User Manual
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About this Manual
This Manual is applicable to PanoVu Series Network Camera.
The Manual includes instructions for using and managing the product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version in the company website (http://overseas.hikvision.com/en/).
Please use this user manual under the guidance of professionals.

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Regulatory Information
FCC Information
Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.
FCC compliance: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Conditions
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

EU Conformity Statement
This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable
harmonized European standards listed under the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

Industry Canada ICES-003 Compliance
This device meets the CAN ICES-3 (A)/NMB-3(A) standards requirements.

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

The precaution measure is divided into ‘Warnings’ and ‘Cautions’:

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

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

<table>
<thead>
<tr>
<th>Warnings</th>
<th>Cautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow these safeguards</td>
<td>Follow these precautions to</td>
</tr>
<tr>
<td>to prevent serious injury</td>
<td>prevent potential injury or</td>
</tr>
<tr>
<td>or death</td>
<td>material damage.</td>
</tr>
</tbody>
</table>

Warnings:
- Please adopt the power adapter which can meet the safety extra low voltage (SELV) standard. The power consumption cannot be less than the required value.
- Do not connect several devices to one power adapter as an adapter overload may cause over-heating and can be a fire hazard.
- When the product is installed on a wall or ceiling, the device should be firmly fixed.
- To reduce the risk of fire or electrical shock, do not expose the indoor used product to rain or moisture.
- This installation should be made by a qualified service person and should conform to all the local codes.
- Please install blackouts equipment into the power supply circuit for convenient supply interruption.
- If the product does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the product yourself. (We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.)
- Please do not look directly into the laser light within 6 meters because laser is hazardous to humans.

Cautions:
- Make sure the power supply voltage is correct before using the product.
- Do not drop the product or subject it to physical shock. Do not install the product on vibratory surface or places.
- Do not expose it to high electromagnetic radiating environment.
- Do not aim the lens at the strong light such as sun or incandescent lamp. The strong light can cause fatal damage to the product.
- The sensor may be burned out by a laser beam, so when any laser equipment is being used, make sure that the surface of the sensor not be exposed to the laser beam.
- For working temperature, please refer to the specification manual for details.
- To avoid heat accumulation, good ventilation is required for a proper operating environment.
- While shipping, the product should be packed in its original packing.
• Please use the provided glove when open up the product cover. Do not touch the product cover with fingers directly, because the acidic sweat of the fingers may erode the surface coating of the product cover.

• Please use a soft and dry cloth when clean inside and outside surfaces of the product cover. Do not use alkaline detergents.

• Improper use or replacement of the battery may result in hazard of explosion. Please use the manufacturer recommended battery type.
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About This Document
This document introduces PanoVu series network camera, including 360° panoramic + PTZ camera, 180° panoramic + PTZ camera, and 360° panoramic camera. It covers how to activate and access to the camera, and operate the camera in the network environment.

Overview of Contents
This document contains the following chapters, sections and appendixes:

**Chapter1 Activating and Accessing to the Camera** provides procedures for setting network environment, activating and accessing the camera by web browsers and client software, and introduces the power-up action.

**Chapter2 Setting Local Parameters and Network** suggests the basic settings, including viewing device local information, configuring saving paths of files, network settings, and other settings.

**Chapter3 Live View** describes how to view video and configure the available settings for the camera via web browser.

**Chapter4 PTZ Control** describes the PTZ function of camera, including preset, patrol, and pattern. It also suggests the PTZ configurations, such as PTZ limits, initial position, and park actions, etc.

**Chapter5 Storage and Playback** introduces how to set the storage, set the recording schedule and capture schedule to trigger the recording and capture by events, and how to view the pictures and play back the saved video files.

**Chapter6 Alarm and Events** explains how to configure the camera to respond to alarm events, and make the events to trigger alarm actions.

**Chapter7 Maintenance** describes how to set the system settings, security settings and user management, including time settings, RS-485 settings, and DST settings, etc.

**Appendix** describes the SADP software, surge protection and details, attention of waterproof measurements and bubble maintenance, RS-485 bus connection details, wire gauge standards and transmission distance, and alarm in/out connections, etc.

Notice
The Camera 1 is the PTZ channel, and the Camera 2 and Camera 3 are the panoramic view channels. All PTZ functions, including privacy mask, and ROI function are only supported by Camera 1.
Chapter 1 Activating and Accessing to the Camera

1.1 System Requirement

System requirements of web browser accessing are as follows:
**Operating System:** Microsoft Windows XP SP1 and above version/Vista/Win7/Server 2003/Server 2008 32bits
**CPU:** Intel Pentium IV 3.0 GHz or higher
**RAM:** 1G or higher
**Display:** 1024 × 768 resolution or higher
**Web Browser:** Internet Explorer 8.0 and above version, Apple Safari 5.02 and above version, Mozilla Firefox 5 and above version and Google Chrome 18 and above versions.

1.2 Activating the Camera

1.2.1 Setting the Camera over the LAN

**Purpose:**
To view and configure the camera via the LAN, you need to connect the camera in the same subnet with your computer, and install the SADP or client software to search and change the IP address of the camera.

**Note:**
For the detailed introduction of SADP, refer to Appendix 1.

The following figures show the two ways of cable connection of a camera and a computer:

**Purpose:**
- To test the camera, you can directly connect the camera to the computer with a network cable as shown in Figure 1-1.
- Refer to Figure 1-2 to set the camera over the LAN via a switch or a router.

![Figure 1-1 Connecting Directly](image-url)
1.2.2 Activating the Camera

**Purpose:**
You are required to activate the camera first before you can use the camera. Activation via web browser, activation via SADP, and activation via client software are supported. In the following sections, activation via web browser and activation via SADP will be taken as examples. You may refer to the user manual of the camera for details of activation via client software.

◆ Activation via Web Browser

**Steps:**
1. Power on the camera, and connect the camera to the network.
2. Input the IP address into the address bar of the web browser, and click **Enter** to enter the activation interface.
   
   **Note:**
   The default IP address of the camera is 192.168.1.64.

3. Create a password and input the password into the password field.
4. Confirm the password.
5. Click OK to activate the camera and enter the live view interface.

◆ Activation via SADP Software

SADP software is used for detecting the online device, activating the device, and resetting the password.

Get the SADP software from the supplied disk or the official website, and install the SADP software according to the prompts. Follow the steps to activate the camera.

Steps:
1. Run the SADP software to search the online devices.
2. Check the device status from the device list, and select an inactive device.

3. Create a password and input the password in the password field, and confirm the password.

4. Click OK to save the password.

STRONG PASSWORD RECOMMENDED—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.
You can check whether the activation is completed on the popup window. If activation failed, make sure that the password meets the requirement and then try again.

5. Change the device IP address to the same subnet with your computer by either modifying the IP address manually or checking the Enable DHCP checkbox.

![Modify Network Parameters](image)

Figure 1-5 Modify the IP Address

6. Input the password and click **Save** to activate your IP address modification.

**Activation via Client Software**

The client software is versatile video management software for multiple kinds of devices. Get the client software from the supplied disk or the official website, and install the software according to the prompts. Follow the steps to activate the camera.

**Steps:**

1. Run the client software and the control panel of the software pops up, as shown in the figure below.

![Control Panel](image)

Figure 1-6 Control Panel
2. **Click Device Management** to enter the Device Management interface, as shown in the figure below.

![Device Management Interface](image)

**Figure 1-7 Device Management Interface**

3. Check the device status from the device list, and select an inactive device.

4. **Click Activate** to pop up the Activation interface.

5. Create a password and input the password in the password field, and confirm the password.

![Activation Interface](image)

**Figure 1-8 Activation Interface**

**STRONG PASSWORD RECOMMENDED—** 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.

6. **Click OK** to start activation.

7. **Click Modify Netinfo** to pop up the Network Parameter Modification interface, as shown in the figure below.
8. Change the device IP address to the same subnet with your computer by either modifying the IP address manually or checking the Enable DHCP checkbox.

9. Input the password to activate your IP address modification.

### 1.3 Setting the Camera over the WAN (Optional)

**Purpose:**
This section explains how to connect the camera to the WAN with a static IP or a dynamic IP.

#### 1.3.1 Static IP Connection

**Before you start:**
Apply a static IP from an ISP (Internet Service Provider). With the static IP address, you can connect the camera via a router or connect it to the WAN directly.

- **Connecting the camera via a router**

  **Steps:**
  1. Connect the camera to the router.
  2. Assign a LAN IP address, the subnet mask and the gateway. Refer to *Section 1.2 Activating the Camera* for detailed IP address configuration of the camera.
  3. Save the static IP in the router.
  4. Set port mapping, e.g., 80, 8000 and 554 ports. The steps for port mapping vary depending on different routers. Call the router manufacturer for assistance with port mapping.

  **Note:**
  Refer to Appendix 2 for detailed information about port mapping.
  5. Visit the camera through a web browser or the client software over the internet.
Before you start:
Apply a dynamic IP from an ISP. With the dynamic IP address, you can connect the camera to a modem or a router.

Connecting the camera via a router

Steps:
1. Connect the camera to the router.
2. In the camera, assign a LAN IP address, the subnet mask and the gateway. Refer to Section 1.2 Activating the Camera for detailed LAN configuration.
3. In the router, set the PPPoE user name, password and confirm the password.

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4. Set port mapping. E.g. 80, 8000 and 554 ports. The steps for port mapping vary depending on different routers. Call the router manufacturer for assistance with port mapping.

Note:
Refer to Appendix 2 for detailed information about port mapping.
5. Apply a domain name from a domain name provider.
6. Configure the DDNS settings in the setting interface of the router.
7. Visit the camera via the applied domain name.

◆ Connecting the camera via a modem

**Purpose:**
This camera supports the PPPoE auto dial-up function. The camera gets a public IP address by ADSL dial-up after the camera is connected to a modem. You need to configure the PPPoE parameters of the camera. Refer to *Section 2.2.1 Basic Settings - Configuring PPPoE Settings* for detailed configuration.

![Diagram of connecting the camera via a modem](image)

**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). Follow the steps below for normal domain name resolution and private domain name resolution to solve the problem.

◆ Normal Domain Name Resolution

![Diagram of normal domain name resolution](image)

**Steps:**
1. Apply a domain name from a domain name provider.
2. Configure the DDNS settings in the DDNS Settings interface of the camera. Refer to *Section 2.2.1 Basic Settings - Configuring DDNS Settings* for detailed configuration.
3. Visit the camera via the applied domain name.

### 1.4 Accessing to the Camera

#### 1.4.1 Accessing by Web Browsers

**Steps:**
1. Open the web browser.
2. In the address field, input the IP address of the camera, e.g., 192.168.1.64 and click Enter to enter the login interface.

3. If you activate the camera for the first time using, refer to the Section 1.2 Activating the Camera.

4. Select English as the interface language on the top-right of login interface.

5. Input the user name and password and click Login.

The admin user should configure the device accounts and user/operator permissions properly. Delete the unnecessary accounts and user/operator permissions.

**Note:**
The device IP address gets locked if the admin user performs 7 failed password attempts (5 attempts for the user/operator).

---

**1.4.2 Accessing by Client Software**

The product CD contains the client software. You can view the live video and manage the camera with the client software.

Follow the installation prompts to install the client software and. The configuration interface and live view interface of client software are shown below.
Notes:
- If you use third party VMS software, contact technical support of our branch for camera firmware.
- For detailed information about client software of our company, refer to the user manual of the software. This manual mainly introduces accessing to the camera by web browser.

1.5 Power-up Action

After the power is applied, the camera will perform self-test actions. It begins with lens actions and then pan and tilt movement. After the power-up self-test actions, the information shown in Figure 1-17 will be displayed on screen for 40 seconds.

The system information displayed on the screen includes the camera model, address, protocol, version and other information. The COMMUNICATION refers to the baud rate, parity, data bit and stop bit of the camera. e.g., “2400, N, 8, 1” indicates the camera is configured with the baud rate of 2400, no parity, 8 data bits and 1 stop bit.

<table>
<thead>
<tr>
<th>Model</th>
<th>XX-XXXXXX-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>0</td>
</tr>
<tr>
<td>Communication</td>
<td>0000,0,0,0</td>
</tr>
<tr>
<td>Software Version</td>
<td>Vx.x.x</td>
</tr>
<tr>
<td>Camera Version</td>
<td>Vx.xx</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
</tr>
</tbody>
</table>

Figure 1-17 Power-up Information
Chapter 2 Setting Local Parameters and Network

2.1 Configuring Local Parameters

Note:
The local configuration refers to the parameters of the live view and other operations using the web browser.

Steps:
1. Enter the Local configuration interface:
   Configuration > Local

   ![Local Configuration Interface](image)

   Figure 2-1 Local Configuration Interface

2. Configure the following settings:
   ♦ **Live View Parameters**: Set the protocol type, play performance, rules, and image format.
     - **Protocol**: TCP, UDP, MULTICAST and HTTP are selectable.
       - **TCP**: Ensures complete delivery of streaming data and better video quality, yet the real-time transmission will be affected.
       - **UDP**: Provides real-time audio and video streams.
       - **MULTICAST**: It’s recommended to select the protocol type to Multicast when using the Multicast function. For other information about Multicast, refer to Section 2.2.1 Basic Settings - Configuring TCP/IP Settings.
       - **HTTP**: Allows the same quality as of TCP without setting specific ports for streaming under some network environments.
     - **Play Performance**: Set the live view performance to Shortest Delay or Auto.
     - **Rules**: You can enable or disable the rules of dynamic analysis for events here.
     - **Image Format**: The captured pictures can be saved in different format. JPEG and BMP are available.
   ♦ **Record File Settings**: Set the saving path of the video files.
     - **Record File Size**: Select the packed size of manually recorded and downloaded video files. The size can be set to 256M, 512M or 1G.
- **Save record files to:** Set the saving path for the manually recorded video files.

- **Save downloaded files to:** Set the saving path for the downloaded video files in interface.

- **Picture and Clip Settings:** Set the saving paths of the captured pictures and clipped video files.

- **Save snapshots in live view to:** Set the saving path of the manually captured pictures in interface.

- **Save snapshots when playback to:** Set the saving path of the captured pictures in playback interface.

- **Save clips to:** Set the saving path of the clipped video files in playback interface.

*Note:*
You can click to change the directory for saving video files, clips and pictures.

3. Click to save the settings.

### 2.2 Configuring Network Settings

#### 2.2.1 Basic Settings

**Configuring TCP/IP Settings**

*Purpose:*
TCP/IP settings must be properly configured before you operate the camera over network. IPv4 and IPv6 are both supported.

*Steps:*
1. Enter TCP/IP settings interface:
   
   Configuration > Network > Basic Settings > TCP/IP
2. Configure the basic network settings, including the NIC Type, IPv4 or IPv6 Address, IPv4 or IPv6 Subnet Mask, IPv4 or IPv6 Default Gateway, MTU settings and Multicast Address.

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

4. Configure the DNS server. Input the preferred DNS server, and alternate DNS server.

5. Click to save the above settings.

**Notes:**
- The valid value range of MTU is 1280 ~ 1500.
- The Multicast sends a stream to the multicast group address and allows multiple clients to acquire the stream at the same time by requesting a copy from the multicast group address. Before utilizing this function, you have to enable the Multicast function of your router.
- Reboot the device before the settings take effect.

**Configuring DDNS Settings**

**Purpose:**
If your camera is set to use PPPoE as its default network connection, you can use the Dynamic DNS (DDNS) for network access.

**Before you start:**
Registration on the DDNS server is required before configuring the DDNS settings of the camera.

- For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be
something 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.

- Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

**Steps:**
1. Enter the DDNS settings interface:
   
   Configuration > Network > Basic Settings > DDNS

![DDNS Settings](image)

2. Check the **Enable DDNS** checkbox to enable this feature.
3. Select **DDNS Type**. Two DDNS types are selectable: DynDNS and NO-IP.
   
   - **DynDNS:**
     
     **Steps:**
     (1) Input **Server Address** of DynDNS (e.g. members.dyndns.org).
     (2) In the **Domain** text field, input the domain name obtained from the DynDNS website.
     (3) Input the **Port** of DynDNS server.
     (4) Input the **User Name** and **Password** registered on the DynDNS website.
     (5) Click **Save** to save the settings.

![DynDNS Settings](image)

   - **NO-IP:**
     
     **Steps:**
     (1) Input **Server Address** of NO-IP.
     (2) In the **Domain** text field, input the domain name obtained from the NO-IP website.
     (3) Input the **Port** of NO-IP server.
     (4) Input the **User Name** and **Password** registered on the NO-IP website.
     (5) Click **Save** to save the settings.
Configuring PPPoE Settings

**Purpose:**
If you have no router but only a modem, you can use Point-to-Point Protocol over Ethernet (PPPoE) function.

**Steps:**
1. Enter the PPPoE settings interface:
   
   *Configuration > Network > Basic Settings > PPPoE*

   ![Figure 2-5 PPPoE Settings](image)

2. Check the **Enable PPPoE** checkbox to enable this feature.
3. Input **User Name**, **Password**, and **Confirm** password for PPPoE access.

   **Note:**
   The User Name and Password should be assigned by your ISP.

   - For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.

   - Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4. Click **Save** to save and exit the interface.

Configuring Port Settings

**Purpose:**
If there is a router and you want to access the camera through Wide Area Network (WAN), you need to forward the 3 ports for the camera.

**Steps:**
1. Enter the Port settings interface:
   
   *Configuration > Network > Basic Settings > Port*

   ![Figure 2-6 Port Settings](image)
2. Set the HTTP port, RTSP port, HTTPS port and port of the camera.
   **HTTP Port**: The default port number is 80.
   **RTSP Port**: The default port number is 554.
   **HTTPS Port**: The default port number is 443.
   **Server Port**: The default port number is 8000.

3. Click to save the settings.

### Configuring NAT (Network Address Translation) Settings

**Purpose:**
Universal Plug and Play (UPnP™) is a networking architecture that provides compatibility among networking equipment, software and other hardware devices. The UPnP protocol allows devices to connect seamlessly and to simplify the implementation of networks in the house and corporate environments.

With the function enabled, you don’t need to configure the port mapping for each port, and the camera is connected to the Wide Area Network via the router.

**Steps:**
1. Enter the NAT settings interface by
   **Configuration > Network > Basic Settings > NAT**
2. Check the checkbox to enable the UPnP™ function.
3. Set the port mapping mode:
   - **To port mapping with the default port numbers:**
     Choose
   - **To port mapping with the customized port numbers:**
     Choose
     And you can customize the value of the port No. by yourself.

![Figure 2-7 Configure the Port No.](image)

4. Click to save the settings.

### 2.2.2 Advanced Settings

#### Configuring SNMP Settings

**Purpose:**
You can use SNMP to get camera status and parameters related information.
**Before you start:**

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

**Note:**

The SNMP version you select should be the same as that of the SNMP software.

**Steps:**

1. Enter the SNMP settings interface:
   
   **Configuration > Network > Advanced Settings > SNMP**

   ![SNMP Settings](image)

   **Figure 2-8 SNMP Settings**

2. Check the corresponding version checkbox (Enable SNMP v1, Enable SNMP v2c, Enable SNMP v3) to enable the feature.

3. Configure the SNMP settings.

   **Note:**

   The configuration of the SNMP software should be the same as the settings you configure here.

4. Click ![Save] to save and finish the settings.
Configuring FTP Settings

**Purpose:**
You can set a FTP server and configure the following parameters for uploading captured pictures.

**Steps:**
1. Enter the FTP settings interface:
   
   Configuration > Network > Advanced Settings > FTP

   ![FTP Settings](image)

   **Figure 2-9 FTP Settings**

2. Configure the FTP settings, including server address, port, user name, password, directory, and upload type.

   ![Warning](image)

   - For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.
   
   - Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

   The server address supports both the domain name and IP address formats.

   - **Setting the directory in FTP server for saving files:**
     
     In the Directory Structure field, you can select the root directory, parent directory and child directory.

     - **Root directory:** The files will be saved in the root of FTP server.
     
     - **Parent directory:** The files will be saved in a folder in FTP server. The name of folder can be defined as shown in following Figure 2-10.

     ![Parent Directory](image)

     **Figure 2-10 Parent Directory**

     - **Child directory:** It is a sub-folder which can be created in the parent directory. The files will be saved in a sub-folder in FTP server. The name of folder can be defined as shown in following Figure 2-11.
User Manual of PanoVu Series Network Camera

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Figure 2-11 Child Directory

- **Upload type:** To enable uploading the captured picture to the FTP server.

3. Click to save the settings.

**Note:**
If you want to upload the captured pictures to FTP server, you also have to enable the continuous snapshot or event-triggered snapshot in **Snapshot** interface. For detailed information, refer to the *Section 5.1.4 Configuring Capture Schedule*.

Configuring Email Settings

**Purpose:**
The system can be configured to send an Email notification to all designated receivers if an alarm event is detected, e.g., motion detection event, video loss, video tampering, etc.

**Before you start:**
Configure the DNS Server settings under **Configuration > Network > Basic Settings > TCP/IP** before using the Email function.

**Steps:**
1. Enter the Email settings interface:
   **Configuration > Network > Advanced Settings > Email**

   ![Figure 2-12 Email Settings]

2. Configure the following settings:
   - **Sender:** The name of the email sender.
   - **Sender's Address:** The email address of the sender.
   - **SMTP Server:** The SMTP Server IP address or host name (e.g., smtp.263xmail.com).
SMTP Port: The SMTP port. The default TCP/IP port for SMTP is 25.

E-mail Encryption: Email encryption can be selected among None and SSL. When SSL is selected, you can check the Enable STARTTLS checkbox to encrypt the email with STARTTLS and the SMTP port No. is 25. You can uncheck the Enable STARTTLS checkbox to encrypt the email with SSL and the SMTP should be set as 465.

**Note:**
STARTTLS protocol must be supported by the email server for email encryption with STARTTLS. When it is not supported by the email server and the Enable STARTTLS checkbox is checked, the email will not be encrypted.

Authentication (optional): If your email server requires authentication, check this checkbox to use authentication to log in to this server and input the login user name and password.

⚠️ **For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.**

ℹ️ **Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.**

Receiver: Input the receiver to which the email is sent.
Receiver’s Address: The email address of user to be notified.

**Note:**
You can click to check whether the setting is invalid after the required parameters are configured.

3. Click to save the settings.

### Configuring HTTPS Settings

**Purpose:**
HTTPS provides authentication of the web site and associated web server that one is communicating with, which protects against Man-in-the-middle attacks. Perform the following steps to set the port number of https.

**Example:**
If you set the port number as 443 and the IP address is 192.168.1.64, you may access the device by inputting https://192.168.1.64:443 via the web browser.

**Steps:**
1. Enter the HTTPS settings interface.
2. Create the self-signed certificate or authorized certificate.
OPTION 1: Create the self-signed certificate
1) Select Create Self-signed Certificate.
2) Click Create to create the following dialog box.
3) Input the country, host name/IP, validity and other information.
4) Click OK to save the settings.

OPTION 2: Start the installation when signed certificate is available.
1) Select Signed certificate is available, Start the installation directly.
2) Click Browse to upload the available certificate.
3) Click Install button to install the certificate.
4) Click OK to save the settings.

OPTION 3: Create certificate request first and continue the installation.
1) Select Create certificate request first and continue the installation.
2) Click Create to create the certificate request, and fulfill the required information.
3) Download the certificate request and submit it to the trusted certificate authority for signature.
4) After receiving the signed valid certificate, import the certificate to the device.
5) Click OK to save the settings.

There will be the certificate information after you successfully create and install the certificate.
4. Check the **Enable HTTPS** checkbox and click **Save**.

### Configuring QoS Settings

**Purpose:**
QoS (Quality of Service) can help solve the network delay and network congestion by configuring the priority of data sending.

**Steps:**
1. Enter the QoS settings interface:
   
   ![Figure 2-16 QoS Settings](image)

   **Video/Audio DSCP**
   **Event/Alarm DSCP**
   **Management DSCP**

2. Configure the QoS settings, including video/audio DSCP, event/alarm DSCP and Management DSCP. The valid DSCP value ranges from 0 to 63. The DSCP value is bigger, the priority is higher.

3. Click **Save** to save the settings.

**Notes:**
- Make sure that you enable the QoS function of your network device (such as a router).
- Reboot the device before the settings take effect.

### Configuring 802.1X Settings

**Purpose:**
The camera supports IEEE 802.1X standard.

IEEE 802.1X is a port-based network access control. It enhances the security level of the LAN. When devices connect to this network with IEEE 802.1X standard, the authentication is needed. If the authentication fails, the devices don’t connect to the network.

The protected LAN with 802.1X standard is shown as follows:

![Figure 2-17 Protected LAN](image)
Before connecting the network camera to the protected LAN, apply a digital certificate from a Certificate Authority.

- The network camera requests access to the protected LAN via the authenticator (a switch).
- The switch forwards the identity and password to the authentication server (RADIUS server).
- The switch forwards the certificate of authentication server to the network camera.
- If all the information is validated, the switch allows the network access to the protected network.

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.

**Steps:**

1. **Connect the network camera to your PC directly with a network cable.**
2. **Enter the 802.1X settings interface:**
   - **Configuration > Network > Advanced Settings > 802.1X**
   
   ![Figure 2-18 802.1X Settings](image)

   3. **Check the Enable IEEE 802.1X checkbox to enable it.**
   4. **Configure the 802.1X settings, including user name and password.**

   **Note:**
   The EAP-MD5 version must be identical with that of the router or the switch.

   5. **Click to finish the settings.**

   **Note:**
   The camera reboots when you save the settings.

6. **After the configuration, connect the camera to the protected network.**
Chapter 3 Live View

3.1 Install the Plug-in

Install the plug-in before viewing the live video and operating the camera. Follow the installation prompts to install the plug-in.

![Download and Install Plug-in](image1)

**Notes:**
- You may have to close the web browser to install the plug-in. Reopen the web browser and log in again after installing the plug-in.
- To select the plug-in type, you can click on live view interface. For detailed information, refer to *Section 3.2.2 Live View Operation*.

3.2 Live View Page

3.2.1 Descriptions of the live view page:

![Live View Page](image2)
Menu Bar:
Click each tab to enter Live View, Playback, Picture, and Configuration page respectively.
Click 📖 to display the help file of the camera.
Click ⚠️ to logout the system.

Live View Window:
Display the live video.

Toolbar:
Operations on the live view page, e.g., live view, capture, record, audio on/off, regional exposure, regional focus, etc.

PTZ Control:
Panning, tilting, focusing and zooming actions of the camera. The lighter, wiper, one-touch focus and lens initialization control.

Preset/patrol/pattern:
Set and call the preset/patrol/pattern for the camera.

Live View Parameters:
Configure the window division, image size, stream type, plug-in type, and two-way audio of the live video.

3.2.2 Live View Operation

Purpose:
The live video page allows you to view live video, capture images, realize PTZ control, set/call presets and configure video parameters.
Log in the camera to enter the live view page, or you can click Live View on the menu bar of the main page to enter the live view page.

Starting Live View

Click 📹 on the toolbar to start the live view of all channels of the network camera. Live view page of panoramic + PTZ camera and panoramic camera are different as shown below.

Figure 3-3 Start Live View (Panoramic + PTZ Camera)
### Descriptions of Icons on Toolbar and Live View Interface are listed below:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Live View Icon" /> <img src="image" alt="Start Live View Icon" /></td>
<td>Click to start all live views and the icon turns into <img src="image" alt="Stop Live View Icon" />. Click the icon again to stop all live views.</td>
</tr>
<tr>
<td><img src="image" alt="Full-screen Icon" /> <img src="image" alt="Double-click Icon" /></td>
<td>Double-click on the live video to switch the current live view into full-screen or return to normal mode from the full-screen.</td>
</tr>
<tr>
<td><img src="image" alt="Record/Capture Icon" /> <img src="image" alt="Click Icon" /></td>
<td><img src="image" alt="Click Icon" /> to manual capture the picture.</td>
</tr>
<tr>
<td><img src="image" alt="Record/Capture Icon" /> <img src="image" alt="Click Icon" /></td>
<td><img src="image" alt="Click Icon" /> to start manual recording and the icon turns into <img src="image" alt="Stop Recording Icon" />. Click the icon again to stop recording.</td>
</tr>
</tbody>
</table>

Note: Before perform manual recording and manual capture, configure the saving path of files referring to Section 2.1 Local Configuration Interface.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Window Division Icon" /> <img src="image" alt="Click Icon" /> <img src="image" alt="Click Icon" /> <img src="image" alt="Click Icon" /></td>
<td>For 360° panoramic + PTZ camera, click <img src="image" alt="Click Icon" /> to select from <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> and display live video in triple-row/double-row/1×1 window size.</td>
</tr>
<tr>
<td><img src="image" alt="Window Division Icon" /> <img src="image" alt="Click Icon" /> <img src="image" alt="Click Icon" /></td>
<td>For 180° panoramic + PTZ camera, click <img src="image" alt="Click Icon" /> to select from <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> and display live video in double-row/1×1 window size.</td>
</tr>
</tbody>
</table>

**Note:**

When you select 1×1 window size, it plays live view of camera 1 only.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Stream Type Icon" /> <img src="image" alt="Select Icon" /> <img src="image" alt="Select Icon" /> <img src="image" alt="Select Icon" /></td>
<td>For panoramic camera, click <img src="image" alt="Select Icon" /> to select from <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> and display live video in 1×1/2×2/3×3/4×4 division mode.</td>
</tr>
<tr>
<td><img src="image" alt="Stream Type Icon" /> <img src="image" alt="Select Icon" /> <img src="image" alt="Select Icon" /> <img src="image" alt="Select Icon" /></td>
<td>Click <img src="image" alt="Select Icon" /> to select from <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> <img src="image" alt="Mode Icon" /> and display live video with the main/sub/third stream. The main stream is with a relatively high resolution and needs much bandwidth. The sub-stream is with a low resolution and...</td>
</tr>
</tbody>
</table>

**Figure 3-4 Start Live View (Panoramic Camera)**
needs less bandwidth. The resolution of third stream is between that of main stream and sub stream. The default setting of stream type is 📀.

### Plug-in Switch

Click 📀 to select between 📀 and 📀 and play the live video via player Webcomponents or Quick Time. The live video is played via webcomponents by default, and other types of players are supported for the browser, such as MJPEG, and VLC. You are required to download and install the player to play the live video.

### Audio

#### Volume

Click 🎵 to display the 🎵. Drag the slider to adjust the volume.

#### Two-way Audio

Click 🎧 and it displays 🎧. Click 🎧 to enable two-way audio and the icon turns into 🎧. Click the icon again to stop two-way audio.

**Note:**

Before enabling the two-way audio or recording with audio functions, set the Stream Type to Video & Audio referring to Section 3.4.1 Configuring Video Settings.

### Digital Zoom

Click 📡 to enable digital zoom function and the icon turns into 📡. Then drag the mouse towards low right direction to draw a rectangle on the image as the desired zoom. After viewing it you can click any place of the picture to get back to normal picture.

### Regional Exposure

Click 🎤 on the toolbar to enter the regional exposure operation mode and the icon turns into 🎤. Then drag the mouse to draw a rectangle on the image as the desired exposure region.

### Regional Focus

Click 🌝 on the toolbar to enter the regional focus operation mode and the icon turns into 🌝. Then drag the mouse to draw a rectangle on the image as the desired focus region.

### PTZ Control Panel

On the live view page, click 🎯 to show the PTZ control panel or click 🎯 to hide it.

**Descriptions of Icons on PTZ Control Panel are listed below:**

#### PTZ Control

Hold the direction buttons to control the pan/tilt movements.

Click 🥇 and the camera keeps panning, the icon turns into 🥈. Click the icon again to stop the camera.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zoom</strong></td>
<td>Click 🔗, the lens zooms in, click 🔗, and the lens zooms out.</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Click 🔗, the lens focus far and the items far away gets clear. Click 🔗, the lens focus near and the items nearby gets clear.</td>
</tr>
<tr>
<td><strong>Iris</strong></td>
<td>When the image is too dark, click 🔗 to open the iris. When the image is too bright, click 🔗 to close the iris.</td>
</tr>
<tr>
<td><strong>Adjust Speed</strong></td>
<td>Adjust speed of pan/tilt movements.</td>
</tr>
</tbody>
</table>

**Preset**
Refer to 4.1.1 for detailed information of setting preset.

**Patrol**
Refer to 4.1.2 for detailed information of setting patrol.

**Pattern**
Refer to 4.1.3 for detailed information of setting pattern.

**Note:**
PTZ functions, including PTZ control, preset, patrol, and pattern are only supported by camera 1.

### Auxiliary Functions

The auxiliary functions include light, wiper, auxiliary focus, lens initialization, manual tracking, 3D positioning, one-touch patrol, and one-touch park.

The Auxiliary functions panel is shown in the figure below:

![Auxiliary Functions Panel](image)

**Figure 3-5 Auxiliary Functions**

**Descriptions of Icons on PTZ Control Panel are listed below:**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light Supplement</strong></td>
<td>Click 🔗 to enable/disable the light supplement of the camera. This function is reserved.</td>
</tr>
<tr>
<td><strong>Wiper</strong></td>
<td>Click 🔗 to move the wiper once.</td>
</tr>
<tr>
<td><strong>Auxiliary Focus</strong></td>
<td>The auxiliary focus function is reserved.</td>
</tr>
<tr>
<td><strong>Manual Tracking</strong></td>
<td>Before you start: Enter the Smart Tracking settings interface and enable smart tracking first.</td>
</tr>
<tr>
<td></td>
<td><strong>Configuration &gt; PTZ &gt; Smart Tracking</strong></td>
</tr>
<tr>
<td><strong>Steps:</strong></td>
<td>1. Click 🔗 on the toolbar of live view interface.</td>
</tr>
<tr>
<td></td>
<td>2. Click a moving object in the live video. The camera will track the object automatically.</td>
</tr>
<tr>
<td><strong>3D Positioning</strong></td>
<td>Steps: 1. Click 🔗 on the toolbar of live view interface.</td>
</tr>
<tr>
<td></td>
<td>2. Operate the 3D positioning function:</td>
</tr>
<tr>
<td></td>
<td>• Left click a position of the live video. The corresponding position will be moved to the</td>
</tr>
</tbody>
</table>
3.3 Configuring Image Settings

3.3.1 Configuring Display Settings

**Purpose:**
You can set the image quality of the camera, including brightness, contrast, saturation, sharpness, etc.

**Notes:**
- The parameters in **Display Settings** interface vary depending on different camera models.
- You can double click the live view to enter full screen mode and double click it again to exit.

**Steps:**
1. Enter the Display Settings interface:
   - **Configuration > Image > Display Settings**
2. Select channel No. of the camera.
3. You can select the **Mounting Scenario** from the dropdown list with different predefined image parameters.
4. Set the image parameters of the camera.

![Figure 3-6 Display Settings](image-url)
**Image Adjustment**

- **Brightness**
  This feature is used to adjust brightness of the image. The value ranges from 0 to 100.

- **Contrast**
  This feature enhances the difference in color and light between parts of an image. The value ranges from 0 to 100.

- **Saturation**
  This feature is used to adjust color saturation of the image. The value ranges from 0 to 100.

- **Sharpness**
  Sharpness function enhances the detail of the image by sharpening the edges in the image. The value ranges from 0 to 100.

**Exposure Settings**

- **Exposure Mode**
  The Exposure Mode can be set to Auto, Iris Priority, Shutter Priority, and Manual.
  - **Auto:**
    The iris, shutter and gain values will be adjusted automatically according to the brightness of the environment.
  - **Iris Priority:**
    The value of iris needs to be adjusted manually. The shutter and gain values will be adjusted automatically according to the brightness of the environment.

    ![Figure 3-7 Manual Iris](image)

  - **Shutter Priority:**
    The value of shutter needs to be adjusted manually. The iris and gain values will be adjusted automatically according to the brightness of the environment.

    ![Figure 3-8 Manual Shutter](image)

  - **Manual:**
    In Manual mode, you can adjust the values of Gain, Shutter, Iris manually.

*Note:*
This function varies depending on different camera models.
Limit Gain
This feature is used to adjust gain of the image. The value ranges from 0 to 100.

Slow Shutter
This function can be used in underexposure condition. It lengthens the shutter time to ensure full exposure. Select slow shutter level from the dropdown list.

<table>
<thead>
<tr>
<th>Slow Shutter</th>
<th>ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow Shutter Level</td>
<td>Slow Shutter^2</td>
</tr>
</tbody>
</table>

Figure 3-9 Slow Shutter

Focus Settings

Focus Mode
The Focus Mode can be set to Auto, Manual, Semi-auto.

- Auto:
The camera focuses automatically at any time according to objects in the scene.

- Semi-auto:
The camera focuses automatically only once after panning, tilting and zooming.

- Manual:
In Manual mode, you need to use on the control panel to focus manually.

Min. Focus Distance
This function is used to limit the minimum focus distance.

Note:
Focus settings applies only to Camera 1.

Day/Night Switch

Day/Night Switch
The Day/Night Switch mode can be set to Auto, Day, Night, and Scheduled-Switch.

- Auto:
In Auto mode, the day mode and night mode can switch automatically according to the light condition of environment. The switching sensitivity can be set to Low, Normal, High.

<table>
<thead>
<tr>
<th>Day/Night Switch</th>
<th>Auto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 3-10 Auto Mode Sensitivity

- Day:
In Day mode, the camera displays color image. It is used for normal lighting conditions.

- Night:
In Night mode, the image is black and white. Night mode can increase the sensitivity in low light conditions.

- Scheduled-Switch
In Scheduled-Switch mode, you can set the time schedule for day mode as shown in Figure 3-11. The rest time out of the schedule is for night mode.
● **Smart Supplement Light**
If the light supplement is on and the image center is overexposure, you can enable this function.

● **IR Light Mode**
IR light mode can be set to **Auto** and **Manual**.
  - **Auto**: The brightness of the infrared light will be adjusted automatically. **IR Light Sensitivity** value ranges from 0 to 100. **Trigger Mode** can be set to **Camera** or **Photosensitive**.
  - **Manual**: you need to adjust the brightness value of infrared light manually. **Brightness Limit** value ranges from 0 to 100.

**Notes**:
- The IR related functions are supported by the IR camera only.
- For detailed parameters configuration of IR light, you can enter the OSD menu by calling the special preset 95.
- When the **IR Light Mode** is auto, the day/night mode is adjusted automatically according to the IR Light Mode. Manually setting the day/night mode is invalid.
- When the **IR Light Mode** is manual and the **Brightness Limit** is 0, you can set the day/night mode manually.
- When the **IR Light Mode** is manual and the **Brightness Limit** is not 0, the night mode is set as the default mode. Manually setting the day/night mode is invalid.

**Backlight Settings**

● **BLC (Back Light Compensation)**
If there’s a bright backlight, the subject in front of the backlight appears silhouetted or dark. Enabling **BLC** (back light compensation) function can correct the exposure of the subject. But the backlight environment is washed out to white.

● **WDR (Wide Dynamic Range)**
The wide dynamic range (WDR) function helps the camera provide clear images even under back light circumstances. When there are both very bright and very dark areas simultaneously in the field of view, WDR balances the brightness level of the whole image and provide clear images with details.

You can enable or disable the WDR function as shown in Figure 3-12. The wide dynamic level ranges from 0 to 100.

**Note**:
This function varies depending on different camera models.

● **HLC**
HLC (High Light Compensation) makes the camera identify and suppress the strong light sources that usually flare across a scene. This makes it possible to see the detail of the image that would normally be hidden.

**White Balance**

The **White Balance** mode can be set to **Auto, MWB, Outdoor, Indoor, Fluorescent Lamp, Sodium Lamp** and **Auto-Tracking**.

- **Auto**
  In **Auto** mode, the camera retains color balance automatically according to the current color temperature.

- **MWB**
  In **MWB** (Manual White Balance) mode, you can adjust the color temperature manually to meet your own demand as shown in Figure 3-13.

```
<table>
<thead>
<tr>
<th>White Balance</th>
<th>MWB</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB Gain Circuit R</td>
<td>0</td>
</tr>
<tr>
<td>WB Gain Circuit B</td>
<td>0</td>
</tr>
</tbody>
</table>
```

**Figure 3-13 Manual White Balance**

- **Outdoor**
  You can select this mode when the camera is installed in outdoor environment.

- **Indoor**
  You can select this mode when the camera is installed in indoor environment.

- **Fluorescent Lamp**
  You can select this mode when there are fluorescent lamps installed near the camera.

- **Sodium Lamp**
  You can select this mode when there are sodium lamps installed near the camera.

- **Auto-Tracking**
  In **Auto-Tracking** mode, white balance is continuously being adjusted in real-time according to the color temperature of the scene illumination.

**Image Enhancement**

- **Digital Noise Reduction**
  The digital noise reduce function processes the noise in the video signal.
  You can set **Digital Noise Reduction** function to **Normal** and adjust the **Noise Reduction Level** as shown in Figure 3-14. The level ranges from 0 to 100.

```
<table>
<thead>
<tr>
<th>Digital Noise Reduction</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Reduction Level</td>
<td>50</td>
</tr>
</tbody>
</table>
```

**Figure 3-14 Normal Mode**

If you are a professional technician, you can set it to **Expert Mode** then adjust Space DNR Level and Time DNR Level.
Defog Mode
When there is fog in the image, you can enable this function to get clear image.

EIS (Electronic Image Stabilization)
The live view image would be tremble and dim when the camera is shocked slightly in some monitoring conditions. And the electronic image stabilization (EIS) function is used to overcome this problem to ensure a steady and clear image.

Video Adjustment

Mirror
If you turn the MIRROR function on, the image will be flipped. It is like the image in the mirror. The flip direction can be set to OFF, or CENTER.

Video Standard
You can set the Video Standard to 50 Hz (PAL) or 60 Hz (NTSC) according to the video system in your country.

Capture Mode:
The Capture Mode can be selected from the list.

Other

Lens Initialization
The lens operates the movements for initialization when you check the Lens Initialization checkbox.

Zoom Limit
You can set Zoom Limit value to limit the maximum value of zooming. The value can be selected from the list.

Note:
Lens Initialization and Zoom Limit functions are supported by Camera 1 only.

Exposure Synchronization
Select ON from the dropdown list to enable exposure synchronization function for Camera 2 or Camera 3.

3.3.2 Configuring OSD Settings

Purpose:
The camera supports following on screen displays:

Zoom: Identifies the amount of magnification.

Direction: Displays panning and tilting direction, with the format of PXXX TXXX. The XXX following P indicates the degrees in pan direction, while the XXX following T indicates the degrees in tilt position.

Time: Supports for time display.
**Preset Title:** Identifies preset being called.

**Camera Name:** Identifies the name of camera.

You can customize the on screen display of time.

**Steps:**

1. Enter the OSD settings interface:
   - **Configuration > Image > OSD Settings**

   ![Figure 3-16 OSD Settings](image)

   - Check the corresponding checkbox to select the display of camera name, date or week if required.

2. Edit the camera name in the text field of **Camera Name**.

3. Select from the dropdown list to set the time format, date format and display mode.

4. You can use the mouse to drag the text frame **[Pdome]** in the live view window to adjust the OSD position.

   ![Figure 3-17 Adjust OSD Location](image)

5. The font color can also be customized, select the Custom in the drop down list and select the font color on your demand.
7. Click to activate above settings.

3.3.3 Configuring Text Overlay Settings

**Purpose:**
You can customize the text overlay.

**Steps:**
1. Enter the Text Overlay settings interface:
   Configuration > Image > OSD Settings
2. Check the checkbox in front of textbox to enable the on-screen display.
3. Input the characters in the textbox.
4. Use the mouse to drag the red text frame in the live view window to adjust the text overlay position.
5. Click .

**Note:**
There are up to 8 text overlays configurable.

![Text Overlay Settings](image)

Figure 3-18 Text Overlay Settings

3.4 Configuring Video and Audio Settings

3.4.1 Configuring Video Settings

**Steps:**
1. Enter the Video settings interface:
   Configuration > Video/Audio > Video
Figure 3-19 Configure Video Settings

2. Select the **Stream Type** of the camera to Main Stream (Normal), Sub-Stream or Third Stream.
   
   **Note:**
   
   The main stream is usually for recording and live viewing with good bandwidth, and the sub-stream can be used for live viewing when the bandwidth is limited. Refer to the **Section 2.1 Configuring Local Parameters** for switching the stream type for live viewing.

3. You can customize the following parameters for the selected stream:
   
   **Video Type:**
   
   Select the stream type to video stream, or video & audio composite stream. The audio signal will be recorded only when the **Video Type** is **Video&Audio**.
   
   **Resolution:**
   
   Select the resolution of the video output.
   
   **Bitrate Type:**
   
   Select the bitrate type to constant or variable.
   
   **Video Quality:**
   
   When bitrate type is selected as **Variable**, 6 levels of video quality are selectable.
   
   **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.
   
   **Max. Bitrate:**
   
   Set the max. bitrate. The higher value corresponds to the higher video quality, and the higher bandwidth is required as well.
   
   **Video Encoding:**
   
   Select the **Video Encoding** standard for the each camera.
   
   **Profile:**
   
   You can set the profile level to **High Profile**, **Main Profile** or **Basic Profile**.

   **I Frame Interval:**
Set the I-Frame interval from 1 to 400.

**SVC:**

SVC is a video encoding technology. It extracts frames from the original video and sends these frames to a video recorder which also supports SVC function when the network bandwidth is insufficient.

**Smoothing:**

Drag [ ] to adjust the value of video smoothing on your demand.

**Resolution Mode:**

Resolution of the panoramic view channels are different in different resolution mode (including main stream, sub-stream and third stream). Select the resolution mode from the dropdown list on your demand.

**Notes:**

- The function is only supported by Camera 2 and Camera 3.
- Reboot the device before it takes effect when the resolution mode is switched.
- Redraw the rule area if the resolution mode is switched.

4. Click [ ] to save the settings.

### 3.4.2 Configuring Audio Settings

**Steps:**

1. Enter the Audio settings interface
   
   Configuration > Video/Audio > Audio

2. Configure the following settings.

   **Audio Encoding:** G.722.1, G.711ulaw, G.711alaw, MP2L2, PCM and G.726 selectable.

   **Audio Stream Bitrate:** When the Audio Encoding is selected as MP2L2, you can configure the Audio Stream Bitrate in the dropdown list. The greater the value is, the better the audio quality will be.

   **Sampling Rate:** When the Audio Encoding is selected as MP2L2 or PCM, you can configure the Sampling Rate in the dropdown list. The greater the value is, the better the audio quality will be.

   **Audio Input:** When an intercom is connected to the camera, you need to set this option to LineIn. When a microphone is connected to the camera, you need to set this option to MicIn.

   **Input Volume:** Slid the bar to turn up/down the volume. The value ranges from 0 to 100.

   **Environmental Noise Filter:** When the monitoring environment is very noisy, you can enable this function to reduce part of the noise.

3. Click [ ] to save the settings.

### 3.4.3 Configuring ROI Settings

**Before you start:**

ROI (Region of Interest) encoding is used to enhance the quality of images which are specified in advance.

Enter the ROI settings interface:
Figure 3-20 Region of Interest

Stream Type:
You can set the ROI function for main stream, sub-stream and third stream. Select a stream type and then configure the ROI settings.

- **Fixed Region:** The fixed region encoding is the ROI encoding for the manually configured area. And you can choose the Image Quality Enhancing level for ROI encoding, and you can also name the ROI area.

  **Steps:**
  1. Select a Region No..
  2. Check the Enable checkbox under Fixed Region.
  3. Select the region from the dropdown list for ROI settings. There are four fixed regions selectable.
  4. Click Draw Area, and then drag the mouse to draw the region of interest on the live video.
  5. Adjust the ROI level from 1 to 6. The higher the value, the better image quality in the red frame.
  6. Enter a Region Name and click Save to save the settings.

- **Dynamic Region:** The device can automatically calculate the region with motion. Set the Image Quality Enhancing level for ROI encoding.

  **Steps:**
  1. Check the Face Tracking checkbox.
  2. Respectively set the ROI level. The higher the value, the better image quality in the red frame.
  3. Click Save to save the settings.
Chapter 4 PTZ Control

4.1 Operating PTZ Control

Purpose:
In the live view interface, you can use the PTZ control buttons to control panning, tilting and zooming. Refer to Section 3.2.2 Live View Operation for detailed information.

4.1.1 Setting/Calling a Preset

Purpose:
A preset is a predefined image position. For the defined preset, you can click the calling button to quickly view the desired image position.

- Setting a Preset:

Steps:
1. In the PTZ control panel, select a preset number from the preset list.

2. Use the PTZ control buttons to move the lens to the desired position.
   - Pan the camera to the right or left.
   - Tilt the camera up or down.
   - Zoom in or out.
   - Refocus the lens.

3. Click \( \text{\(\rightarrow\)} \) to finish the setting of the current preset.

4. Edit a preset name by double clicking on the default name such as preset 1. (The pre-defined presets are named already and not configurable. Refer to the user manual for detailed function description.)

5. You can click \( \text{\(\times\)} \) to delete the preset.

   Note:
   You can configure up to 300 presets.

- Calling a Preset:

In the PTZ control panel, select a defined preset from the list and click \( \text{\(\rightarrow\)} \) to call the preset.
For convenient preset selection, refer to the following steps to navigate to the preset you want.

**Steps:**
1. Select any preset from the list.
2. Click the preset number you need on the keyboard.

**Note:**
The following presets are predefined with special commands. You can only call them but not configure them. For instance, preset 99 is the “Start auto scan”. If you call the preset 99, the camera starts auto scan function.

### Table 4-1 Special Presets

<table>
<thead>
<tr>
<th>Preset</th>
<th>Function</th>
<th>Preset</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Auto flip</td>
<td>92</td>
<td>Start to set limit stops</td>
</tr>
<tr>
<td>34</td>
<td>Back to initial position</td>
<td>93</td>
<td>Set limit stops manually</td>
</tr>
<tr>
<td>35</td>
<td>Call patrol 1</td>
<td>94</td>
<td>Remote reboot</td>
</tr>
<tr>
<td>36</td>
<td>Call patrol 2</td>
<td>95</td>
<td>Call OSD menu</td>
</tr>
<tr>
<td>37</td>
<td>Call patrol 3</td>
<td>96</td>
<td>Stop a scan</td>
</tr>
<tr>
<td>38</td>
<td>Call patrol 4</td>
<td>97</td>
<td>Start random scan</td>
</tr>
<tr>
<td>39</td>
<td>Day mode (IR cut filter in)</td>
<td>98</td>
<td>Start frame scan</td>
</tr>
<tr>
<td>40</td>
<td>Night mode (IR cut filter out)</td>
<td>99</td>
<td>Start auto scan</td>
</tr>
<tr>
<td>41</td>
<td>Call pattern 1</td>
<td>100</td>
<td>Start tilt scan</td>
</tr>
<tr>
<td>42</td>
<td>Call pattern 2</td>
<td>101</td>
<td>Start panorama scan</td>
</tr>
<tr>
<td>43</td>
<td>Call pattern 3</td>
<td>102</td>
<td>Call patrol 5</td>
</tr>
<tr>
<td>44</td>
<td>Call pattern 4</td>
<td>103</td>
<td>Call patrol 6</td>
</tr>
<tr>
<td>45</td>
<td>One-touch patrol</td>
<td>104</td>
<td>Call patrol 7</td>
</tr>
<tr>
<td>90</td>
<td>Wiper</td>
<td>105</td>
<td>Call patrol 8</td>
</tr>
</tbody>
</table>
Note:
You may need to use the OSD (On Screen Display) menu when controlling the camera remotely. To display the OSD menu on the live view screen, you can call the preset number 95.

4.1.2 Setting/Calling a Patrol

Purpose:
A patrol is a memorized series of preset function. It can be configured and called on the patrol settings interface. There are up to 8 patrols for customizing. A patrol can be configured with 32 presets.

Before you start:
Make sure that the presets you want to add into a patrol have been defined.

● Setting a Patrol:

Steps:
1. In the PTZ control panel, click \( \circ \) to enter the patrol settings interface.
2. Select a patrol number from the list and click \( \circ \).
3. Click \( + \) to enter the adding interface of preset, as shown in Figure 4-4.

![Figure 4-4 Adding Presets]

4. Configure the preset number, patrol time and patrol speed.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patrol Time</td>
<td>It is the duration staying on one patrol point. The camera moves to another patrol point after the patrol time.</td>
</tr>
<tr>
<td>Patrol Speed</td>
<td>It is the speed of moving from one preset to another.</td>
</tr>
</tbody>
</table>

5. Click OK to save a preset into the patrol.
6. Repeat the steps from 3 to 5 to add more presets.
7. Click OK to save all the patrol settings.

● Calling a Patrol:

In the PTZ control panel, select a defined patrol from the list and click \( \rightarrow \) to call the patrol, as shown in Figure 4-5.
4.1.3 Setting/Calling a Pattern

**Purpose:**
A pattern is a memorized series of pan, tilt, zoom, and preset functions. It can be called on the pattern settings interface. There are up to 4 patterns for customizing.

- **Setting a Pattern:**

  **Steps:**

1. In the PTZ control panel, click \(\text{ }\) to enter the pattern settings interface.
2. Select a pattern number from the list as shown in Figure 4-6.

![Figure 4-6 Patterns Settings Interface](image)

3. Click \(\text{ }\) to enable recording the panning, tilting and zooming actions.
4. Use the PTZ control buttons to move the lens to the desired position after the information of **Program Pattern Remaining Memory (%)** is displayed on the screen.

- Pan the camera to the right or left.
- Tilt the camera up or down.
- Zoom in or out.
- Refocus the lens.

5. Click \(\text{ }\) to save all the pattern settings.

**Notes:**

- These 4 patterns can be operated separately and with no priority level.
- When configuring and calling the pattern, proportional pan is valid; the limit stops and auto flip will be invalid; and the 3D positioning operation is not supported.
4.2 PTZ Configuration

4.2.1 Configuring Basic PTZ Parameters

_Purpose:_
You can configure the basic PTZ parameters, including proportional pan, preset freezing, preset speed, etc.

1. Enter the Basic PTZ parameter configuration interface:
   
   **Configuration > PTZ > Basic Settings**

   ![Basic PTZ Configuration Interface](image)

   2. Configure the following settings:
   
   - **Basic Parameters:** Enable/disable proportional pan and preset freezing, set the preset speed, manual control speed, keyboard control speed, auto scan speed, and zooming speed.
     
     - **Proportional Pan:** If you enable this function, the pan/tilt speeds change according to the amount of zoom. When there is a large amount of zoom, the pan/tilt speed will be slower for keeping the image from moving too fast on the live view image.
     
     - **Preset Freezing:** This function enables the live view to switch directly from one scene defined by a preset to another, without showing the middle areas between these two, to ensure the surveillance efficiency. It can also reduce the use of bandwidth in a digital network system.

   **Note:**
   
   Preset freezing function is invalid when you calling a pattern.

   - **Preset Speed:** You can set the speed of a defined preset from 1 to 8.
   
   - **Manual Control Speed:** The manual control speed can be set as Compatible, Pedestrian, Non-motor Vehicle, Motor Vehicle or Auto.
• Compatible: The control speed is same as the Keyboard Control Speed.
• Pedestrian: Choose the Pedestrian when you monitor the pedestrians.
• Non-motor Vehicle: Choose the Non-motor Vehicle when you monitor the non-motor vehicles.
• Motor Vehicle: Choose the Motor Vehicle when you monitor the motor vehicles.
• Auto: You are recommended to set it to be auto when the application scene of the camera is complicated.

• **Keyboard Control Speed:** Define the speed of PTZ control by a keyboard as Low, Medium or High.
• **Auto Scan Speed:** The scan speed can be set from level 1 to 40.
• **Zooming Speed:** The zoom speed is adjustable from level 1 to 3.

◆ **PTZ OSD:** Set the on-screen display duration of the PTZ status.
• **Zoom Status:** Set the OSD duration of zooming status as 2 seconds, 5 seconds, 10 seconds, Always Close or Always Open.
• **PT Status:** Set the azimuth angle display duration while panning and tilting as 2 seconds, 5 seconds, 10 seconds, Always Close or Always Open.
• **Preset Status:** Set the preset name display duration while calling the preset as 2 seconds, 5 seconds, 10 seconds, Always Close or Always Open.

◆ **Power-off Memory:** The camera can resume its previous PTZ status or actions after it restarted from a power-off. You can set the time point of which the camera resumes its PTZ status. You can set it to resume the status of 30 seconds, 60 seconds, 300 seconds or 600 seconds before power-off.

3. Click ![Save](image) to save the settings.

### 4.2.2 Configuring PTZ Limits

**Purpose:**
The camera can be programmed to move within the configurable PTZ limits (left/right, up/down).

**Steps:**
1. Enter the Limit configuration interface:
   > Configuration > PTZ > Limit
2. Click the **Enable Limit** checkbox and choose the limit type as manual stops or scan stops.
   - **Manual Stops:**
     When manual limit stops are set, you can operate the PTZ control panel manually only in the limited surveillance area.
   - **Scan Stops:**
     When scan limit stops are set, the random scan, frame scan, auto scan, tilt scan, panorama scan is performed only in the limited surveillance area.

   **Note:**
   **Manual Stops** of Limit Type is prior to **Scan Stops**. When you set these two limit types at the same time, **Manual Stops** is valid and **Scan Stops** is invalid.

3. Click the PTZ control buttons to find the left/right/up/down limit stops; you can also call the defined presets and set them as the limits of the camera.
4. Click **Set** to save the limits or click **Clear** to clear the limits.

### 4.2.3 Configuring Initial Position

**Purpose:**
The initial position is the origin of PTZ coordinates. It can be the factory default initial position. You can also customize the initial position according to your own demand.

- **Customize an Initial Position:**

  **Steps:**
  1. Enter the Initial Position configuration interface:
     - **Configuration > PTZ > Initial Position**
2. Click the PTZ control buttons to find a position as the initial position of the camera; you can also call a defined preset and set it as the initial position of the camera.

3. Click Set to save the position.

◆ Call/delete an Initial Position:

You can click  to call the initial position. You can click  to delete the initial position and restore the factory default initial position.

### 4.2.4 Configuring Park Action

**Purpose:**
This feature allows the camera to start a predefined park action (scan, preset, pattern and etc.) automatically after a period of inactivity (park time). The park action function only takes effect in Camera 1.

**Note:**
Scheduled Tasks function is prior to Park Action function. When these two functions are set at the same time, only the Scheduled Tasks function takes effect.

**Steps:**
1. Enter the Park Action settings interface:
   - Configuration > PTZ > Park Action

![Figure 4-10 Set the Park Action](image)

2. Check the Enable Park Action checkbox.
3. Set the Park Time as the inactivity time of the camera before it starts the park actions.
4. Choose Action Type from the dropdown list.
5. Click to save the settings.

4.2.5 Configuring Privacy Mask

**Purpose:**
Privacy mask enables you to cover certain areas on the live video to prevent certain spots in the surveillance area from being live viewed and recorded. The privacy mask function only takes effect in Camera 1.

**Steps:**
1. Enter the Privacy Mask settings interface:
   Configuration > PTZ > Privacy Mask

2. Click the PTZ control buttons to find the area you want to set the privacy mask.
3. Click ; drag the mouse in the live video window to draw the area.
   You can drag the corners of the red rectangle area to draw a polygon mask.
4. Click to finish drawing or click to clear all of the areas you set without saving them.
5. Click [Add] to save the privacy mask, and it will be listed in the **Privacy Mask List** area; set the value of **Active Zoom Ratio** on your demand, and then the mask will only appear when the zoom ratio is greater than the predefined value.

<table>
<thead>
<tr>
<th>Privacy Mask List</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Name</td>
<td>Type</td>
<td>Enable</td>
<td>Active Zoom Ratio</td>
</tr>
<tr>
<td>1</td>
<td>Privacy Mask 1</td>
<td>gray</td>
<td>Yes</td>
<td>1</td>
</tr>
</tbody>
</table>

![Figure 4-13 Privacy Mask List]

6. You can also define the color of the masks.

![Figure 4-14 Define Mask Color]

7. You can select a mask and click [Delete] to delete it from the list.

8. Check the **Enable Privacy Mask** checkbox to enable this function.

   **Note:**
   You are allowed to draw up to 24 areas on the same image.

### 4.2.6 Configuring Scheduled Tasks

**Purpose:**
You can configure the network camera to perform a certain action automatically in a user-defined time period.

**Steps:**
1. Enter the Scheduled Task settings interface:

   Configuration > PTZ > Scheduled Tasks
2. Check the **Enable Scheduled Task** checkbox.

3. Set the **Park Time**. You can set the park time (a period of inactivity) before the camera starts the scheduled tasks.

4. Select the task type from the dropdown list. You can choose scan, preset, pattern and etc.

5. Select the timeline of a certain day, and drag the left button of the mouse to set the recording schedule (the start time and end time of the recording task).

6. After you set the scheduled task, you can click ![copy icon] and copy the task to other days (optional).
7. After setting the record schedule, you can click a record segment to display the segment record settings interface to edit the segment record parameters. (Optional)

![Segment Record Settings](image)

**Figure 4-18 Segment Record Settings**

*Note:* The time of each task cannot be overlapped. Up to 10 tasks can be configured for each day.

8. Click ![Save](image) to save the settings.

### 4.2.7 Clearing PTZ Configurations

**Purpose:**
You can clear PTZ configurations in this interface, including all presets, patrols, patterns, privacy masks, PTZ limits, scheduled tasks and park actions.

**Steps:**
1. Enter the Clearing Configuration interface:
   - Configuration > PTZ > Clear Config
2. Check the checkbox of the items you want to clear.
3. Click ![Save](image) to clear the settings.

### 4.2.8 Configuring PTZ Control Priority

**Steps:**
1. Get to the configuration interface:
   - Configuration > PTZ > Prioritize PTZ.
   - The camera can be controlled by network and RS-485 signals. You can set the control priority of these two signals.
   - The operation of Operator is prior to that of User. When the Operator is controlling the camera, the User cannot control it. When the Operator finishes, the User can control the camera after the Delay time. The Delay time can be set in Priority PTZ interface as shown follows.

![PTZ Priority](image)

**Figure 4-19 PTZ Priority**

2. Click ![Save](image) to activate the settings.
4.2.9 Configuring Panorama Tracking

_Purpose:_
The camera tracks the moving objects automatically after you configure this function. It keeps the target appear in the center of the image by automatically adjusting its focal length and position.

You can click in the live view interface to manually track the target.

_Steps:_
1. Enter the Panorama Tracking settings interface:
   **Configuration > PTZ > Panorama Tracking**

   ![Figure 4-20 Configure Smart Tracking](image)

   2. Check the **Enable Tracking** checkbox to enable panorama tracking function.
   3. Perform the calibration.

   **Auto Calibration:**
   (1) Select **Auto** from the calibration mode.
   (2) Move and zoom in/out the PTZ view to make sure the PTZ view and the panoramic view is almost the same.
   (3) Click **Save** to save the calibration settings.
   (4) The calibration is completed when note shows up as: **Calibration Succeeded.**

   **Manual Calibration:**
   (1) Select **Manual Calibrating** from the calibration list.
   (2) Drag the crosses of the panoramic view """ and move them to the scene evenly.
(3) Select a calibration site and adjust the PTZ view by controlling PTZ and zooming in/out to ensure the cross in the center of the PTZ view is almost the same with the site of the calibration site of panoramic view.

(4) Click  to save the setting of calibration No. 1.

(5) Select calibration site No. 2 to No. 6, and repeat the step above to add the manual calibration sites.

(6) Click Calibrate to perform the calibration, and click  to switch the scene and add calibration sites. In manual calibration mode, for each device, you shall add at least 4 calibration sites.

4. Set the tracking duration. The camera stops tracking when the duration time is up. The duration ranges from 0 to 60 seconds.

5. Click  to set the current zoom ratio as the tracking zoom ratio.

6. You can select Add, Delete, and Clear All to edit the calibration sites. The coordinates and PTZ positions of selected calibration sites will appear in the list below. In auto calibration mode, click Calibration to refresh the PTZ position; and in manual calibration mode, click  to refresh the PTZ position.

Figure 4-21 Calibration Parameters

Notes:
- In auto calibration mode, the more similar is the PTZ view and the panoramic view, the panorama tracking gets more accurate.
- The more distant manual calibration sites are to each other, the panorama tracking gets more accurate.

4.2.10 Configuring Eagle Vision Focus

Purpose:
After this function is enabled, perform calibration and the focus can be quicker than quick focus.

Steps:
1. Enter the Eagle Vision Focus settings interface:
   Configuration > PTZ > Eagle Vision Focus
2. Check the Enable checkbox to enable the Eagle Vision Focus function.
3. Drag the red line on the live view image to the calibration position. You can drag the ends of the red line to adjust the length of the line.
4. Click Start Calibration. There is the notice Calibrating on the live view image and the camera lens performs auto focus.
5. After calibration, there is the notice Calibration succeeded on the live view image.
6. Click Save to save the settings.
Chapter 5 Storage and Playback

In this and the following chapters, operation of the camera by the web browser will be taken as an example.

5.1 Storage Settings

Before you start:
To configure record settings, make sure that you have the network storage device within the network or the memory card has been inserted in the corresponding card slot. Refer to the quick start guide for the location of the memory card slot.

5.1.1 Configuring Net HDD (Optional)

Before you start:
The network disk should be available within the network and properly configured to store the recorded files, log files, etc.

Steps:
Add Net HDD
1. Enter the NAS (Network-Attached Storage) settings interface:
Configuration > Storage > Storage Management > Net HDD

![Figure 5-1 Select Net HDD Type](image)

2. Enter the IP address and the file path of the network disk.
3. Select the mounting type. NFS and SMB/CIFS are selectable. You can set the user name and password to guarantee the security if SMB/CIFS is selected.

Note:
Refer to the NAS User Manual for creating the file path.

- For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.
- Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4. Click Save to save the settings.
5.1.2 HDD Management

If the memory card is inserted in the device or NAS (Network-Attached Storage) is added, enter HDD Management interface to configure the storage status.

**Steps:**
1. Enter the HDD settings interface
   - **Configuration > Storage > Storage Management > HDD Management,**
   - You can view the capacity, free space, status, type and property of the disk.

   ![Figure 5-2 Storage Management Interface](image)

   **Figure 5-2 Storage Management Interface**

2. If the status of the disk is **Uninitialized**, check the corresponding checkbox to select the disk and click **Format** to start initializing the disk.

   When the initialization completed, the status of disk will become **Normal.**

   ![Figure 5-3 View Disk Status](image)

   **Figure 5-3 View Disk Status**

**Define the Quota for Record and Pictures**

**Steps:**
1. Input the quota percentage for picture and for record.
2. Click **Save** and refresh the browser page to activate the settings.

   ![Figure 5-4 Quota Settings](image)

   **Figure 5-4 Quota Settings**

**Note:**

Up to 8 NAS disks can be connected to the camera.
5.1.3 Configuring Record Schedule

**Before you start:**
Make sure a local memory card is inserted in the camera or the network storage is added to the camera.

**Purpose:**
There are two kinds of recording for the cameras: manual recording and scheduled recording. In this section, you can follow the instructions to configure the scheduled recording. By default, the record files of scheduled recording are stored in the memory card (if supported) or in the network disk.

**Steps:**
1. Enter the Record Schedule settings interface:
   Configuration > Storage > Schedule Settings > Record Schedule

![Figure 5-5 Record Schedule Interface](image)

2. Check the **Enable** checkbox to enable scheduled recording.

3. To set the advanced settings of the camera, click ![Advanced](image) to enter the advanced settings interface.

![Figure 5-6 Record Parameters](image)
**Pre-record:** The time you set to start recording before the scheduled time or the event. For example, if an alarm triggers recording at 10:00, and the pre-record time is set as 5 seconds, the camera starts to record at 9:59:55. The Pre-record time can be configured as No Pre-record, 5 s, 10 s, 15 s, 20 s, 25 s, 30 s or not limited.

*Note:* The pre-record time changes according to the video bitrate.

**Post-record:** The time you set to stop recording after the scheduled time or the event. For example, if an alarm triggered recording ends at 11:00, and the post-record time is set as 5 seconds, the camera records until 11:00:05. The Post-record time can be configured as 5 s, 10 s, 30 s, 1 min, 2 min, 5 min or 10 min.

*Note:* The Pre-record and Post-record parameters vary depending on different camera models.

**Stream Type:** You can select the stream type for recording; Main stream, sub stream and third stream are selectable. If you select the sub stream, you can record for a longer time with the same storage capacity.

4. Click **OK** to save the advanced setting.

5. Set the record schedule:
   (1) Select a **Record Type**. The record type can be Continuous, Motion, Alarm, Motion | Alarm, Motion & Alarm, and Events.

   - **Continuous**
     If you select **Continuous**, the video will be recorded automatically according to the time of the schedule.

   - **Record Triggered by Motion Detection**
     If you select **Motion**, the video will be recorded when the motion is detected. Besides configuring the recording schedule, you have to set the motion detection area and check the **Trigger Channel** checkbox in the **Linkage Method** of Motion Detection settings interface. For detailed information, refer to the **Step 1 in the Section 6.1.1 Configuring Motion Detection**.

   - **Record Triggered by Alarm**
     If you select **Alarm**, the video will be recorded when the alarm is triggered via the external alarm input channels.
Besides configuring the recording schedule, you have to set the **Alarm Type** and check the **Trigger Channel** checkbox in the **Linkage Method** of **Alarm Input Settings** interface. For detailed information, refer to **Section 6.1.4 Configuring Alarm Input**.

- **Record Triggered by Motion | Alarm**
  If you select **Motion | Alarm**, the video will be recorded when the external alarm is triggered or the motion is detected.
  Besides configuring the recording schedule, you have to configure the settings on the **Motion Detection** and **Alarm Input** settings interfaces. Refer to **Section 6.1.1** and **Section 6.1.4** for detailed information.

- **Record Triggered by Motion & Alarm**
  If you select **Motion & Alarm**, the video will be recorded when the motion and alarm are triggered at the same time.
  Besides configuring the recording schedule, you have to configure the settings on the **Motion Detection** and **Alarm Input** settings interfaces. Refer to **Section 6.1.1** and **Section 6.1.4** for detailed information.

- **Record Triggered by Events**
  If you select **Events**, the video will be recorded when any event is detected.

  (2) Select the timeline of a certain day, and drag the left button of the mouse to set the recording schedule (the start time and end time of the recording task).
  (3) After you set the scheduled task, you can click ![Copy to...](image) and copy the task to other days (optional).
  (4) After setting the record schedule, you can click a record segment to display the segment record settings interface to edit the segment record parameters. (optional)

![Figure 5-8 Segment Record Settings](image)

**Note:**
The time of each segment cannot be overlapped. Up to 8 segments can be configured for each day.

6. Click ![Copy to...](image) to copy the schedule settings to other channels if the schedule settings are the same.

7. Click ![Save](image) to save the settings.

### 5.1.4 Configuring Capture Schedule

**Purpose:**
You can configure the scheduled snapshot and event-triggered snapshot. The captured picture can be stored in the local storage or network storage.

**Steps:**
1. Enter the Capture settings interface:
Configuration > Storage > Storage Settings > Capture

2. Click **Capture Schedule** to enter the Capture interface.

3. Select the timeline of a certain day, and drag the left button of the mouse to set the capture schedule (the start time and end time of the recording task).

4. After you set the scheduled task, you can click **Copy** and copy the task to other days (optional).

5. After setting the capture schedule, you can click a capture segment to display the segment capture settings interface to edit the segment capture parameters. (optional)

6. Click **Capture Parameters** to enter the Capture Parameters interface.

7. Check the **Enable Timing Snapshot** checkbox to enable continuous snapshot, and configure the schedule of timing snapshot. Check the **Enable Event-triggered Snapshot** checkbox to enable event-triggered snapshot.

8. Select the format, resolution, quality of the snapshot.

9. Set the time interval between two snapshots.

10. Click **Save** to save the settings.

5.2 Picture

**Purpose:**
This section explains how to view the captured picture files stored in the network disks and download the captured pictures.
Steps:

1. Click Picture on the menu bar to enter picture interface.  
   ![Picture Interface](image)
   Figure 5-11 Picture Interface

2. Select the file type of capturing the pictures from the list as timing, alarm, motion, etc.
3. Set the start time and end time. Click Search. The corresponding picture files will be listed.
4. Check the checkbox in front of the files that you need to download.
5. Click Download to download the files.

5.3 Playback

Purpose:
This section explains how to view the remotely recorded video files stored in the memory card or network disks.

5.3.1 Play Back Video Files

Steps:

1. Click Playback on the menu bar to enter playback interface.
2. Select the date and click

3. Click ▶️ to play the video files found on this date.

The toolbar on the bottom of Playback interface can be used to control playing process.

Descriptions of Icons on PTZ Control Panel are listed below:

- **Playback** 🎥: Click ▶️ to start playback and the icon turns into ▶️. Click the icon again to stop playback.
- **Stop All Playback** ✈️: Click ✈️ to stop all channels’s playback at once.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Frame</td>
<td>Click to start playback by frame.</td>
</tr>
<tr>
<td>Playing Speed</td>
<td>Click ◀ to slow forward and click ▶ to fast forward.</td>
</tr>
<tr>
<td>Capture a picture</td>
<td>Click ◀ to manually capture the picture.</td>
</tr>
<tr>
<td>Clip</td>
<td>Click ◀ to start clipping video file and the icon turns into ◀. Click the icon again to stop clipping.</td>
</tr>
<tr>
<td>Download</td>
<td>Click ▼ to download the video file.</td>
</tr>
</tbody>
</table>

**Note:**
You can choose the file paths locally for downloaded playback video files and pictures in Local Configuration interface. Refer to Section 2.1 Local Configuration Interface for details. Drag the progress bar with the mouse to locate the exact playback point. You can also input the time and click ◀ to locate the playback point in the Set playback time field. You can also click ◀ ▶ to zoom out/in the progress bar.

![Figure 5-15 Set Playback Time](image)

![Figure 5-16 Progress Bar](image)

The different colors of the video on the progress bar stand for the different video types as shown in Figure 5-17.

![Figure 5-17 Video Types](image)

### 5.3.2 Downloading Video Files

**Steps:**

1. Click ◀ on the playback interface. The pop-up menu is shown in Figure 5-18.
2. Set the start time and end time. Click Search. The corresponding video files will be listed.
3. Check the checkbox in front of the video files that you need to download.

4. Click ![Download](download_icon) to download the video files.
Chapter 6 Alarm and Events

Purpose:
This section explains how to configure the camera to respond to alarm events, including motion detection, video tampering, video loss, alarm input, alarm output, exception, and audio exception detection. These events can trigger the alarm actions, such as Send Email, Notify Surveillance Center, Upload to FTP/Memory Card/NAS, etc. For example, when an external alarm is triggered, the camera sends a notification to an e-mail address.

6.1 Basic Event Configuration

6.1.1 Configuring Motion Detection

Purpose:
Motion detection is a feature which can trigger alarm actions and actions of recording videos when the motion occurred in the surveillance scene.

Steps:
1. Enter the motion detection setting interface:
   Configuration > Event > Basic Event > Motion Detection
2. Select the camera Channel No. from the dropdown list.
   Note:
The Camera 1 is the PTZ channel, and the Camera 2 and Camera 3 are the panoramic view channels.
3. Check the Enable Motion Detection checkbox to enable this function.
   You can check the Enable Dynamic Analysis for Motion checkbox if you want the detected object get marked with rectangle in the live view.
4. Select the configuration mode as Normal or Expert and set the corresponding motion detection parameters.
   ● Normal
   Steps:
   (1) Click Draw Area. Drag the mouse on the live video image to draw a motion detection area.
   (2) Click Stop Drawing to finish drawing.
   Notes:
   ● You can draw up to 8 motion detection areas on the same image.
   ● You can click Clear All to clear all of the areas.
   (3) Move the slider Sensitivity to set the sensitivity of the detection.
Figure 6-1 Motion Detection Settings-Normal

- **Expert**

![Expert Motion Detection Settings](image)

**Steps:**

1. Set the **Scheduled Image Settings**, there are OFF, Auto-Switch and Scheduled-Switch selectable. If the switch mode is enabled, you can configure the detection rule for the day and night separately.

   **OFF:** Disable the day and night switch.
Auto-Switch: Switch the day and night mode according to the illumination automatically.
Scheduled-Switch: Switch to the day mode at 6:00 a.m., and switch to the night mode at 18:00 p.m.

(2) Select Area to configure in the dropdown list.
(3) Set the values of Sensitivity and Percentage.
   Sensitivity: The greater the value is, the easier the alarm will be triggered.
   Percentage: When the size proportion of the moving object exceeds the predefined value, the alarm will be triggered. The less the value is, the easier the alarm will be triggered.

5. Set the Arming Schedule for Motion Detection.
   (1) Click the Arming Schedule tab to enter the arming schedule setting interface.
   (2) Select the timeline of a certain day, and drag the mouse to set the arming schedule (the start time and end time of the arming task).
   (3) After you set the scheduled task, you can click and copy the task to other days (optional).
(4) After setting the arming schedule, you can click a segment to display the segment arming settings interface to edit the segment record parameters (optional).

![Figure 6-5 Segment Arming Settings](image)

(5) Click **Save** to save the settings.  

**Note:**  
The time of each period cannot be overlapped. Up to 8 periods can be configured for each day.

6. Set the Alarm Actions for Motion Detection.

Click **Linkage Method** tab to enter the **Linkage Method** interface.  

You can specify the linkage method when an event occurs. The following contents are about how to configure the different types of linkage method.

![Figure 6-6 Linkage Method](image)

Check the checkbox to select the linkage method. Send Email, Notify Surveillance Center, Upload to FTP/Memory Card/NAS, Trigger Alarm Output and Trigger Recording are selectable.  

- **Send Email**  
Send an email with alarm information to a user or users when an event occurs.  

**Note:**  
- To send the Email when an event occurs, you need to refer to **Section 2.2.2 Advanced Settings - Configuring Email Settings** to set the Email parameters.  
- **Notify Surveillance Center**  
Send an exception or alarm signal to remote management software when an event occurs.  
- **Upload to FTP/Memory Card/NAS**  
Capture the image when an alarm is triggered and upload the picture to a FTP server.
**Note:**
You need a FTP server and set FTP parameters first. Refer to *Section 2.2.2 Advanced Settings - Configuring FTP Settings* for setting FTP parameters.
- **Trigger Channel**
  Record a video when an event occurs.

**Note:**
You have to set the recording schedule to realize this function. Refer to *Section 5.1 Storage Settings* for setting the recording schedule.
- **Trigger Alarm Output**
  Trigger one or more external alarm outputs when an event occurs.

**Note:**
To trigger an alarm output when an event occurs, refer to *Section 6.1.5 Configuring Alarm Output* to set the alarm output parameters.

### 6.1.2 Configuring Video Tampering Alarm

**Purpose:**
You can configure the camera to trigger the alarm actions when the lens is covered.

**Steps:**
1. Enter the video tampering settings interface:
   - **Configuration > Event > Basic Event > Video Tampering**

   ![Figure 6-7 Tampering Alarm](image)

   **Figure 6-7 Tampering Alarm**

2. Check the **Enable** checkbox to enable the tampering detection.
3. Set the tampering area. Refer to Step 4 in *Section 6.1.1 Configuring Motion Detection*. 
4. Click \( \text{Arming Schedule} \) tab to enter the arming schedule setting interface. The arming schedule configuration is the same as the setting of the arming schedule for motion detection. Refer to Step 5 in \textit{Section 6.1.1 Configuring Motion Detection}.

5. Click \( \text{Linkage Method} \) tab to select the linkage method taken for the video loss alarm. Send Email, Notify Surveillance Center, and Trigger Alarm Output are selectable. Refer to Step 6 in \textit{Section 6.1.1 Configuring Motion Detection}.

6. Click \( \text{Save} \) to save the settings.

\subsection*{6.1.3 Configuring Video Loss Alarm}

\textit{Steps:}

1. Enter the Video Loss setting interface:
   \( \text{Configuration} > \text{Event} > \text{Basic Event} > \text{Video Loss} \)

   \begin{figure}[h]
   \centering
   \includegraphics[width=\textwidth]{image.png}
   \caption{Video Loss}
   \end{figure}

2. Check the \textit{Enable} checkbox to enable the video loss detection.

3. Click \( \text{Arming Schedule} \) tab to enter the arming schedule setting interface. The arming schedule configuration is the same as the setting of the arming schedule for motion detection. Refer to Step 5 in \textit{Section 6.1.1 Configuring Motion Detection}.

4. Click \( \text{Linkage Method} \) tab to select the linkage method taken for the video loss alarm. Send Email, Notify Surveillance Center, and Trigger Alarm Output are selectable. Refer to Step 6 in \textit{Section 6.1.1 Configuring Motion Detection}.

5. Click \( \text{Save} \) to save the settings.
6.1.4 Configuring Alarm Input

*Steps:*

1. Enter the Alarm Input settings interface:
   **Configuration > Event > Basic Event > Alarm Input**

2. Choose the Alarm Input No. and the Alarm Type. The alarm type can be NO (Normally Open) and NC (Normally Closed).

3. Edit the name in the Alarm Name field to set a name for the alarm input (optional).

4. Click the Arming Schedule tab to enter the arming schedule setting interface. The arming schedule configuration is the same as the setting of the arming schedule for motion detection. Refer to Step 5 in Section 6.1.1 Configuring Motion Detection.

5. Click the Linkage Method tab to select the linkage method taken for the video loss alarm. Send Email, Notify Surveillance Center, Upload to FTP/Memory Card/NAS, Trigger Alarm Output and Trigger Recording are selectable. Refer to Step 6 in Section 6.1.1 Configuring Motion Detection.

6. You can also choose the PTZ linking for the alarm input. Check the relative checkbox and select the No. to enable Preset Calling, Patrol Calling or Pattern Calling.

7. You can copy your settings to other alarm inputs.

8. Click the Save button to save the settings.
6.1.5 Configuring Alarm Output

Steps:
1. Enter the Alarm Output settings interface:
   Configuration > Event > Basic Event > Alarm Output
2. Select one alarm output channel in the Alarm Output dropdown list.
3. Set a name in Alarm Name for the alarm output (optional).
4. The Delay time can be set to 5sec, 10sec, 30sec, 1min, 2min, 5min, 10min or Manual. The delay time refers to the time duration that the alarm output remains in effect after alarm occurs.
5. Click Arming Schedule tab to enter the arming schedule setting interface. The time schedule configuration is the same as the settings of the arming schedule for motion detection. Refer to Step 5 in Section 6.1.1 Configuring Motion Detection.
6. You can copy the settings to other alarm outputs.

7. Click to save the settings.

### 6.1.6 Handling Exception

The exception type can be HDD full, HDD error, network disconnected, IP address conflicted and illegal login to the cameras.

**Steps:**

1. Enter the Exception settings interface:
   
   Configuration > Event > Basic Event > Exception

2. Check the checkbox to set the actions taken for the Exception alarm. Refer to Step 6 in Section 6.1.1 Configuring Motion Detection.

   ![Exception Settings](image)

   Figure 6-12 Exception Settings

3. Click to save the settings.

### 6.2 Smart Event Configuration

#### 6.2.1 Detecting Audio Exception

**Purpose:**

When you enable this function and audio exception occurs, the alarm actions will be triggered.
Steps:

1. Enter the audio exception detection interface:
   
   Configuration > Event > Smart Event > Audio Exception Detection

   ![Figure 6-13 Audio Exception Detection](image)

2. Check the **Audio Loss Detection** checkbox to enable the audio input exception detection.

3. Check the **Sudden Increase of Sound Intensity Detection** checkbox to enable the sudden rise detection.
   
   - **Sensitivity**: Range [1-100], the smaller the value the more severe the sound change will trigger the detection.
   
   - **Sound Intensity Threshold**: Range [1-100], it can filter the sound in the environment, the louder the environment sound, the higher the value should be. You can adjust it according to the actual environment.

4. Check the **Sudden Decrease of Sound Intensity Detection** checkbox to enable the sudden drop detection.
   
   **Sensitivity**: Range [1-100], the smaller the value the more severe the sound change will trigger the detection.

5. Click ![Arming Schedule](image) tab to enter the arming schedule setting interface. The time schedule configuration is the same as the settings of the arming schedule for motion detection. Refer to **Step 5 in Section 6.1.1 Configuring Motion Detection**.

6. Click ![Linkage Method](image) tab to select the linkage method taken for the video loss alarm. Send Email, Notify Surveillance Center, Trigger Alarm Output, and Trigger Recording are selectable. Refer to **Step 3 in Section 6.1.1 Configuring Motion Detection**.

7. Click ![Save](image) to save the settings.
6.3 VCA Configuration

6.3.1 VCA Configuration description

Purpose:
You can do intelligent analysis such as behavior analysis and face capture, etc. with the camera. Multiple rules can be configured for different requirements. The three VCA resource types are only available for Camera 1.

Note:
VCA function varies depending on different camera models.

Before you start:
Enter the VCA Resource Type configuration interface:
Configuration > VCA
Select Camera 1 from the dropdown list and click VCA Info: Behavior Analysis, Face Capture, and Behavior Analysis & Face Capture are selectable as the VCA type for Camera 1. Select Camera 2 or Camera 3 from the dropdown list: only Overlay & Capture, Shield Region, Rule, and Advanced Configuration are configurable.

![VCA Configuration Interface]

Figure 6-14 VCA Configuration (Camera 1)
The setting of VCA configuration can be divided into three modes.

- **Behavior Analysis Configuration**
  For the configuration of behavior analysis, refer to the flowchart below.

  ![Flowchart of Configuring Behavior Analysis](image)

  - Select **Behavior Analysis** as VCA Resource.
  - Set **Overlay & Capture**.
  - Set **Zoom Ratio**.
  - **Set parameters in VCA > Advanced Configuration**.
  - Set scene parameters and rules in **VCA > Scene Configuration**.
  - Set **Arming Schedule, Alarm Linkage** and **Scene Auto-switch** (optional) of the scene.
  - Save the settings.

- **Behavior Analysis & Face Capture Configuration**
  For the configuration of behavior analysis & face capture, refer to the flowchart below.
Select **Behavior Analysis + Face Capture as VCA Resource.**

- **Set Overlay & Capture.**
- **Set Zoom Ratio.**
- **Set parameters in VCA > Advanced Configuration.**
- **Set face capture parameters in VCA > Face Capture.**
- **Set scene parameters and rules in VCA > Scene Configuration.**
- **Set Arming Schedule, Alarm Linkage and Scene Auto-switch (optional) of the scene.**
- **Save the settings.**

Figure 6-17 Flowchart of Configuring Behavior Analysis & Face Capture

- **Face Capture Configuration**
  For the configuration of face capture, refer to the flowchart below.

Select **Behavior Analysis + Face Capture as VCA Resource.**

- **Set Overlay & Capture.**
- **Set Shield Region.**
- **Set parameters in VCA > Advanced Configuration.**
- **Set face capture parameters in VCA > Face Capture.**
- **Set rules in VCA > Rule.**
- **Save the settings.**

Figure 6-18 Flowchart of Configuring Face Capture

### 6.3.2 Configuring VCA Information (Overlay & Capture)

**Steps:**
1. Enter the VCA configuration interface:
   
   Configuration > VCA > Overlay & Capture
2. Check the check box to enable the Intelligent Analysis. And you can check the current version for the selected VCA analysis module.

3. Set the display information:
   - If you select to display the target info and rule info on the alarm picture are supported; you can enable the functions by checking the corresponding checkbox on your demand.
   - And if you check the checkbox of 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.

4. Set the Snapshot:
   - You can check the checkbox to upload JPEG image to surveillance center when VCA alarm occurs.
   - You can also set the quality and resolution of the picture separately.

5. Click to save the settings.

### 6.3.3 Zooming Ratio

**Steps:**

1. Enter the Zooming Ratio settings interface:
   - Configuration > VCA > Zooming Ratio
2. Configure the **Zoom Ratio** parameters: Set the appropriate tracking zooming ratio with the PTZ control panel.
6.3.4 Advanced Configuration

**Purpose:**
All the parameters for both behavior analysis and face capture are collected in the advanced configuration page. You can configure these parameters for different VCA types on your demand.

**Steps:**
1. Enter the Advanced Configuration interface:
   - Configuration > VCA > Advanced Configuration

3. Click to save the settings.
2. Adjust the Detection Parameters. (When VCA resource is selected as Behavior Analysis/Behavior Analysis + Face Capture.)
   - **Detection Sensitivity**: Range [0-4], the higher the sensitivity is, the easier the target will be detected.
   - **Background Update Rate**: Range [0-4], if a detected target remains in the monitoring scene for a certain time, the system will count the target as the background automatically. The greater the value is, the faster the target will be counted as the background.
   - **Minimum Target Size**: Range [0-4], The system will filter out the object smaller than the minimum target size.
   - **Displacement Constraint for Target Generation**: Range [0-4], the higher the value is, the slower the target is generated, and the higher accuracy the analysis will get.
   - **Light Change Suppression**: Check the checkbox to suppress the impact caused by the illumination change.

3. Adjust the Tracking Parameters. (When VCA resource is selected as Behavior Analysis/Behavior Analysis + Face Capture.)
   - **Post-tracking**: Range [2-600], you can configure the tracking duration after the target is still.
   - **Force Tracking**: Check the checkbox to enable the function to prevent the object to be blocked. After the function being enabled, the camera will continue locating and tracking the blocked target.
   - **Grade Threshold for Stopping Tracking**: Range [1-15], the higher the value is, the network camera stops tracking under higher condition.
   - **Stop Tracking after Face Detected**: You can set the tracking stopping threshold. The higher the value is the, the easier the tracking can be stopped.
   - **Restore Default**: Click Restore to restore the parameters to the default.
Restart VCA: Click Restart to restart the VCA function.

4. Adjust the Capture Parameters. (When VCA resource is selected as Face Capture.)
   - **Generation Speed**: Range [1-5], the speed for generating the target frame (green) when the person enters the detection region. If you increase this parameter, the target will generate faster and also the false detection rate will rise. In general, it is recommended to use the default value.
   - **Capture Times**: Range [1-10], the times for capturing the person who passes through the detection region. If the person passes very fast, the capture times may be less than the set parameter.
   - **Sensitivity**: Range [1-5], the sensitivity for face detection. Larger value means higher sensitivity, more faces will be detected and also false detection rate will rise. In general, it is recommended to use the default value. Decrease the value if the false detection rate is high.
   - **Capture Interval**: Range [1-255], the interval between two capture actions.
   - **Capture Sensitivity**: Range [0-20], the threshold for judging whether to do face capture.

5. Click to save the settings.

### 6.3.5 Scene Configuration

**Purpose:**
The network camera supports patrol tracking for multiple scenes. At most 10 scenes can be supported by the network camera. At most 8 rules can be configured for a single scene. You can configure the rules for the scene on your demand.

**Steps:**
1. Enter the Scene Configuration interface:
   - Go to **Configuration > VCA > Scene Configuration**.
2. Create a scene. (Optional)
   - **Create a Scene**:
     1) Add New Scene: Click **New Scene** to create a new scene.
     2) Control the PTZ to get the required scene.
     3) Set the scene parameters.
     4) Click to save the settings.
     5) After saving the scene position, you can click **Call** to call the scene position.
3. Select a scene to enter the scene VCA configuration interface.
4. You can configure the scene parameters, rule, arming schedule and alarm linkage.

**Scene Parameters**

**Steps:**
1. Enter Scene Parameters settings interface (here we take Scene 1 as an example):
   - **Configuration > VCA > Scene Configuration > Scene 1 > Scene Parameters**
2. Set the scene parameters.

   **Scene Name:** Enter a custom scene name.

   **Duration:** Set the dwell time of the scene when doing patrol tracking. The intelligent analysis will be enabled during the period. If the alarm is triggered, the network camera will start to stack automatically.

   **Enable Track:** Check the checkbox to enable the tracking function for the scene.

   **Tracking Duration:** Set the duration of the tracking. If the value is selected as 0, the tracking duration will not be limited.

   **Limited Tracking:** You can check the checkbox to enable/disable the function. If the function is enabled, you can set the limited position for the tracking.

   **Note:** After saving the scene position and auto-tracking limits, you can click **Call** to view the saved position or limits.

3. Click **Save** to save the settings.

**Rule**

**Purpose:**
At most 8 rules can be configured for a single scene. Follow the steps below to configure the rule for the scene.

**Steps:**
1. Enter the Rule setting interface:
   
   **Configuration > VCA > Scene Configuration > Scene 1 > Rule**

2. Create new rule: Click **+** to add a new rule.

3. Select rule type: Click the dropdown list to select the rule type. Line Crossing, Intrusion, Region Entrance, and Region Exiting are selectable.
4. Configure the rule area: Click **Draw Line** or **Draw Area** on the tool bar of the live view panel. Click the mouse on the live view panel. Right click the mouse to finish drawing. For details, refer to **Section 6.3.9 Rule Configuration Demonstration**.

5. Configure the filtering size: The filtering function is reserved. You can set the minimum and maximum size of the object needs to be filtered in **Section 6.3.4 Advanced Configuration**.

6. Enable rules: Check the **Enable** checkbox of each rule in the rule list to enable the rule.

7. Click **Save** to save the settings.

**Note:**
Create multiple rules: You can create more rules by repeating the above steps.

**Arming Schedule**

**Steps:**
11. Enter the Arming Schedule settings interface:
   
   **Configuration > VCA > Scene Configuration > Scene > Arming Schedule**

   ![VCA Arming Schedule Interface](image)

   **Figure 6-24 VCA Arming Schedule Interface**

12. The saved rules will be listed in the rule list. Click to select a rule to set the arming schedule.

13. Select the timeline of a certain day, and drag the left button of the mouse to set the arming schedule (the start time and end time of the recording task).

14. After you set the scheduled task, you can click **Edit** and copy the task to other days (optional).

15. After setting the arming schedule, you can click an arming segment to display the segment arming settings interface to edit the segment arming parameters. (optional)

![Segment Arming Settings](image)

**Figure 6-25 Segment Arming Settings**
16. Click to save the settings.

**Note:**

You can select to copy the settings to whole week or are specific days of the week. At most 8 segments can be configured.

**Alarm Linkage**

**Steps:**

1. Enter the Alarm Linkage settings interface:
   
   **Configuration > VCA > Scene Configuration > Scene > Alarm Linkage**

2. Select a rule from the rule list.

3. Check the checkbox of corresponding linkage actions to enable it.

4. Click to save the settings.

### 6.3.6 Scene Auto-switch

**Purpose:**

You can set the sequence for the scene when doing patrol tracking (at least one scene is required to enable scene auto-switch).

**Steps:**

1. Enter the Scene Auto-switch interface:
   
   **Configuration > VCA > Scene Auto-switch**
2. Select scene name from the dropdown list and input the dwell time.

3. You can click ↑ and ↓ to move up and down the scene of the patrol sequence list.

   **Note:**
   If the sequence is selected as 0, this scene will not be configured for patrol tracking.

5. Click **Save** to save the settings.

**6.3.7 Face Capture**

**Steps:**
1. Select Face Capture/Behavior Analysis & Face Capture as VCA resource.
   1) Go to **System > System Settings > VCA Resource**.
   2) Select the Face Capture/Behavior Analysis & Face Capture as the intelligent resource.
   3) Click **Save** to save the settings.
2. Enter the Face Capture interface:
   **Configuration > VCA > Face Capture**
3. Configure **Face Capture** parameters:
   Check the check box to enable the function of face capture.

![Face Capture](image)

**Figure 6-28 Face Capture**

**Capture Interval:** Range [1-255], the interval between two capture actions.

**Capture Times:** Range [1-10], the times for capturing the person who passes through the detection region. If the person passes very fast, the capture times may be less than the set parameter.

**Sensitivity:** Range [1-5], the sensitivity for face detection. Larger value means higher sensitivity, more faces will be detected and also false detection rate will rise. In general, it is recommended to use the default value. Decrease the value if the false detection rate is high.

**Capture Sensitivity:** Range [0-20], the threshold for judging whether to do face capture.

4. Click **Save** to save the settings.

**6.3.8 Shield Region**

**Steps:**
1. Get the Behavior Analysis interface:
Go to VCA Configuration. > VCA Resource. Select the Face Capture as the intelligent resource. Click Save to save the settings.

2. Configure the VCA Info: For details, see 6.2 VCA Information.

3. Configure the Shield Region:
The system will shield the meaningless region to reduce the environment impact and to improve the detection accuracy.

   **Note:**
   At most 4 regions can be configured.

   **Steps:**
   1) Rotate the network camera to the required scene by control the PTZ keyboard.

   2) Click on the tool bar of the live view panel. Click the mouse to draw a region on the live view panel. Right click the mouse to finish.

   ![Shield Region](image)
   **Figure 6-29 Shield Region**

   3) Click **Save** to save the settings.

4. Configure Rule Parameters:
You can set the detection area for the scene. The system will only detect and analyze objects in the configured area.

   **Steps:**
   1) Enable Rule: Check the checkbox to enable the Face Capture rule.

   ![Draw Area](image)
   **Figure 6-30 Draw Area**
2) **Draw the Detection Area:** Click on the tool bar of the live view panel. Click the mouse to draw an area on the live view panel. Right click the mouse to finish. Click **Save** to save the settings.

3) **Draw the Minimum Pupil Distance:** Click on the tool bar of the live view panel. Drag the mouse to draw a pupil distance on the live view panel. The system will filter the objects with a pupil distance which is less than the configured value.

4) **Click** to save the settings.

### 6.3.9 Rule Configuration Demonstration

This section provides detailed configuration steps for each rule.

**Line Crossing**

**Purpose:**
This function can be used for detecting people, vehicles and objects traversing a set virtual plane. The traversing direction can be set as bidirectional, from left to right or from right to left. The alarm will be triggered if the rule is broken.

**Steps:**

1. **Create new rule:** Click to add a new rule.

2. **Select rule type:** Click the dropdown list and select **Line Crossing** as the rule type.

![Figure 6-31 Select Rule Type](image)

3. **Configure the rule area:**

   Click on the tool bar of the live view panel. Adjust the position and length of the line on the live view panel.
4. Click the dropdown list in the rule list to select the crossing direction.

5. Enable rules: Check the Enable checkbox of each rule in the rule list to enable the rule.

6. Click to save the settings.

**Intrusion**

**Purpose:**
This function can be used for detecting whether there are people, vehicles and objects intrude into the pre-defined region longer than the set duration. The alarm will be triggered if the rule is broken.

**Steps:**

1. Create new rule: Click add a new rule.

2. Select rule type: Click the dropdown list and select Intrusion as the rule type.
3. Configure the rule area:

Click on the tool bar of the live view panel. Click the mouse on the live view panel. Right click the mouse to finish drawing.

![Figure 6-35 Draw Area](image)

4. Set the duration from 1 to 100.
5. Enable rules: Check the **Enable** checkbox of each rule in the rule list to enable the rule.

6. Click **Save** to save the settings.

**Region Entrance**

*Purpose:*
This function can be used for detecting people, vehicles and objects entering the pre-defined region. The alarm will be triggered if the rule is broken.

*Steps:*
1. Create new rule: Click **+** to add a new rule.
2. Select rule type: Click the dropdown list and select **Region Entrance** as the rule type.

![Figure 6-36 Select Rule Type](image)

3. Configure the rule area:

Click on the tool bar of the live view panel. Click the mouse on the live view panel. Right click the mouse to finish drawing.
4. **Enable rules:** Check the **Enable** checkbox of each rule in the rule list to enable the rule.

5. **Click** to save the settings.

**Region Exiting**

**Purpose:**
This function can be used for detecting people, vehicles, and objects exiting the pre-defined region. The alarm will be triggered if the rule is broken.

**Steps:**

1. **Create new rule:** Click to add a new rule.

2. **Select rule type:** Click the dropdown list and select **Region Exiting** as the rule type.

3. **Configure the rule area:**

   Click on the tool bar of the live view panel. Click the mouse on the live view panel. Right click the mouse to finish drawing.
4. Enable rules: Check the **Enable** checkbox of each rule in the rule list to enable the rule.

5. Click ![Save](https://example.com/save_icon.png) to save the settings.
Chapter 7 Maintenance

7.1 System Setting

7.1.1 Viewing Basic Information

Enter the Basic Information interface:
Configuration > System > System Settings > Basic Information

In the Basic Information interface, you can edit the Device Name and Device No. Other information of the camera, such as Model, Serial No., Firmware Version, Encoding Version, Web Version, Plugin Version, Number of Channels, Number of HDDs, Number of Alarm Input and Number of Alarm Output are displayed. The information cannot be changed in this menu. It is the reference for maintenance or modification in future.

<table>
<thead>
<tr>
<th>Basic Information</th>
<th>Time Settings</th>
<th>RS485</th>
<th>DST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Name</td>
<td>IP DOME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device No.</td>
<td>00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>XX-XXXX-XXXX-X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial No.</td>
<td>XX-XXXX-XXXX-XXXXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firmware Version</td>
<td>VXX.X build XXXXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encoding Version</td>
<td>VXX.X build XXXXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web Version</td>
<td>VXX.X build XXXXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plugin Version</td>
<td>VXX.XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Channels</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of HDDs</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Alarm Input</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Alarm Output</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 7-1 Device Information

7.1.2 Time Settings

Purpose:
You can follow the instructions in this section to configure the time which can be displayed on the video. There are Time Zone, Time Synchronization, Daylight Saving Time (DST) functions for setting the time. Time Synchronization consists of auto mode by Network Time Protocol (NTP) server and manual mode.

To enter the Time settings interface:
Configuration > System > System Settings > Time Settings
Figure 7-2 Time Settings

◆ Configuring Time Synchronization by NTP Server

Steps:
(1) Check the radio button to enable the NTP function.
(2) Configure the following settings:
   - **Server Address**: IP address of NTP server.
   - **NTP Port**: Port of NTP server.
   - **Interval**: The time interval between the two synchronizing actions by NTP server. It can be set from 1 to 10080 minutes.

(3) You can click to check whether the configuration is succeeded.

*Note:*
If the camera is connected to a public network, you should use a NTP server that has a time synchronization function, such as the server at the National Time Center (IP Address: 210.72.145.44). If the camera is set in a customized network, NTP software can be used to establish a NTP server for time synchronization.

◆ Configuring Time Synchronization Manually

Steps:
(1) Check the **Manual Time Sync** radio button.
(2) Click to set the system time from the pop-up calendar.
(3) Click to save the settings.
**Note:**
You can also check the **Sync. with computer time** checkbox to synchronize the time of the camera with the time of your computer.

![Figure 7-4 Time Sync Manually](image)

◆ **Select the Time Zone**

*Purpose:*
When the camera is taken to another time zone, you can use the **Time Zone** function to adjust the time. The time will be adjusted according to the original time and the time difference between the two time zones.

From the **Time Zone** dropdown menu as shown in Figure 7-5, select the Time Zone in which the camera locates.

![Figure 7-5 Time Zone Settings](image)

7.1.3 **Configuring RS-485**

*Purpose:*
The RS-485 serial port is used to control the PTZ of the camera. The configuring of the PTZ parameters should be done before you control the PTZ unit.

*Steps:*
1. Enter RS-485 Port setting interface:
   - **Configuration > System > System Settings > RS-485**

![Figure 7-6 RS-485 Settings](image)
2. Set the RS-485 parameters and click **Save** to save the settings.

   **Note:**
   The Baudrate, PTZ Protocol and PTZ Address parameters of the camera should be exactly the same as those of the control device.

### 7.1.4 Configuring DST (Daylight Saving Time)

**Purpose:**
If there is the habit of adjusting clocks forward in your country in certain time period of a year, you can turn this function on. The time will be adjusted automatically when the Daylight Saving Time (DST) comes.

**Steps:**
1. Enter the DST settings interface:
   **Configuration > System > System Settings > DST**
2. Check **Enable DST** to enable the DST function.
3. Set the date of the DST period.
4. Click **Save** to save the settings.

![Figure 7-7 DST Settings](image)

### 7.2 Maintenance

#### 7.2.1 Upgrade & Maintenance

- **Rebooting the Camera**

  **Steps:**
  1. Enter the Maintenance interface:
     **Configuration > System > Maintenance > Upgrade & Maintenance:**
  2. Click **Reboot** to remotely reboot the camera.

- **Restoring Default Settings**

  **Steps:**
  1. Enter the Maintenance interface:
     **Configuration > System > Maintenance > Upgrade & Maintenance:**
  2. Click **Restore** or **Default** to restore the default settings.
**Note:**
Clicking the **Default** button will restore all the parameters to default settings including the IP address and user information. Use this button with caution.

<table>
<thead>
<tr>
<th>Default</th>
<th><strong>Reset all the parameters, except the IP parameters and user information, to the default settings.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Restore</td>
<td><strong>Restore all parameters to default settings.</strong></td>
</tr>
</tbody>
</table>

![Figure 7-8 Restore Default Settings](image)

- **Exporting Configuration File**

  **Steps:**
  1. Enter the Maintenance interface:
     - **Configuration > System > Maintenance > Upgrade & Maintenance**
  2. Click **Device Parameters** to select the directory as the saving path to start exporting configuration file.

- **Importing Configuration File**

  **Steps:**
  1. Enter the Maintenance interface:
     - **Configuration > System > Maintenance > Upgrade & Maintenance**
  2. Click **Browse** to select the local configuration file and then click **Import** to start importing configuration file.

![Figure 7-9 Import Configuration File](image)

**Note:**
You need to reboot the camera after importing configuration file.

- **Upgrading the System**

  **Steps:**
  1. Enter the Upgrade & Maintenance interface:
     - **Configuration > System > Maintenance > Upgrade & Maintenance**
  2. Select Firmware or Firmware Directory.
    - **Firmware**: when you select **Firmware**, you need to find the firmware in your computer to upgrade the device.
    - **Firmware Directory**: You need to find the directory where the firmware locates. The device can find the firmware in the directory automatically.
3. Click Browse to select the local upgrade file and then click Upgrade to start remote upgrade.

Note:
The upgrading process will take 1 to 10 minutes. Do not disconnect the power of the camera during the upgrading process. The camera reboots automatically after upgrading.

![Remote Upgrade Figure](image)

**Figure 7-10 Remote Upgrade**

### 7.2.2 Log Searching

**Purpose:**
The operation, alarm, exception and information of the camera can be stored in log files. You can also export the log files on your demand.

**Before you start:**
Configure network storage for the camera or insert a memory card in the camera.

**Steps:**
1. Enter the Log interface:
   - Configuration > System > Maintenance > Log

![Log Searching Interface](image)

**Figure 7-11 Log Searching Interface**

2. Set the log search conditions to specify the search, including the Major Type, Minor Type, Start Time and End Time as shown in Figure 7-11.

3. Click Search to search log files. The matched log files will be displayed on the Log List.
4. To export the log files, click **Save Log** to save the log files in your computer.

### 7.2.3 System Service

**Steps:**
1. Enter the interface of configuring the remote connection:  
   
   **Configuration** > **System** > **Maintenance** > **System Service**

2. Input a number in text field as the upper limit of the remote connection number. E.g. when you specify the remote connection number as 10, then the 11th remote connection cannot be established.

![Live View Connection Settings](image)

3. Check the checkbox to enable the supplement light function, and then the light will be turned on automatically when the illumination is not enough for the video monitoring. (Optional)

4. Click **Save** to activate the settings.

   **Note:**
   The supplement light configuration is only supported by certain models.

### 7.3 Security

#### 7.3.1 Configuring Authentication

**Purpose:**
You can specifically secure the stream data of live view.

**Steps:**
1. Enter the Authentication interface:
   
   **Configuration** > **System** > **Security** > **Authentication**

2. Set the authentication mode for RTSP authentication.
   
   **RTSP Authentication:** Select the authentication mode as basic or disable in the dropdown list to enable or disable the RTSP authentication.

3. Click **Save** to save the settings.

#### 7.3.2 Configuring IP Address Filter

**Purpose:**
With this function on, the camera allows certain IP addresses whether to log in or not.

**Steps:**
1. Enter IP Address Filter interface:

   **Configuration > System > Security > IP Address Filter**

![](image)

**Figure 7-13 IP Address Filter**

2. Check the **Enable IP Address Filter** checkbox.

3. Select the type of IP Address Filter in the dropdown list, Forbidden and Allowed are selectable.

4. Set the IP Address Filter list.

   - **Add an IP Address**

     **Steps:**
     
     (1) Click **Add** to add an IP.
     
     (2) Input the IP Adreess.
     
     ![](image)
     
     **Figure 7-14 Add an IP**
     
     (3) Click **OK** to finish adding.

   - **Modify an IP Address**

     **Steps:**
     
     (1) Left-click an IP address from filter list and click **Modify**.
     
     (2) Modify the IP address in the text filed.
3. Click **OK** to finish modifying.

   - **Delete an IP Address**
     - Left-click an IP address from filter list and click **Delete**.
   - **Delete all IP Addresses**
     - Click **Clear** to delete all the IP addresses.

5. Click **Save** to save the settings.

### 7.3.3 Configuring Security Service Settings

**Steps:**

1. Enter the Security Service interface:
   - **Configuration > System > Security > Security Service**
2. Check the **Enable SSH** checkbox to enable the SSH function.
   - **Enable SSH**: Enabling SSH (Secure Shell) function is to encrypt and compress the data and to reduce the transmission time.

### 7.4 User Management

Enter the User Management interface:
   - **Configuration > System > User Management**

The **admin** user has access to create, edit or delete other accounts. Up to 31 user accounts can be created.
• **Add a User**

**Steps:**

1. Click **Add** to add a user.

2. Input the new **User Name**, select **Level** and input **Password**.

   ! **For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.**

   ! **Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.**

   **Note:**

   The level indicates the permissions you give to the user. You can define the user as **Operator** or **User**.

3. In the **Basic Permission** field and **Camera Configuration** field, you can check or uncheck the permissions for the new user.

4. Click **OK** to finish the user addition.

---

**Figure 7-17 Add a User**

• **Modify a User**

**Steps:**

1. Click to select the user from the list and click **Modify**.

2. Modify the **User Name**, **Level** or **Password**.
3. In the **Basic Permission** field and **Camera Configuration** field, you can check or uncheck the permissions.

4. Click **OK** to finish the user modification.

![Modify user interface](image)

**Figure 7-18 Modify a User**

- **Delete a User**

  **Steps:**

  1. Click the user name you want to delete and click **Delete**.

  2. Click **OK** on the pop-up confirmation box to delete the user.
Appendix

Appendix 1 SADP Software Introduction

◆ Description of SADP

SADP (Search Active Devices Protocol) is a kind of user-friendly and installation-free online device search tool. It searches the active online devices within your subnet and displays the information of the devices. You can also modify the basic network information of the devices using this software.

◆ Search active devices online

- **Search online devices automatically**
  After launch the SADP software, it automatically searches the online devices every 15 seconds from the subnet where your computer locates. It displays the total number and information of the searched devices in the Online Devices interface. Device information including the device type, IP address and port number, etc. will be displayed.

![SADP Software Interface](image)

**Figure A.1.1 Searching Online Devices**

*Note:* Device can be searched and displayed in the list in 15 seconds after it went online; it will be removed from the list in 45 seconds after it went offline.

- **Search online devices manually**
  You can also click ![Refresh](image) to refresh the online device list manually. The newly searched devices will be added to the list.
**Note:**

You can click or on each column heading to order the information; you can click to expand the device table and hide the network parameter panel on the right side, or click to show the network parameter panel.

◆ **Modify network parameters**

**Steps:**

1. Select the device to be modified in the device list and the network parameters of the device will be displayed in the Modify Network Parameters panel on the right side.
2. Edit the modifiable network parameters, e.g. IP address and port number.
3. Enter the password of the admin account of the device in the **Password** field and click to save the changes.

⚠️ For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something 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.

⚠️ Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

![Modify Network Parameters](image)

Figure A.1.2 Modify Network Parameters
Appendix 2 Statics, Interference Lightning and Surge Protection

This product adopts TVS plate lightning protection technology to avoid damage caused by pulse signal that is below 3000V, like instantaneous lighting stroke, surging, etc. According to the actual outdoor situation, necessary protection measures must be taken, besides ensuring the electrical safety.

- The distance between signal transmission wires and High-voltage equipment or high-voltage cable is at least 50m.
- Outdoor wiring should better be routed under eaves as much as possible.
- In the open field, wiring should be buried underground in sealed steel pipe, and the steel-pipe should be one-point grounding. Overhead routing method is forbidden.
- In strong thunderstorm area or high induction voltage areas (such as high-voltage transformer substation), high power lightning protection apparatus and lightning conductor are necessary to be added.
- The design of lightning protection and grounding of the outdoor devices and cables should be considered together with the lightning protection demand of buildings. It also must conform to the related national standards and industrial standards.
- The system should be equipotential grounded. The grounding equipment must conform to the demands of system anti-jamming and electrical safety both and it must not appear short circuit or mixed circuit with the zero conductor of strong grid. When the system is grounded alone, the resistance should be no more than 4Ω. The sectional area of the grounding cable should be no less than 25mm². For grounding instructions, refer to the Installation Manual of Camera.

![Lightning & Surge Protection](image)

**Grounding for Cement Pole/Wall Installation:**
When the camera is installed in environment where is relatively insulating to the earth, e.g., cement pole or cement wall, then only the control center requires proper grounded locally. Refer to the following figure.
Figure A.3.2 Grounding in Cement Pole/Wall Installation

**Notes:**
- Because the signal transmission media of fiber optical camera and camera are isolated from the control center, they must be grounded locally to protect camera against damages.
- If the camera is installed in strong thunderstorm area, it must be grounded locally to release lightening or suchlike high energy to protect camera against damages. Refer to the following figure.

Figure A.3.3 Lightening-protection Grounding in Cement Pole/Wall Installation
Grounding for Metal Pole Installation:
When the camera is installed in environment where is conductive to the earth, e.g., metal pole, then the grounding of camera can be achieved by the properly grounded metal pole, meanwhile, the control center must be grounded locally as well. Refer to the following figure.

Figure A.3.4 Grounding in Metal Pole Installation

**Note:**
If the fiber optics, lightening protector or other device are applied during the transmission of camera, such devices as well as the video cables routing through must be proper grounded.
Appendix 3 Waterproof

**Notes:**
- The long-arm wall mount is recommended for the outdoor application of camera.
- You cannot use the short-arm wall mount or pendant mount for outdoor application, because it is not water-proof.
- It is recommended to use the mount with inner threaded interface and good waterproof performance.
- If you use a mount with outer threaded interface, adopt waterproof measures to the adapter applied between the mount and the camera.
- Do not install indoor camera to the outdoor environment.

**L-shape Pole Mount**

Make sure that the L-shape pole mount is designed with a certain inclination angle as shown in following figure. Water won’t flow from the pole into the camera with the inclination angle.

![Figure A.4.1 Customized Mount](image-url)
Appendix 4 Bubble Maintenance

The bubble is a transparent plastic. The dust, oil and finger print, etc. will cause scratch or image blur. Refer to the following method to clean the bubble.

- Handling dust
  Use oil free soft brush or blowing dust ball to clean the dust.

- Handling oil

**Steps:**
1. Wipe off the water-drop or oil by soft cloth and dry the bubble.
2. Use oil free cotton cloth to wipe the bubble with alcohol or detergent.
3. Change the cloth to wipe the bubble until the bubble is clean.
Appendix 5 RS-485 Bus Connection

- General Property of RS-485 Bus
According to RS-485 industry bus standard, RS-485 is a half-duplex communication bus which has 120Ω characteristic impedance, the maximum load ability is 32 payloads (including controller device and controlled device).

- RS-485 Bus Transmission Distance
When using 0.56mm (24AWG) twisted-pair line, according to different baudrate, the maximum transmission distance theory table is shown as below:

<table>
<thead>
<tr>
<th>Baudrate</th>
<th>Max Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2400BPS</td>
<td>1800m</td>
</tr>
<tr>
<td>4800BPS</td>
<td>1200m</td>
</tr>
<tr>
<td>9600BPS</td>
<td>800m</td>
</tr>
</tbody>
</table>

The transmission distance will be decreased if we use the thinner cable, or use this product under the strong electromagnetic interference situation, or there are lots of devices are added to the bus; on the contrary, the transmission distance will be increased.

- Connection Methods
RS-485 industry bus standard require daisy-chain connection method between any devices, both sides have to connect a 120Ω terminal resistance (show as Diagram 1), the simplified connection method is shown as diagram 2, but the distance of “D” should not be too long.

![Figure A.6.1 RS-485 Connection 1](image1)

![Figure A.6.2 RS-485 Connection 2](image2)

- Problems in the Practical Application
Normally, users adopt star-shape connection method in construction, under this situation, the terminal resistors must be connected between two farthest devices (as Figure A-9, 1# and 15#), but this connection method is not satisfy the requirement of the RS-485 industry standard so that it will lead to some problems such as signal reflection, anti-jamming ability decline when the devices are faraway. At this time, the camera will be uncontrollable, or self-running, etc.
For such case, the best way is adding a RS-485 distributor. This product can effectively change the star-shape connection to which satisfies the requirement of RS-485 industry standard, in order to avoid those problems and improve the communication reliability. Refer to the following figure.

**Troubleshooting of RS-485 communication**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Reasons</th>
<th>To Solve the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>The camera does the self-test action but cannot be controlled remotely.</td>
<td>1. The address or baudrate of the camera does not match with those of remote control device.</td>
<td>1. Adjust the address and baudrate of the remote control device to match with those of the camera.</td>
</tr>
<tr>
<td></td>
<td>2. The wire RS-485+ connects to the interface RS-485- and wire RS-485- connects to the interface RS-485+.</td>
<td>2. Connect the wire RS-485+ to the interface RS-485+ and wire RS-485- to the interface RS-485-.</td>
</tr>
<tr>
<td></td>
<td>3. The RS-485 wire is disconnected.</td>
<td>3. Reconnect the RS-485 wire tightly.</td>
</tr>
<tr>
<td></td>
<td>4. RS-485 wire is broken.</td>
<td>4. Change a RS-485 wire.</td>
</tr>
<tr>
<td>The camera can be controlled but not smoothly.</td>
<td>1. The connection is loose.</td>
<td>1. Reconnect the RS-485 wire tightly.</td>
</tr>
<tr>
<td></td>
<td>2. RS-485+ or RS-485-wire is broken.</td>
<td>2. Change a RS-485 wire.</td>
</tr>
<tr>
<td></td>
<td>3. The camera is too far away from the remote control device.</td>
<td>3. Add a terminal resistor.</td>
</tr>
<tr>
<td></td>
<td>4. Too many cameras are connected.</td>
<td>4. Add a RS-485 distributor.</td>
</tr>
</tbody>
</table>
Appendix 6 24VAC Wire Gauge & Transmission Distance

The following table describes the recommended max. distance adopted for the certain wire gauge when the loss rate of 24VAC voltage is less than 10%. For the AC driven device, the maximum voltage loss rate is 10% allowable. For example, for a device with the rating power of 80VA which is installed at a distance of 35 feet (10m) away from the transformer, then 0.8000mm is required as the minimum wire gauge.

<table>
<thead>
<tr>
<th>Distance (feet)</th>
<th>0.8000</th>
<th>1.000</th>
<th>1.250</th>
<th>2.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>283(86)</td>
<td>451(137)</td>
<td>716(218)</td>
<td>1811(551)</td>
</tr>
<tr>
<td>20</td>
<td>141(42)</td>
<td>225(68)</td>
<td>358(109)</td>
<td>905(275)</td>
</tr>
<tr>
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<td>94(28)</td>
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Appendix 7 12VDC Wire Gauge & Transmission Distance

The following table describes the recommended max. distance adopted for the certain wire gauge when the loss rate of 12VDC voltage is less than 15%. For the DC driven device, the maximum voltage loss rate is 15% allowable.

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# Appendix 8 Table of Wire Gauge Standards

<table>
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<tr>
<th>Bare Wire Gauge (mm)</th>
<th>American Wire Gauge AWG</th>
<th>British Wire Gauge SWG</th>
<th>Cross-sectional Area of Bare Wire (mm²)</th>
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Appendix 9 Alarm In/Out Connections

Note:
This section is only for the cameras with alarm in/out functions. The camera can be connected with alarm inputs (0~5VDC) and alarm outputs. Refer to the following diagrams for alarm output:

Figure A.9.1 Alarm Out Connections

The alarm provides the relay output (no voltage), and the external power supply is required when it connects to the alarm device.

- For DC power supply (left diagram), the input voltage must be no more than 30VDC, 1A.
- For AC power supply, the external relay must be used (right diagram) to prevent damages to the camera and avoid risk of electric shock.
Appendix 10 Camera Function Description

*Note:* The functions vary depending on different camera models.

**Limit Stops**
The camera can be programmed to move within the limit stops (left/right, up/down).

**Scan Modes**
The camera provides 5 scan modes: auto scan, tilt scan, frame scan, random scan and panorama scan.

**Preset Freezing**
This feature freezes the scene on the monitor when the camera is moving to a preset. This allows for smooth transition from one preset scene to another. It also guarantees that masked area will not be revealed when the camera is moving to a preset.

**Presets**
A preset is a predefined image position. When the preset is called, the camera will automatically move to the defined position. The presets can be added, modified, deleted and called.

**Label Display**
The on-screen label of the preset title, azimuth/elevation, zoom, time and camera name can be displayed on the monitor. The displays of time and camera name can be programmed.

**Auto Flips**
In manual tracking mode, when a target object goes directly beneath the camera, the video will automatically flips 180 degrees in horizontal direction to maintain continuity of tracking. This function can also be realized by auto mirror image depending on the models of camera.

**Privacy Mask**
This function allows you to block or mask certain area of a scene, for preventing the personal privacy from recording or live viewing. A masked area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide.

**3D Positioning**
In the client software, use the left key of mouse to click on the desired position in the video image and drag a rectangle area in the lower right direction, then the camera system will move the position to the center and allow the rectangle area to zoom in. Use the left key of mouse to drag a rectangle area in the upper left direction to move the position to the center and allow the rectangle area to zoom out.

**Proportional Pan/Tilt**
Proportional pan/tilt automatically reduces or increases the pan and tilt speeds according to the amount of zoom. At telephoto zoom settings, the pan and tilt speeds will be slower than at wide zoom settings. This keeps the image from moving too fast on the live view image when there is a large amount of zoom.

**Auto Focus**
The auto focus enables the camera to focus automatically to maintain clear video images.

**Day/Night Auto Switch**
The cameras deliver color images during the day. And as light diminishes at night, the cameras switch to night mode and deliver black and white images with high quality.

**Slow Shutter**
In slow shutter mode, the shutter speed will automatically slow down in low illumination conditions to maintain clear video images by extending the exposure time. The feature can be enabled or disabled.

**Backlight Compensation (BLC)**
If you focus on an object against strong backlight, the object will be too dark to be seen clearly. The BLC
(Backlight Compensation) function can compensate light to the object in the front to make it clear, but this causes the over-exposure of the background where the light is strong.

**Wide Dynamic Range (WDR)**

The wide dynamic range (WDR) function helps the camera provide clear images even under back light circumstances. When there are both very bright and very dark areas simultaneously in the field of view, WDR balances the brightness level of the whole image and provide clear images with details.

**White Balance (WB)**

White balance can remove the unrealistic color casts. White balance is the white rendition function of the camera to adjust the color temperature according to the environment automatically.

**Patrol**

A patrol is a memorized series of pre-defined preset function. The scanning speed between two presets and the dwell time at the preset are programmable.

**Pattern**

A pattern is a memorized series of pan, tilt, zoom, and preset functions. By default the focus and iris are in auto status during the pattern is being memorized.

**Power Off Memory**

The camera supports the power off memory capability with the predefined resume time. It allows the camera to resume its previous position after power is restored.

**Time Task**

A time task is a preconfigured action that can be performed automatically at a specific date and time. The programmable actions include: auto scan, random scan, patrol 1-8 ,pattern 1-4, preset 1-8,frame scan, panorama scan, tilt scan, day, night, reboot, PT adjust, Aux Output, etc.

**Park Action**

This feature allows the camera to start a predefined action automatically after a period of inactivity.

**User Management**

The camera allows you to edit users with different levels of permission, in the admin login status. Multiple users are allowed to access and control the same camera via network simultaneously.

**3D Digital Noise Reduction**

Comparing with the general 2D digital noise reduction, the 3D digital noise reduction function processes the noise between two frames besides processing the noise in one frame. The noise will be much less and the video will be clearer.

**Dual-VCA**

Combine the detected VCA information into the video stream, which can be used for the second-time analysis on the back-end device.