



# Thermal Bi-spectrum Network Positioning System

## Quick Start Guide

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#### **About this Manual**

This Manual is applicable to **Thermal Bi-spectrum Network Positioning System**. The Manual includes instructions for using and managing the product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version in the company website (<http://overseas.hikvision.com/en/>).

Please use this user manual under the guidance of professionals.

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### Regulatory Information

#### FCC Information

**FCC compliance:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation

#### EU Conformity Statement



This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive

2014/30/EU, the RoHS Directive 2011/65/EU.



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

The precaution measure is divided into **Warnings** and **Cautions**:

**Warnings:** Neglecting any of the warnings may cause serious injury or death.

**Cautions:** Neglecting any of the cautions may cause injury or equipment damage.

<b>Warnings</b> Follow these safeguards to prevent serious injury or death.	<b>Cautions</b> Follow these precautions to prevent potential injury or material damage.



#### Warnings

- The device should be used in compliance with local laws and electrical safety regulations. Refer to the appropriate documentation for detailed information.
- The input voltage should conform to IEC60950-1 standard: SELV (Safety Extra Low Voltage) and the Limited Power Source (24 VAC/12 VDC). Refer to the appropriate documentation for detailed information.
- DO NOT connect multiple devices to one power adapter, to avoid over-heating or fire hazards caused by overload.
- Make sure the plug is properly connected to the power socket.
- If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.

- The installer and user are responsible for password and security configuration and its settings.
- Both internal and external grounds should be connected properly. (The cross section area of the grounding wire must be no less than 4 mm<sup>2</sup>, and no less than that of the phase connector).



### Cautions

- Do not drop the device or subject it to physical shock.
- Wipe the device gently with a clean cloth and a small quantity of ethanol, if necessary.
- Do not aim the lens at the sun or any other bright light.
- When any laser equipment is in use, make sure that the device lens is not exposed to the laser beam, or it may burn out.
- Do not expose the device to high electromagnetic radiation or extremely hot, cold, dusty, or damp environments.
- Place the device in a dry and well-ventilated environment.
- Keep non-waterproof devices away from liquids.
- Keep the device in original or similar packaging while transporting it.
- A few device components (e.g., electrolytic capacitor) require regular replacement. The average lifespan varies, so periodic checking is recommended. Contact your dealer for details.
- Improper use or replacement of the battery may result in explosion hazard. Replace with the same or equivalent type only. Dispose of used batteries in conformance with the instructions provided by the battery manufacturer.
- Never attempt to disassemble the device.

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# 1 Preparation

## Basic Requirement

- All the electronic operation should be strictly compliance with the electrical safety regulations, fire prevention regulations and other related regulations in your local region.
- Check the package contents and make sure that the device in the package is in good condition and all the assembly parts are included.
- Use the system according to the working environment requirement.

## Checking Installing Environment

- Be sure that there is enough space to install the positioning system and accessories.
- Make sure that the wall is strong enough to withstand at least 8 times the weight of the system and the mount.

## Preparing Cables

- According to the actual network bandwidth, the Cat5 (in 100M) or Cat6 (100M above) is needed.
- When the Positioning System uses standard 24V AC power supply, the power cable should be American wire gauge 18 or above. The formula of the cross-section  $S$  ( $\text{mm}^2$ ) and the maximum transmission distance  $L$  (m) of the bare wire is  $L=50*S$ .
- Choose the video cable according to the transmission length. The video should meet the least demands as:  $75\Omega$  resistance; 100% copper core conducting wire; 95% weaving copper shield.
- RS485 communication cable, please refer to Appendix 2
- 24V AC power cable, please refer to Appendix 3

## Preparing Tools

Before installation, please prepare the tools needed, such as the expansion screws, electric hammer, electric drill, wrench, screwdriver, electroprobe and network cable.

## Original Packaging

When you unpack the positioning system, please keep the original package properly, in case of returning or repairing the positioning system, you can pack the positioning system with the package.

**Note:** The user should be responsible for any damage caused when transporting with unoriginal package.



## 2 Appearance Description

There are two kinds of thermal network positioning systems: Type I positioning system, and Type II positioning system. The appearance description of two cameras are shown below.

### 2.1 Type I Positioning System Appearance

Refer to the following figures for Type I thermal positioning system overview and dimensions.

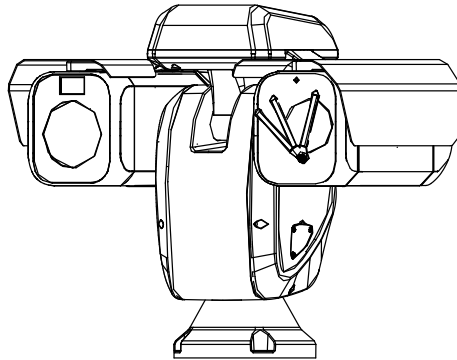


Figure 2-1 Type I Thermal Positioning System Overview

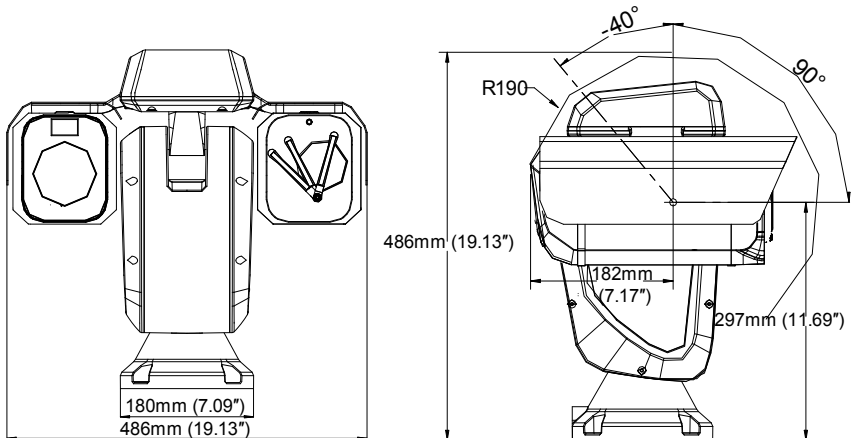


Figure 2-2 Type I Thermal Positioning System Dimensions (1)

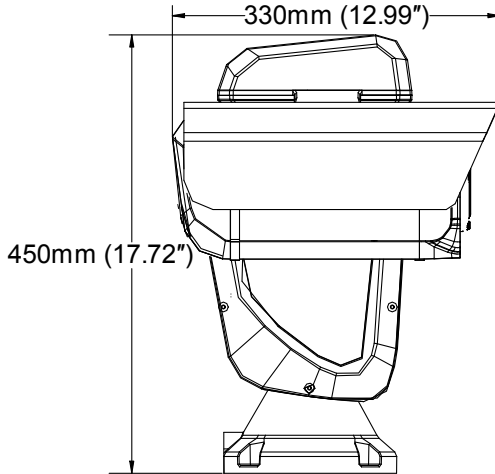


Figure 2-3 Type I Thermal Positioning System Dimensions (2)

## 2.2 Type II Positioning System Appearance

Refer to the following figures for Type II thermal positioning system overview and dimensions.

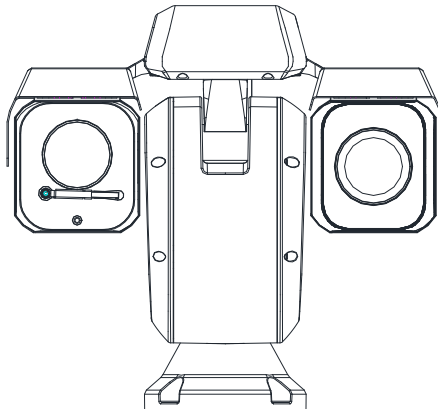


Figure 2-4 Type II Thermal Positioning System Overview

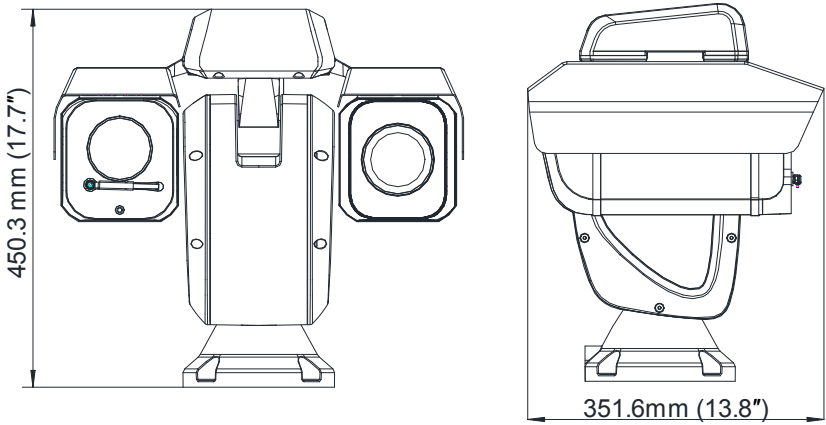


Figure 2-5 Type II Thermal Positioning System Dimensions (1)

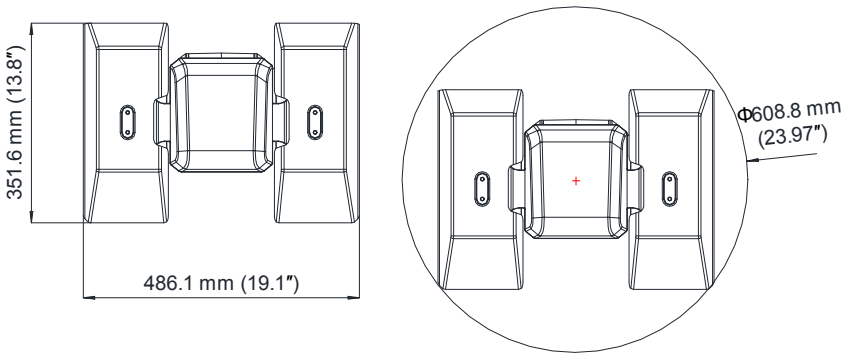


Figure 2-6 Type II Thermal Positioning System Dimensions (2)

## 2.3 Cable Descriptions

The cable interfaces of positioning system are shown in Figure 2-7. The cables of RS-485, power supply, alarm inputs, alarm outputs, etc. are distinguished by different colors. Please refer to the labels attached on the cables for identification.

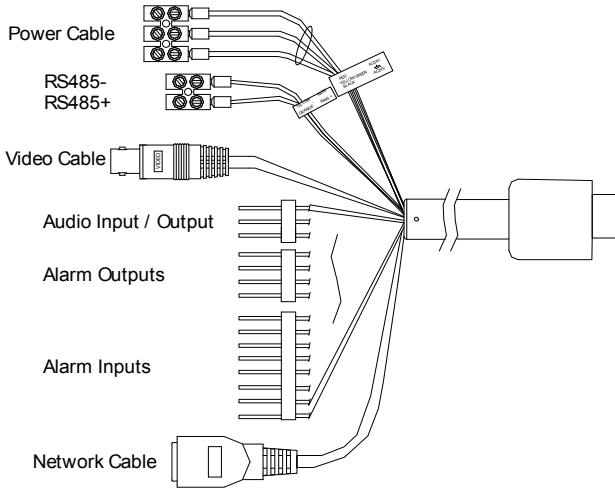


Figure 2-7 Cables of Other Positioning Systems

## 2.4 Alarm In/Out Connections



This section is only for the positioning system 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:

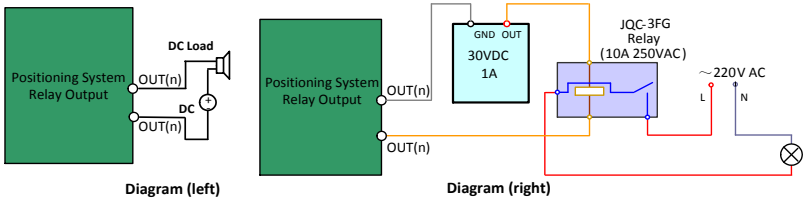


Figure 2-8 Alarm Out Connections

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.

## 3 Installing the Positioning System

### 3.1 Monitoring Distance Range

Electric lens is adopted for the thermal channel of positioning system. It supports auto-focus function and remote focus function. For different lens focal length, the monitoring range is shown in the table below:

**Table 3-1 Monitoring Range (Pixel Interval: 17um)**

Lens Focal Length/mm	25	50	75	100
MRAD	0.68	0.34	0.23	0.17
Detection Range (Vehicle)/m	2255	4510	6765	9020
Detection Range (Human)/m	735	1471	2206	2941
Recognition Range (Vehicle)/m	564	1127	1691	2255
Recognition Range (Human)/m	184	368	551	735
Identification Range (Vehicle)/m	282	564	846	1127
Identification Range (Human)/m	92	184	276	368

**Table 3-2 Monitoring Range (Pixel Interval: 25um)**

Lens Focal Length/mm	25	50	75	100
MRAD	1.00	0.50	0.33	0.25
Detection Range (Vehicle)/m	1533	3067	4600	6133
Detection Range (Human)/m	500	1000	1500	2000
Recognition Range (Vehicle)/m	383	767	1150	1533

Lens Focal Length/mm	25	50	75	100
Recognition Range (Human)/m	125	250	375	500
Identification Range (Vehicle)/m	192	383	575	767
Identification Range (Human)/m	63	125	188	250



- This table is for reference only, and the actual detection range may vary according to different camera settings, mounting condition, monitor and so on.
- When the weather is fine and the atmospheric visibility is normal, the probability of detecting/recognizing/identifying target is 50%.
- The human width is presumed as 0.5m (human width cannot exceed 0.75m), the human height is presumed as 1.8m, and the vehicle width cannot exceed 2.3m.

### 3.2 Wiring

Please fully take into consideration the installation environment and position of the positioning system when you plan for the wiring. In order to make sure the stable power supply and signal transmission, please closely follow the rules below:

- Please get familiar with the installation environment before you wiring, including the wiring distance, wiring environment, keeping magnetic-field interference away, etc..
- Please make sure the rated voltage of the cable is higher than that the device requires, thus guarantee the device can work normally when the voltage instability occurs.
- Please avoid the interrupt line connection
- It's recommended to use a single complete cable for the device connection; if not, reinforce and protective measures should be taken for the wiring point between two cables, in case the circuit aging will make the device work abnormally.
- Make sure the video cable and the signal transmission cable are well protected. And pay attention to reinforce and protective measures during wiring.

- Make sure the cables are not too redundant or being stretched too tight. Under normal circumstances, the wiring is completed by the professional technicians. However, when the device cannot work normally, you can check the above information to look for reason.

### Water-proof of Cable Terminal

**Purpose:**

The terminals may be rusted after a long time exposed. It is recommended to do water proof treatment to cable terminals.

**Steps:**

1. Use the terminal box for wiring.
2. The live wire and null wire of outsource should be connected to the power surge protector.
3. Do water-proof treatment to cable terminals.

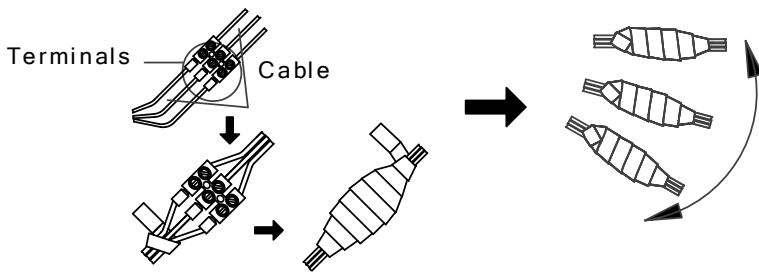


Figure 3-1 Water-proof of terminals

### Network Cable Water-proof Accessory Installation

**Purpose:**

If the camera is installed outdoor, you can adapt the water-proof accessory for the network cable after the camera is secured on the installation surface.

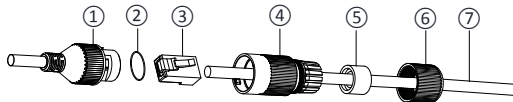


Figure 3-2 Water-proof Accessory Components

Table 3-3 Components

No.	Components
1	Camera's Network Interface Socket
2	O-Type Gasket

No.	Components
3	Network Plug
4	Waterproof Endcap
5	Waterproof Rubber Gasket
6	Lock Nut
7	Network Cable from Router/Switch

**Steps:**

1. Feed the plugless network cable ⑦ through the lock nut ⑥, waterproof rubber gasket ⑤ (rubber gasket inset ridge must face waterproof endcap), and the water-proof endcap ④ in order.
2. Crimp an RJ-45 network plug ③ onto the end of the cable, taking care to insert the twisted pairs of wires in correct order.
3. Place the O-type gasket ② onto the end of the camera's network interface socket ①.
4. Insert the network plug ③ into the camera's network interface socket ①.
5. Insert the water-proof rubber gasket ⑤ into the waterproof endcap ④, and secure lock nut ⑥ with the water-proof endcap ④.
6. Align the snap on the water-proof endcap ④ with the notch on the camera's network interface socket ①, and then secure the water-proof endcap ④ to the camera's network interface socket ① to finish installation.

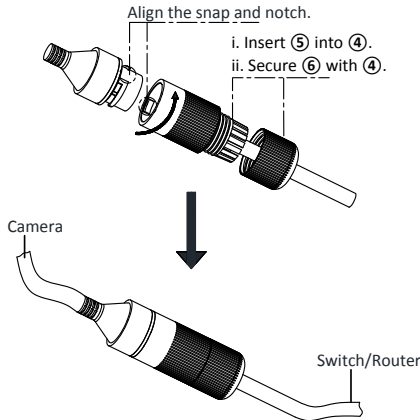


Figure 3-3 Water-proof Accessory Installation



### 3.3 Memory Card Installation

**Steps:**

1. Open the memory card cover of the right side of the positioning system with cross screwdriver.
2. Insert the memory card into the card slot until it clicks, as shown in Figure 3-4.

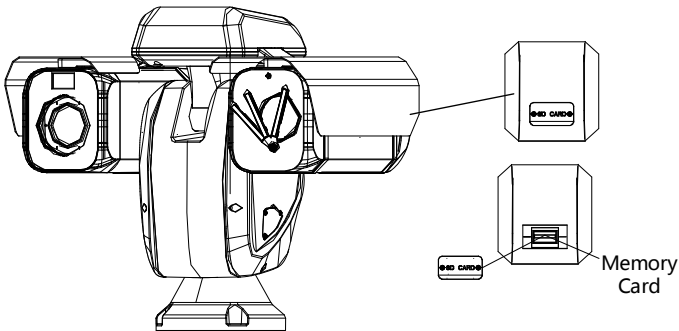


Figure 3-4 Memory Card Installation

3. Cover the memory card slot and tighten two screws.

### 3.4 Installing Positioning System

**Steps:**

1. Drill four screw holes on the bracket according to the base dimensions of the figure below with four screws.

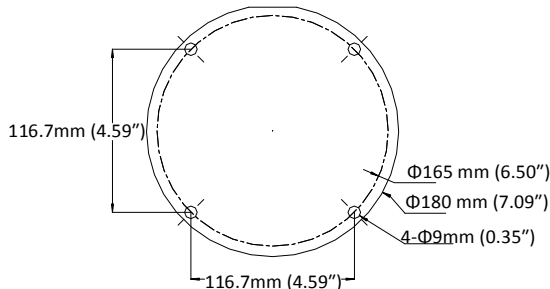


Figure 3-5 Base Dimensions

2. Fix the positioning system onto the bracket base, as shown in Figure 3-6.



If no screw thread is found on the screw holes of the bracket base, lock the screw nut.

The length of the screws should be 30mm and the diameter of screws should be 8mm.

The thickness of bracket base should be at least 5mm.

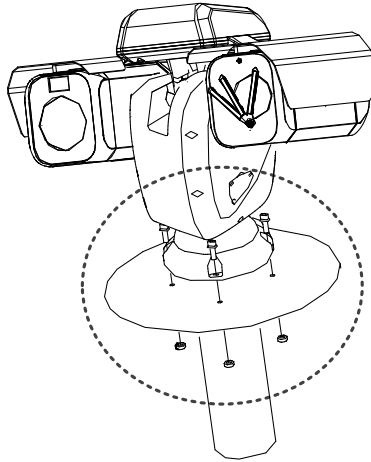


Figure 3-6 Install the Positioning System

3. Connect the corresponding required cables and power on. Make sure the system functions, e.g. live view and control operations can work normally.

### 3.5 Finishing Installing

Connect the corresponding cables and turn the power on; the system will do the self-test automatically. Make sure the live view image and the PTZ control work normally and then finish the installation.

## 4 Setting the System over the LAN



- You shall acknowledge that the use of the product with Internet access might be under network security risks. For avoidance of any network attacks and information leakage, please strengthen your own protection. If the product does not work properly, please contact with your dealer or the nearest service center.
- To ensure the network security of the positioning system, we recommend you to have the system assessed and maintained termly. You can contact us if you need such service.

### 4.1 Wiring

To view and configure the system via LAN (Local Area Network), you need to connect the network system in the same subnet with your PC. Then, install the SADP or client software to search and change the IP of network system.

The following figure shows the cable connection of network system.

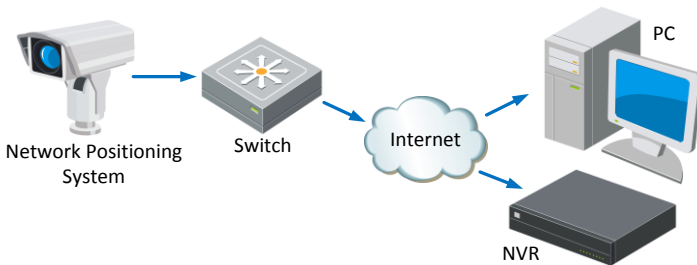


Figure 4-1 Wiring over LAN

### 4.2 Activating the System

#### *Purpose:*

You are required to activate the system first by setting a strong password for it before you can use the 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 system for the details of activation via client software.

### 4.2.1 Activation via Web Browser

**Steps:**

1. Power on the system, and connect the 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.



The default IP address of the system is 192.168.1.64.

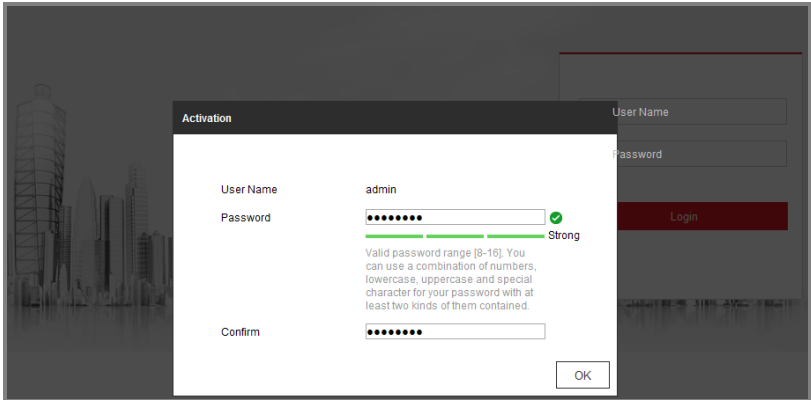


Figure 4-2 Activation Interface(Web)

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 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 system and enter the live view interface.

### 4.2.2 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 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.

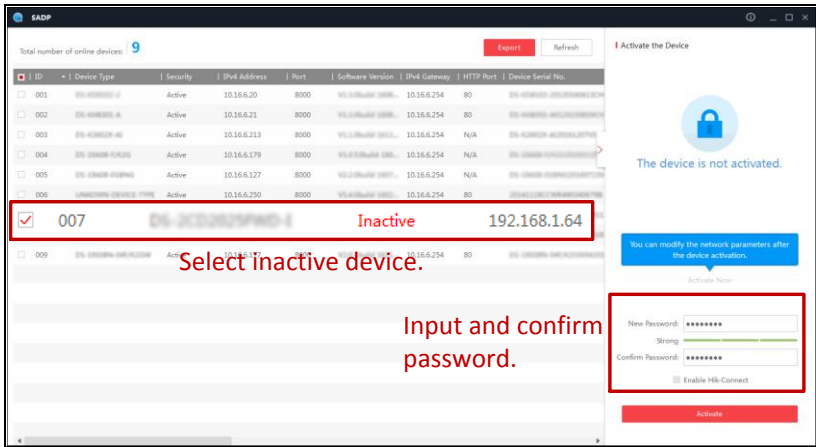


Figure 4-3 SADP Interface

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 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.

## 4.3 Modifying the IP Address

### Purpose:

To view and configure the system via LAN (Local Area Network), you need to connect the network system in the same subnet with your PC. Then, install the SADP software or client software to search and change the IP of network system. We will take modifying the IP Address via SADP software as an example to introduce the IP address modification.

### Steps:

1. Run the SADP software.
2. Click to select an active device.



Please refer to section 3.2 to activate the system if it is inactive.

3. 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

Enable DHCP  
 Enable Hik-Connect

Device Serial No.:

IP Address:

Port:

Subnet Mask:

Gateway:

IPv6 Address:

IPv6 Gateway:

IPv6 Prefix Length:

HTTP Port:

Security Verification

Admin Password:

[Forgot Password](#)

Figure 4-4 Modify the IP Address

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

## 5 Operating via Web browser

### 5.1 Accessing the System

**System Requirement:**

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 version

**Steps:**

1. Open the web browser.
2. In the browser address bar, 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 **4.2**

**Activating the System.**

4. Input the user name and password and click .

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



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



Figure 5-1 Login Interface

5. Install the plug-in before viewing the live video and managing the network positioning system. Please follow the installation prompts to install the plug-in.



You may have to close the web browser to finish the installation of the plug-in.

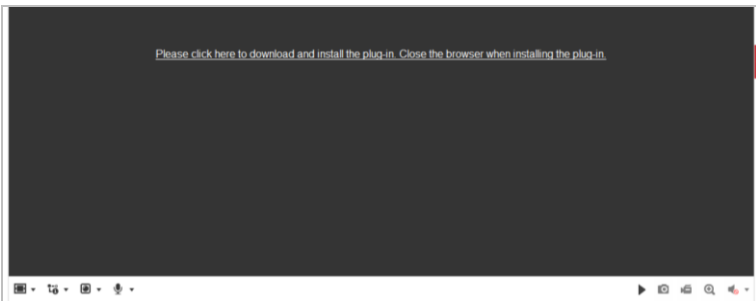


Figure 5-2 Download Plug-in

6. Reopen the web browser after the installation of the plug-in and repeat the above steps 2-4 to login.



For detailed instructions of further configuration, please refer to the user manual of network positioning system.



## 5.2 Live View Page

The live video page allows you to view live video, capture images, realize PTZ control, set/call presets and configure video parameters.

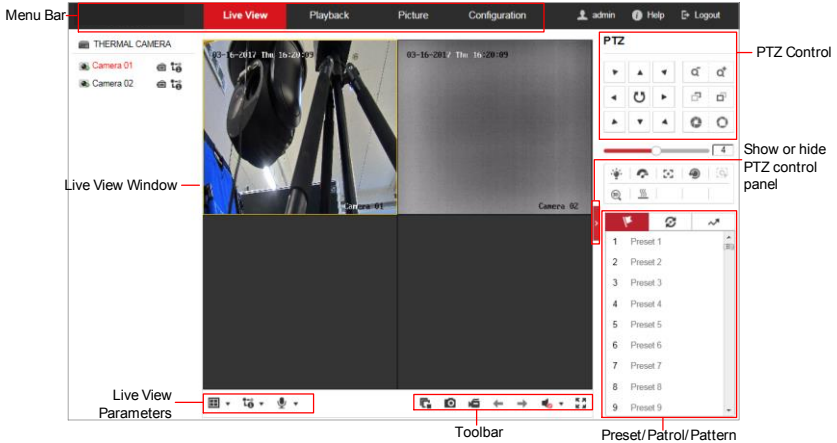



Figure 5-3 Live View Page

### Menu Bar:

Click each tab to enter Live View, Playback, Picture, and Configuration page respectively.

Click  to display the help file of the positioning system.

Click  to logout the system.

### Live View Window:

Display the live video.

### Toolbar:

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

### PTZ Control:

Panning, tilting, focusing and zooming actions of the 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.

# Appendix

---

## Frequently Asked Questions (FAQ)

### Device Running Error

Question:

- The device fails to start up or reboots repeatedly.
- The device constantly powers off unexpectedly when you pan/tilt the device or call preset.
- The device fails to zoom in/out or pan/tilt.

Answer:

- Examine the power supply of the positioning system and see whether it meets the requirements.
- Select the power supply as close as possible.
- Examine the power cord and see whether it meets the requirements.

### Device Upgrading

Question:

Device fails to upgrade.

Answer:

- Examine if the device upgrading fails because of the poor network.
- Examine if the upgrading program matches with the device type.

### Others

Question:

The device live view is vague.

Answer:

- Examine if you removed the protective film.
- Examine if the lens is dirty or not.
- Examine if any obstruction is nearby, e.g. spider web.

Question:

Live view fails with good network connection.

Answer:

- Examine if the IE plug-in is well installed. Change the Website Blocker settings if necessary.
- For cross-domain routing, enable the UPnP of device, or set manual mapping to port No. 80, 8000, or 554.
- Examine if the live view channel amount exceeds the upper limit.
- Examine the network bandwidth.

Question:

Focus fails when you test outdoor device in indoor situation.

Answer:

- Restore the device to default settings.
- Adjust the **Min. Focusing Distance** in **Configuration > Image > Display Settings > Focus**

## Common Material Emissivity Reference

Material	Emissivity
Human Skin	0.98
PCB	0.91
Cement Concrete	0.95
Ceramics	0.92
Rubber	0.95
Paint	0.93
Wood	0.85
Asphalt	0.96
Brick	0.95
Sand	0.90
Soil	0.92
Cotton	0.98
Cardboard	0.90
White Paper	0.90
Water	0.96

