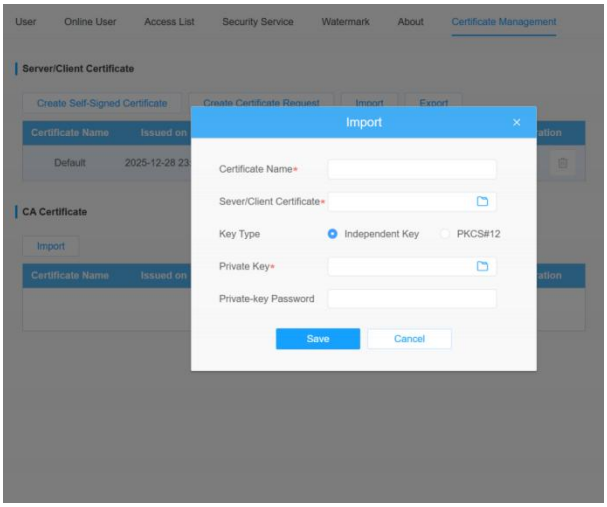
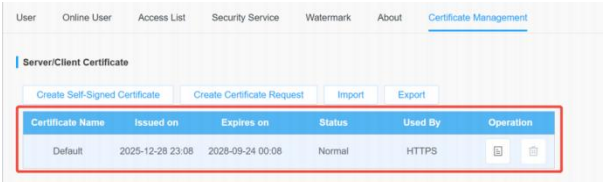
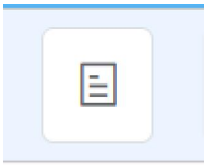
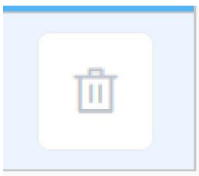


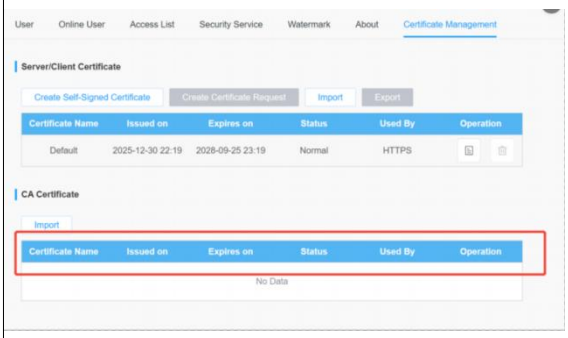
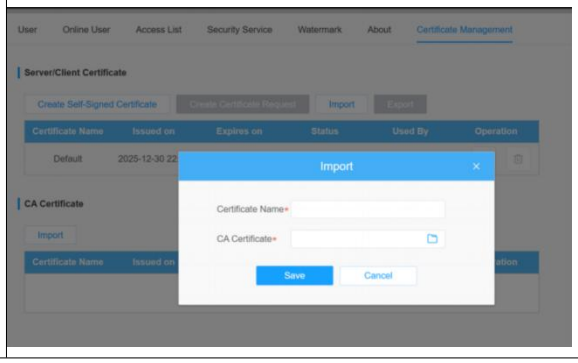
Table 93. Parameter Description

Parameters	Function Introduction
Server/Client Certificate	**Create Self-Signed Certificate:** Click it to create a self- signed certificate. When you click it, the following buttons are displayed. **Certificate Name:** Enter a certificate name. **Public Key Length:** Select **1024** or **2048** for the public key length. **Country:** Enter a country. **Domain/IP:** Enter a domain or an IP. **Validity Period:** Enter a validity period (day) from **1** to **5,000**. **Password:** Enter a password. **Province/State:** Enter a province or state. **Locality:** Enter a locality. **Organization Unit:** Enter an organization unit. **Organization:** Enter an organization. **Email:** Enter an email address.

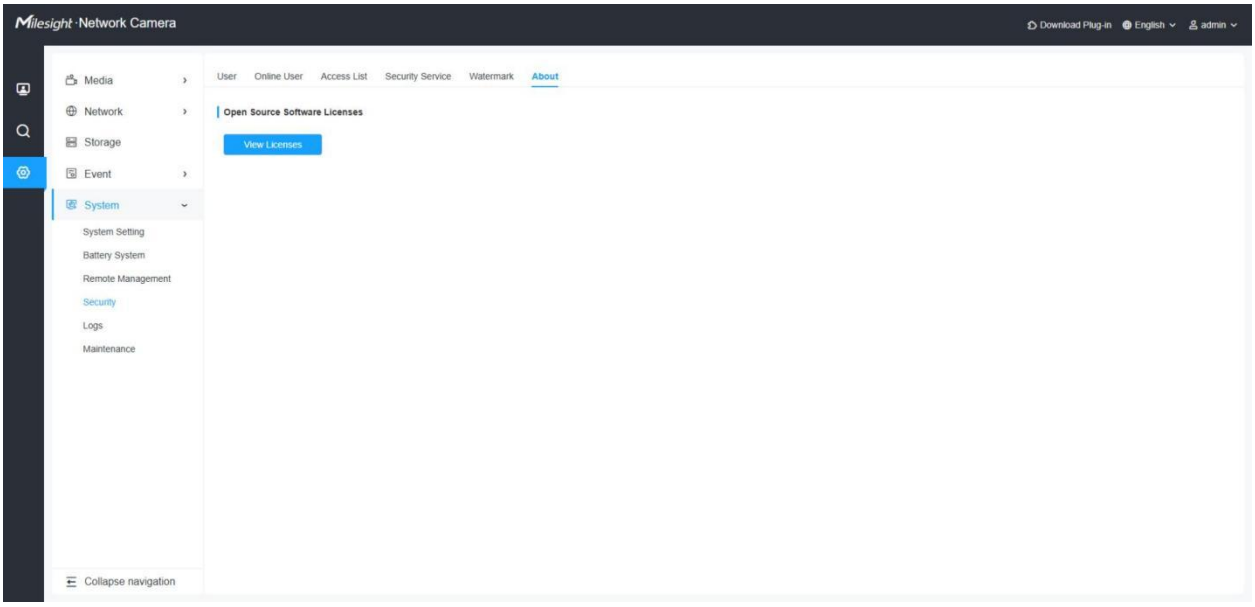
Parameters	Function Introduction
	
Server/Client Certificate	**Create Certificate Request:** Click it to create a certificate request. When creating a certificate request, you are advised to enter the following buttons: **Certificate Name**, **Country**, **Domain/IP**, **Province/State**, **Locality**, **Organization Unit**, **Organization**, and **Email**. 

Parameters	Function Introduction
Server/Client Certificate	**Import:** Import a certificate. **Certificate Name:** Enter a certificate name. **Sever/Client Certificate:** Import a sever or client certificate. **Key Type:** Select **Independent Key** or **PKCS#12**. **Private Key:** Import a private key. **Private-key Password:** Enter a private-key password.  **Export:** Click it to export the certificate.

Parameters	Function Introduction
Server/Client Certificate	 **Certificate Name:** Certificate name. **Issued On:** The Issue time of the certificate. **Expires On:** The validate period of the certificate. **Status:** The status of the certificate. **Used By:** The application method of the certificate. **Operation:** The following icons are displayed under the column of **Operation**.   Click the first icon to see the detailed information of the certificate; click the latter to delete the certificate.

Parameters	Function Introduction
CA Certificate	You can import CA certificates by clicking **Import** and configuring **Certificate Name** and **CA Certificate**. There also have **Certificate Name**, **Issued On**, **Expires On**, **Status**, **Used By**, and **Operation** options.  

10.8.7 About



User can view some open source software licenses about the camera by clicking the View Licenses button.

10.9 Logs

10.9.1 Logs

The logs contain the information about the time and IP that has accessed the camera through web.

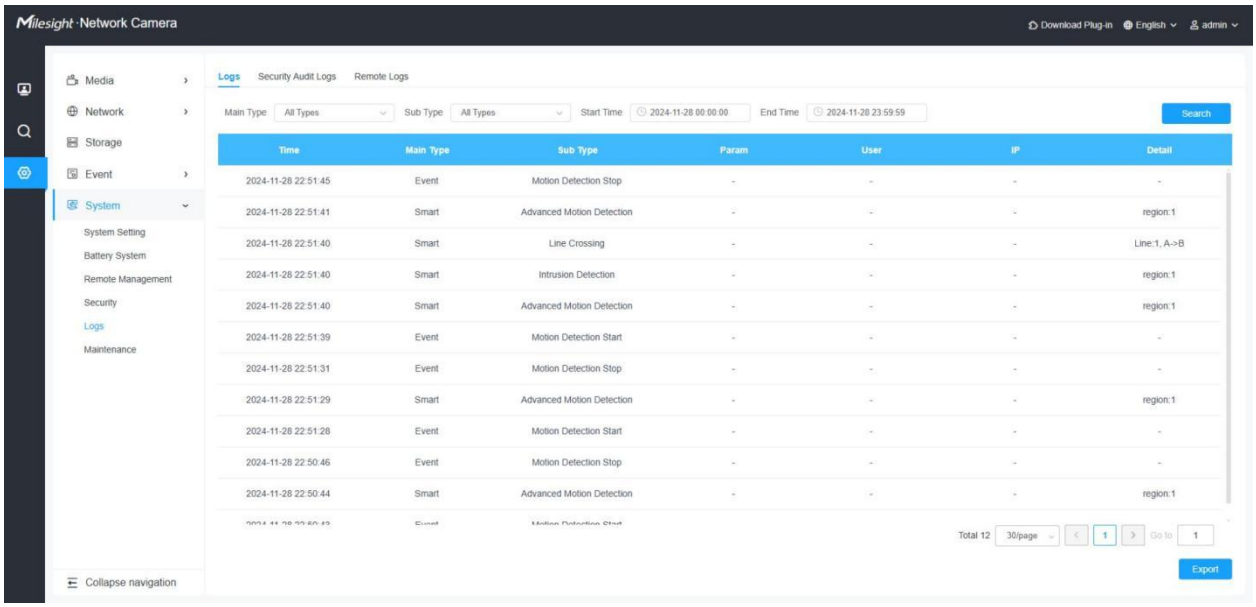


Table 68. Description of the buttons

Parameters	Function Introduction
Main Type	There are five main log types: **All Type, Event, Operation, Information, Exception** and **Smart.**
Sub Type	On the premise that main type has been selected, select the sub type to narrow the range of logs.
Start Time	The time log starts.
End Time	The time log ends.
Search	Search the logs.
Export	Export the logs.
Go to	Input the number of logs' page.

10.9.2 Security Audit Logs

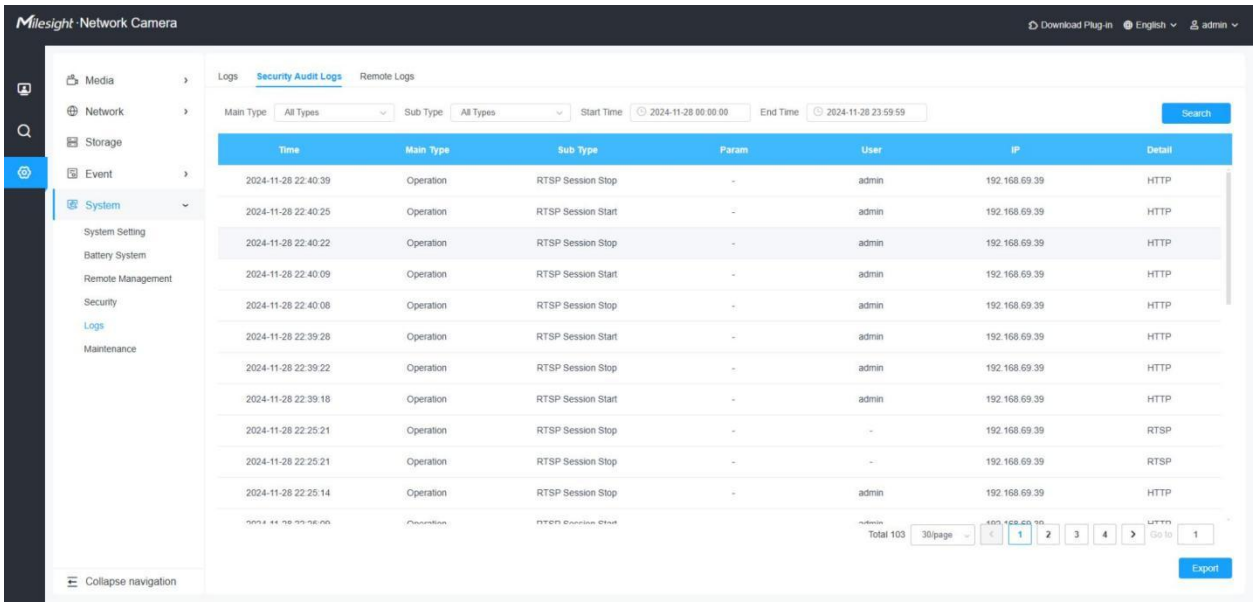


Table 69. Description of the buttons

Parameters	Function Introduction
Main Type	There are five main log types: **All Type, Operation, Information and Exception.**
Sub Type	On the premise that main type has been selected, select the sub type to narrow the range of logs.
Start Time	The time log starts.
End Time	The time log ends.
Search	Search the logs.
Export	Export the logs.
Go to	Input the number of logs' page.

10.9.3 Remote Logs

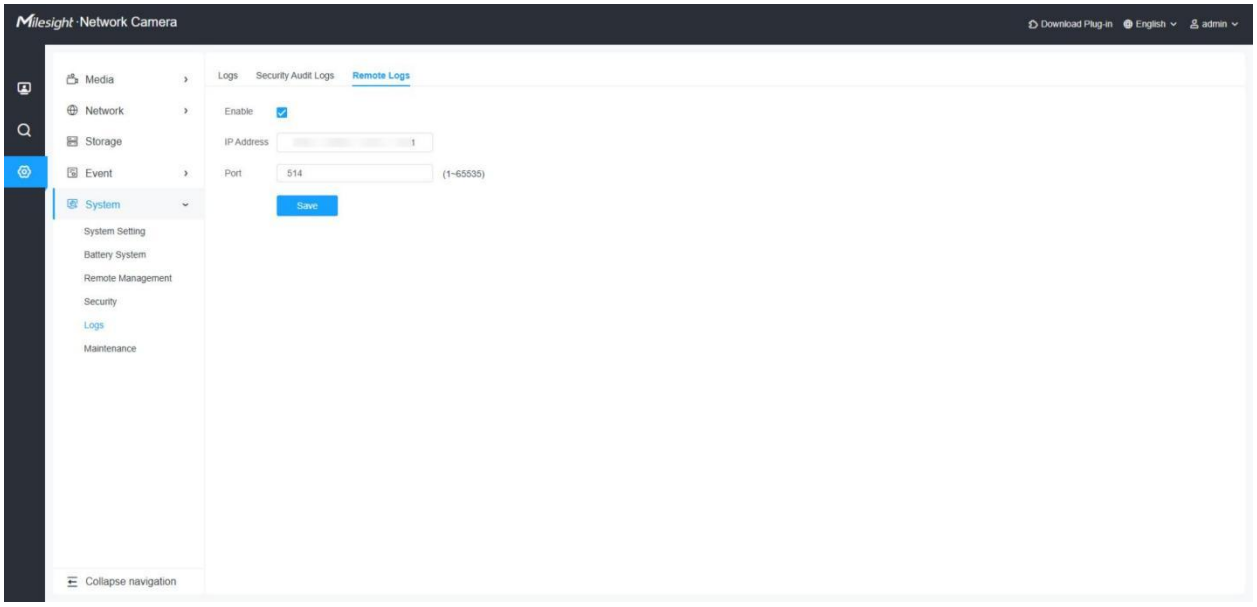


Table 70. Description of the buttons

Parameters	Function Introduction
Enable	Enable this checkbox to activate the Remote Logs feature. Logs can be sent to the target server.
IP Address	Enter the IP address of the target server where you wish to receive the logs.
Port	Enter the port number of the target server where you wish to receive the logs.
Save	Click this button to manually save the above operation.

10.10 Maintenance

10.10.1 System Maintenance

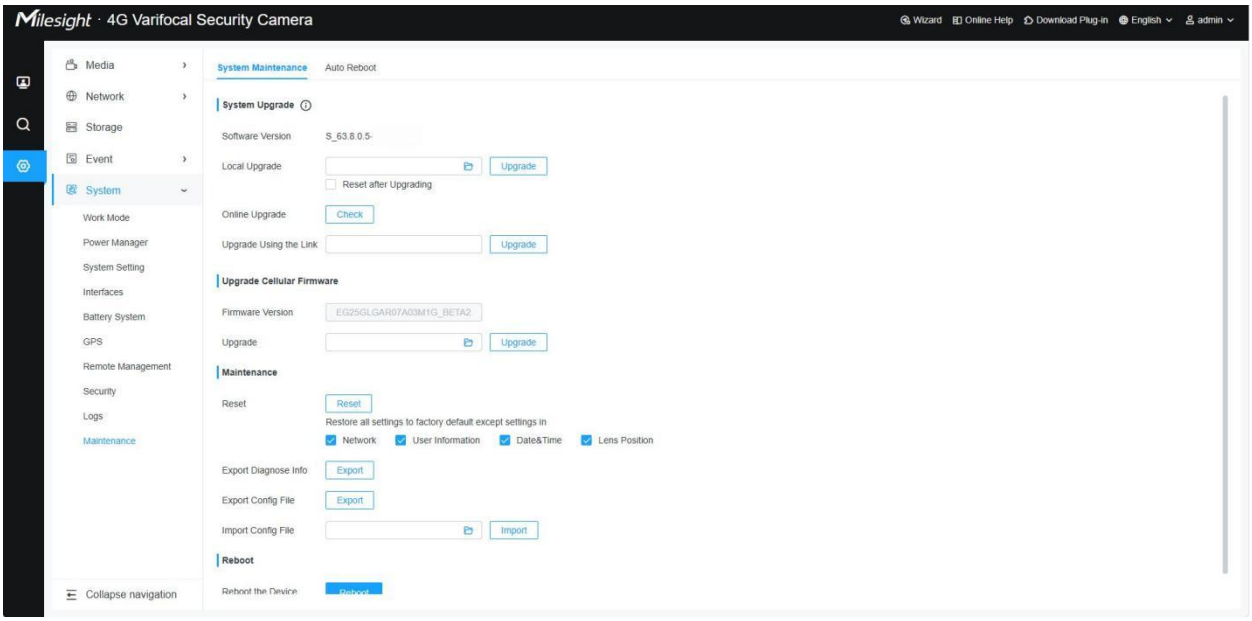
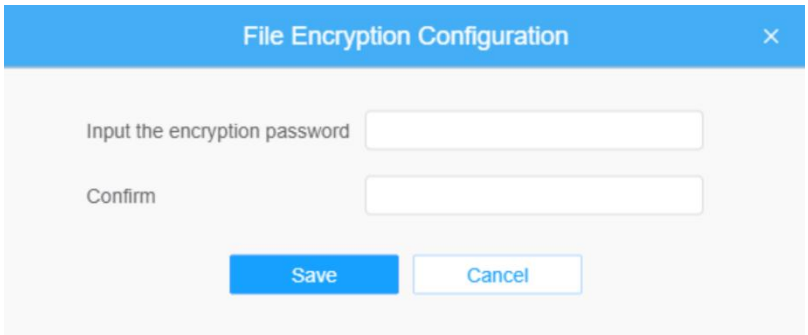
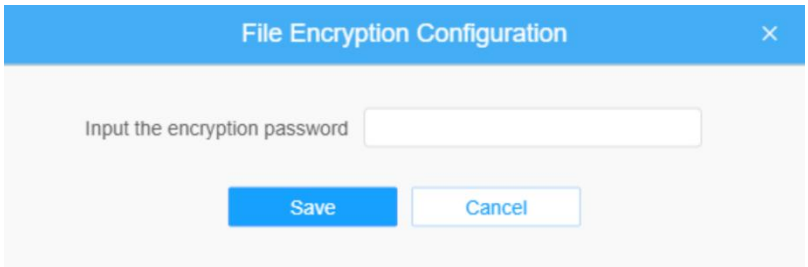
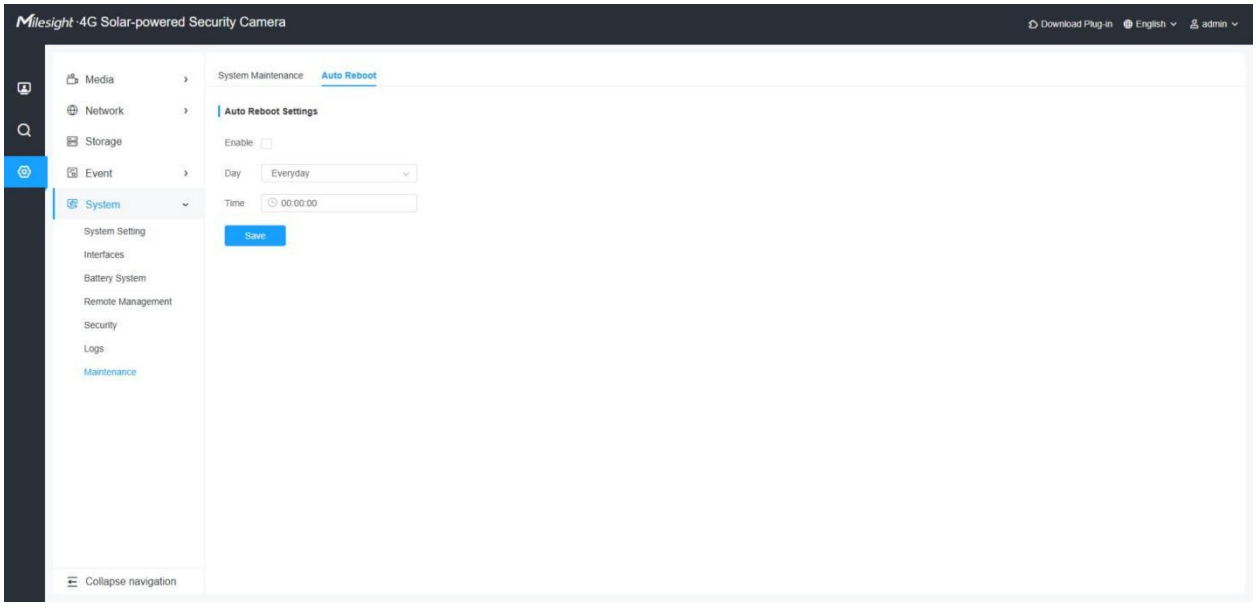


Table 71. Description of the buttons

Parameters	Function Introduction
System Upgrade	**Software Version:** The software version of the camera. **Local Upgrade:** Click the "Browse" button and select the upgrading file, then click the "Upgrade" button to upgrade. After the system reboots successfully, the update is done. You can check "**Reset after Upgrading**" to reset the camera after upgrading it. **Note:** Do not disconnect the power of the device during the update. The device will be restarted to complete the upgrading.
Upgrade Cellular Firmware	**Firmware Version:** Display the current firmware version of the cellular module. **Upgrade:** Support selecting a firmware upgrade package for the cellular module and performing the upgrade.

Parameters	Function Introduction
Maintenance	**Reset:** Click “Reset” button to reset the camera to factory default settings. You can choose to retain network configuration, user information configuration, date & time configuration, and lens position during reset. **Export Config File:** Click this button and a window will pop up as shown below:  You need to enter and confirm password again, then click save button to export configuration file. **Import Config File:** Click this button, then a window will pop up and you can click "OK" to update the configuration. It will pop up a window to prompt "Input the password of config file" , then enter password and click save button to import configuration file.  **Note:** Export and import the same configuration file. Password must be the same.
Reboot	Click the “Reboot” button to restart the device.

10.10.2 Auto Reboot



Set the date and time to enable Auto Reboot function, the camera will reboot automatically according to the customized time in case that camera overload after running a long time.

Chapter 11. Services

Milesight provides customers with timely and comprehensive technical support services. End-users can contact your local dealer to obtain technical support. Distributors and

resellers can contact directly with Milesight for technical support.

Technical Support Mailbox: support@milesight.com

Web: http://www.milesight.com

Online Problem Submission System: http://www.milesight.com/service/feedback.asp

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