



User Manual

4G Solar-powered Traffic Sensing Camera

Version: V1.0

Date: 2022-11-28

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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 Traffic Sensing 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 <http://www.milesight.com>

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	November 2022

Chapter 2. Product Description

2.1 Product Overview

Milesight 4G Solar-powered Traffic Sensing Camera is equipped with 4G cellular module, radar and GPS technology to capture vehicle snapshots sensitively in the harshest conditions. Wireless installation and wireless data transmission will release you from the heavy cabling infrastructures. It features a 2MP fixed lens camera with IR, lithium battery, and power socket combined in an integrated mount.

- **Solar-powered Supported**

The camera can not only eliminate the tedious wiring process, but also get uninterrupted power outdoors by pairing the cameras with solar panels. In addition, it is equipped with battery and power socket to provide abundant power support, ensuring the uninterrupted operation of the camera.

- **4G Technology**

The cost of installing network cables can be reduced thanks to 4G technology, which also allows convenient mobility. Additionally, the backing of Verizon, T-Mobile, and AT&T offers customers a range of carrier options to suit their demands.

- **Low Power Consumption**

The camera can automatically switch between the low-power operation mode and the working mode according to the environmental conditions, which ensures that the device can be used for a long time and meet diverse environments such as continuous rainy days.

- **Radar Trigger and Quick Start Capture**

The camera can capture high-accuracy images by Radar Trigger Technology and intelligent algorithm confirmation. And the Quick Start Capture technology also ensures the timely capture of more accurate pictures.

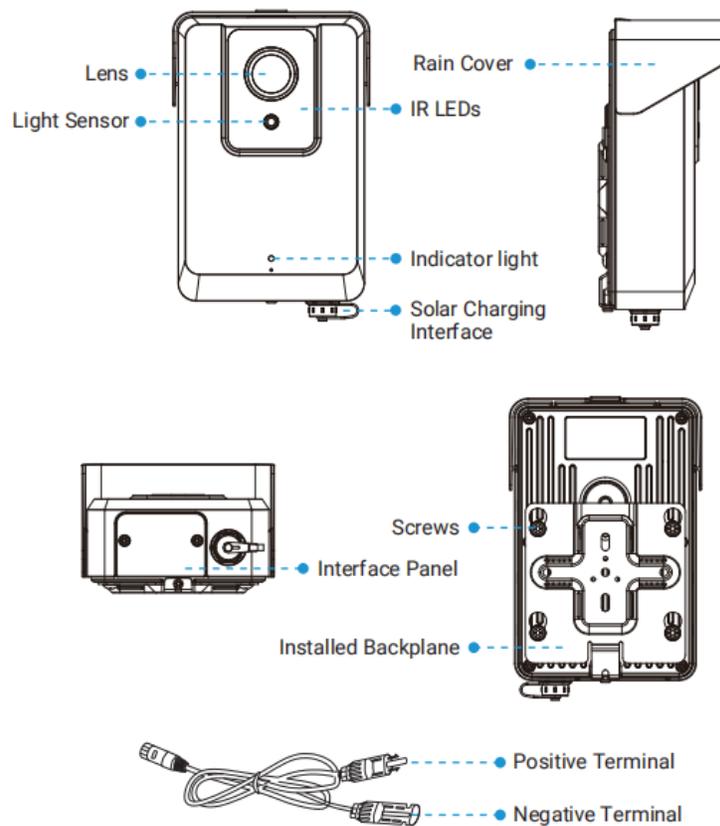
- **Excellent Structural Design**

The camera is independently developed and designed by engineers and has excellent structural performance. Differentiated appearance design has better concealment. The anti-theft mounting design ensures the security of the camera. And it is also equipped with brackets to adapt to a variety of installation conditions.

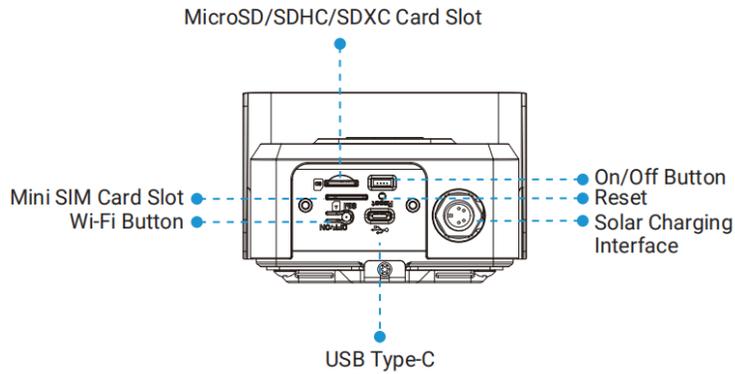
• **High Compatibility**

The high compatibility makes the camera stand apart. Unlike some conventional cameras that only record the image on SD card, this device allows you to transmit the snapshot remotely via MQTT protocols to any third party's system.

2.2 Hardware Overview

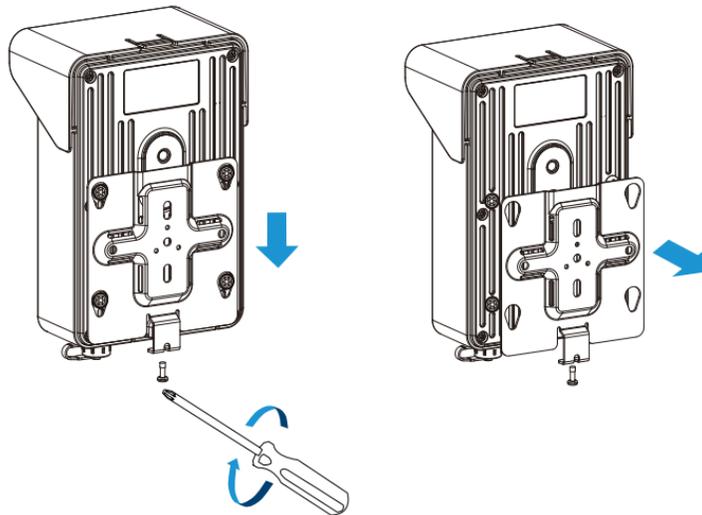


Note: The Positive Terminal of the Solar Panel Cable needs to be connected to the Negative Terminal of the solar panel, and the Negative Terminal needs to be connected to the Positive Terminal of the solar panel.



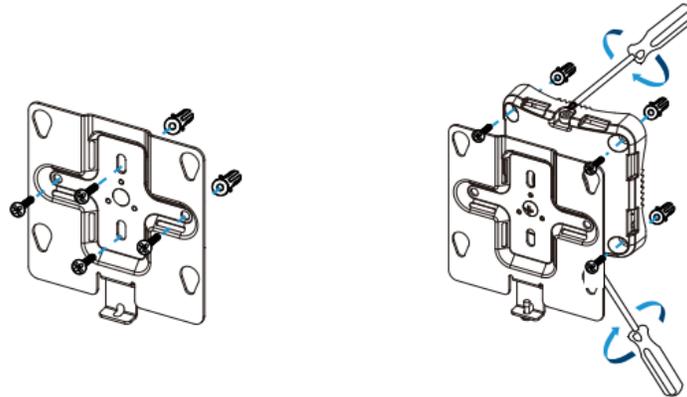
2.3 Installation Guide

Step 1: Loosen the screw at the bottom of the backplane and remove the backplane.

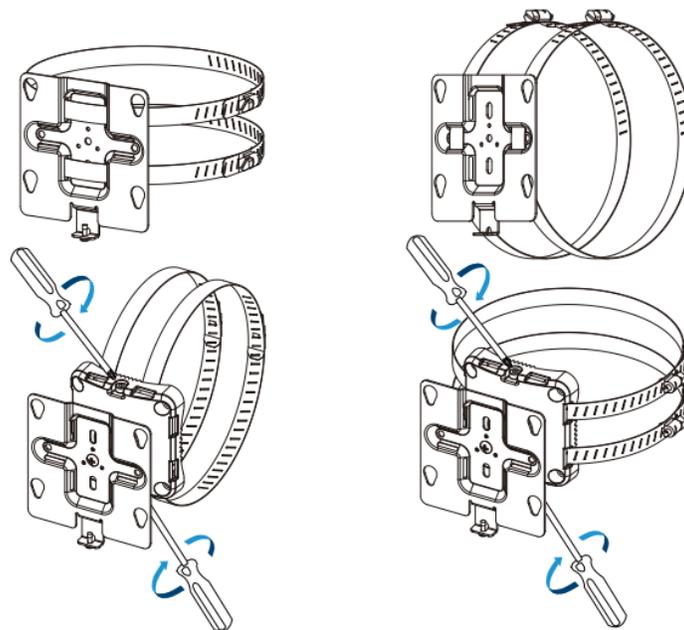


Step 2: Fix the backplane in the position where the device is intended to be installed. Multiple installation methods are available depending on the installation location:

(1) Mount directly on the wall, or mount on the wall via 3-Axis Ball Mounting Bracket.



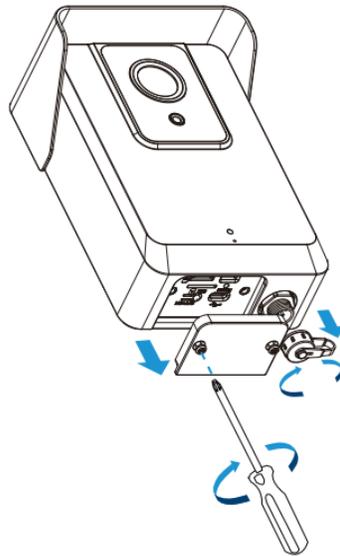
(2) Pole Mount with the straps, or Pole Mount with 3-Axis Ball Mounting Bracket and the straps.



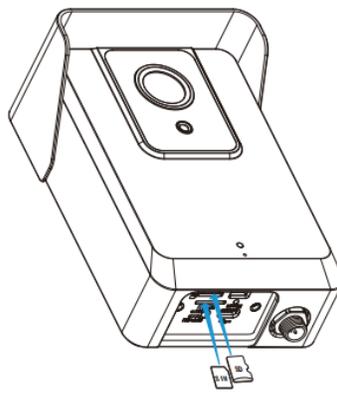
Note:

1. The 3-Axis Ball Bracket can support the equipment to rotate 360° to adjust the monitoring Angle, meeting various installation environments.
2. There is a screw above and below the 3-Axis Ball Bracket. When adjusting the installation Angle, it is necessary to pay attention to the loosening of one and the tightening of the other.

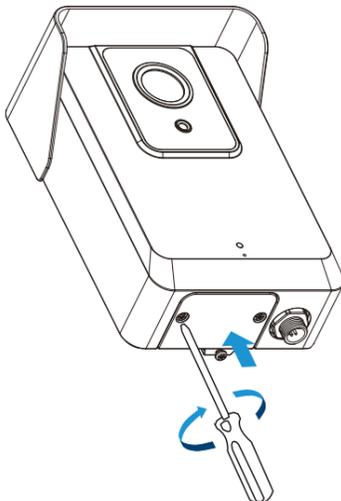
Step 3: Loosen the screws of Interface Panel and remove the cover. And remove the Solar Charging Interface cover.



Step 4: Insert the SD Card and SIM Card.



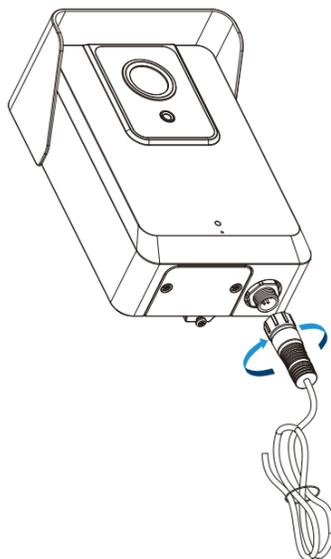
Step 5: Cover back the Interface Panel and fix the screws.



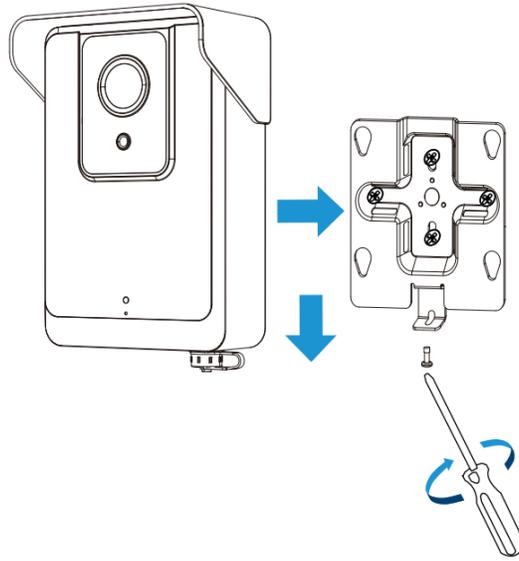
Step 6: Connect the solar panel to the Solar Charging Interface.

 **Note:**

1. The product does not include solar panel.
2. The device has battery inside, when the solar power supply is insufficient, it can be powered by battery; When the battery is low, it can be charged using USB Type-C.



Step 7: Connect the device to the Installed Backplane and tighten the fixing screws. The installation is completed.



Chapter 3. Accessing the Camera

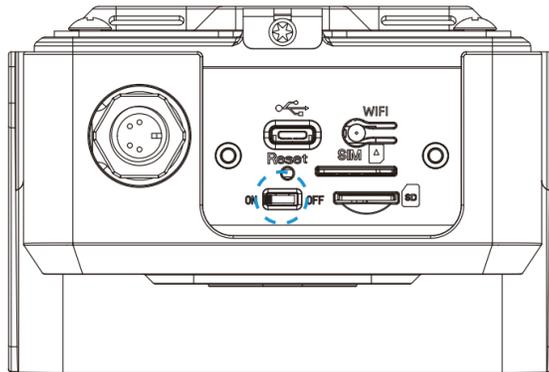
After installing the camera, you need to access the camera's web page for basic configuration so that the camera can capture objects accurately. The camera can be used with most standard operating systems and browsers.

The configuration steps are as follows:

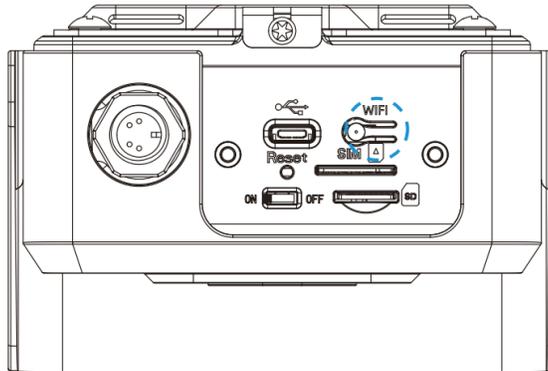
Step1: Adjust the switch button to On to start the device.

 **Note:**

1. When the device is being powered on, the indicator in front of the device will blink green until the device is powered on. And When the device is turned off, the indicator in front of the device will blink green twice to indicate.
2. The indicator light will be red to indicate when the device cannot be started due to low power.

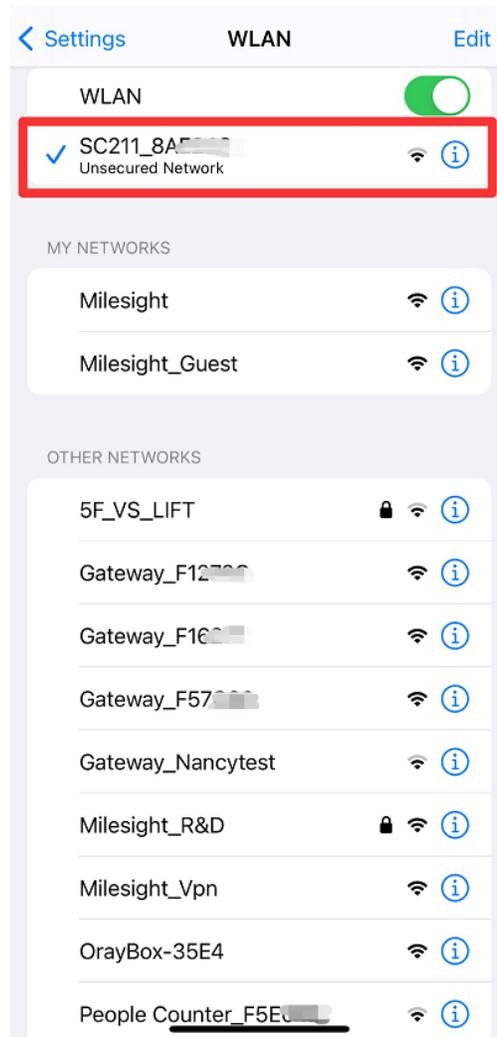


Step2: Press the Wi-Fi button to enable Wi-Fi of the device.



Step3: Use mobile devices or laptop to connect to the device's Wi-Fi.

 **Note:** The Wi-Fi name is SC211_xxxxxx (xxxxxx is the last six bits of the MAC address).



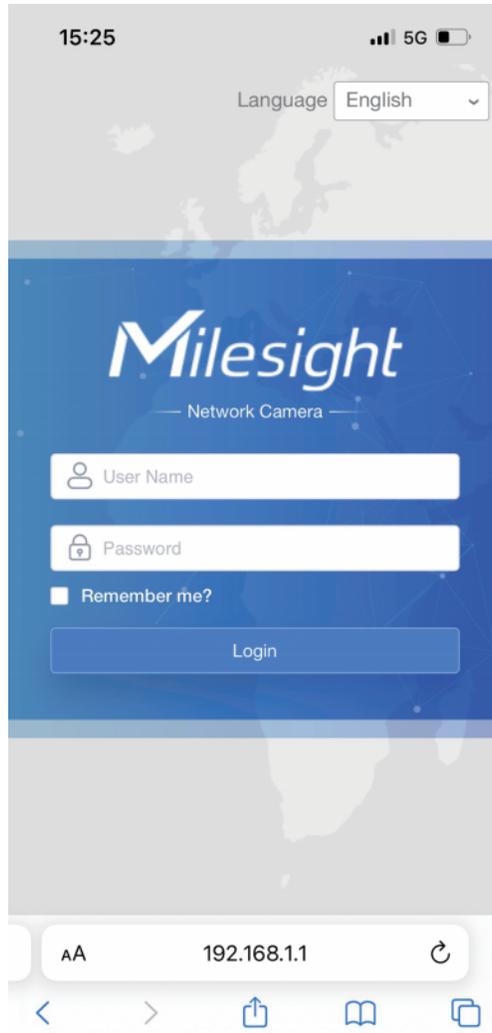
Step4: Enter the IP address **192.168.1.1** in the browser to log in to the web page of the device and configure the device. We provide two web interfaces that can be adapted to both PC and mobile devices to ensure an excellent user experience whether you access the web from a mobile device or a laptop.

- Default User Name: admin
- Default Password: ms123456

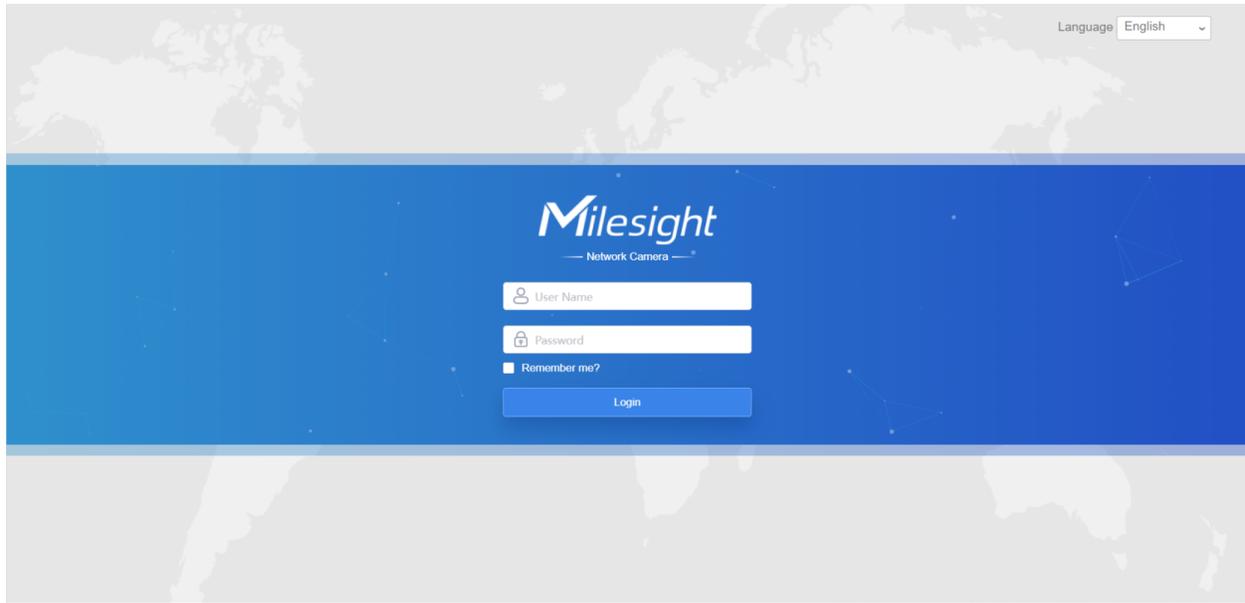
 **Note:**

1. The IP address of the device cannot be modified.
2. The configuration options are the same on the PC and mobile web pages, so in the following chapters, we will take the snapshot of the PC web page as an example.

- Mobile:

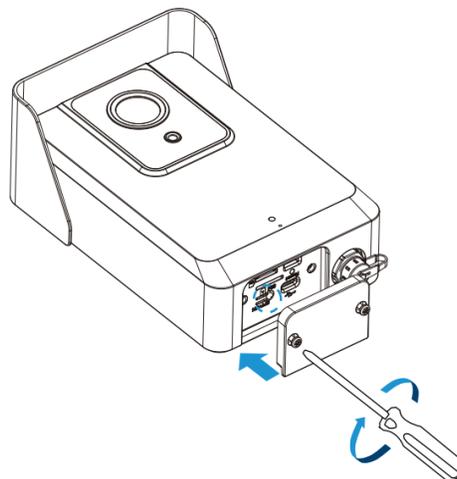


- PC:



Step5: After completing the device configuration, click the Wi-Fi button again to disable the device Wi-Fi and cover back the interface panel to ensure data security.

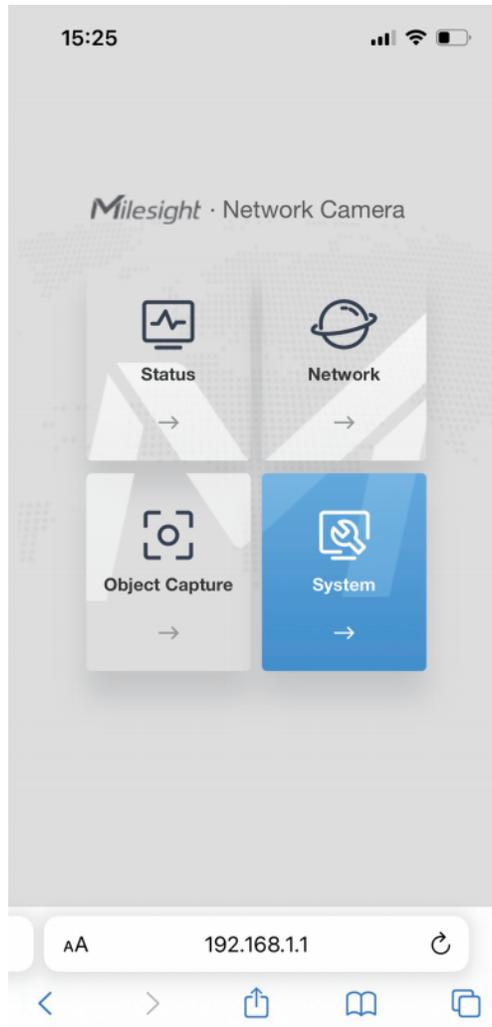
Note: Long press the reset button for 3s to reset the device. When the device is reset successfully, the indicator will blink green twice.



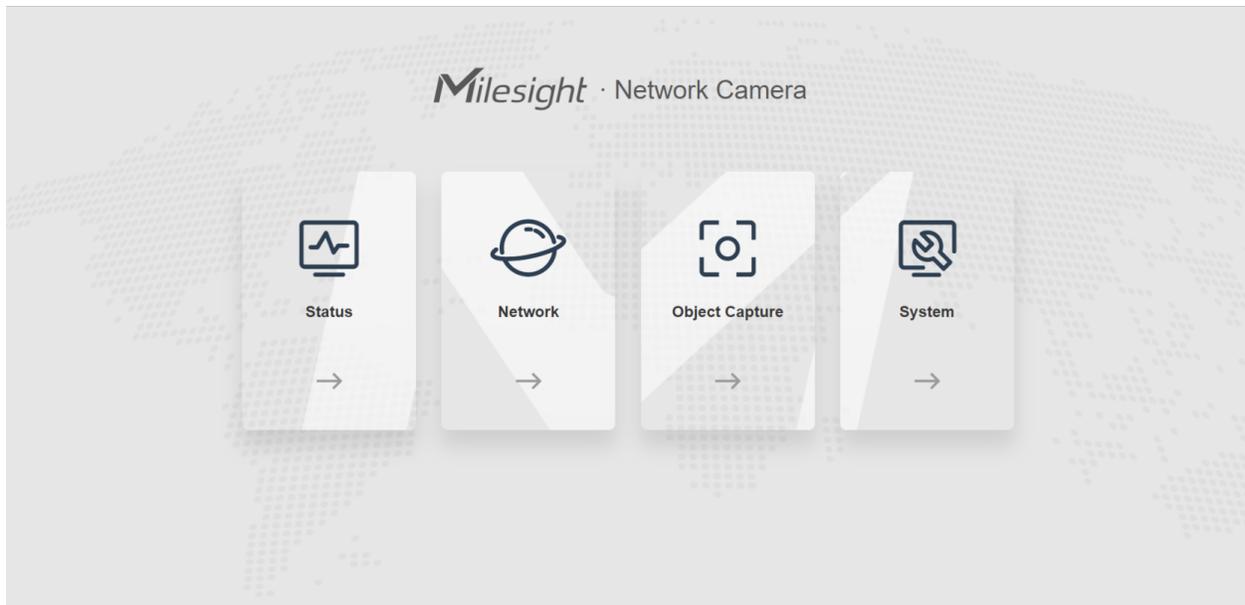
Chapter 4. Home

After logging in to the camera web GUI successfully, the user is allowed to view the home page as follows.

- Mobile:



- PC:

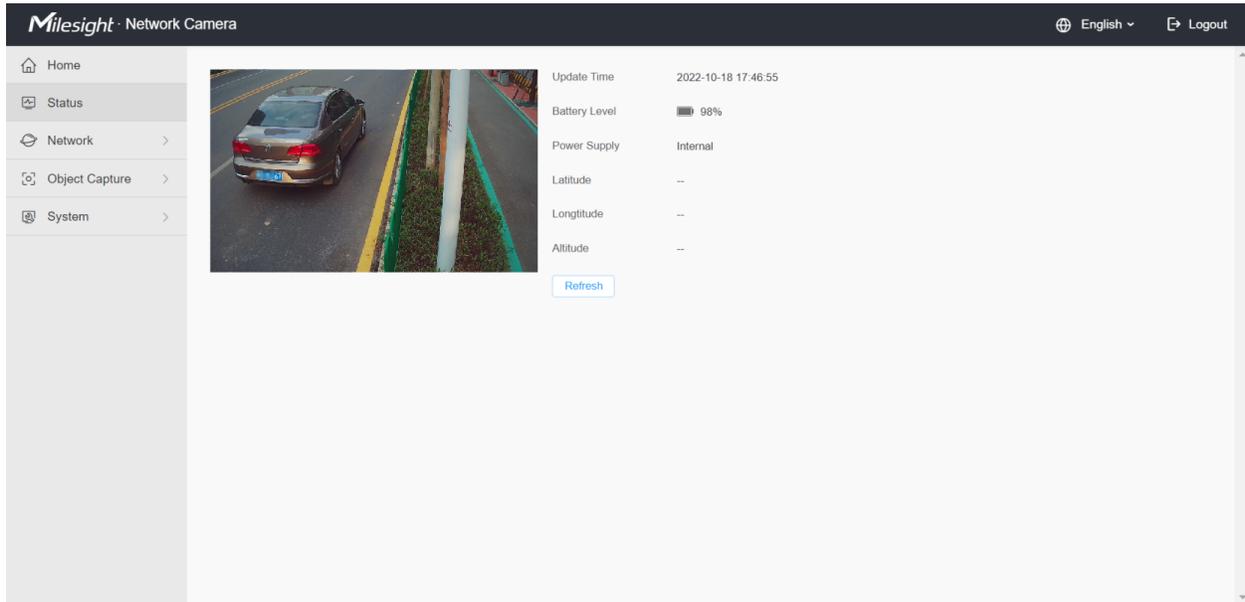


The home page consists of four modules including Status, Network, Object Capture and System.

1. **Status: (page 19)** Check device status, including Power Supply and GPS-related information, etc.
2. **Network (page 21):** Configure the network configuration, including Cellular and WLAN.
3. **Object Capture (page 25):** Includes Image Configuration and Capture Management. Image Configuration is used to configure image parameters to ensure the quality of captured images, and Capture Management is mainly used to configure Capture Settings and Upload Settings, such as Detection Mode, Upload Mode, Frequency, Sensitivity, etc., with the purpose of capturing and uploading the snapshots more accurately.
4. **System: (page 33)** Check and maintain system information, manage snapshots and users, etc.

Chapter 5. Status

Users can check device status in this interface, including Power Supply and GPS-related information, etc.



The meanings of the items can be referred to the table below:

Table 2.

Item	Description
Update Time	Display the last time the Status page was refreshed.
Battery Level	Display the real-time battery level, the meaning of the visual icon is as follows:  : Charging  : Low Battery(Battery power is less than 10%)

Item	Description
<p style="text-align: center;">Power Supply</p>	<p>Display how the device is powered. Internal and External options are available.</p> <p>Internal: Powered by battery.</p> <p>External: Powered by solar panel or external power supply via Type-C.</p> <p>The power supply mechanism of the device is as follows:</p> <ul style="list-style-type: none"> • When equipped with an external power supply, priority will be given to powering the device, and only when there is excess power will the battery be charged. • When both internal and external power supplies are equipped, priority will be given to using external power supplies to power the device. (Solar Panel > Type-C > Battery). <p> Note: If the device is equipped with a solar panel but the solar panel is low on power, then the device will be powered by the battery.</p>
<p style="text-align: center;">Latitude/Longitude/Altitude</p>	<p>Display the GPS-related information of the device including latitude, longitude and altitude. It is detected by the GPS module attached to the device.</p> <p> Note: GPS information will only be displayed when the device is inserted with a SIM card and access the network successfully.</p>
<p style="text-align: center;"></p>	<p>Click this button to refresh all the above states.</p>

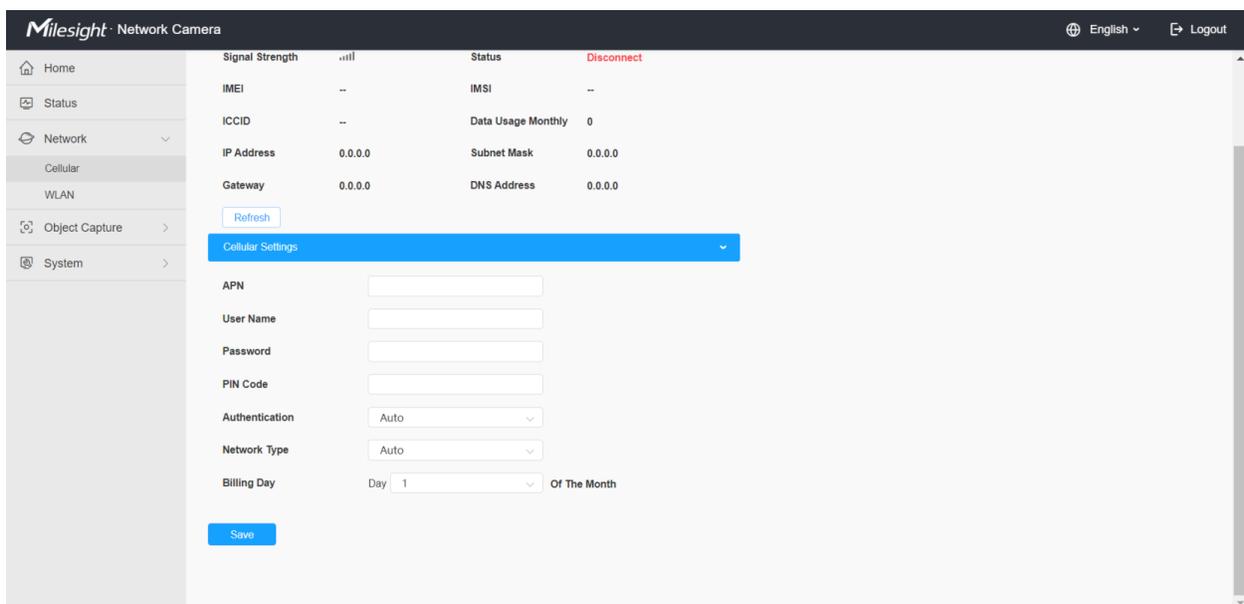
 **Note:** The preview window on the interface shows the real-time image after each refresh of the device status, not the real-time video. Please note that to keep the device running on low power, there is no video streaming on this device.

Chapter 6. Network

6.1 Cellular

You can check the cellular status and configure the cellular settings here. The configuration steps are as follows:

Step1: Fill in the information provided by your Internet Service Provider (ISP) to the Cellular Settings interface, then click Save to access the network successfully.



Please refer to the meaning of the options as follows:

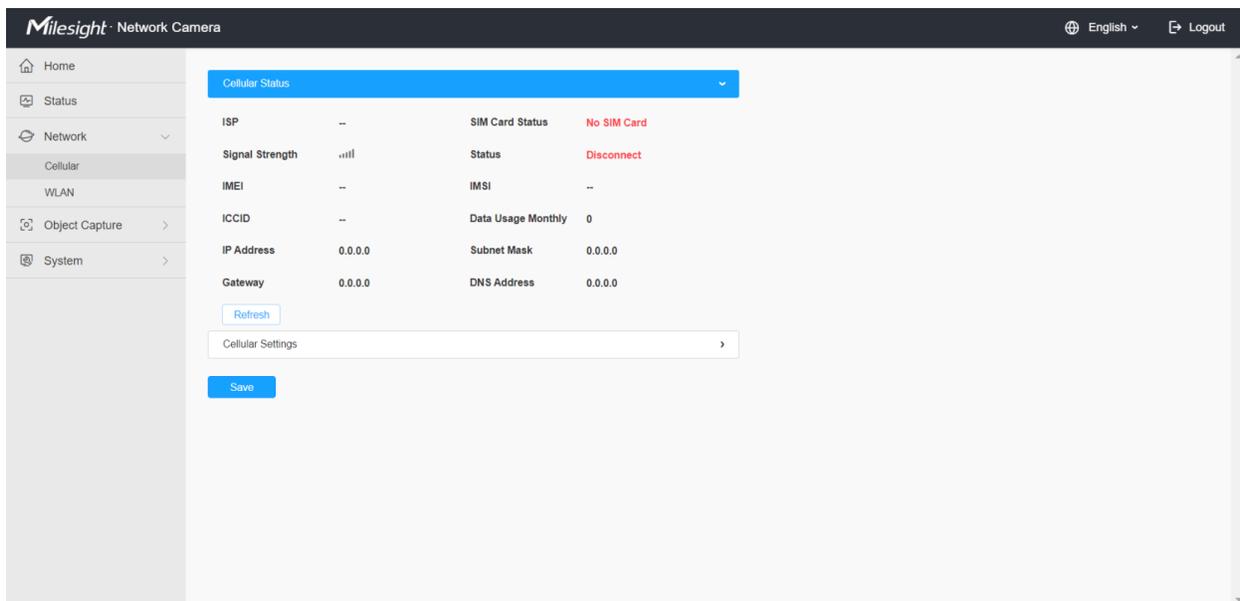
Table 3.

Item	Description
APN	Enter the Access Point Name for cellular dial-up connection provided by local ISP.
User Name	Enter the username 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.

Item	Description
Authentication	Display the Authentication Type.
Network Type	Select the network type of cellular network. There are four options including Auto, 4G Only, 3G Only and 2G Only, the default option is Auto. Auto: connect to the network with the strongest signal automatically.
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 each month.

 **Note:** For some Internet Service Providers, users only need to insert the SIM card directly to access the network without additional configuration.

Step2: After connecting to the network successfully, you can check the cellular status information on the Cellular Status interface, as shown below.



Please refer to the meaning of the options as follows:

Table 4.

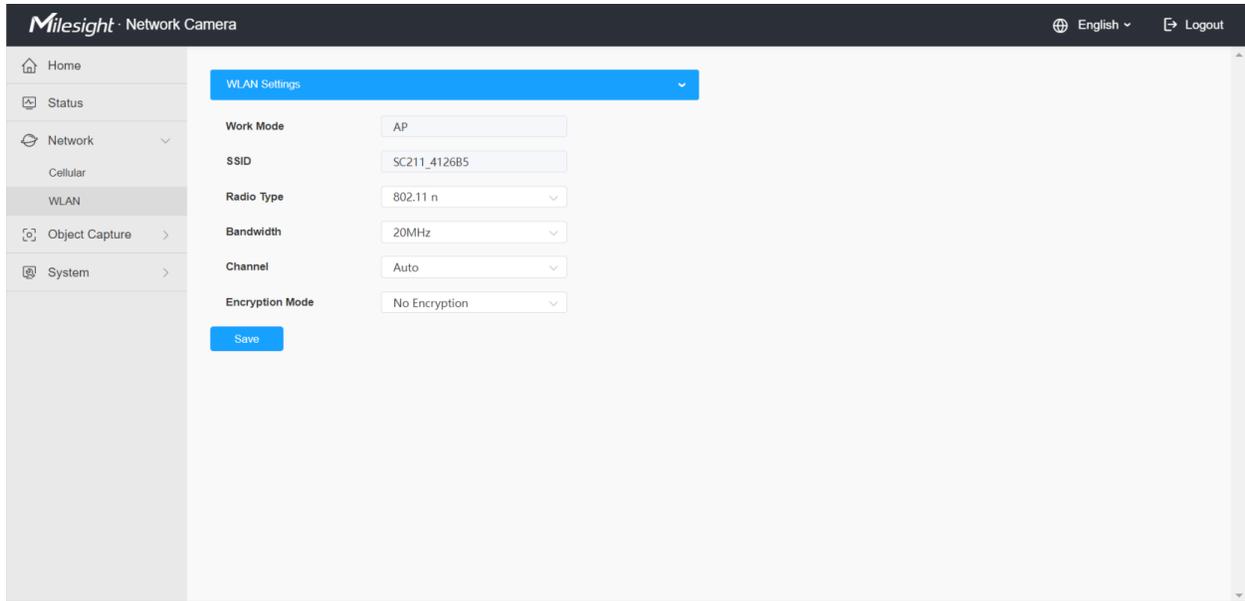
Item	Description
ISP	Show the network provider which the SIM card registers on.  Note: It will display "-" when the SIM card is not inserted or not recognized.

Item	Description
SIM Card Status	Display the connection status of SIM card, including 4G Connected, 3G Connected, 2G Connected, No SIM Card and SIM Card Invalid.
Signal Strength	Display the current signal strength of the network.
Status	Display the connection status of the network, including “connect” and “disconnect”.
IMEI	Show the IMEI of the module.
IMSI	Show IMSI of the SIM card.
ICCID	Show ICCID of the SIM card
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	
DNS Address	
Data Usage Monthly	Display current monthly used data.
	Click this button to manually refresh the above status.

 **Note:** The camera supports the wake-up function. When the battery power is less than 10%, the device will automatically enter sleep mode. The user can wake up the device via MQTT or dialing the SIM card.

6.2 WLAN

In this interface, the user can configure WLAN-related settings and then access the device via WiFi for device configuration. The configuration through Wi-Fi enhances the user experience for great convenience.



Please refer to the meaning of the options as follows:

Table 5.

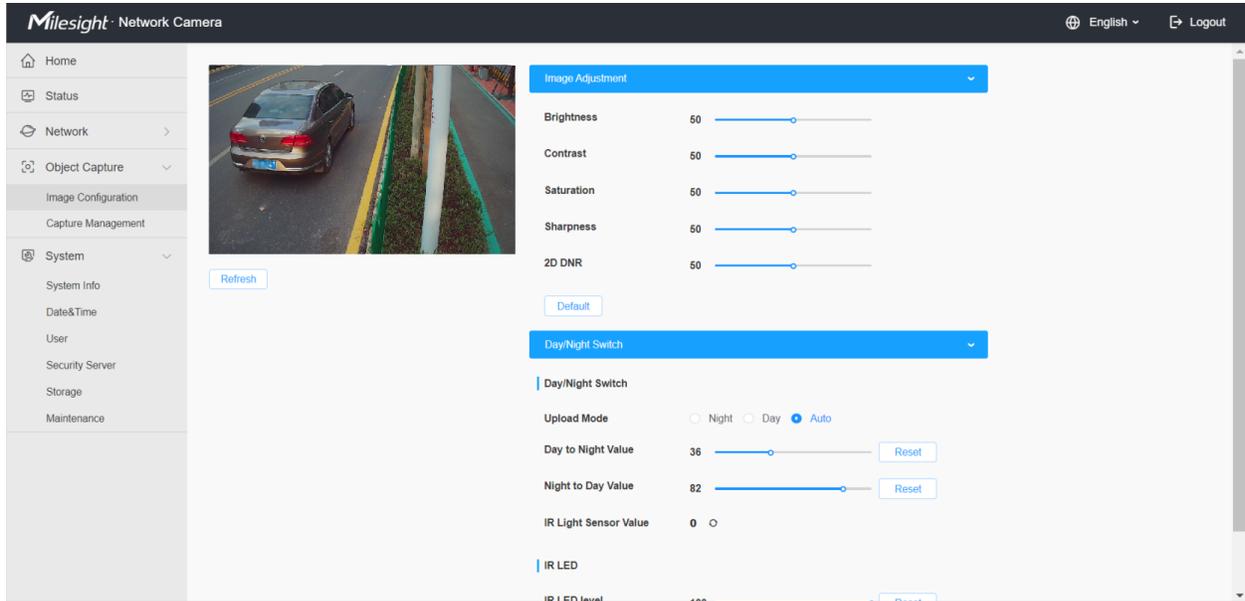
Item	Description
Work Mode	Work mode is fixed as AP and can not connect to other access point.
SSID	The unique name for this device Wi-Fi access point, defined as SC211_XXXXX (XXXXX is the last six bits of the MAC address).  Note: The Wi-Fi name cannot be modified.
Radio Type	802.11b (2.4 GHz), 802.11g (2.4 GHz), 802.11n (2.4 GHz) are optional.
Bandwidth	20 MHz or 40 MHz are optional.
Channel	Select the wireless channel. Auto, 1,...11 are optional.
Encryption Mode	No Encryption, WPA-PSK, WPA2-PSK and WPA-PSK/WPA2-PSK are optional.

 **Note:** The function can be disabled by pressing the WiFi button on the device to eliminate possible worries of privacy disclosure.

Chapter 7. Object Capture

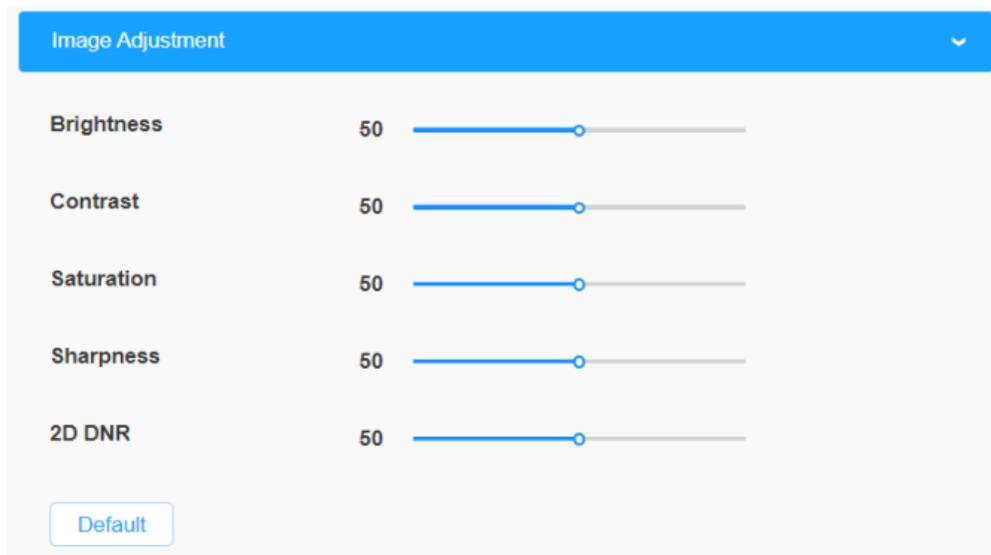
7.1 Image Configuration

Here you can configure image parameters to ensure the quality of captured images.



The configuration steps are as follows:

Step1: Configure Image Adjustment settings.

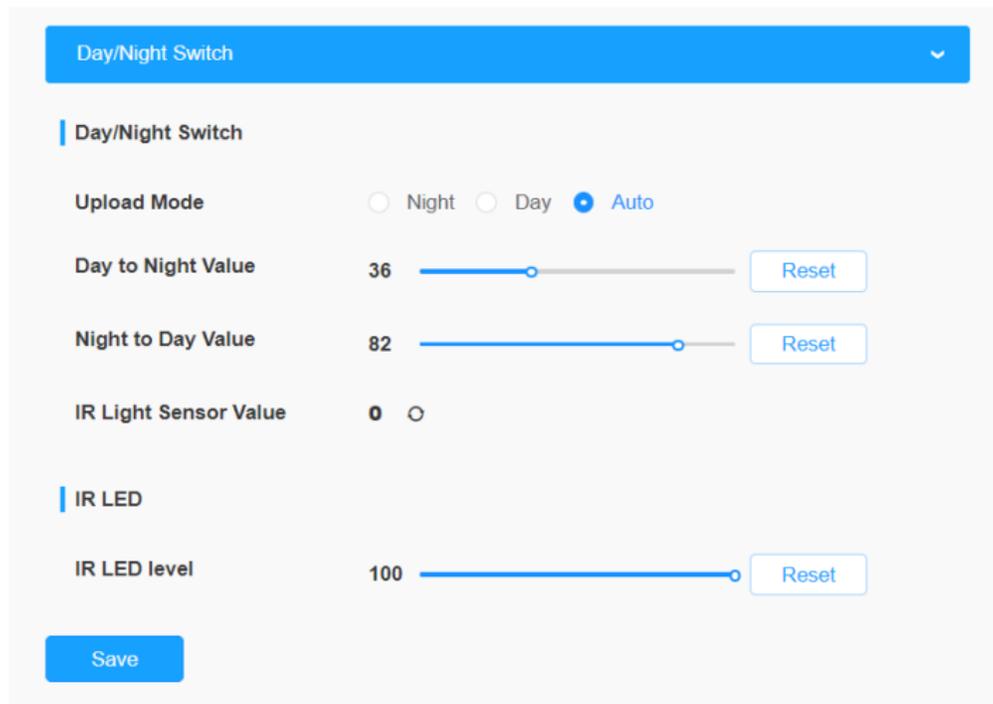


Please refer to the meaning of the options as follows:

Table 6. 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 sharpens the pixel boundary and makes the image looks "more clear".
2D DNR	Adjust the noise reduction level.
	Click this button to restore to the default settings.

Step2: Configure Day/Night Switch settings.



Please refer to the meaning of the options as follows:

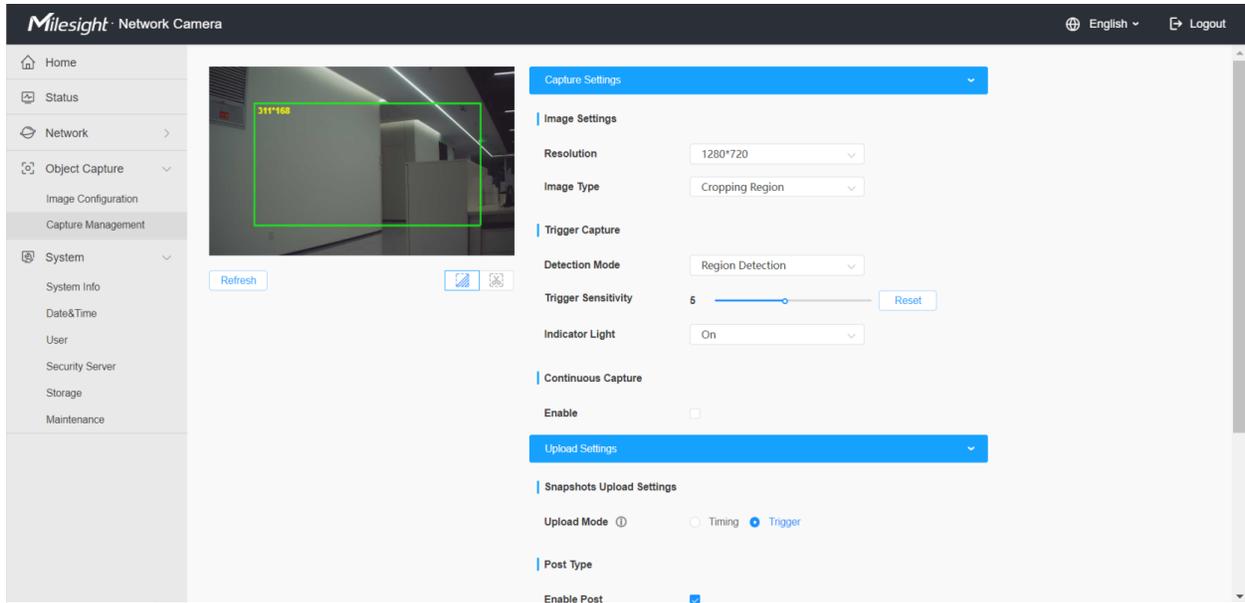
Table 7. Description of the buttons

Parameters	Function Introduction
Day/Night Mode	<p>Night Mode: Shown in live view based on Night Mode settings.</p> <p>Day Mode: Shown in live view based on Day Mode settings.</p> <p>Auto Mode: Shown in live view based on environment, set the sensitivity for switching Day Mode to Night Mode, or Night Mode to Day Mode.</p>
Day/Night Switch	<p>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  to reset the value to 36.</p> <p>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  to reset the value to 82.</p> <p>IR Light Sensor Value: The current value of the IR light sensor.</p> <p> Note: The three buttons are optional only if you select Auto Mode.</p>
IR LED Level	<p>You can also manually adjust the strength of the IR LED, the range is from 0 to 100. The default value is 100, click the Reset button to return to the default value.</p>

Step3: After completing the above settings, click  button to refresh the image.

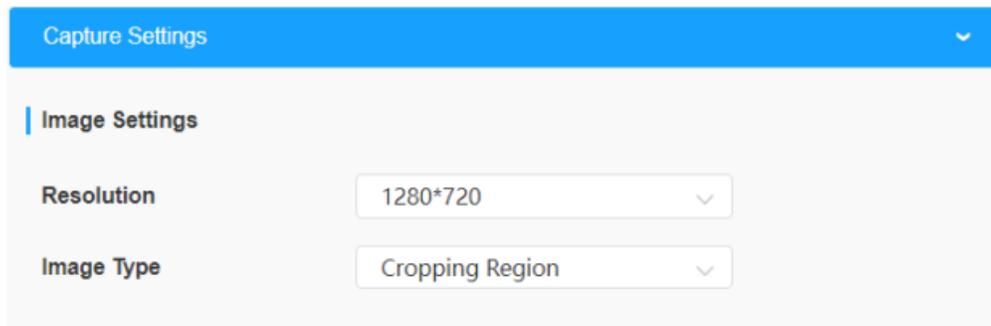
7.2 Capture Management

Capture Management is used to configure Capture Settings and Upload Settings, such as Detection Mode, Upload Mode, Frequency, Sensitivity, etc., with the purpose of capturing and uploading the snapshots more accurately.



The configuration steps are as follows:

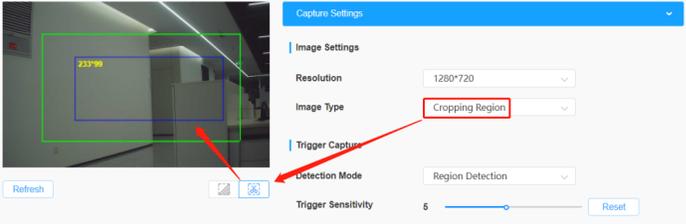
Step1: Set the configuration of the captured images.



Please refer to the meaning of the options as follows:

Table 8. Description of the buttons

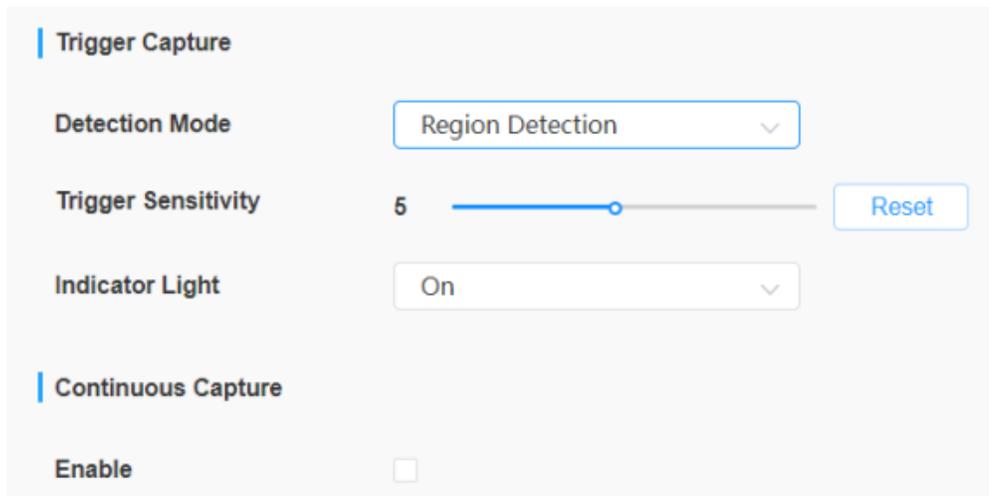
Parameters	Function Introduction
Resolution	Select the resolution of the captured images, including 1920*1080, 1280*960, 1280*720 and 704*576. The default option is 1920*1080.

Parameters	Function Introduction
<p style="text-align: center;">Image Type</p>	<p>Select the captured image type, including Full Image and Cropping Region. The default option is Full Image.</p> <p>Full Image: It will capture the full image when an object is detected.</p> <p>Cropping Region: The captured image will be cropped according to your settings when an object is detected.</p> <p> Note: If you have selected the image type as Cropping Region, please click  button to draw the corresponding cropping region, it will show a blue frame with pixels on the screen.</p> 

Step2: Set capture configuration. There are two capture types available, including Trigger Capture and Continuous Capture.

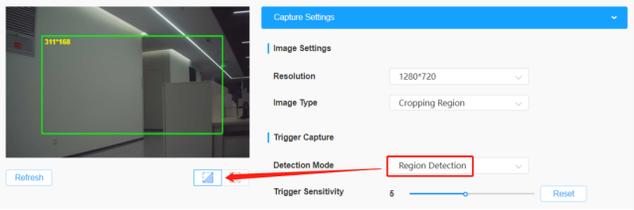
Trigger Capture: Only when the device detects an object will it trigger the capture of the image.

Continuous Capture: It will capture the images continuously according to the interval you set, whether or not objects are detected.



For more details about the options, please refer to the table below:

Table 9. Description of the buttons

Parameters		Function Introduction
Trigger Capture	Detection Mode	<p>Region Detection: Click  button, then draw the screen to set the detection region, it will show the green frame with pixels on the screen. It will capture the images when an object enters the defined detection region.</p> 
	Trigger Sensitivity	Set Trigger Sensitivity. The higher the sensitivity, the easier the object is to be detected. Levels 1~10 are available, the default level is 5.
	Indicator Light	<p>Set the status of the indicator light to On or Off.</p> <p>On: Turn on the indicator light. When the capture is triggered, the indicator light on the front of the device will light up green.</p> <p>Off: Turn off the indicator light. When the capture is triggered, the indicator light will not light up.</p>
Continuous Capture	Enable	Check the checkbox to enable Continuous Capture.
	Interval	Set the capture interval, input the number and select the unit as minute or hour.

Step3: Set Upload Settings. This device allows you to transmit the snapshot remotely via MQTT protocols to any third party's system. There are two upload mechanisms available, including Timing and Trigger.

Upload Settings
▼

Snapshots Upload Settings

Upload Mode ⓘ Timing Trigger

Frequency

Time1

Time2

Delete snapshots after uploading?

Post Type

Enable Post

Post Type

Host

Port

User Name

Password

For more details about the options, please refer to the table below:

Table 10.

Parameters		Function Introduction
Upload Mode	Timing	<p>In this mode, it will upload the captured images at the interval you set.</p> <p>Frequency: Set the upload frequency to Once a Day or Twice a Day.</p> <p>Time: Set the time to upload the snapshots every day according to the set frequency.</p> <p> Note:</p> <ol style="list-style-type: none"> 1. The timing mode can work normally only when the SD card is inserted. 2. You can check this option to delete the snapshots after uploading.
	Trigger	<p>In this mode, the captured images will only be uploaded when the device detects an object and triggers the capture.</p>

Parameters		Function Introduction
Post Type	MQTT	<p>Enable Post: Check the checkbox to enable snapshot uploading.</p> <p>Post Type: Currently it only supports MQTT protocol.</p> <p>Host: MQTT broker address to receive data.</p> <p>Post: MQTT broker port to receive data.</p> <p>User Name: The username used for connecting to the MQTT broker.</p> <p>Password: The password used for connecting to the MQTT broker.</p>

Chapter 8. System

8.1 System info

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

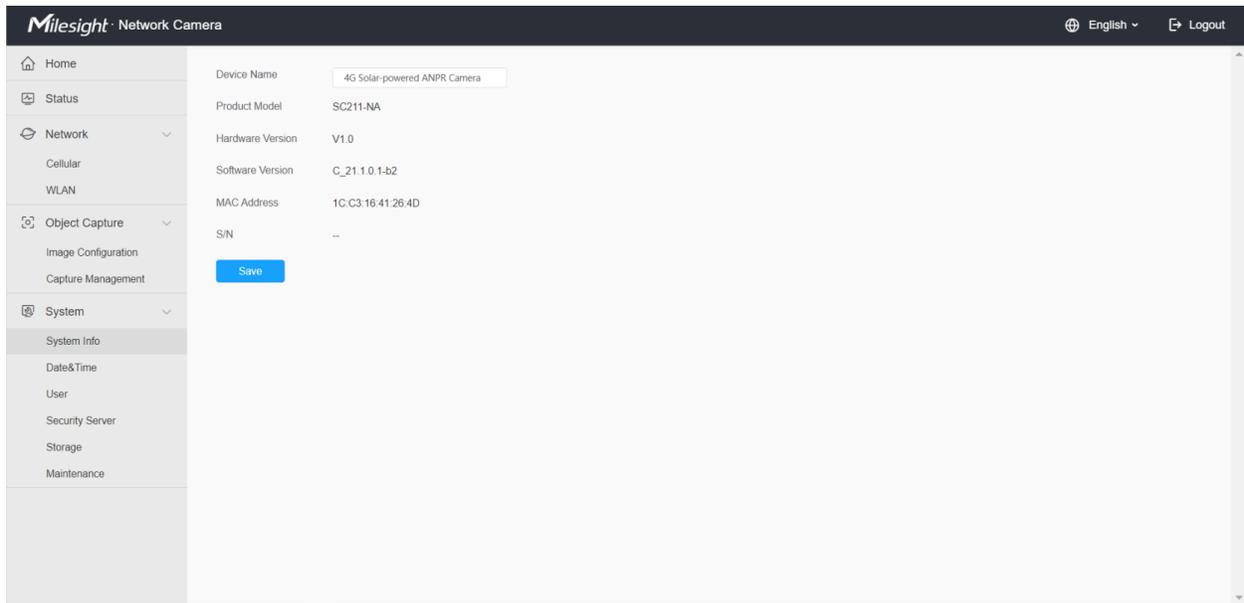
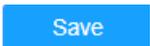


Table 11. Description of the buttons

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.
	Save the configuration.

8.2 Date&Time

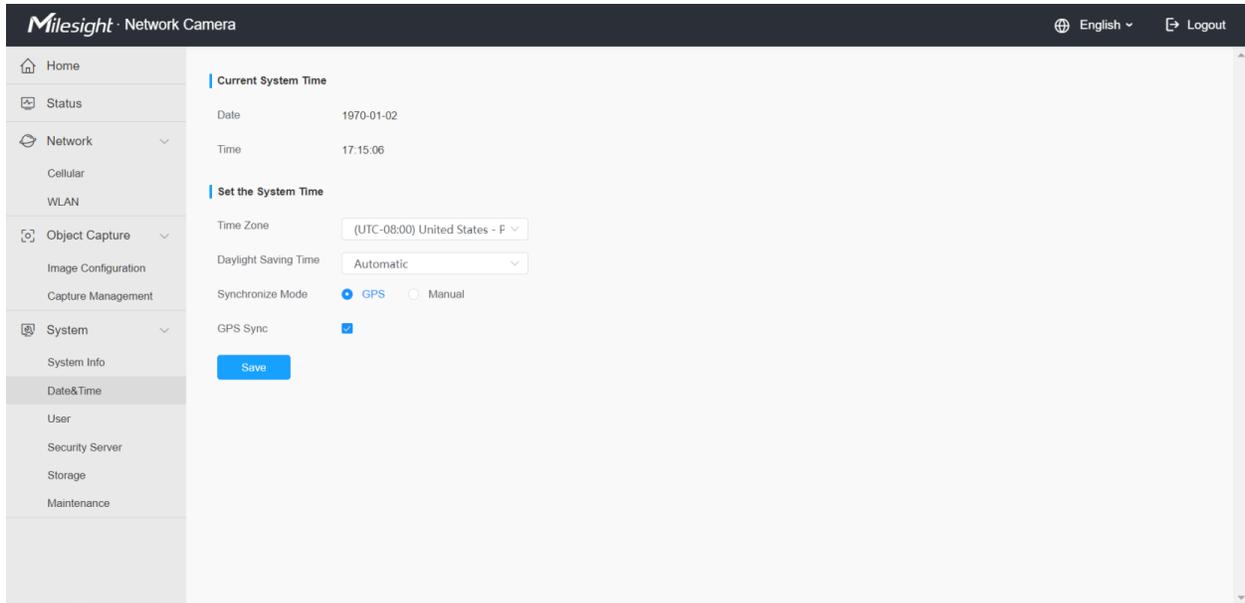


Table 12. Description of the buttons

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.
	Daylight Saving time: Enable the daylight saving time.
	Synchronize Mode: GPS and Manual options are available.
	GPS Sync: Synchronize the time with GPS once a day.
Save	Save the configuration.

8.3 User

You can change the user password in this interface for security.

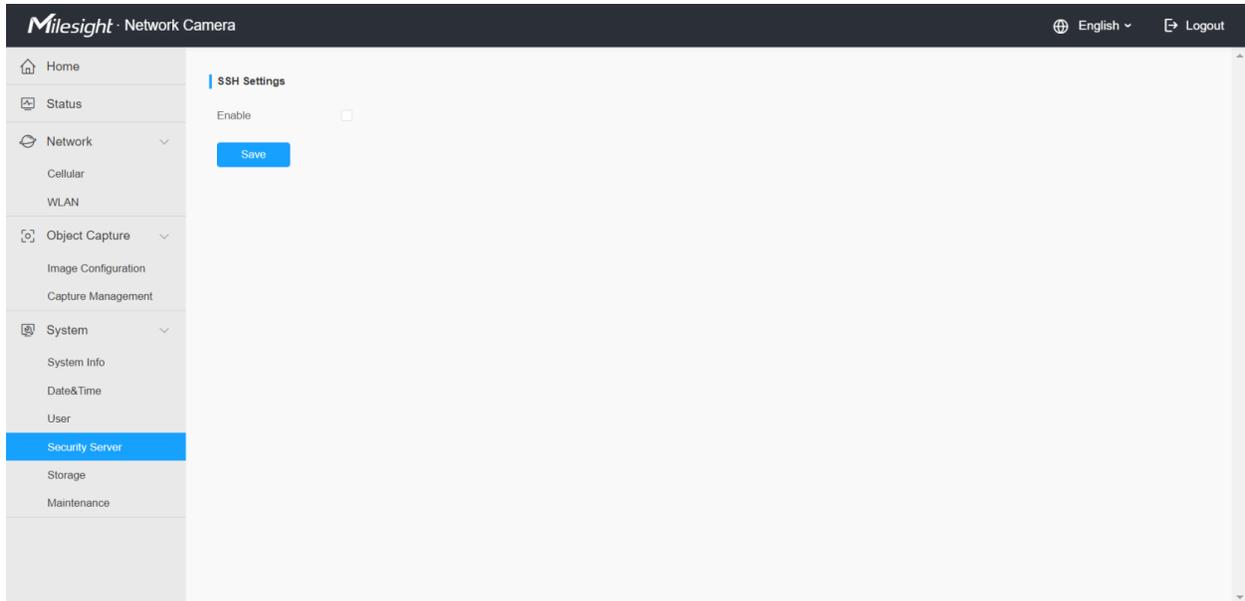
- Default User Name: admin
- Default Password: ms123456

Please refer to the meaning of the options as follows:

Table 13.

Item	Description
Admin Password	Input the current admin password.
User Name	Display the user name of the device.
New Password	Input a new password for the account.
Confirm	Confirm the new password.

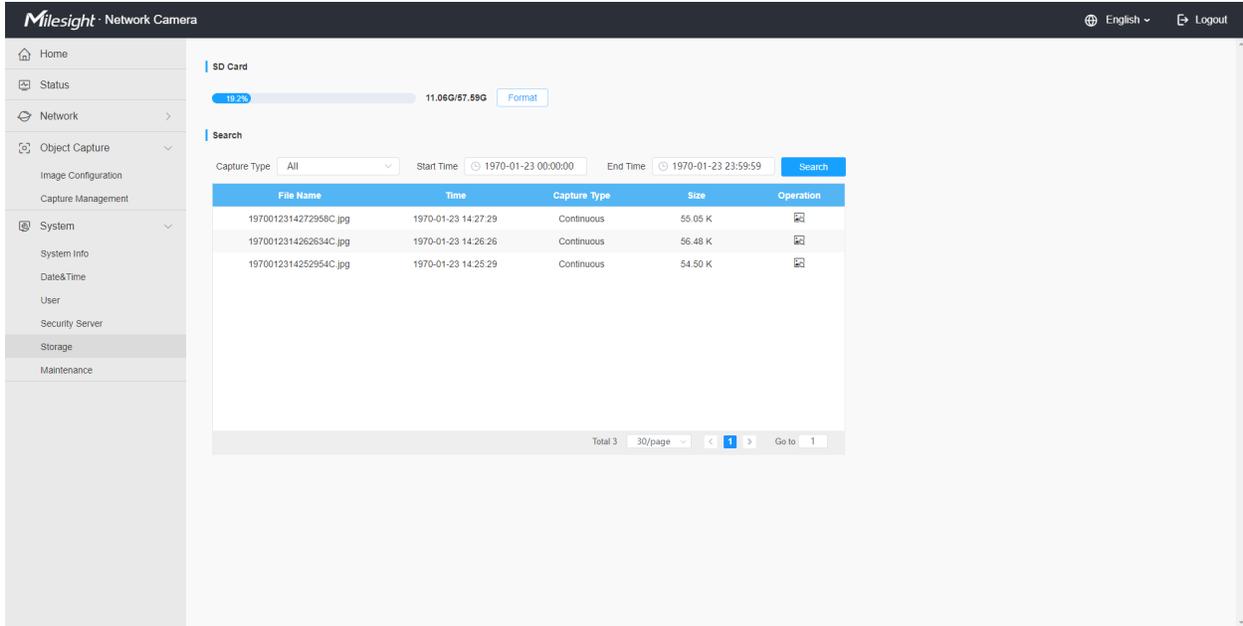
8.4 Security Service

**Table 14. Description of the buttons**

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.

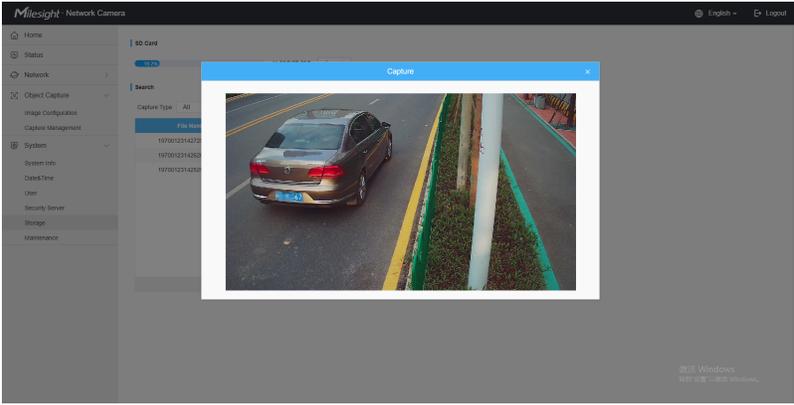
8.5 Storage

If an SD card is inserted into the device, the snapshots can be saved to the SD card. Here you can check the status of the SD card, search and manage snapshots in the SD card.



Please refer to the meaning of the options as follows:

Table 15.

Item	Description
SD Card	<p>Format: Format the SD card, the files in the SD card will be removed.</p> <p>Mount/UnMount: Mount/Dismount SD card.</p>
Search	<p>Select Capture Type and Start/End time, then click the search button to search out snapshots.</p>
	<p>Click this button to display the entire snapshot as shown below:</p> 

8.6 System Maintenance

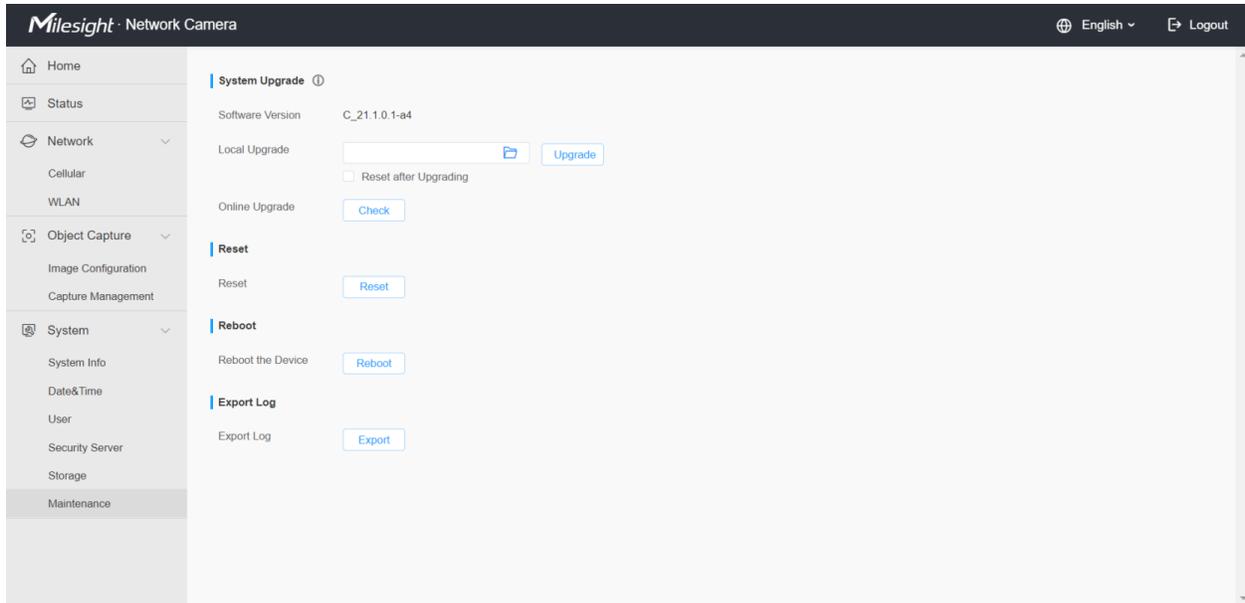


Table 16. Description of the buttons

Parameters	Function Introduction
<p>System Upgrade</p>	<p>Software Version: The software version of the camera.</p> <p>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.</p> <p>You can check “Reset after Upgrading” to reset the camera after upgrading it.</p> <p>Online Upgrade: Click the "Check" button to check the current latest firmware version on our website, and then click "OK" to upgrade to this version.</p> <p>It will prompt "The current version is the latest version" if your camera is already the latest version.</p> <div data-bbox="591 1392 1188 1690" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <div style="background-color: #007bff; color: white; text-align: center; padding: 5px; display: flex; justify-content: space-between; align-items: center;"> Tips × </div> <div style="text-align: center; padding: 10px 0;">  The current version is the latest version. </div> <div style="text-align: center; margin-top: 10px;"> OK </div> </div> <p>Note: Do not disconnect the power of the device during the update. The device will be restarted to complete the upgrading.</p>

Parameters	Function Introduction
Reset	Click "Reset" button to reset the camera to factory default settings.
Reboot	Click "Reboot" button to restart the device immediately.
Export Log	Click "Export" button to export logs and system information of the device operation status.  Note: The file format is ".csv".

Chapter 9. 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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