



Thermographic Cube Camera

User Manual

Legal Information

User Manual

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The symbols that may be found in this document are defined as follows.

Symbol	Description
 Danger	Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.
 Caution	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 Note	Provides additional information to emphasize or supplement important points of the main text.

Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss.

Laws and Regulations

- The device should be used in compliance with local laws, electrical safety regulations, and fire prevention regulations.

Transportation

- Keep the device in original or similar packaging while transporting it.

Power Supply

- Please purchase the charger by yourself. Input voltage should meet the Limited Power Source (12 VDC) according to the IEC61010-1 standard. Please refer to technical specifications for detailed information.
- Make sure the plug is properly connected to the power socket.
- DO NOT connect multiple devices to one power adapter, to avoid over-heating or fire hazards caused by overload.

Battery

- Improper use or replacement of the battery may result in explosion hazard.
- The built-in battery cannot be dismantled. Please contact the manufacture for repair if necessary.
- For long-term storage of the battery, make sure it is fully charged every half year to ensure the battery quality. Otherwise, damage may occur.

Maintenance

- If the product does not work properly, please contact your dealer or the nearest service center. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- A few device components (e.g., electrolytic capacitor) require regular replacement. The average lifespan varies, so periodic checking is recommended. Contact your dealer for details.
- Wipe the device gently with a clean cloth and a small quantity of ethanol, if necessary.

Using Environment

- Make sure the running environment meets the requirement of the device. The operating temperature shall be -20°C to 50°C (-4°F to 122°F), and the operating humidity shall be 95% or less.
- Do not expose the device to high electromagnetic radiation or dusty environments.
- Do not aim the lens at the sun or any other bright light.

Emergency

- If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.

Contents

Chapter 1 Overview	1
1.1 Brief Description	1
1.2 Function	1
Chapter 2 Device Activation and Accessing	2
2.1 Activate the Device via SADP	2
2.2 Activate the Device via Browser	2
2.3 Login	3
2.3.1 Install Plug-in	3
2.3.2 Illegal Login Lock	3
Chapter 3 Temperature Measurement	5
3.1 Notice	5
3.2 Thermometry Configuration Flow Chart	5
3.3 Automatic Thermometry	6
3.3.1 Set Automatic Thermometry Parameters	7
3.3.2 Set Normal Mode	8
3.3.3 Set Expert Mode	9
3.3.4 Set Thermometry Rule	9
3.3.5 Point Thermometry	10
3.3.6 Line Thermometry	11
3.3.7 Area Thermometry	11
3.4 Manual Thermometry	11
Chapter 4 Event and Alarm	12
4.1 Set Video Tampering Alarm	12
4.2 Set Video Loss	13
4.3 Set Alarm Input	13
4.4 Set Exception Alarm	13

Chapter 5 Arming Schedule and Alarm Linkage	15
5.1 Set Arming Schedule	15
5.2 Linkage Method Settings	15
5.2.1 Trigger Alarm Output	15
5.2.2 FTP/NAS/Memory Card Uploading	16
5.2.3 Send Email	17
5.2.4 Notify Surveillance Center	18
5.2.5 Trigger Recording	18
5.2.6 Set Audible Alarm Output	18
Chapter 6 Live View	19
6.1 Live View Parameters	19
6.1.1 Window Division	19
6.1.2 Live View Stream Type	19
6.1.3 Enable and Disable Live View	19
6.1.4 Start Digital Zoom	19
6.1.5 View Previous/Next Page	20
6.1.6 Full Screen	20
6.1.7 Light	20
6.1.8 Wiper	20
6.1.9 Lens Initialization	20
6.1.10 Auxiliary Focus	20
6.2 Set Transmission Parameters	20
Chapter 7 Video and Audio	22
7.1 Video Settings	22
7.1.1 Stream Type	22
7.1.2 Video Type	22
7.1.3 Resolution	23
7.1.4 Bitrate Type and Max. Bitrate	23

7.1.5 Video Quality	23
7.1.6 Frame Rate	23
7.1.7 Video Encoding	23
7.1.8 Smoothing	25
7.1.9 Display VCA Info	25
7.1.10 Set ROI	26
7.2 Display Settings	26
7.2.1 Image Adjustment	26
7.2.2 Image Adjustment (Thermal Channel)	27
7.2.3 Exposure Settings	27
7.2.4 White Balance	27
7.2.5 DNR	27
7.2.6 Set Palette	28
7.2.7 Set Target Color	28
7.2.8 Mirror	30
7.2.9 Video Standard	30
7.2.10 Digital Zoom	30
7.2.11 Local Video Output	30
7.3 OSD	30
7.4 Set Picture in Picture	31
7.5 Set Privacy Mask	31
7.6 Overlay Picture	32
7.7 Set Manual DPC (Defective Pixel Correction)	32
Chapter 8 Video Recording and Picture Capture	33
8.1 Storage Settings	33
8.1.1 Set Memory Card	33
8.1.2 Set NAS	33
8.1.3 Set FTP	34

8.2 Video Recording	34
8.2.1 Record Automatically	34
8.2.2 Record Manually	36
8.2.3 Playback and Download Video	36
8.3 Capture Configuration	36
8.3.1 Capture Automatically	37
8.3.2 Capture Manually	37
8.3.3 View and Download Picture	37
Chapter 9 Network Settings	39
9.1 TCP/IP	39
9.1.1 Multicast Discovery	40
9.2 Port	40
9.3 Port Mapping	41
9.3.1 Set Auto Port Mapping	41
9.3.2 Set Manual Port Mapping	41
9.3.3 Set Port Mapping on Router	42
9.4 SNMP	42
9.5 Access to Device via Domain Name	43
9.6 Access to Device via PPPoE Dial Up Connection	44
9.7 Set ONVIF User	44
Chapter 10 System and Security	46
10.1 View Device Information	46
10.2 Search and Manage Log	46
10.3 Import and Export Configuration File	46
10.4 Export Diagnose Information	47
10.5 Reboot	47
10.6 Restore and Default	47
10.7 Upgrade	47

Thermographic Cube Camera User Manual

10.8 View Open Source Software License	48
10.9 Time and Date	48
10.9.1 Synchronize Time Manually	48
10.9.2 Set NTP Server	48
10.9.3 Set DST	49
10.10 Set RS-232	49
10.11 Set RS-485	49
10.12 Security	50
10.12.1 Authentication	50
10.12.2 Set IP Address Filter	50
10.12.3 Set HTTPS	50
10.12.4 Set QoS	51
10.12.5 Set IEEE 802.1X	52
10.13 User and Account	52
10.13.1 Set User Account and Permission	52
Chapter 11 Appendix	54
11.1 Common Material Emissivity Reference	54
11.2 Device Command	54
11.3 Device Communication Matrix	55

Chapter 1 Overview

1.1 Brief Description

The Thermographic Cube Camera is a temperature measurement device which combines the optical lens and thermal lens together.

It is equipped with high-sensitivity IR detector and high-performance sensor. The device is able to measure object's temperature at a high accuracy in real time. It is applied to electric system, and industrial automation, etc, for fire prevention. 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.

Temperature Measurement

Device detects the real-time temperature all the day, and display it on liveview.

Fusion

Device can display fusion of thermal view and optical view.

Audiable Alarm

Device outputs audible alarm when the temperature is higher than the setting alarm threshold value.

Image Adjustment

Device can correct the nonuniformity of the image and improve the image quality.

Chapter 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.



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

2.1 Activate the Device via SADP

Search and activate the online devices via SADP software.

Before You Start

Access www.hikvision.com to get SADP software to install.

Steps

1. Connect the device to network using the network cable.
2. Run SADP software 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 Install Plug-in

You can access the device by installing plug-in.

Steps

1. Input IP address of the device in web browser and the login window will pop up.
2. Install the plug-in according to the prompt.
3. Open the web browser again and input IP address of the device.
4. Input user name and password, and click **Login**.

Help Get online help document of the device.

Logout You can exit safely.

2.3.2 Illegal Login Lock

It helps to improve the security when accessing the device via Internet.

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

Go to **Configuration** → **System** → **Security** → **Security Service** , and enable **Enable Illegal Login Lock**, and set the illegal login attempts.

Chapter 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 thermometry or area thermometry for a certain area temperature measurement. The point thermometry is not recommended in case of deviation occurred during device movement to affect the accuracy of temperature measurement.

3.2 Thermometry Configuration Flow Chart

This part introduces the process of configuring temperature measurement.

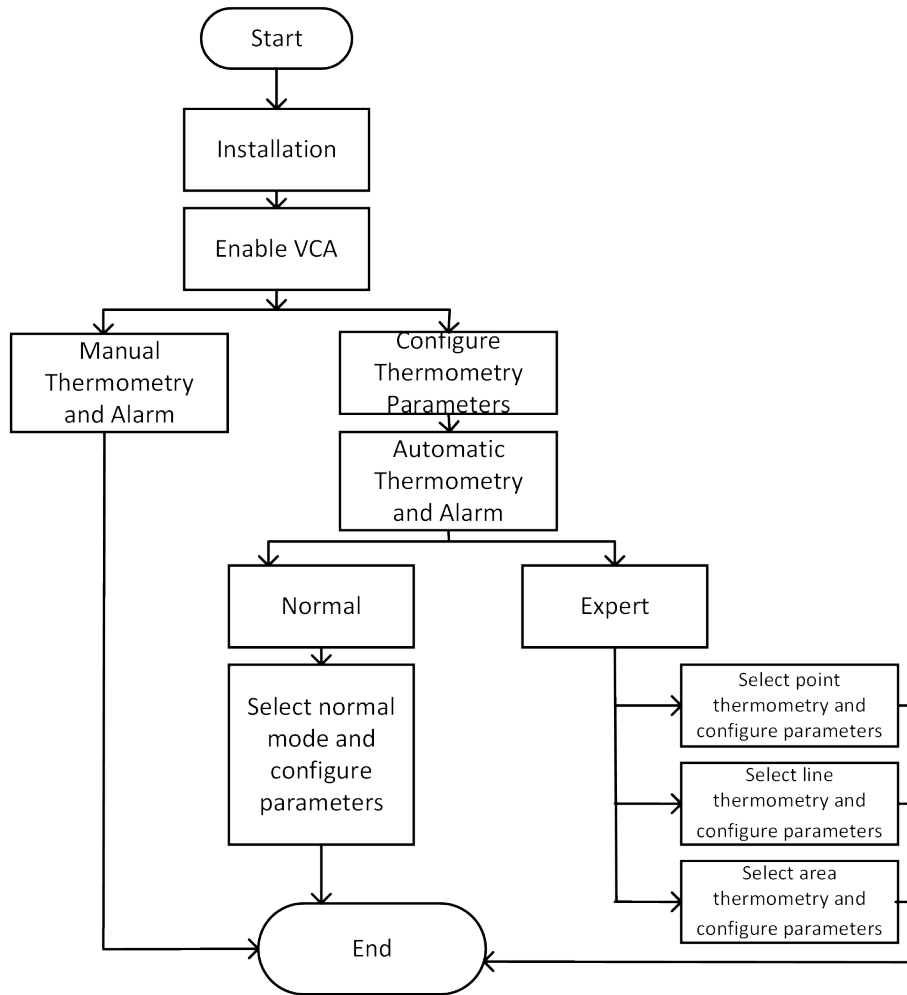


Figure 3-1 Thermometry Configuration Flow Chart

 **Note**

Please refer to the *Quick Start Guide* for detail information of Installation part in the flow chart.

3.3 Automatic Thermometry

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 Automatic Thermometry Parameters

Configure the parameters of automatic temperature measurement.

Steps

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

Display Temperature Info.

Select **Yes** to display temperature information on liveview and playback interface.

Display Temperature Info. on Capture

Select **Yes** to display temperature information on the capture.

Enable **Rules** to display the rules information on the liveview.

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 the thermal channel detected temperature information on the optical channel accordingly.

Display Max./Min./Average Temperature

Check to display maximum/minimum/average temperature information in thermal channel 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.

Unit

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

Temperature Range

Select the temperature measurement range.

Optical Transmissivity

Set the optical transmissivity of external optical material (e.g.: germanium window) to improve the temperature measuring accuracy.

Calibration Coefficient

Check to enable it and set the value of calibration coefficient to get the temperature of the external window or optical material automatically. The setting range is 0 to 30.



You can get the setting value from SDK software.

External Optics/Window Correction

Set the temperature of the external window or optical material (e.g.: germanium window) to correct the measured temperature.

Verison

View the version of current algorithm.

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 Automatic Thermometry 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.

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 Automatic Thermometry 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 Thermometry 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 thermometry rules will be displayed on the liveview.

Note

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

3.3.4 Set Thermometry 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 Thermometry** for detailed configuration.

Line Please refer to **Line Thermometry** for detailed configuration.

Area Please refer to **Area Thermometry** 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.

5. Click Save.

Click **Liveview**, and select thermal channel to view the temperature and rules information on live view.

3.3.5 Point Thermometry

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 Thermometry

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 Thermometry

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

Steps


1. Click and drag the mouse in the liveview 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.

3.4 Manual Thermometry

After enable the manual thermometry 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.

Chapter 4 Event and Alarm

This part introduces the configuration of events. The device takes certain response to triggered alarm.

4.1 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.

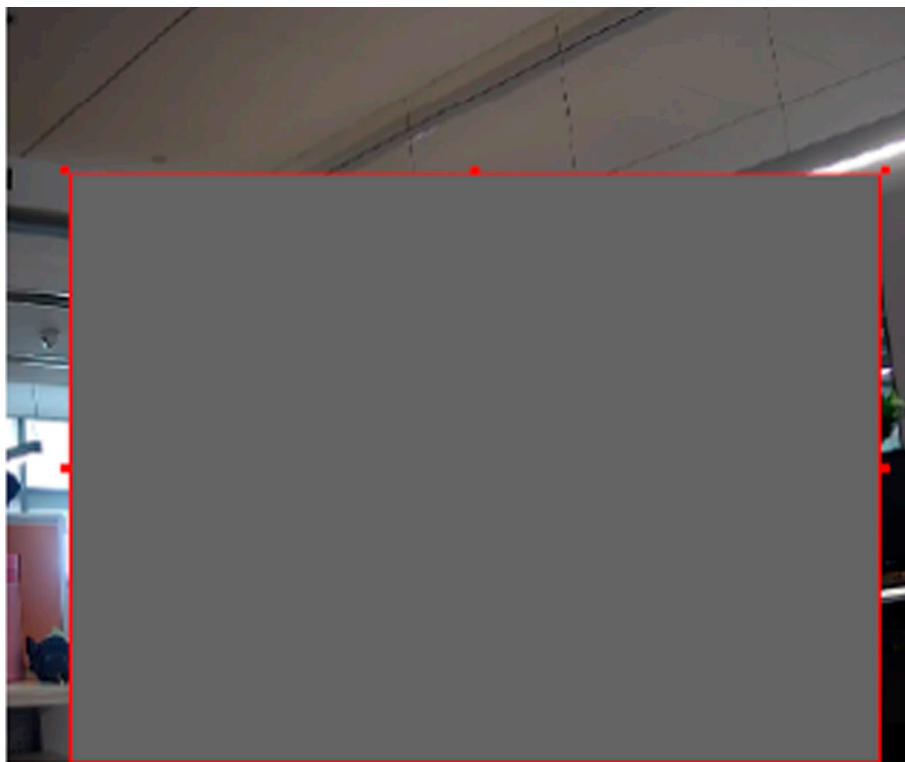


Figure 4-1 Set Video Tampering Area

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

4.2 Set Video Loss

This function can detect the video signal loss in time and trigger the linkage action.

Steps

1. Go to **Configuration → Event → Basic Event → Video Loss** .
2. Select the channel number.
3. Check **Enable**.
4. Refer to **Set Arming Schedule** for setting scheduled time. Refer to **Linkage Method Settings** for setting linkage method.
5. Click **Save**.

4.3 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 Handling**.
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**.

4.4 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**.

Chapter 5 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.

5.1 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**.

5.2 Linkage Method Settings

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

5.2.1 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**.

5.2.2 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.

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

5.2.4 Notify Surveillance Center

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

5.2.5 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***

5.2.6 Set Audible Alarm Output

For device that supports audible warning as a linkage method, options are open to configure audible alarm parameters.

Steps



Note

The function is only supported by certain camera models.

1. Go to the setting page: **Configuration** → **Event** → **Basic Event** → **Audible Alarm Output** .
2. Select desired alarm sound type and alarm times.
3. Set arming schedule for audible alarm. Refer to ***Set Arming Schedule***
4. Click **Save**.

Chapter 6 Live View





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

6.1 Live View Parameters



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

6.1.1 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.

6.1.2 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**.

6.1.3 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.

6.1.4 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.


6.1.5 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.

6.1.6 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.

6.1.7 Light

Click  to turn on or turn off the illuminator.

6.1.8 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.

6.1.9 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.

6.1.10 Auxiliary Focus

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

6.2 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 real-time. In poor network environment, the device cannot ensure 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**.

Chapter 7 Video and Audio

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

7.1 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** .



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

7.1.1 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 means 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.

Other Streams

Streams other than the main stream and sub stream may also be offered for customized usage.

7.1.2 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.

7.1.3 Resolution

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

7.1.4 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.

7.1.5 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.

7.1.6 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.

7.1.7 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.264+

H.264+ is an improved compression coding technology based on H.264. By enabling H.264+, you can estimate the HDD consumption by its maximum average bitrate. Compared to H.264, H.264+ reduces storage by up to 50% with the same maximum bitrate in most scenes.

When H.264+ is enabled, **Max. Average Bitrate** is configurable. The device gives a recommended max. average bitrate by default. You can adjust the parameter to a higher value if the video quality is less satisfactory. Max. average bitrate should not be higher than max. bitrate.

Note

When H.264+ is enabled, **Video Quality, I Frame Interval, Profile** and **SVC** are not configurable.

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.

H.265+

H.265+ is an improved compression coding technology based on H.265. By enabling H.265+, you can estimate the HDD consumption by its maximum average bitrate. Compared to H.265, H.265+ reduces storage by up to 50% with the same maximum bitrate in most scenes.

When H.265+ is enabled, **Max. Average Bitrate** is configurable. The device gives a recommended max. average bitrate by default. You can adjust the parameter to a higher value if the video quality is less satisfactory. Max. average bitrate should not be higher than max. bitrate.

Note

When H.265+ is enabled, **Video Quality, I Frame Interval, Profile** and **SVC** are not configurable.

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 to decode high quality video stream.

7.1.8 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.

7.1.9 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.

7.1.10 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.

7.2 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.

Click **Default** to restore settings.

7.2.1 Image Adjustment

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

7.2.2 Image Adjustment (Thermal Channel)

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

Background Correction

Fully cover the lens with an object of uniform temperature in front of the lens, such as foam board or paperboard. When you click **Correct**, the device will take the uniform object as the standard and optimize the image once.

Manual Correction

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



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

7.2.3 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**.

7.2.4 White Balance

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

7.2.5 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.

7.2.6 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.

7.2.7 Set Target Color

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

Before You Start

You need to set the palette as white hot mode.

Steps

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

^ Image Enhancement

Digital Noise Reduction

Noise Reduction Level

Palettes

Above (be colored)

Max °C

Color

Between (be colored)

Min °C

Max °C

Color

Below (be colored)

Max °C

Color

Note: Click button to save the settings.

DDE

DDE Level

Brightness Sudden Chan...

Target Enhancement

Figure 7-1 Set the Temperature and Color of Target

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**.

7.2.8 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.



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

7.2.9 Video Standard

Select video signal standard according to the video system in your country.

7.2.10 Digital Zoom

You can zoom in the image

The larger the zoom size is, the more blurred the image is.

7.2.11 Local Video Output

If the device is equipped with video output interfaces, such as BNC, CVBS, HDMI, and SDI, you can preview the live image directly by connecting the device to a monitor screen.

Select the output mode as ON/OFF to control the output.

7.3 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.

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**.

7.4 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.
 - Normal Mode** Disable picture in picture mode.
 - Overlay Mode** Enable picture in picture mode. You can overlay the image of another channel in the current channel.
3. Adjust **Image Fusion Ratio**. It refers to the image fusion effect of thermal channel and optical channel.
4. Adjust **Border Fusion Ratio**. The higher the value is, the borders of objects are clearer.
5. Set the fusion distance of the target.
6. Click **Save**.

7.5 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**.



Up to 4 areas are supported for setting.

7.6 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**.

7.7 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  to correct defective pixel.

Click  Save the position of defective pixel.

Click  Cancel defective pixel correction.

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.

Chapter 8 Video Recording and Picture Capture

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

8.1 Storage Settings

This part introduces the configuration of several common storage paths.

8.1.1 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**.

8.1.2 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.** Select **Mounting Type** and set parameters for the disk.

Server Address

The IP address of the network disk.

File Path

The saving path of network disk files.

User Name and Password

The user name and password of the net HDD.

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

8.1.3 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.

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.

Directory Structure

The saving path of snapshots in the FTP server.

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

8.2 Video Recording

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

8.2.1 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

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.



Note

When you select the stream type with higher bitrate, the actual time of the pre-record and post-record may be less than the set value.

7. Click **Save**.

8.2.2 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.




8.2.3 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.

Note

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

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.

8.3 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.

8.3.1 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**.

8.3.2 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.

8.3.3 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.

Chapter 9 Network Settings

9.1 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 SADP to get the device IP address.



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.



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.

9.1.1 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.

9.2 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 that access the device through the browser. You should enter the port No. after the IP address. For example, when the **HTTP port** is modified to 81, you need to enter ***http://192.168.1.64:81*** in the browser for browser login.

HTTPS Port

It refers to the port of browser certificate access. Certificate verification is required when accessing the device through the browser, and the security level is high.

RTSP Port

It refers to the port of real time streaming protocol.

Server Port

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

9.3 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**.

9.3.1 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.

9.3.2 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.

9.3.3 Set Port Mapping on Router

The following settings are for a certain router. The settings vary depending on different models of routers.

Steps

1. Select the **WAN Connection Type**.
2. Set the **IP Address**, **Subnet Mask** and other network parameters of the router.
3. Go to **Forwarding** → **Virtual Servers**, and input the **Port Number** and **IP Address**.
4. Click **Save**.

Example

When the cameras are connected to the same router, you can configure the ports of a camera as 80, 8000, and 554 with IP address 192.168.1.23, and the ports of another camera as 81, 8001, 555, 8201 with IP 192.168.1.24.

ID	Service Port	IP Address	Protocol	Enable
1	80	192.168.10.23	ALL	<input checked="" type="checkbox"/>
2	8000	192.168.10.23	ALL	<input checked="" type="checkbox"/>
3	554	192.168.10.23	ALL	<input checked="" type="checkbox"/>
4	8200	192.168.10.23	ALL	<input checked="" type="checkbox"/>
5	81	192.168.10.24	ALL	<input checked="" type="checkbox"/>
6	8001	192.168.10.24	ALL	<input checked="" type="checkbox"/>
7	555	192.168.10.24	ALL	<input checked="" type="checkbox"/>
8	8201	192.168.10.24	ALL	<input checked="" type="checkbox"/>

Common Service Port: DNS(53) Copy to ID 1

Previous Next Clear All Save

Figure 9-1 Port Mapping on Router

Note

The port of the network camera cannot conflict with other ports. For example, some web management port of the router is 80. Change the camera port if it is the same as the management port.

9.4 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**.

9.5 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.

9.6 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.

9.7 Set ONVIF User

If you need to access to the device through ONVIF protocol, you can configure the ONVIF user to enhance the network security.

Steps

1. Go to **Configuration** → **Network** → **Advanced Settings** → **Integration Protocol** .
2. Check **Enable ONVIF**.

3. Click **Add** to configure the ONVIF user.

Delete Delete the selected ONVIF user.

Modify Modify the selected ONVIF user.

4. Click **Save**.

5. **Optional:** Repeat the steps above to add more ONVIF users.

Chapter 10 System and Security

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

10.1 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.

10.2 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.

10.3 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**.

10.4 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.

10.5 Reboot

You can reboot the device via browser.

Go to **Configuration → System → Maintenance → Upgrade & Maintenance** , and click **Reboot**.

10.6 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. |



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

10.7 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**.

10.8 View Open Source Software License

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

10.9 Time and Date

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

10.9.1 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**.

10.9.2 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**.



Note

Server Address is NTP server IP address.

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

6. Click **Save**.

10.9.3 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**.

10.10 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**.

10.11 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 terminal 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**.

10.12 Security

You can improve system security by setting security parameters.

10.12.1 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.



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

10.12.2 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**.

10.12.3 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. 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 CA Certificate*

4. 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, Hostname/IP, Validity** and other parameters.
4. Click **OK**.

Result

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

Install CA 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, Hostname/IP, Validity** and other parameters.
4. Click **Download** to download the certificate request and submit it to the trusted certificate 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**.

10.12.4 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**.

10.12.5 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.

10.13 User and Account

10.13.1 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**.

Chapter 11 Appendix

11.1 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

11.2 Device Command

Scan the following QR code to get device common serial port commands.

Note that the command list contains the commonly used serial port commands for Hikvision thermal cameras.

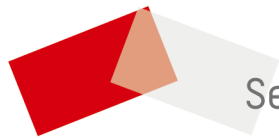


11.3 Device Communication Matrix

Scan the following QR code to get device communication matrix.

Note that the matrix contains all communication ports of Hikvision thermal cameras.





See Far, Go Further