HIKVISION

Intelligent Monitoring (iDS-TCM403)

Installation Guidance

Chapter 1 Installation

1.1 System Overview

1.1.1 System Design and Deployment

The smart surveillance system is composed of the three main sub-system,including front end, network transmission and back-end.

Normally we install bullet camera and continuous light on the side of the road.

Whenever a vehicle passes through, the system will capture a photo and automatically transfer the data and picture to IVMS.
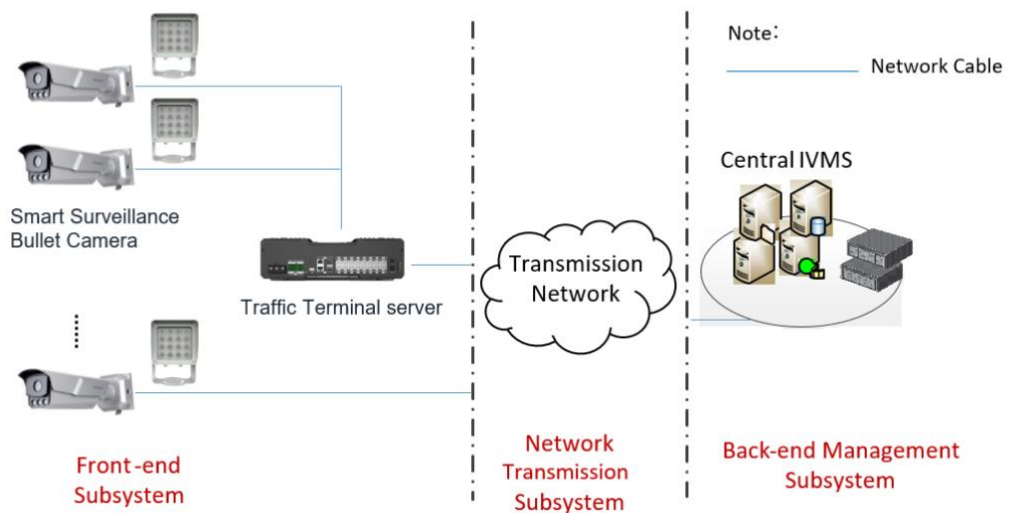

Figure 1-1   System design and deployment

1.2 Site survey

1.2.1 Construction Condition for Installation

IF you want to do license plate recognition,we suggest that the following situations can be constructed.The entrance-exit of the City(town), the necessary road between the cities, High level roads or the connecting roads between main roads . Avoid queuing, mixed traffic, illegal occupation, bend, steep roads, end roads, etc.
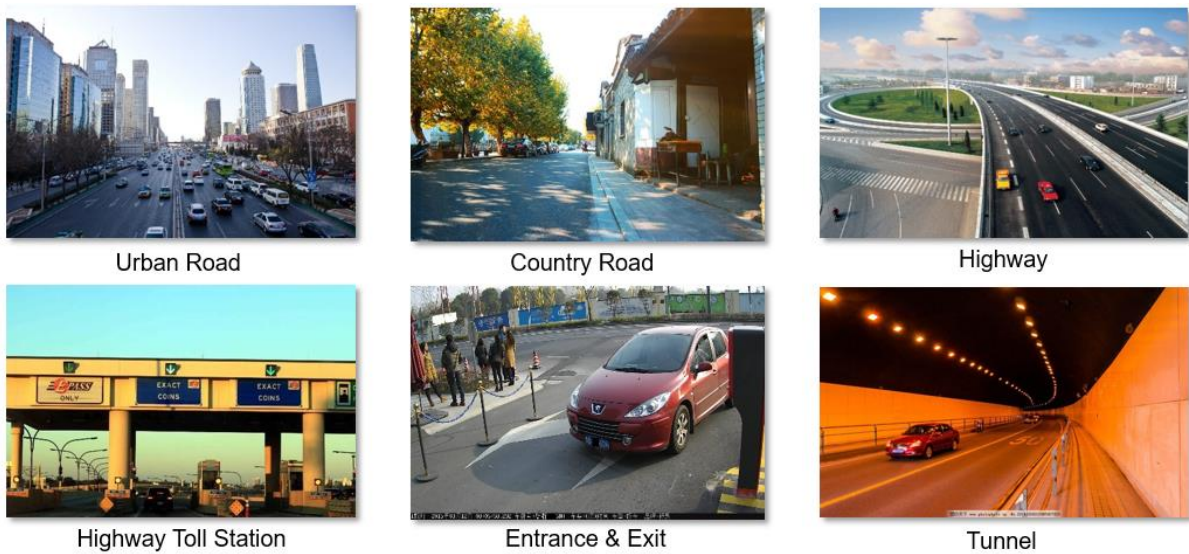

Urban Road   Country Road   Highway

Highway Toll Station   Entrance & Exit   Tunnel

Figure 1-2   Condition for Installation

1.2.2 Site selection guide

1.There are no intersections, traffic lights, many crossing pedestrians or traffic jams in 200 meters.

2.The lanes should be straight.

3.Capture distance is between 20 and 25 meters. Camera live view should be kept clear without any shelter.

D≥200m
mid
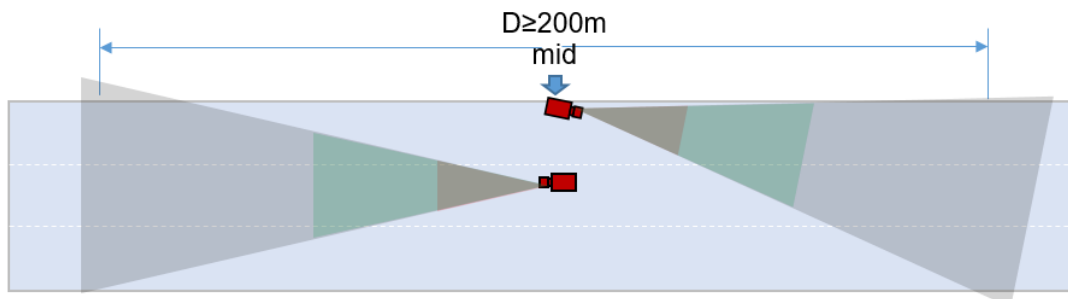
1.3 installation

1.3.1 Center Mounting (Recommended)

Middle installation is able to provide the most ideal condition. The installation guidance is as follow.

I. Install the camera at the middle position of the lanes. Then adjust vertical angle to an appropriate view. The referenced distance of the view is about 80~100 m. Finally, adjust the angel of rotation to make sure all the lanes are vertical in the view.

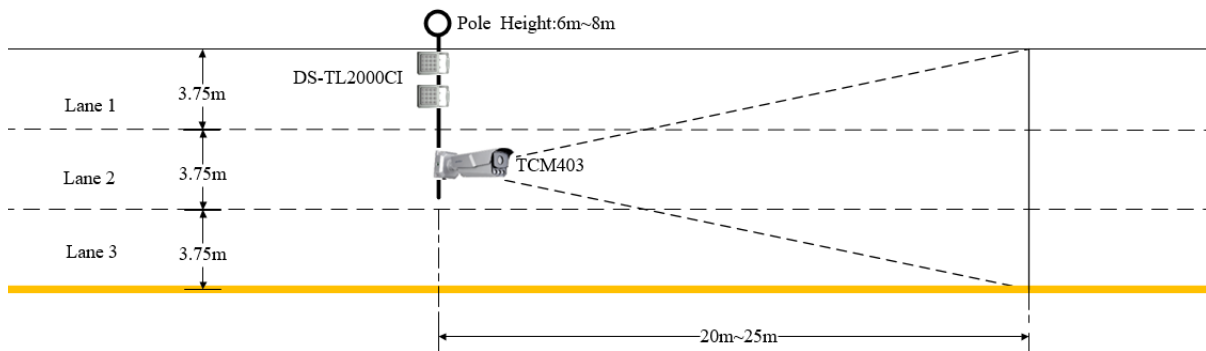II. The camera supports vehicle counting no matter it is detecting the head or the tail of vehicle.

Figure 1-3   Middle installation

1.3.2 Side Mounting

Generally, it is not cost-efficient or even allowed to build an infrastructure facility like gantry. The provided installation condition might be unpredictable such as utilizing lamppost or traffic light pole. So we also offer a suggestion of road side installation in compliance with the basic principle.

Mount the camera on the lamppost or pole beside the road. Then adjust vertical angle to an appropriate view. The referenced distance of the view is about 80~100 m.
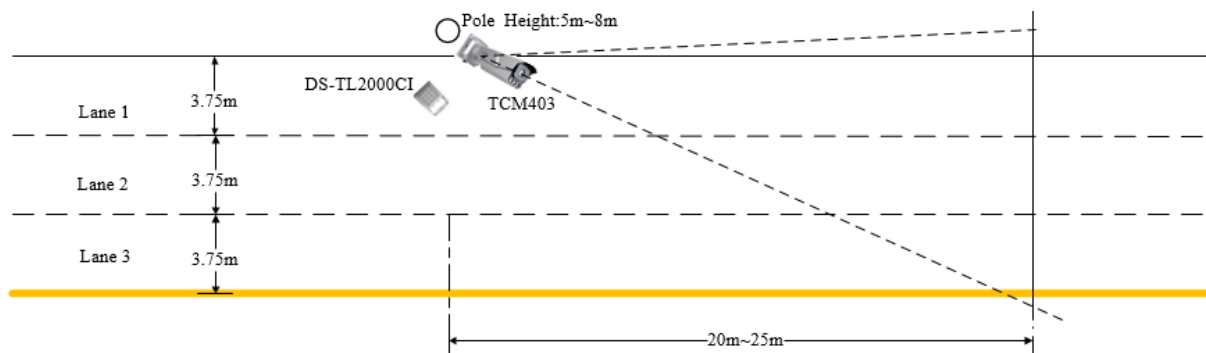

Figure 1-4   Side installation

1.3.3 Angle Requirement

Regardless of how you choose to install each camera,you should keep installation specifications meet camera performance requirements.The drop angle is no more then 30°,the horizontal angle is no more then 30°,if the actual installation can't meet it,the camera's performance of license plate recognition is greatly reduced.
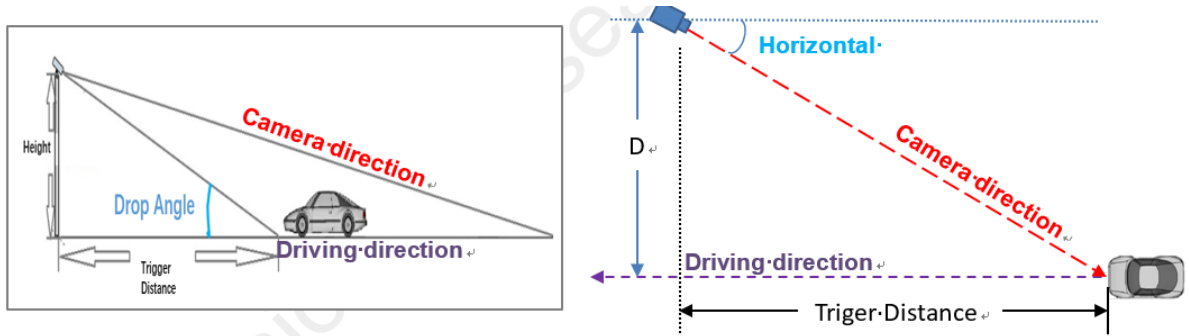
Figure 1-5   Vertical&Horizontal Angle Requirement

Table 1   Angle Requirement

No.	Angle Requirement	location	Triger Distance
1	LPR: Front , Horizontal Angle < 30°	D no more than12m	20m
2		D no more than15m	equirement25m
3		D no more than17m	30m
4	LPR: Front , Vertical Angle < 30°	Height=5-6m	≥12m
5		Height=7m	≥15m
6		Height=8m	≥18m

1.3.4 Pixel check

Standard license plate character height is 25-30 pixels, motorcycle characters & other characters to be recognized are> 16 pixels; The upper and lower edges of the license plate should be as horizontal as possible, the left and right edges should be as vertical as possible, and the tilt angle should be controlled within 5 degrees.
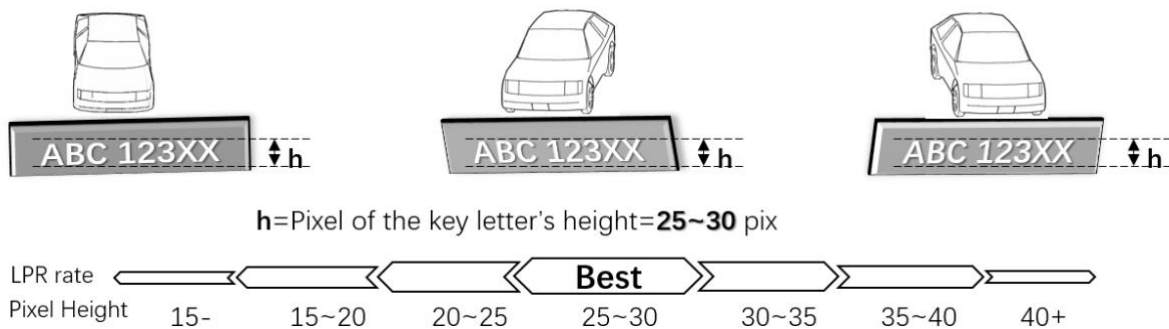
h=Pixel of the key letter's height=**25~30** pix

LPR rate					Best			
Pixel Height	15-	15~20	20~25	25~30		30~35	35~40	40+

Figure 1-6   Pixel check

Notes：Capture is clear and focus to the plate ?Angle of the view is OK ?Plate level is OK ? The height of the plate letter is OK ?

1.4 System Wiring

1.4.1 Wiring Topology

The correct system wiring guide helps you to implement the safety of the entire system and ensure the normal running of the entire system.
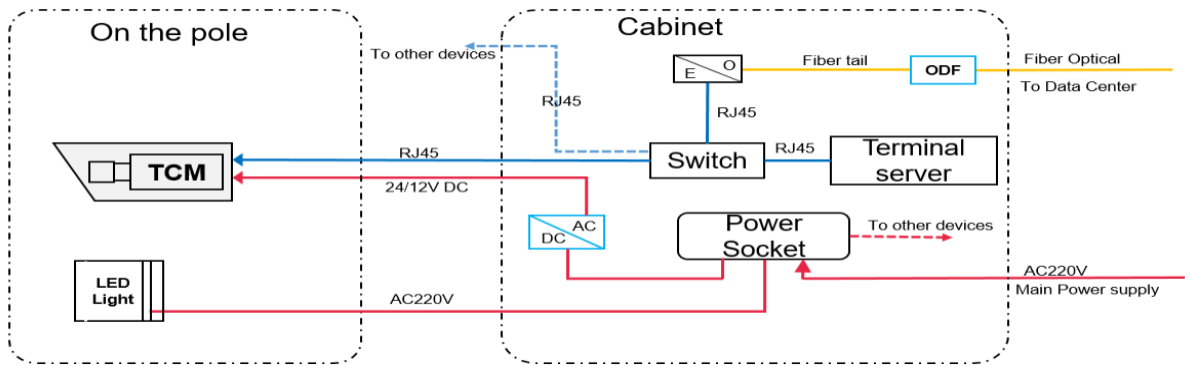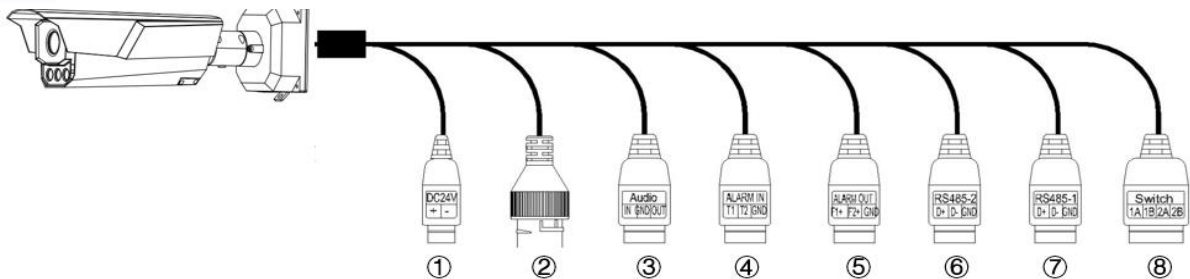

Figure 1-7   Wiring topology

1.4.2 Camare interfaces

Bellow is a description of each interface of the camera,A brief introduction from serial numbers 1 to 8 ：
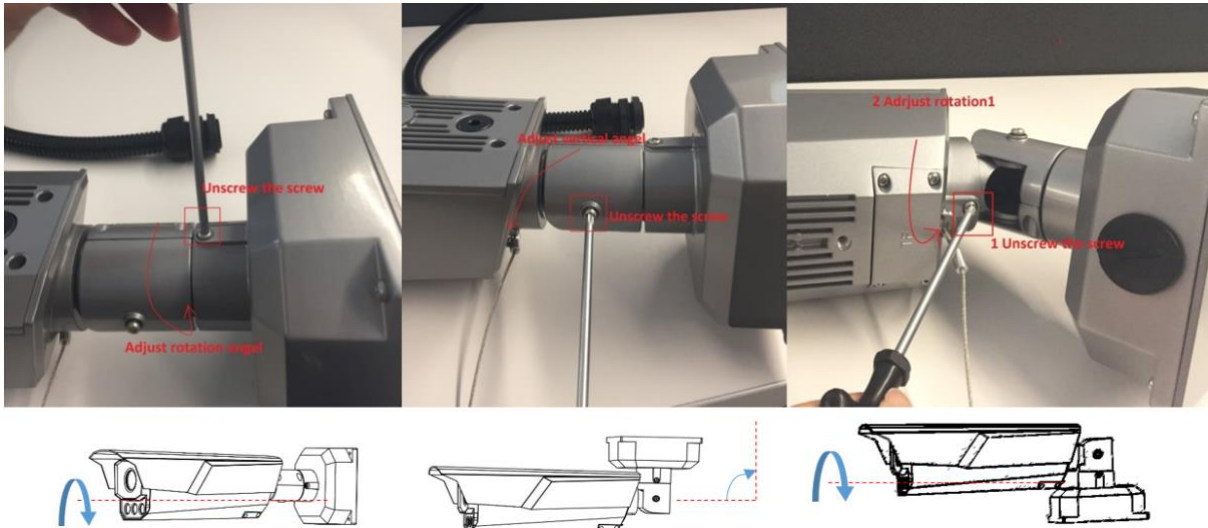

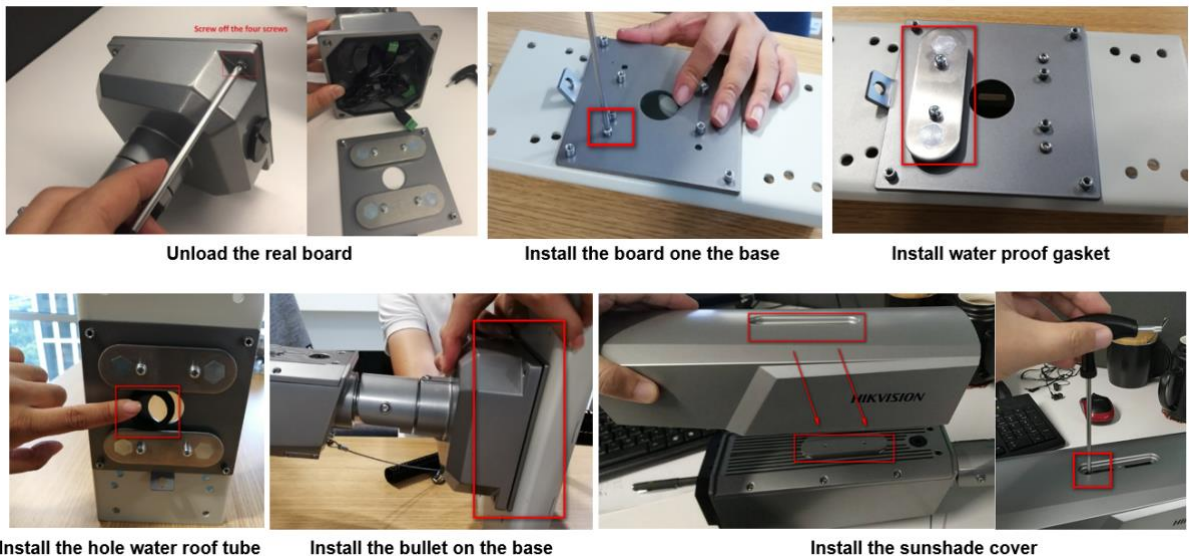| NO	Interface	Description
1	Power	DC24V 1A or DC12V 1.5A+
2	Lan	RJ45
3	Audio	IN ,GND,OUT
4	Alarm in	T1,T2,GND
5	Alarm out	F1,F2,GND
6	RS485-1	D+,D-,GND
7	RS485-2	D+,D-,GND
8	Switch	1A 1B; 2A 2B

1.5 Installation Diagram

1.5.1 Rotation Adjustment

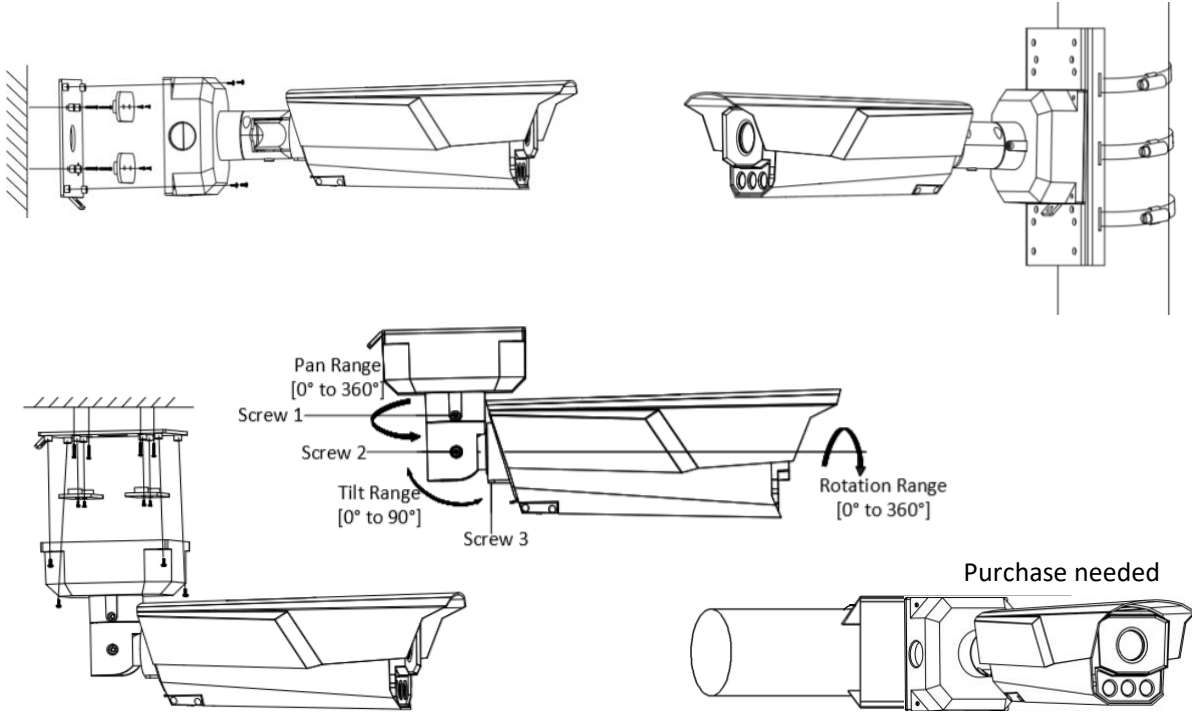You can refer to the following illustration for adjusting the installation mode:

1.5.2 Installation with Base Bracket

You can refer to the following illustration for base installation:

Unload the real board   Install the board one the base   Install water proof gasket

Install the hole water roof tube   Install the bullet on the base   Install the sunshade cover

1.5.3 Mount the camera any way

You can refer to the following illustration for actual installation:

Pan Range [0° to 360°]
Screw 1
Screw 2
Tilt Range [0° to 90°]
Screw 3
Rotation Range [0° to 360°]

Purchase needed

Chapter 2 Configuration

2.1 Device Activation

Steps:

1. Install the SADP software in the attached CD or downloaded from the official website.
2. Run the software.

    SADP will automatically search all online devices in LAN. The results are displayed in sheet, with device type, IP address, security status, device serial No. and many other information.
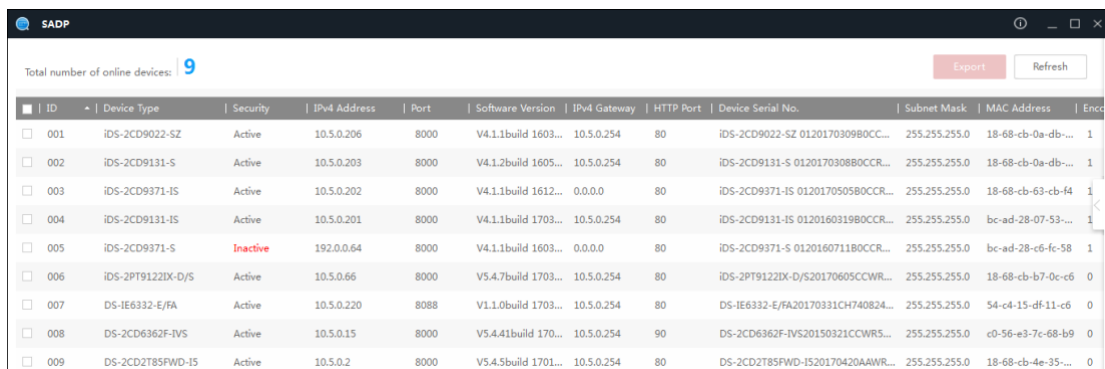
Figure 2-1   SADP Search Interface

3. Check the capture camera to be activated to pop up the **Activate the Device** window on the right.
4. Set capture camera password in the popup window.
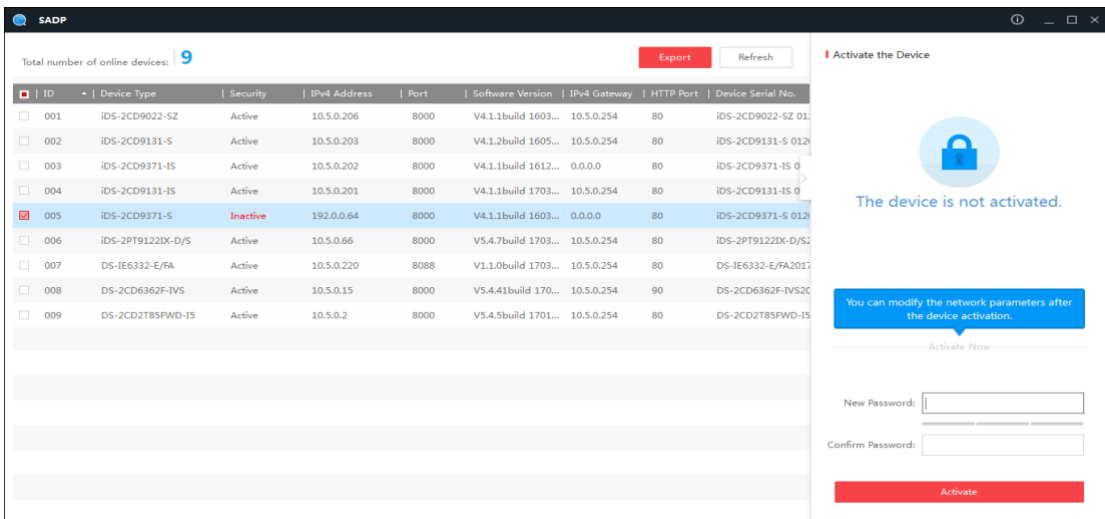5. Click **Activate** to complete activation

Figure 2-2   Activate the Capture Camera

6. Check the activated camera to pop up the **Modify Network Parameters** window on the right.
7. Enter camera IP address, subnet mask and admin password.
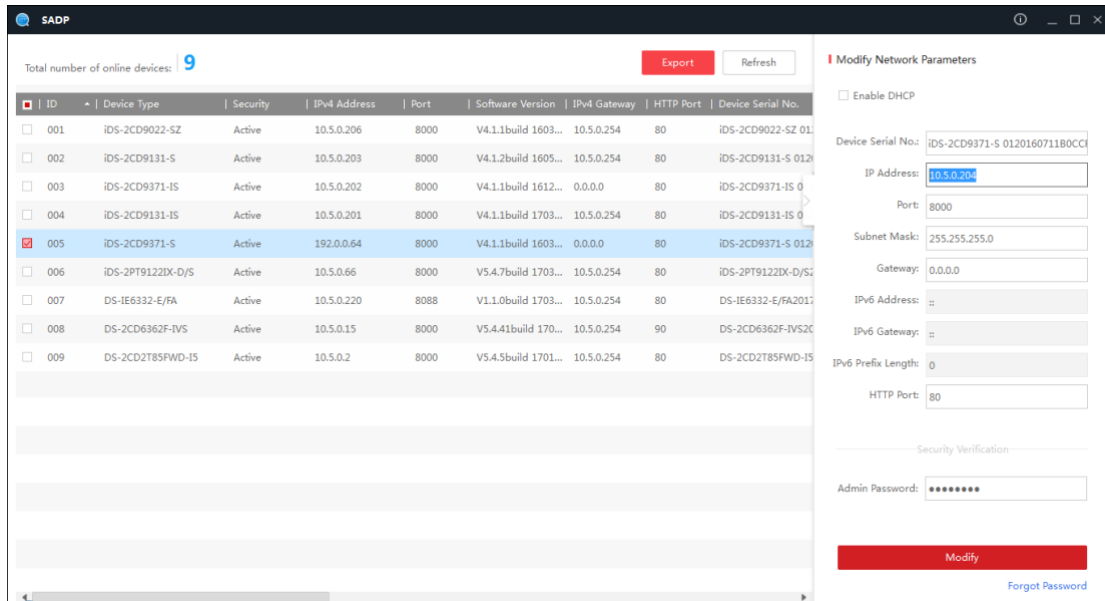8. Click **Modify** to finish IP settings.

Figure 2-3Modify Camera IP Address

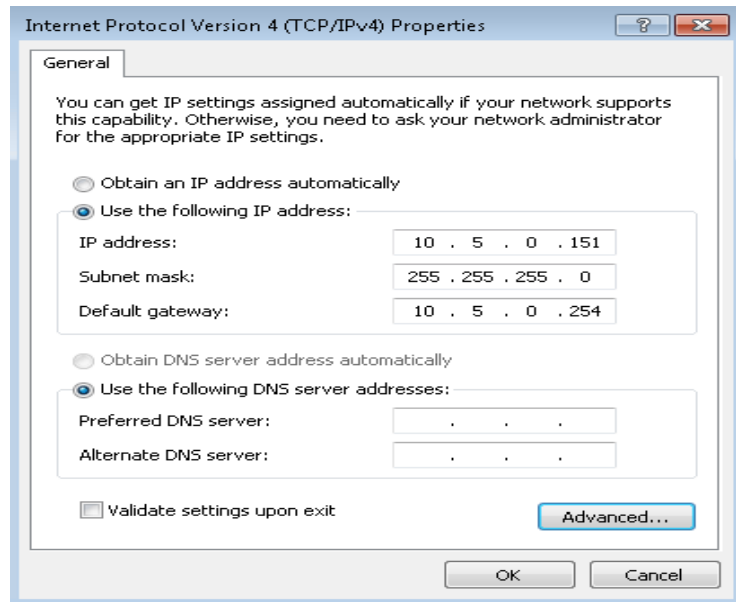9.   Modify the computer IP address to be in the same network segment as the camera.

Figure 2-4Modify Computer IP Address

10. Open Chrome or IE browser to connect the camera and enter password to login.
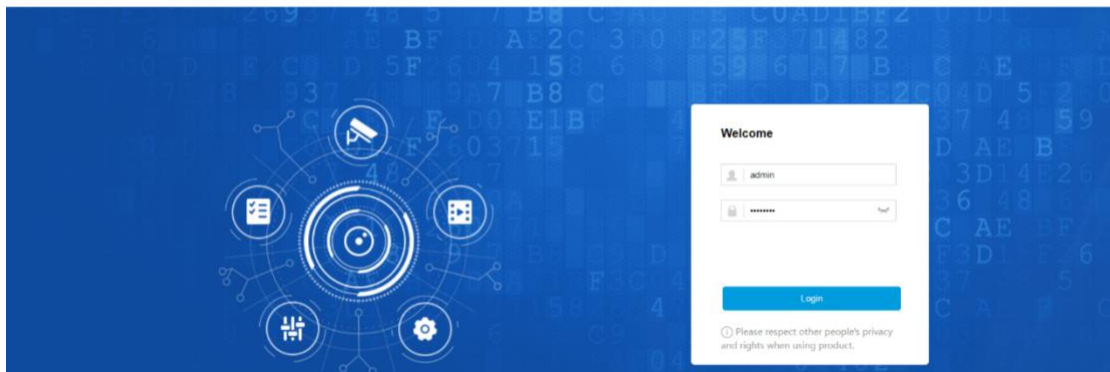

Figure 2-5   Log In

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2.2 Checking Firmware Version

Steps:

1. Go to **Configuration > System > System settings > Basic information**
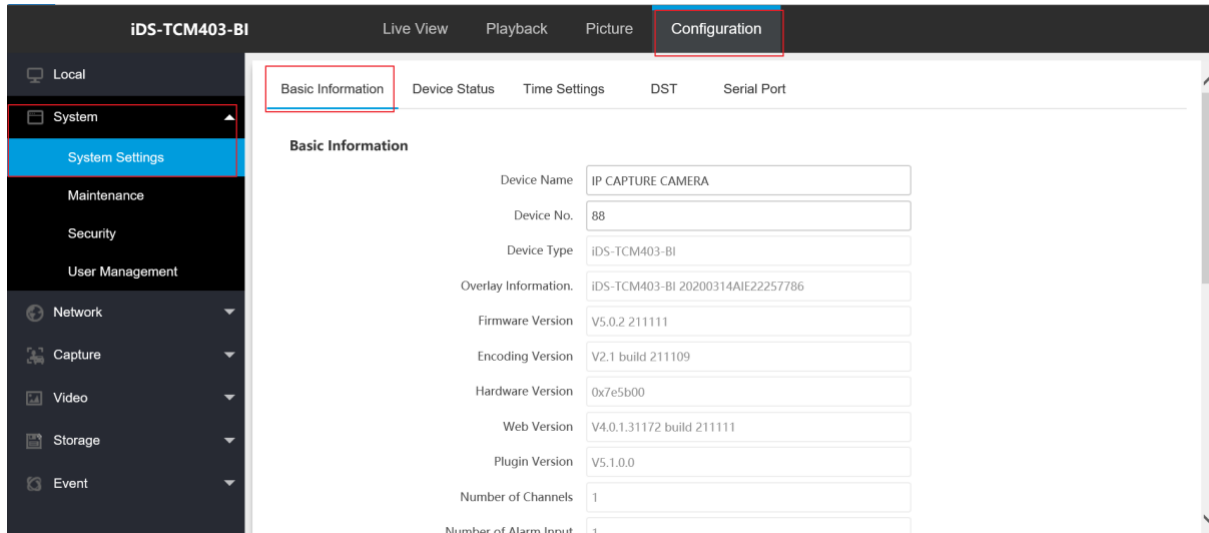2. Check the information in **Firmware Version**.

Figure 2-6 check Firmware Version

2.3 Upgrading Program and Restoring Default Settings

.*Steps:*

Go to **Configuration > Maintenance.**

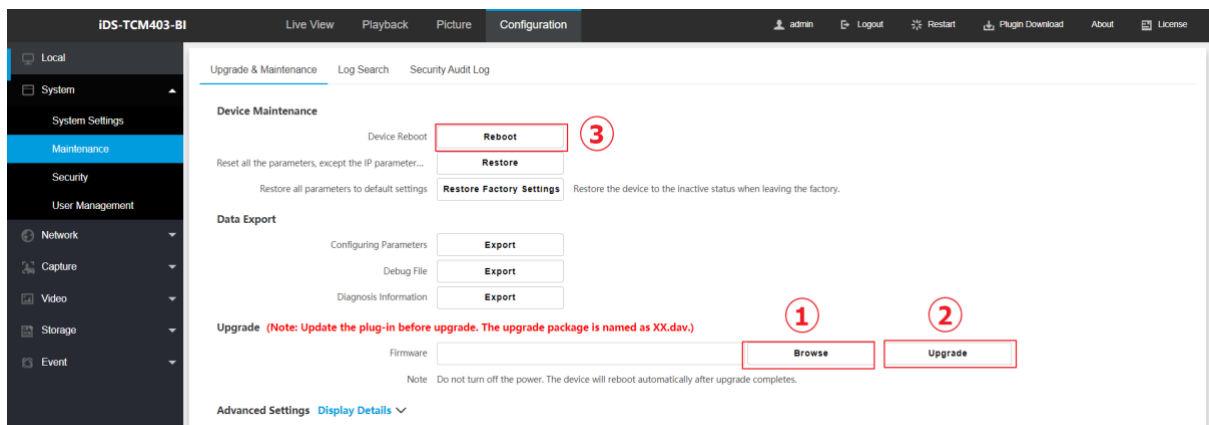1. Choose Firmware.
2. Click Upgrade.
3. Reboot the camera.

Figure 2-7 Upgrade

2.4 Modifying Time Zone

Steps:

1. Go to **Configuration > System Settings > Time Settings.**
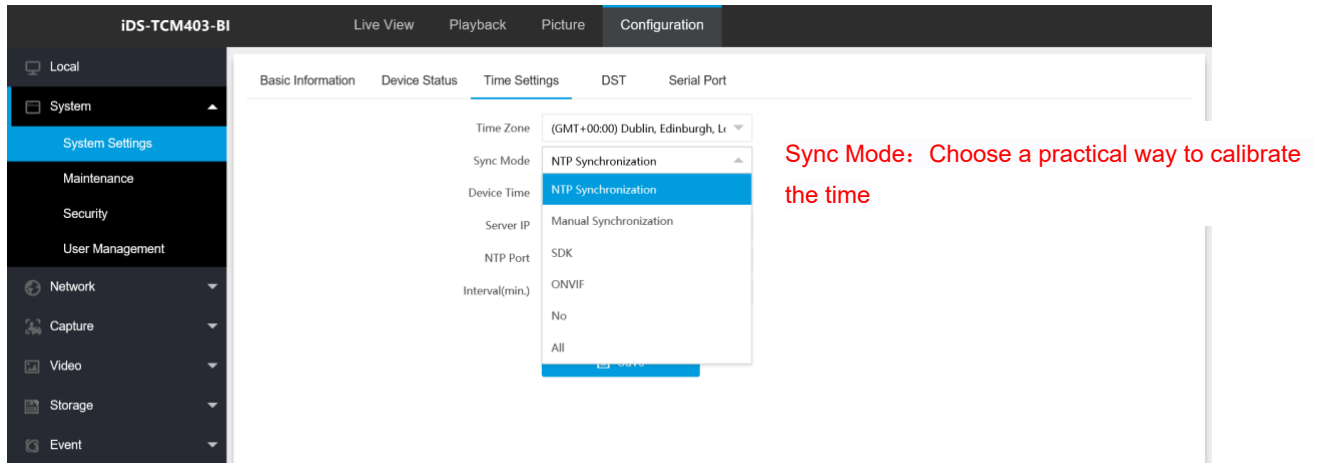2. Select **Time Zone**.
3. Click **Save**.

Figure 2-8 Modif Time Zone

2.5 Configuring Application Mode Parameter

2.5.1 Set Smart Monitoring Capture

Steps:

1. Go to **Configuration > Capure > Application Mode.**
2. Set **Smart Mode**
3. Set **Capture Type**.

   Motor Vehicle, Non-Motor Vehicle, and Pedestrian

   The motor vehicles, non-motor vehicles, and pedestrians in the scene will be recognized and captured.

   Motor Vehicle

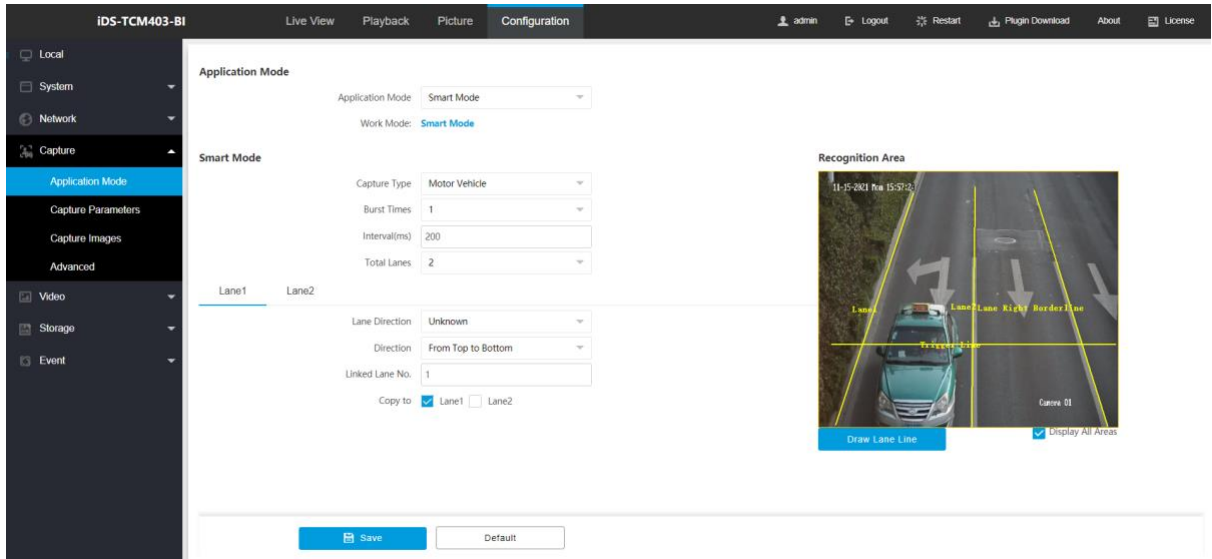   Only the motor vehicles in the scene will be recognized and captured.

Figure 2-9 Smart Mode

Draw lane lines.

1) Click **Draw Lane Line**.

2) Select the default lane lines, trigger line, 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.

3) Optional: Click **Redraw Lane Line** to redraw the lines.

4) Click **OK**.

It is recommended to draw the trigger line at the position which is 1/3 to 1/4 of the lane line. The standard license plate character height should be 25-30 pixels.
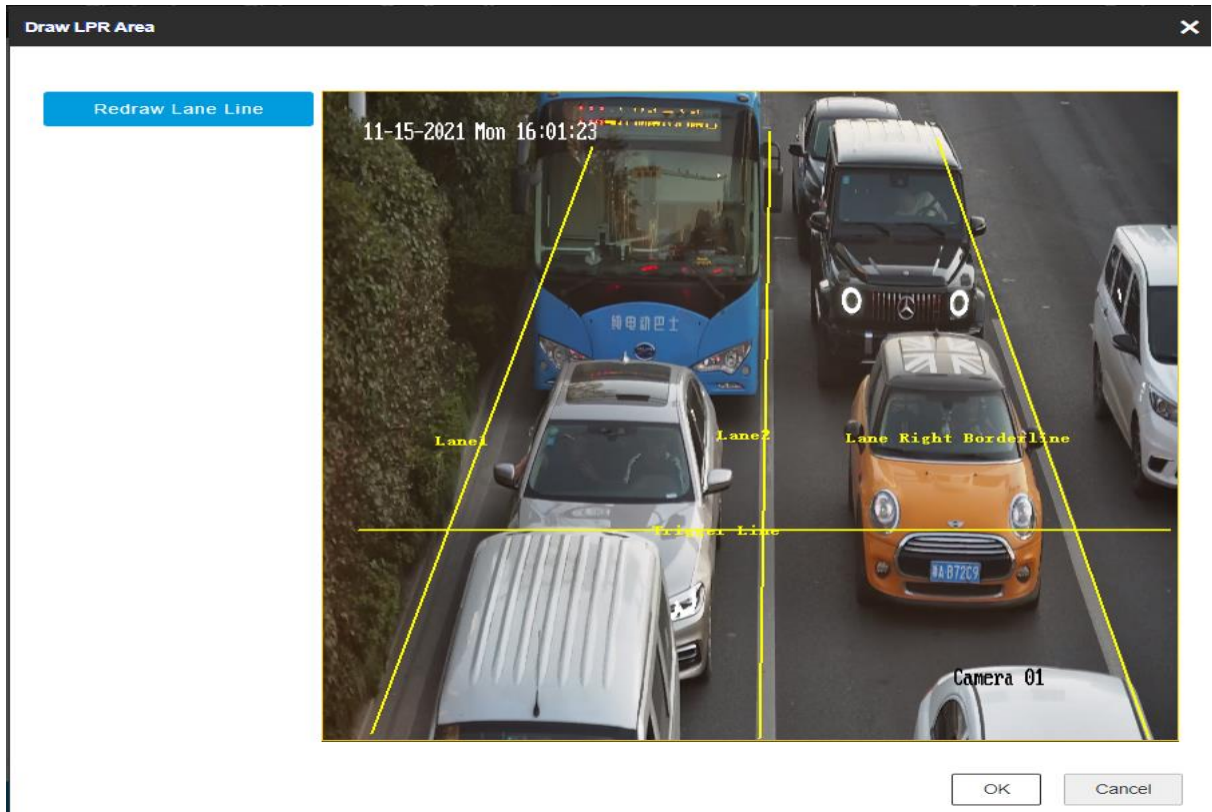

Figure 2-10 Draw lane lines.

2.5.2 Set License Plate Recognition System

IF you want to trigger capture of the passing vehicles and recognize the license plate numbers, set license plate recognition system capture.Steps

1. Go to **Configuration > Capture > Application Mode**.
2. Select **Application Mode** as **License Plate Recognition System**.

Application Mode

Application Mode	License Plate Recognition System ▼
Work Mode:	**License Plate Recognition System**

License Plate Recognition System Mode

Trigger Type	Video Detection ▼
Picture Type	Scene Picture ▼
Capture Type	Strobe Light Mode ▼
Total Lanes	1 ▼

Lane1

Lane Direction	Unknown ▼
Linked Lane No.	1

Figure 2-11 License Plate Recognition System.

3.   Select **Trigger Type**.

Video Detection

The passing vehicles will be recognized via videos. The capture mode is recommended as **Strobe Light Mode**.

I/O Coil

Select it when the device has been connected to I/O signal.

4.   Select **Picture Type**.

Scene Picture

Only one passing vehicle picture will be output.

Scene Picture + Close-up Picture

One passing vehicle picture and one close-up picture will be output.

2.6 Configuring Capture Parameters

Steps:

1. Go to **Configuration > Capture Parameters > License Parameters**;
2. Select **Country/Region** according to fact,select **Forward** or **Backward** according to real vehicle direction.
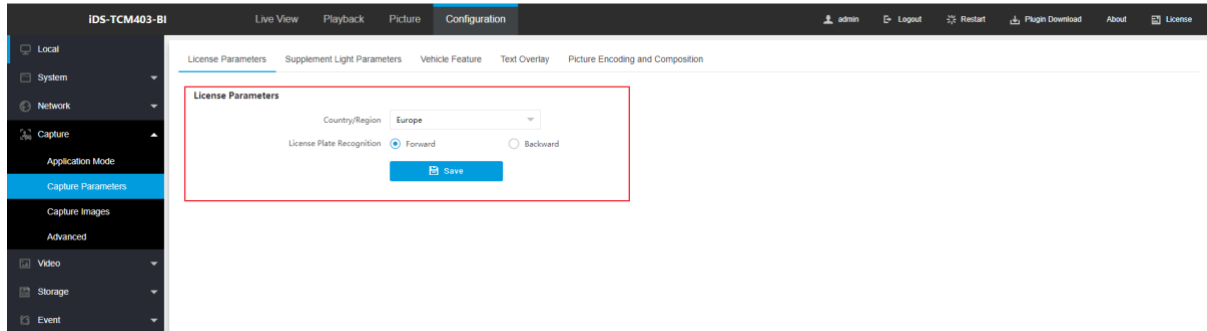

Figure 2-12 license Parameters

3. Go to **Configuration > Capture Parameters>Supplement Light Parameters**;
4. IO1 is for internal light, while IO2 is for external supplement light; only constant light mode is available;
5. Set **duty ratio** from 0 to 40 according to real light brightness requirement; choose control constant light by schedule and select start time and end time.
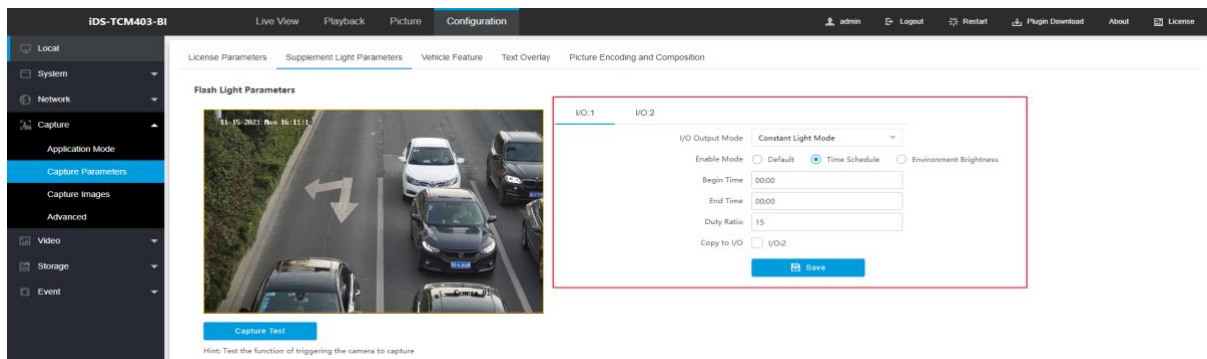

Figure 2-13 Supplement Light Parameters

2.7 Configuring Image Parameters

Steps:

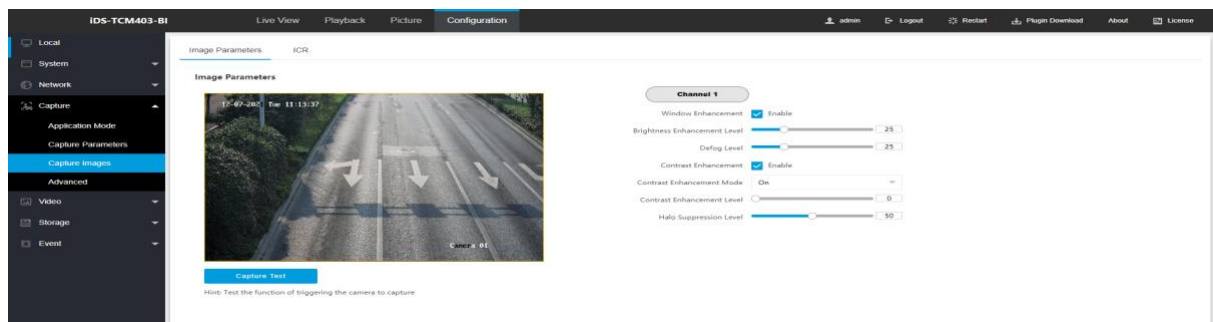1. Go to **Configuration > Capture > Captur Image > Image Parameters**

Figure 2-14 Capture Parameters

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2. **Normally set all the parameters as default.**
3. Enable 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.
4. Enable Contrast Enhancement,It refers to the contrast of the image. Set it to adjust the levels and permeability of the image.
5. Go to **Configuration > Image Parameters >ICR,**Change **ICR Mode** as Schedule.

2.8 Configuring Text Overlay Parameters

Steps:

1. Go to **Configuration > Capture > Capture Parameters > Text Overlay**.
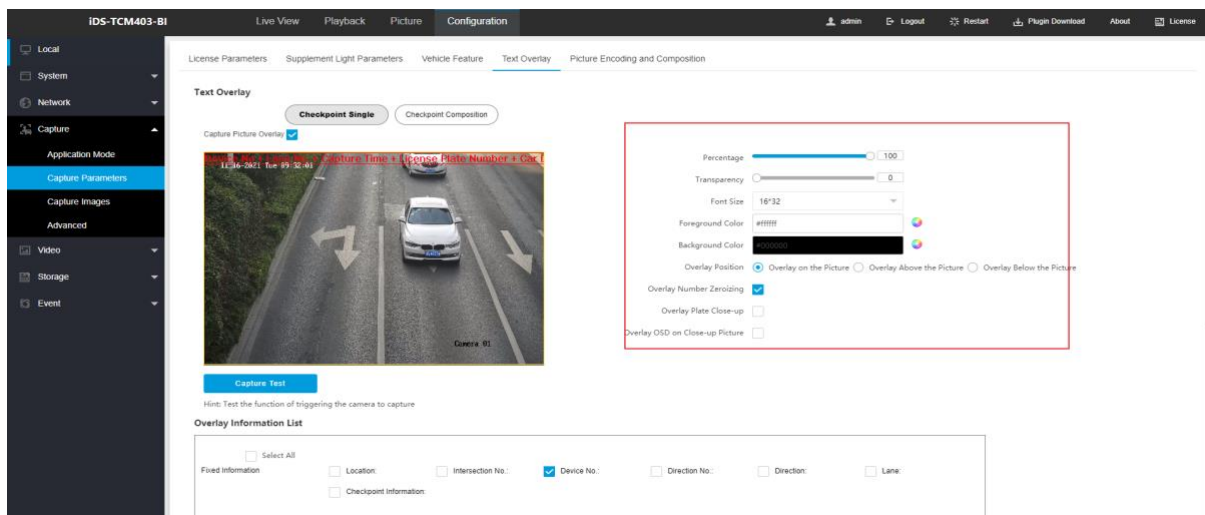2. Enter information.
3. Click **Save**.

Figure 2-15 Text overlay

2.9 Lens adjustment

Steps:

1. Go to live view
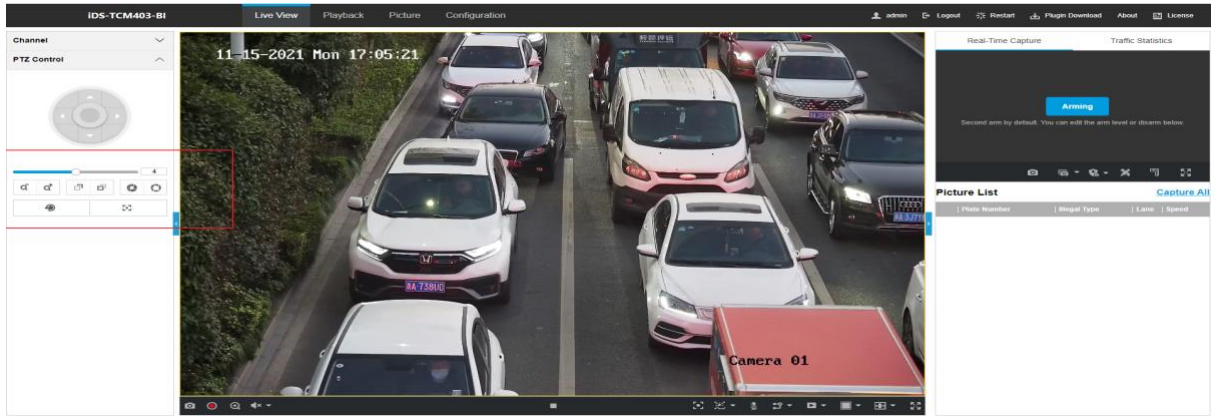2. Adjusting zoom in or zoom out, focus and iris adjustment,manually capture to check captured pictures.

Figure 2-16 Live View

2.10 Testing

Steps:

1. Click **Live View** to enter the live view interface.
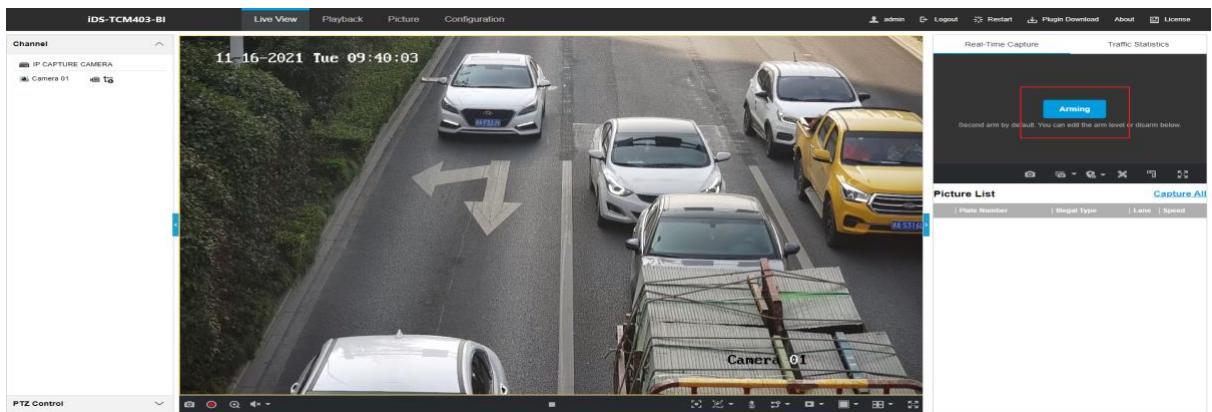2. Click **Arming** in the upper right corner of the window

Figure 2-17 Armed

3. Check if there is uploading of license plates in Picture List.
4. Click to measure plate to check the license plate pixel, The standard license plate character height should be 25-30 pixels.
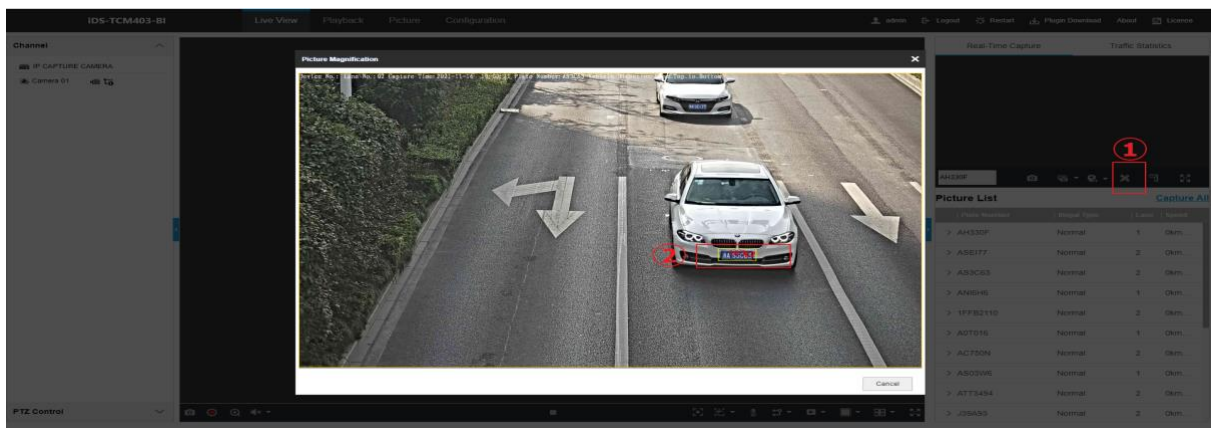

Figure 2-18 Check Pixel

If you have any question, you can contact **Overseas Traffic Project Team**. We are looking forward to your reply.

2.11 Enable Algorithm POS Information Debug

Steps:

1. Go to **Configuration > Capture > Advanced > System service;**
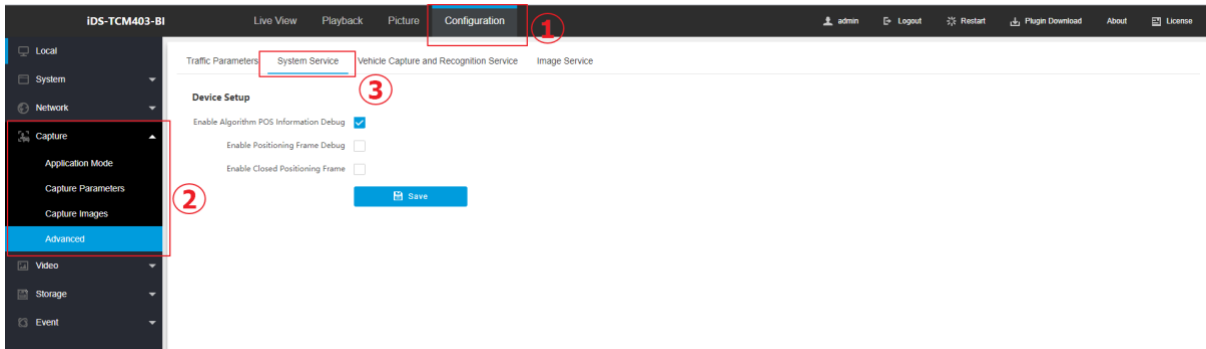2. Enable Algorithm POS Information Debug.

Figure 2-19 Enable Algorithm POS Information Debug

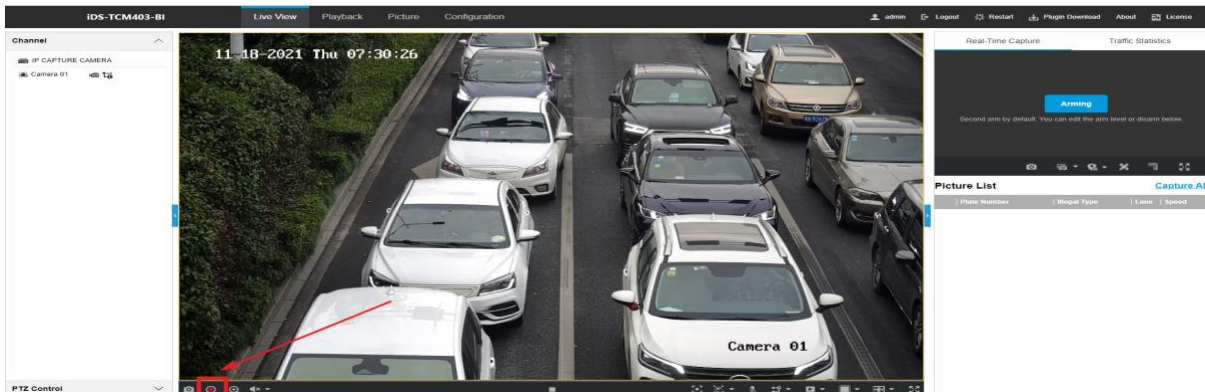3. Start Recording to collect pos information
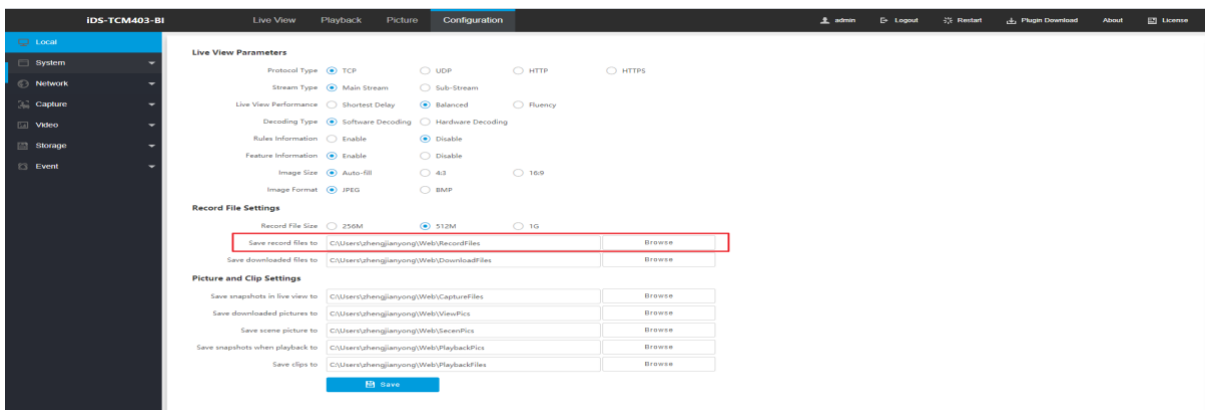

Figure 2-20 Start recording

4. Find POS infomation

Figure 2-21 POS path