User Manual

GD-TI-BP1603T   **GD-TI-AP1614V**

GD-TI-BP1606T   **GD-TI-BP1603V**

GD-TI-BP1610T

EN

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Contents

Introduction

Thank you for purchasing a Grundig product. Before installing or connecting the product, please read first the following documents which you can find in printed form in the product package:

- Legal Disclaimer

- Safety Instructions

- Installation Manual and/or Quick Guide for the respective product model

Further information about the product like Data Sheets, CE Documents, etc. can also be found on our Web page www.grundig-security.com.

This User Guide is a manual for IP Cameras. Please see in the table of **Model Overview** the applicable models. Please read this User Guide carefully and retain it for future use.

Model Overview

This User Guide is for the following products:

GD-TI-AP1614V
GD-TI-BP1603V
GD-TI-BP1603T
GD-TI-BP1606T
GD-TI-BP1610T

1 Overview

1.1 Brief Description

Thermal & Optical Bi-spectrum network camera equipped with built-in GPU which supports intelligent behavior analysis algorithm, can realize high-precision VCA detection and real-time alarm. It is applied to perimeter defense and fire-prevention purposes in critical infrastructures such as community, villa, construction site, factory, 4S stores, and so on. The pre-alarm system helps you discover unexpected events immediately and protects your property.

1.2 Function

This section introduces main functions of the device.

Note

Not all models support the configurations below, take the actual product for reference.

Fire Detection

Device can detect the dynamic fire source in the scene and output pre-alarm and alarm to protect the property.

Temperature Measurement

Device can measure the actual temperature of the spot being monitored. The device alarms when temperature exceeds the temperature threshold value.

VCA

Device can do behavior analysis. Multiple rules can be configured for different requirements.

Smoking Detection

Device can detect the smoking behavior and alarm.

2 Device Activation and Accessing

To protect the security and privacy of the user account and data, you should set a login password to activate the device when access the device via network.

Note

Refer to the user manual of the software client for the detailed information about the client software activation.

2.1 Activate the Device via IP-Finder

Search and activate the online devices via IP-Finder tool.

Before You Start

Get the IP-Finder tool from the official website www.grundig-security.com to install.

Steps

1. Connect the device to network using the network cable.
2. Run IP-Finder to search the online devices.
3. Check **Device Status** from the device list, and select **Inactive** device.
4. Create and input the new password in the password field, and confirm the password.

   Caution

   We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

5. Click **OK**.
   Device Status changes into **Active**.
6. Optional: Change the network parameters of the device in **Modify Network Parameters**.

2.2 Activate the Device via Browser

You can access and activate the device via the browser.

Steps

1. Connect the device to the PC using the network cables.
2. Change the IP address of the PC and device to the same segment.

Note

The default IP address of the device is 192.168.1.64. You can set the IP address of the PC from 192.168.1.2 to 192.168.1.253 (except 192.168.1.64). For example, you can set the IP address of the PC to 192.168.1.100.

3. Input ***192.168.1.64*** in the browser.
4. Set device activation password.

Caution

We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

5. Click **OK**.
6. Input the activation password to log in to the device.
7. Optional: Go to **Configuration → Network → Basic → TCP/IP** to change the IP address of the device to the same segment of your network.

2.3 Login

Log in to the device via Web browser.

2.3.1 Plug-in Installation

Certain operation systems and web browser may restrict the display and operation of the device function. You should install plug-in or complete certain settings to ensure normal display and operation. For detailed restricted function, refer to the actual device.

Operating System	Web Browser	Operation
Windows	Internet Explorer 10+	Follow pop-up prompts to complete plug-in installation.
	Google Chrome 57+ Mozilla Firefox 52+	Click [Download Plug-in] to download and install plug-in. Go to **Configuration → Network → Advanced Settings → Network Service** to enable WebSocket or WebSockets for normal view if plug-in installation is not

Operating System	Web Browser	Operation
		required. Display and operation of certain functions are restricted. For example, Playback and Picture are not available. For detailed restricted function, refer to the actual device.
Mac OS 10.13+	Mac Safari 12+	Plug-in installation is not required. Go to **Configuration → Network → Advanced Settings → Network Service** to enable WebSocket or WebSockets for normal view. Display and operation of certain functions are restricted. For example, Playback and Picture are not available. For detailed restricted function, refer to the actual device.

Note

The device only supports Windows and Mac OS system and does not support Linux system.

2.3.2 Illegal Login Lock

It helps to improve the security when accessing the device via Internet.
Go to **Configuration → System → Security → Security Service**, and enable **Enable Illegal Login Lock**. **Illegal Login Attempts** and **Locking Duration** are configurable.

Illegal Login Attempts

When your login attempts with the wrong password reach the set times, the device is locked.

Locking Duration

The device releases the lock after the setting duration.

3 Temperature Measurement

When you enable this function, the device measures the actual temperature of the scene. It alarms when temperature exceeds the temperature threshold value.

3.1 Notice

This part introduces the notices of configuring temperature measurement function.
● The target surface should be as vertical to the optical axis as possible. It is recommended that the angle of oblique image plane should be less than 45°.
● The target image pixels should be more than 5 × 5.
● If multiple presets will be taken for temperature measurement, it is recommended to set the patrol time above 20 s.
● Please select line thermography or area thermography for a certain area temperature measurement. The point thermography is not recommended in case of deviation occurred during device movement to affect the accuracy of temperature measurement.

3.2 Thermography Configuration Flow Chart

This part introduces the process of configuring temperature measurement.
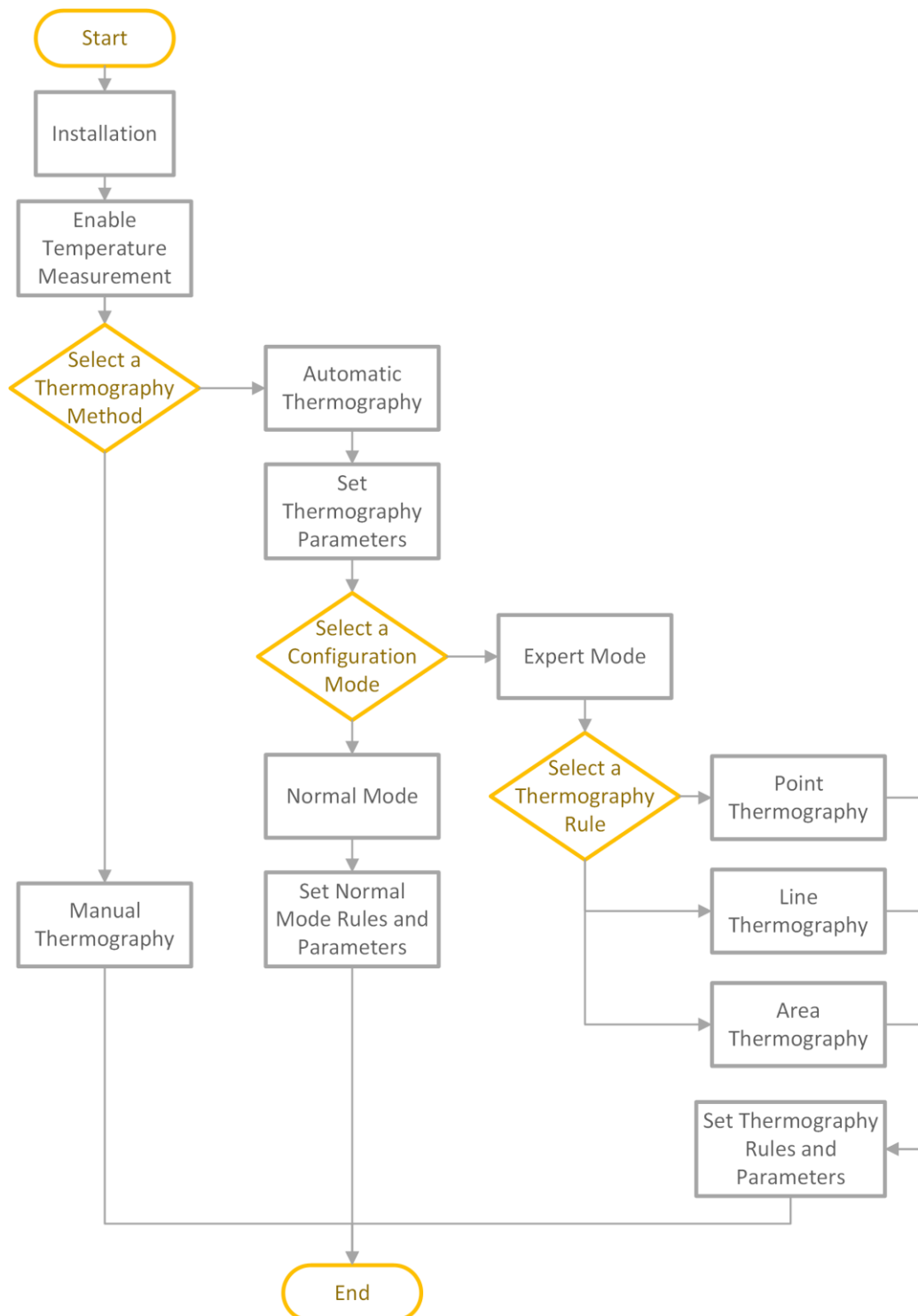
Figure 3-1 Thermography Configuration Flow Chart

3.3 Automatic Thermography

Configure the temperature measurement parameters and temperature measurement rules. The device can measure the actual temperature and output alarms when temperature exceeds the alarm threshold value.

3.3.1 Set Thermography Parameters

Configure the parameters of temperature measurement.

Steps

1. Go to **Configuration → Local**, enable **Display Temperature Info.** .

    Display Temperature Info.

        Select **Yes** to display temperature information on live view.
        Enable **Rules** to display the rules information on live view.
2. Click **Save**.
3. Go to **Configuration → Temperature Measurement → Basic Settings** to configure parameters.

    Enable Temperature Measurement

        Check to enable temperature measurement function.

    Enable Color-Temperature

        Check to display Temperature-Color Ruler in live view.

    Display Temperature Info. on Stream

        Check to display temperature information on the stream.

    Display Temperature in Optical Channel

        Check to display thermal channel temperature information in the optical channel.

    Display Max./Min./Average Temperature

        Check to display maximum/minimum/average temperature information on live view when the temperature measurement rule is line or area.

    Position of Thermometry Info

        Select the position of temperature information showed on the live view.
        ● Near Target: display the information beside the temperature measurement rule.
        ● Top Left: display the information on the top left of screen.

    Add Original Data on Capture

Check to add data on alarm triggered capture of thermal channel.

Add Original Data on Stream

Check to add original data on thermal view.

Data Refresh Interval

It means the refresh interval of temperature information.

Unit

Display temperature with Degree Celsius (°C)/Degree Fahrenheit (°F)/Degree Kelvin (K).

Temperature Range

Select the temperature measurement range.

Version

View the version of current algorithm.

Calibration File Version

View the version of calibration file.

Alarm Interval

Set the alarm interval between two alarms.

Reflect Light Filter & Forklift Filter

Enable these functions if there is strong reflect light from sun or forklift in the scene. Or it may cause false alarm.
Check **Display Filtering Status**, there will be an OSD when the filter is ON.
Click **Restart** to restart algorithm library.

Note

The settings vary according to different camera models.

4. Click **Save**.

3.3.2 Set Normal Mode

This function is used to measure the temperature of the whole scene and alarm.

Steps

1. Go to **Configuration → Temperature Measurement → Basic Settings**, and check **Enable Temperature Measurement**.
2. Refer to *Set Thermography Parameters* to set the parameters.
3. Go to **Configuration → Temperature Measurement → Advanced Settings**, and select **Normal**.
4. Configure the parameters of normal mode.

Emissivity

Set the emissivity of your target. The emissivity of each object is different.

Distance

The distance between the target and the device.

Pre-Alarm Threshold

When the temperature of target exceeds the pre-alarm threshold, and this status keeps more than **Filtering Time**, it triggers pre-alarm.

Alarm Threshold

When the temperature of target exceeds the alarm threshold, and this status keeps more than **Filtering Time**, it triggers alarm.

Pre-Alarm Output and Alarm Output

Check **Pre-Alarm Output** and **Alarm Output** to link the pre-alarm or alarm with the connected alarm device.

Temperature Sudden Change Alarm

When the temperature change exceeds the set sudden change alarm value within the set cycle, the camera triggers an alarm.

Note

Temperature sudden change alarm is only supported by certain device models.

5. Refer to *Set Arming Schedule* for setting scheduled time. Refer to *Linkage Method Settings* for setting linkage method.
6. Click **Save**.
The maximum and minimum temperature will be displayed on the live view.

Note

Go to **Image → VCA Rules Display** to adjust the fonts size and the temperature colour of normal, alarm and pre-alarm.

3.3.3 Set Expert Mode

Select the temperature measurement rules from **Point**, **Line**, or **Area** and configure parameters, the device alarms if the alarm rules are met.

Steps

1. Go to **Configuration → Temperature Measurement → Basic Settings**, check **Enable Temperature Measurement**.
2. Refer to *Set Thermography Parameters* to set the parameters.
3. Go to **Configuration → Temperature Measurement → Advanced Settings**, select **Expert**.
4. Select and enable the temperature measurement rules. Please refer to *Set Thermography Rule* for setting the rule.
5. Optional: Click **Area's Temperature Comparison** to set the alarm rules and the temperature.
6. Refer to *Set Arming Schedule* for setting scheduled time. Refer to *Linkage Method Settings* for setting linkage method.

7. Click **Save**.

The maximum temperature and thermography rules will be displayed on the live view.

Note

Go to **Image → VCA Rules Display** to adjust the fonts size and the temperature color of normal, alarm and pre-alarm.

8. Optional: Call the preset and check if the rules are efficient.
9. Enable the scan function of device, such as linear scan to monitor the scene.

3.3.4 Set Thermography Rule

Steps

1. Customize the rule name.
2. Select the rule **type** to Point, Line, or Area. Then draw a point, line, or area on the interface where the position to be measured.

Point	Please refer to ***Point Thermography***for detailed configuration.
Line	Please refer to ***Line Thermography***for detailed configuration.
Area	Please refer to ***Area Thermography***for detailed configuration.

3. Configure the temperature measurement parameters.

Emissivity

Set the emissivity of the target. The emissivity of the surface of a material is its effectiveness in emitting energy as thermal radiation. Different objects have different emissivity. Refer to ***Common Material Emissivity Reference*** to search for the target emissivity.

Distance

The distance between the target and the device.

Reflective Temperature

If there is any object with high emissivity in the scene, check and set the reflective temperature to correct the temperature. The reflective temperature should be set the same as the temperature of the high emissivity object.

4. Click ⚙ and set the **Alarm Rule**.

Alarm Temperature and Pre-Alarm Temperature

Set the alarm temperature and pre-alarm temperature. E.g., select Alarm Rule as Above (Average Temperature), set the Pre-Alarm Temperature to 50 °C, and set the Alarm Temperature to 55 °C. The device pre-alarms when its average temperature is higher than 50 °C and alarms when its average temperature is higher than 55 °C.

Filtering Time

It refers to the duration time after the target temperature reaches or exceeds the pre-alarm

temperature/alarm temperature.

Tolerance Temperature

Set the tolerance temperature to prevent the constant temperature change to affect the alarm. E.g., set tolerance temperature as 3°C, set alarm temperature as 55°C, and set pre-alarm temperature as 50°C. The device sends pre-alarm when its temperature reaches 50°C and it alarms when its temperature reaches 55°C and only when the device temperature is lower than 52°C will the alarm be cancelled.

Pre-Alarm Output and Alarm Output

When the temperature of target exceeds the pre-alarm or alarm threshold, it triggers the pre-alarm or alarm output of the connected device.

Area's Temperature Comparison

Select two areas and set the comparison rule, and set the temperature difference threshold. The device alarms when the temperature difference meets the setting value.

5. You can shield certain area from being detected. Refer to ***Set Shielded Region*** for detailed settings.
6. Click **Save**.
   Click **Live View**, and select thermal channel to view the temperature and rules information on live view.

3.3.5 Point Thermography

Configure the temperature measurement rule and click any point in live view to monitor the temperature.

Steps

1. Click in the live view and a cross cursor showed on the interface.
2. Drag the cross cursor to desired position.
   Go to **Live View** interface to view the temperature and rule of the point in thermal channel.

3.3.6 Line Thermography

Configure the temperature measurement rule and monitor the maximum temperature of the line.

Steps

1. Click and drag the mouse to draw a line in the live view interface.
2. Click and move the line to adjust the position.
3. Click and drag the ends of the line to adjust the length.
   Go to **Live View** interface to view the maximum temperature and rule of the line in thermal channel.

3.3.7 Area Thermography

Configure the temperature measurement rule and monitor the maximum temperature of the area.

Steps

1. Click and drag the mouse in the live view to draw the area and right click to finish drawing.
2. Click and move the area to adjust the position.
3. Drag the corners of the area to adjust the size and shape.
   Go to **Live View** interface to view the maximum temperature and rule of the area in thermal channel.

3.3.8 Set Shielded Region

You can configure areas from being detected.

Steps

1. Check **Enable Shield Area**.
2. Click ⬡.
3. Drag the mouse in the live view to draw the area. You can drag the corners of the red rectangle area to change its shape and size.
4. Right click the mouse to stop drawing.
5. Optional: Select one area and click ✕ to delete it.
6. Click **Save**.

3.4 Manual Thermography

After enable the manual thermography function of the device, you can click any position on the live view to show the real temperature.

Steps

1. Go to **Configuration** → **Local** and select **Display Temperature Info.** as **Yes**.
2. Go to **Configuration** → **Temperature Measurement** → **Basic Settings**.
3. Check **Enable Temperature Measurement**.
4. Click **Save**.
5. Go to live view interface and select thermal channel, click 🌡. Click any position on the interface to show the real temperature.

4 Fire Source Detection

The device will trigger and upload alarm when detect the fire source or smoking.
Fire source detection includes fire source detection and smoking detection. It is applied to fire-prevention purposes in scenic region, forest, tunnel and so on.

Note

Not all models support the configurations below, take the actual product for reference.

Fire Detection

Configure the fire source detection parameters. When fire source is detected, the alarm actions will be triggered.

Smoking Detection

The device can detect the smoking behavior and output alarm.

4.1 Recommended Scene

This part introduces the recommended scenes of fire source detection and helps you select the appropriate scene.
Fire source detection can be applied to indoor and outdoor monitoring with a maximum detection radius 15 km. To achieve the best monitoring effect, please set the installation place as requirements below.
● The installation place should be the highest position within the detection area. The lens should not be covered during movement to detect the maximum area.
● It is better to choose the installation place with convenient traffic, well-equipped power and internet facilities. E.g. communication tower, watchtower, high-rise roof and so on.

4.2 Set Fire Detection Parameters

To avoid the potential fire damage, you should configure the fire detection function for certain areas. The detail configuration steps show as below.

Steps

1. Go to **Configuration → Local**.
2. Check **Locate Highest Temperature Point** to display the position of highest temperature. Check **Frame Fire Point** to frame the fire source on live view.
3. Go to **Configuration → Event → Smart Event**, select **Dynamic Fire Source Detection**.
4. Check **Enable Dynamic Fire Source Detection**.
5. Set the parameters of fire detection.

Fire Source Detection Mode

   Smoking Mode

   Detect smoking behavior in the scene.

   Dynamic Fire

   Detect the fire source in the scene.

Sensitivity

The sensitivity of fire detection. The bigger the value is, more easily the fire source can be detected, and the false rate is higher.

Note

When **VCA Resource Type** is selected as **Temperature Measurement+Behavior Analysis**, only smoking detection is supported. When **VCA Resource Type** is selected as **Temperature Measurement+Fire Detection**, two detection modes are both supported.

6. Check **Display Fire Source Frame on Stream** to display a red frame around the fire source on stream when fire occurs.
7. Optional: you can shield certain areas from being detected in fire source detection.
   1) Go to **Configuration → Event → Smart Event → Fire Source Detection Shield**.
   2) Check **Enable Fire Source Detection Shield** .
   3) Click **Draw Area** and drag the mouse in the live view to draw the area. Release the mouse to finish drawing.
   4) You can drag the corners of the red rectangle area to change its shape and size. Or drag the rectangle to the position on your demand.
   5) Click **Stop Drawing**.
   6) Click **Clear All** to clear all of the setting areas.
   7) Set the value of **Active Zoom Ratio** on your demand, and then the shield will only appear when the zoom ratio is greater than the predefined value
   8) Click **Add** to save the smoke detection shield, and it will be listed in the **Fire Source Detection Shield List** area; you can select a region and click **Delete** to delete it from the list; you can also define the color of the regions.
   9) Check **Display Shield Region** to show the shielded area in live view.
8. Refer to ***Set Arming Schedule*** for setting scheduled time. Refer to ***Linkage Method Settings*** for setting linkage method.
9. Click **Save**.

5 Behavior Analysis

The behavior analysis function is used to detect whether there is any target break the VCA rules. The optical camera will track the target or the device will alarm when the VCA rule is triggered.

5.1 Flow Chart of Behavior Analysis

The process of configuring the behavior analysis function is described below.
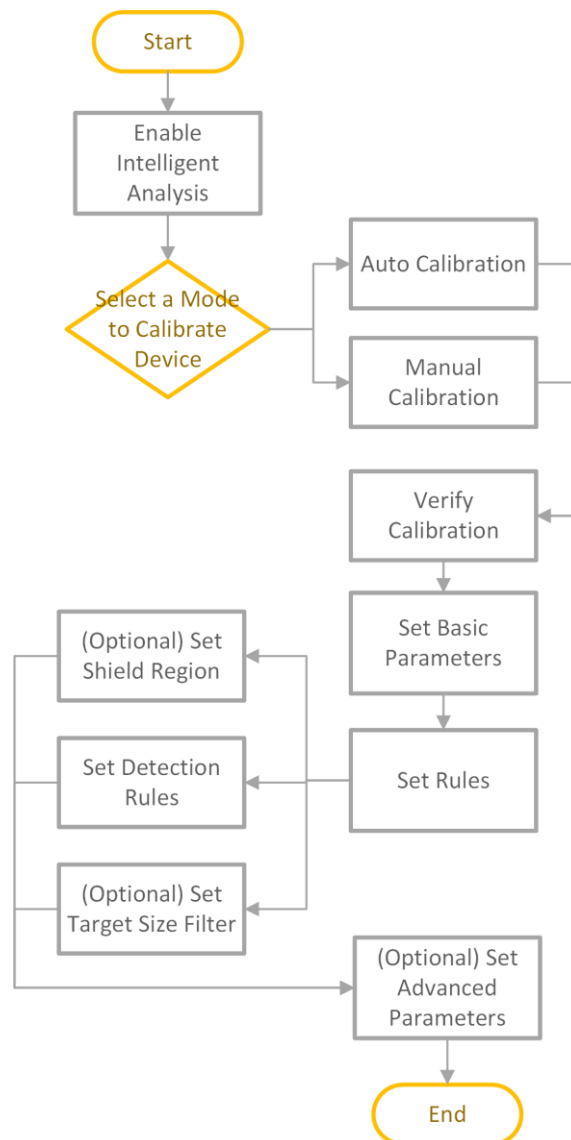
Figure 5-1 Flow Chart of Behavior Analysis Configuration

5.2 Set VCA Parameters

Steps

1. Go to **Configuration → VCA → Basic Settings**.

   Display VCA Info. on Stream

   Select to display target info and rule on stream, the information will be added to the video stream, and the overlay will be displayed if you get live view or play back by the VS Player.

   Display Trajectory

   The target's moving path will be shown in live view.

   Display Target Info. on Alarm Picture

   Select to display the target information on the alarm picture.

   Display Rule Info. on Alarm Picture

   Select to display the rule information on the alarm picture.

   Display Size Info. on Alarm Picture

   Select to display the size information of the target on the alarm picture.

   Snapshot Settings

   Select to upload the picture to the surveillance center when the VCA alarm occurs. You can also set the quality and resolution of the picture separately.

2. Click **Save**.
   Go to **Configuration → Local**, check **Enable** rules to display rules information on the live view.

5.3 Calibration

Note

Not all models support the calibration function, take the actual product for reference.

5.3.1 Calibrate Automatically

Before You Start

- Make sure that we have known the actual height of the target person in the scene.
- Make sure there is no moving objects in the view except for the person.

Steps

1. Go to **Configuration → VCA → Camera Calibration**.
2. Check **Camera Calibration**.
3. when the person is totally seen in live view, enter the height of person in **Target Height**.

4. Click ▶ to start calibration.

Caution

- The auto calibration starts when the person is totally seen in live view, and ends when the person is in the endpoint.
- The endpoint-to-camera distance (m) equals 4 times the lens focal length (mm). E.g, for 7mm lens, the recommended endpoint is 28m (7*4).
- The person should walk in zigzag path. And two zigzag paths are required. Make sure the walking route covers the left, middle, right of image.
- The auto calibration duration should be no shorter than 10 sec, and no longer than 10 min. The device will stop calibration automatically if the duration is too long.
- If there is moving object such as leave or tree in the scene, you can set the shielded area . Refer to *Set Shielded Region* for detail settings.

5. When the person exits, click ■ to stop calibration.

Note

After auto calibration, refer to *Verify the Calibration Result* to verify if the calibration is successful. Set manual calibration if the auto calibration failed, or the verified result turns bad.

Result

After calibration, the height and angle of camera will be shown in live view.

5.3.2 Calibrate Manually

Steps

1. Go to **Configuration → VCA → Camera Calibration**.
2. Check **Manual Calibration**.
3. Click **Fig 1**. Click 🔲 and drag the vertical line until it fits the target.
4. Enter the actual length of the calibration line.
5. Repeat steps above to set **Fig 2**, **Fig 3**, and **Fig 4**.

Note

Draw a calibration line in each figure, and the four calibration lines should be evenly distributed in the same horizontal plane from left to right.
In the four figures, the calibrated object doesn't need to be the same. Select a proper object in each figure.

6. Optional: Click ✕ to delete the calibration line.

7. Click **Save**.

Caution

- Separate 4 vertical lines in the optical-axis direction at the close site, middle and far site respectively.
- Separate 4 vertical lines at the left, middle and right of the image respectively.
- If manual calibration's result is incorrect, select another target to recalibrate.
- After manual calibration, refer to ***Verify the Calibration Result*** to verify if the calibration is successful.

Result

After calibration, the height and angle of camera will be shown in live view.

5.3.3 Verify the Calibration Result

The function can verify whether the calibrated value is consistent with the actual value.

Steps

1. Click ⬚.
2. Click ⬚, and drag a vertical line in the view.
3. Move the line to the target, then click ⬚ to calculate the length.
   Compare the calculated line length to the actual length to verify the calibration settings.
4. Click ← to exit.

Note

Verify not only person, but also other objects appeared in the view. Such as car, street lamp, etc.

5.4 Set Rules

The device can detect whether there is any target break the VCA rules. The device will alarm when the VCA rule is triggered.

Steps

1. Go to **Configuration → VCA → Rule**.
2. Click ✚ to add a new rule.
3. Enter the rule name, and click the drop down menu to select **Rule Type**.

   Line Crossing

   If any target moves across the setting line, the alarm will be triggered. You can set the crossing direction.

   Intrusion

If any target intrudes into the pre-defined region longer than the set duration, the alarm will be triggered.

Region Entrance

If any target enters the pre-defined region, the alarm will be triggered.

Region Exiting

If any target exits the pre-defined region, the alarm will be triggered.

4. Draw the detection rule.

Rule Type	How to Draw and What Parameters to Set
Line Crossing	1. Click ✎ to draw a line in the live view. 2. You can drag end points of the line to adjust the position and length. 3. Set the crossing direction. **Bidirectional**, **A-to-B**, or **B-to-A** are selectable. 4. Set **Sensitivity**. The higher the value is, the easier the target can be detected.
Intrusion	1. Click ⬡ to draw an area in the live view. Right click the mouse to finish drawing. 2. Set **Duration**. When a target intrudes into the set area and stays in the area for more than the set duration, the device triggers an intrusion alarm. 3. Set **Sensitivity**. The higher the value is, the easier the target can be detected.
Region Entrance and Region Exit	Click ⬡ to draw an area in the live view. Right click the mouse to finish drawing. Target that enters or exit the set area triggers the region entrance or region exit alarm.

5. Set other parameters for the rule.

Detection Target

You are recommended to select the target as **Human & Vehicle**. In distant view, the device cannot classify the target with pixels less than 10*10. The target will be recognized as human directly. So the selection of this item will not trigger false alarm or missing alarm.

Background Interference Suppression

Eliminate the environment interference to reduce the false alarm. For example, the false alarms caused by wind blowing grass.

Note

The parameter is available in optical channel.

Target Size Filter

Settings a suitable target size filter helps to increase detection accuracy. There are two ways to set the filter:
- If your device is successfully calibrated, select **Filter by Actual Size** and the device will filter targets according to the calibration automatically. For the calibration instructions, see ***Calibration***.
- If you fails to calibrate the device, you can use **Filter by Pixel**. Draw max size and min size rectangles to filter the target among human, vehicle, animal, and others. Only the target whose size is between the Max. Size and Min. Size value will trigger the alarm.

Note
- You can draw the max size and min size rectangles according to the real target in the scene. The recommended size is 1.2 times of the target.
- Due to the main difference between human and animal is the height. Just concern the height of animal.

6. Optional: Repeat steps above to configure other rules.
7. Optional: Click 📋 to copy the same settings to other rules.
8. Click **Save**.
9. Optional: you can shield certain areas from being detected. Refer to ***Set Shielded Region*** for detailed settings.
10. ***Set Arming Schedule*** and ***Linkage Method Settings*** for each rule.

5.5 Advanced Configuration

Go to **Configuration → VCA → Advanced Configuration** and configure the parameters.
Detection Parameters

Single Alarm

The system only sends alarm once for one target triggering. Otherwise, the alarm will be triggered continuously until the target disappears.

Scene Modes

The scene mode is set to be **General** by default. Select **Leaves Interfered View** when there are shaking targets in the scene, such as leaves.
Restore Parameters

Restore Default

Click **Restore** to restore the parameters to the default.

Restart VCA

    Click **Restart** to restart the VCA function.

6 Event and Alarm

This part introduces the configuration of events. The device takes certain response to triggered alarm. Certain events may not be supported by certain device models.

6.1 Set Motion Detection

It helps to detect the moving objects in the detection region and trigger the linkage actions.

Steps

1. Go to **Configuration → Event → Basic Event → Motion Detection**.
2. Select the channel No.
3. Check **Enable Motion Detection**.
4. Optional: Highlight to display the moving object in the image in green.
   1) Check **Enable Dynamic Analysis for Motion**.
   2) Go to **Configuration → Local**.
   3) Set **Rules** to **Enable**.
5. Select **Configuration Mode**, and set rule region and rule parameters.
   – For the information about normal mode, see ***Normal Mode***.
   – For the information about expert mode, see ***Expert Mode***.
6. Set the arming schedule and linkage methods. For the information about arming schedule settings, see ***Set Arming Schedule***. For the information about linkage methods, see ***Linkage Method Settings***.
7. Click **Save**.

6.1.1 Normal Mode

You can set motion detection parameters according to the device default parameters.

Steps

1. Select normal mode in **Configuration**.
2. Set the sensitivity of normal mode. The higher the value of sensitivity is, the more sensitive the motion detection is. If the sensitivity is set to *0*, motion detection and dynamic analysis do not take effect.
3. Click **Draw Area**. Click and drag the mouse on the live video, then release the mouse to finfish drawing one area.

Figure 6-1 Set Rules

Stop Drawing   Stop drawing one area.

Clear All   Clear all the areas.

4. Optional: You can set the parameters of multiple areas by repeating the above steps.

6.1.2 Expert Mode

You can configure the motion detection parameters of day/night switch according to the actual needs.

Steps

1. Select expert mode in **Configuration**.
2. Set parameters of expert mode.

Day/Night Switch

OFF: Day/Night switch is disabled.
Day/Night Auto-Switch: The system switches day/night mode automatically according to environment. It displays colored image at day and black and white image at night.
Day/Night Scheduled-Switch: The system switches day/night mode according to the schedule. It switches to day mode during the set periods and switches to night mode during the other periods.

Note

This function is not supported in the expert mode of thermal channel.

Sensitivity

The higher the value of sensitivity is, the more sensitive the motion detection is. If the sensitivity is set to *0*, motion detection and dynamic analysis do not take effect.

3. Select an **Area** and click **Draw Area**. Click and drag the mouse on the live video, then release the mouse to finish drawing one area.

Figure 6-2 Set Rules

Stop Drawing	Finish drawing one area.
Clear All	Delete all the areas.

4. Optional: Repeat the above steps to set multiple areas.

6.2 Set Video Tampering Alarm

When the configured area is covered and cannot be monitored normally, the alarm is triggered and the device takes certain alarm response actions.

Steps

1. Go to **Configuration → Event → Basic Event → Video Tampering**.
2. Select the channel number.
3. Check **Enable**.
4. Set the **Sensitivity**. The higher the value is, the easier to detect the area covering.
5. Click **Draw Area** and drag the mouse in the live view to draw the area.

Stop Drawing	Finish drawing.
Clear All	Delete all the drawn areas.

Figure 6-3 Set Video Tampering Area

6. Refer to _**Set Arming Schedule**_ for setting scheduled time. Refer to _**Linkage Method Settings**_ for setting linkage method.
7. Click **Save**.

6.3 Set Alarm Input

Alarm signal from the external device triggers the corresponding actions of the current device.

Before You Start

Make sure the external alarm device is connected. See *Quick Start Guide* for cables connection.

Steps

1. Go to **Configuration → Event → Basic Event → Alarm Input**.
2. Check **Enable Alarm Input Handing**.
3. Select **Alarm Input NO.** and **Alarm Type** from the dropdown list. Edit the **Alarm Name**.
4. Refer to _**Set Arming Schedule**_ for setting scheduled time. Refer to _**Linkage Method Settings**_ for setting linkage method.
5. Click **Copy to...** to copy the settings to other alarm input channels.
6. Click **Save**.

6.4 Set Exception Alarm

Exception such as network disconnection can trigger the device to take corresponding action.

Steps

1. Go to **Configuration → Event → Basic Event → Exception**.
2. Select **Exception Type**.

HDD Full	The HDD storage is full.
HDD Error	Error occurs in HDD.
Network Disconnected	The device is offline.
IP Address Conflicted	The IP address of current device is same as that of other device in the network.
Illegal Login	Incorrect user name or password is entered.

3. Refer to **_Linkage Method Settings_** for setting linkage method.
4. Click **Save**.

6.5 Detect Audio Exception

Audio exception detection function detects the abnormal sound in the scene, such as the sudden increase/decrease of the sound intensity, and some certain actions can be taken as response.

Steps

1. Go to **Configuration → Event → Smart Event → Audio Exception Detection**.
2. Select one or several audio exception detection types.

Audio Loss Detection

Detect sudden loss of audio track.

Sudden Increase of Sound Intensity Detection

Detect sudden increase of sound intensity. **Sensitivity** and **Sound Intensity Threshold** are configurable.

Note

● The lower the sensitivity is, the more significant the change should be to trigger the detection.
● The sound intensity threshold refers to the sound intensity reference for the detection. It is recommended to set as the average sound intensity in the environment. The louder the environment sound, the higher the value should be. You can adjust it according to the real environment.

Sudden Decrease of Sound Intensity Detection

Detect sudden decrease of sound intensity. **Sensitivity** is configurable.

3. Refer to **_Set Arming Schedule_** for setting scheduled time. Refer to **_Linkage Method Settings_** for setting linkage methods.

4. Click **Save**.

Note

The function varies according to different models.

7 Arming Schedule and Alarm Linkage

Arming schedule is a customized time period in which the device performs certain tasks. Alarm linkage is the response to the detected certain incident or target during the scheduled time.

7.1 Set Arming Schedule

Set the valid time of the device tasks.

Steps

1. Click **Arming Schedule**.
2. Drag the time bar to draw desired valid time.

Note

Up to 8 periods can be configured for one day.

---

3. Adjust the time period.
   – Click on the selected time period, and enter the desired value. Click **Save**.
   – Click on the selected time period. Drag the both ends to adjust the time period.
   – Click on the selected time period, and drag it on the time bar.
4. Optional: Click **Copy to...** to copy the same settings to other days.
5. Click **Save**.

7.2 Linkage Method Settings

You can enable the linkage functions when an event or alarm occurs.

7.2.1 Trigger Alarm Output

If the device has been connected to an alarm output device, and the alarm output No. has been configured, the device sends alarm information to the connected alarm output device when an alarm is triggered.

Steps

1. Go to **Configuration → Event → Basic Event → Alarm Output**.
2. Set alarm output parameters.

Automatic Alarm	For the information about the configuration, see ***Automatic Alarm***.
Manual Alarm	For the information about the configuration, see ***Manual Alarm***.

3. Click **Save**.

Manual Alarm

You can trigger an alarm output manually.

Steps

1. Set the manual alarm parameters.

   Alarm Output No.

   Select the alarm output No. according to the alarm interface connected to the external alarm device.

   Alarm Name

   Custom a name for the alarm output.

   Delay

   Select **Manual**.
2. Click **Manual Alarm** to enable manual alarm output.
3. Optional: Click **Clear Alarm** to disable manual alarm output.

Automatic Alarm

Set the automatic alarm parameters, then the device triggers an alarm output automatically in the set arming schedule.

Steps

1. Set automatic alarm parameters.

   Alarm Output No.

   Select the alarm output No. according to the alarm interface connected to the external alarm device.

   Alarm Name

   Custom a name for the alarm output.

   Delay

   It refers to the time duration that the alarm output remains after an alarm occurs.
2. Set the alarming schedule. For the information about the settings, see ***Set Arming Schedule***.
3. Click **Copy to...** to copy the parameters to other alarm output channels.
4. Click **Save**.

7.2.2 FTP/NAS/Memory Card Uploading

If you have enabled and configured the FTP/NAS/memory card uploading, the device sends the alarm information to the FTP server, network attached storage and memory card when an alarm is triggered.
Refer to ***Set FTP*** to set the FTP server.
Refer to ***Set NAS*** for NAS configuration.

Refer to *__Set Memory Card__* for memory card storage configuration.

7.2.3 Send Email

Check **Send Email**, and the device sends an email to the designated addresses with alarm information when an alarm event is detected.
For email settings, refer to *__Set Email__*.

Set Email

When the email is configured and **Send Email** is enabled as a linkage method, the device sends an email notification to all designated receivers if an alarm event is detected.

Before You Start

Set the DNS server before using the Email function. Go to **Configuration → Network → Basic Settings → TCP/IP** for DNS settings.

Steps

1. Go to email settings page: **Configuration → Network → Advanced Settings → Email**.
2. Set email parameters.
   1) Input the sender's email information, including the **Sender's Address**, **SMTP Server**, and **SMTP Port**.
   2) Optional: If your email server requires authentication, check **Authentication** and input your user name and password to log in to the server.
   3) Set the **E-mail Encryption**.
      ● When you select **SSL** or **TLS**, and disable STARTTLS, emails are sent after encrypted by SSL or TLS. The SMTP port should be set as 465.
      ● When you select **SSL** or **TLS** and **Enable STARTTLS**, emails are sent after encrypted by STARTTLS, and the SMTP port should be set as 25.

> **Note**
>
> If you want to use STARTTLS, make sure that the protocol is supported by your email server. If you check the **Enable STARTTLS** while the protocol is not supported by your email sever, your email is sent with no encryption.

   4) Optional: If you want to receive notification with alarm pictures, check **Attached Image**. The notification email has 3 attached alarm pictures about the event with configurable image capturing interval.
   5) Configure **Alarm E-mail Attachment Settings**.

   Image

   Select the number of captures of the corresponding channel.
   ● 0: It will not upload the image of the selected channel.
   ● 1: It will only upload the image captured when the alarm is triggered.
   ● 3: It will upload the images captured about 1 s before and after the alarm is triggered, as

well as the image captured when the alarm is triggered.

Video

Select the video channel and video duration as required.
- 0 s: It will not upload the video of the selected channel.
- 3 s: Upload the video that is recorded about 1 s before and 2 s after the alarm is triggered.
- 5 s: Upload the video that is recorded about 2 s before and 3 s after the alarm is triggered.
- 7 s: Upload the video that is recorded about 2 s before and 5 s after the alarm is triggered.

6) Input the receiver's information, including the receiver's name and address.
7) Click **Test** to see if the function is well configured.

3. Click **Save**.

7.2.4 Notify Surveillance Center

Check **Notify Surveillance Center**, the alarm information is uploaded to the surveillance center when an alarm event is detected.

7.2.5 Trigger Recording

Check **Trigger Recording**, and the device records the video about the detected alarm event. For device with more than one camera channels, you can set one or more channels to take recordings if needed.
For recording settings, refer to ***Video Recording and Picture Capture***

7.2.6 Set Audible Alarm Output

When the device detects targets in the detection area, audible alarm can be triggered as a warning.

Steps

1. Go to **Configuration → Event → Basic Event → Audible Alarm Output**.
2. Select a **Alarm Type**.
3. Select **Sound Type** and set related parameters.
   - Select **Warning** and its contents. Set the alarm times you need.
   - Select **Custom Audio**. You can select a custom audio file from the drop-down list. If no file is available, you can click **Add** to upload an audio file that meets the requirement. Up to three audio files can be uploaded.
4. Optional: Click **Test** to play the selected audio file on the device.
5. Set arming schedule for audible alarm. See ***Set Arming Schedule*** for details.
6. Click **Save**.

Note

The function is only supported by certain device models.

7.2.7 Set Flashing Alarm Light Output

Steps

1. Go to **Configuration → Event → Basic Event → Flashing Alarm Light Output**.
2. Select a **White Light Mode**.

Mode	Description
Flashing	Alarm triggers the light to flash for a certain duration. Set the flashing speed in **Flashing Frequency**.
Solid	Alarm triggers the light to turn on for a certain duration.

3. Set the light action duration and the brightness.

   Flashing Duration

   The time period of light on or light flashing when one alarm happens.

   Brightness

   The brightness of the light.
4. Edit the arming schedule.
5. Click **Save**.

Note

Only certain camera models support the function.

8 Live View

It introduces the live view parameters, function icons and transmission parameters settings.

8.1 Live View Parameters

The supported functions vary depending on the model.

Note

For multichannel devices, select the desired channel first before live view settings.

8.1.1 Window Division

- ◼ refers to 1 × 1 window division.
- ⊞ refers to 2 × 2 window division.
- ⊞ refers to 3 × 3 window division.
- ⊞ refers to 4 × 4 window division.

8.1.2 Live View Stream Type

Select the live view stream type according to your needs. For the detailed information about the stream type selection, refer to ***Stream Type***.

8.1.3 Enable and Disable Live View

This function is used to quickly enable or disable live view of all channels.
- Click 🕞 to start live view of all channels.
- Click 🕞 to stop live view of all channels.

8.1.4 Start Digital Zoom

It helps to see a detailed information of any region in the image.

Steps

1. Click 🔍 to enable the digital zoom.
2. In live view image, drag the mouse to select the desired region.
3. Click in the live view image to back to the original image.

8.1.5 View Previous/Next Page

When the number of channels surpasses that of live view window division, this function can switch

live view among multiple channels.

Click ← → to switch live view among multiple channels.

8.1.6 Full Screen

This function is used to view the image in full screen mode.

Click ⛶ to start full screen mode and press ESC button to exit.

8.1.7 Light

Click 💡 to turn on or turn off the illuminator.

8.1.8 Wiper

For the device that has a wiper, you can control the wiper via web browser.

Click 🌀 on live view page. The wiper wipes the window one time.

8.1.9 Lens Initialization

Lens initialization is used on the device equipped with motorized lens. The function can reset lens when long time zoom or focus results in blurred image. This function varies according to different models.

Click ◉ to operate lens initialization.

8.1.10 Auxiliary Focus

Click ⛶ to realize automatic focus. This function is subject to the actual device model.

8.1.11 Quick Set Live View

It offers a quick setup of PTZ, display settings, OSD, video/audio and VCA resource settings on live view page.

Steps

1. Click ┃ to show quick setup page.
2. Set PTZ, display settings, OSD, video/audio and VCA resource parameters.
   – For PTZ settings, see ***Lens Parameters Adjustment*** .
   – For display settings, see ***Display Settings***.
   – For OSD settings, see ***OSD***.
   – For audio and video settings, see ***Video and Audio***.
   – For VCA settings, see ***Fire Source Detection***, ***Temperature Measurement***, and ***Behavior Analysis***.

Note

The function is only supported by certain models.

8.1.12 Lens Parameters Adjustment

It is used to adjust the lens focus, zoom and iris.

Zoom

- Click ⊕, and the lens zooms in.
- Click ⊖ , and the lens zooms out.

Focus

- Click ⊡ , then the lens focuses far and the distant object gets clear.
- Click ⊡ , then the lens focuses near and the nearby object gets clear.

PTZ Speed

Slide ▬▬▬○▬▬▬ 🔲 to adjust the speed of the pan/tilt movement.

Iris

- When the image is too dark, click ⟳ to enlarge the iris.
- When the image is too bright, click ⟳ to stop down the iris.

8.2 Set Transmission Parameters

The live view image may be displayed abnormally according to the network conditions. In different network environments, you can adjust the transmission parameters to solve the problem.

Steps

1. Go to **Configuration** → **Local**.
2. Set the transmission parameters as required.

   Protocol

     TCP

       TCP ensures complete delivery of streaming data and better video quality, yet the real-time transmission will be affected. It is suitable for the stable network environment.

     UDP

       UDP is suitable for the unstable network environment that does not demand high video fluency.

     MULTICAST

       MULTICAST is suitable for the situation that there are multiple clients. You should set the multicast address for them before selection.

HTTP

HTTP is suitable for the situation that the third-party needs to get the stream from the device.

Play Performance

Shortest Delay

The device takes the real-time video image as the priority over the video fluency.

Balanced

The device ensures both the real-time video image and the fluency.

Fluent

The device takes the video fluency as the priority over teal-time. In poor network environment, the device cannot ensures video fluency even the fluency is enabled.

Auto Start Live View

- **Yes** means the live view is started automatically. It requires a high performance monitoring device and a stable network environment.
- **No** means the live view should be started manually.

3. Click **OK**.

9 Video and Audio

This part introduces the configuration of video and audio related parameters.

9.1 Video Settings

This part introduces the settings of video parameters, such as, stream type, video encoding, and resolution.
Go to setting page: **Configuration → Video/Audio → Video**.

Note

For device with multiple camera channels, select a channel before other settings.

9.1.1 Stream Type

For device supports more than one stream, you can specify parameters for each stream type.

Main Stream

  The stream stands for the best stream performance the device supports. It usually offers the best resolution and frame rate the device can do. But high resolution and frame rate usually mean larger storage space and higher bandwidth requirements in transmission.

Sub Stream

  The stream usually offers comparatively low resolution options, which consumes less bandwidth and storage space.

9.1.2 Video Type

Select the content (video and audio) that should be contained in the stream.

Video

  Only video content is contained in the stream.

Video & Audio

  Video content and audio content are contained in the composite stream.

9.1.3 Resolution

Select video resolution according to actual needs. Higher resolution requires higher bandwidth

and storage.

9.1.4 Bitrate Type and Max. Bitrate

Constant Bitrate

It means that the stream is compressed and transmitted at a comparatively fixed bitrate. The compression speed is fast, but mosaic may occur on the image.

Variable Bitrate

It means that the device automatically adjust the bitrate under the set **Max. Bitrate**. The compression speed is slower than that of the constant bitrate. But it guarantees the image quality of complex scenes.

9.1.5 Video Quality

When **Bitrate Type** is set as Variable, video quality is configurable. Select a video quality according to actual needs. Note that higher video quality requires higher bandwidth.

9.1.6 Frame Rate

The frame rate is to describe the frequency at which the video stream is updated and it is measured by frames per second (fps).
A higher frame rate is advantageous when there is movement in the video stream, as it maintains image quality throughout. Note that higher frame rate requires higher bandwidth and larger storage space.

9.1.7 Video Encoding

It stands for the compression standard the device adopts for video encoding.

Note

Available compression standards vary according to device models.

H.264

H.264, also known as MPEG-4 Part 10, Advanced Video Coding, is a compression standard. Without compressing image quality, it increases compression ratio and reduces the size of video file than MJPEG or MPEG-4 Part 2.

H.265

H.265, also known as High Efficiency Video Coding (HEVC) and MPEG-H Part 2, is a compression

standard. In comparison to H.264, it offers better video compression at the same resolution, frame rate and image quality.

MJPEG

Motion JPEG (M-JPEG or MJPEG) is a video compression format in which intraframe coding technology is used. Images in a MJPEG format is compressed as individual JPEG images.

Profile

This function means that under the same bitrate, the more complex the profile is, the higher the quality of the image is, and the requirement for network bandwidth is also higher.

I-Frame Interval

I-frame interval defines the number of frames between 2 I-frames.
In H.264 and H.265, an I-frame, or intra frame, is a self-contained frame that can be independently decoded without any reference to other images. An I-frame consumes more bits than other frames. Thus, video with more I-frames, in other words, smaller I-frame interval, generates more steady and reliable data bits while requiring more storage space.

SVC

Scalable Video Coding (SVC) is the name for the Annex G extension of the H.264 or H.265 video compression standard.
The objective of the SVC standardization has been to enable the encoding of a high-quality video bitstream that contains one or more subset bitstreams that can themselves be decoded with a complexity and reconstruction quality similar to that achieved using the existing H.264 or H.265 design with the same quantity of data as in the subset bitstream. The subset bitstream is derived by dropping packets from the larger bitstream.
SVC enables forward compatibility for older hardware: the same bitstream can be consumed by basic hardware which can only decode a low-resolution subset, while more advanced hardware will be able decode high quality video stream.

9.1.8 Smoothing

It refers to the smoothness of the stream. The higher value of the smoothing is, the better fluency of the stream will be, though, the video quality may not be so satisfactory. The lower value of the smoothing is, the higher quality of the stream will be, though it may appear not fluent.

9.1.9 Display VCA Info

VCA information can be displayed by Player and Video.

Player

Player means the VCA info can be displayed by the dedicated player provided by the manufacturer.

Video

Video means the VCA info can be displayed by any general video player.

9.1.10 Audio Settings

It is a function to set audio parameters such as audio encoding, environment noise filtering. Go to the audio settings page: **Configuration → Video/Audio → Audio**.

Audio Encoding

Select the audio encoding compression of the audio.

Audio Input

Note
- Connect the audio input device as required.
- The audio input display varies with the device models.

LineIn	Set **Audio Input** to **LineIn** when the device connects to the audio input device with the high output power, such as MP3, synthesizer or active pickup.
MicIn	Set **Audio Input** to **MicIn** when the device connects to the audio input device with the low output power, such as microphone or passive pickup.

Environmental Noise Filter

Set it as OFF or ON. When the function is enabled, the noise in the environment can be filtered to some extent.

9.1.11 Two-way Audio

It is used to realize the two-way audio function between the monitoring center and the target in the monitoring screen.

Before You Start
- Make sure the audio input device (pick-up or microphone) and audio output device (speaker) connected to the device is working properly. Refer to specifications of audio input and output devices for device connection.

- If the device has built-in microphone and speaker, two-way audio function can be enabled directly.

Steps

1. Click **Live View**.
2. Click 🎤 on the toolbar to enable two-way audio function of the camera.
3. Click 🔊and select 🔊 ☐▬▬▬▬ , move the slider to adjust the volume.
4. Click 🎤 , disable the two-way audio function.

9.1.12 Set ROI

ROI (Region of Interest) encoding helps to assigns more encoding resource to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused.

Before You Start

Please check the video coding type. ROI is supported when the video coding type is H.264 or H.265.

Steps

1. Go to **Configuration → Video/Audio → ROI**.
2. Check **Enable**.
3. Select the channel No. according to your need.
4. Select **Stream Type**.
5. Select **Region No.** in **Fixed Region** to draw ROI region.
    1) Click **Drawing**.
    2) Click and drag the mouse on the view screen to draw the fixed region.
    3) Click **Stop Drawing**.

Note

Select the fixed region that needs to be adjusted and drag the mouse to adjust its position.

---

6. Input the **Region Name** and **ROI Level**.
7. Click **Save**.

Note

The higher the ROI level is, the clearer the image of the detected region is.

---

8. Optional: Select other region No. and repeat the above steps if you need to draw multiple fixed regions.

9.2 Display Settings

It offers the parameter settings to adjust image features.
Go to **Configuration → Image → Display Settings**.
For device that supports multiple channels, display settings of each channel is required. The settings for different channels may be different. This part introduces all possible parameters among the channels.
Click **Default** to restore settings.

9.2.1 Image Adjustment

By adjusting the **Brightness**, **Saturation**, **Contrast** and **Sharpness**, the image can be best displayed.

9.2.2 Image Adjustment (Thermal Channel)

You can optimize the image display effect of thermal channel by manual correction.

Manual Correction

Click **Correct** to optimize the image once.

Note

It is a normal phenomenon that short video freezing might occur during the process of **Manual Correction**.

Thermal AGC Mode

Choose the AGC mode according to different scenes to balance and improve the image quality.
- Histogram: Choose for scene with obvious WDR and high temperature difference, can improve image contrast and enhance image. E.g. the scene contains both indoor and outdoor scenes.
- Linear: Choose for scene with low temperature difference and the target is not obvious, can improve image contrast and enhance image. E.g. the bird in forest.
- Self-Adaptive: Choose AGC mode automatically according to current scene.

9.2.3 Exposure Settings

Exposure is controlled by the combination of iris, shutter, and photo sensibility. You can adjust image effect by setting exposure parameters.
In manual mode, you need to set **Exposure Time**, **Gain** and **Slow Shutter**.

9.2.4 Day/Night Switch

Day/Night Switch function can provide color images in the day mode and black/white images in

the night mode. Switch mode is configurable.

Day

The image is always in color.

Night

The image is always black/white

Auto

The camera switches between the day mode and the night mode according to the illumination automatically.

Scheduled-Switch

Set the **Start Time** and the **End Time** to define the duration for day mode.

Note

Day/Night Switch function varies according to models.

9.2.5 Set Supplement Light

Steps

1. Go to **Configuration** → **Maintenance** → **System Service**.
2. Check **Enable Supplement Light**.
3. Click **Save**.
4. Go to **Configuration** → **Image** → **Display Settings** → **Day/Night Switch** to set supplement light parameters.

   Smart Supplement Light

   This feature uses smart image processing technology to reduce overexposure caused by supplement light.

   IR Light Mode

   When the mode is set to **Auto**, the supplement light is automatically enabled or disabled according to the image brightness.

   Brightness Limit

   Adjust the upper limit of IR light power.

9.2.6 BLC

If you focus on an object against strong backlight, the object will be too dark to be seen clearly. BLC (backlight compensation) compensates light to the object in the front to make it clear. If BLC

mode is set as **Custom**, you can draw a red rectangle on the live view image as the BLC area.

9.2.7 WDR

The WDR (Wide Dynamic Range) function helps the camera provide clear images in environment with strong illumination differences.
When there are both very bright and very dark areas simultaneously in the field of view, you can enable the WDR function and set the level. WDR automatically balances the brightness level of the whole image and provides clear images with more details.

Note

When WDR is enabled, some other functions may be not supported. Refer to the actual interface for details.

9.2.8 White Balance

White balance is the white rendition function of the camera. It is used to adjust the color temperature according to the environment.

9.2.9 DNR

Digital Noise Reduction is used to reduce the image noise and improve the image quality. **Normal** and **Expert** modes are selectable.

Normal

Set the DNR level to control the noise reduction degree. The higher level means stronger reduction degree.

Expert

Set the DNR level for both space DNR and time DNR to control the noise reduction degree. The higher level means stronger reduction degree.

9.2.10 Defog

You can enable the defog function when the environment is foggy and the image is misty. It enhances the subtle details so that the image appears clearer.

9.2.11 Gray Scale

This section introduces the gray scale function in optical channel.
You can choose the range of the grey scale as [0-255] or [16-235].

9.2.12 Set Palette

You can select the palette mode to display the thermal grayscale image to colored image.

Steps

1. Go to **Configuration → Image → Display Settings**.
2. Select the thermal channel.
3. Select a palette mode in **Image Enhancement** according to your need.

Result

The live view displays the image with palette.

9.2.13 Set Target Color

You can set the color of the targets in different temperature ranges to identify the target quickly.

Steps

1. Go to **Configuration → Image → Display Settings**.
2. Select the thermal channel.
3. Click **Image Enhancement**, select **Palette** as **White Hot** or **Black Hot**.
4. Set the temperature value and color of **High Temperature**, **Interval Temperature**, or **Low Temperature** targets.

   Above (be colored)

   When the target of high temperature needs to be colored, you can set the high temperature color. Target above the setting temperature will be displayed in setting color.

   Between (be colored)

   When the target of an interval temperature needs to be colored, you can set the interval temperature color. Target between the minimum and the maximum temperatures will be displayed in setting color.

   Below (be colored)

   When the target of low temperature needs to be colored, you can set the low temperature color. Target below the setting temperature will be displayed in setting color.
5. Click **Save**.

9.2.14 DDE

Digital Detail Enhancement is used to adjust the details of the image. **OFF** and **Normal** modes are selectable.

OFF

Disable this function.

Normal

Set the DDE level to control the details of the image. The higher the level is, the more details

shows, but the higher the noise is.

9.2.15 Brightness Sudden Change

When the brightness of target and the background is hugely different (the temperature difference of target and background is huge), the system reduces the difference for viewing.

9.2.16 Enhance Regional Image

You can select the desired area of image to improve the coding quality. The regional image will be more detailed and clear.

Steps
1. Go to **Configuration → Image → Display Settings → Image Enhancement**.
2. Select the area of regional image enhancement. You can select **OFF** to disable this function, or select **Custom Area** to draw a desired area.
   A red rectangle shows on the display, in which the image quality is improved.

9.2.17 Mirror

When the live view image is the reverse of the actual scene, this function helps to display the image normally.
Select the mirror mode as needed.

Note
The video recording will be shortly interrupted when the function is enabled.

9.2.18 Video Standard

Video standard is an ability of a video card or video display device that defines the amount of colors that are shown and the resolution. The two most common video standard used are NTSC and PAL. In NTSC, 30 frames are transmitted each second. Each frame is made up of 525 individual scan lines. In PAL, 25 frames are transmitted each second. Each frame is made up of 625 individual scan lines. Select video signal standard according to the video system in your country/region.

9.2.19 Digital Zoom

You can zoom in the image. The larger the zoom size is, the more blurred the image is.

9.2.20 Scene Mode

There are several sets of image parameters predefined for different installation environments.

Select a scene according to the actual installation environment to speed up the display settings.

9.3 OSD

You can customize OSD (On-screen Display) information such as device name, time/date, font, color, and text overlay displayed on video stream.
Go to OSD setting page: **Configuration → Image → OSD Settings**. Set the corresponding parameters, and click **Save** to take effect.

Character Set

Select character set for displayed information. If Korean is required to displayed on screen, select **EUC-KR**. Otherwise, select **GBK**.

Displayed Information

Set camera name, date, week, and their related display format.

Text Overlay

Set customized overlay text on image.

OSD Parameters

Set OSD parameters, such as **Display Mode**, **OSD Size**, **Font Color**, and **Alignment**.

9.4 Set Privacy Mask

The function blocks certain areas in the live view to protect privacy. No matter how the device moves, the blocked scene will never be seen.

Steps

1. Go to privacy mask setting page: **Configuration → Image → Privacy Mask**.
2. Select the channel No..
3. Check **Enable Privacy Mask**.
4. Click **Draw Area**. Drag the mouse in the live view to draw a closed area.

Drag the corners of the area	Adjust the size of the area.
Drag the area	Adjust the position of the area.
Click Clear All	Clear all the areas you set.

5. Click **Stop Drawing**.
6. Click **Save**.

9.5 Overlay Picture

Overlay a customized picture on live view.

Before You Start

The picture to overlay has to be in BMP format with 24-bit, and the maximum picture size is 128 × 128 pixel.

Steps

1. Go to picture overlay setting page: **Configuration → Image → Picture Overlay**.
2. Select a channel to overlay picture.
3. Click **Browse** to select a picture, and click **Upload**.
   The picture with a red rectangle will appear in live view after successfully uploading.
4. Check **Enable Picture Overlay**.
5. Drag the picture to adjust its position.
6. Click **Save**.

9.6 Set Manual DPC (Defective Pixel Correction)

If the amount of defective pixels in the image is comparatively small and accurate correction is needed, you can correct these pixels manually.

Steps

1. Go to **Configuration → Image → DPC**.
2. Select the thermal channel.
3. Select manual mode.
4. Click the defective pixel on the image, then a cursor shows on the live view.
5. Click **Up**, **Down**, **Left**, **Right** to adjust the cursor position to the defective pixel position.
6. Click ▤, then click ⊕ to correct defective pixel.

Note

If multiple defective pixels need to be corrected, click ▤ after locating a defective pixel. Then after locating other pixels, click ⊕ to correct them simultaneously.

7. Optional: Click ↻ to cancel defective pixel correction.

9.7 Set Picture in Picture

You can overlay the images of two channels and view the image of two channels at the same time.

Steps

1. Select a channel number.
2. Select the picture in picture mode.

Overlap Mode	Partial image of thermal channel is displayed on the full screen of optical channel. This mode is only supported in optical channel.
Details Overlay Mode	The device displays the details of optical channel on thermal channel. This mode is only supported in thermal channel.

3. In **Details Overlay Mode**, set the **Fusion Distance** of the target. It is recommended to use the default value.
4. Click **Save**.

Note

Not all models support this function, take the actual product for reference.

10 Video Recording and Picture Capture

This part introduces the operations of capturing video clips and snapshots, playback, and downloading captured files.

10.1 Storage Settings

This part introduces the configuration of several common storage paths.

10.1.1 Set Memory Card

If you choose to store the files to memory card, make sure you insert and format the memory card in advance.

Before You Start

Insert the memory card to the camera. For detailed installation, refer to *Quick Start Guide* of the camera.

Steps

1. Go to storage management setting page: **Configuration → Storage → Storage Management → HDD Management**.
2. Select the memory card, and click **Format** to start initializing the memory card.
   The **Status** of memory card turns to **Normal** from **Uninitialized**, which means the memory card can be used normally.
3. Optional: Define the **Quota** of the memory card. Input the quota percentage for different contents according to your need.
4. Click **Save**.

10.1.2 Set NAS

Take network server as network disk to store the record files, captured images, etc.

Before You Start

Get the IP address of the network disk first.

Steps

1. Go to NAS setting page: **Configuration → Storage → Storage Management → Net HDD**.
2. Click **HDD No.**. Enter the server address and file path for the disk.

   Server Address

   The IP address of the network disk.

   File Path

The saving path of network disk files.

Mounting Type

Select file system protocol according to the operation system.
Enter user name and password of the net HDD to guarantee the security if **SMB/CIFS** is selected.

3. Click **Test** to check whether the network disk is available.
4. Click **Save**.

10.1.3 Set FTP

You can configure the FTP server to save images which are captured by events or a timed snapshot task.

Before You Start

Get the FTP server address first.

Steps

1. Go to **Configuration** → **Network** → **Advanced Settings** → **FTP**.
2. Configure FTP settings.

FTP Protocol

FTP and SFTP are selectable. If SFTP is selected, the files uploading is encrypted using SFTP protocol.
SSH File Transfer Protocol (SFTP) uses SSH as the encryption protocol. SFTP server is required when you select the protocol.

Server Address and Port

The FTP server address and corresponding port.

User Name and Password

The FTP user should have the permission to upload pictures.
If the FTP server supports picture uploading by anonymous users, you can check **Anonymous** to hide your device information during uploading.

Note

If SFTP is used, logging into the FTP server anonymously is now allowed.

Directory Structure

The saving path of snapshots in the FTP server.

3. Click **Upload Picture** or **Upload Video** to enable uploading snapshots or videos to the FTP server.
4. Click **Test** to verify the FTP server.
5. Click **Save**.

10.1.4 Set Cloud Storage

It helps to upload the captured pictures and data to the cloud. The platform requests picture directly from the cloud for picture and analysis. The function is only supported by certain models.

Steps

Caution

If cloud storage is enabled, the pictures are stored in the cloud storage server preferentially.

---

1. Go to **Configuration** → **Storage** → **Storage Management** → **Cloud Storage**.
2. Check **Enable Cloud Storage**.
3. Set basic parameters.

Protocol Version	The protocol version of the cloud storage server.
Server IP	The IP address of the cloud storage server. It supports IPv4 address.
Serve Port	The port of the cloud storage server. 6001 is the default port and you are not recommended to edit it.
User Name and Password	The user name and password of the cloud storage server.
Picture Storage Pool ID	The ID of the picture storage region in the cloud storage server. Make sure storage pool ID and the storage region ID are the same.

4. Click **Test** to test the configured settings.
5. Click **Save**.

10.2 Video Recording

This part introduces the operations of manual and scheduled recording, playback, and downloading recorded files.

10.2.1 Record Automatically

This function can record video automatically during configured time periods.

Before You Start

Select **Trigger Recording** in event settings for each record type except **Continuous**. See ***Event and Alarm*** for details.

Steps

> **Note**
>
> The function varies according to different models.

1. Go to **Configuration** → **Storage** → **Schedule Settings** → **Record Schedule**.
2. Select channel No.
3. Check **Enable**.
4. Select a record type.

> **Note**
>
> The record type is vary according to different models.

Continuous

The video will be recorded continuously according to the schedule.

Motion

When motion detection is enabled and trigger recording is selected as linkage method, object movement is recorded.

Alarm

When alarm input is enabled and trigger recording is selected as linkage method, the video is recorded after receiving alarm signal from external alarm input device.

Motion | Alarm

Video is recorded when motion is detected or alarm signal is received from the external alarm input device.

Motion & Alarm

Video is recorded only when motion is detected and alarm signal is received from the external alarm input device.

Event

The video is recorded when configured event is detected.
5. Set schedule for the selected record type. Refer to **_Set Arming Schedule_** for the setting operation.
6. Click **Advanced** to set the advanced settings.

Overwrite

Enable **Overwrite** to overwrite the video records when the storage space is full. Otherwise the camera cannot record new videos.

Pre-record

The time period you set to record before the scheduled time.

Post-record

The time period you set to stop recording after the scheduled time.

Stream Type

Select the stream type for recording.

Recording Expiration

The recordings are deleted when they exceed the expired time. The expired time is configurable. Note that once the recordings are deleted, they can not be recovered.

7. Click **Save**.

10.2.2 Record Manually

Steps

1. Go to **Configuration → Local**.
2. Set the **Record File Size** and saving path to for recorded files.
3. Click **Save**.
4. Click to start recording. Click to stop recording.

10.2.3 Playback and Download Video

You can search, playback and download the videos stored in the local storage or network storage.

Steps

1. Click **Playback**.
2. Select channel No.
3. Set search condition and click **Search**.
   The matched video files showed on the timing bar.
4. Click to play the video files.
   – Click to clip video files.
   – Click to play video files in full screen. Press **ESC** to exit full screen.

5. Click on the playback interface to download files.
   1) Set search condition and click **Search**.
   2) Select the video files and then click **Download**.

Note

Go to **Configuration → Local**, click **Save downloaded files to** to change the saving path of downloaded video files.

10.3 Capture Configuration

The device can capture the pictures manually or automatically and save them in configured saving path. You can view and download the snapshots.

10.3.1 Capture Automatically

This function can capture pictures automatically during configured time periods.

Before You Start

If event-triggered capture is required, you should configure related linkage methods in event settings. Refer to ***Event and Alarm*** for event settings.

Steps

1. Go to **Configuration → Storage → Schedule Settings → Capture → Capture Parameters**.
2. Set the capture type.

   Timing

   Capture a picture at the configured time interval.

   Event-Triggered

   Capture a picture when an event is triggered.
3. Set the **Format**, **Resolution**, **Quality**, **Interval**, and **Capture Number**.
4. Refer to ***Set Arming Schedule*** for configuring schedule time.
5. Click **Save**.

10.3.2 Capture Manually

Steps

1. Go to **Configuration → Local**.
2. Set the **Image Format** and saving path to for snapshots.

   JPEG

   The picture size of this format is comparatively small, which is better for network transmission.

   BMP

   The picture is compressed with good quality.
3. Click **Save**.

4. Click 📷 near the live view or play back window to capture a picture manually.

10.3.3 View and Download Picture

You can search, view and download the pictures stored in the local storage or network storage.

Steps

1. Click **Picture**.
2. Select channel No..
3. Set search condition and click **Search**.
   The matched pictures showed in the file list.
4. Select the pictures then click **Download** to download them.

> **Note**
>
> Go to **Configuration → Local**, click **Save snapshots when playback** to change the saving path of pictures.

11 Network Settings

11.1 TCP/IP

TCP/IP settings must be properly configured before you operate the device over network. IPv4 and IPv6 are both supported. Both versions can be configured simultaneously without conflicting to each other.

Go to **Configuration** → **Basic Configuration** → **Network** → **TCP/IP** for parameter settings.

NIC Type

Select a NIC (Network Interface Card) type according to your network condition.

IPv4

Two IPv4 modes are available.

DHCP

The device automatically gets the IPv4 parameters from the network if you check **DHCP**. The device IP address is changed after enabling the function. You can use the IP-Finder to get the device IP address.

Note

The network that the device is connected to should support DHCP (Dynamic Host Configuration Protocol).

Manual

You can set the device IPv4 parameters manually. Input **IPv4 Address**, **IPv4 Subnet Mask**, and **IPv4 Default Gateway**, and click **Test** to see if the IP address is available.

IPv6

Three IPv6 modes are available.

Route Advertisement

The IPv6 address is generated by combining the route advertisement and the device Mac address.

Note

Route advertisement mode requires the support from the router that the device is connected to.

DHCP

The IPv6 address is assigned by the server, router or gateway.

Manual

Input **IPv6 Address**, **IPv6 Subnet**, **IPv6 Default Gateway**. Consult the network administrator for required information.

MTU

It stands for maximum transmission unit. It is the size of the largest protocol data unit that can be communicated in a single network layer transaction.
The valid value range of MTU is 1280 to 1500.

DNS

It stands for domain name server. It is required if you need to visit the device with domain name. And it is also required for some applications (e.g., sending email). Set **Preferred DNS Server** and **Alternate DNS server** properly if needed.

11.1.1 Multicast Discovery

Check the **Enable Multicast Discovery**, and then the online network camera can be automatically detected by client software via private multicast protocol in the LAN.

11.2 Port

The device port can be modified when the device cannot access the network due to port conflicts.

Caution

Do not modify the default port parameters at will, otherwise the device may be inaccessible.

Go to **Configuration → Network → Basic Settings → Port** for port settings.

HTTP Port

It refers to the port through which the browser accesses the device. For example, when the **HTTP Port** is modified to 81, you need to enter *http://192.168.1.64:81* in the browser for login.

HTTPS Port

It refers to the port through which the browser accesses the device with certificate. Certificate verification is required to ensure the secure access.

RTSP Port

It refers to the port of real-time streaming protocol.

SRTP Port

It refers to the port of secure real-time transport protocol.

Server Port

It refers to the port through which the client adds the device.

Enhanced SDK Service Port

It refers to the port through which the client adds the device. Certificate verification is required

to ensure the secure access.

WebSocket Port

TCP-based full-duplex communication protocol port for plug-in free preview.

WebSockets Port

TCP-based full-duplex communication protocol port for plug-in free preview. Certificate verification is required to ensure the secure access.

Note

- Enhanced SDK Service Port, WebSocket Port, and WebSockets Port are only supported by certain models.
- For device models that support that function, go to **Configuration** → **Network** → **Advanced Settings** → **Network Service** to enable it.

11.3 Port Mapping

By setting port mapping, you can access devices through the specified port.

Before You Start

When the ports in the device are the same as those of other devices in the network, refer to **_Port_** to modify the device ports.

Steps

1. Go to **Configuration** → **Network** → **Basic Settings** → **NAT**.
2. Select the port mapping mode.

Auto Port Mapping	Refer to **_Set Auto Port Mapping_** for detailed information.
Manual Port Mapping	Refer to **_Set Manual Port Mapping_** for detailed information.

3. Click **Save**.

11.3.1 Set Auto Port Mapping

Steps

1. Check **Enable UPnP™**, and choose a friendly name for the camera, or you can use the default name.
2. Select the port mapping mode to **Auto**.
3. Click **Save**.

Note

UPnP™ function on the router should be enabled at the same time.

11.3.2 Set Manual Port Mapping

Steps

1. Check **Enable UPnP™**, and choose a friendly name for the device, or you can use the default name.
2. Select the port mapping mode to **Manual**, and set the external port to be the same as the internal port.
3. Click **Save**.

What to do next

Go to the router port mapping settings interface and set the port number and IP address to be the same as those on the device. For more information, refer to the router user manual.

11.4 Multicast

Multicast is group communication where data transmission is addressed to a group of destination devices simultaneously. After setting multicast, you can send the source data efficiently to multiple receivers.
Go to **Configuration → Network → Basic Settings → Multicast** for the multicast settings.

IP Address

It stands for the address of multicast host.

Stream Type

The stream type as the multicast source.

Video Port

The video port of the selected stream.

Audio Port

The audio port of the selected stream.

11.5 SNMP

You can set the SNMP network management protocol to get the alarm event and exception messages in network transmission.

Before You Start

Before setting the SNMP, you should download the SNMP software and manage to receive the device information via SNMP port.

Steps

1. Go to the settings page: **Configuration → Network → Advanced Settings → SNMP**.
2. Check **Enable SNMPv1**, **Enable SNMP v2c** or **Enable SNMPv3**.

Note

The SNMP version you select should be the same as that of the SNMP software.
And you also need to use the different version according to the security level required. SNMP v1 is not secure and SNMP v2 requires password for access. And SNMP v3 provides encryption and if you use the third version, HTTPS protocol must be enabled.

3. Configure the SNMP settings.
4. Click **Save**.

11.6 Access to Device via Domain Name

You can use the Dynamic DNS (DDNS) for network access. The dynamic IP address of the device can be mapped to a domain name resolution server to realize the network access via domain name.

Before You Start

Registration on the DDNS server is required before configuring the DDNS settings of the device.

Steps

1. Refer to *TCP/IP* to set DNS parameters.
2. Go to the DDNS settings page: **Configuration → Network → Basic Settings → DDNS**.
3. Check **Enable DDNS** and select **DDNS type**.

 DynDNS

 Dynamic DNS server is used for domain name resolution.

 NO-IP

 NO-IP server is used for domain name resolution.
4. Input the domain name information, and click **Save**.
5. Check the device ports and complete port mapping. Refer to *Port* to check the device port, and refer to *Port Mapping* for port mapping settings.
6. Access the device.

By Browsers	Enter the domain name in the browser address bar to access the device.
By Client Software	Add domain name to the client software. Refer to the client manual for specific adding methods.

11.7 Access to Device via PPPoE Dial Up Connection

This device supports the PPPoE auto dial-up function. The device gets a public IP address by ADSL dial-up after the device is connected to a modem. You need to configure the PPPoE parameters of

the device.

Steps

1. Go to **Configuration** → **Network** → **Basic Settings** → **PPPoE**.
2. Check **Enable PPPoE**.
3.   Set the PPPoE parameters.

   Dynamic IP

   After successful dial-up, the dynamic IP address of the WAN is displayed.

   User Name

   User name for dial-up network access.

   Password

   Password for dial-up network access.

   Confirm

   Input your dial-up password again.
4. Click **Save**.
5. Access the device.

By Browsers	Enter the WAN dynamic IP address in the browser address bar to access the device.
By Client Software	Add the WAN dynamic IP address to the client software. Refer to the client manual for details.

Note

The obtained IP address is dynamically assigned via PPPoE, so the IP address always changes after rebooting the camera. To solve the inconvenience of the dynamic IP, you need to get a domain name from the DDNS provider (e.g. DynDns.com). Refer to ***Access to Device via Domain Name*** for detail information.

11.8 Enable SCMS Service on Camera

SCMS service should be enabled on your camera before using the service.
You can enable the service through IP-Finder tool or Web browser.

11.8.1 Enable SCMS Service via Web Browser

Follow the following steps to enable SCMS Service via Web Browser.

Before You Start

You need to activate the camera before enabling the service.

Steps

1. Access the camera via web browser.
2. Enter platform access configuration interface. **Configuration → Network → Advanced Settings → Platform Access**
3. Select SCMS as the **Platform Access Mode**.
4. Check **Enable**.
5. Click and read "Terms of Service" and "Privacy Policy" in pop-up window.
6. Create a verification code or change the old verification code for the camera.

Note

The verification code is required when you add the camera to SCMS service.

---

7. Save the settings.

11.8.3 Access Camera via SCMS

SCMS is an application for mobile devices. Using the App, you can view live image, receive alarm notification and so on.

Before You Start

Connect the camera to network with network cables.

Steps

1. Get and install SCMS application by searching "SCMS" in App Store or Google Play$^{(TM)}$.
2. Start the application and register for a SCMS user account.
3. Log in after registration.
4. In the app, tap "+" on the upper-right corner and then scan the QR code of the camera to add the camera. You can find the QR code on the camera or on the cover of the Quick Start Guide of the camera in the package.
5. Follow the prompts to set the network connection and add the camera to your SCMS account.

   For detailed information, refer to the user manual of the SCMS app.

11.9 Set ISUP

When the device is registered on ISUP platform (formerly called Ehome), you can visit and manage the device, transmit data, and forward alarm information over public network.

Steps

1. Go to **Configuration → Network → Advanced Settings → Platform Access**.
2. Select **ISUP** as the platform access mode.
3. Select **Enable**.
4. Select a protocol version and input related parameters.
5. Click **Save**.

Register status turns to **Online** when the function is correctly set.

11.10 Set Open Network Video Interface

If you need to access the device through Open Network Video Interface protocol, you can configure the user settings to enhance the network security.

Steps

1. Go to **Configuration → Network → Advanced Settings → Integration Protocol**.
2. Check **Enable Open Network Video Interface**.
3. Click **Add** to configure the Open Network Video Interface user.

Delete	Delete the selected Open Network Video Interface user.
Modify	Modify the selected Open Network Video Interface user.

4. Click **Save**.
5. Optional: Repeat the steps above to add more Open Network Video Interface users.

11.11 Set Alarm Host

The device can send the alarm signal to the remote alarm host when an event occurs. The alarm host refers to the PC installed with client software.

Steps

1. Go to **Configuration → Network → Other**.
2. Enter the alarm host IP and port.
3. Click **Save**.

11.12 Set Alarm Server

The device can send alarms to destination IP address or host name through HTTP, HTTPS, or ISUP protocol. The destination IP address or host name should support HTTP, HTTP, or ISUP data transmission.

Steps

1. Go to **Configuration → Network → Advanced Settings → Alarm Server**.
2. Enter **Destination IP or Host Name**, **URL**, and **Port**.
3. Select **Protocol**.

Note

HTTP, HTTPS, and ISUP are selectable. It is recommended to use HTTPS, as it encrypts the data transmission during communication.

4. Click **Test** to check if the IP or host is available.
5. Click **Save**.

11.13 Set Network Service

You can control the ON/OFF status of certain protocol as desired.

Steps

Note

This function varies according to different models.

1. Go to **Configuration** → **Network** → **Advanced Settings** → **Network Service**.
2. Set network service.

WebSocket & WebSockets

WebSocket or WebSockets protocol should be enabled if you use Google Chrome 57 and its above version or Mozilla Firefox 52 and its above version to visit the device. Otherwise, live view, image capture, and digital zoom function cannot be used.
If the device uses HTTP, enable WebSocket.
If the device uses HTTPS, enable WebSockets.

TLS (Transport Layer Security)

The device offers TLS1.1 and TLS1.2. Enable one or more protocol versions according to your need.
3. Click **Save**.

11.14 Set SRTP

The Secure Real-time Transport Protocol (SRTP) is a Real-time Transport Protocol (RTP) internet protocol, intended to provide encryption, message authentication and integrity, and replay attack protection to the RTP data in both unicast and multicast applications.

Steps

1. Go to **Configuration** → **Network** → **Advanced Settings** → **SRTP**.
2. Select **Server Certificate**.
3. Select **Encrypted Algorithm**.
4. Click **Save**.

Note

Only certain device models support this function.

12 System and Security

It introduces system maintenance, system settings and security management, and explains how to configure relevant parameters.

12.1 View Device Information

You can view device information, such as Device No., Model, Serial No. and Firmware Version. Enter **Configuration** → **System** → **System Settings** → **Basic Information** to view the device information.

12.2 Search and Manage Log

Log helps locate and troubleshoot problems.

Steps

1. Go to **Configuration** → **System** → **Maintenance** → **Log**.
2. Set search conditions **Major Type**, **Minor Type**, **Start Time**, and **End Time**.
3. Click **Search**.
   The matched log files will be displayed on the log list.
4. Optional: Click **Export** to save the log files in your computer.

12.3 Import and Export Configuration File

It helps speed up batch configuration on other devices with the same parameters.

Steps

1. Export configuration file.
   1) Go to **Configuration** → **System** → **Maintenance** → **Upgrade & Maintenance**.
   2) Click **Device Parameters** and input the encryption password to export the current configuration file.
   3) Set the saving path to save the configuration file in local computer.
2. Import configuration file.
   1) Access the device that needs to be configured via web browser.
   2) Click **Browse** to select the saved configuration file.
   3) Input the encryption password you have set when exporting the configuration file.
   4) Click **Import**.

12.4 Export Diagnose Information

Diagnose information includes running log, system information, hardware information.
Go to **Configuration → System → Maintenance → Upgrade & Maintenance**, and click **Diagnose Information** to export diagnose information of the device.

12.5 Reboot

You can reboot the device via browser.
Go to **Configuration → System → Maintenance → Upgrade & Maintenance**, and click **Reboot**.

12.6 Restore and Default

Restore and Default helps restore the device parameters to the default settings.

Steps

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance**.
2. Click **Restore** or **Default** according to your needs.

Restore	Reset device parameters, except user information, IP parameters and video format to the default settings.
Default	Reset all the parameters to the factory default.

> **Note**
>
> Be careful when using this function. After resetting to the factory default, all the parameters are reset to the default settings.

12.7 Upgrade

Before You Start

You need to obtain the correct upgrade package.

Caution

DO NOT disconnect power during the process, and the device reboots automatically after upgrade.

Steps

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance**.
2. Choose one method to upgrade.

Firmware	Locate the exact path of the upgrade file.
Firmware Directory	Locate the directory which the upgrade file belongs to.

3. Click **Browse** to select the upgrade file.
4. Click **Upgrade**.

12.8 View Open Source Software License

Go to **Configuration → System → System Settings → About Device**, and click **View Licenses**.

12.9 Time and Date

You can configure time and date of the device by configuring time zone, time synchronization and Daylight Saving Time (DST).

12.9.1 Synchronize Time Manually

Steps

1. Go to **Configuration → System → System Settings → Time Settings**.
2. Select **Time Zone**.
3. Click **Manual Time Sync.**.
4. Choose one time synchronization method.
  – Select **Set Time**, and manually input or select date and time from the pop-up calendar.
Check **Sync. with computer time** to synchronize the time of the device with that of the local PC.
5. Click **Save**.

12.9.2 Set NTP Server

You can use NTP server when accurate and reliable time source is required.

Before You Start

Set up a NTP server or obtain NTP server information.

Steps

1. Go to **Configuration → System → System Settings → Time Settings**.
2. Select **Time Zone**.
3. Click **NTP**.
4. Set **Server Address**, **NTP Port** and **Interval**.

5. Click **Test** to test server connection.
6. Click **Save**.

12.9.3 Set DST

If the region where the device is located adopts Daylight Saving Time (DST), you can set this function.

Steps

1. Go to **Configuration** → **System** → **System Settings** → **DST**.
2. Check **Enable DST**.
3. Select **Start Time**, **End Time** and **DST Bias**.
4. Click **Save**.

12.10 Set RS-232

RS-232 can be used to debug device or access peripheral device. RS-232 can realize communication between the device and computer or terminal when the communication distance is short.

Before You Start

Connect the device to computer or terminal with RS-232 cable.

Steps

1. Go to **Configuration** → **System** → **System Settings** → **RS-232**.
2. Set RS-232 parameters to match the device with computer or terminal.
3. Click **Save**.

12.11 Set RS-485

RS-485 is used to connect the device to external device. You can use RS-485 to transmit the data between the device and the computer or terminal when the communication distance is too long.

Before You Start

Connect the device and computer or termial with RS-485 cable.

Steps

1. Go to **Configuration** → **System** → **System Settings** → **RS-485**.
2. Set the RS-485 parameters.

Note

You should keep the parameters of the device and the computer or terminal all the same.

3. Click **Save**.

12.12 Set Same Unit

Set the same temperature unit and distance unit. When you enable this function, the unit cannot be configured separately in other setting pages

Steps

1. Go to **Configuration → System → System Settings → Unit Settings**.
2. Check **Use Same Unit**.
3. Set the temperature unit and distance unit.
4. Click **Save**.

12.13 Security

You can improve system security by setting security parameters.

12.13.1 Authentication

You can improve network access security by setting RTSP and WEB authentication.
Go to **Configuration → System → Security → Authentication** to choose authentication protocol and method according to your needs.

RTSP Authentication

Digest and digest/basic are supported, which means authentication information is needed when RTSP request is sent to the device. If you select **digest/basic**, it means the device supports digest or basic authentication. If you select **digest**, the device only supports digest authentication.

WEB Authentication

Digest and digest/basic are supported, which means authentication information is needed when WEB request is sent to the device. If you select **digest/basic**, it means the device supports digest or basic authentication. If you select **digest**, the device only supports digest authentication.

Note

Refer to the specific content of protocol to view authentication requirements.

12.13.2 Security Audit Log

The security audit logs refer to the security operation logs. You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events. Security audit logs can be saved on device internal storage. The log will be saved every half hour after device booting. Due to limited storage space, you can also save the logs on a log server.

Search Security Audit Logs

You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events.

Steps

Note

This function is only supported by certain camera models.

---

1. Go to **Configuration** → **System** → **Maintenance** → **Security Audit Log**.
2. Select log types, **Start Time**, and **End Time**.
3. Click **Search**.
   The log files that match the search conditions will be displayed on the Log List.
4. Optional: Click **Export** to save the log files to your computer.

12.13.3 Set IP Address Filter

IP address filter is a tool for access control. You can enable the IP address filter to allow or forbid the visits from the certain IP addresses.

IP address refers to IPv4.

Steps
1. Go to **Configuration** → **System** → **Security** → **IP Address Filter**.
2. Check **Enable IP Address Filter**.
3. Select the type of IP address filter.

Forbidden	IP addresses in the list cannot access the device.
Allowed	Only IP addresses in the list can access the device.

4. Edit the IP address filter list.

Add	Add a new IP address to the list.
Modify	Modify the selected IP address in the list.
Delete	Delete the selected IP address in the list.

5. Click **Save**.

12.13.4 Set SSH

SSH is a protocol to ensure security of remote login. This setting is reserved for professional maintenance personnel only.

Steps

1. Go to **Configuration** → **System** → **Security** → **Security Service**.
2. Check **Enable SSH**.
3. Click **Save**.

12.13.5 Set HTTPS

HTTPS is a network protocol that enables encrypted transmission and identity authentication, which improves the security of remote access.

Steps

1. Go to **Configuration** → **Network** → **Advanced Settings** → **HTTPS**.
2. Check **Enable**.
3. Optional: Check **HTTPS Browsing** to access the device only via HTTPS protocol.
4. Click **Delete** to recreate and install certificate.

Create and install self-signed certificate	Refer to ***Create and Install Self-signed Certificate***
Create certificate request and install certificate	Refer to ***Install Authorized Certificate***

5. Click **Save**.

Create and Install Self-signed Certificate

Steps

1. Check **Create Self-signed Certificate**.
2. Click **Create**.
3. Follow the prompt to enter **Country/Region**, **Hostname/IP**, **Validity** and other parameters.
4. Click **OK**.

Result

  The device will install the self-signed certificate by default.

Install Authorized Certificate

If the demand for external access security is high, you can create and install authorized certificate

via HTTPS protocol to ensure the data transmission security.

Steps

1. Select **Create certificate request first and continue the installation**.
2. Click **Create**.
3. Follow the prompt to input **Country/Region**, **Hostname/IP**, **Validity** and other parameters.
4. Click **Download** to download the certificate request and submit it to the trusted authority for signature.
5. Import certificate to the device.
   – Select **Signed certificate is available, start the installation directly**. Click **Browse** and **Install** to import the certificate to the device.
   – Select **Create the certificate request first and continue the installation**. Click **Browse** and **Install** to import the certificate to the device.
6. Click **Save**.

12.13.6 Set QoS

QoS (Quality of Service) can help improve the network delay and network congestion by setting the priority of data sending.

Note

QoS needs support from network device such as router and switch.

Steps

1. Go to **Configuration → Network → Advanced Configuration → QoS**.
2. Set **Video/Audio DSCP**, **Alarm DSCP** and **Management DSCP**.

   Note

   Network can identify the priority of data transmission. The bigger the DSCP value is, the higher the priority is. You need to set the same value in router while configuration.

3. Click **Save**.

12.13.7 Set IEEE 802.1X

You can authenticate user permission of the connected device by setting IEEE 802.1X.
Go to **Configuration → Network → Advanced Settings → 802.1X**, and enable the function. Select protocol and version according to router information. User name and password of server are required.

12.14 User and Account

12.14.1 Set User Account and Permission

The administrator can add, modify, or delete other accounts, and grant different permission to different user levels.

Caution

To increase security of using the device on the network, please change the password of your account regularly. Changing the password every 3 months is recommended. If the device is used in high-risk environment, it is recommended that the password should be changed every month or week.

Steps

1. Go to **Configuration → System → User Management → User Management**.
2. Click **Add**. Enter **User Name**, select **Level**, and enter **Password**. Assign remote permission to users based on needs.

   Administrator

   The administrator has the authority to all operations and can add users and operators and assign permission.

   User

   Users can be assigned permission of viewing live video, setting PTZ parameters, and changing their own passwords, but no permission for other operations.

   Operator

   Operators can be assigned all permission except for operations on the administrator and creating accounts.

Modify	Select a user and click **Modify** to change the password and permission.
Delete	Select a user and click **Delete**.

   Note

   The administrator can add up to 31 user accounts.

3. Click **OK**.

13 Appendix

13.1 Common Material Emissivity Reference

Material	Emissivity
Human Skin	0.98
Printed Curcuit Board	0.91
Concrete	0.95
Ceramic	0.92
Rubber	0.95
Paint	0.93
Wood	0.85
Pitch	0.96
Brick	0.95
Sand	0.90
Soil	0.92
Cloth	0.98
Hard Paperboard	0.90
White Paper	0.90
Water	0.96