Radar-Assisted Traffic Camera

User Manual

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Regulatory Information

FCC Information

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

FCC Conditions

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

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

EU Conformity Statement

CE

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 LVD Directive 2014/35/EU, the RoHS Directive 2011/65/EU.

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

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

Industry Canada ICES-003 Compliance

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

Symbol Conventions

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

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

Safety Instruction

Regulatory Information

This is a class A product and may cause radio interference in which case the user may be required to take adequate measures.

Laws and Regulations

Use of the product must be in strict compliance with the local laws and regulations. Please shut down the device in prohibited area.

Power Supply

- Use of the product must be in strict compliance with the local electrical safety regulations.
- Use the power adapter provided by qualified manufacturer. Refer to the product specification for detailed power requirements.
- It is recommended to provide independent power adapter for each device as adapter overload may cause over-heating or a fire hazard.
- Make sure that the power has been disconnected before you wire, install, or disassemble the device in the authorized way according to the description in the manual.
- To avoid electric shock, DO NOT directly touch exposed contacts and components once the device is powered up.
- DO NOT use damaged power supply devices (e.g., cable, power adapter, etc.) to avoid electric shock, fire hazard, and explosion.
- DO NOT directly cut the power supply to shut down the device. Please shut down the device normally and then unplug the power cord to avoid data loss.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.
- Make sure the power supply has been disconnected if the power adapter is idle.
- Connect to earth before connecting to the power supply.

Transportation, Use, and Storage

- To avoid heat accumulation, good ventilation is required for a proper operating environment.
- Store the device in dry, well-ventilated, corrosive-gas-free, no direct sunlight, and no heating source environment.
- Avoid fire, water, and explosive environment when using the device.
- Install the device in such a way that lightning strikes can be avoided. Provide a surge suppressor at the inlet opening of the equipment under special conditions such as the mountain top, iron tower, and forest.
- Keep the device away from magnetic interference.
- Avoid device installation on vibratory surfaces or places. Failure to comply with this may cause device damage.
- DO NOT touch the heat dissipation component to avoid burns.
- DO NOT expose the device to extremely hot, cold, or humidity environments. For temperature and humidity requirements, see device specification.

- No naked flame sources, such as lighted candles, should be placed on the equipment.
- DO NOT touch the sharp edges or corners.
- To prevent possible hearing damage, DO NOT listen at high volume levels for long periods.

Maintenance

- If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.
- If the device cannot work properly, contact the store you purchased it or the nearest service center. DO NOT disassemble or modify the device in the unauthorized way (For the problems caused by unauthorized modification or maintenance, the company shall not take any responsibility).
- Keep all packaging after unpacking them for future use. In case of any failure occurred, you need to return the device to the factory with the original packaging. Transportation without the original packaging may result in damage to the device and the company shall not take any responsibility.

Network

- Please enforce the protection for the personal information and the data security as the device may be confronted with the network security problems when it is connected to the Internet. Contact us if network security risks occur.
- Please understand that you have the responsibility to configure all the passwords and other security settings about the device, and keep your user name and password.

Lens

- DO NOT touch the lens with fingers directly in case the acidic sweat of the fingers erodes the surface coating of the lens.
- DO NOT aim the lens at the strong light such as sun or incandescent lamp. The strong light can cause fatal damage to the device.

Data

DO NOT disconnect the power during formatting, uploading, and downloading. Or files may be damaged.

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Chapter 1 Introduction

1.1 Product Introduction

Integrated with millimeter wave radar with high accuracy and network traffic camera with low illumination, the radar-assisted traffic camera can track and position the moving target, detect the speed and direction, and extract the target structuralization data.

1.2 Key Feature

- Integrated with millimeter wave radar with high accuracy and network traffic camera with low illumination.
- Supports trace tracking and detection, and target visualization.
- Workable in all-weather environment, free of the influences from rain, fog, wind, dust, light, etc.
- Embedded with deep learning algorithm, supporting smart recognition. Supports license plate recognition and target full structuralization, the integration of the target information detected by the radar and the video data, and display of the integration data on the video interface.
- Multi-target information detection of the positions, lanes, speeds, directions, etc.
- Traffic data collection of multiple types of roads.
- Statistics of different lanes, including the traffic flow, speed, status, queue, time headway, space headway, number of parking vehicle in an area, average delay, space occupancy, and time occupancy. Supports uploading statistics data by period.
- Outputs traffic evaluation data, including the parking duration, parking times, and queue length.
- Two virtual coils supported for each lane to output the entrance and exit signal of the vehicle. The positions of the virtual coils can be set.
- Speed detection and checkpoint picture capture of the motor vehicle.
- Links to the guidance screen to display the license plate number and vehicle speed in real time.
- Applicable to various scenes with defog, license plate brightness compensation, wide dynamic range, and white balance functions.

1.3 Running Environment

- Operating system: 64-bit Windows 7 recommended.
- CPU: i5-4590@3.3 GHz, or E3-1226 V3@3.30 GHz.
- GPU: GTX970 (Nvidia), or Inter(R) HD Graphics P4600.
- Resolution: 1024 × 768 and above.
- Browser: IE8, IE9, IE10, and IE11 recommended.

Chapter 2 Activation and Login

2.1 Activation

For the first-time access, you need to activate the device by setting an admin password. No operation is allowed before activation. The device supports multiple activation methods, such as activation via SADP software, web browser, and client software.

Note

Refer to the user manual of client software for the activation via client software.

2.1.1 Default Information

The device default information is shown as below.

- Default IP address: 192.168.1.64
- Default user name: admin

2.1.2 Activate via SADP

SADP is a tool to detect, activate, and modify the IP address of the device over the LAN.

Before You Start

- Get the SADP software from the supplied disk or the official website (***http://www.hikvision.com/***), and install it according to the prompts.
- The device and the computer that runs the SADP tool should belong to the same network segment.

The following steps show how to activate one device and modify its IP address. For batch activation and IP address modification, refer to *User Manual of SADP* for details.

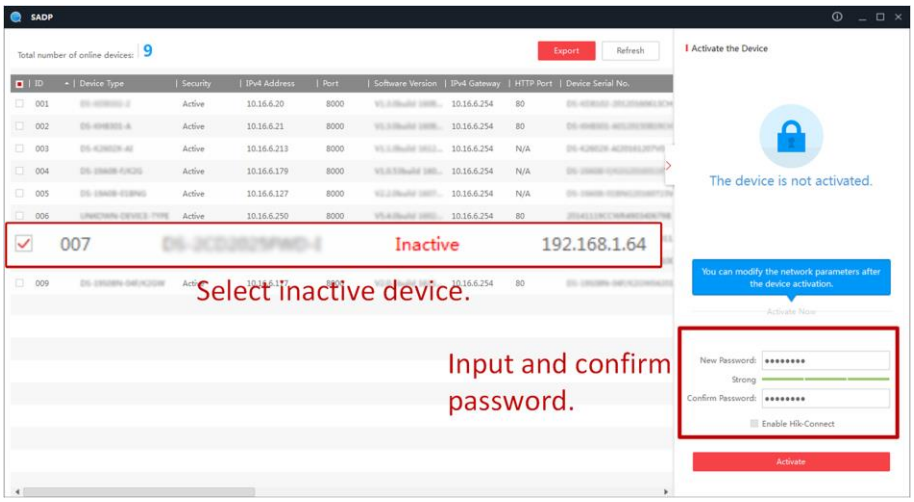
Steps

1. Run the SADP software and search the online devices.
2. Find and select your device in online device list.
3. Enter a new password (admin password) and confirm the password.

Caution

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 **Activate** to start activation.



Status of the device becomes **Active** after successful activation.

5. Modify IP address of the device.
   1) Select the device.
   2) Change the device IP address to the same network segment as your computer by either modifying the IP address manually or checking **Enable DHCP**.
   3) Enter the admin password and click **Modify** to activate your IP address modification.

2.1.3 Activate via Web Browser

Use web browser to activate the device. For the device with the DHCP enabled by default, use SADP software or client software to activate the device.

Before You Start

Ensure the device and the computer connect to the same LAN.

Steps

1. Change the IP address of your computer to the same network segment as the device.
2. Open the web browser, and enter the default IP address of the device to enter the activation interface.
3. Create and confirm the admin password.

Caution

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 complete activation.
5. Go to the network settings interface to modify IP address of the device.

2.2 Login

You can log in to the device via web browser for further operations such as live view and local configuration.

Before You Start

Connect the device to the network directly, or via a switch or a router.

Steps

1. Open the web browser, and enter the IP address of the device to enter the login interface.
2. Enter **User Name** and **Password**.
3. Click **Login**.
4. Download and install appropriate plug-in for your web browser. Follow the installation prompts to install the plug-in.
5. Reopen the web browser after the installation of the plug-in and repeat steps 1 to 3 to login.
6. Optional: Click **Logout** on the upper right corner of the interface to log out of the device.

Chapter 3 Radar Detection

Radar is used to detect the target and link the capture. Set radar detection parameters before capturing vehicle pictures.

Note

The function varies with different models. The actual device prevails.

3.1 Set Detection Parameters

Set radar detection parameters before capturing vehicle pictures.

Steps

1. Click **Radar**.

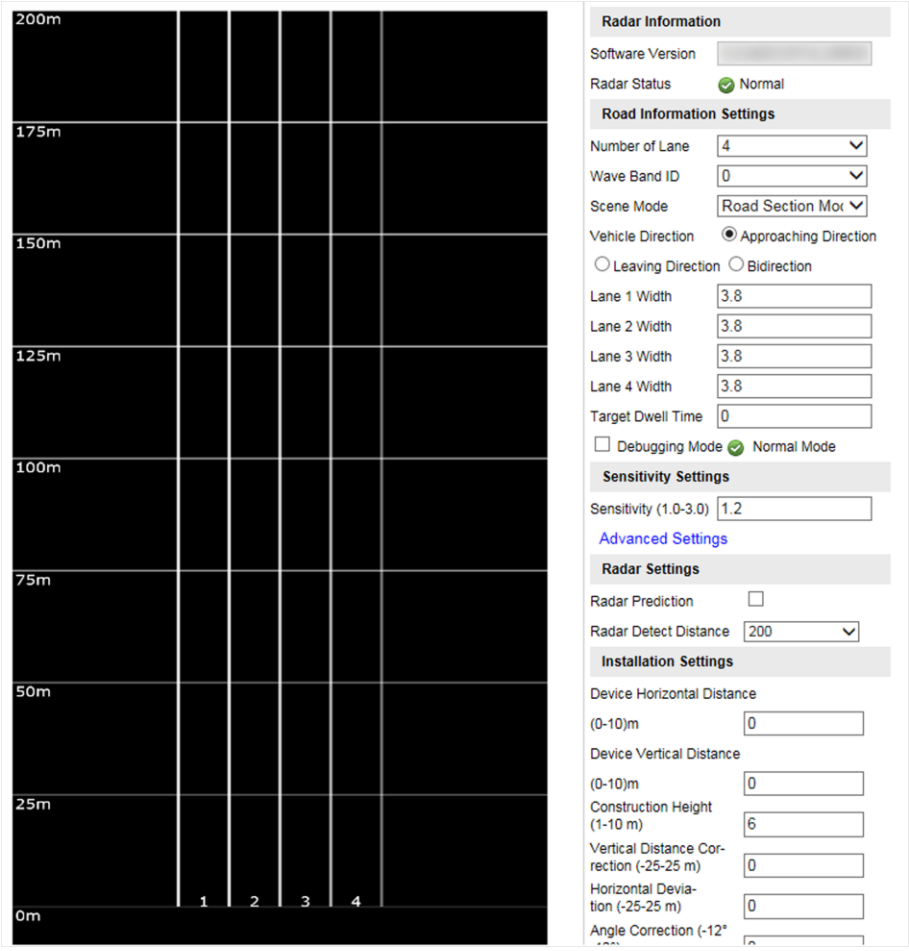


Figure 3-1 Set Radar Detection Parameters

2. View the radar information.

Software Version

The software version of the radar.

Radar Status

The current radar status. The radar can be normally used in normal status. If the radar is in upgrading status, do not reboot the device. Refresh the interface every one minute, and the status can be restored to normal.

3. Set the road information.

Number of Lane

Select it according to the actual scene.

Wave Band ID

0 to 4 stand for five frequencies. No need to set the wave band ID in normal conditions. But you need to set it when there are many vehicle detectors in the same road segment and the detection areas are overlapped, to guarantee the wave band IDs of the vehicle detectors covered by the detection areas are different.

Scene Mode

Select it according to the actual scene.

Vehicle Detection

Approaching Direction

The vehicles are driven towards the construction position of the vehicle detector.

Leaving Direction

The vehicles are driven far away from the construction position of the vehicle detector.

Bidirection

There are vehicles driven both towards and far away from the construction position of the vehicle detector.

Lane Width

The width ranges from 3 to 6 m.

Target Dwell Time

When the target stays for a duration exceeding the set dwell time, the device will remove the corresponding target rectangles automatically. The targets will not be counted in vehicle data statistics.

Debugging Mode

Check it to enable the radar debug mode. In this mode, the vehicles outside the drawn area will be displayed, to make it convenient to debug the radar.

4. Set the sensitivity.

1) Enter **Sensitivity**.

Note

The lower the sensitivity is, the more sensitive the detection will be. For the detection which is too sensitive (e.g., some fixed facilities such as the bus station on the lane are detected as vehicles), you can adjust the sensitivity higher.

2) Click **Advanced Settings** to set the influential range and sensitivity.

Influential Range

If you do not want to adjust the total sensitivity, enter the vertical distance from the possible mistakenly recognized area (such as the bus station) to the vehicle detector.

Sensitivity

You can adjust the sensitivity of each influential range independently.

Note

The influential range of the sensitivity can be set every 50 m, and up to four areas can be set.

5. Set the installation parameters.

Construction Height

The construction height of the camera.

Horizontal Deviation

The horizontal distance from the radar to the central point of all the detected roads. E.g., if the radar detects three lanes, and is installed in the center of the central lane, then the horizontal deviation is 0. If the radar is not installed in the center, you need to set the value.

Angle Correction

To correct the angle between the radar and the approaching direction of the vehicle. E.g., if the radar detects three lanes, and is installed in the center of the central lane without deflection, then the angle correction is 0. If the radar is not installed in the center, and there is deflection comparing with the central installation, you need to set the value.

Note

Keep the default value of **Vertical Distance Correction** and **Distance to Stop Line**.

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

3.2 Set Radar Calibration

Calibrate radar after the radar detection parameters are set to display the targets detected by the radar on the video.

Before You Start

Enable **Rule Information** in **Configuration** → **Local Configuration**.

Steps

1. Click **Radar**.
2. Click **Radar Calibration**.
3. Select **Calibration Mode** and set the radar calibration.
   – Select **Coordinate Mode**. Refer to ***Coordinate Mode*** for details.
   – Select **Auto Calibration Mode**. Refer to ***Auto Calibration Mode*** for details.

Note

The supported calibration modes vary with different models. The actual device prevails.

3.2.1 Coordinate Mode

Steps

1. Select **Calibration Mode** as **Coordinate Mode**.

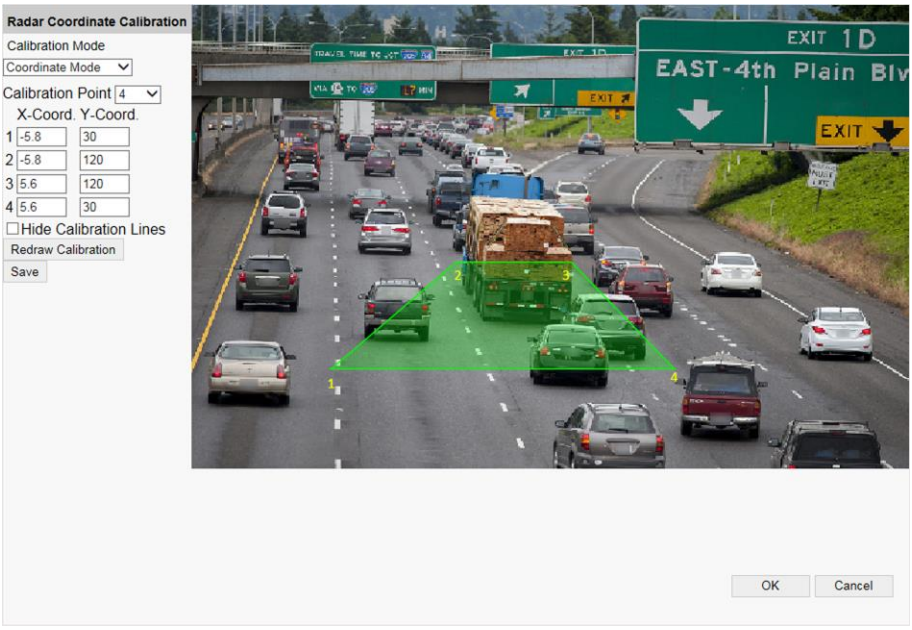


Figure 3-2 Coordinate Mode

2. Select **Calibration Point**.
3. Draw the calibration area.

1) Click **Redraw Calibration**.
2) Click the left button of the mouse to locate the vertexes of the calibration area on the live view image, and click the right button of the mouse to finish the drawing.

Note

The number of vertexes should be consistent with the selected number of **Calibration Point**.

3) Drag the vertexes of the calibration area to align it to the lanes.

Note

If the lanes cannot be aligned, ensure the calibration area can contain the detection area.

4. Measure the world coordinates of the vertexes, and enter the values in the corresponding coordinate text fields.

Note

The world coordinate origin is the central point of the radar. The Y-coordinate of the central point locates in the horizontal pole where the radar is installed, and the X-coordinate of the central point locates in the central point of all the detected roads. E.g., if the calibration area covers three lanes, and the lane width is 2 m, 4 m, and 4 m respectively, then the X-coordinate of the central point locates in the 5 m position, and the X-coordinate of the far left lane and far right lane is -5 and 5 respectively.

5. Adjust the radar in two ways if the coordinates fed back from the radar cannot be matched with the measured coordinates when the vehicle passes the calibration position.
   – Adjust the radar until it can feed back the correct position.
   – Adjust the X-coordinates of the calibration points to make them adapt to the coordinates fed back from the radar. The method is to enter the X-coordinates fed back from the radar into the corresponding text fields when the vehicle passes the far left or far right. Adjust finely if there is small deviation to guarantee the radar frames and the video frames can be matched in the field of view.
6. Optional: Check **Hide Calibration Lines** to hide the lines on the live view image.
7. Click **Save**.
8. Click **OK** to exit.

3.2.2 Auto Calibration Mode

Steps

1. Select **Calibration Mode** as **Auto Calibration Mode**.

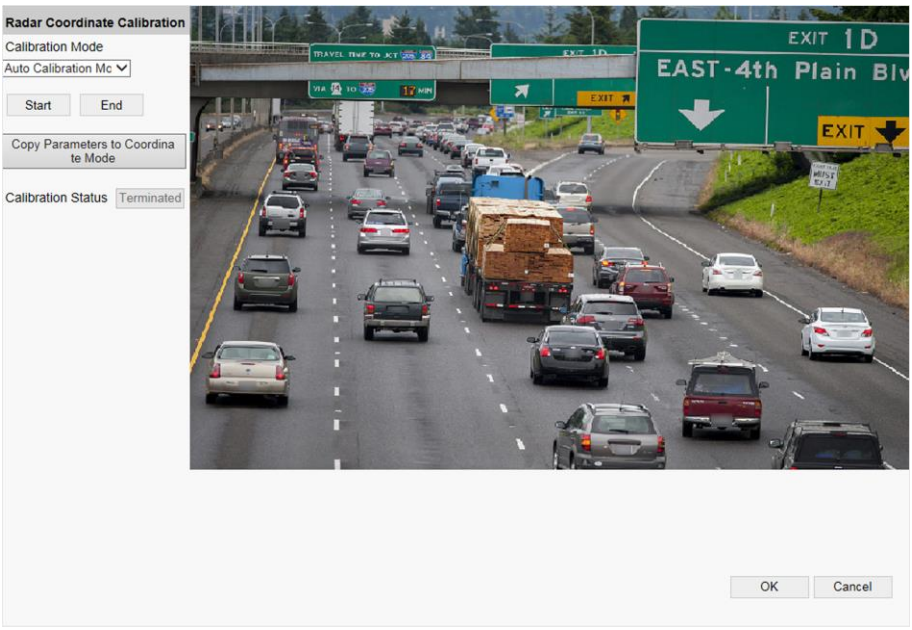


Figure 3-3 Auto Calibration Mode

2. Click **Start**.
   The auto calibration starts, and you can view the calibration status and progress. 100% means the auto calibration is finished.
3. Optional: Click **End** if the calibration effect has met the requirement during the process.
4. Optional: Click **Copy Parameters to Coordinate Mode** to copy the auto calibrated coordinates to the coordinate mode.
5. Click **OK**.

Chapter 4 Vehicle Capture

Note

The supported trigger modes vary with different models. The actual device prevails.

4.1 Set Data Collection

You can set the vehicle data collection and analysis parameters.

Steps

1. Go to **Configuration** → **Device Configuration** → **Application Mode** → **Trigger Mode**.
2. Select **Trigger Mode** as **Data Collection**.

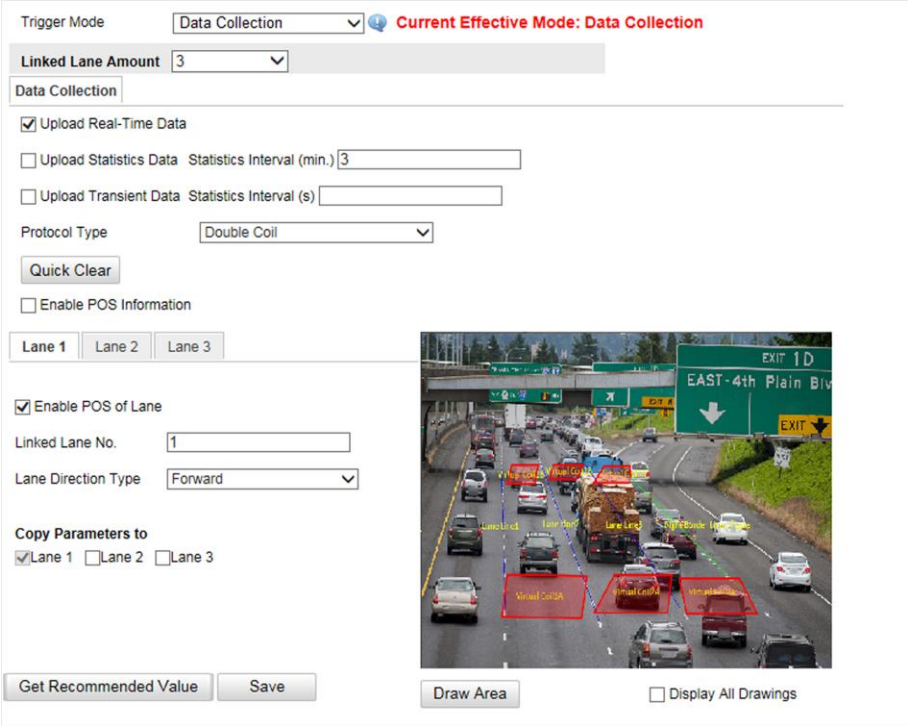


Figure 4-1 Set Data Collection

3. Select **Linked Lane Amount**.
4. Select data upload mode.

Upload Real-Time Data

The vehicle detector will upload the collected data to the server in real time.

Upload Statistics Data

The vehicle detector will upload the collected data to the server according to the set interval.

Upload Transient Data

The vehicle detector will upload the collected transient data to the server according to the set interval.

5. Select **Protocol Type**.

Unicoil

One coil for each lane.

Double Coil

Two coils for each lane.

6. Enable POS information.
   1) Check **Enable POS Information**.
   2) Enter **X-Coord.** and **Y-Coord.** of the POS information overlaid on the live view image.
   3) Check the POS information to overlay on the live view image.
   4) Optional: Click **Quick Clear** to refresh the POS information on the live view image.
7. Set the lane data collection parameters.
   1) Click the lane No.
   2) Check **Enable POS of Lane** to enable the POS information collection of the lane.
   3) Enter **Linked Lane No.**
   4) Select **Lane Direction Type**.
   5) Optional: Check lane(s) to copy the parameters of the current lane to other lane(s).
8. Draw lane lines and virtual coil areas.
   1) Click **Draw Area**.
   2) Select the lane.
   3) Select the default lane lines and right border line, and drag the two end points of the line or drag the whole line to adjust its position according to the actual scene.
   4) Optional: Click **Draw Lane Line** to restore to the default drawing.
   5) Click **Draw Virtual Coil A/B** to draw the virtual coil area.

Note

- Click the left button of the mouse to locate the vertexes of the virtual coil area on the live view image, and click the right button of the mouse to finish the drawing.
- It is recommended to draw the virtual coil A at the position the distance from which to the image lower edge is the length of two vehicles, and the virtual coil B at the position the distance from which to coil A is 20 to 30 m.

   6) Click **OK**.

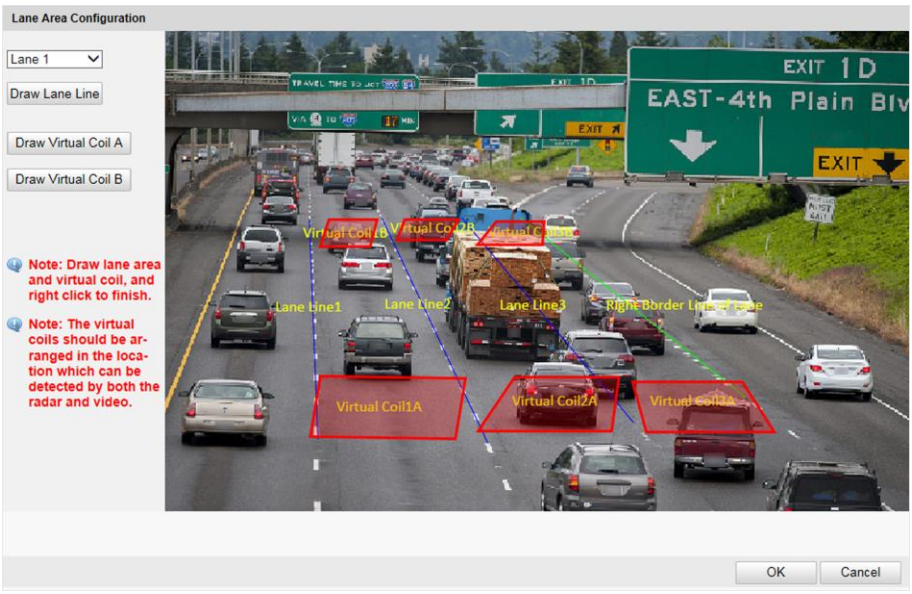


Figure 4-2 Draw Lane Lines and Virtual Coil Areas

9. Click **Save**.

4.2 Set Campus Speed Detection

You can set the speed prompt on the campus feedback screen and set the speed detection parameters.

Steps

1. Go to **Configuration** → **Device Configuration** → **Application Mode**.
2. Select **Trigger Mode** as **Campus Speed Detection**.

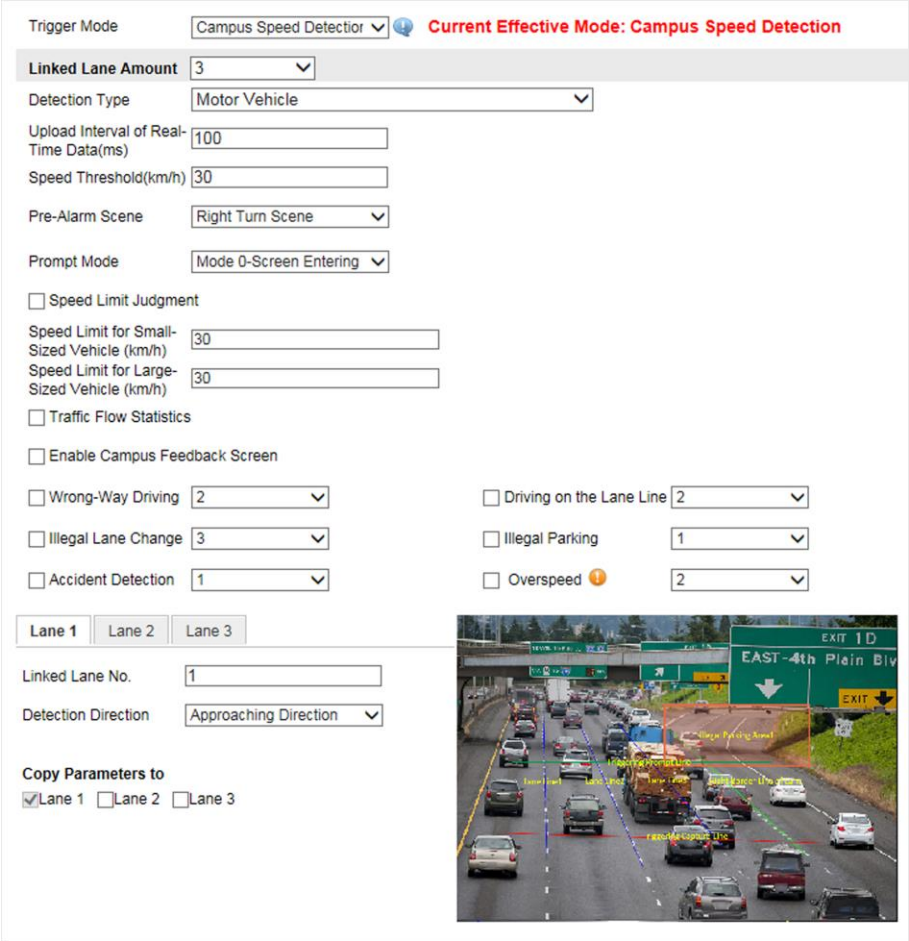


Figure 4-3 Set Campus Speed Detection

3. Select **Linked Lane Amount**.
4. Set detection type and speed limit parameters.

Detection Type

Select motor vehicle, non-motor vehicle, or pedestrian to detect the speed.

Upload Interval of Real-Time Data

The detected speed information will be uploaded to the server in real time according to the set interval.

Speed Threshold

When the speed of the detected target exceeds the threshold, it is regarded as overspeed, and more than one picture will be captured.

Pre-Alarm Scene

Select the scene of triggering pre-alarm.

Prompt Mode

Mode 0-Screen Entering Accuracy Priority

The speed and license plate information will prompt when the vehicle is at the capture triggering line.

Mode 1-Screen Entering Timeliness Priority

The speed and license plate information will prompt when the vehicle is at the prompt triggering line.

Mode 2-Single Lane Dynamic Speed Detection

The speed and license plate information of the first vehicle will display in real time during the vehicle is passing between the prompt triggering line and capture triggering line.

Speed Limit Judgment

Check it to judge the speed limit and set **Speed Limit for Small-Sized Vehicle** and **Speed Limit for Large-Sized Vehicle**. When the vehicle speed exceeds the set limit, the speed information will be displayed as red on the feedback screen, and green when the speed does not exceed the limit.

Traffic Flow Statistics

Check it and set the interval. Then the traffic flow will be counted according to the set interval.

5. Set the campus feedback screen.
   1) Check **Enable Campus Feedback Screen** .
   2) Set the IP address and port of the screen.
   3) Select **Screen Type**.

      Vehicle Speed Screen

      For the vehicle speed screen, **Default Content** on the screen cannot be edited.

      Vehicle License Plate and Speed Screen

      For the vehicle license plate and speed screen, you can set **Default Content** on the screen. Up to four characters are supported.

   4) Set **Display Color** and **Display Time**.
6. Check the event detection types, and set the number of captured pictures and corresponding parameters.

Note

For the detection sensitivity, if there are many mistaken captures, you can adjust it smaller, and if there are many missing captures, you can adjust it larger.

7. Draw lane lines and illegal parking areas.
   1) Click **Draw Area**.
   2) Select the lane.
   3) Set the property of the lane lines and right border line.
   4) Select the default lane lines and right border line, and drag the two end points of the line or drag the whole line to adjust its position according to the actual scene.
   5) Optional: Click **Draw Lane Line** to restore to the default drawing.

6) Select **Illegal Parking Area**.
7) Select the illegal parking area No., and click **Draw Illegal Parking Area** to draw the area.

Note

Click the left button of the mouse to locate the vertexes of the area on the live view image, and click the right button of the mouse to finish the drawing.

8) Select another area No. and draw the area according to the steps above.
9) Click **OK**.

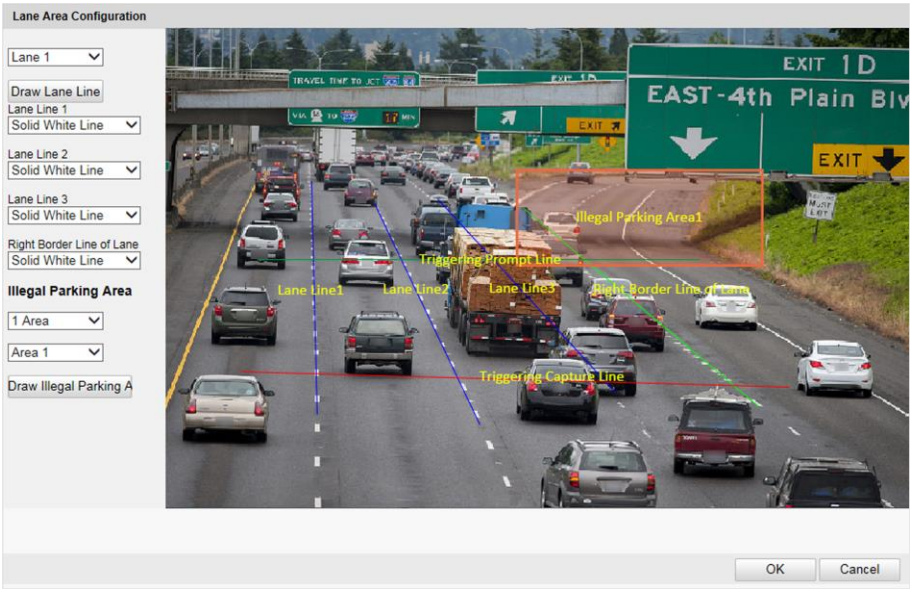


Figure 4-4 Draw Lane Lines and Illegal Parking Areas

8. Set the lane parameters.
   1) Select **Linked Lane No.**
   2) Select **Detection Direction**.

Note

The detection directions of multiple lanes should be consistent.

   3) Optional: Check lane(s) to copy the parameters of the current lane to other lane(s).
9. Click **Save**.

4.3 Set Capture Parameters

4.3.1 Set Captured Image Parameters

Set the parameters of captured images to raise the image quality.

Steps

1. Go to **Configuration** → **Device Configuration** → **Image Parameters** → **Capture**.

Figure 4-5 Set Captured Image Parameters

2. Set the captured image parameters.

Window Enhancement

In front light or back light scene, the flash light may not pass through the vehicle window, or the image effect of the window is bad caused by the light. In this condition, you can check **Window Enhancement**. The higher the **Brightness Enhancement Level** is, the brighter the window image is. The higher the **Defog Level** is, the better the permeability of the window image is.

Enable Plate Enhancement

Check **Enable Plate Enhancement** to capture clearer license plate images. The higher the **Plate Sharpness Enhancement** and **License Plate Contrast Grade** are, the clearer the captured license plate images are. But if the level is too high, the captured images may be overexposed. It is recommended to save the default level.

4.3.2 Set License Plate Recognition Parameters

When there are vehicles of different types passing from different directions, set the license plate recognition parameters.

Steps

1. Go to **Configuration** → **Device Configuration** → **Capture Parameters** → **LPR Parameters**.

Figure 4-6 Set License Plate Recognition Parameters

2. Select **License Plate Direction**.
   - Select **Front LPR** when license plates of vehicles from the approaching direction need to be recognized.
   - Select **Rear LPR** when license plates of vehicles from the leaving direction need to be recognized.
3. Set **Country/Region** according to the actual needs.
4. Click **Save**.

4.3.3 Set Supplement Light Parameters

Supplement light can enhance the image stabilization and adjust the brightness and color temperature. You can use supplement light to supplement light at night or when the light is dim.

Steps

Note

Only when the solid light is connected, can the set parameters take effect.

1. Go to **Configuration** → **Device Configuration** → **Capture Parameters** → **Supplement Light Parameters**.

Figure 4-7 Set Supplement Light Parameters

2. Set the solid light output mode.
   – Check **Enable Solid Light by Auto Brightness Detection** when you want the solid light to be controlled by detecting the surroundings brightness automatically. Set the brightness threshold. The higher the threshold is, the harder the solid light can be enabled.
   – Check **Enable Solid Light by Time** when you want the solid light to be enabled during a fixed time period. Set the start time and end time.

Note

Enabling solid light by brightness and time are conflicted with each other. You can only enable one function.

3. Click **Save**.

4.3.4 Set Picture Composition

You can enable the picture composition to composite several pictures into one to make it convenient to view the violation captured pictures.

Steps

Note

Functions and parameters vary with different models. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **Capture Parameters** → **Picture Composition**.

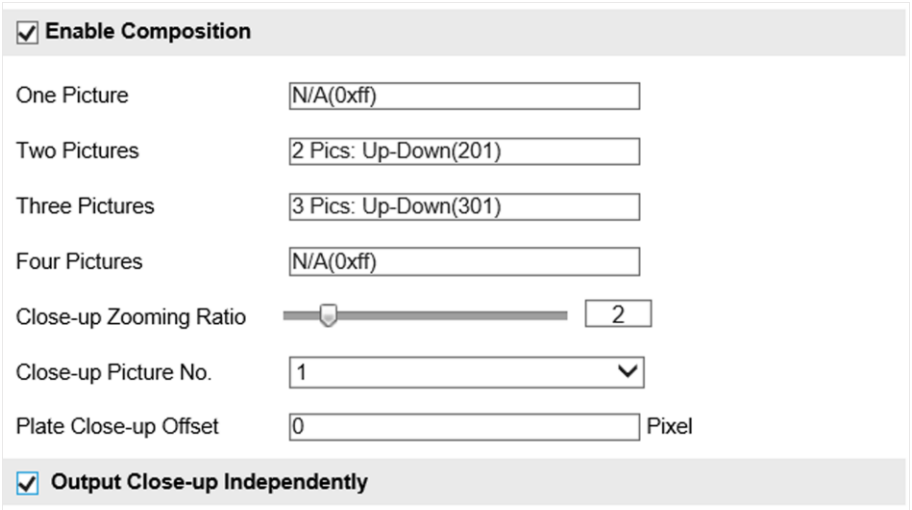


Figure 4-8 Set Picture Composition

2. Check **Enable Composition**.
3. Set composition types for different picture quantities.
4. Set other composition parameters.

Note

The default value of **Plate Close-up Offset** is 0, which is recommended to be adopted. The device can capture close-up pictures according to the set offset when no license plate is recognized.

5. Optional: Check **Output Close-up Independently** to output close-up pictures independently when the picture composition is not enabled.
6. Click **Save**.

4.3.5 Set Capture Overlay

If you want to overlay information on the captured pictures, set capture overlay.

Steps

1. Go to **Configuration** → **Device Configuration** → **Text Overlay** → **Capture Overlay Configuration**.
2. Check **Text Overlay on Capture**.

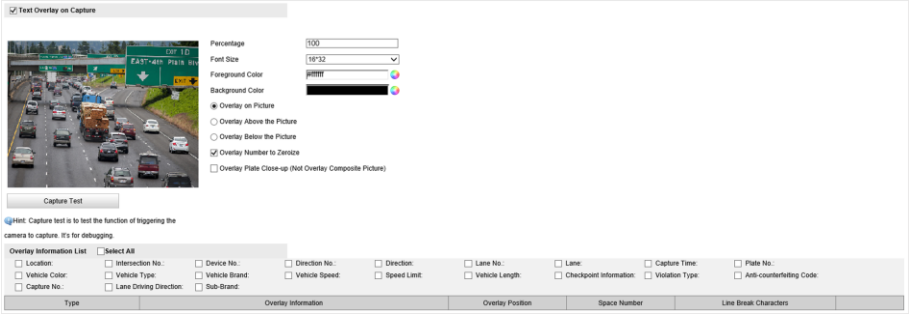


Figure 4-9 Set Capture Overlay

3. Set the percentage, front size, color, overlay position, etc.

Percentage

It is the percentage that the overlaid information occupies on the picture. For example, if you set the percentage to 50, the overlaid information in a row will occupy up to half of the image width, and the excess content will be overlaid from a new line.

Overlay Number to Zeroize

When the overlaid number digits are smaller than the fixed digits, 0 will be overlaid before the overlaid number. E.g., the fixed digits for lane No. is 2. If the lane No. is 1, 01 will be overlaid on the picture.

4. Select the overlay information from the list.

Note

The overlay information varies with different models. The actual device prevails.

5. Set the overlay information.

Set Type	You can edit the type.
Set Overlay Information	For some information type, you can edit the detailed information.
Set Overlay Position	If you select **Overlay on the Picture**, you can check it. Then the current information will be displayed from a new line.
Set Space Number	Edit the number of space between the current information and the next one from 0 to 255. 0 means there is no space.
Set Line Break Characters	Edit the number of characters from 0 to 100 between the current information line and the previous information line. 0 means no line break.
Adjust overlay sequence	Click ↑/↓ to adjust the display sequence of the overlay information.

6. Click **Save**.

4.3.6 Set Composite Picture Overlay

If you want to overlay information on the composite pictures, set composite picture overlay.

Steps

1. Go to **Configuration** → **Device Configuration** → **Text Overlay** → **Composite Picture Overlay Configuration**.
2. Check **Text Overlay on Capture**.

Figure 4-10 Set Capture Overlay

3. Set the font size, color, overlay position, etc.

   Percentage

   It is the percentage that the overlaid information occupies on the picture. For example, if you set the percentage to 50, the overlaid information in a row will occupy up to half of the image width, and the excess content will be overlaid from a new line.

4. Select the overlay information from the list.

Note

The overlay information varies with different models. The actual device prevails.

5. Set the overlay information.

Set Type	You can edit the type.
Set Overlay Information	For some information type, you can edit the detailed information.
Set Overlay Position	If you select **Overlay on the Picture**, you can check it. Then the current information will be displayed from a new line.
Set Space Number	Edit the number of space between the current information and the next one from 0 to 255. 0 means there is no space.
Set Line Break Characters	Edit the number of characters from 0 to 100 between the current information line and the previous information line. 0 means no line break.
Adjust overlay sequence	Click ↑/↓ to adjust the display sequence of the overlay information.

6. Click **Save**.

4.3.7 Set Traffic Light Synchronization

If you want to synchronize the shutter with the traffic light, enable the traffic light synchronization.

Steps

Note

Some models do not support traffic light synchronization. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **Capture Parameters** → **Traffic Light Synchronization**.
2. Check **Enable Traffic Light Synchronization**.
3. Set the phase and signal frequency according to the prompts.
4. Click **Save**.

4.3.8 Set Vehicle Feature Parameters

Set vehicle feature parameters if you need to detect the vehicle features of the passing vehicle.

Steps

1. Go to **Configuration** → **Device Configuration** → **Capture Parameters** → **Vehicle Feature Parameters**.

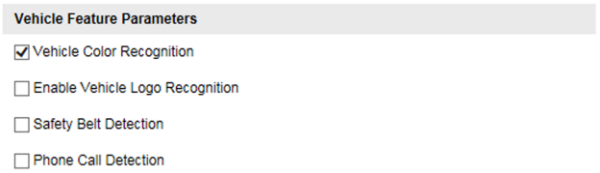


Figure 4-11 Set Vehicle Feature Parameters

2. Check the vehicle features that needed to be detected.
3. Click **Save**.

4.3.9 Set Face Picture Matting

You can enable driver's or passenger's face picture matting on the capture violation pictures and set corresponding parameters.

Steps

> **Note**
>
> Some models do not support face picture matting. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **Capture Parameters** → **Vehicle Feature Parameters**.
2. Check **Enable Face Picture Matting**.

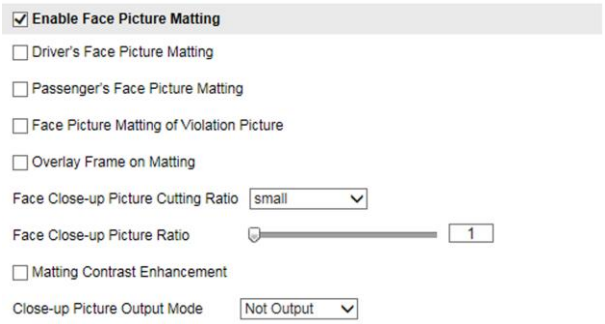


Figure 4-12 Set Face Picture Matting

3. Set corresponding parameters.

Driver's/Passenger's Face Picture Matting

Select the driver's or passenger's face picture to be detected.

Face Picture Matting of Violation Picture

Check it to cutout the face picture on the captured violation picture.

Overlay Frame on Matting

Check it to overlay frame on the matted picture.

Face Close-up Picture Cutting Ratio

Select the cutting ratio of the face close-up picture to be small, middle, or large.

Face Close-up Picture Ratio

Adjust the zooming ratio of the face close-up picture.

Matting Contrast Enhancement

Check it to enable the function and set the level. The higher the level is, the stronger the contrast between the matting and the overlaid picture will be.

Close-up Picture Output Mode

Overlay on Picture

The driver's face close-up picture will be overlaid on the upper right corner of the picture, and the passenger's face close-up picture will be overlaid on the upper left corner of the picture.

Upload Arm

The face close-up pictures will be uploaded to the arming host or listening host.

Overlay and Upload Arm

The face close-up pictures will both be overlaid on the pictures and uploaded to the arming host or listening host.

4. Click **Save**.

Result

If level 1 arming is set for the camera, the face close-up pictures will be uploaded to the level 1 arming device. If only level 2 arming is set for the camera, the face close-up pictures will both be stored in the local storage and uploaded to the level 2 arming device.

4.3.10 Set Image Encoding Parameters

If the captured pictures are not clear, set the resolution of the captured pictures and the picture size.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Image Encoding**.

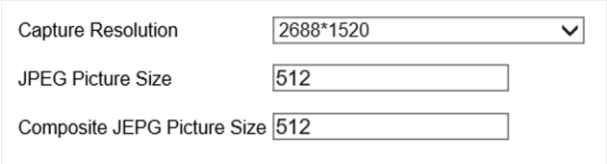


Figure 4-13 Set Image Encoding Parameters

2. Select **Capture Resolution**.
3. Enter the picture size.

JPEG Picture Size

The size of the captured picture.

Composite JEPG Picture Size

The size of the composite picture.

4. Click **Save**.

4.3.11 Set Construction Parameters

Set construction parameters according to the actual installation when applying the video speed detection.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Construction Parameters**.

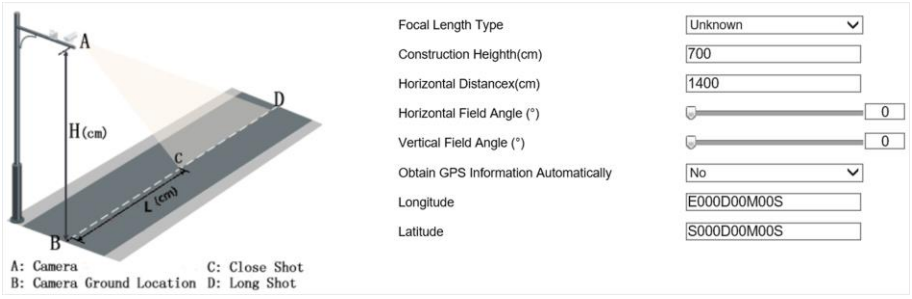


Figure 4-14 Set Construction Parameters

2. Set construction parameters according to the actual scene.
3. Click **Save**.

4.3.12 Set Violation Dictionary

Violation dictionary defines corresponding codes of violation types. You can set the violation code, violation type, and violation description in this section. The default parameters are recommended.

Steps

Note

Functions and parameters vary with different models. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **System** → **Violation Dictionary**.
2. Set **Violation Code**, **Violation Type**, and **Violation Description** according to the actual needs.
3. Click **Save**.

Result

The violation code and description will be displayed on the captured picture when the corresponding violation happens.

4.3.13 Set Upload Protocol

You can control the picture types to be uploaded by selecting different upload protocols.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Upload Protocol**.

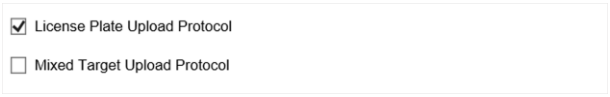


Figure 4-15 Set Upload Protocol

2. Check an upload protocol.

   License Plate Upload Protocol

   Only the license plate pictures will be uploaded.

   Mixed Target Upload Protocol

   Both the license plate and face pictures will be uploaded. If you check **Enable Body Property**, the body property information will be overlaid on the uploaded face pictures.
3. Click **Save**.

4.4 View Real-Time Picture

You can view the real-time captured pictures and license plate information.

Steps

1. Go to **Live View** → **Real-Time Status and Traffic Flow Statistics**.

2. Select an item from the list, and you can view the capture scene picture and license plate picture.

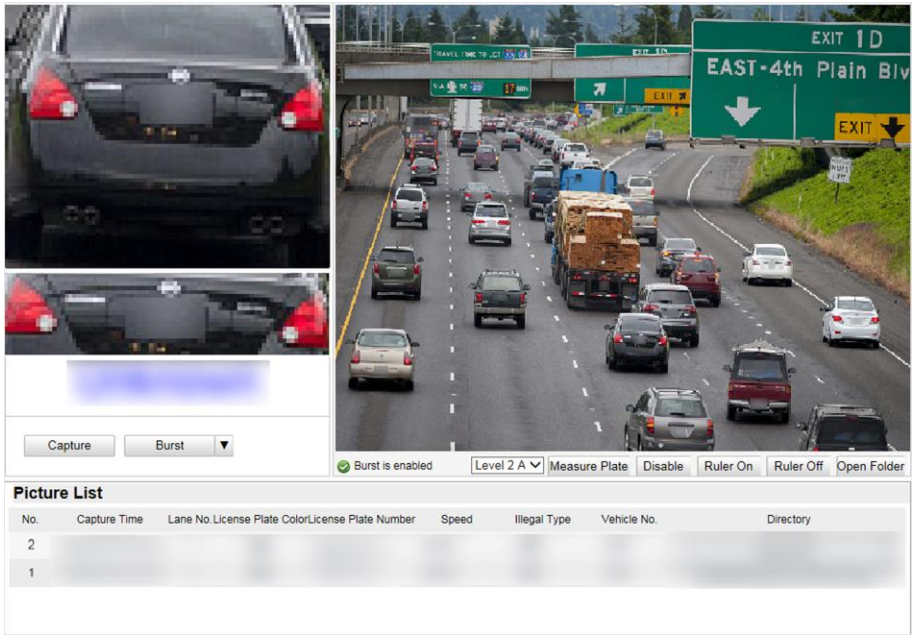


Figure 4-16 Real-Time Picture

3. You can do the following operations on this interface.
   - Select the arming mode. **Level 1 Arming** can only connect one client or web. The uploaded pictures will not be stored in the storage card. The pictures in the storage card will be uploaded to the level 1 arming. **Level 2 Arming** can connect three clients or webs. The pictures will be uploaded to the client/web, and stored in the storage card. **Disarm** is to cancel the alarm status or real-time picture.
   - Click **Capture** to enable manual capture. The captured pictures will be saved in the set local path. Or you can click **Open Folder** to view the pictures.
   - Click **Measure Plate/Ruler On** to measure the license plate pixel. After the measurement, click **Disable/Ruler Off**.
   - Click ▼ after **Burst** to set the burst parameters.

     Pictures Per Burst

     Up to five pictures can be captured per burst.

     Burst Interval

     Up to four intervals can be set, and the default interval is 100 s.

     Click **Burst**, and the device will capture pictures according to the set intervals.

4.5 Search Picture

You can search the captured pictures stored in the storage card and export the pictures you need.

Before You Start

Install the storage card, and ensure the storage status is normal.

Steps

1. Click **Picture**.
2. Set the search conditions such as **Lane No.**, **Vehicle Type**, etc.
3. Click **Search**.
   The searched pictures information will be displayed in the picture list.

> **Note**
>
> If you have set level 1 arming for the device, the captured pictures will not be saved in the storage card. Go to the saving path of scene pictures to view them. You can go to **Configuration** → **Local Configuration** to get the saving path.

4. Optional: Click to preview the selected picture.
   You can view the captured picture and the related information such as the capture time, lane No., license plate number, etc.
5. Optional: Check a picture or several pictures and click **Export Picture** to export it/them to the saving path you have set.
   The downloaded picture(s) will be marked as "Downloaded". You can go to **Configuration** → **Local Configuration** to get the saving path of downloaded pictures.

4.6 Set Guidance Screen

You can set the guidance screen to display the license plate, vehicle speed, and slogan information.

Steps

> **Note**
>
> The guidance screen function varies with different models. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **Guidance Screen**.
2. Select the screen.
3. Check **Enable**.

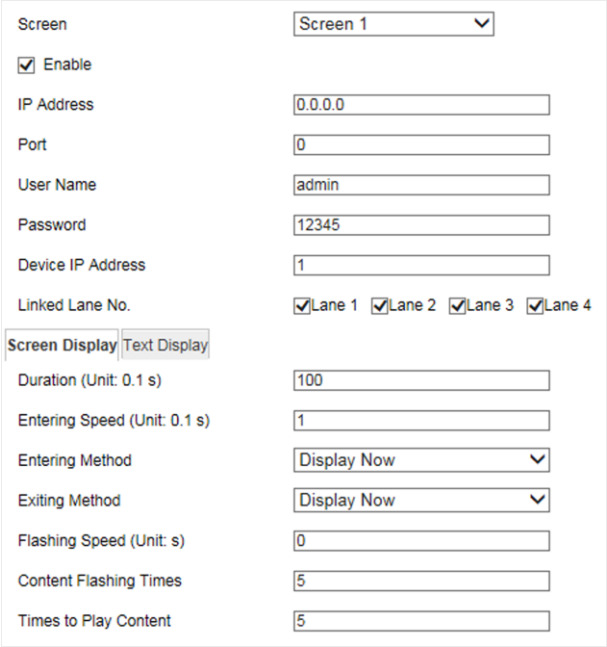


Figure 4-17 Set Guidance Screen

4. Set the screen parameters such as the IP address, port, user name, etc.
5. Select **Linked Lane No.**
6. Click **Screen Display** to set the display parameters.

Duration

The display duration of the captured text information.

Entering Speed

The speed of the captured text information entering into the screen.

Entering Method

The method of the captured text information entering into the screen.

Exiting Method

The method of the captured text information exiting from the screen.

Flashing Speed

The flashing speed of the captured text information on the screen.

Content Flashing Times

The flashing times of the captured text information on the screen.

Times to Play Content

The times of playing the captured text information on the screen.

7. Click **Text Display** to set the text display parameters.

Text Display

Select the content to display on the screen. You can display **License Plate**, **Vehicle Speed**, and **Slogan on Idle Screen**.

Note

After you select one content, set the corresponding parameters and click **Save** to save the settings before selecting another content to set.

Start X-Coordinate of Text Display Area

The start X-coordinate of the text displaying on the screen.

Start Y-Coordinate of Text Display Area

The start Y-coordinate of the text displaying on the screen.

8. Click **Save**.

Chapter 5 Live View and Local Configuration

5.1 Live View

5.1.1 Start/Stop Live View

Click  to start live view. Click  to stop live view.

5.1.2 Select Image Display Mode

Click  to display the image in 4:3/16:9/self-adaptive display mode.

5.1.3 Select Stream Type

Click Main Stream/Sub-Stream/Third Stream to select the stream type. It is recommended to select the main stream to get the high-quality image when the network condition is good, and select the sub-stream to get the fluent image when the network condition is not good enough. The third stream is custom.

5.1.4 Capture Picture Manually

You can capture pictures manually on the live view image and save them to the computer.

Steps

1. Click  to start live view.
2. Click  to capture a picture.
3. Optional: Click **Configuration** → **Local Configuration** to view the saving path of snapshots in live view.

5.1.5 Record Manually

You can record videos manually on the live view image and save them to the computer.

Steps

1. Click  to start live view.
2. Click  to start recording.
3. Click  to stop recording.
4. Optional: Click **Configuration** → **Local Configuration** to view the saving path of record files.

5.1.6 Enable Digital Zoom

You can enable digital zoom to zoom in a certain part of the live view image.

Steps

1. Click  to start live view.
2. Click  to enable digital zoom.
3. Place the cursor on the live view image position which needs to be zoomed in. Drag the mouse rightwards and downwards to draw an area.
   The area will be zoomed in.
4. Click any position of the image to restore to normal image.
5. Click  to disable digital zoom.

5.1.7 Enable Regional Focus

Steps

1. Click  .
2. Drag the cursor from the upper left corner to the lower right corner to select the area that needs to be focused.

Result

The selected area is focused.

5.1.8 Enable Regional Exposure

Enable regional exposure to expose partial area of the live view image.

Steps

1. Click  .
2. Drag the cursor downwards and rightwards to select an area in the live view image.
   The selected area can be exposed.
3. Click  to disable regional exposure.

5.1.9 Enable Wiper

For the device that has a wiper, you can control the wiper via web browser.
Click  on the live view interface. The wiper wipes the window one time.

5.2 Local Configuration

Go to **Configuration** → **Local Configuration** to set the live view parameters and change the saving paths of videos, captured pictures, scene pictures, etc.

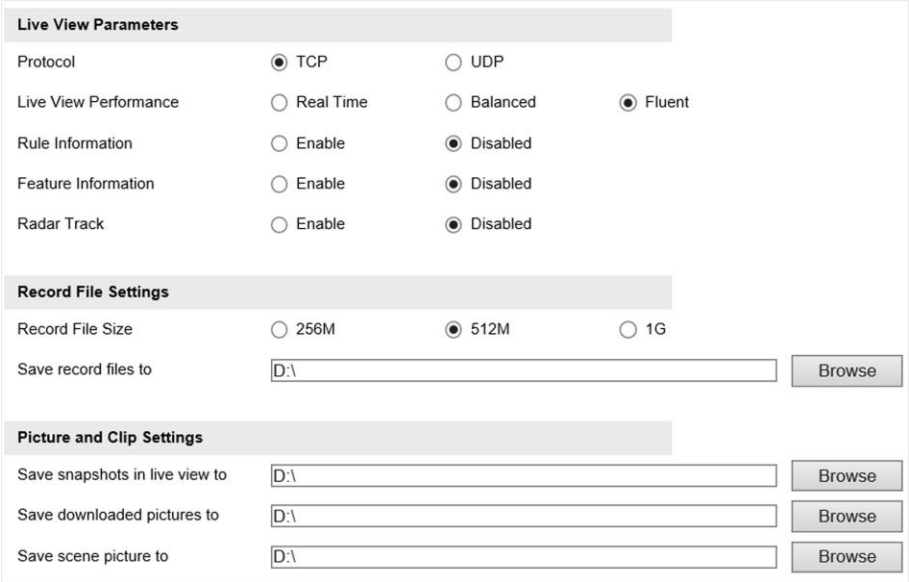


Figure 5-1 Local Configuration

Protocol

Select the network transmission protocol according to the actual needs.

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.

Live View Performance

Real Time

The video is real-time, but the video fluency may be affected.

Balanced

Balanced mode considers both the real time and fluency of the video.

Fluent

When the network condition is good, the video is fluent.

Rule Information

If you enable the rule information, frames will be displayed on the live view interface when there are vehicles passing.

Feature Information

If you enable the feature information, information of the lane, traffic flow, speed, etc. will be displayed on the live view interface.

Record File Size

Select the packed size of the manually recorded video files. After the selection, the max. record file size is the value you selected.

Save record files to

Set the saving path for the manually recorded video files.

Save snapshots in live view to

Set the saving path of the manually captured pictures in live view mode.

Save downloaded pictures to

Set the saving path for the downloaded pictures.

Save scene picture to

Set the saving path of the captured pictures in the **Real-Time Status and Traffic Flow Statistics** interface.

Note

The parameters vary with different models. The actual device prevails.

Chapter 6 Record and Capture

6.1 Set Storage Path

6.1.1 Set Storage Card

If you want to store the files to the storage card, make sure you insert and format the storage card in advance.

Before You Start

Insert the storage card to the device.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Storage Management**.

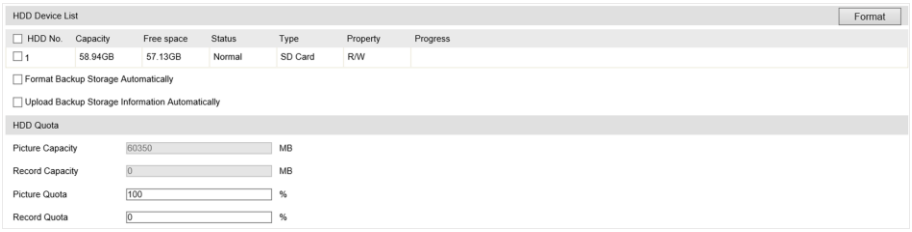


Figure 6-1 Set Storage Card

2. Format the storage card in two ways.
   - Check the storage card, and click **Format** to format it manually.

     Note

     For the newly installed storage card, you need to format it manually before using it normally.

   - If you want to format the storage card automatically when the card is abnormal, check **Format Backup Storage Automatically**.
3. Optional: If the device has been connected to the platform, and you want to upload the storage card information automatically, check **Upload Backup Storage Information Automatically**.
4. Click **Save**.

6.1.2 Set FTP

Set FTP parameters if you want to upload the captured pictures to the FTP server.

Before You Start

Set the FTP server, and ensure the device can communicate normally with the server.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **FTP**.

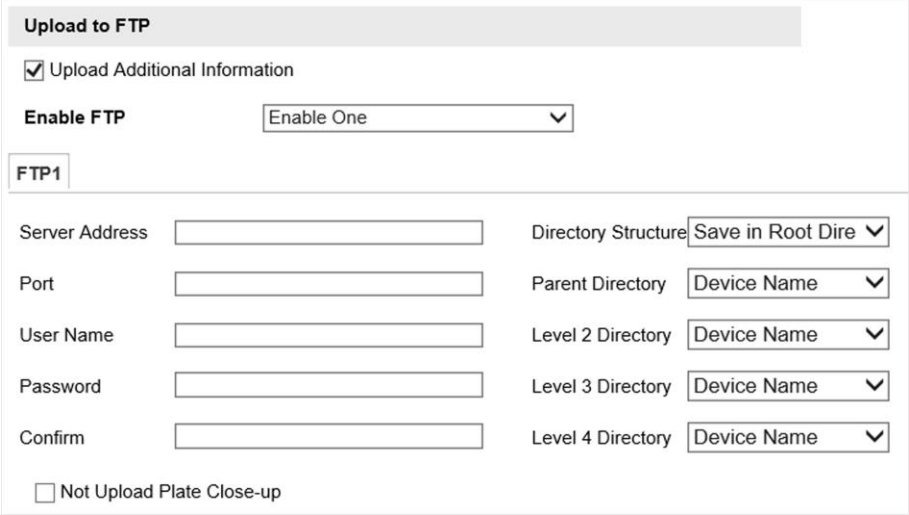


Figure 6-2 Set FTP

2. Optional: Check **Upload Additional Information**, and then the related information can be attached when uploading.
3. Enable the FTP server.
4. Set FTP parameters.
   1) Enter **Server Address** and **Port**.
   2) Enter **User Name** and **Password**, and confirm the password.
   3) Select **Directory Structure**.

> **Note**
>
> If multiple directories are needed, you can customize the directory name.

5. Optional: Check **Not Upload Plate Close-up** if the license plate close-up pictures are not needed to upload.
6. Set the name rule and separator according to the actual needs.
7. Optional: Edit OSD information which can be uploaded to the FTP server with the pictures to make it convenient to view and distinguish the data.
8. Click **Save**.

6.1.3 Set Listening Host

The listening host can be used to receive the uploaded information and pictures of the device arming alarm.

Before You Start

The listening service has been enabled for the listening host, and the network communication with the device is normal.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Network Interface Parameters**.

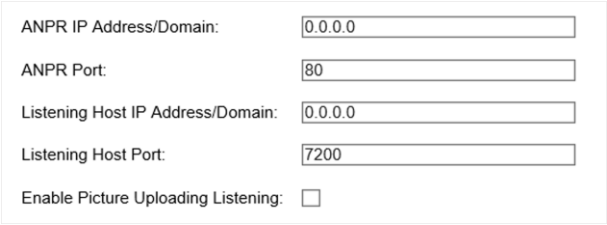


Figure 6-3 Set Listening Host

2. Set **ANPR IP Address/Domain** and **ANPR Port** if you need to upload the alarm information.
3. Set **Listening Host IP Address/Domain** and **Listening Host Port**, and check **Enable Picture Uploading Listening** if you need to upload pictures.
4. Click **Save**.

6.1.4 Set Cloud Storage

Cloud storage is a kind of network storage. It can be used as the extended storage to save the captured pictures.

Before You Start

- Arrange the cloud storage server.
- You have enabled level 1 arm in **Real-Time Status and Traffic Flow Statistics**.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Cloud Storage**.

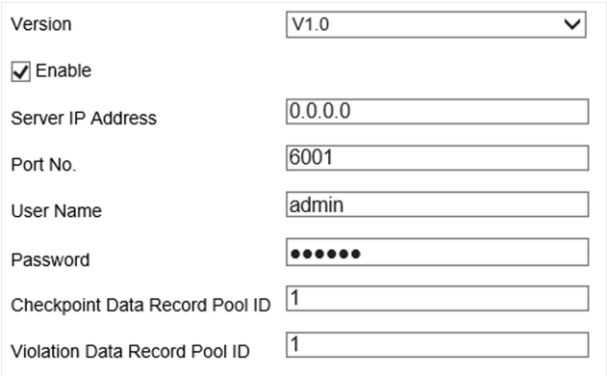


Figure 6-4 Set Cloud Storage

2. Select **Version**.
3. Set the server parameters.
   1) Check **Enable**.
   2) Enter **Server IP Address** and **Port No.**
   3) Set other parameters.

Note

The interface varies with the version that you select.

4. Click **Save**.

6.2 Set Quota

Set the video and picture ratio in the storage.

Before You Start

Install the storage card.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Storage Management**.
2. Set **Picture Quota** and **Record Quota** according to the actual needs.

Note

The percentage sum of the picture and record quota ratio should be 100%.

3. Click **Save**.

What to do next

Format the storage card after the settings.

6.3 Set Record Schedule

Set record schedule to record video automatically during configured time periods.

Before You Start

Install the storage card, and the video quota ratio is not 0.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Record Schedule**.

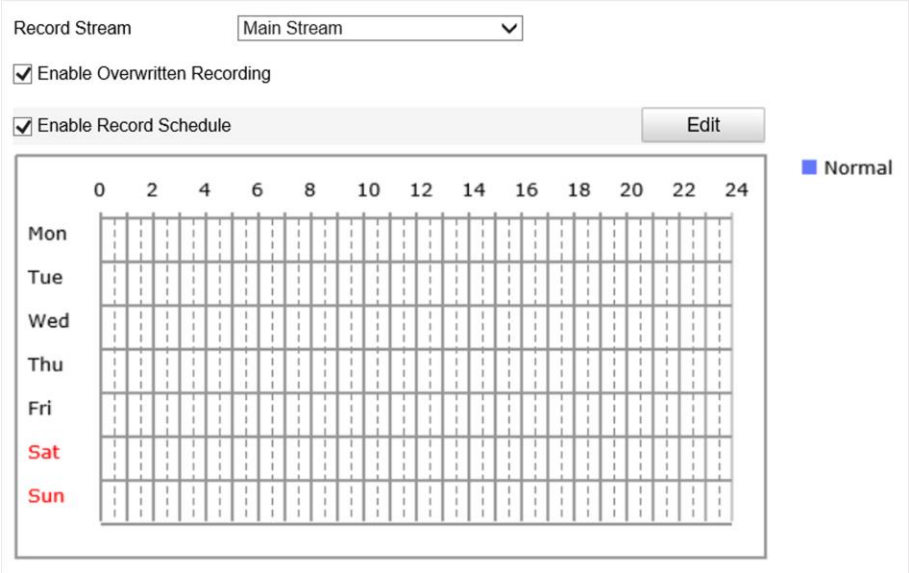


Figure 6-5 Set Record Schedule

2. Optional: Check **Enable Overwritten Recording**.
   When the storage is full, the earliest videos will be overwritten.
3. Check **Enable Record Schedule**.
4. Click **Edit** to edit the record schedule.
   1) Select **Customize**.
   2) Set the start time and end time.
   3) Optional: Select the other days and click **Copy** to copy the settings to other days.
   4) Click **OK**.
5. Click **Save**.

Chapter 7 Encoding and Display

7.1 Set Video Encoding Parameters

Set video encoding parameters to adjust the live view and recording effect.

- When the network signal is good and the speed is fast, you can set high resolution and bitrate to raise the image quality.
- When the network signal is bad and the speed is slow, you can set low resolution, bitrate, and frame rate to guarantee the image fluency.
- When the network signal is bad, but the resolution should be guaranteed, you can set low bitrate and frame rate to guarantee the image fluency.
- Main stream stands for the best stream performance the device supports. It usually offers the best resolution and frame rate the device can do. But high resolution and frame rate usually means larger storage space and higher bandwidth requirements in transmission. Sub-stream usually offers comparatively low resolution options, which consumes less bandwidth and storage space. Third stream is offered for customized usage.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **Video Encoding**.
2. Set the parameters for different streams.

Stream Type

Only video stream is available.

Bitrate

Select relatively large bitrate if you need good image quality and effect, but more storage spaces will be consumed. Select relatively small bitrate if storage requirement is in priority.

Frame Rate

It 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.

Resolution

The higher the resolution is, the clearer the image will be. Meanwhile, the network bandwidth requirement is higher.

SVC

Scalable Video Coding (SVC) is an extension of the H.264/AVC and H.265 standard. Enable the function and the device will automatically extract frames from the original video when the network bandwidth is insufficient.

Bitrate Type

Select the bitrate type to constant or variable.

Image Quality

When bitrate type is variable, 6 levels of image quality are selectable. The higher the image quality is, the higher requirements of the network bandwidth.

Profile

When you select H.264 or H.265 as video encoding, you can set the profile. Selectable profiles vary according to device models.

I Frame Interval

It refers to the number of frames between two key frames. The larger the I frame interval is, the smaller the stream fluctuation is, but the image quality is not that good.

Video Encoding

The device supports multiple video encoding types, such as H.264, H.265, and MJPEG. Supported encoding types for different stream types may differ. H.265 is a new encoding technology. Compared with H.264, it reduces the transmission bitrate under the same resolution, frame rate, and image quality.

3. Click **Save**.

7.2 Set Image Parameters

You can adjust the image parameters to get clear image.

Steps

Note

The supported parameters may vary with different models. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **Image Parameters** → **General Parameters/Configuration** → **Device Configuration** → **Image Parameters** → **Video**.

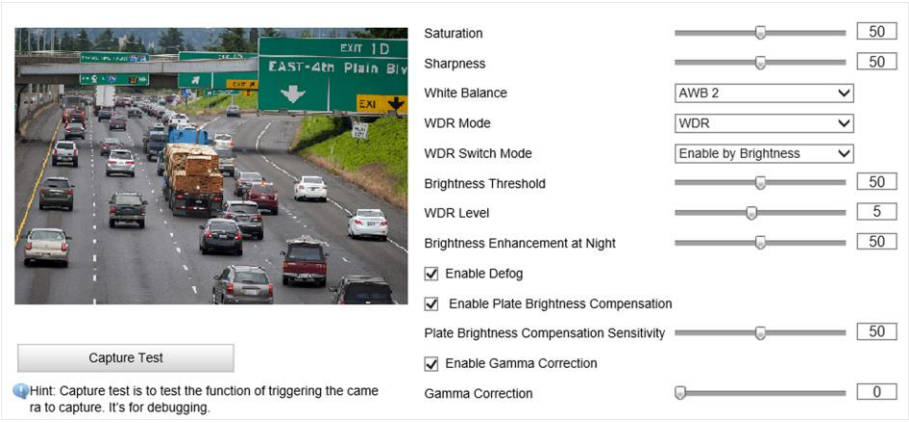


Figure 7-1 Set General Parameters

Figure 7-2 Set Video Image Parameters

2. Adjust the parameters.

Saturation

It refers to the colorfulness of the image color.

Sharpness

It refers to the edge contrast of the image.

White Balance

It is the white rendition function of the device used to adjust the color temperature according to the environment.

WDR Mode

Wide Dynamic Range (WDR) can be used when there is a high contrast of the bright area and the dark area of the scene.

Select **WDR Switch Mode** and set corresponding parameters according to your needs.

Enable

Set **WDR Level**. The higher the level is, the higher the WDR strength is.

Enable by Time

Enable WDR according to the time.

Enable by Brightness

Set **Brightness Threshold**. When the brightness reaches the threshold, WDR will be enabled.

Brightness Enhancement at Night

The scene brightness will be enhanced at night automatically.

Enable Defog

Enable defog to get a clear image in foggy days.

Enable Plate Brightness Compensation

Check it. The plate brightness compensation can be realized, and various light supplement conditions can be adapted via setting license plate expectant brightness and supplement light correction coefficient. The higher the sensitivity is, the easier this function can be enabled.

Enable Gamma Correction

The higher the gamma correction value is, the stronger the correction strength is.

Brightness

It refers to the max. brightness of the image.

Contrast

It refers to the contrast of the image. Set it to adjust the levels and permeability of the image.

Shutter

If the shutter speed is quick, the details of the moving objects can be displayed better. If the shutter speed is slow, the outline of the moving objects will be fuzzy and trailing will appear.

Gain

It refers to the upper limit value of limiting image signal amplification. It is recommended to set a high gain if the illumination is not enough, and set a low gain if the illumination is enough.

3D Noise Reduction Mode

Digital Noise Reduction (DNR) reduces the noise in the video stream.
In **Normal Mode**, the higher the **Noise Reduction Level** is, the stronger the noise will be reduced. But if it is too high, the image may become fuzzy.
In **Expert Mode**, set **Space Domain Intensity** and **Time Domain Intensity**. If the space domain intensity is too high, the outline of the image may become fuzzy and the details may lose. If the time domain intensity is too high, trailing may appear.

2D DNR

The higher the **2D DNR Level** is, the stronger the noise will be reduced. But if it is too high, the image may become fuzzy.

Enable Slow Shutter

You can enable slow shutter to increase the exposure time and raise the photosensitivity. Then the image brightness can be raised in low illumination conditions.

Video Standard

Select the video standard according to the actual power supply frequency.

7.3 Set ICR

ICR adopts mechanical IR filter to filter IR in the day to guarantee the image effect, and to remove the IR filter at night to guarantee full-spectrum rays can get through the device.

Steps

1. Go to **Configuration** → **Device Configuration** → **Image Parameters** → **ICR**.
2. Select **ICR Mode**.

Auto-Switch	Switches to ICR mode automatically at night or in dark light conditions.
Manual Switch	Select **Day/Night Mode** to switch to the day or night manually.
Scheduled Mode	Set day/night mode, start time, and end time to switch to ICR mode only during the set time period.
No Switch	Disable the ICR mode.

3. Click **Save**.

7.4 Set ROI

ROI (Region of Interest) encoding helps to assign more encoding resources to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused.

Before You Start

Please check the video encoding type. ROI is supported when the video encoding type is H.264 or H.265.

Steps

1. Go to **Configuration** → **Device Configuration** → **Encoding and Storage** → **ROI**.

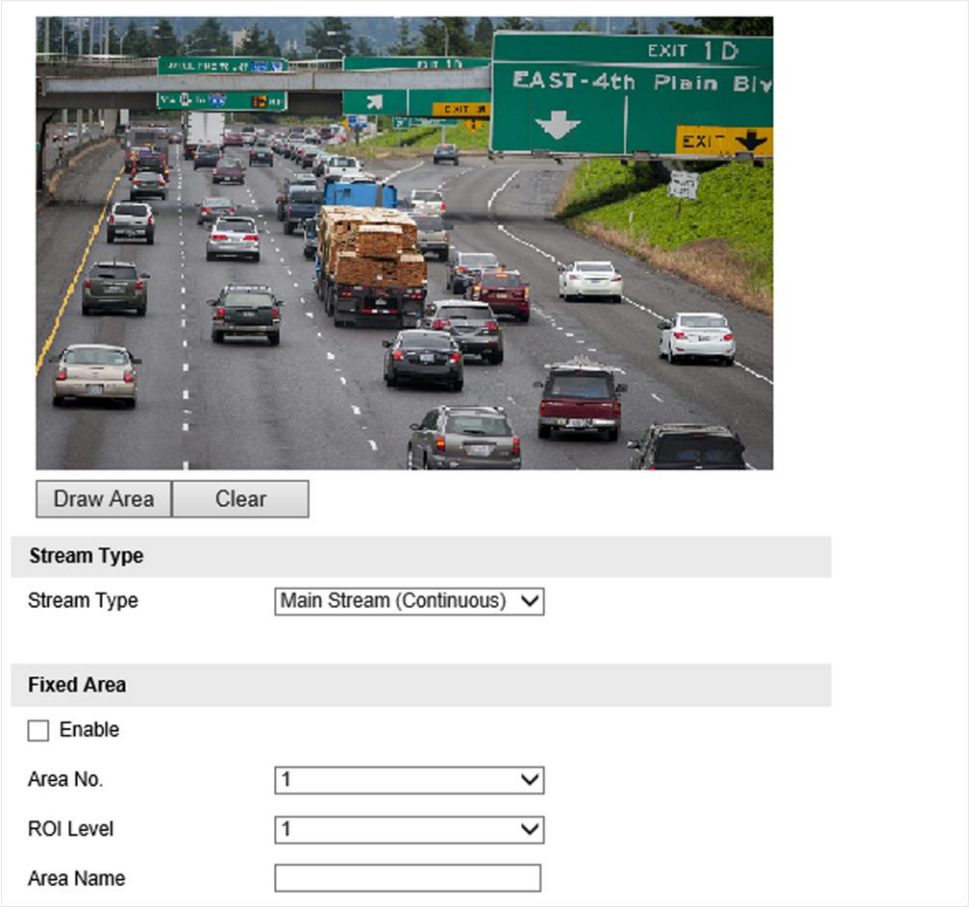


Figure 7-3 Set ROI

2. Select **Stream Type**.
3. Set ROI region.
   1) Check **Enable**.
   2) Select **Area No.**
   3) Click **Draw Area**.
   4) Drag the mouse on the live view image to draw a fixed area.
   5) Select the fixed area that needs to be adjusted and drag the mouse to adjust its position.
   6) Click **Stop Drawing**.
4. Select **Area No.** and **ROI Level** and enter **Area Name**.

Note

The higher the ROI level is, the clearer the image of the detected area is.

5. Click **Save**.
6. Optional: Select other area codes and repeat the steps above if you need to draw multiple fixed areas.

7.5 Set OSD

You can customize OSD information on the live view.

Steps

1. Go to **Configuration** → **Device Configuration** → **Text Overlay** → **OSD Settings**.

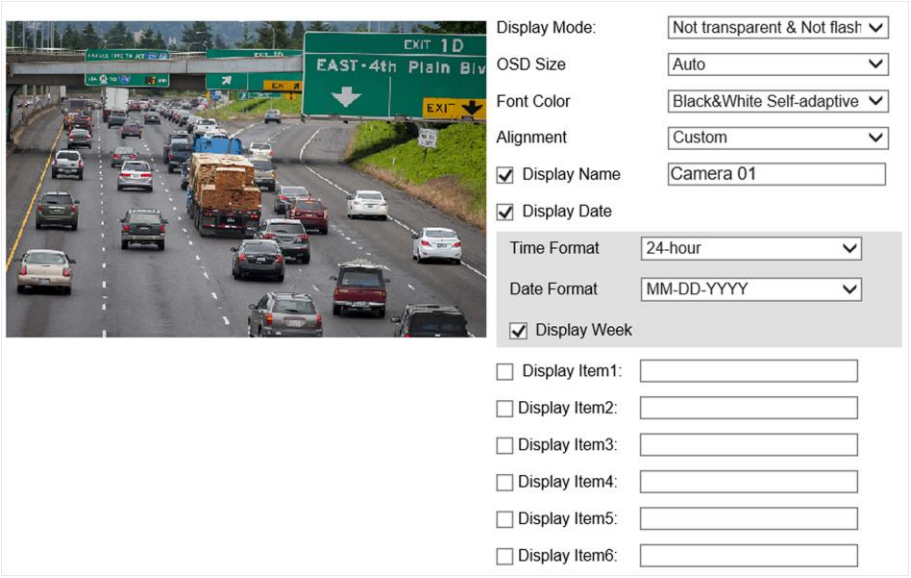


Figure 7-4 Set OSD

2. Set the display mode, size, color, etc.

Note

The supported functions vary with different models. The actual device prevails.

3. Set the display content.
   1) Check **Display Name** and enter the name.
   2) Check **Display Date**, and set the time and date format.
   3) Check **Display Week**.
4. Optional: Check the display item(s) and enter information in the text field(s).
5. Drag the red frames on the live view image to adjust the OSD positions.
6. Click **Save**.

Result

The set OSD will be displayed in live view image and recorded videos.

Chapter 8 Network Configuration

8.1 Set IP Address

IP address must be properly configured before you operate the device over network. IPv4 and IPv6 are both supported. Both versions can be configured simultaneously without conflicting to each other.

Go to **Configuration** → **Device Configuration** → **System** → **Network Interface Parameters**.

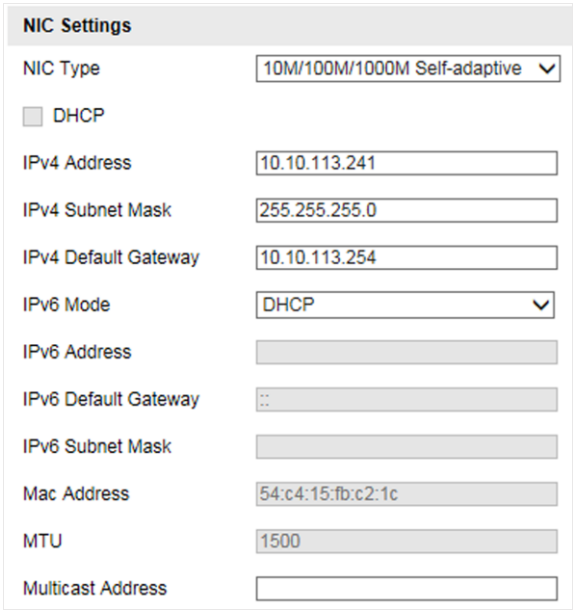


Figure 8-1 Set IP Address

NIC Type

Select a NIC (Network Interface Card) type according to your network condition.

IPv4

Two IPv4 modes are available.

DHCP

The device automatically gets the IPv4 parameters from the network if you check **DHCP**. The device IP address is changed after enabling the function. You can use SADP to get the device IP address.

Note

The network that the device is connected to should support DHCP (Dynamic Host Configuration Protocol).

Manual

You can set the device IPv4 parameters manually. Enter **IPv4 Address**, **IPv4 Subnet Mask**, and **IPv4 Default Gateway**.

IPv6

Three IPv6 modes are available.

Route Advertisement

The IPv6 address is generated by combining the route advertisement and the device Mac address.

Note

Route advertisement mode requires the support from the router that the device is connected to.

DHCP

The IPv6 address is assigned by the server, router, or gateway.

Manual

Enter **IPv6 Address**, **IPv6 Subnet Mask**, and **IPv6 Default Gateway**. Consult the network administrator for required information.

MTU

It stands for maximum transmission unit. It is the size of the largest protocol data unit that can be communicated in a single network layer transaction.
The valid value range of MTU is 1280 to 1500.

Multicast

Multicast is group communication where data transmission is addressed to a group of destination devices simultaneously. After setting the IP address of the multicast host, you can send the source data efficiently to multiple receivers.

DNS

It stands for domain name server. It is required if you need to visit the device with domain name. And it is also required for some applications (e.g., sending email). Set **Preferred DNS Server** properly if needed.

8.2 Connect to ISUP Platform

ISUP (EHome) is a platform access protocol. The device can be remotely accessed via this platform.

Before You Start

- Create the device ID on ISUP platform.
- Ensure the device can communicate with the platform normally.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **ISUP Protocol**.

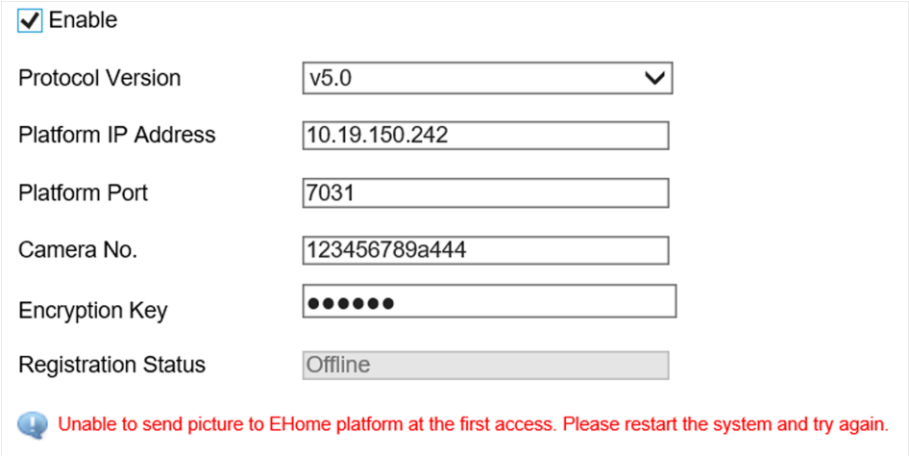


Figure 8-2 Connect to ISUP Platform

2. Check **Enable**.
3. Select **Protocol Version**.
4. Enter **Platform IP Address**, **Platform Port**, and **Camera No.**

Note

The camera No. should be the same with the added one on the ISUP platform.

5. Optional: Enter **Encryption Key** if you select **v5.0**.
6. Click **Save**.
7. Optional: View **Registration Status**.

Note

When the registration status shows online, you can add or manage the device via the platform software. Refer to its corresponding manual for details.

8.3 Set DDNS

You can use the Dynamic DNS (DDNS) for network access. The dynamic IP address of the device can be mapped to a domain name resolution server to realize the network access via domain name.

Before You Start

- Register the domain name on the DDNS server.
- Set the LAN IP address, subnet mask, gateway, and DNS server parameters. Refer to "Set IP Address" for details.
- Complete port mapping. The default port is 80, 8000, and 554.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **DDNS**.

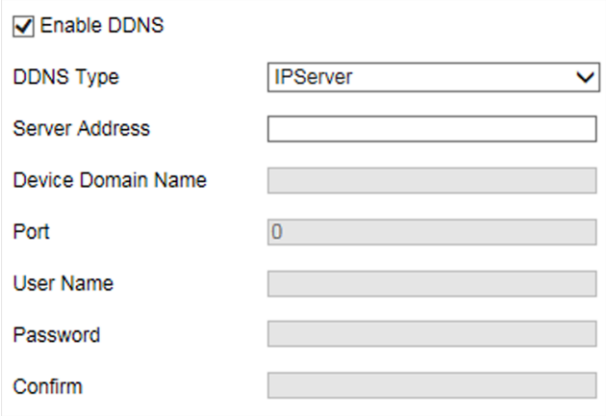


Figure 8-3 Set DDNS

2. Check **Enable DDNS**.
3. Enter the server address and other information.
4. Click **Save**.
5. Access the device.

By Browsers	Enter the domain name in the browser address bar to access the device.
By Client Software	Add domain name to the client software. Refer to the client software manual for specific adding methods.

8.4 Set IEEE 802.1X

IEEE 802.1x is a port-based network access control. It enhances the security level of the LAN/WLAN. When devices connect to the network with IEEE 802.1x standard, the authentication is needed.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **802.1x**.

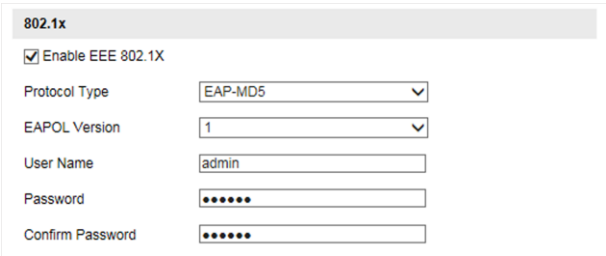


Figure 8-4 Set IEEE 802.1X

2. Check **Enable EEE 802.1X**.

3. Select **Protocol Type** and **EAPOL Version**.

   EAP-MD5

   If you use EAP-MD5, the authentication server must be configured. Register a user name and password for 802.1X in the server in advance. Enter the user name and password for authentication.

   EAPOL Version

   The EAPOL version must be identical with that of the router or the switch.

4. Enter **User Name** and **Password** registered in the server.
5. Confirm the password.
6. Click **Save**.

8.5 Set Image and Video Library

Set the interaction parameters of the device consistent with those of the image and video library platform via the image and video library (1400) protocol, and register the device on the platform. When the device generates alarm signals, the alarm information will be sent to the platform.

Steps

Note

The function varies with different models. The actual device prevails.

1. Go to **Configuration** → **Device Configuration** → **System** → **Image and Video Library**.
2. Check **Enable**.
3. Set the parameters such as the device ID, user name, password, etc.

Note

The parameters should be consistent with those on the image and video library platform.

4. Set other parameters.

   Heartbeat Cycle

   The connection time between the device and the image and video library platform.

   Max. Times of Heartbeat Timeout

   The max. times of heartbeat timeout when the device connects to the image and video library platform.
5. View **Registration Status**.
6. Set **Camera ID** of the channel.
7. Click **Save**.

8.6 Set Port

The device port can be modified when the device cannot access the network due to port conflicts.

Caution

Do not modify the default port parameters at will, otherwise the device may be inaccessible.

Go to **Configuration** → **Device Configuration** → **System** → **Port** for port settings.

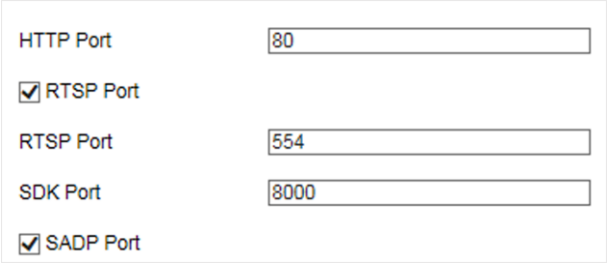


Figure 8-5 Set Port

HTTP Port

It refers to the port through which the browser accesses the device. For example, when the **HTTP Port** is modified to 81, you need to enter ***http://192.168.1.64:81*** in the browser for login.

RTSP Port

It refers to the port of real-time streaming protocol.

SDK Port

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

SADP Port

It refers to the port through which the SADP software searches the device.

Chapter 9 Serial Port Configuration

9.1 Set RS-485

Set RS-485 parameters if the device has been connected to a vehicle detector or other RS-485 devices.

Before You Start

The corresponding device has been connected via the RS-485 serial port.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Serial Port Parameters**.

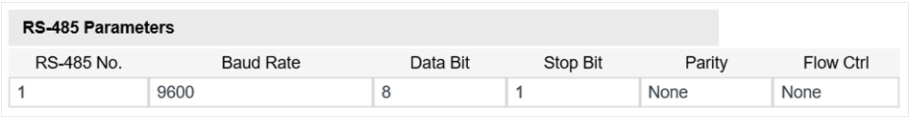


Figure 9-1 Set RS-485

2. Set **Baud Rate**, **Data Bit**, **Stop Bit**, etc.

Note

The parameters should be same with those of the connected device.

3. Click **Save**.

9.2 Set RS-232

Set RS-232 parameters if you need to debug the device via RS-232 serial port, or peripheral devices have been connected.

Before You Start

The corresponding device has been connected via the RS-232 serial port.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Serial Port Parameters**.
2. Click **Advanced Settings**.

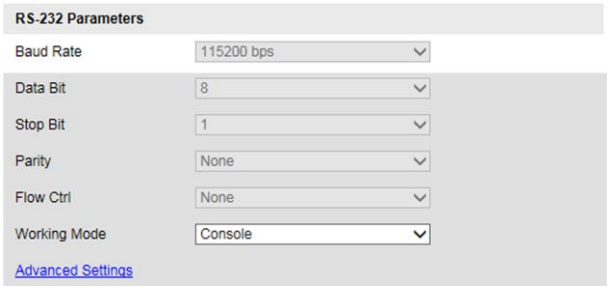


Figure 9-2 Set RS-232

3. Set **Baud Rate**, **Data Bit**, **Stop Bit**, etc.

Note

The parameters should be same with those of the connected device.

4. Select **Working Mode**.

Console

Select it when you need to debug the device via RS-232 serial port.

Transparent Channel

Select it, and the network command can be transmitted to RS-232 control command via the RS-232 serial port.

Narrow Band Transmission

Reserved.

5. Click **Save**.

Chapter 10 Exception Alarm

Set exception alarm when the network is disconnected, the IP address is conflicted, etc.

Steps

1. Go to **Configuration** → **Device Configuration** → **Events** → **Exception Event**.

Figure 10-1 Set Exception Alarm

2. Select the exception type(s) and the linkage method.
3. Click **Save**.

Chapter 11 Safety Management

11.1 Manage User

The administrator can add, modify, or delete other accounts, and grant different permissions to different user levels.

Steps

1. Go to **Configuration** → **Device Configuration** → **User Management**.
2. Add a user.
   1) Click **Add**.
   2) Enter **User Name** and select **Level**.
   3) Enter **Admin Password**, **Password**, and confirm the password.

   Caution

   To increase security of using the device on the network, please change the password of your account regularly. Changing the password every 3 months is recommended. If the device is used in high-risk environment, it is recommended that the password should be changed every month or week.

   4) Assign remote permission to users based on needs.

   User

   Users can be assigned permission of viewing live video and changing their own passwords, but no permission for other operations.

   Operator

   Operators can be assigned all permission except for operations on the administrator and creating accounts.

   5) Click **OK**.

   Note

   The administrator can add up to 31 user accounts.

3. You can do the following operations.
   – Select a user and click **Modify** to change the password and permission.
   – Select a user and click **Delete** to delete the user.

11.2 Enable User Lock

To raise the data security, you are recommended to lock the current IP address.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Service**.
2. Check **Enable User Lock**.
3. Click **Save**.

Result

When the times you entered incorrect passwords have reached the limit, the current IP address will be locked automatically.

11.3 Set HTTPS

11.3.1 Create and Install Self-signed Certificate

HTTPS is a network protocol that enables encrypted transmission and identity authentication, which improves the security of remote access.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **HTTPS**.
2. Select **Create Self-Signed Certificate**.
3. Click **Create**.
4. Follow the prompt to enter **Country/Region**, **IP Address**, **Valid Date (Day)**, and other parameters.
5. Click **OK**.

Result

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

11.3.2 Install Authorized Certificate

If the demand for external access security is high, you can create and install authorized certificate via HTTPS protocol to ensure the data transmission security.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **HTTPS**.
2. Select **Create the certificate request first and continue the installation.**
3. Click **Create**.
4. Follow the prompt to enter **Country/Region**, **IP Address**, and other parameters.
5. Click **Download** to download the certificate request and submit it to the trusted authority for signature.

6. Import certificate to the device.
   - Select **Signed certificate is available. Start the installation directly.** Click **Browse** and **Install** to import the certificate to the device.
   - Select **Create the certificate request first and continue the installation.** Click **Browse** and **Install** to import the certificate to the device.
7. Click **Save**.

11.4 Set SSH

To raise network security, disable SSH service. The configuration is only used to debug the device for the professionals.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Service**.
2. Uncheck **Enable SSH Service**.
3. Click **Save**.

Chapter 12 Maintenance

12.1 View Device Information

Basic Information and Algorithms Library Version

Go to **Configuration** → **Device Configuration** → **System** → **Device Information** to view the basic information and algorithms library version of the device.
You can edit **Device Name** and **Device No.** The device No. is used to control the device. It is recommended to reserve the default value.

Device Status

Go to **Configuration** → **Device Status** to view the device status, Wi-Fi status, Wi-Fi AP status, etc.

12.2 Log

12.2.1 Enable System Log Service

The security audit logs refer to the security operation logs. You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events. Security audit logs can be saved on device internal storage. The log will be saved every half hour after device booting. Due to limited storage space, you are recommended to save the logs on a log server.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Service**.
2. Check **Enable Syslog Service**.
3. Enter **IP Address** and **Port** of the log server.
4. Click **Save**.

Result

The device will upload the security audit logs to the log server regularly.

12.2.2 Search Log

Log helps to locate and troubleshoot problems.

Steps

1. Click **Log**.
2. Set search conditions.

3. Click **Search**.
   The matched log files will be displayed on the log list.
4. Optional: Click **Save Log** to save the log files to your computer.

12.3 Upgrade

Upgrade the system when you need to update the device version.

Before You Start

Prepare the upgrade file.

Steps

1. Go to **Configuration** → **Device Configuration** → **System Maintenance** → **Upgrade**.
2. Click **Browse** to select the upgrade file.
3. Click **Upgrade**.
4. Click **OK** in the popup window.

Note

The upgrade process will take 1 to 10 minutes. Do not cut off the power supply.

Result

The device will reboot automatically after upgrade.

12.4 Reboot

When the device needs to be rebooted, reboot it via the software instead of cutting off the power directly.

Steps

1. Go to **Configuration** → **Device Configuration** → **System Maintenance** → **Reboot**.
2. Click **Reboot**.
3. Click **OK** to reboot the device.

12.5 Restore Parameters

When the device is abnormal caused by the incorrect set parameters, you can restore the parameters.

Steps

1. Go to **Configuration** → **Device Configuration** → **System Maintenance** → **Default**.
2. Select the restoration mode.
   – Click **Restore** to restore the parameters except the IP parameters and user parameters to the

default settings.

– Click **Restore Factory Settings** to restore all the parameters to the factory settings.

3. Click **OK**.

12.6 Synchronize Time

Synchronize the device time when it is inconsistent with the actual time.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **Time Settings**.
2. Select **Time Zone**.
3. Select **Time Sync. Mode**.

NTP Time Sync.

Select it to synchronize the device time with that of the NTP server. Set **Server Address**, **NTP Port**, and **Interval**. Click **NTP Test** to test if the connection between the device and the server is normal.

Manual Time Sync.

Select it to synchronize the device time with that of the computer. Set time manually, or check **Sync. with computer time**.

SDK

If the remote host has been set for the device, select it to synchronize time via the remote host.

ONVIF

Select it to synchronize time via the third-party device.

No

Select it to disable time synchronization.

All

Select it, and you can select any mode above.

Note

The time synchronization modes vary with different models. The actual device prevails.

4. Click **Save**.

12.7 Set DST

If the region where the device is located adopts Daylight Saving Time (DST), you can set this function.

Steps

1. Go to **Configuration** → **Device Configuration** → **System** → **DST**.
2. Check **Enable DST**.
3. Set **Start Time**, **End Time**, and **DST Bias**.
4. Click **Save**.

12.8 Debug

Note

The debug configurations below are only provided to debug the device by the professionals.

12.8.1 Enable Information Overlay

You can overlay the algorithm POS information and positioning frames on the captured pictures or playback images.

Steps

1. Go to **Configuration** → **Device Configuration** → **Advanced Settings** → **System Service**.
2. Check the debug information according to your needs.

   Enable Algorithm POS Information Debug

   The algorithm POS information will be overlaid on the playback image when you play back the video with the dedicated tool.

   Enable Positioning Frame Debug

   The positioning frames of vehicle bodies and license plates will be overlaid on the captured pictures.
3. Click **Save**.

12.8.2 Set Capture Filtering

Set the capture filtering information. The filtered conditions will not be captured.

Steps

1. Go to **Configuration** → **Device Configuration** → **Advanced Settings** → **Vehicle Capture and Recognition Service**.
2. Check the conditions to be filtered.

Not Capture No Plate Vehicle

The vehicles without license plates will not be captured.

Filter Checkpoint Capture of Same Vehicle

It is used to debug the device with the same vehicle. When the same vehicle is triggered many times during a short period in the scene, the checkpoint pictures of the vehicle will not be captured.

Note

The supported filtering information varies with different models. The actual device prevails.

3. Optional: Set the custom lane No. to upload.
   1) Check **Enable Custom Lane No.**
   2) Enter the lane No. to upload.
4. Click **Save**.

12.8.3 Set Image Format

You can enable smartJPEG which can save the storage space without influencing the resolution.

Steps

1. Go to **Configuration** → **Device Configuration** → **Advanced Settings** → **Image Service**.
2. Check **smartJPEG**.
3. Click **Save**.

12.9 Export Parameters

You can export the parameters of one device, and import them to another device to set the two devices with the same parameters.

Steps

1. Go to **Configuration** → **Device Configuration** → **System Maintenance** → **Export Parameters**.
2. Click **Export Parameters**.
3. Set a password, and click **OK**.

Note

The password is used for importing the configuration file of the current device to other devices.

4. Select the saving path, and enter the file name.
5. Click **Save**.

12.10 Import Configuration File

Import the configuration file of another device to the current device to set the same parameters.

Before You Start

Save the configuration file to the computer.

Steps

Caution

Importing configuration file is only available to the devices of the same model and same version.

1. Go to **Configuration** → **Device Configuration** → **System Maintenance** → **Import Config. File**.
2. Select **Importing Method**.

Note

If you select **Import Part**, check the parameters to be imported.

3. Click **Browse** to select the configuration file.
4. Enter the password which is set when the configuration file is exported, and click **OK**.
5. Click **Import**.
6. Click **OK** on the popup window..

Result

The parameters will be imported, and the device will reboot.

12.11 Export Violation Type File

You can export the violation type file to check whether the vehicle has illegal types, etc.

Steps

Note

Export violation type file function vary with different models, please refer to the actual product.

1. Go to **Configuration** → **Device Configuration** → **System Maintenance**.
2. Click **Export Violation Type File**.
3. Select the saving path and enter the file name.
4. Click **Save**.

12.12 Export Debug File

The technicians can export the debug file to troubleshoot and maintain the device.

Steps

1. Go to **Configuration** → **Device Configuration** → **System Maintenance** → **Export Debug File**.
2. Click **Export Debug**.
3. Select the saving path, and enter the file name.
4. Click **Save**.

A. Communication Matrix and Device Command

Scan the QR code below to get the communication matrix of the device.

Scan the QR code below to get the device command.


See Far, Go Further