HIKVISION

Thermometric Bi-spectrum Network Positioning System

User Manual

Thank you for purchasing our product. If there are any questions, or requests, please do not hesitate to contact the dealer.

This manual applies to Thermometric Bi-spectrum Network Positioning System.

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

Different models may differ in functions, please refer to the actual GUI of each model.

DISCLAIMER STATEMENT

"Underwriters Laboratories Inc. ("UL") has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock or casualty hazards as outlined in UL's Standard(s) for Safety, UL60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product. UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT."

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Regulatory Information

FCC Information

FCC compliance: This equipment has been tested and found to comply with the limits for Class A 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 Low Voltage Directive 2006/95/EC, the EMC Directive 2004/108/EC, 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.

⚡	⚠️
Warnings Follow these safeguards to prevent serious injury or death.	**Cautions** Follow these precautions to prevent potential injury or material damage.

⚡ **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.)

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.

Table of Contents

Chapter 1 Overview

1.1 Overview

Thermometric bi-spectrum network positioning system (named as positioning system in the chapters below) integrates the function of the decoder, thermal camera, and the high-definition zoom camera. It performs temperature measurement, dynamic fire source detection and other smart detections in the remote surveillance of the power system, metallurgy system, and petrochemical engineering, and so on.

You can get a high-quality live view via web browser or client software.

The figure below shows the overview of the positioning system.
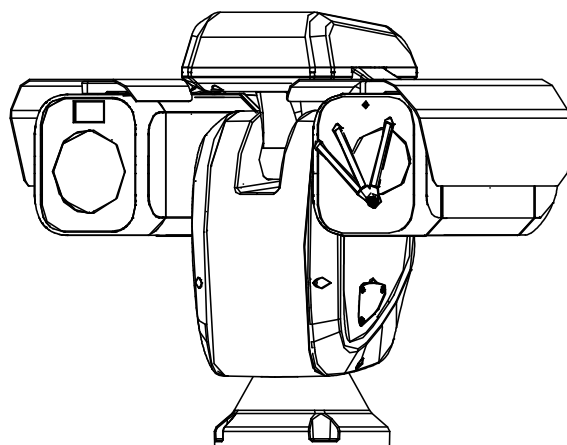
Figure 1-1 Overview of Thermometric Positioning System

1.2 System Requirement

System requirement of web browser accessing is 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 7.0 and above version, Apple Safari 5.02 and above version, Mozilla Firefox 5 and above version and Google Chrome8 and above versions.

1.3 Functions

NOTE

The functions vary depending on the models of positioning system.

● **Bi-spectrum**

The positioning system has two lens, an optical one and a thermal one, and two images are respectively provided by each lens.

● **PTZ Limits**

The positioning system can be programmed to move within the PTZ stops (left/right, up/down).

● **Scan Modes**

The positioning system provides 5 scan modes: auto scan, tilt scan, frame scan, random scan and panorama scan.

● **Presets**

A preset is a predefined image position. When the preset is called, the positioning system 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 positioning system name can be displayed on the monitor. The displays of time and positioning system name can be programmed.

● **Auto Flips**

In manual tracking mode, when a target object goes directly beneath the positioning system, 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 different camera models.

● **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 positioning system 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 positioning systems deliver color images during the day. And as light diminishes at night, the positioning systems 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.

NOTE

This feature varies depending on positioning system models.

● **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 positioning system supports the power off memory capability with the predefined resume time. It allows the positioning system to resume its previous position after power is restored.

● **Timing 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 positioning system to start a predefined action automatically after a period of inactivity.

- **User Management**

The positioning system 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 network positioning system 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.

- **VCA Detection**

The positioning system allows you to do intelligent analysis and multiple rules can be configured for different requirements.

Chapter 2 Network Connection

Before you start:
- If you want to set the network positioning system via a LAN (Local Area Network), please refer to ***Section 2.1 Setting the Network Positioning system over the LAN.***
- If you want to set the network positioning system via a WAN (Wide Area Network), please refer to ***Section 2.2 Setting the Network Positioning system over the WAN.***

2.1 Setting the Network Positioning system over the LAN

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

> For the detailed introduction of SADP, please refer to Appendix 1.

2.1.1 Wiring over the LAN

The following figures show the two ways of cable connection of a network positioning system and a computer:

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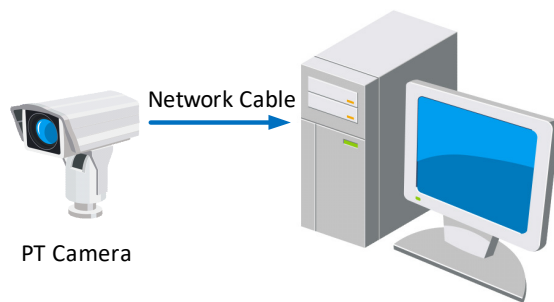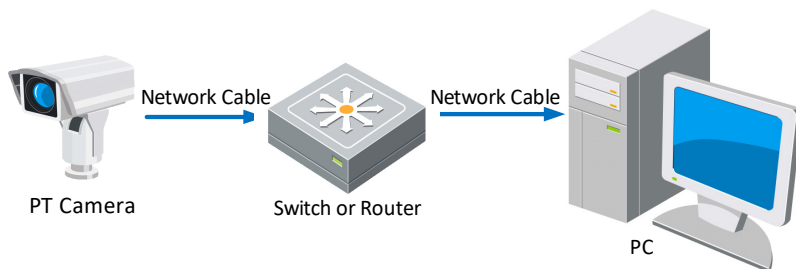
Figure 2-1 Connecting Directly

Figure 2-2 Connecting via a Switch or a Router

2.1.2 Activating the Positioning system

Purpose:

You are required to activate the positioning system first before you can use the positioning system.

Activation via Web Browser, Activation via SADP, and Activation via client software are supported. In the following sections, activation via web browser and SADP will be taken as examples. You may refer to the user manual of the positioning system for the details of activation via client software.

◆ **Activation via Web Browser**

Steps:

1. Power on the positioning system, and connect the positioning system 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 positioning system is 192.168.1.64.

Figure 2-3 Activation Interface(Web)

3. Create a password and input the password into the password field.

> ⚠️ **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.*

4. Confirm the password.
5. Click **OK** to activate the positioning system 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 according to the prompts. Follow the steps to activate the positioning system**.**
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.
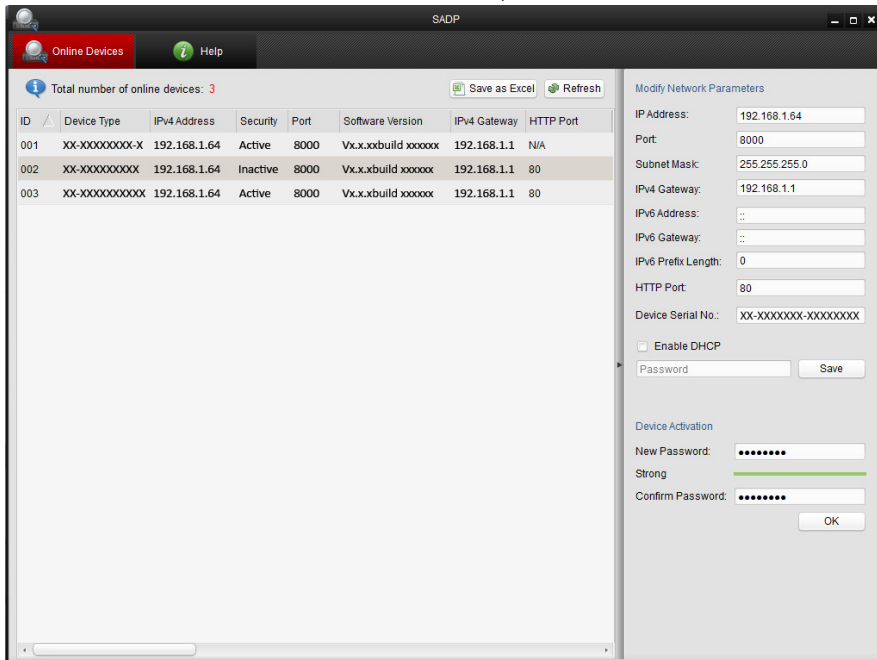

Figure 2-4 SADP Interface

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

4. Click **OK** to save the password.

    You can check whether the activation is completed on the popup window. If activation failed, please 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 checkbox of Enable DHCP.

Modify Network Parameters

IP Address:	192.168.1.64
Port:	8000
Subnet Mask:	255.255.255.0
IPv4 Gateway:	192.168.1.1
IPv6 Address:	::
IPv6 Gateway:	::
IPv6 Prefix Length:	0
HTTP Port:	80
Device Serial No.:	XX-XXXXXXX-XXXXXXXX

☐ Enable DHCP

| Password | Save |

Figure 2-5 Modify the IP Address

6. Input the password and click the **Save** button 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
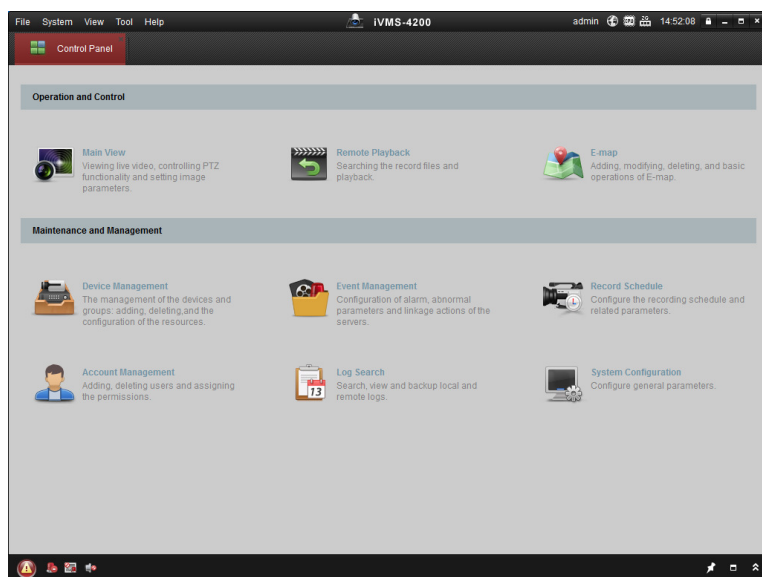
in the figure below.

Figure 2-6 Control Panel

2. Click the **Device Management** icon to enter the Device Management interface, as shown in the figure below.
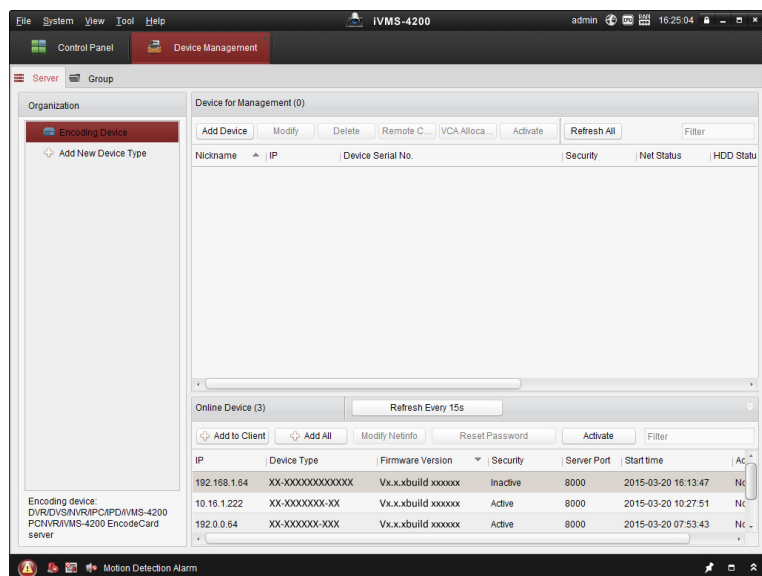

Figure 2-7 Device Management Interface

3. Check the device status from the device list, and select an inactive device.
4. Click the **Activate** button to pop up the Activation interface.
5. Create a password and input the password in the password field, and confirm 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.*
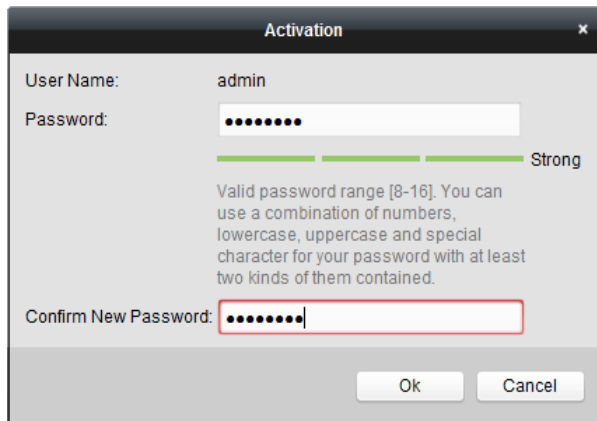

Figure 2-8 Activation Interface

7. Click **OK** button to start activation.
8. Click the **Modify Netinfo** button to pop up the Network Parameter Modification interface, as shown in the figure below.
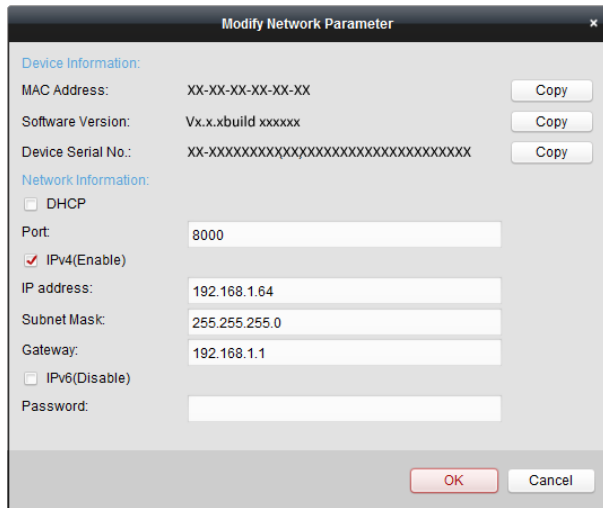

Figure 2-9 Modifying the Network Parameters

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

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

2.2 Setting the Network Positioning system over the WAN

Purpose:

This section explains how to connect the network positioning system to the WAN with a static IP or a dynamic IP.

2.2.1 Static IP Connection

Before you start:

Please apply a static IP from an ISP (Internet Service Provider). With the static IP address, you can connect the network positioning system via a router or connect it to the WAN directly.

● **Connecting the network positioning system via a router**

Steps:

1. Connect the network positioning system to the router.
2. Assign a LAN IP address, the subnet mask and the gateway. Refer to **Section 2.1.2** for detailed IP address configuration of the positioning system.
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. Please call the router manufacturer for assistance with port mapping.

   ![NOTE]

        Refer to Appendix 2 for detailed information about port mapping.
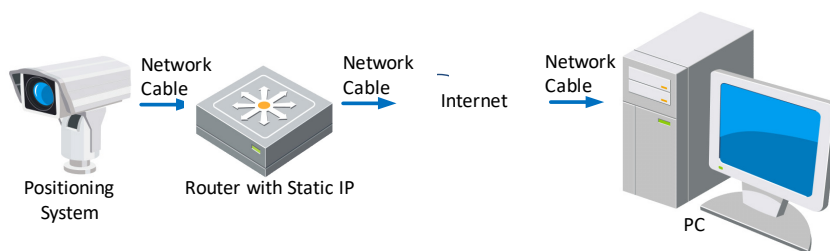5. Visit the network positioning system through a web browser or the client software over the internet.

     Figure 2-10 Accessing the Positioning system through Router with Static IP

![END]

● **Connecting the network positioning system with static IP directly**

You can also save the static IP in the positioning system and directly connect it to the internet without using a router. Refer to **Section 2.2.2 Dynamic IP Connection** for detailed IP address configuration of the positioning system.
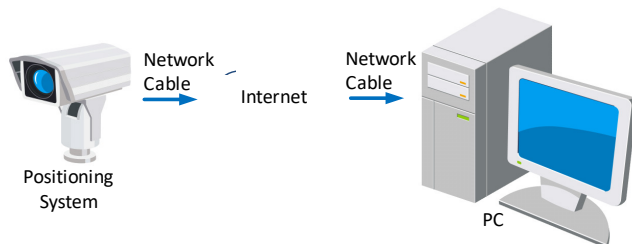

Figure 2-11 Accessing the Positioning system with Static IP Directly

2.2.2 Dynamic IP Connection

Before you start:
Please apply a dynamic IP from an ISP. With the dynamic IP address, you can connect the network positioning system to a modem or a router.

● **Connecting the network positioning system via a router**

Steps:
1. Connect the network positioning system to the router.
2. In the positioning system, assign a LAN IP address, the subnet mask and the gateway. Refer to **Section 2.1.2** 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. Please call the router manufacturer for assistance with port mapping.

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 positioning system via the applied domain name.

END

- **Connecting the network positioning system via a modem**

Purpose:

This positioning system supports the PPPoE auto dial-up function. The positioning system gets a public IP address by ADSL dial-up after the positioning system is connected to a modem. You need to configure the PPPoE parameters of the network positioning system. Refer to *Section 6.3.3 Configuring PPPoE Settings* for detailed configuration.
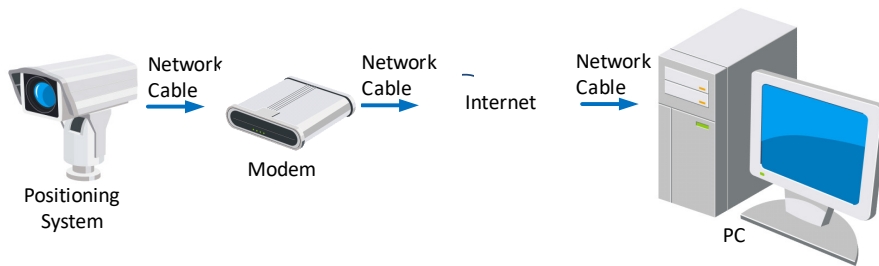

Figure 2-12 Accessing the Positioning system with Dynamic IP

NOTE

The obtained IP address is dynamically assigned via PPPoE, so the IP address always changes after rebooting the positioning system. To solve the inconvenience of the dynamic IP, you need to get a domain name from the DDNS provider (E.g. DynDns.com). Please follow below steps for normal domain name resolution and private domain name resolution to solve the problem.

◆ Normal Domain Name Resolution
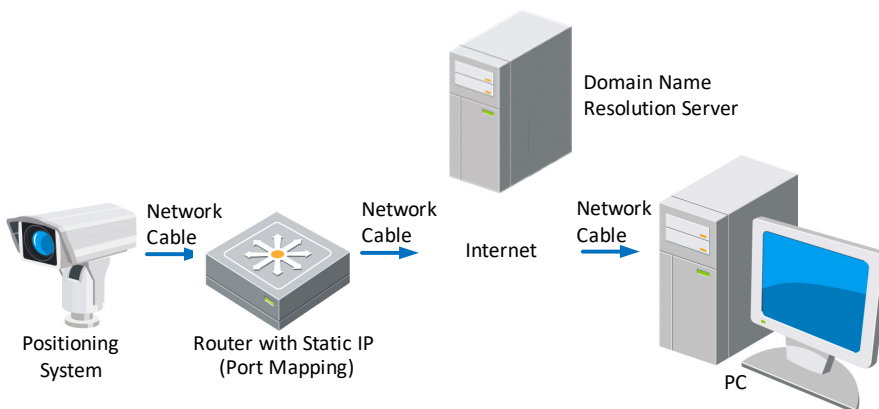

Figure 2-13 Normal Domain Name Resolution

Steps:

1. Apply a domain name from a domain name provider.
2. Configure the DDNS settings in the **DDNS Settings** interface of the network positioning system. Refer to ***Section 6.3.4 Configuring DDNS Settings*** for detailed configuration.
3. Visit the positioning system via the applied domain name.
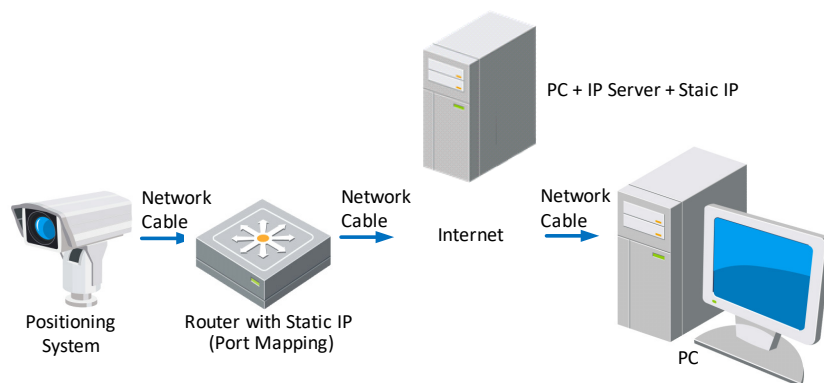
[END]

◆   Private Domain Name Resolution

Figure 2-14 Private Domain Name Resolution

Steps:
1. Install and run the IP Server software in a computer with a static IP.
2. Access the network positioning system through the LAN with a web browser or the client software.
3. Enable DDNS and select IP Server as the protocol type. Refer to ***Section 6.3.4 Configuring DDNS Settings*** for detailed configuration.

[END]

Chapter 3 Access to the Network Positioning system

3.1 Accessing by Web Browsers

Steps:
1. Open the web browser.
2. In the address field, input the IP address of the network positioning system, e.g., 192.168.1.64 and press the **Enter** key to enter the login interface.
3. Activate the positioning system for the first time using, refer to the section ***2.1.2 Activating the Positioning system***.
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).
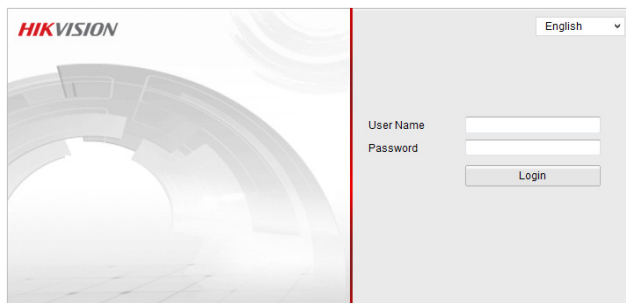

Figure 3-1 Login Interface

6. Install the plug-in before viewing the live video and operating the positioning system. Please follow the installation prompts to install the plug-in.
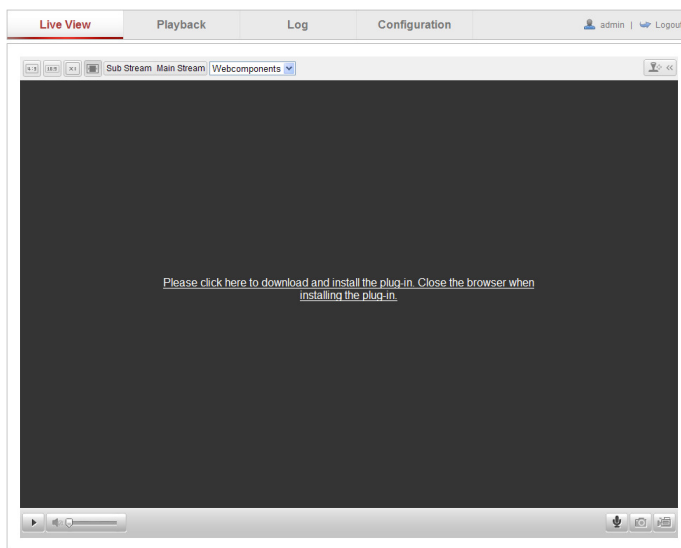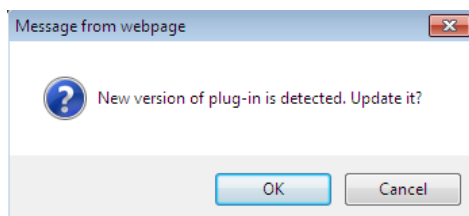
Figure 3-2 Download and Install Plug-in
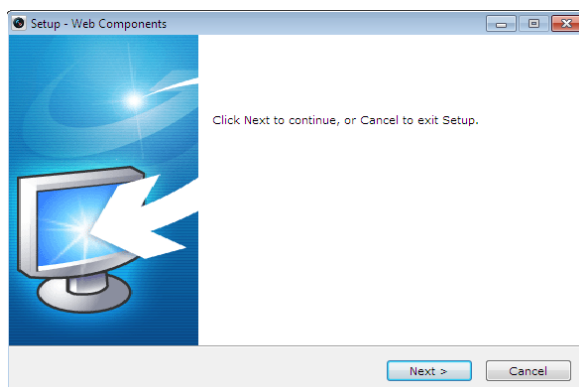

Figure 3-3 Install Plug-in (1)
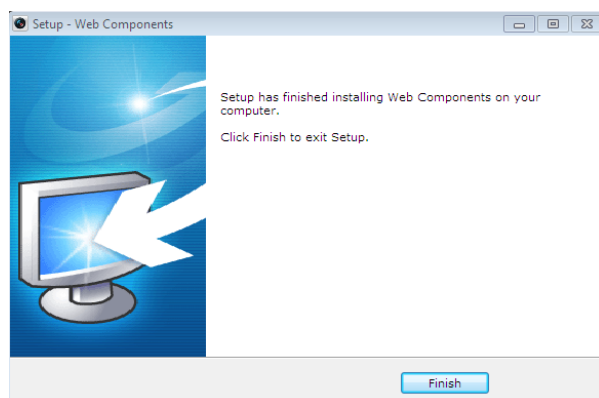

Figure 3-4 Install Plug-in (2)

Figure 3-5 Install Plug-in (3)

You may have to close the web browser to install the plug-in. Please reopen the web browser and log in again after installing the plug-in.

3.2 Accessing by Client Software

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

Follow the installation prompts to install the client software and WinPcap. The configuration interface and live view interface of client software are shown below.
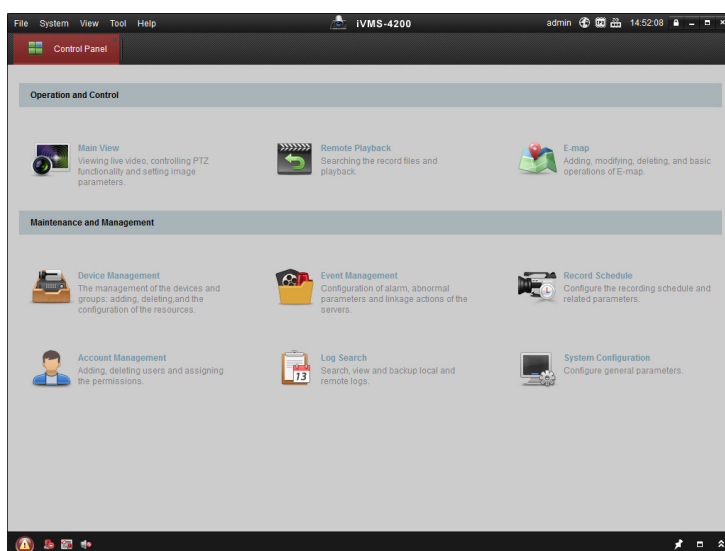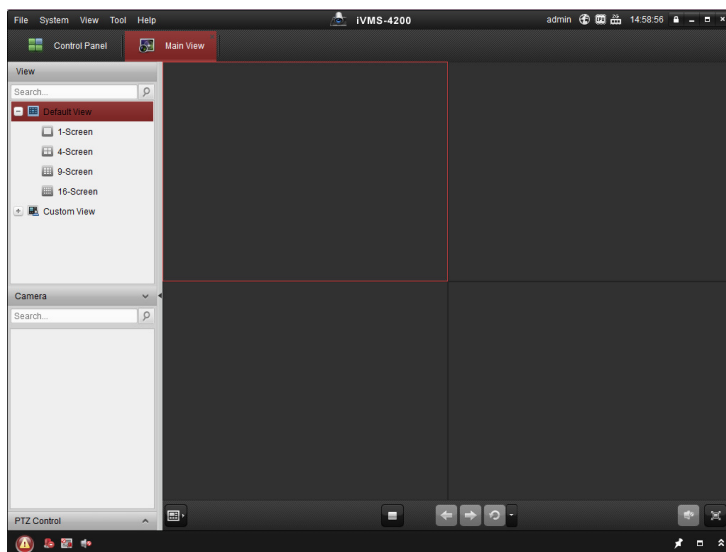

Figure 3-6 iVMS-4200 Control Panel

Figure 3-7 iVMS-4200 Live View Interface

NOTE

● If you use third party VMS software, please contact technical support of our branch for camera firmware.

● For detailed information about client software of our company, please refer to the user manual of the software. This manual mainly introduces accessing to the network positioning system by web browser.

Chapter 4 Live View

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

4.1 Power-up Action

After the power is applied, the positioning system 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 as shown in Figure 4-1 will be displayed on screen for 40 seconds.

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

```
Model                    XX-XXXXXX-X

Address                            0

Communication           0000,0,0,0

Software Version              Vx.x.x

Camera  Version               Vx.xx

Language                   English
```

Figure 4-1 Power-up Information

4.2 Live View Page

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 network positioning system 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.
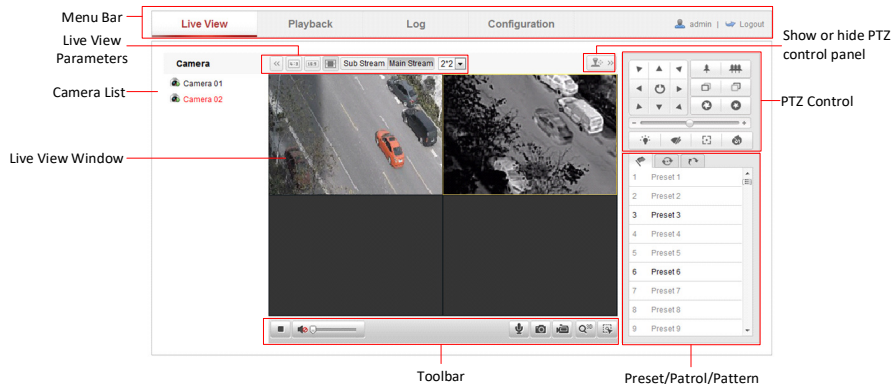
Descriptions of the live view page:

Figure 4-2 Live View Page

Menu Bar:
Click each tab to enter Live View, Playback, Log and Configuration page respectively.
Live View Window:
Display the live video.
Toolbar:
Operations on the live view page, e.g., live view, capture, record, audio on/off, two-way audio, etc.
PTZ Control:
Panning, tilting, focusing and zooming actions of the positioning system. The lighter, wiper, one-touch focus and lens initialization control.
Preset/patrol/pattern:
Set and call the preset/patrol/pattern for the positioning system.
Live View Parameters:
Configure the image size and stream type of the live video.

4.3 Starting Live View

In the live view window as shown in Figure 4-3, click [▶] on the toolbar to start the live view of the positioning system.

Figure 4-3 Start Live View

Table 4-1 Descriptions of the Toolbar

Icon	Description	Icon	Description
▶ / ■	Start/Stop Live view	📷	Manually capture the pictures
🎥 / 🎥	Manual recording off/on	🔇▭ / 🔊▭	Mute / Audio on and adjust volume
🎤 / 🎤	Two-way audio off/on/	Q³ᴰ	3D positioning
▦	Manual tracking		

NOTE

● Not all the positioning system models support the above functions. Please take the browser interface of the actual product as standard.
● Before enabling the two-way audio or recording with audio functions, please set the **Stream Type** to **Video & Audio** referring to Section *6.4.1 Configuring Video Settings.*

Full-screen Mode:
You can double-click on the live video to switch the current live view into full-screen or return to normal mode from the full-screen.

Multi-screen Mode:

You can select the window division mode in the dropdown list, there are single and 2*2 selectable. And you can click to select a window and then double-click a camera to specify the camera order to view.

3D Positioning:
Steps:

1. Click [Q3D] on the toolbar of live view interface.

2. Operate the 3D positioning function:
    ● Left click a position of the live video. The corresponding position will be moved to the center of the live video.
    ● Hold down the left mouse button and drag the mouse to the lower right on the live video. The corresponding position will be moved to the center of the live video and zoomed in.
    ● Hold down the left mouse button and drag the mouse to the upper left on the live video. The corresponding position will be moved to the center of the live video and zoomed out.

[END]

Manual Tracking:
Before you start:
Please enter the Smart Tracking settings interface and enable smart tracking first.
Configuration > Advanced Configuration> PTZ > Smart Tracking
Steps:

1. Click [icon] on the toolbar of live view interface.

2. Click a moving object in the live video.
    The positioning system will track the object automatically.

[END]

Please refer to the following sections for more information:
● Configuring remote recording in *Section 8.3 Configuring Recording Schedule*.
● Setting the image quality of the live video in *Section 6.1 Configuring Local Parameters* and *Section 6.4.1 Configuring Video Settings*.
● Setting the OSD text on live video in *Section 6.5.2 Configuring OSD Settings*.

4.4 Recording and Capturing Pictures Manually

In the live view interface, click [icon] on the toolbar to capture the live pictures and the captured image will be saved as a JPEG file in your computer by default.

You can click [icon] to record the live video.

The local saving paths of the captured pictures and clips can be set in the **Configuration > Local Configuration** interface and the image format can also be edited in that interface.

To configure remote automatic recording, please refer to **Section 8.3 Configuring Recording Schedule**.

4.5 Operating PTZ Control

Purpose:
In the live view interface, you can use the PTZ control buttons to control panning, tilting and zooming.

4.5.1 PTZ Control Panel

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

Click the direction buttons to control the pan/tilt movements, while the pan angle ranges from the 0° to 360° and the tilt angle range is from -15° to 90°.

Click the zoom/iris/focus buttons to realize lens control.

[NOTE icon]

● The range of tilt movement angle varies according to different models.
● The lens control operations are supported by the optical channel only.

Figure 4-4 PTZ Control Panel

Table 4-2 Descriptions of PTZ Control Panel

Button	Description
[icon]	Zoom in/out
[icon]	Focus near/far
[icon]	Iris +/-
[slider]	Adjust speed of pan/tilt movements

4.5.2 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:
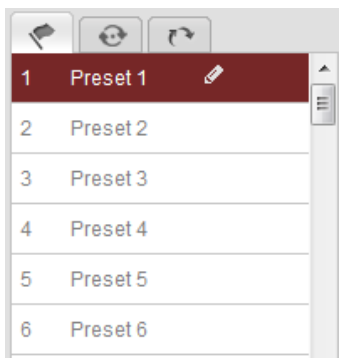1. In the PTZ control panel, select a preset number from the preset list.

Figure 4-5 Setting a Preset

2. Use the PTZ control buttons to move the lens to the desired position.
   - Pan the positioning system to the right or left.
   - Tilt the positioning system up or down.
   - Zoom in or out.
   - Refocus the lens.
3. Click ✐ to finish the setting of the current preset.
4. You can click 🗙 to delete the preset.

NOTE

   You can configure up to 300 presets.

END

● **Calling a Preset:**
In the PTZ control panel, select a defined preset from the list and click ➡ to call the preset.

Figure 4-6 Calling a Preset

For convenient preset selection, refer to the following steps to navigate to the preset you want.

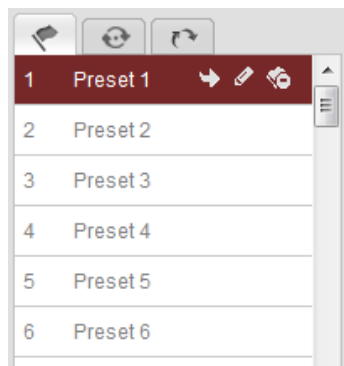***Steps:***

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

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 positioning system starts auto scan function.

Table 4-3 Special Presets

| Special Preset	Function	Special Preset	Function
33	Auto flip	93	Set limit stops manually
34	Back to initial position	94	Remote reboot
35	Call patrol 1	95	Call OSD menu
36	Call patrol 2	96	Stop a scan
37	Call patrol 3	97	Start random scan
38	Call patrol 4	98	Start frame scan
39	IR cut filter in	99	Start auto scan
40	IR cut filter out	100	Start tilt scan
41	Call pattern 1	101	Start panorama scan
42	Call pattern 2	102	Call patrol 5
43	Call pattern 3	103	Call patrol 6
44	Call pattern 4	104	Call patrol 7
45	Automatically Create Patrol	105	Call patrol 8
92	Start to set limit stops		
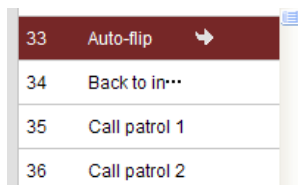
Figure 4-7 Special Preset

NOTE

You may need to use the OSD (On Screen Display) menu when controlling the positioning system remotely. To display the OSD menu on the live view screen, you can call the preset number 95.

4.5.3 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:
Please 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 [icon] to enter the patrol settings interface.

2. Select a patrol number from Path 01 .

3. Click [icon] to enter the adding interface of preset, as shown in Figure 4-8.
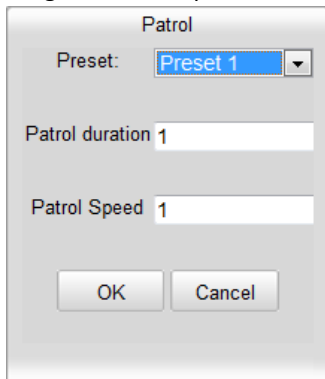
Figure 4-8 Adding Presets

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

Name	Description
Patrol Time	It is the duration staying on one patrol point. The positioning system moves to another patrol point after the patrol time.
Patrol Speed	It is the speed of moving from one preset to another.

5. Click OK to save a preset into the patrol.

6. Repeat the steps from 3 to 5 to add more presets.

7. Click ⊟ to save all the patrol settings.

END

● **Calling a Patrol:**

In the PTZ control panel, select a defined patrol from Path 01 and click ▷ to call the patrol, as shown in Figure 4-9.
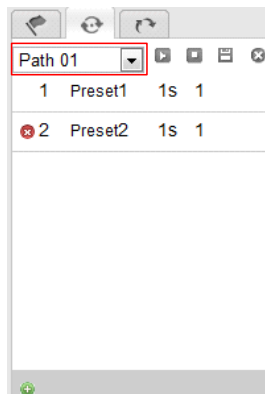
Figure 4-9 Calling a Patrol

● **Buttons on the Patrols interface:**

Buttons	Description
⊟	Save a patrol
▷	Call a patrol
■	Stop a patrol
⊕	Enter the adding interface of preset
✐	Modify a preset
⊗	Delete a preset
⊗	Delete all the presets in the selected patrol

4.5.4 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 [icon] to enter the pattern settings interface.

2. Select a pattern number from the list as shown in Figure 4-10.
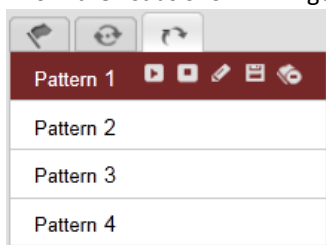
Figure 4-10 Patterns Settings Interface

3. Click [icon] 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 positioning system to the right or left.
   • Tilt the positioning system up or down.
   • Zoom in or out.
   • Refocus the lens.

5. Click [icon] to save all the pattern settings.

[END]

● **Buttons on the Patterns interface:**

Buttons	Description
[icon]	Start to record a pattern.
[icon]	Stop recording a pattern.
[icon]	Call the current pattern.
[icon]	Stop the current pattern.
[icon]	Delete the current pattern.

[NOTE]

● 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.

4.6 Configuring Live View Parameters

● **Main stream/Sub-stream:**

You can select Main Stream or Sub Stream as the stream type of live viewing. The main stream is with a relatively high resolution and needs much bandwidth. The sub-stream is with a low resolution and needs less bandwidth. The default setting of stream type is Main Stream.

NOTE

Please refer to *Section 6.4.1 Configuring Video Settings* for more detailed parameter settings of the main stream and sub-stream respectively.

● **Image Size:**

You can scale up/down the live view image by clicking 4:3 , 16:9 , x1 , . The image size can be 4:3, 16:9, original or auto.

Chapter 5 PTZ Configuration
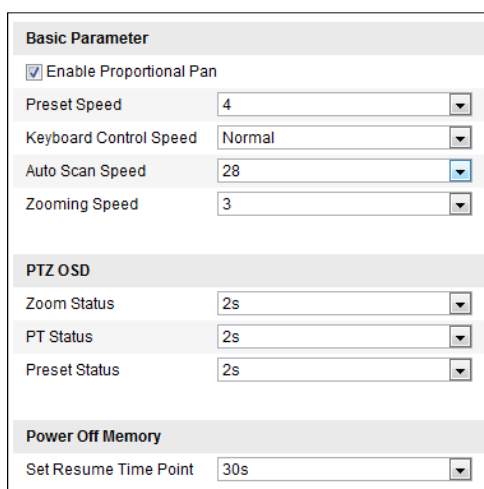
5.1 Configuring Basic PTZ Parameters

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 > **Advanced Configuration** > **PTZ** > **Basic**

Basic Parameter	
☑ Enable Proportional Pan	
Preset Speed	4
Keyboard Control Speed	Normal
Auto Scan Speed	28
Zooming Speed	3
PTZ OSD	
Zoom Status	2s
PT Status	2s
Preset Status	2s
Power Off Memory	
Set Resume Time Point	30s

Figure 5-1 Basic PTZ Configuration Interface

2. Configure the following settings:
*   **Basic Parameters:** Enable/disable proportional pan, set the preset 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 Speed:** You can set the speed of a defined preset from 1 to 8.
    ◆ **Keyboard Control Speed:** Define the speed of PTZ control by a keyboard as Low, Normal or High.
    ◆ **Auto Scan Speed:** The positioning system provides 5 scan modes: auto scan, tilt scan, frame scan, random scan and panorama scan. 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 positioning system can resume its previous PTZ status or actions after it restarted from a power-off. You can set the time point of which the positioning system 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] to save the settings.

5.2 Configuring PTZ Limits

Purpose:

The positioning system can be programmed to move within the configurable limits (left/right, up/down).

Steps:

1. Enter the Limit Configuration interface:

   Configuration > **Advanced Configuration** > **PTZ** > **Limit**

Figure 5-2 Configure the PTZ Limit

2. Click the checkbox of **Enable Limit** 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 positioning system.
4. Click **Set** to save the limits or click **Clear** to clear the limits.

END

5.3 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 > **Advanced Configuration** > **PTZ** > **Initial Position**
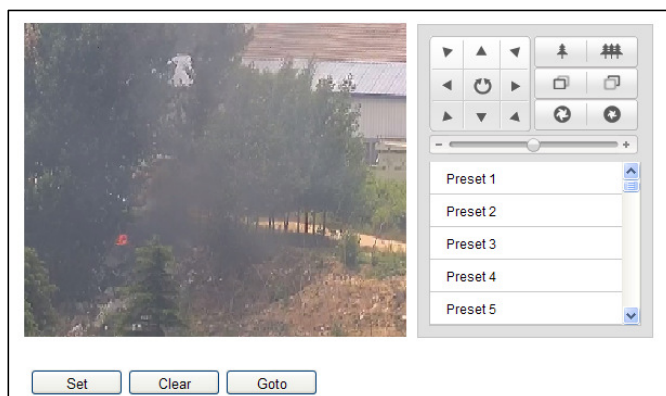
Figure 5-3 PTZ Configuration

2. Click the PTZ control buttons to find a position as the initial position of the positioning system; you can also call a defined preset and set it as the initial position of the positioning system.
3. Click **Set** to save the position.

END

- **Call/delete an Initial Position:**

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

5.4 Configuring Park Actions

Purpose:
This feature allows the positioning system to start a predefined park action (scan, preset, pattern and etc.) automatically after a period of inactivity (park time).

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 > **Advanced Configuration**> **PTZ** > **Park Action**

☑ Enable Park Action		
Park Time	5	second
Action Type	Auto Scan ▾	

Figure 5-4 Set the Park Action

2. Check the checkbox of **Enable Park Action**.
3. Set the **Park Time** as the inactivity time of the positioning system before it starts the park actions.
4. Choose **Action Type** the from the drop-down list.

Auto Scan ▾
Auto Scan
Frame Scan
Random Scan
Patrol
Pattern
Preset
Panorama Scan
Tilt Scan

Figure 5-5 Action Types

5. Click [Save] to save the settings.

[END]

5.5 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.

[NOTE]

The privacy mask function is supported by the optical lens only.

Steps:

1. Enter the Privacy Mask Settings interface:

    Configuration > **Advanced Configuration** > **PTZ** > **Privacy Mask**
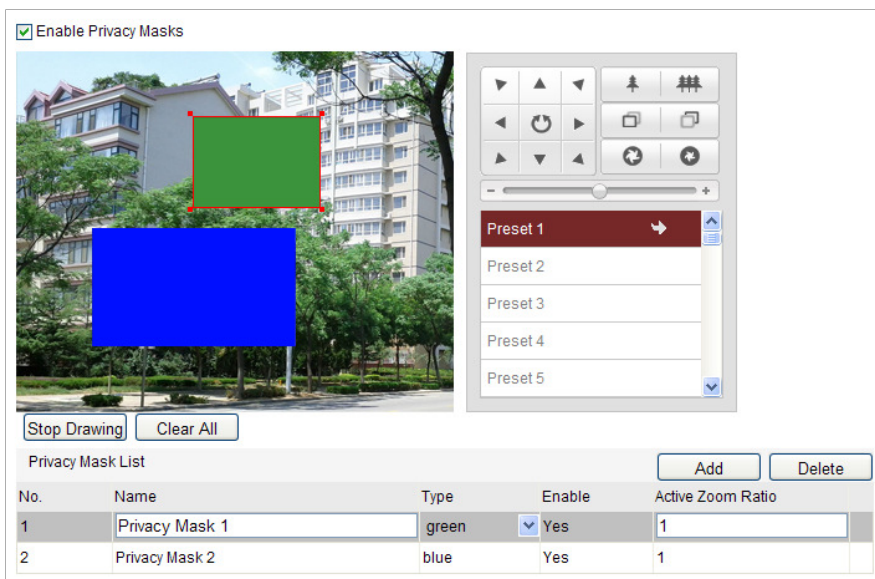
Figure 5-6 Draw the Privacy Mask

2. Click the PTZ control buttons to find the area you want to set the privacy mask.
3. Click [Draw Area]; click and 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 [Stop Drawing] to finish drawing or click [Clear All] 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.

6.   You can also define the color of the masks.
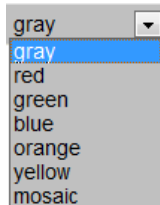
Figure 5-7 Define Mask Color

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

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

NOTE

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

END

5.6 Configuring Scheduled Tasks

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

Steps:
1.   Enter the Scheduled Task Settings interface:
    Configuration> **Advanced Configuration**> **PTZ** > **Scheduled Tasks**

Figure 5-8 Configure Scheduled Tasks

2.   Check the checkbox of **Enable Scheduled Task**.
3.   Set the **Park Time**. You can set the park time (a period of inactivity) before the

positioning system starts the scheduled tasks.

4. Set the schedule and task details.

(1) Click Edit Tasks to edit the task schedule.

Figure 5-9 Edit the Schedule and Task Type

(2) Choose the day you want to set the task schedule.

(3) Click **All Day** to set the schedule as all day; or click **Customize** and input the **Start Time** and **End Time** for each task, and click **Enter** on your keyboard to enter the time.

(4) Choose the task type from the drop-down list. You can choose scan, preset, pattern and etc.

Figure 5-10 Task Types

(5) After you set the scheduled task, you can copy the task to other days (Optional).

(6) Click OK to save the settings.

NOTE

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

5. Click [Save] to save the settings.

END

5.7 Clearing PTZ Configurations

Purpose:

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

Steps:
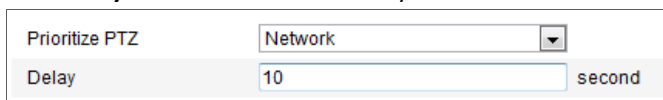
1. Enter the Clearing Configuration interface:
   Configuration > Advanced Configuration> PTZ > Clear Config
2. Check the checkbox of the items you want to clear.

3. Click [Save] to clear the settings.

END

5.8 Configuring PTZ Control Priority

Steps:

1. Get to the configuration interface:
   Configuration > Advanced Configuration> PTZ > Prioritize PTZ.
   ● The positioning system 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 positioning system, the **User** cannot control it. When the **Operator** finishes, the **User** can control the positioning system after the **Delay** time. The **Delay** time can be set in Priority PTZ interface as shown follows.

Prioritize PTZ	Network	
Delay	10	second

Figure 5-11 PTZ Priority

2. Click [Save] to activate the settings.

END

Chapter 6 System Configuration

6.1 Configuring Local Parameters

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 Configuration

Figure 6-1 Local Configuration Interface

2. Configure the following settings:

●   **Live View Parameters:** Set the protocol type, stream type, image size and live view performance.

♦   **Protocol Type:** 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.

HTTP: Allows the same quality as of TCP without setting specific ports for streaming under some network environments.

MULTICAST: It's recommended to select the protocol type to when using the Multicast function. For other information about Multicast,

refer to *Section 6.3.1 Configuring TCP/IP Settings*.

♦ **Live View Performance:** Set the live view performance to Shortest Delay, or Auto.

![NOTE]

Please set Live View Performance as Best Fluency for the high frame rate positioning system.

♦ **Auto Start Live View:** You can enable the function if you want to view the live view image directly when you log in the device.

♦ **Rules:** You can enable or disable the rules of dynamic analysis for events here.

♦ **Image Format:** The captured pictures can be saved as different format. JPEG and BMP are available.

♦ **Fire Point:** Select **Fire Source Detection** as VCA Resource Type. Check the checkbox to enable the functions required. Display Fire Point Distance, Display Highest Temperature, Locate Highest Temperature Point and Frame Fire Point are selectable.

♦ **Display Temperature Info. on Stream:** Select **Temperature Measurement** as VCA Resource Type. Check the checkbox to display the temperature information on the live view interface.

♦ **Display Temperature Info. on Capture:** Select **Temperature Measurement** as VCA Resource Type. Check the checkbox to display the temperature information on the captures.

● **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 <u>Playback</u> 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 <u>Live View</u> interface.

♦ **Save snapshots when playback to:** Set the saving path of the captured pictures in <u>Playback</u> interface.

♦ **Save clips to:** Set the saving path of the clipped video files in <u>Playback</u> interface.

![NOTE]

You can click <u>Browse</u> to change the directory for saving video files, clips

and pictures.

3. Click [Save] to save the settings.

[END]

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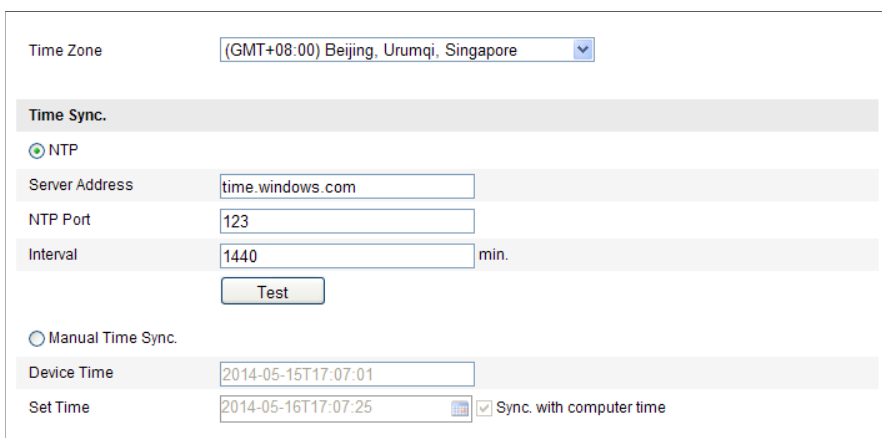
Purpose:
You can follow the instructions in this section to configure the time which can be displayed on the video. There are Time Zone, Time Synchronization, Daylight Saving Time (DST) functions for setting the time. Time Synchronization consists of auto mode by Network Time Protocol (NTP) server and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

To enter the Time Settings interface:
Configuration > Basic Configuration > System > Time Settings
Or **Configuration > Advanced Configuration > System > Time Settings**

Figure 6-2 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.
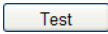
Figure 6-3 Time Sync by NTP Server

(3) You can click the [Test] button to check whether the confguration is succeeded.

[NOTE]

If the positioning system 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 positioning system is set in a customized network, NTP software can be used to establish a NTP server for time synchronization.

[END]

● **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 [Save] to save the settings.

[NOTE]

You can also check the **Sync. with computer time** checkbox to synchronize the time of the positioning system with the time of your computer.
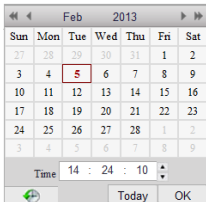
Figure 6-4 Time Sync Manually

[END]

● **Select the Time Zone**

Purpose:

When the positioning system 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** drop-down menu as shown in Figure 6-5, select the Time Zone in which the positioning system locates.
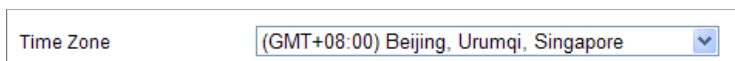
Figure 6-5 Time Zone Settings

- **Configuring Daylight Saving Time (summer 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** interface by **Configuration > Advanced Configuration > System > 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.
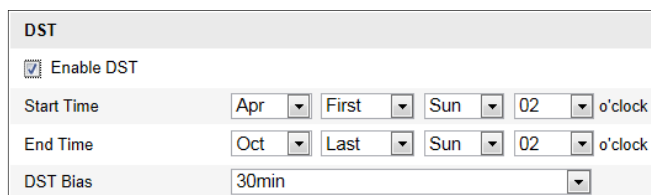
Figure 6-6 DST Settings

6.3 Configuring Network Settings

6.3.1 Configuring TCP/IP Settings

Purpose:

TCP/IP settings must be properly configured before you operate the positioning system over network. IPv4 and IPv6 are both supported.

Steps:

1. Enter TCP/IP Settings interface:
   Configuration > Basic Configuration > Network > TCP/IP
   Or **Configuration > Advanced Configuration > Network > TCP/IP**

Figure 6-7 TCP/IP Settings

2. Configure the NIC settings, including the **IPv4(IPv6) Address**, **IPv4(IPv6) Subnet Mask** and **IPv4(IPv6) Default Gateway**.

3. Click [Save] to save the above settings.

NOTE

● If the DHCP server is available, you can check [ ] DHCP to automatically obtain an IP address and other network settings from that server.

● If the IP address is set manually, you can click [Test] to check whether the

   IP address is already used to prevent the IP address confliction.
● The valid value range of Maximum Transmission Unit (MTU) is 500 ~ 9676. The default value is 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 and configure the gateway of the network positioning system.
● If the DNS server settings are required for some applications (e.g., sending email), you should properly configure the **Preferred DNS Server** and **Alternate**

DNS server.

● Check the checkbox of **Enable Multicast Discovery**, and then the positioning system can be detected by client software in the LAN.

DNS Server	
Preferred DNS Server	8.8.8.8
Alternate DNS Server	

Figure 6-8 DNS Server Settings

NOTE

The router must support the route advertisement function if you select **Route Advertisement** as the IPv6 mode.

END

6.3.2 Configuring Port Settings

Purpose:

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

Steps:

1. Enter the Port Settings interface:

    Configuration > Basic Configuration > Network > Port
    Or **Configuration > Advanced Configuration > Network > Port**

HTTP Port	80
RTSP Port	554
HTTPS Port	443
Server Port	8000

Figure 6-9 Port Settings

2. Set the HTTP port, RTSP port, HTTPS port and port of the positioning system.
    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 [Save] to save the settings.

END

6.3.3 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 >Advanced Configuration > Network > PPPoE

Figure 6-10 PPPoE Settings

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

![NOTE]

> The User Name and Password should be assigned by your ISP.

![warning]

*   *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.

![END]

6.3.4 Configuring DDNS Settings

Purpose:
If your positioning system 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 positioning system.

⚠️

- *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 > Advanced Configuration > Network > DDNS

Figure 6-11 DDNS Settings

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

Figure 6-12 DynDNS Settings

● **IP Server:**

 Steps:

(1) Enter the Server Address of the IP Server.

(2) Click [Save] to save the settings.

    The **Server Address** should be entered with the static IP address of the computer that runs the IP Server software. For the IP Server, you have to apply a static IP, subnet mask, gateway and preferred DNS from the ISP.

Figure 6-13 IPServer Settings

● **HiDDNS:**

 Steps:
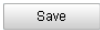
(1) Enter the Server Address: www.hik-online.com.

(2) Enter the Domain name of the camera. The domain is the same with the device alias in the HiDDNS server.

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

Figure 6-14 HiDDNS Settings

● **NO-IP:**

Steps:

(1) Enter **Server Address** of NO-IP.

(2) In the **Domain** text field, enter the domain name obtained from the NO-IP website.

(3) Enter the **Port** of NO-IP server.

(4) Enter the **User Name** and **Password** registered on the NO-IP website.

(5) Click [Save] to save the settings.

6.3.5 Configuring SNMP Settings

Purpose:
You can use SNMP to get positioning system status and parameters related information.
Before you start:
Before setting the SNMP, please use the SNMP software and manage to receive the positioning system information via SNMP port. By setting the Trap Address, the positioning system 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 > Advanced Configuration > Network > SNMP

Figure 6-15 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.

> 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.

6.3.6 Configuring 802.1X Settings

Purpose:
The positioning system 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:
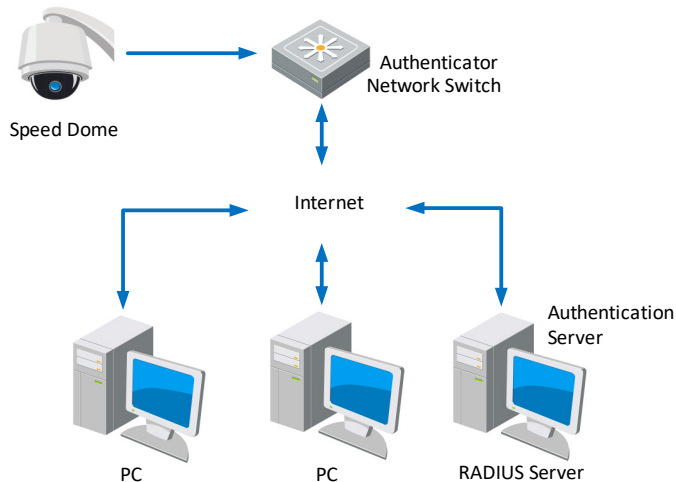
Figure 6-16 Protected LAN

●   Before connecting the Network Camera to the protected LAN, please 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.*
- *Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.*

Steps:

1. Connect the network camera to your PC directly with a network cable.
2. Enter the 802.1X Settings interface:

   Configuration > Advanced Configuration > Network > 802.1X

Figure 6-17 802.1X Settings

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. Enter the user name and password (issued by the CA) to access the server.

6. Click [Save] to finish the settings.

   NOTE

   The camera reboots when you save the settings.

7. After the configuration, connect the camera to the protected network.

END

6.3.7 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:
   Configuration >Advanced Configuration > Network > QoS

Video/Audio DSCP	0
Event/Alarm DSCP	0
Management DSCP	0

Figure 6-18 QoS Settings

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.

   ⚠️

   ● *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.*

3. Click ⬚ Save to save the settings.

   NOTE

   ● Make sure that you enable the QoS function of your network device (such as a router).
   ● It will ask for a reboot for the settings to take effect.

   END

6.3.8 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 >Advanced Configuration > Network > FTP

Figure 6-19 FTP Settings

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

- *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 6-20.

Figure 6-20 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 6-21.
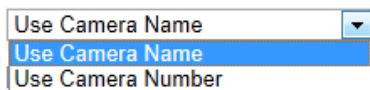
Figure 6-21 Child Directory

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

3. Click [Save] 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, please refer to the Section *8.4 Configuring Snapshot Settings*.

END

6.3.9 Configuring UPnP™ 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 UPnP™ settings interface.
   Configuration >Advanced Configuration > Network > UPnP™
2. Check the checkbox to enable the UPnP™ function.
   You can edit the Friendly Name of the positioning system. This name can be detected by corresponding device, such as a router.
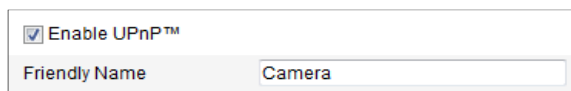
Figure 6-22 Configure UPnP Settings

END

6.3.10 Configuring NAT (Network Address Translation) Settings

Steps:
1. Set the port mapping mode:

    To port mapping with the default port numbers:

    Choose Port Mapping Mode   Auto

    To port mapping with the customized port numbers:

    Choose Port Mapping Mode   Manual

    And you can customize the value of the port No. by yourself.

    ☑ Enable Port Mapping

Port Mapping Mode	Manual			
	Port Type	External Port	External IP Address	Status
☑	HTTP	80	0.0.0.0	Not Valid
☑	RTSP	554	0.0.0.0	Not Valid
☑	Server Port	8002	0.0.0.0	Not Valid

    Figure 6-23 Configure the Port No.

2. Click Save to save the settings.

6.3.11 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, tamper-proof, etc.

Before you start:
Please configure the DNS Server settings under **Basic Configuration > Network > TCP/IP** or **Advanced Configuration > Network > TCP/IP** before using the Email function.

Steps:
1. Enter the Email Settings interface:

    Configuration > Advanced Configuration > Network > Email

Figure 6-24 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.

Enable SSL: Check the checkbox to enable SSL if it is required by the SMTP server.

Attached Image: Check the checkbox of Attached Image if you want to send emails with attached alarm images.

Interval: The interval refers to the time between two actions of sending attached pictures.

Authentication (optional): If your email server requires authentication, check this checkbox to use authentication to log in to this server and enter 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.*

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

Receiver: Select the receiver to which the email is sent. Up to 2 receivers can be configured.

Receiver: The name of the user to be notified.

Receiver's Address: The email address of user to be notified.

NOTE

You can click [Test] to check whether the setting is invalid after the required parameters are configured.

3. Click [Save] to save the settings.

END

6.3.12 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.

    Configuration > Advanced Configuration > Network > HTTPS

2. Create the self-signed certificate or authorized certificate.

Figure 6-25 HTTPS Settings

OPTION 1: Create the self-signed certificate

1) Click the **Create** button to create the following dialog box.

Figure 6-26 Create Self-signed Certificate

2) Enter the country, host name/IP, validity and other information.
3) Click **OK** to save the settings.

OPTION 2: Create the authorized certificate

1) Click the **Create** button to create the certificate request, and fulfill the required information.
2) Download the certificate request and submit it to the trusted certificate authority for signature.
3) After receiving the signed valid certificate, import the certificate to the device.

3. There will be the certificate information after you successfully create and install the certificate.

Figure 6-27 Installed Certificate Property

You can click configure the HTTPS port No. on your demand; refer to **Section 6.3.2 Configuring Port Settings** for details.

6.4 Configuring Video and Audio Settings

6.4.1 Configuring Video Settings

Steps:
1. Enter the Video Settings interface:
   Configuration >Basic Configuration > Video / Audio > Video
   Or **Configuration > Advanced Configuration > Video / Audio > Video**

Channel No.	Camera 1
Stream Type	Main Stream(Normal)
Video Type	Video&Audio
Resolution	1920*1080P
Bitrate Type	Variable
Video Quality	Medium
Frame Rate	25 fps
Max. Bitrate	2048 Kbps
Video Encoding	H.264
Profile	High Profile
I Frame Interval	50
SVC	OFF

Figure 6-28 Configure Video Settings

2. Select the **Channel No.** in the dropdown list you want to configure and select the **Stream Type** of the positioning system to main stream (normal) or sub-stream.
   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 6.1 Configuring Local Parameters* for switching the main stream and sub-stream for live viewing.
3. You can customize the following parameters for the selected main stream or sub-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 to 32~16384 Kbps. The higher value corresponds to the higher video quality, and the higher bandwidth is required as well.

Video Encoding:

The **Video Encoding** standard can be set to H.264 or MJPEG.

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.

4. Click [Save] to save the settings.

[END]
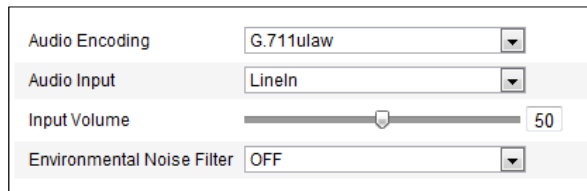
6.4.2 Configuring Audio Settings

Steps:

1. Enter the Audio Settings interface
   Configuration > Basic Configuration > Video / Audio > Audio
   Or **Configuration > Advanced Configuration > Video / Audio > Audio**

Audio Encoding	G.711ulaw
Audio Input	LineIn
Input Volume	50
Environmental Noise Filter	OFF

Figure 6-29 Audio Settings

2. Configure the following settings.
   Audio Encoding: G.722.1, G.711ulaw, G.711alaw, MP2L2 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.
   Audio Input: When an intercom is connected to the positioning system, you need to set this option to **LineIn**. When a microphone is connected to the positioning system, you need to set this option to **MicIn**.
   Input Volume: Slid the bar to turn up/down the volume. The value ranges from 0

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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 [Save] to save the settings.

[END]
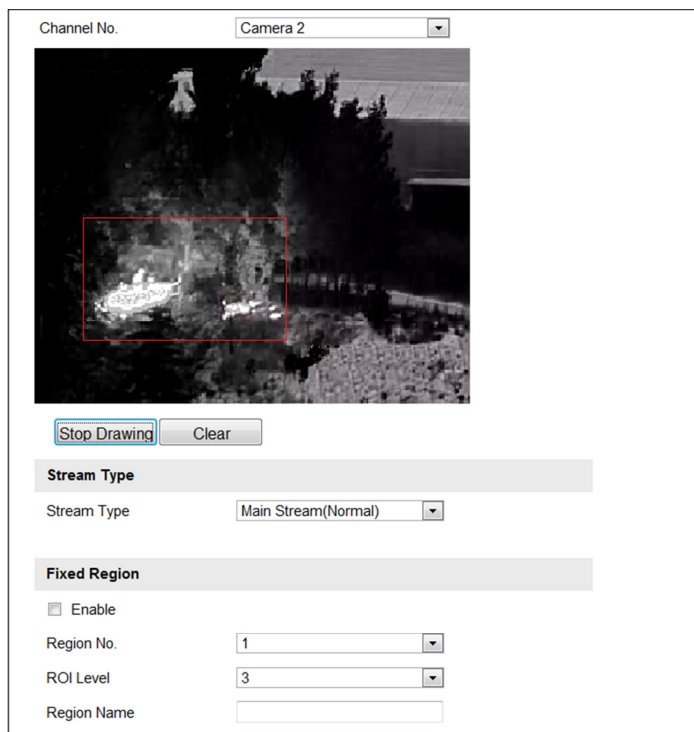
6.4.3 Configuring ROI Settings

Before you start:

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

Enter the RIO Settings interface:

Configuration > Advanced Configuration > Video / Audio > ROI

Figure 6-30 Region of Interest

Channel No.:

Select the **Channel No.** in the dropdown list, and the ROI area can be set for the Camera 1 and Camera 2 respectively.

Stream Type:

You can set the ROI function for main stream or substream. 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 checkbox of **Enable** under **Fixed Region**.
3. Select the region from the dropdown list for ROI settings. There are four fixed regions selectable.
4. Click the Draw Area button, and then click-and-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.

6.5 Configuring Image Settings

6.5.1 Configuring Display Settings

Purpose:

You can set the image quality of the positioning system, including brightness, contrast, saturation, sharpness, etc.

● The parameters in **Display Settings** interface vary depending on the models of positioning system.
● 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 > Basic Configuration> Image> Display Settings
   Or **Configuration > Advanced Configuration> Image> Display Settings**
2. You can select the **Mounting Scenario** in the dropdown list with different predefined image parameters.
3. Set the image parameters of the positioning system.

Setting the Channel Camera 1

Select the **Channel No.** to Camera 1.
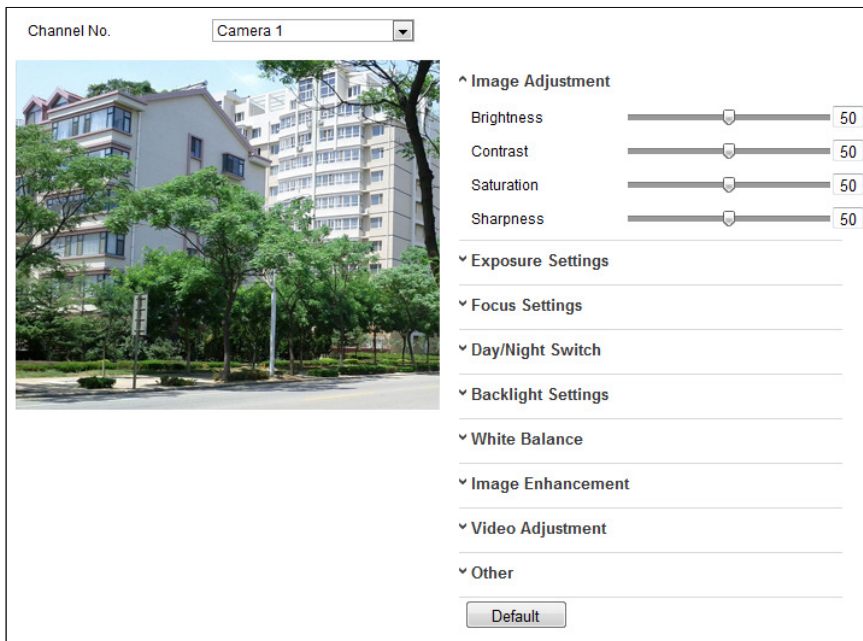
Figure 6-31 Display Settings-Optical Channel

■ **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.

![NOTE]

This function varies depending on the models of positioning system.

■ **Exposure Settings**

● **Exposure Mode**

The **Exposure Mode** can be set to **Auto, Iris Priority, Shutter Priority, 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.

Exposure Mode	Iris Priority
Iris	f2.4

Figure 6-32 Manual Iris

◆   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.

Exposure Mode	Shutter Priority
Shutter	1/50

Figure 6-33 Manual Shutter

◆   Gain Priority:

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

Gain	49

Figure 6-34 Manual Gain

◆   Manual:

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

NOTE

This function varies depending on the models of positioning system.

● **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. The slow shutter value can be set to **Slow Shutter*2, *4, *6, *12, *16, *24** and ***32**.

Slow Shutter	ON
Slow Shutter Level	Slow Shutter*12

Figure 6-35 Slow Shutter

■   **Focus Settings**

●   **Focus Mode**

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

◆ Auto:

The positioning system focuses automatically at any time according to objects in the scene.

◆ Semi-auto:

The positioning system focuses automatically only once after panning, tilting and zooming.

◆ Manual:

In **Manual** mode, you need to use [icon] on the control panel to focus manually.

● **Min. Focus Distance**

This function is used to limit the minimum focus distance.

[NOTE]

The minimum focus value varies depending on the models of positioning system.

■ **Day/Night Switch**

[NOTE]

The IR light related function introduced below is supported by IR positioning systems only.

● **Day/Night Switch**

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

◆ **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 **1-3**.

Day/Night Switch	Auto
Sensitivity	2

Figure 6-36 Auto Mode Sensitivity

◆ **Day**:

In **Day** mode, the positioning system 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.

◆ **Schedule**:

In **Schedule** mode, you can set the time schedule for day mode as shown in Figure 6-37. The rest time out of the schedule is for night mode.

[NOTE]

This function varies depending on the models of positioning system.

Figure 6-37 Day Night Schedule

● **Smart IR**

If the IR light 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 you need to adjust the brightness limit of infrared light manually. **Brightness Limit** value ranges from 0 to 100.

NOTE

- The IR related functions are supported by the IR positioning system only.
- For detailed parameters configuration of IR light, you can enter the OSD menu by calling the special preset 95.

■ **Backlight Settings**

● **BLC**

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 **WDR** (Wide Dynamic Range) 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.

NOTE

This function varies depending on the models of positioning system.

● **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-Track**.

◆ **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 6-38.

WB Gain Circuit R		0
WB Gain Circuit B		0

Figure 6-38 Manual White Balance

◆ **Outdoor**

You can select this mode when the positioning system is installed in outdoor environment.

◆ **Indoor**

You can select this mode when the positioning system is installed in indoor environment.

◆ **Fluorescent Lamp**

You can select this mode when there are fluorescent lamps installed near the positioning system.

◆ **Sodium Lamp**

You can select this mode when there are sodium lamps installed near the positioning system.

◆ **Auto-Tracking**

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

NOTE

This function varies depending on the models of positioning system.

■ **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 Mode** and adjust the **Noise Reduction Level** as shown in Figure 6-39. The level ranges from 0 to 100.

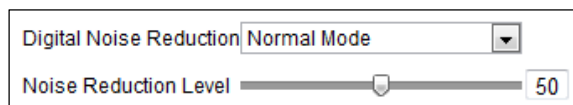|		
Digital Noise Reduction	Normal Mode	▼
Noise Reduction Level		50

Figure 6-39 Digital Noise Reduction-Normal Mode

You can set **Digital Noise Reduction** function to **Normal Mode** and adjust the **Space DNR Level** and **Time DNR Level** as shown in Figure 6-40. The level ranges from 0 to 100.
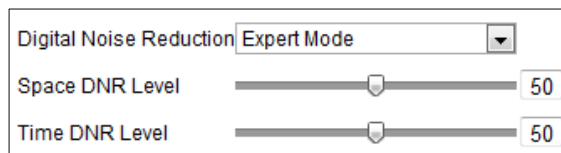
Digital Noise Reduction	Expert Mode ▼
Space DNR Level	——————○—————— 50
Time DNR Level	——————○—————— 50

Figure 6-40 Digital Noise Reduction-Expert Mode

NOTE

This function varies depending on the models of positioning system.
● **Defog Mode**
When there is fog in the image, you can enable this function to get clear image.
● **EIS**
The live view image would be trembled 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 set the **Mirror** function to Center, the image will be flipped. It is like the image in the mirror.

NOTE

This function varies depending on the models of positioning system.
● **Video Standard**
You can set the **Video Standard** to 50hz(PAL) or 60hz(NTSC) according to the video system in your country.

NOTE

This function varies depending on the models of positioning system.
● **Capture Mode:**
The **Capture Mode** is selectable to meet the different demands of field of view and resolution.

■ **Other**

● **Lens Initialization**
The lens operates the movements for initialization when you check the check box of **Lens Initialization.**
● **Zoom Limit**
You can set **Zoom Limit** value to limit the maximum value of zooming. The value can be set to 30, 60, 120, 240 and 480.
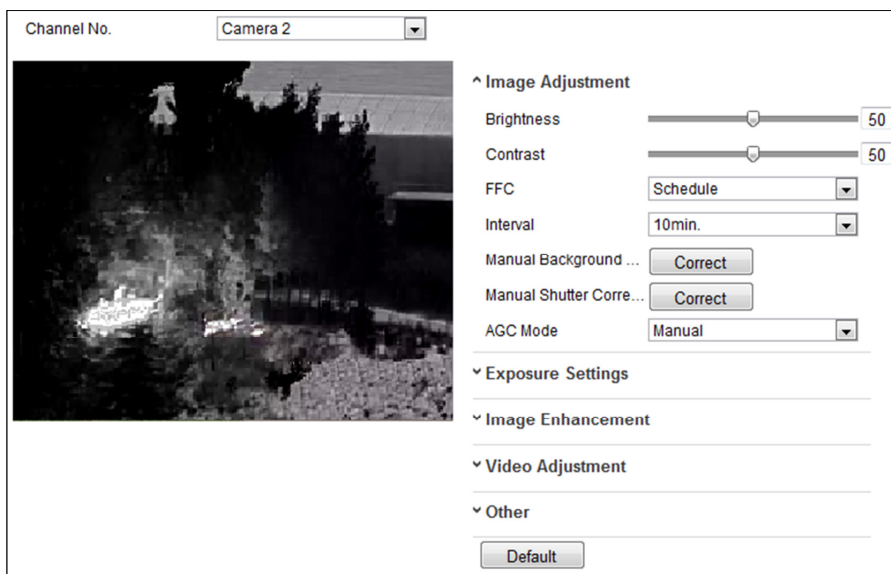
NOTE

This function varies depending on the models of positioning system.

● **Local Output**

You can enable or disable the video output through the BNC interface on your demand.

Setting the Channel Camera 2

Select the **Channel No.** to Camera 2.

■ **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.

● **FFC**

The FFC (Flat Field Correction) improves the quality in digital imaging. It can remove artifacts from 2-D images that are caused by variations in the pixel-to-pixel sensitivity of the detector or by distortions in the optical path. **Schedule**, **Temperature**, and **OFF** are selectable.

◇ **Schedule**

You can select the correction interval among "10", "20", "30", "40", "50", "60", "120", "180", and "240" minutes.

✧ **Temperature**

Camera adjusts the image according to the temperature.

● **Manual Background Correction**

Fully cover the lens with an object (lens cover is recommended) and click the **Manual Background Correction** button, and then the positioning system adjusts the image according to the current environment.

● **Manual Shutter Correction**

Click the **Manual Shutter Correction** button and then the positioning system adjusts the image according to the temperature of the camera itself.

● **AGC Mode**

This feature can be selected among Normal, Highlight, and Manual. Normal is applicable to most of the environment; while it may display less details and backgrounds when in an environment have obvious dark areas and bright areas. Highlight is applicable to the highlight environment. If manual is selected for AGC mode, brightness and contrast can be adjusted.

■ **Image Enhancement**

● **Digital Noise Reduction:**

DNR reduces the noise in the video stream. OFF, Normal Mode and Expert Mode are selectable.

OFF: DNR is disabled.

Normal Mode: Set the DNR level from 0~ 100, and the default value is 50.

Expert Mode: Set the DNR level from both space DNR level [0~100] and time DNR level [0~100] in Expert Mode.

● **Palettes**

The palettes allow you to select the desired colors. white hot, black hot, fusion 1, rainbow, fusion 2, ironbow 1, ironbow2, sepia, color 1, color 2, ice fire, rain, red hot, and green hot are selectable.

● **DDE**

The DDE (Digital Detail Enhancement) can adjust the details of the image. And you can set it to OFF or Normal mode. And **DDE Level** can be adjust from 1 to 100 when in normal mode.

■ **Video Adjustment**

● **Mirror**

If you turn the **Mirror** function on, the image will be flipped. You can set the mirror direction to Center or disable it.

NOTE

This function varies depending on the models of positioning system.

● **Video Standard**

The **Video Standard** is configurable.

NOTE

This function varies depending on the models of positioning system.

- **Capture Mode:**

You can set the **Capture Mode** to OFF and 384*288@25fps.

- **Digital Zoom**

The digital zoom is available for the thermal sensor, there are x2 and X4 selectable.

NOTE

This function varies depending on the models of positioning system.

■ **Other**

- **Local Output**

You can enable or disable the video output through the BNC interface on your demand.

6.5.2 Configuring OSD Settings

Purpose:

The positioning system 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 positioning system.

You can customize the on screen display of time.

Steps:

1. Enter the OSD Settings interface:

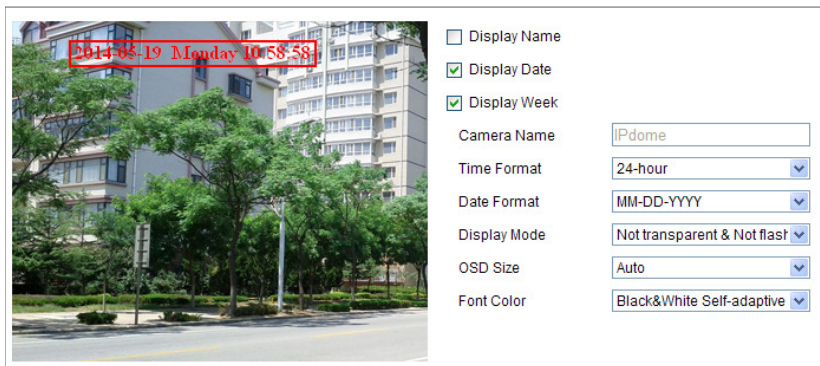   **Configuration > Advanced Configuration > Image > OSD Settings**

Figure 6-41 OSD Settings

2. Check the corresponding checkbox to select the display of positioning system name, date or week if required.
3. Edit the positioning system name in the text field of **Camera Name**.
4. Select from the drop-down list to set the time format, date format and display mode.

5. You can use the mouse to click and drag the text frame ![IPdome2] in the live view window to adjust the OSD position.

Figure 6-42 Adjust OSD Location

6. 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 ![Save] to activate above settings.

END

6.5.3 Configuring Text Overlay Settings

Purpose:
You can customize the text overlay.
Steps:
1. Enter the Text Overlay Settings interface:
    Configuration > **Advanced Configuration** > **Image** > **Text Overlay**
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 click and drag the red text frame **Text** in the live view window to adjust the text overlay position.
5. Click Save .

NOTE

There are up to 8 text overlays configurable.

Figure 6-43 Text Overlay Settings

END

6.5.4 Configuring DPC Settings

DPC (Defective Pixel Correction) refers to the function that the camera can correct the defective pixels on the LCD which are not performing as expected.
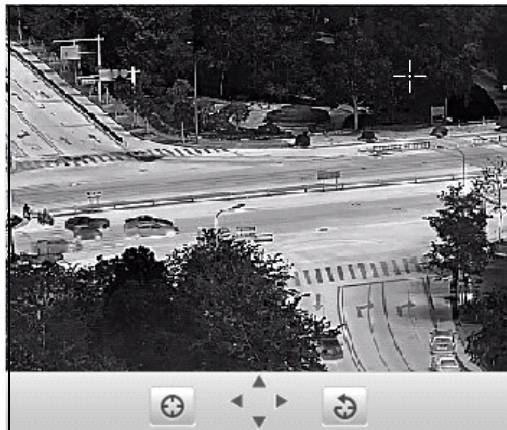
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Figure 6-44 Defective Pixel Correction

Steps:

1. Select the defective pixel using the mouse. And click [icon] to adjust the position.

2. Click [icon] to start correction.

3. (Optional) Click [icon] to cancel the correction.

NOTE

This function varies depending on the models of positioning system.

6.6 Configuring and Handling Alarms

Purpose:

This section explains how to configure the network positioning system to respond to alarm events, including motion detection, external alarm input, video loss, tamper-proof and exception. These events can trigger the alarm actions, such as Notify Surveillance Center, Send Email, Trigger Alarm Output, etc.

For example, when an external alarm is triggered, the network positioning system sends a notification to an e-mail address.

6.6.1 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 > Advanced Configuration> Basic Event > Motion Detection
2. The motion detection function is applicable to both the optical channel and the thermal channel, you need to select the **Channel No.** in the dropdown list to configure.
3. Check the checkbox of the **Enable Motion Detection** 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.
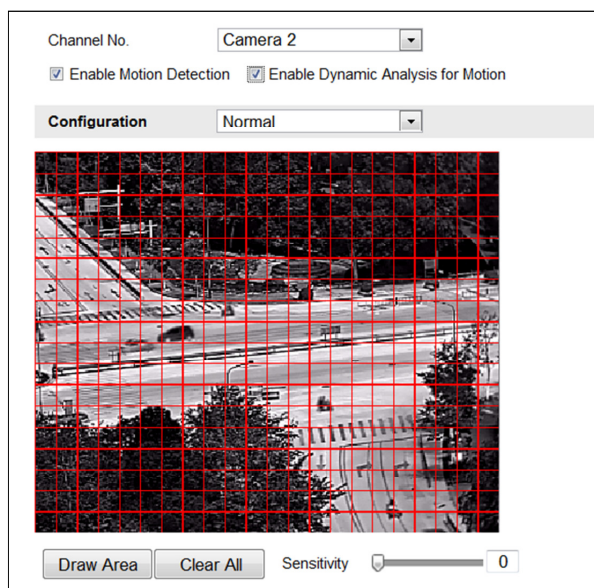   - **Normal**

   Figure 6-45 Motion Detection Settings-Normal

   (1) Click [Draw Area]. Click and drag the mouse on the live video image to draw a motion detection area.

   (2) Click [Stop Drawing] to finish drawing.

   NOTE

   - You can draw up to 8 motion detection areas on the same image.
   - You can click [Clear All] to clear all of the areas.

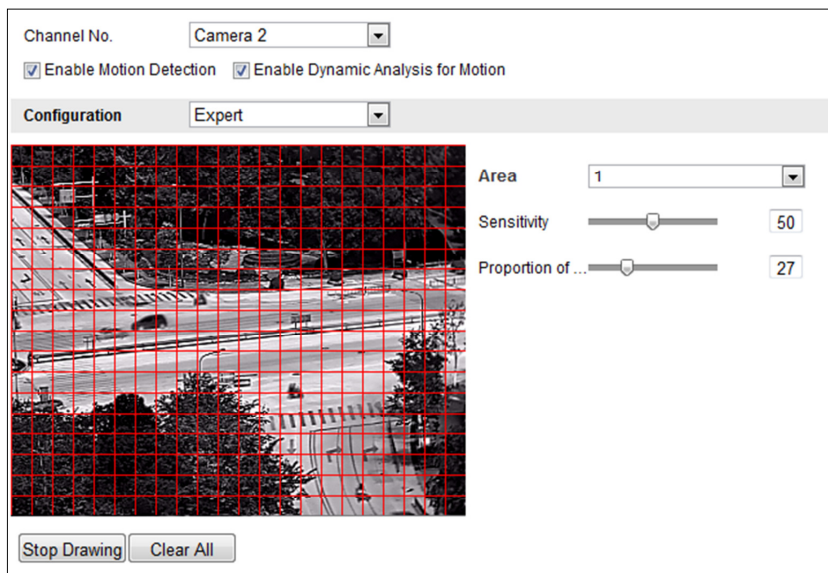   (3) Move the slider [Sensitivity] to set the sensitivity of the detection.
   - **Expert**

Figure 6-46 Motion Detection Settings-Expert

(1) (Available for the optical channel only) Set the Day&Night switch mode, there are OFF, Auto-Switch and Scheduled-Switch selectable. If the Day&Night 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 No. to configure in the dropdown list.

(3) Set the values of sensitivity and proportion of object on area.
Sensitivity: The greater the value is, the easier the alarm will be triggered.
Proportion of Object on Area: 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.
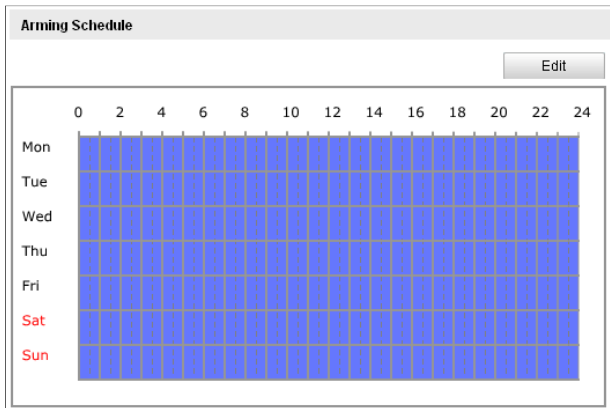
    (1) Click [Edit] in Figure 6-47.

Figure 6-47 Arming Schedule

(2) Choose the day you want to set the arming schedule as shown in Figure 6-48.

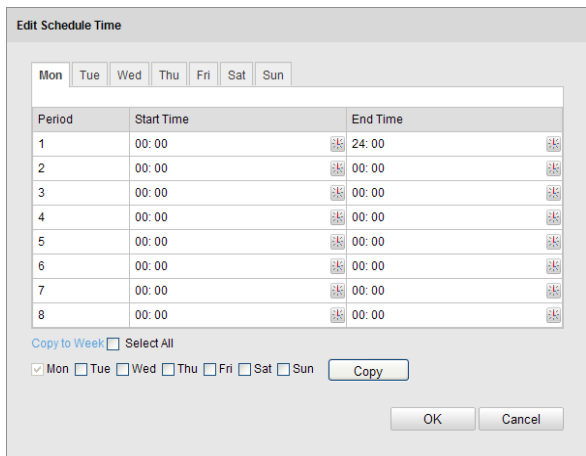
Figure 6-48 Arming Time Schedule

(3) Click ⏰ to set the time period for the arming schedule.

(4) (Optional) After you set the arming schedule, you can click ⬚Copy⬚ to copy the schedule to other days.

(5) Click ⬚ OK ⬚ 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.

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 6-49 Linkage Method

Check the checkbox to select the linkage method. Notify surveillance center, send email, upload to FTP, trigger channel and trigger alarm output are selectable.

● **Notify Surveillance Center**

Send an exception or alarm signal to remote management software when an event occurs.

● **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 6.3.11 Configuring Email Settings* to set the Email parameters.

● **Upload to FTP**

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 6.3.8 Configuring FTP Settings* for setting FTP parameters.

● **Trigger Channel**

Trigger the camera to record a video when an event occurs.

NOTE

You have to set the recording schedule to realize this function. Please refer to *Section 8.3 Configuring Recording Schedule* for settings 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, please refer to *Section 6.6.4 Configuring Alarm Output* to set the alarm output

parameters.

6.6.2 **Configuring Video Tampering Alarm**

Purpose:
You can configure the positioning system to trigger the alarm actions when the lens is covered.

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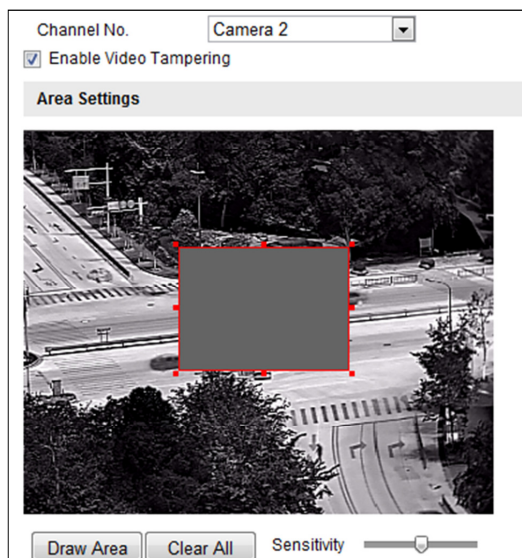   **Configuration > Advanced Configuration > Basic Event > Video Tampering**

Figure 6-50 Tampering Alarm

2. The motion detection function is applicable to both the optical channel and the thermal channel, you need to select the **Channel No.** in the dropdown list to configure.
3. Check **Enable Video Tampering** checkbox to enable the tampering detection.
4. Set the tampering area. Refer to *Step 1* in **Section 6.6.1 Configuring Motion Detection**.
5. Click [Edit] to edit the arming schedule for tampering. The arming schedule configuration is the same as the setting of the arming schedule for motion detection. Refer to *Step 2* in **Section 6.6.1 Configuring Motion Detection**.
6. Check the checkbox to select the linkage method taken for the tampering. Notify surveillance center, send email, trigger channel and trigger alarm output are selectable. Please refer to *Step 3* in **Section 6.6.1 Configuring Motion Detection**.

7. Click [Save] to save the settings.

[END]

6.6.3 Configuring Alarm Input

Steps:
1. Enter the Alarm Input Settings interface:
   Configuration > Advanced Configuration> Events > 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 Alarm Name [   ] to set a name for the alarm input (optional).

Figure 6-51 Alarm Input Settings

4. Click [Edit] to set the arming schedule for the alarm input. Refer to *Step 2* in **Section 6.6.1 Configuring Motion Detection**.
5. Check the checkbox to select the linkage method taken for the alarm input. Refer to *Step 3* in **Section 6.6.1 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.

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8.   Click [Save] to save the settings.

Figure 6-52 Linkage Method

6.6.4 Configuring Alarm Output

Steps:

1.   Enter the Alarm Output Settings interface:
     Configuration>Advanced Configuration> Events > Alarm Output
2.   Select one alarm output channel in the **Alarm Output** drop-down 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 [Edit] to enter the **Edit Schedule Time** interface. The time schedule
     configuration is the same as the settings of the arming schedule for motion
     detection. Refer to *Step 2* in *Section 6.6.1 Configuring Motion Detection*.

Figure 6-53 Alarm Output Settings

6. You can copy the settings to other alarm outputs.

7. Click [Save] to save the settings.

[END]

6.6.5 Handling Exception

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

Steps:
1. Enter the Exception Settings interface:
    Configuration > Advanced Configuration> Events > Exception
2. Check the checkbox to set the actions taken for the Exception alarm. Refer to *Step 3* in ***Section 6.6.1 Configuring Motion Detection***.

Figure 6-54 Exception Settings

3. Click [Save] to save the settings.

[END]

6.6.6 Detecting Audio Exception

Purpose:
When you enable this function and audio exception occurs, the alarm actions will be triggered.
Steps:
1. Enter the video audio exception detection interface:
    Configuration > Advanced Configuration > Smart Event > Audio Exception Detection
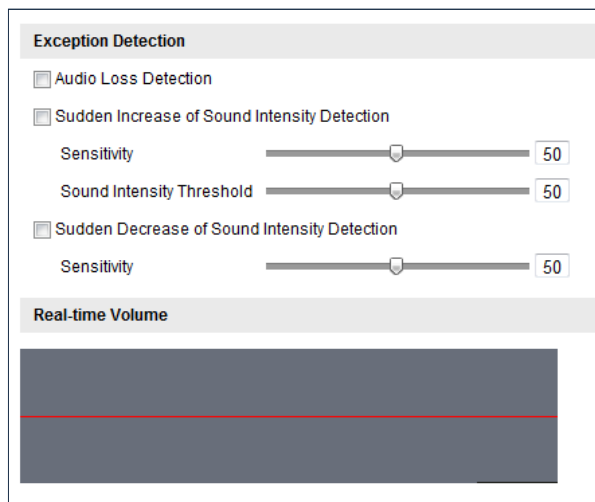
Figure 6-55 Audio Exception Detection

2. Check the checkbox of **Audio Loss Detection** to enable the audio input exception detection.
3. Check the checkbox of **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 checkbox of **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 [Edit] to edit the arming schedule. The arming schedule configuration is the same as the setting of the arming schedule for motion detection. Refer to *Step 2* in *Section 6.6.1 Configuring Motion Detection*.
6. Check the checkbox to select the linkage method taken for audio exception.

Notify surveillance center, send email, trigger alarm output, etc. are selectable. Please refer to *Step 3* in ***Section 6.6.1 Configuring Motion Detection***.

7. Click ▭ Save ▭ to save the settings.

[END]

6.6.7 Detecting Dynamic Fire Source

Purpose:

When you enable this function and fire source is detected, the alarm actions will be triggered.

Steps:

1. Enter Configuration>Advanced Configuration>System>VCA Resource Type to select **Dynamic Fire Source Detection** as VCA Resource Type.
2. Enter the dynamic fire source detection interface:
   Configuration > Advanced Configuration > Smart Event > Dynamic Fire Source Detection

Figure 6-56 Dynamic Fire Source Detection

3. Check the checkbox of **Enable Dynamic Fire Source Detection** to enable the dynamic fire source detection.

[NOTE]

The function of dynamic fire source detection can only be enabled for camera 2.

● **Sensitivity**: Range [1-10], the smaller the value is, the fire source of lower temperature can be detected.
● **Dwell Time(s)**: Range [0-120]. You can set the dwell time of the positioning system staying the position where detects the fire source when performing auto scan, patrol, pattern, scheduled task, and park action.

4. Check the checkbox of **Display Fire Source Frame on Stream** to display a red frame around the fire source on stream when fire occurs. (Optional)
5. Check the checkbox to select the linkage method taken for the alarm input. *Refer to Step 3 in Section 6.6.1 Configuring Motion Detection*. In the field of **Other Linkage**, you can check the checkbox to enable the alarm output (The alarm output number varies depending on device ability).

6. Click [Save] to save the settings.

[END]

6.6.8 Detecting Ship

Comment [t1]:

Purpose:
When you enable this function and ship is detected, the alarm actions will be triggered.

Steps:
1. Enter Configuration>Advanced Configuration>System>VCA Resource Type to select **Ship Detection** as VCA Resource Type.
2. Enter the ship detection interface:
   Configuration > Advanced Configuration > Smart Event > Ship Detection
3. Check the checkbox of **Enable Ship Detection** to enable the ship detection function.
4. Check the checkbox of **Display Detection Frame on Video** to display the frame and alarm line on stream. (Optional)

   [NOTE]

   The function of ship detection is only supported for some models.
5. Enter the device height in the textbox as the height of device above the water level.
6. Draw the ship detection area and the alarm lines.
   (1) Click Draw Area. Click the mouse on the live video image to draw a ship detection area and right click to finish the drawing. The alarm will be uploaded when ship is detected in this area.
   (2) Click Draw Alarm Line. Click the mouse on the live video to draw an alarm line and right click to finish the drawing. The device alarms and counts the ship number when ships are detected in the area and the ship information will be displayed on the right.

   [NOTE]

   Make sure the alarm line is longer than the width of ship detection area.
7. Check the checkbox to select the linkage method taken for the alarm input. *Refer to Step 3 in Section 6.6.1 Configuring Motion Detection*. In the field of **Other**

Linkage, you can check the checkbox to enable the alarm output (The alarm output number varies depending on device ability).

8. Click ⬚ Save to save the settings.

📖 END

6.7 Temperature Measurement

Purpose:

When you enable this function, it measures the actual temperature of the spot being monitored. The device alarms when temperature exceeds the temperature threshold value.

Before You Start:

Enter **Configuration > Advanced Configuration > System > VCA Resource Type** to select **Temperature Measurement + Behavior Analysis** as VCA Resource Type.

6.7.1 Temperature Measurement Configuration

Steps:

1. Enter **Configuration > Advanced Configuration > Temperature Measurement Configuration**.
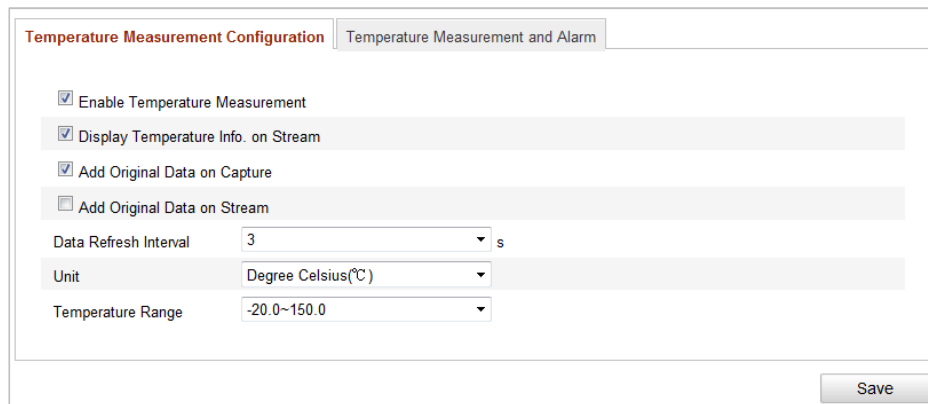

Figure 6-57 Dynamic Fire Source Detection

2. Check the checkboxes of the interface to set the temperature measurement configurations.

   ● **Enable Temperature Measurement:** Check the checkbox to enable temperature measurement function.

   ● **Display Temperature Info. on Stream:** Check the checkbox to display temperature information in live view.

   ● **Add Original Data on Capture:** Check the checkbox to add original data on

capture.

- **Add Original Data on Stream:** Check the checkbox to add original data on stream.
- **Data Refresh Interval:** Select the data refresh interval from 1s to 5s.
- **Unit:** Display temperature with Degree Celsius (°C)/Degree Fahrenheit (°F)/Degree Kelvin (K）.
- **Temperature Range:** Set the temperature range.

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

6.7.2 Temperature Measurement and Alarm

Purpose:

This function is used for measuring the temperature of detected spot and the device compares temperature of selected regions and alarms.

Steps:

1. Enter **Configuration > Advanced Configuration > Temperature Measurement and Alarm**.
2. Adjust the image to the scene for temperature measurement with the PTZ control panel. Save current scene as certain preset.

- You can set the preset in live view interface before and call the preset in the temperature measurement and alarm interface.
- You can set/ call/ clear the preset in temperature measurement interface.

3. Set the alarm rule: Select a temperature measurement rule from the rule list and configure the parameters.
   - **Name:** You can customize the rule name.
   - **Type:** Select point, line, or frame as rule type.
   - **Emissivity:** Set the emissivity of your target. Note: The emissivity of each object is different.
   - **Distance (m):** The straight-line distance between the target and the device.
   - **Reflective Temperature:** If there is any target with high emissivity in the scene, check the checkbox and set the reflective temperature to correct the temperature. If no such target exists, uncheck the checkbox.
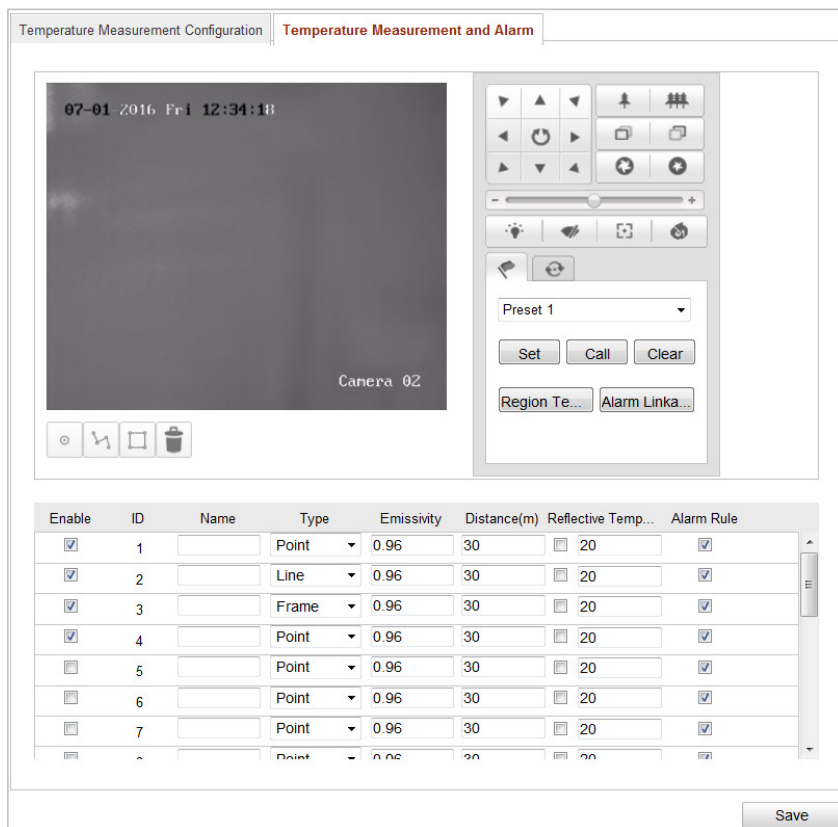
Figure 6-58 Temperature Measurement Configuration

4. Click [pencil icon] in the list to show the alarm rule interface.

- **Alarm Rule:** The alarm rule varies according to different types. The rule is to compare the temperature information of two selected regions. For targets set by frame, the rules include: **Max. Temperature is Higher than**, **Max. Temperature is Lower than**, **Min. Temperature is Higher than**, **Min. Temperature is Lower than**, **Average Temperature is Higher than**, **Average Temperature is Lower than**, **Temperature Difference is Higher than**, and **Temperature Difference is Lower than**. For targets set by line, the rules include Max. Temperature, Min. Temperature, and Average Temperature. For targets set by point, the rules are distinguished by Average Temperature.
- **Pre-Alarm Temperature and Alarm Temperature:** Set the pre-alarm temperature and alarm temperature, the device sends pre-alarm when its rule temperature exceeds pre-alarm temperature and sends alarm when its rule temperature exceeds alarm temperature.
- **Tolerance Temperature:** Set the tolerance temperature and the device judges whether the triggered alarm stops until the device temperature/temperature difference is lower than rule temperature by tolerance temperature. For example, set tolerance temperature as 3°C, set alarm temperature as 55°C,

and set pre-alarm temperature as 50°C. The device sends pre-alarm when its temperature reaches 50°C and it alarms when its temperature reaches 55°C and only when the device temperature is lower than 52°C will the alarm be cancelled.

5. Draw the Target Region: Select the rule and draw the corresponding

   frame/line/point. Click ⊙ to draw the point. Click 〜 to draw the line. Click

   ☐ to draw the frame.

6. Set Temperature Difference Alarm: Click Temperature Difference Alarm to enter the temperature difference alarm interface, up to four temperature difference alarms can be set.

   NOTE

   Temperature Difference Alarm only applies to the targets set by frame.

7. Set Alarm Linkage: Click Alarm Linkage to enter the alarm linkage interface and set the linkage methods.

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

END

Chapter 7 VCA Configuration

Purpose:

You can do intelligent analysis, such as behavior analysis, with the positioning system. Multiple rules can be configured for different requirements.

![NOTE]

The VCA function only supported by the thermal channel.

7.1 VCA Resource Configuration

Purpose:

Before using the VCA function of the camera, you should select the VCA resource type first. To use Temperature Measurement and Behavior Analysis, select Temperature Measurement and Behavior Analysis. To use Dynamic Fire Source Detection function, select Dynamic Fire Source Detection. To use Ship Detection function, select Ship Detection.

Steps:

1. Enter the VCA Resource Type interface:

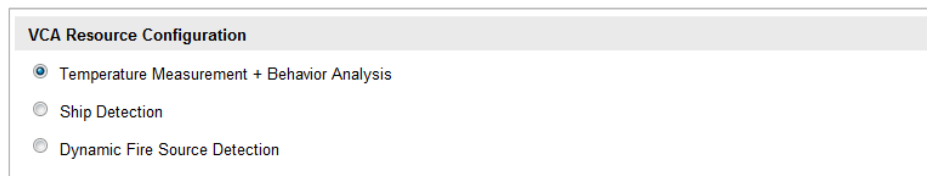   **Configuration > Advanced Configuration > System > VCA Resource Type**

Figure 7-1 VCA Information

2. Check the checkbox to enable the VCA resource type.
3. The system reboots and the selected VCA resource will be enabled.

![NOTE]

Once you select any of the resources, the other VCA rules cannot be enabled.

7.2 Configuring VCA Information

Steps:

1. Enter the VCA Information Configuration interface:

   Configuration > VCA Configuration > VCA Info.

Figure 7-2 VCA Information

2. Tick the checkbox to enable the Intelligent Analysis. And you can view the current version for the behavior analysis.
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 ticking the corresponding checkbox on your demand.
   - And if you tick 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 configure the **Notify Surveillance Center** function which is used for uploading the picture to the surveillance center when and VCA alarm occurs.
   - You can also set the quality and resolution of the picture separately.
5. Click [Save] to save the settings.

7.3 Advanced Configuration

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 Configuration > Advanced Configuration

Figure 7-3 Advanced Configuration

2. Adjust the Detection Parameters.

   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.

   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 positioning system will continue locating and tracking the blocked target.

   Restore Default: Click [Restore] to restore the parameters to the default.

   Restart VCA: Click [Restart] to restart the VCA function.

7.4 Behavior Analysis

Purpose:

The positioning system supports patrol tracking for multiple scenes. At most 8 rules can be configured for a single scene. You can configure the rules for the scene on your demand.

Steps:

1. Configure the VCA Info: For details, see 7.2.
2. Configure the **Zooming Ratio** parameters: Set the appropriate tracking zooming

   ratio with the PTZ control panel. Click on Save Zooming F button to save the settings.

   The optical camera will track the target when the VCA rule is triggered which is configured on the thermal camera.

Figure 7-4 Zoom Ratio

3. Configure the Scene:
   Go to **VCA Configuration> Scene Configuration**
   At most 10 scenes can be added. Different rules and properties can be configured for each scene.
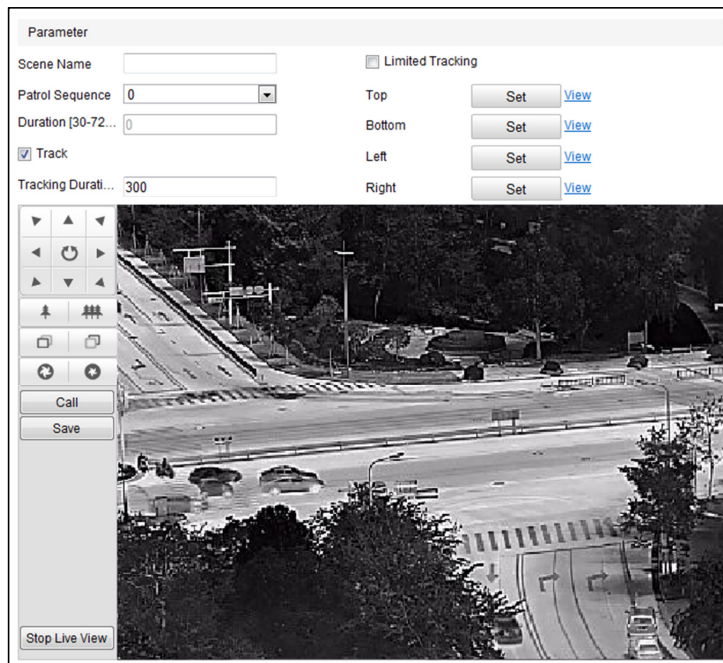
Figure 7-5 Scene Parameters

- **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:

   Scene Name: Enter a custom scene name.

   Patrol Sequence: Set the sequence for the scene when doing patrol tracking. If the sequence is selected as 0, this scene will not be configured for patrol tracking.

   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 positioning system will start to track automatically.

   Track: Check the checkbox to enable the auto tracking function for the scene. Once the thermal channel detects target, the optical channel auto tracks the target.

   Tracking Duration: Set the duration of the auto track. If the value is set 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.

4) Click [Save] to save the settings.

- **Rule Configuration:**

   At most 8 rules can be configured for a single scene. Follow the steps below

to configure the rule for the scene.

1) Click the **Rule** tab to enter the rule settings interface.

2) Create new rule: Click on the button ⊞ to add a new rule.

3) Select rule type: Click the dropdown menu to select the rule type. Line Crossing, Intrusion, Region Entrance, and Region Exiting are selectable.
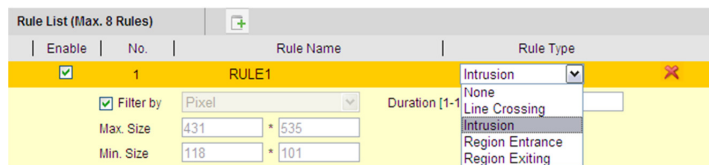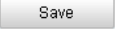

Figure 7-6   Rule List

4) Configure the rule area: Click the Draw Line or Draw Area button 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, see 7.5 Rule Configuration Demonstration.

5) Configure the filtering size: The filtering function is supported for all rules. You can set the minimum and maximum size of the object needs to be filtered. The system will only detect the object in a size between the configured minimum and maximum value. For details, see7.5 Rule Configuration Demonstration.

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.

● **Configure Arming schedule:**

1) Click the Arming Schedule tab.

2) Select a rule from the rule list.

Figure 7-7 Arming Schedule

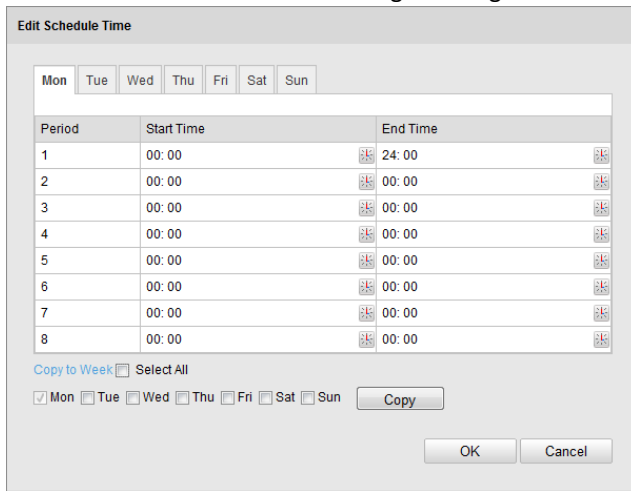3) Click on the Edit button to edit the arming time segment.

Figure 7-8 Schedule Time

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.

4) Click Save to save the settings.

● **Configure Arming schedule:**

1) Click the Alarm Linkage tab.
2) Select a rule from the rule list.

Figure 7-9 Alarm Linkage

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

4. Advanced Configuration: For details, see *section 7.3 Advanced Configuration*. Click **Save** to save the settings.

7.5 Rule Configuration Demonstration

Purpose:

This section provides detailed configuration steps for each rule.

7.5.1 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 on the button [icon] to add a new rule.

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

Figure 7-10 Select Rule Type

3. (Optional) Configure the size filter, if you want to narrow the detection target to a desired range.

   1) Check the checkbox of the **Filter by**, and only filer by pixel is available.

   2) Click the [Min. Size] button and draw a rectangle on the live view image as

the Min. size filter.

3) Click the ⬚ Max. Size button and draw a rectangle on the live view image as

the Max. size filter.

4. Configure the rule area:

Click ⬚ Draw Line on the tool bar of the live view panel. Specify a point of the
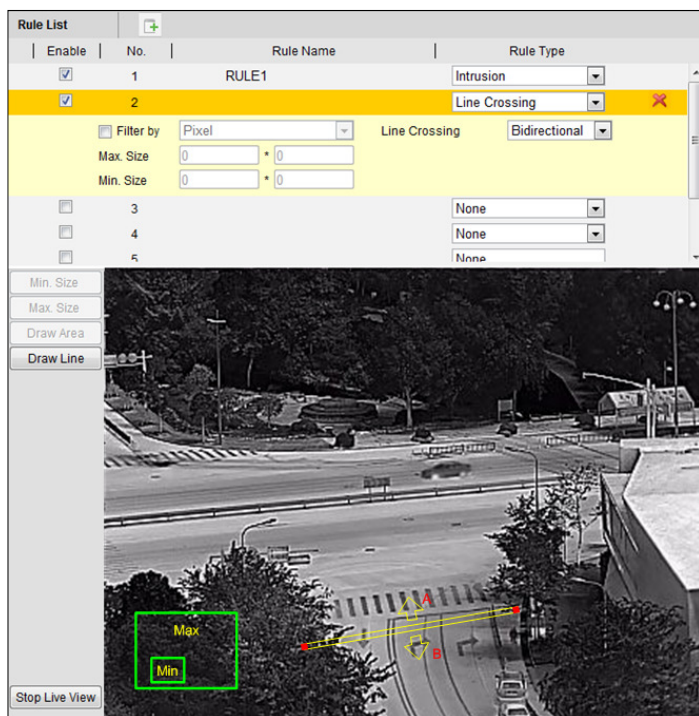line by clicking the mouse on the live view image, and then specify the other
one.

Figure 7-11 Draw Line

5. Click the dropdown menu in the rule list to select the crossing direction.
6. Enable rules: Check the **Enable** checkbox of each rule in the rule list to enable
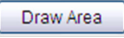   the rule.

7. Click ⬚ Save to save the settings.

7.5.2 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 on the button [icon] to add a new rule.
2. Select rule type: Click the dropdown menu and select **Intrusion** as the rule type.
3. Configure the filtering size: for details, see step 3 in *section 7.5.1 Line Crossing*.
4. Configure the rule area:

   Click [Draw Area] on the tool bar of the live view panel. Click the mouse on the live view image to specify a corner of the area. After you specify all the corners, right click the mouse to connect the first corner and the last corner, which means the polygonal area is drawn.
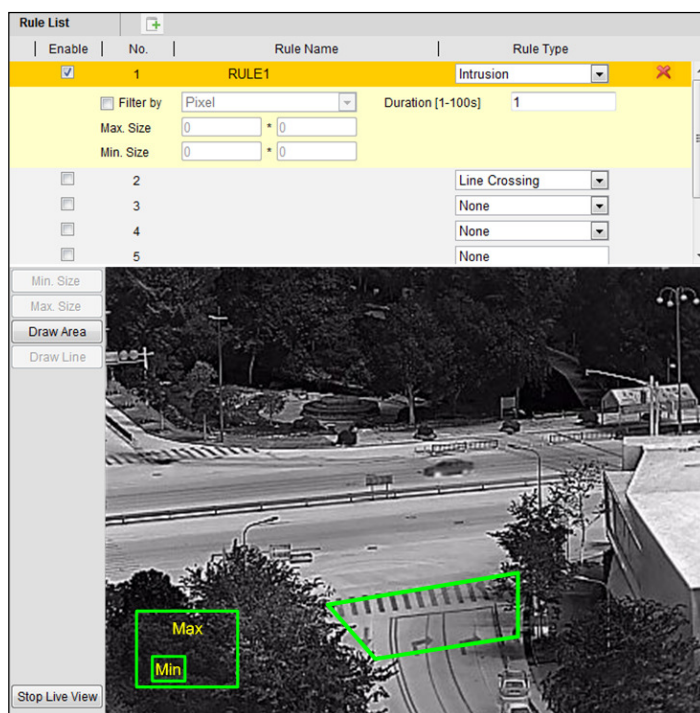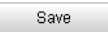

Figure 7-12 Draw Area

5. Set the duration from 1 to 100.
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.

7.5.3 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 on the button ![icon] to add a new rule.

2. Select rule type: Click the dropdown menu and select **Region Entrance** as the rule type.

3. Configure the rule area:

   Click [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.

4. Configure the filtering size: for details, see step 3 in *section 7.5.1 Line Crossing*.

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.

7.5.4 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 on the button ![icon] to add a new rule.

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

3. Configure the rule area:

   Click [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.
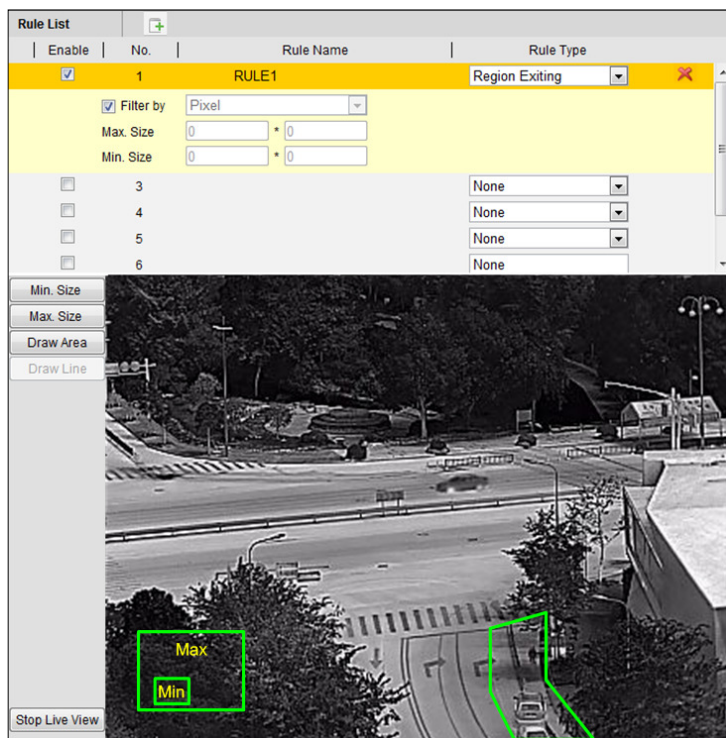
Figure 7-13 Draw Area

4. Configure the filtering size: for details, see step 3 in *section 7.5.1 Line Crossing*.
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.

Chapter 8 Record Settings

Before you start:

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

8.1 Configuring NAS Settings

Before you start:

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

Steps:

1. Enter the NAS (Network-Attached Storage) Settings interface:

   Configuration > Advanced Configuration > Storage > NAS

2. Select the NAS type as NFS or SMB/CIFS. If you select SMB/CIFS, you need to enter the User Name and Password.

Figure 8-1 Select NAS Type

3. Enter the IP address of the network disk. The default NFS storage format of file path is */dvr/test* as shown in Figure 8-2. And the default SMB/CIFS storage format of file path is */test*.

Figure 8-2 Add Network Disk

4. Click [Save] to add the network disk.

Up to 8 NAS disks can be connected to the positioning system.

8.2 Initializing and Configuring Storage

Steps:
1. Initialize the local disk or added network disk.
   (1) Enter the HDD Settings interface (**Advanced Configuration > Storage > Storage Management**), in which you can view the capacity, free space, status, type and property of the disk.
   (2) If the status of the disk is **Uninitialized** as shown in Figure 8-3, check the corresponding checkbox to select the disk and click [Format] to start initializing the disk.

HDD Device List						Format
☑ HDD No.	Capacity	Free space	Status	Type	Property	Progress
☑ 9	0.96GB	0.00GB	Uninitialized	NAS	R/W	

Figure 8-3 Initialize Disk

HDD Device List						Format
☑ HDD No.	Capacity	Free space	Status	Type	Property	Progress
☑ 9	39.06GB	0.00GB	Uninitialized	NAS	R/W	7%

Figure 8-4 Initializing

When the initialization completed, the status of disk will become **Normal** as shown in Figure 8-5.

HDD Device List						Format
☐ HDD No.	Capacity	Free space	Status	Type	Property	Progress
☐ 9	39.06GB	38.75GB	Normal	NAS	R/W	

Figure 8-5 View Disk Status

2. Configure the quota for saving the video and picture.
   Enter the percentage for picture and record in the text filed, and the total percentage must be 100%.

Quota		
Max.Picture Capacity	49.50GB	
Free Size for Picture	49.50GB	
Max. Record Capacity	149.25GB	
Free Size for Record	149.25GB	
Percentage of Picture	25	%
Percentage of Record	75	%

Figure 8-6 Setting Quota

8.3 Configuring Recording Schedule

Before you start:
Please make sure a local storage card is inserted in the positioning system or the network storage is added to the positioning system, and the

Purpose:
There are two kinds of recording for the positioning systems: manual recording and scheduled recording. For the manual recording, refer to ***Section 4.4 Recording and Capturing Pictures Manually****.* 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 SD card (if supported) or in the network disk.

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

Figure 8-7 Recording Schedule Interface

2. Check the checkbox of **Enable Record Schedule** to enable scheduled recording.
3. Set the record parameters of the positioning system.

Figure 8-8 Record Parameters

- **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 positioning system 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 positioning system 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 the positioning system model.

● **Overwrite**: If you enable this function and the HDD is full, the new record files overwrite the oldest record files automatically.

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

4. Click [Edit] to edit the record schedule.

Figure 8-9 Record Schedule

5. Choose the day to set the record schedule.

(1) Set all-day record or segment record:

◆ If you want to configure the all-day recording, please check the **All Day** checkbox.

◆ If you want to record in different time sections, check the **Customize** checkbox. Set the **Start Time** and **End Time.**

NOTE

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

(2) Select a **Record Type**. The record type can be Continuous, Motion Detection, Alarm, Motion | Alarm, Motion & Alarm, Face Detection, Intrusion Detection, Line Crossing Detection, Audio Exception Detection and All 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 Detection**, 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 checkbox of **Trigger Channel** in the **Linkage Method** of Motion Detection Settings interface. For detailed information, please refer to the *Step 1 in the Section 6.6.1 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 checkbox of **Trigger Channel** in the **Linkage Method** of **Alarm Input Settings** interface. For detailed information, please refer to *Section 6.6.3 Configuring Alarm Input*.

◆ **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. Please refer to *Section 6.6.1* and *Section 6.6.3* for detailed information.

◆ **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. Please refer to *Section 6.6.1* and *Section 6.6.3* for detailed information.

◆ **Record Triggered by VCA Recording**

If you select **VCA Recording**, the video will be recorded when the VCA detection is triggered.

Besides configuring the recording schedule, you have to configure the settings on the **VCA Configuration** interface. Please refer to **Chapter 7** for detailed information.

◆ **Record Triggered by Audio Exception Detection**
If you select **Audio Exception Detection**, the video will be recorded when the audio exception is detected.
Besides configuring the recording schedule, you have to configure the settings on the **Audio Exception Detection** interface. Please refer to *Section 6.6.6* for detailed information.

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

(3) Check the checkbox ☐ Select All and click [Copy] to copy settings of this day to the whole week. You can also check any of the checkboxes before the date and click [Copy].

(4) Click [OK] to save the settings and exit the Edit Record Schedule interface.

6. Click [Save] to save the settings.

📖 END

8.4 Configuring Snapshot Settings

Purpose:
You can configure the scheduled snapshot and event-triggered snapshot. You can upload the captured pictures to a FTP server.

● **Basic Settings**
Steps:
1. Enter the Snapshot Settings interface:
Configuration > Advanced Configuration > Storage > Snapshot

Figure 8-10 Snapshot Settings

2. 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.
3. Select the quality of the snapshot.
4. Set the time interval between two snapshots.

5. Click [Save] to save the settings.

[END]

● **Uploading to FTP**

[NOTE]

Please make sure that the FTP server is online.

You can follow below configuration instructions to upload the snapshots to FTP.

◆ Upload continuous snapshots to FTP

Steps:

1) Check the **Enable Timing Snapshot** checkbox.

2) Configure the FTP settings and check checkbox in FTP Settings interface. Please refer to **Section 6.3.8 Configuring FTP Settings** for more details to configure FTP parameters.

◆ Upload event-triggered snapshots to FTP
Steps:
1) Check the **Enable Event-triggered Snapshot** checkbox.

2) Configure the FTP settings and check checkbox in FTP Settings interface. Please refer to **Section 6.3.8 Configuring FTP Settings** for more details to configure FTP parameters.

3) Check checkbox in Motion Detection Settings or Alarm Input interface. Please refer to *Step 3* in **Section 6.6.1 Configuring Motion Detection**.
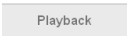
Chapter 9 Playback

Purpose:

This section explains how to view the remotely recorded video files stored in the network disks.

Task 1: **To play back the video files**

Steps:

1. Click ⬚ Playback on the menu bar to enter playback interface.
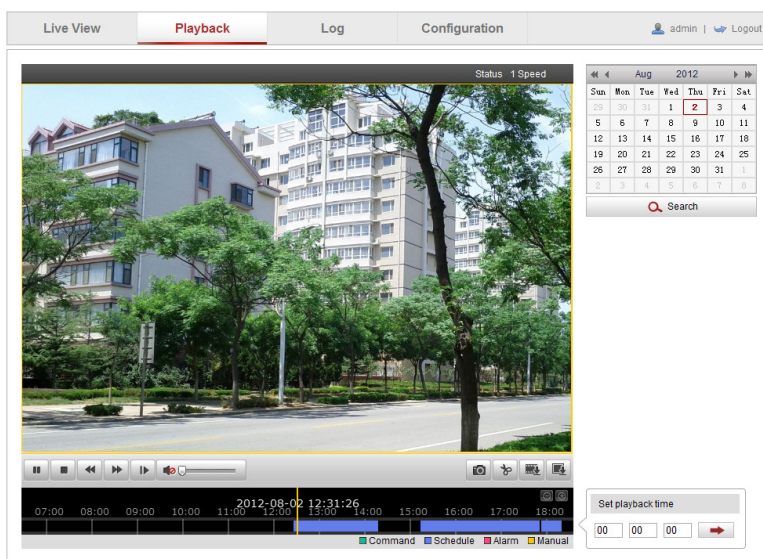
Figure 9-1 Playback Interface

2. Select the date and click 🔍 Search .
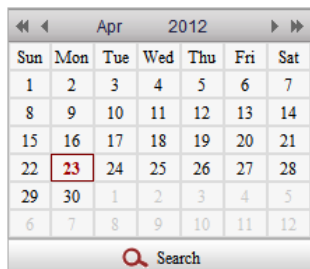
Figure 9-2 Search Video

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.

Figure 9-3 Playback Toolbar

Table 9-1 Description of the buttons

Button	Operation	Button	Operation
▶ / ❚❚	Play/Pause	■	Stop
◀◀	Speed down	▶▶	Speed up
❚▶	Playback by frame	/	Audio on and adjust volume/Mute
📷	Capture a picture	✂ / ✂	Start/Stop clipping video files
⬇	Download video files	⬇	Download captured pictures
Status 1 Speed	Display playback status		

NOTE

> You can choose the file paths locally for downloaded playback video files and pictures in Local Configuration interface. Please refer to **Section 6.1 Configuring Local Parameters** 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.
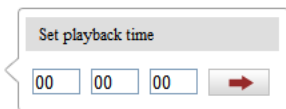
Figure 9-4 Set Playback Time
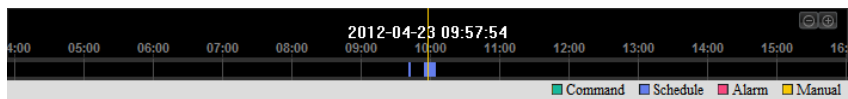
Figure 9-5 Progress Bar

The different colors of the video on the progress bar stand for the different video types as shown in Figure 9-6.
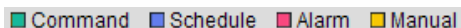
© Hikvision

Figure 9-6 Video Types

Task 2: **To download the video files**

Steps:

1. Click on the playback interface. The pop-up menu is shown in Figure 9-7.

2. Set the start time and end time. Click **Search**. The corresponding video files are listed on the left.


Figure 9-7 Video Downloading interface

3. Check the checkbox in front of the video files that you need to download.

4. Click to download the video files.

- The progress ratio displays the downloading ratio of the video file.
- You can click to stop downloading.
- The total number displays the amount of the video files.

Task 3: **To download the captured pictures**

Steps:

1. Click on the playback interface. The pop-up menu is shown in Figure 9-8.

2. Set the linkage type of capturing the pictures as timing, alarm, motion, etc..
3. Set the start time and end time. Click **Search**. The corresponding picture files are listed on the left.
4. Check the checkbox in front of the files that you need to download.

5. Click to download the files.

☐	No.	File Name	File Date	File Size	Progress

Timing

Start Time

2013-07-8 00:00:00

End Time

2013-07-8 23:59:59

Q Search

Download

Figure 9-8 Picture Downloading interface

END

Chapter 10 Log Searching

Purpose:

The operation, alarm, exception and information of the positioning system can be stored in log files. You can also export the log files on your demand.

Before you start:

Please configure network storage for the positioning system or insert a SD card in the positioning system.

Steps:

1. Click [Log] on the menu bar to enter log searching interface.
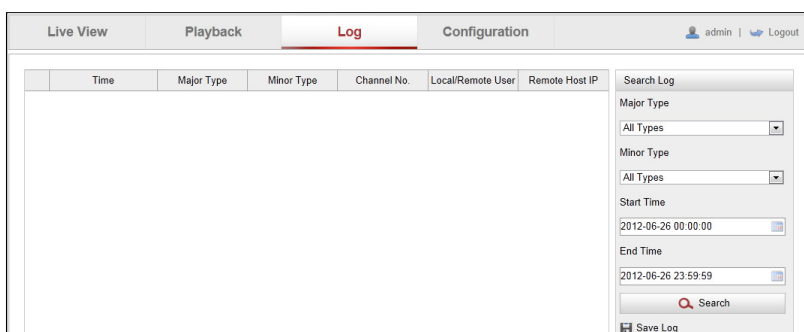

Figure 10-1 Log Searching Interface

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 10-2.

3. Click [Search] to search log files. The matched log files will be displayed on the **Log** interface.
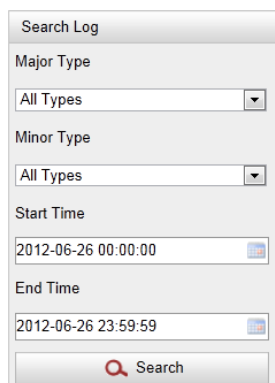

Figure 10-2 Log Searching

4. To export the log files, click [Save Log] to save the log files in your computer.
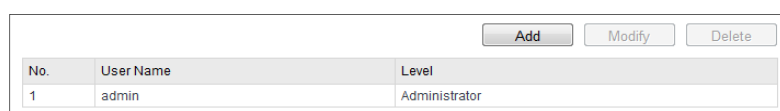
Chapter 11 Others

11.1 Managing User Accounts

Enter the User Management interface:
Configuration >**Basic Configuration**> **Security** > **User**
Or **Configuration** > **Advanced Configuration**> **Security** > **User**
The **admin** user has access to create, edit or delete other accounts. Up to 32 user accounts can be created.

	Add	Modify	Delete

No.	User Name	Level
1	admin	Administrator

Figure 11-1 User Information

- **Add a User**

Steps:

1. Click [Add] to add a user.

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

    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 11-2 Add a User
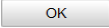

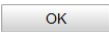
● **Modify a User**

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.
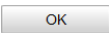

Figure 11-3 Modify a User

END

● **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.

END

11.1.1 Deleting a User

Steps:

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

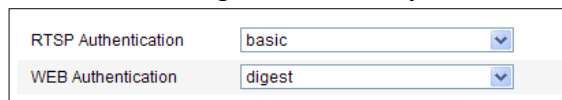4. Click OK on the pop-up confirmation box to delete the user.

END

11.2 Configuring RTSP Authentication

Purpose:

You can specifically secure the stream data of live view.

Steps:

1. Enter the RTSP Authentication interface:

   Configuration> **Advanced Configuration**> **Security** > **Authentication**

| RTSP Authentication | basic |
| WEB Authentication | digest |

Figure 11-4 RTSP Authentication

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

3. Click Save to save the settings.

END

11.3 Configuring Anonymous Visit

When you enable this function, you can log into the camera without a username and password.

In login interface, check the **Anonymous** checkbox and click **Login** to enter the camera as shown in Figure 11-6.
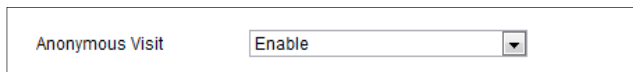
Figure 11-5 Anonymous Login

Figure 11-6 Login Interface

11.4 Configuring IP Address Filter

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

Filter Type	Description
Forbidden	Forbid the IP addresses added in the **IP Address Filter** interface to log in.
Allowed	Allow only the IP addresses added in the **IP Address Filter** interface to log in.

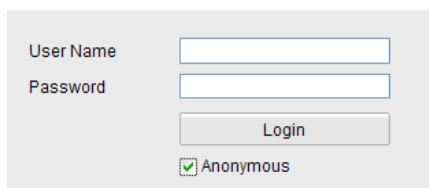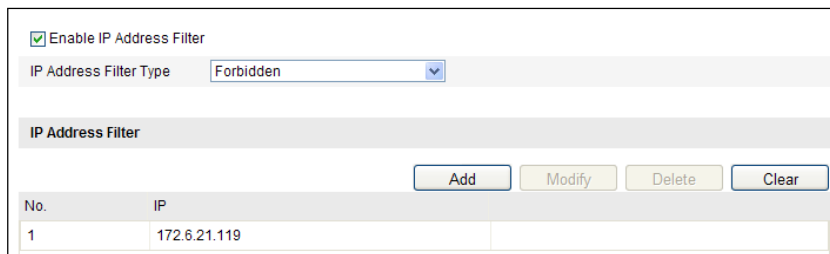
Figure 11-7 IP Address Filter

11.5 Configuring Security Service Settings

Steps:
1. Enter the Security Service interface:
    Configuration> **Advanced Configuration**> **Security** > **Security Service**

    ☐ Enable Telnet
    ☑ Enable SSH

    Figure 11-8 Security Service

2. Check the checkbox to enable the corresponding function.
    Enable Telnet: Telnet is a network protocol used on the Internet or local area networks to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection.
    Enable SSH: Enabling SSH (Secure Shell) function is to encrypt and compress the data and to reduce the transmission time.

11.6 Viewing Device Information

Enter the Device Information **interface**:
Configuration > **Basic Configuration**> **System** > **Device Information**
Or **Configuration** > **Advanced Configuration**> **System** > **Device Information**
In the **Device Information** interface, you can edit the Device Name.
Other information of the network positioning system, such as Model, Serial No., Firmware Version, Encoding 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.

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Figure 11-9 Device Information

11.7 Maintenance

11.7.1 Rebooting the Positioning system

Steps:
1. Enter the Maintenance interface:
    Configuration > **Basic Configuration**> **System** > **Maintenance**
    Or **Configuration** > **Advanced Configuration**> **System** > **Maintenance:**

2. Click [Reboot] to reboot the network positioning system.

Figure 11-10 Reboot the Device

11.7.2 Restoring Default Settings

Steps:
1. Enter the Maintenance interface:
    Configuration > Basic Configuration> System > Maintenance
    Or **Configuration > Advanced Configuration> System > Maintenance**

2. Click [Restore] or [Default] to restore the default settings.

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Clicking [Default] restores all the parameters to default settings including

the IP address and user information. Please use this button with caution.

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

Figure 11-11 Restore Default Settings

11.7.3 Importing/Exporting Configuration File

Steps:
1. Enter the Maintenance interface:
    Configuration > **Basic Configuration**> **System** > **Maintenance**
    Or **Configuration** > **Advanced Configuration**> **System > Maintenance**

2. Click [Browse] to select the local configuration file and then click [Import] to

    start importing configuration file.

You need to reboot the positioning system after importing configuration file.

3. Click [Export] and set the saving path to save the configuration file in local

    storage.

Import Config. File			
Config File		Browse	Import
Status			
Export Config. File			
Export			

Figure 11-12 Import/Export Configuration File

11.7.4 Upgrading the System

Steps:
1. Enter the Maintenance interface:

Configuration > **Basic Configuration**> **System** > **Maintenance**
Or **Configuration** > **Advanced Configuration**> **System** > **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. Please don't disconnect
power of the positioning system during the process. The positioning system
reboots automatically after upgrading.

Figure 11-13 Remote Upgrade

[END]

11.8 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> **Advanced Configuration**> **System** > **RS485**

Figure 11-14 RS-485 Settings

2. Set the RS-485 parameters and click ⬚ Save to save the settings.

🔲 NOTE

The Baud Rate, PTZ Protocol and PTZ Address parameters of the positioning system should be exactly the same as those of the control device.

📖 END

11.9 Configuring Supplement Light

🔲 NOTE

This function is only applicable to certain model of positioning systems.

Steps:
1. Enter Supplement Light Setting interface:
   Configuration> Advanced Configuration> System > Service
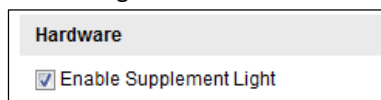2. Check the checkbox to enable the Supplement light when the illumination is not enough for the video monitoring.

Hardware

☑ Enable Supplement Light

Figure 11-15 Setting Supplement Light

3. Click the ⬚ Save button to activate the settings.

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.
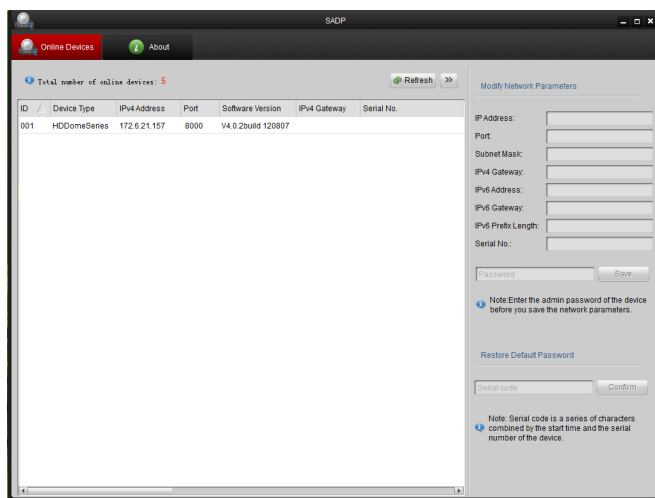

Figure A.1.1 Searching Online Devices

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 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 [Save] 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	
IP Address:	192.168.1.64
Port:	8000
Subnet Mask:	255.255.255.0
IPv4 Gateway:	192.168.1.1
IPv6 Address:	3a3a::
IPv6 Gateway:	3a3a::
IPv6 Prefix Length:	64
Serial No.:	XX-XXXXXX-XXXXXX-XXXXXX
Password	Save

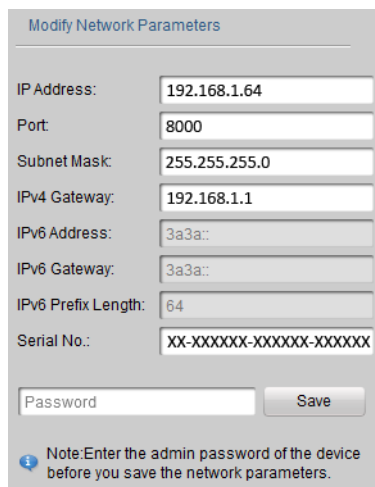Note:Enter the admin password of the device before you save the network parameters.

Figure A.1.2 Modify Network Parameters

📖 END

Appendix 2 Port Mapping

The following settings are for TP-LINK router (TL-R410). The settings vary depending on different models of routers.

Steps:

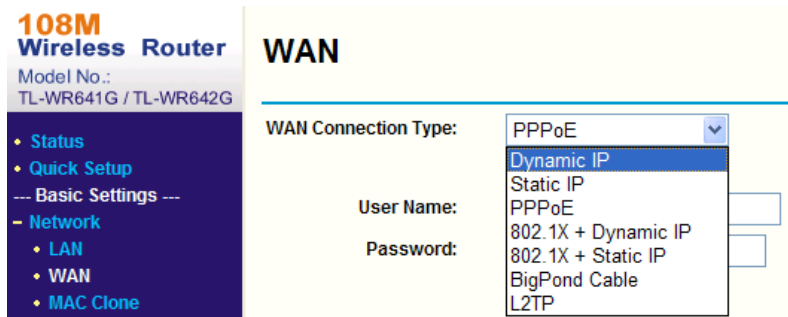1. Select the **WAN Connection Type**, as shown below:

Figure A.2.1 Select the WAN Connection Type

2. Set the **LAN** parameters of the router as in the following figure, including IP address and subnet mask settings.
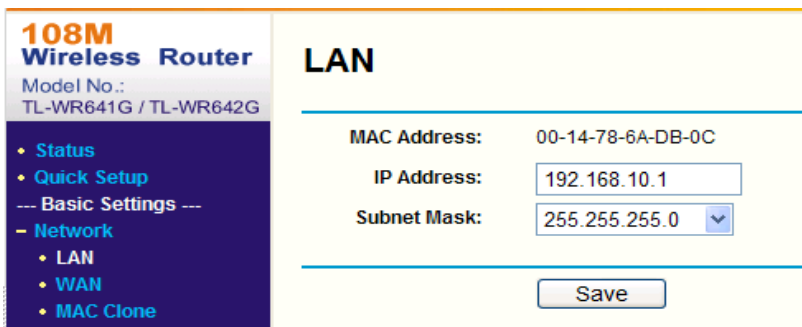
Figure A.2.2 Set the LAN parameters

3. Set the port mapping in the virtual severs of **Forwarding**. You need to forward ports 80, 8000, 8200~8210 and 554 for a positioning system.

- ● You can change 80, 8000 and 554 ports value in the positioning system with web browser or client software.
- ● In the positioning system, the 8200~8210 ports change with the 8000 port with a constant value of 200. E.g. if the 8000 port is changed to 8005, then the 8200~8210 ports should be changed to 8205~8215.

Example:

When the positioning systems are connected to the same router, you can forward the ports of a positioning system as 80, 8000, 8200~8210 and 554 with IP address 192.168.1.23, and the ports of another positioning system as 81, 8001, 8201~8211 and 555 with IP 192.168.1.24. Refer to the steps as below:

Steps:

1. As the settings mentioned above, forward the port 80, 8000, 8200~8210 and 554 for the network positioning system at 192.168.1.23
2. Forward the port 81, 8001, 8201~8211 and 555 for the network positioning system at 192.168.1.24.
3. Enable ALL or TCP protocols.
4. Check the Enable checkbox and click [Save].

Figure A.2.3 Port Mapping

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

Appendix 3 RS485 Bus Connection

● General Property of RS485 Bus

According to RS485 industry bus standard, RS485 is a half-duplex communication bus which has 120Ω characteristic impendence, the maximum load ability is 32 payloads (including controller device and controlled device).

● RS485 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:

Max. Distance of RS485 Transmission	
Baudrate	**Max Distance**
2400BPS	1800m
4800BPS	1200m
9600BPS	800m

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

RS485 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.
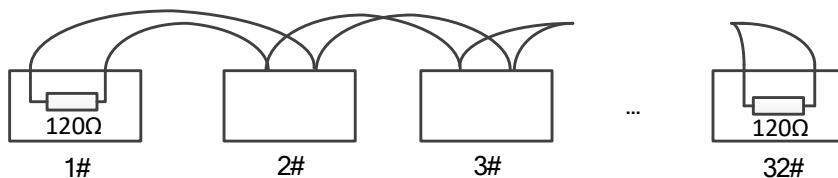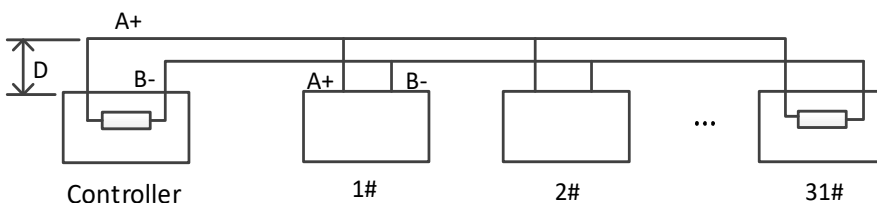

Figure A-7 RS485 Connection 1

Figure A-8 RS485 Connection 2

● 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 RS485 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 positioning system will be uncontrollable, or self-running, etc.
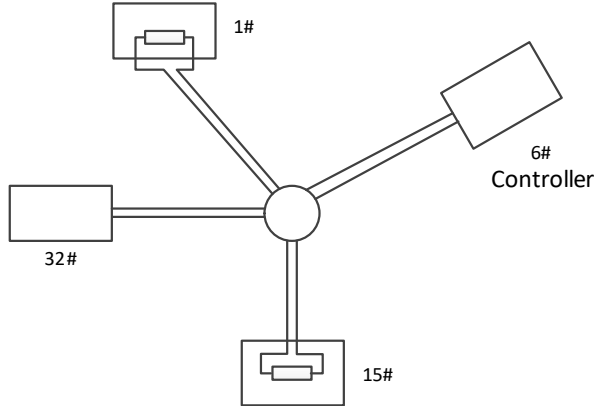

Figure A-9 Star Shape Connection

For such case, the best way is adding a RS485 distributor. This product can effectively change the star-shape connection to which satisfies the requirement of RS485 industry standard, in order to avoid those problems and improve the communication reliability. Refer to the following figure.
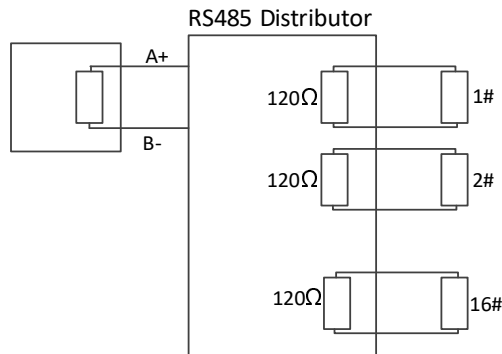
Figure A-10 RS485 Distributor

● Troubleshooting of RS485 communication

Problem	Possible Reasons	To Solve the Problem
The positioning system does the self-test action but cannot be controlled remotely.	1. The address or baudrate of the positioning system does not match with those of remote control device.	1. Adjust the address and baudrate of the remote control device to match with those of the positioning system.
	2. The wire RS485+ connects to the interface RS485- and wire RS485- connects to the interface RS485+.	2. Connect the wire RS485+ to the interface RS485+ and wire RS485- to the interface RS485-.
	3. The RS485 wire is	3. Reconnect the RS485 wire

Problem	Possible Reasons	To Solve the Problem
	disconnected.	tightly.
	4. RS485 wire is broken.	4. Change a RS485 wire.
The positioning system can be controlled but not smoothly.	1. The connection is loose.	1. Reconnect the RS485 wire tightly.
	2. RS485+ or RS485-wire is broken.	2. Change a RS485 wire.
	3. The positioning system is too far away from the remote control device.	3. Add a terminal resistor.
	4. Too many positioning systems are connected.	4. Add a RS485 distributor.

Appendix 4 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 powelr 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.

Distance (feet) / Wire Gauge (mm) / Power (va)	0.8000	1.000	1.250	2.000
10	283(86)	451(137)	716(218)	1811(551)
20	141(42)	225(68)	358(109)	905(275)
30	94(28)	150(45)	238(72)	603(183)
40	70(21)	112(34)	179(54)	452(137)
50	56(17)	90(27)	143(43)	362(110)
60	47(14)	75(22)	119(36)	301(91)
70	40(12)	64(19)	102(31)	258(78)
80	35(10)	56(17)	89(27)	226(68)
90	31(9)	50(15)	79(24)	201(61)
100	28(8)	45(13)	71(21)	181(55)
110	25(7)	41(12)	65(19)	164(49)
120	23(7)	37(11)	59(17)	150(45)
130	21(6)	34(10)	55(16)	139(42)
140	20(6)	32(9)	51(15)	129(39)
150	18(5)	30(9)	47(14)	120(36)
160	17(5)	28(8)	44(13)	113(34)
170	16(4)	26(7)	42(12)	106(32)
180	15(4)	25(7)	39(11)	100(30)
190	14(4)	23(7)	37(11)	95(28)
200	14(4)	22(6)	35(10)	90(27)

Appendix 5 Table of Wire Gauge Standards

Bare Wire Gauge(mm)	American Wire Gauge AWG	British Wire Gauge SWG	Cross-sectional Area of Bare Wire(mm^2)
0.750	21		0.4417
0.800	20	21	0.5027
0.900	19	20	0.6362
1.000	18	19	0.7854
1.250	16	18	1.2266
1.500	15	17	1.7663
2.000	12	14	3.1420
2.500			4.9080
3.000			7.0683

Appendix 6 Alarm In/Out Connections

NOTE

This section is only for the positioning systems with alarm in/out functions.

The positioning system can be connected with alarm inputs (0~5VDC) and alarm outputs. Refer to the following diagrams for alarm output:
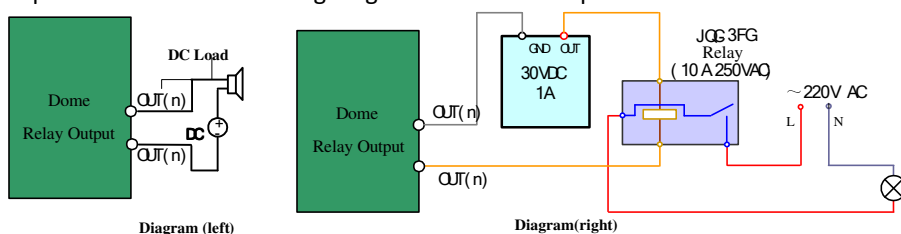

Figure A-11 Alarm Out Connections

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 positioning system and avoid risk of electric shock.

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