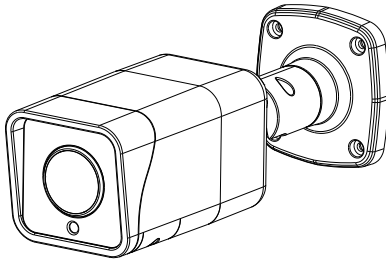
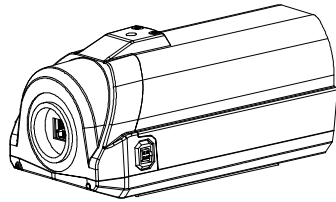
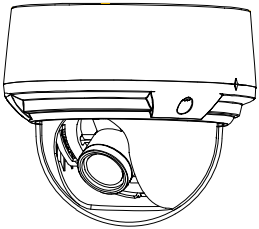


# Multi-target Detection Network Camera User Manual



**Issue**      **V 1.0**

**Date**      **2019-08-16**






# Precautions

## Precautions

Fully understand this document before using this device, and strictly observe rules in this document when using this device. If you install this device in public places, provide the tip "You have entered the area of electronic surveillance" in an eye-catching place. Failure to correctly use electrical products may cause fire and severe injuries. To prevent accidents, carefully read the following context:

## Symbols

This document may contain the following symbols whose meanings are described accordingly.

Symbol	Description
 <b>DANGER</b>	It alerts you to fatal dangers which, if not avoided, may cause deaths or severe injuries.
 <b>WARNING</b>	It alerts you to moderate dangers which, if not avoided, may cause minor or moderate injuries.
 <b>CAUTION</b>	It alerts you to risks. Neglect of these risks may cause device damage, data loss, device performance deterioration, or unpredictable results.
 <b>TIP</b>	It provides a tip that may help you resolve problems or save time.
 <b>NOTE</b>	It provides additional information.

### **DANGER**

To prevent electric shocks or other dangers, keep power plugs dry and clean.

### **WARNING**

- Strictly observe installation requirements when installing the device. The manufacturer shall not be held responsible for device damage caused by users' non-conformance to these requirements.

- Strictly conform to local electrical safety standards and use power adapters that are marked with the LPS standard when installing and using this device. Otherwise, this device may be damaged.
- Use accessories delivered with this device. The voltage must meet input voltage requirements for this device.
- If this device is installed in places with unsteady voltage, ground this device to discharge high energy such as electrical surges in order to prevent the power supply from burning out.
- When this device is in use, ensure that no water or any liquid flows into the device. If water or liquid unexpectedly flows into the device, immediately power off the device and disconnect all cables (such as power cables and network cables) from this device.
- Do not focus strong light (such as lighted bulbs or sunlight) on this device. Otherwise, the service life of the image sensor may be shortened.
- If this device is installed in places where thunder and lightning frequently occur, ground the device nearby to discharge high energy such as thunder strikes in order to prevent device damage.



### CAUTION

- Avoid heavy loads, intensive shakes, and soaking to prevent damages during transportation and storage. The warranty does not cover any device damage that is caused during secondary packaging and transportation after the original packaging is taken apart.
- Protect this device from fall-down and intensive strikes, keep the device away from magnetic field interference, and do not install the device in places with shaking surfaces or under shocks.
- Clean the device with a soft dry cloth. For stubborn dirt, dip the cloth into slight neutral cleanser, gently wipe the dirt with the cloth, and then dry the device.
- Do not jam the ventilation opening. Follow the installation instructions provided in this document when installing the device.
- Keep the device away from heat sources such as radiators, electric heaters, or other heat equipment.
- Keep the device away from moist, dusty, extremely hot or cold places, or places with strong electric radiation.
- If the device is installed outdoors, take insect- and moisture-proof measures to avoid circuit board corrosion that can affect monitoring.
- Remove the power plug if the device is idle for a long time.
- Before unpacking, check whether the fragile sticker is damaged. If the fragile sticker is damaged, contact customer services or sales personnel. The manufacturer shall not be held responsible for any artificial damage of the fragile sticker.

## Special Announcement

All complete products sold by the manufacturer are delivered along with nameplates, operation instructions, and accessories after strict inspection. The manufacturer shall not be held responsible for counterfeit products.

This manual may contain misprints, technology information that is not accurate enough, or product function and operation description that is slightly inconsistent with the actual product. The manufacturer will update this manual according to product function enhancement or changes and regularly update the software and hardware described in this manual. Update information will be added to new versions of this manual without prior notice.

This manual is only for reference and does not ensure that the information is totally consistent with the actual product. For consistency, see the actual product.

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# 1 Device Installation

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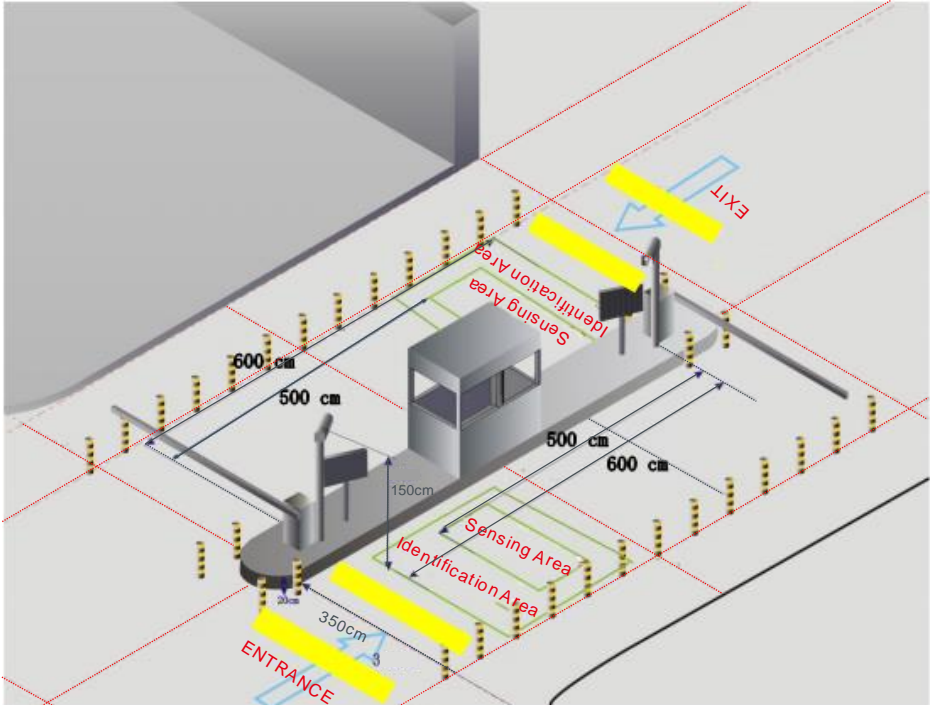
## 1.1 Vehicle Detection

### 1.1.1 Scene

The vehicle detection needs horizontal pixels of the license plate size of the scene is between 90 to 170 pixels.

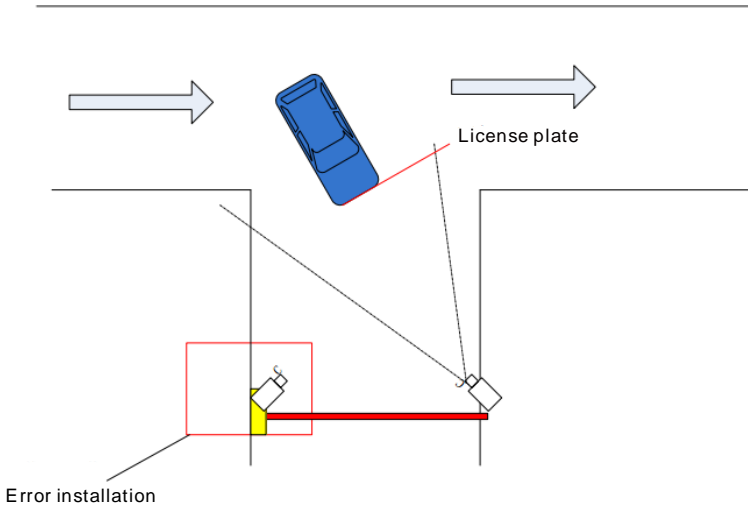
- Generally, the height of the camera erection needs to consider the application scenario. In the entrance and exit scene, about 1.5 meters, the installation height of the road monitoring scene is recommended to be 5-6 meters, the pitch angle is not more than 15 degrees, and the license plate recognition distance is about 5 meters.
- The height of the entrance and exit camera column needs to exceed 1.5 meters. The configuration can adjust the moving bracket up and down to facilitate debugging equipment, as shown in Figure 1-1.

Figure 1-1 Allowed tilt



The camera erection position must meet the angle of view to detect most vehicles entering, as shown in Figure 1-2.

Figure 1-2 The best installation



There are three modes of installation:

Figure 1-3 Scene 1

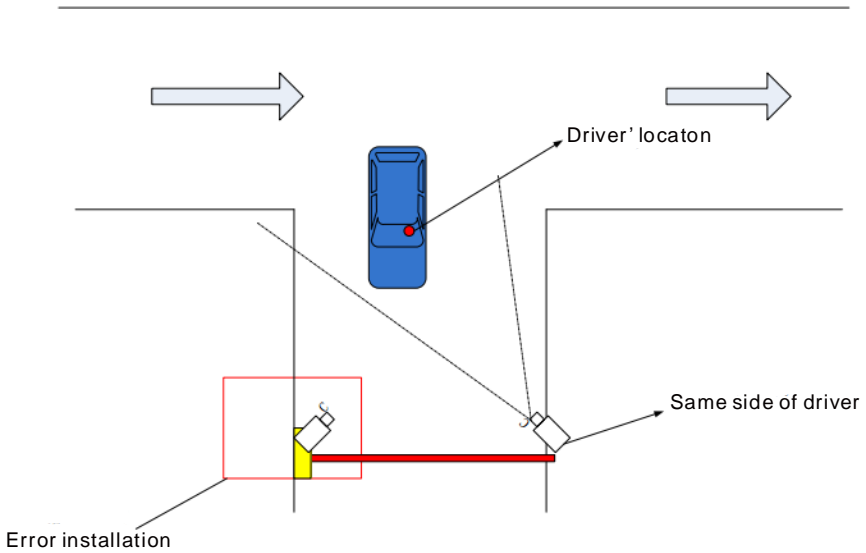




Figure 1-4 Scene 2

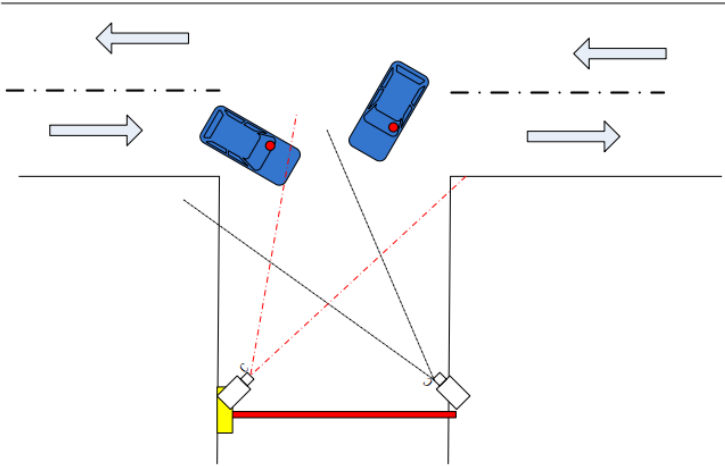


Figure 1-5 Scene 3

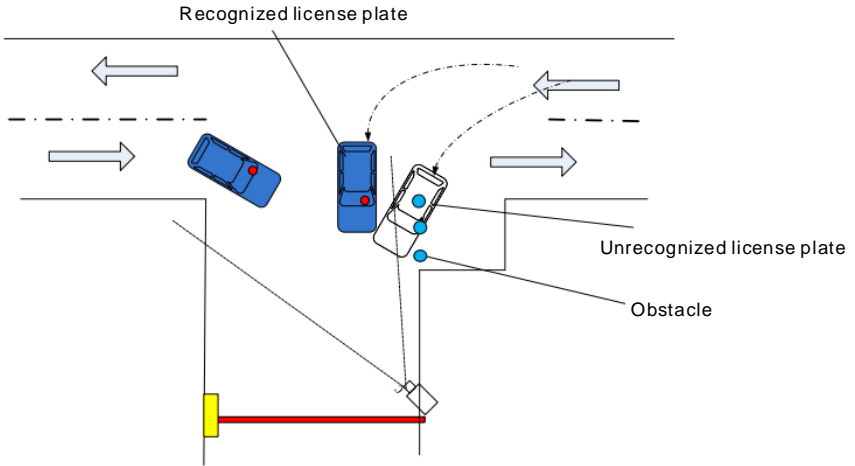
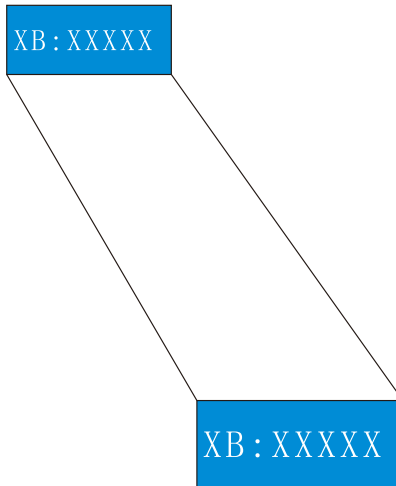
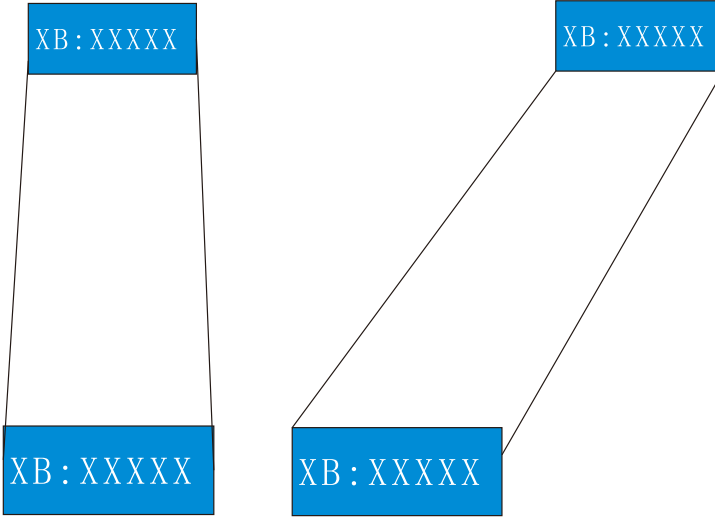


Figure 1-6 Motion track





## 1.1.2 License Plate Recognition and Debugging

Table 1-1 Recognition distance and image size

No.	Recognition distance (meters)	Corresponding algorithm image size
1	More than 6 m	1080P(1920*1080)
2	5-6 m	900P(1600*900)
3	4.5-5 m	700P(1280*720)
4	3.5-4.5 m	540P(960*540)
5	Less than 3.5 m	D1(704*396)

## 1.1.3 Camera Installation Tips

**Erection height:** The installation height of the camera is about 1.5 meters. In order to avoid the nighttime headlights directly illuminating the camera lens, if the camera installation height is low, it is like a person lying on the side of the road, the lights are shining, the license plate is not visible to the human eye, the license plate The same is true for recognizing cameras.

The position of the license plate on the camera screen is as horizontal as shown in the red box in Figure 1-7. Adjust the camera position so that most of the license plate appears in the position of the screen and the bottom edge level.

Figure 1-7 Installation tip



### 1.1.4 Other

**Network transmission selection:** The license plate recognition camera adopts H.264 video stream, and it is recommended to use Gigabit Ethernet switch through network transmission to ensure image fluency and corresponding time. The network cable is preferably more than five types, and the transmission rate will be much higher.

**Nighttime fill light debugging:** nighttime fill light debugging needs to ensure that the completed fill light can clearly and accurately display the license plate, to ensure that the license plate is not overexposed. The brightness adjustment of the fill light is based on the vehicle license plate as the reference object. When adjusting the height, the license plate picture is captured to check the license plate image quality. If the license plate is clear and not exposed, the brightness of the fill light is adjusted. Under normal circumstances, the recognition distance is about 5 meters, the fill light brightness is 6Lux.

## 1.2 Face Detection

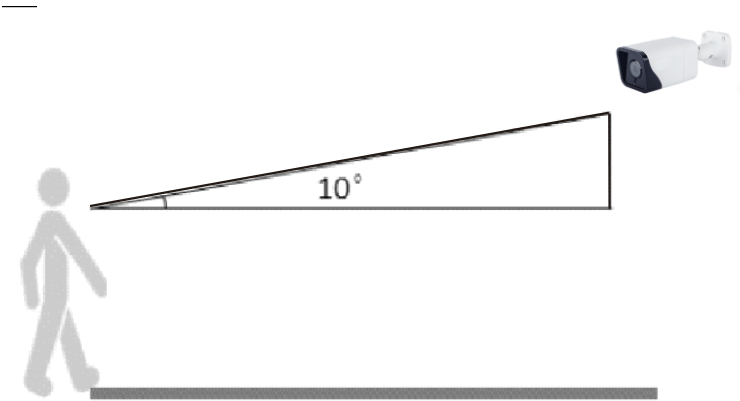
### 1.2.1 Scene

The camera should be installed in the middle of the entrance of the channel, and the surrounding environment is unobstructed.

The target face should not be displayed too small in the image, and the horizontal width (the spacing between the pupils) must be at least 80 pixels or more. The face detection camera should be installed at the entrance and exit as much as possible.

The face is captured, and the horizontal deflection angle is less than  $15^\circ$ . The smaller the better. The installation needs to have a slight angle of view to avoid obscuring the rear face when the person passes through the passage, and the vertical top view angle  $\alpha=10^\circ\pm 3^\circ$ . As shown in Figure 1-8.

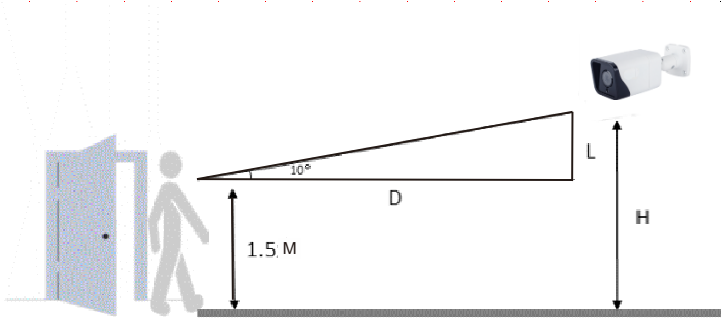
Figure 1-8 Angel of installation



#### **Camera Installation Height:**

The camera usually has a height of 1.8 meters to 2.3 meters. The best installation position during camera installation is that the camera is parallel to the collection face, or higher; keep the tilt angle not too large, the success rate of the face collection and the detection rate will be greatly increased, as shown in .

Figure 1-9 Height of installation



The height of the lens erection:  $H=1.5+0.18*D$ , 1.5 meters means that the height of the human head is averaged, and D is the monitoring distance.

Camera installation lighting problem:

The camera installation position should be adjusted according to the lighting and lighting conditions to adjust the position of the camera; if the camera is installed behind the light.

The direction of influence of light on the face is: light, backlight, side light, etc.; camera installation position requires root face to light direction

To the light: the face is facing the light or the direction of the light

Backlighting: face facing away from light or light direction

Sidelight: the light on the left and right sides of the face, the light is higher than the light intensity before and after

Illuminance: face is not less than 20 LUX, the spacing between pupils is not less than 80 pixels

The recommended camera is as follows:

Table 1-2 The best viewing width

Monitoring width (m)	Monitoring distance (m)	Lens focal length(mm)	Installing height(m)	Top view angle ( ° )
2.5	2.5	8	2	10
2.5	4	12	2.2	10
2.5	6	16	2.5	10
2.5	8	25	3	10

2.5	11	32	3.6	10
2.5	14	40	4.1	10
2.5	18	50	4.7	10

## 1.3 Road Monitoring

Road monitoring is used for video detection methods to detect pedestrians, motor vehicles, and non-motor vehicles, and rapid discrimination s have been monitored in all directions.

## 1.4 Basic Requirements for Camera Installation

1. When the camera is installed, try to install it in a fixed place. The camera's anti-shake function and the algorithm itself can compensate the camera shake to a certain extent, but excessive shaking will affect the accuracy of the detection.
2. If wide dynamic range function writing is not enabled, try to avoid backlit scenes such as the sky in the camera field of view.
3. In order to make the target more stable and accurate, it is recommended that the target size in the actual scene accounts for 50% of the scene size and the height is more than 10% of the scene height.
4. Try to avoid reflective scenes such as glass, floor tiles, and water.
5. Try to avoid narrow or over-shielded surveillance sites.
6. In the daytime environment, the camera should have clear image and good contrast. If there is insufficient light at night, you need to fill the scene to ensure the brightness of the detection area.

## 1.5 Requirement of Computer

CPU Core (TM) i5 7500 @ 3.4GHz or above

Graphics card: discrete graphics, memory 1G or above

Network: Support Gigabit (network card and switch)

Memory: 4G and above

Hard disk: 500G or more

Display resolution: 1920\*1080 or more

Operating system recommendations: win 7 32 bit or more



# 2 Quick Configuration

## 2.1 Login and Logout



### CAUTION

You must use Internet Explorer 8 or a later version to access the web management system; otherwise, some functions may be unavailable.

Login system

Step 1 Open Internet Explorer, enter the IP address of the IP camera (default value: 192.168.0.120) in the address box, and press **Enter Arrow** to enter.

The login page is displayed, as shown in Figure 2-1.

Figure 2-1 Login page

Step 2 Enter the user name, and password.




### NOTE

- The default user name is **admin**. The default password is **admin**. Change the password when you login to the system for the first time to ensure system security.
- If you need to restart after changing your password, it is recommended to restart the camera after three minutes.
- You can change the system display language on the login page.

Step 3 Click .

The main page is displayed.

logout

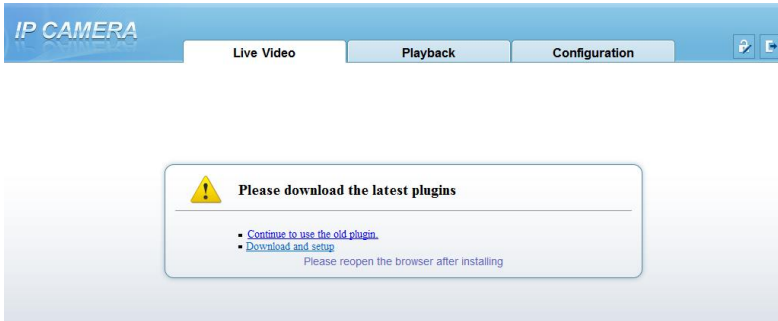
To logout of system, click  in the upper right corner of the main page, the login page is display after you log out of the system.

## 2.2 Browsing Video

### 2.2.1 Install Plugins

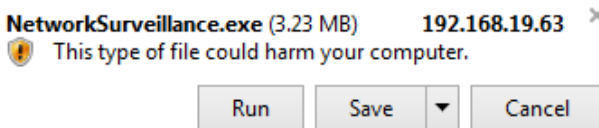
You will be prompted with a message “download the latest plugins” as shown in Figure 2-2 when you log in to the web management system for the first time.

Figure 2-2 Download the plug-ins page



Step 1 Click **Download and setup**, download and setup the plug-ins as shown in Figure 2-3.

Figure 2-3 Download the plug-ins



Step 2 Click **Run**, install the plug-ins follow the prompts.

Step 3 Reopen the browser after installation.

#### **NOTE**

If the repair tips displayed when installing the control, please ignore the prompt, and continue the installation.

## 2.2.2 Browsing Video

To browse real-time videos, click **Live Video**. The **Live Video** page is displayed, as shown in Figure 2-4.

Figure 2-4 Live Video

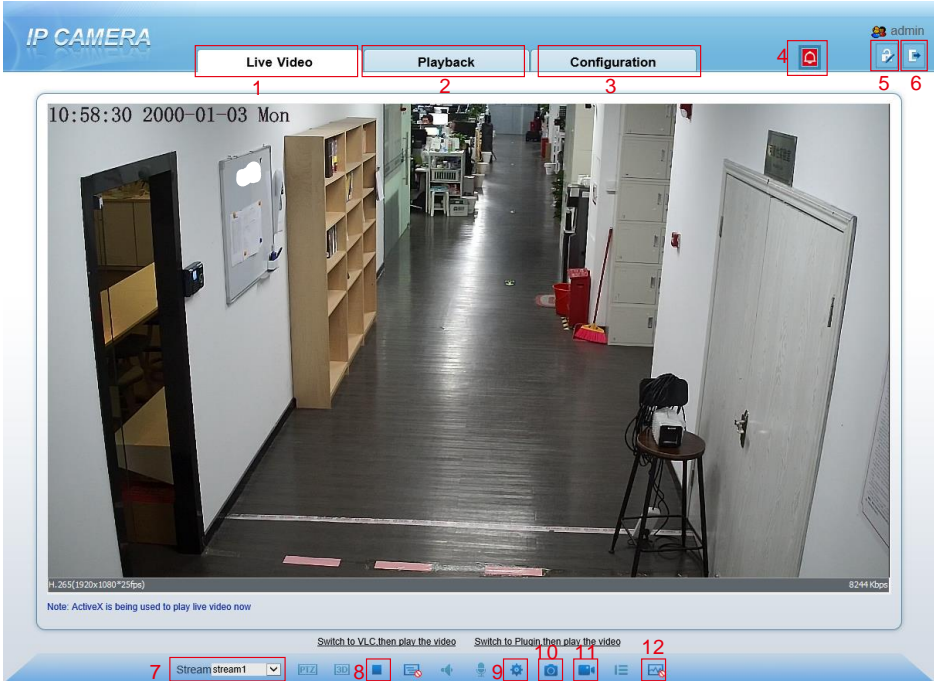


Table 2-1 Interface description

No	Item	Description
1	Live video	Display live video, right-click to set sensor settings.
2	Playback	Query the recording video if the camera has SD card.
3	Configuration	Configuration of camera, such as information, stream, device, external device, AI multiply objects, alarm, device record, privacy masking, network service, privilege manager, protocol, device log, maintenance and local log.
4	Alarm	The icon is shining, and click to view the alarm information.

No	Item	Description
5	Modify password	Modify the password`.
6	Log out	Log out, change language at login interface.
7	Stream	Select the stream of live video.
8	Stop/video	Click the icon to stop or start play live video.
9	Sensor setting	Click to set the sensor setting, such as time segment, image, scene, exposure, WB, daynight, noise reduction, enhance image and zoom focus.
10	Snapshot	Click to snapshot the current image, and the saved directory is set at <b>Configuration &gt; Local config.</b>
11	Local record	Click to record the current video, click again to finish.
12	Intelligent analysis	Click to open the intelligent analysis.

## 2.3 Setting Local Network Parameters

### Description

Local network parameters include:

- IP protocol
- IP address
- Subnet mask
- Default gateway
- Dynamic Host Configuration Protocol (DHCP)
- Preferred Domain Name System (DNS) server
- Alternate DNS server
- MTU

### Procedure

Step 1 Choose **Configuration >Device > Local Network**, the **Local Network** page is displayed as shown in Figure 2-5.

Figure 2-5 Local Network

**Local Network**

Network Card ID: 1

IP Protocol: IPv4

DHCP: OFF

IP Address: 192.168.0.198

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

Preferred DNS Server: 192.168.0.1

Alternate DNS Server: 192.168.0.2

MTU(1280-1500): 1500

Refresh Apply

Step 2 Set the parameters according to Table 2-2.

Table 2-2 Local network parameters

Parameter	Description	Setting
IP Protocol	IPv4 is the IP protocol that uses an address length of 32 bits.	[Setting method] Select a value from the drop-down list box. [Default value] IPv4
Obtain an IP address automatically	The device automatically obtains the IP address from the DHCP server.	[Setting method] Click the button on to enable <b>Obtain IP address automatically</b> .  NOTE To query the current IP address of the device, you must query it on the platform based on the device name.
DHCP IP	IP address that the DHCP server assigned to the device.	N/A

Parameter	Description	Setting
IP Address	Device IP address that can be set as required.	[Setting method] Enter a value manually. [Default value] 192.168.0.120
Subnet Mask	Subnet mask of the network adapter.	[Setting method] Enter a value manually. [Default value] 255.255.255.0
Default Gateway	This parameter must be set if the client accesses the device through a gateway.	[Setting method] Enter a value manually. [Default value] 192.168.0.1
Preferred DNS Server	IP address of a DNS server.	[Setting method] Enter a value manually. [Default value] 192.168.0.1
Alternate DNS Server	IP address of a domain server. If the preferred DNS server is faulty, the device uses the alternate DNS server to resolve domain names.	[Setting method] Enter a value manually. [Default value] 192.168.0.2
MTU	Set the maximum value of network transmission data packets.	[Setting method] Enter a value manually.  Note The MTU value is range from 800 to 1500, the default value is 1380, please do not change it arbitrarily.

### Step 3 Click **Apply**.

- If the message "Apply succeed" is displayed, the system saves the settings. The message "Set network parameter success, Please login system again" is displayed. Use the new IP address to log in to the web management system.
- If the message "Invalid IP Address", "Invalid Subnet Mask", "Invalid default gateway", "Invalid primary DNS", or "Invalid space DNS" is displayed, set the parameters correctly.

 **NOTE**

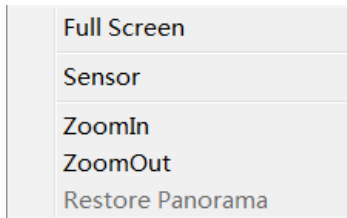
If you set only the **Subnet Mask**, **Default Gateway**, **Preferred DNS Server**, and **Alternate DNS Server** parameters, you do not need to log in to the system again.

## 2.4 Sensor Configuration

### Procedure

- Step 1 Move the cursor to the real-time video page and right-click on the page.  
A shortcut menu is displayed, as shown in Figure 2-6.

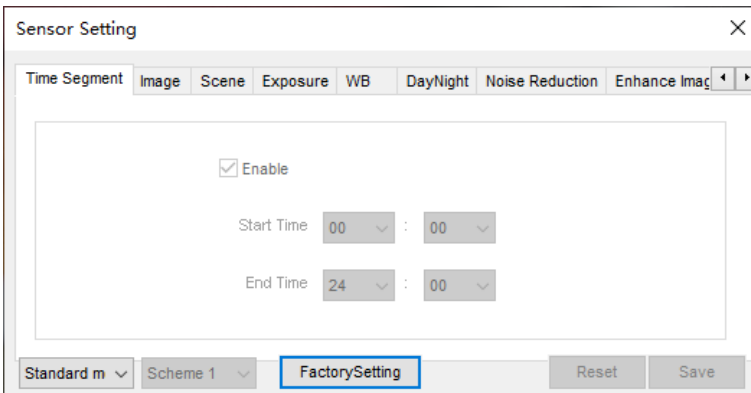
Figure 2-6 Sensor configuration menu



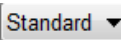
- Step 2 Choose **Sensor**.

The front-end configuration dialog box is displayed as shown in Figure 2-7.

Figure 2-7 Sensor configuration page



- Step 3 Configure **Time Segment**.

1. Click  in the lower left corner of Sensor Setting, and choose **Debug Mode**.

2. Set the **Start Time** to 18:00
3. Set the **End Time** to 7:00
4. Click **Save**, the message "Save succeed" is displayed.



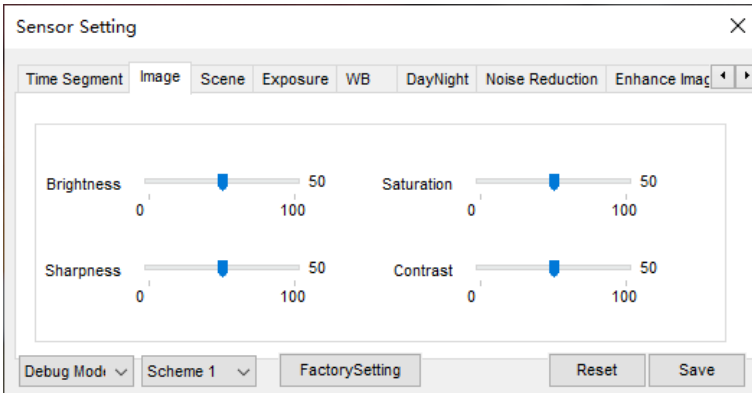
**NOTE**

You can set the start time according to the local sunset time and set the end time according to the local sunrise time.

**Step 4** Configure **Image**

1. Click **Image** the image page is displayed as shown in Figure 2-8.

Figure 2-8 Image page



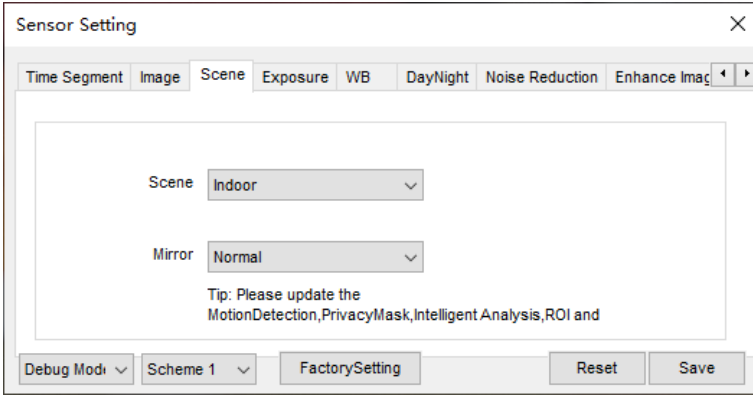
2. Set the **Brightness, Saturation, Sharpness** and **Contrast**.
3. Click **Save**, the message "Save succeed" is displayed

**Step 5** Configure **Scene**.

1. Click **Scene**, the scene page is displayed as shown in Figure 2-10.



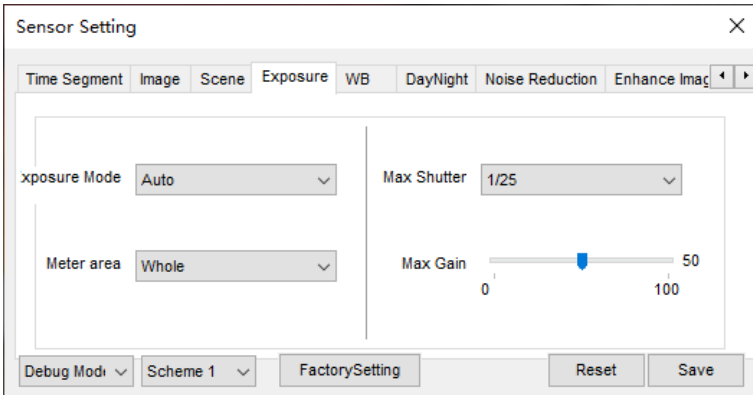
Figure 2-9 Scene page



Step 6 Configure **Exposure**.

1. Click **Exposure**, the Exposure page is displayed as shown in Figure 2-10.

Figure 2-10 Exposure page

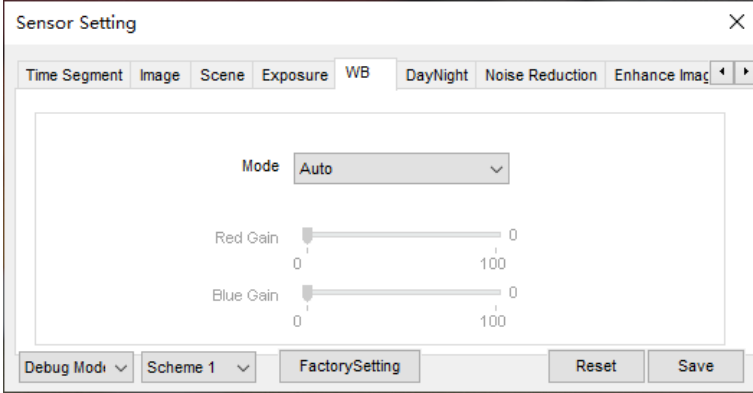


2. Set the **Meter area** to Centre spot.
3. Set the **Max Shutter** to 1/100.
4. Click **Save**, the message "Save succeed" is displayed.

Step 7 Configure **WB**.

1. Click **WB**, the WB page is displayed as shown in Figure 2-11

Figure 2-11 WB page

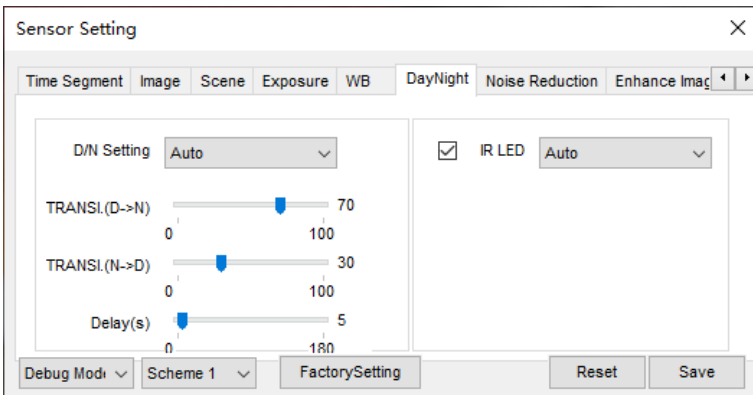


2. Set **Mode** from the drop list.
3. **Manual mode**, drag the slider to adjust the value of red gain and blue gain.
4. Click **Save**, the message "Save succeed" is displayed.

Step 8 Configure **DayNight**.

1. Click **DayNight**, the DayNight page is displayed as shown in Figure 2-12.

Figure 2-12 DayNight page



 **NOTE**

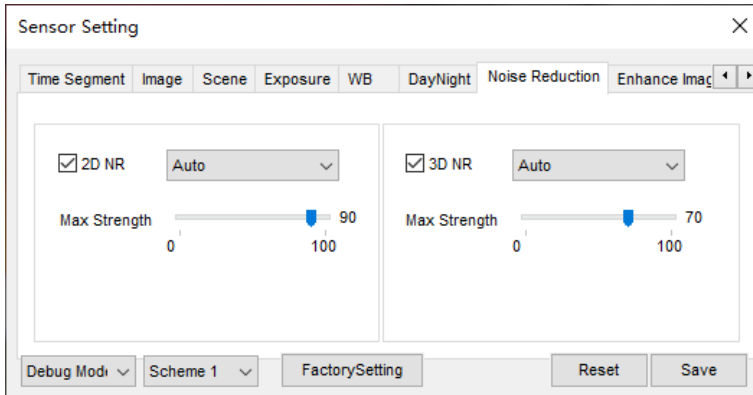
Strength of IR LED is only for IR camera.

2. Set the **D/N Setting** to Night Mode.
3. Set the **IR LED** to Manual.
4. Set the **Strength** to 40.
5. Click **Save**, the message "Save succeed" is displayed.

Step 9 Configure **Noise Reduction**.

1. Click **Noise Reduction**, the page is displayed as shown in Figure 2-13.

Figure 2-13 Noise Reduction page

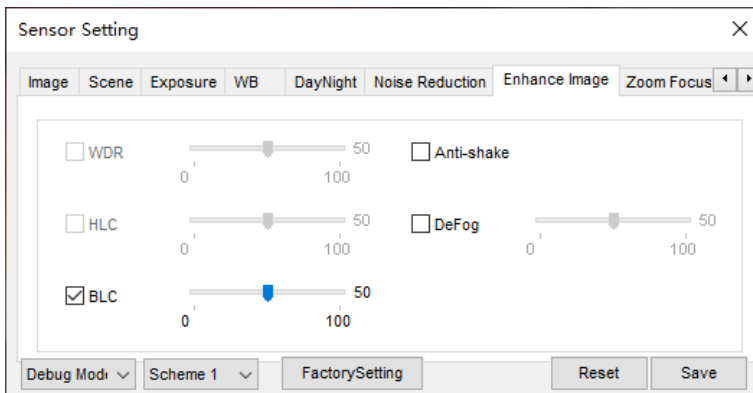


2. Tick the 2 DNR and 3DNR
3. Set **Mode** from the drop list.
4. **Auto mode**, drag the slider to adjust the value of Max Strength
5. **Manual mode**, drag the slider to adjust the value of Fixed Strength.
6. Click **Save**, the message "Save succeed" is displayed.

Step 10 Configure **Enhance Image**.

1. Click **Enhance Image**, the page is displayed as shown in Figure 2-14.

Figure 2-14 Enhance image page

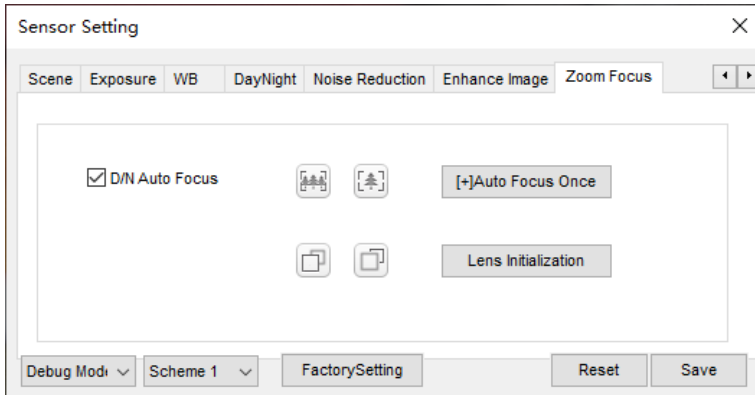


2. Tick **WDR, HLC, BLC, Anti-shake, or Defog**
3. Drag the slider to adjust the value.

Step 11 Configure **Zoom Focus**. (Motorized lens applicable)

1. Click **Zoom Focus**, the page is displayed as shown in Figure 2-14.

Figure 2-15 Enhance image page

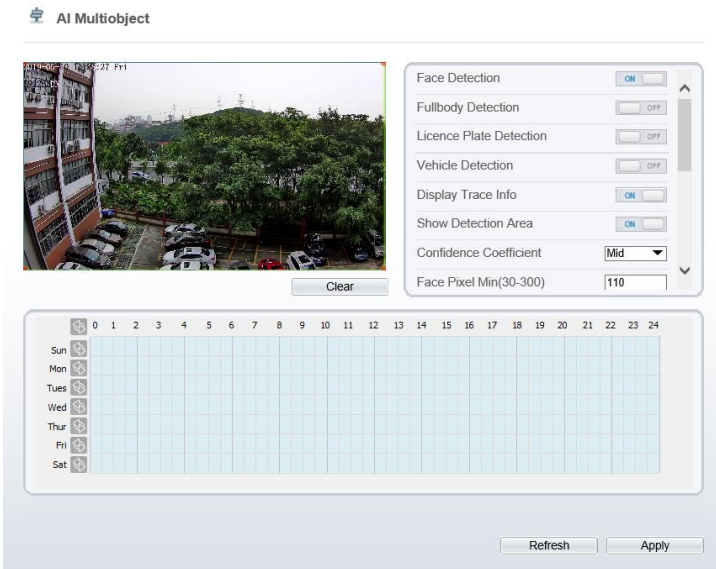


2. Tick **D/A Auto Focus**
3. Click zoom in/zoom out to zoom.
4. Click focus in/focus out to focus
5. Click **Auto Focus Once** or **Lens Initialization** to focus lens.

# 3 AI Multi-Object

Choose **Configuration > AI Multi Object** to set parameter of detection face, and license plate.

Figure 3-1 AI Multiobject interface



Face Detection	<input checked="" type="checkbox"/>
Fullbody Detection	<input checked="" type="checkbox"/>
Licence Plate Detection	<input checked="" type="checkbox"/>
Vehicle Detection	<input checked="" type="checkbox"/>
Display Trace Info	<input checked="" type="checkbox"/>
Show Detection Area	<input checked="" type="checkbox"/>
Confidence Coefficient	Low
Face Pixel Min(30-300)	110

Face Pixel Min(30-300)	110
Body Pixel Min(30-300)	30
Plate Pixel Min(30-300)	300
Vehicle Pixel Min(30-300)	300
Image Matting Quality	Mid
Snapshot Mode	Optimal
Snapshot Count	1
Yaw Degree(0-90)	30

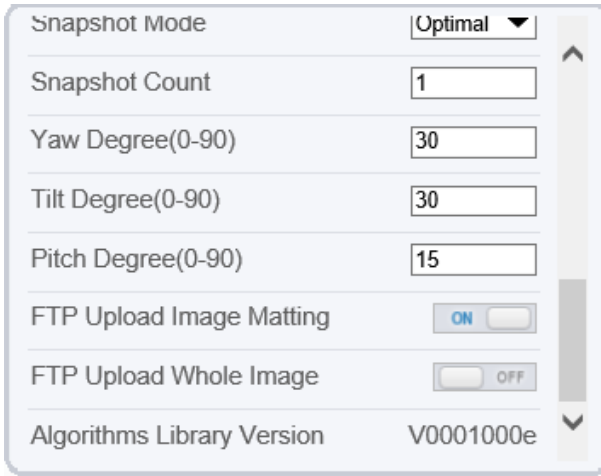


Table 3-1 lists the troubleshooting of the camera.

Table 3-1 Troubleshooting of the camera

Parameter	Description	How to set
Face detection	The camera will snap the face when someone appear in live video.	Enable
Full body detection	The camera will snap the whole body when someone appear in live video.	Enable
Licence plate detection	The camera will snap the licence will the vehicle’s licence appear in live video.	Enable
Vehicle detection	The camera will snap the licence will the vehicle appear in live video.	Enable
Display trace info	Enable the function and a trace frame will show at live video	Enable
Show detection area	Enable to set a detection area, and the frame will show at live video	Enable
Confidence coefficient	The range of snap image, there are three type, such as high, mid and low.	Choose from drop list.
Face pixel min(30-300)	30-300 pixels, the smaller the pixel be set, the more face will be captured, but it may mistake.	Input a value ranges 30 to 300
Body pixel min(30-300)	30-300 pixels, the smaller the pixel be set, the more body will be captured, but it may be mistaken.	Input a value ranges 30 to 300
Plate pixel min(30-300)	30-300 pixels, the smaller the pixel be set, the more face will be captured, but it may be mistaken.	Input a value ranges 30 to 300

Parameter	Description	How to set
Vehicle pixel min(30-300)	30-300 pixels, the smaller the pixel be set, the more face will be captured, but it may be mistaken.	Input a value ranges 30 to 300
Image matting quality	The quality of snap image, There are three mode can be chosen, such as low, mid and high.	Choose from drop list.
Snapshot mode	There are three mode can be chosen, such as timing, optimal and auto.	Choose from drop list.
Upload image interval(1-10s)	At timing mode, set the interval of upload image.	Input a value ranges 1 to 10
Snapshot count	At optimal mode, set the number of snapshot image	Input a value ranges 1 to 9
Yaw degree(0-90)	Both eyes appear on the screen, offset in the left and right direction	Input a value ranges 0 to 90
Tilt degree(0-90)	The face is deflected, and both eyes cannot appear in the picture.	
Pitch degree(0-90)	Face is moving up and down	
FTP upload image matting	<b>Configuration &gt; Network Service &gt; FTP</b> , set FTP related parameters, the captured picture will be sent to the set FTP location	Enable
FTP upload whole image	Capture a picture and send a panorama.	Enable

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