



## **ANPR Quick Guide via Web**

## Contents

1 Introduction .....	2
2 Web Configuration .....	2
2.1 Detection Configuration.....	2
2.2 Uploaded Picture Configuration.....	7
2.3 (Optional) Overlay Content Configuration .....	9
2.4 Real-time LPR Result.....	9
2.5 Blacklist and Whitelist .....	10
3 Result Query.....	10
4 Parameter Recommendation .....	11
4.1 Exposure Settings .....	12
4.2 Day/Night Switch.....	13
4.3 Backlight Settings .....	13
5 FAQ.....	14
5.1 License plate tilt angle .....	15
5.2 Depth of focus .....	16
5.3 Lighting.....	16
5.4 License plate width .....	17
5.5 Low sharpness.....	18
5.6 Insufficient light.....	18
5.7 High Exposure time.....	18
6 Appendices.....	19
7 Revision History.....	21

# 1 Introduction

Vehicle Detection is available for the road traffic monitoring. The vehicle detection detects passing vehicles and captures the license plates. The detection triggers a series of actions, such as notifying the surveillance center, uploading the captured picture to FTP server, etc.

## 2 Web Configuration

Login IPC via web browser and make sure the firmware version supports ANPR.

### 2.1 Detection Configuration

1. VCA resource can be efficiently allocated to get a better performance. Two modes of VCA resource allocation are supported: Smart Event and Vehicle Detection. Go to **Configuration->Advanced Configuration->System -> VCA Resource**. Select **Vehicle Detection** for the VCA resource allocation. Reboot the device to activate the new settings.

**Note:** When Smart Event is enabled, the Vehicle Detection function is disabled; When the Vehicle Detection is enabled, high frame rate, recording on SD card or NAS/CIFS, some certain smart events and people counting are not supported (see the actual operation interface for details).

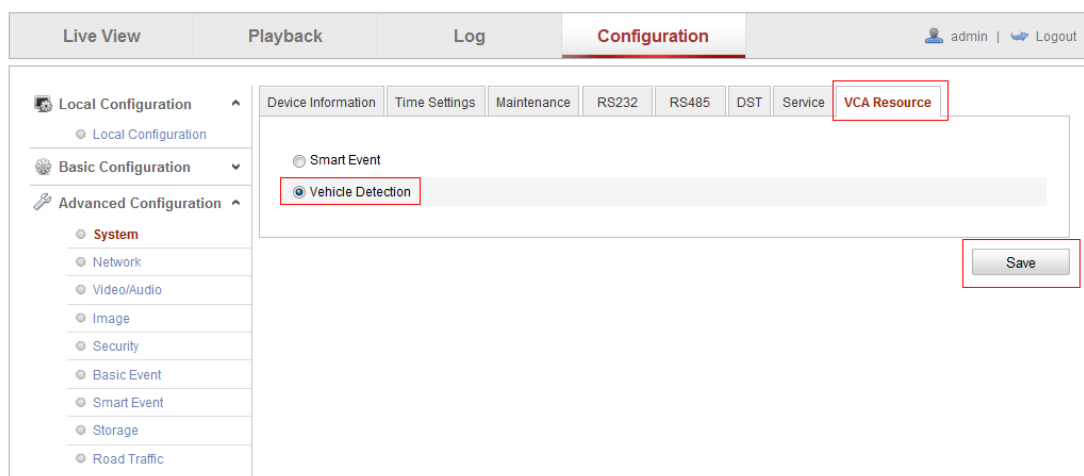


Fig.1 VCA Resource Allocation

2. Then go to **Advanced Configuration->Road Traffic** option. Select the detection type from the list and enable the selected detection function. **Vehicle Detection** can be selected.

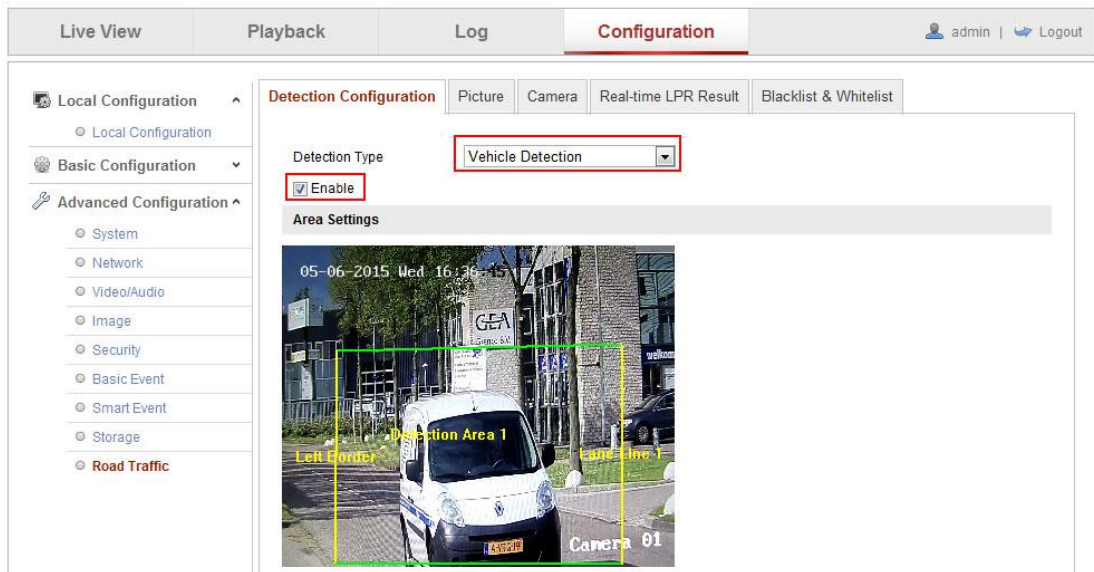


Fig.2 Enable Vehicle Detection

- Then select the lane number and the region in the corresponding dropdown list. Up to 4 lanes and three kind of regions are selectable.

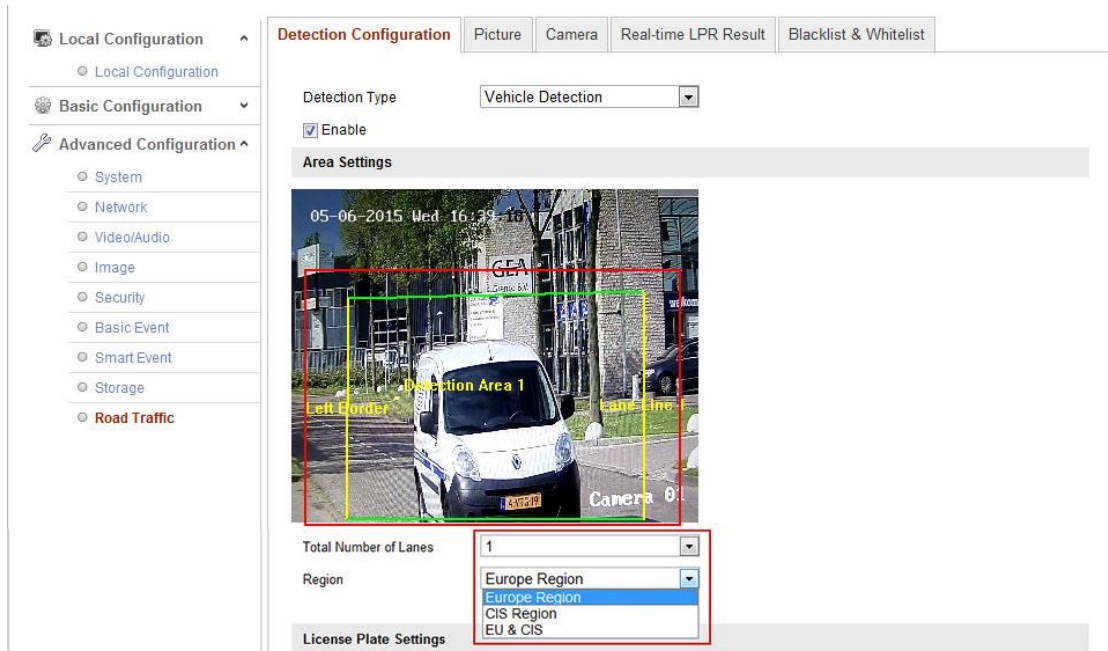


Fig.3 Select Lanes Number and Region

- Click and drag the lane line to set the position, or click and drag the line end to adjust the length and angle. The area surrounded by yellow and green lines stands for the detection area or the area of interest.

**Note:** Only 1 license plate can be captured at one time for each lane.

- For high accuracy rate, it is necessary to set the maximum and minimum size of the license plate.

- Get some snapshots manually when the license plate appears in the detection area, and measure the height pixels as Fig.4 shows.

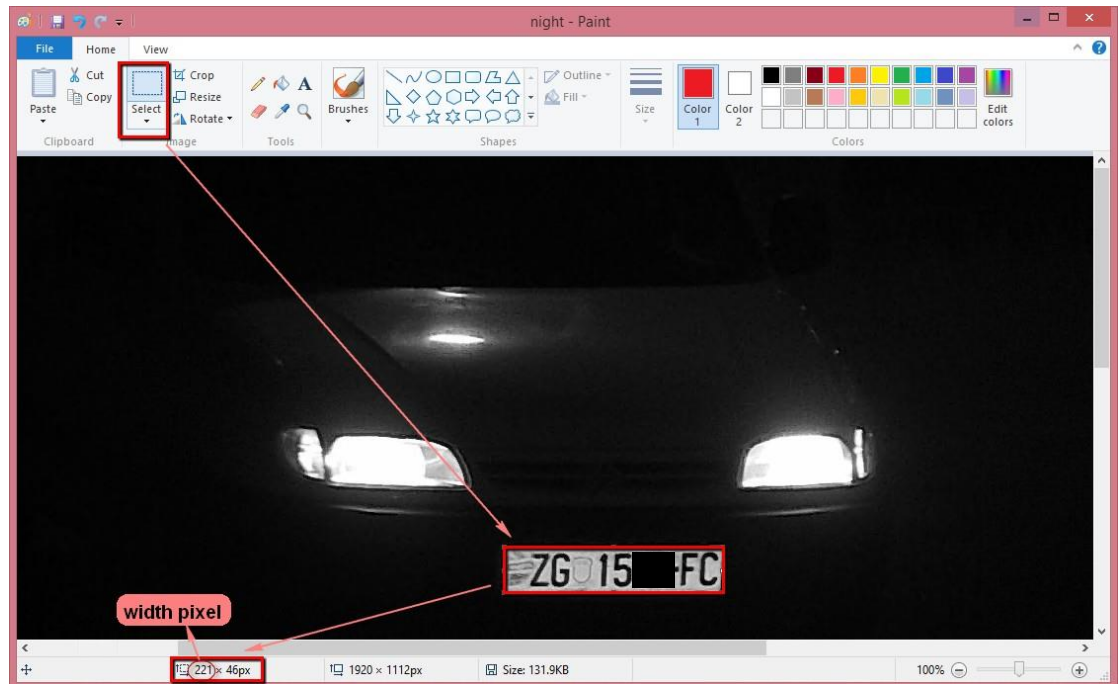


Fig.4 Measure the Plate Width

- Set the parameters.



Fig.5 License Plate Region Settings

**For EU region:**

Restrictions to plate width minimum acceptable width is 130 pixels, and 70px for a two-row plates. Max plate width should be at least 2\*min plate width and not exceed 3\*min plate width.

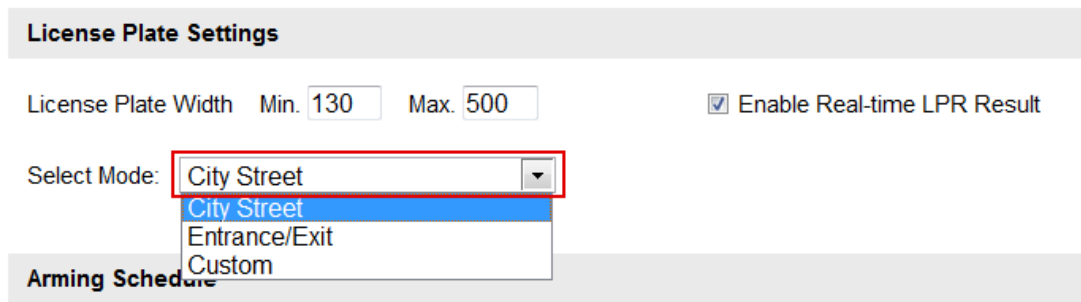
**For CIS region:**

Restrictions to plate width minimum acceptable width is 150 pixels, and 100px for a two-row plates. Max plate width should be at least 2\*min plate width and not exceed 3\*min plate width.

**For Universal region (combining EU and CIS) :**

Restrictions to plate width minimum acceptable width is 130 pixels, and 70px for a two-row plates. Max plate width should be at least 2\*min plate width and not exceed 3\*min plate width.

6. Select mode of vehicle detection in the dropdown list.



**License Plate Settings**

License Plate Width Min.  Max.  ☒ Enable Real-time LPR Result

Select Mode: City Street  
City Street  
 Entrance/Exit  
 Custom

**Arming Schedule**

Fig.6 Vehicle Detection Mode Settings

**City Street:**

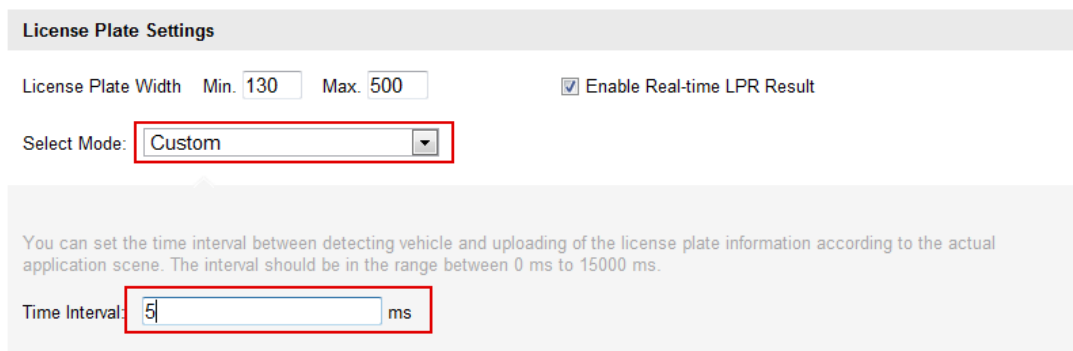
The license plate information will be uploaded after vehicle leaving the detection region.

**Entrance/Exit:**

The license plate information will be uploaded as soon as vehicle is detected.

**Custom:**

You can set the time interval between detecting vehicle and uploading of the license plate information. The interval should be in the range between 0ms to 15000ms.



**License Plate Settings**

License Plate Width Min.  Max.  ☒ Enable Real-time LPR Result

Select Mode: Custom

You can set the time interval between detecting vehicle and uploading of the license plate information according to the actual application scene. The interval should be in the range between 0 ms to 15000 ms.

Time Interval: 5 ms

Fig.7 Time Interval Settings

7. **(Optional)** Arming Schedule is set into 24/7 by default and can be modified if necessary.

**Arming Schedule**

**Edit**

	0	2	4	6	8	10	12	14	16	18	20	22	24
Mon													
Tue													
Wed													
Thu													
Fri													
Sat													
Sun													

Fig.8 Arming Schedule Configuration

After setting the arming schedule, click the **Copy** button to copy the schedule to other days. Click the **OK** button to save the settings.

**Mon** Tue Wed Thu Fri Sat Sun

☐ All Day → 00:00~24:00

☒ Custom

Period	Start Time	End Time
1	00:00	24:00
2	00:00	24:00
3	00:00	00:00
4	00:00	00:00
5	00:00	00:00
6	00:00	00:00
7	00:00	00:00
8	00:00	00:00

Copy to Week ☐ All

☒ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☐ Sat ☐ Sun

**Copy**

**OK** Cancel

Fig.9 Copy the Arming Schedule

**Note:** The time of each period cannot be overlapped.

8. (Optional) Set the Linkage Method, for **Triggering Source**, “All” (including Whitelist, Blacklist and Other) is checked by default. You can also disable All, select corresponding source in the dropdown list.

**Linkage Method**

Triggering Source ☐ All Whitelist

Normal Linkage

☒ Notify Surveillance Center ☐ Upload to FTP

Trigger Alarm Output ☐ All ☐ A->1

Fig.10 Triggering Source Configuration

“**Notify Surveillance Center**” is checked by default, and other linkage methods such as “**Upload to FTP**” and “**Trigger Alarm Output**” is selectable.

**Linkage Method**

Triggering Source ☒ All Whitelist

Normal Linkage

☒ Notify Surveillance Center ☐ Upload to FTP

Other Linkage

Trigger Alarm Output ☐ All ☐ A->1

Fig.11 Notify Surveillance Configuration

### Notify Surveillance Center:

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

9. Click the **Save** button to activate the settings.

## 2.2 Uploaded Picture Configuration

1. Set the picture quality

Either Picture Quality or Picture Size can be set to specify the picture quality.

2. (Optional) Enable and edit the text overlay on the uploaded picture.

You can set the font color and background color by clicking the desired color in the popup palette.

3. Select the information for the text overlay, including **Camera No.**, **Camera info**, **Device No.**, **Capture Time**, **Plate No.**. You can also click the up and down direction buttons to adjust the sequence of the text.

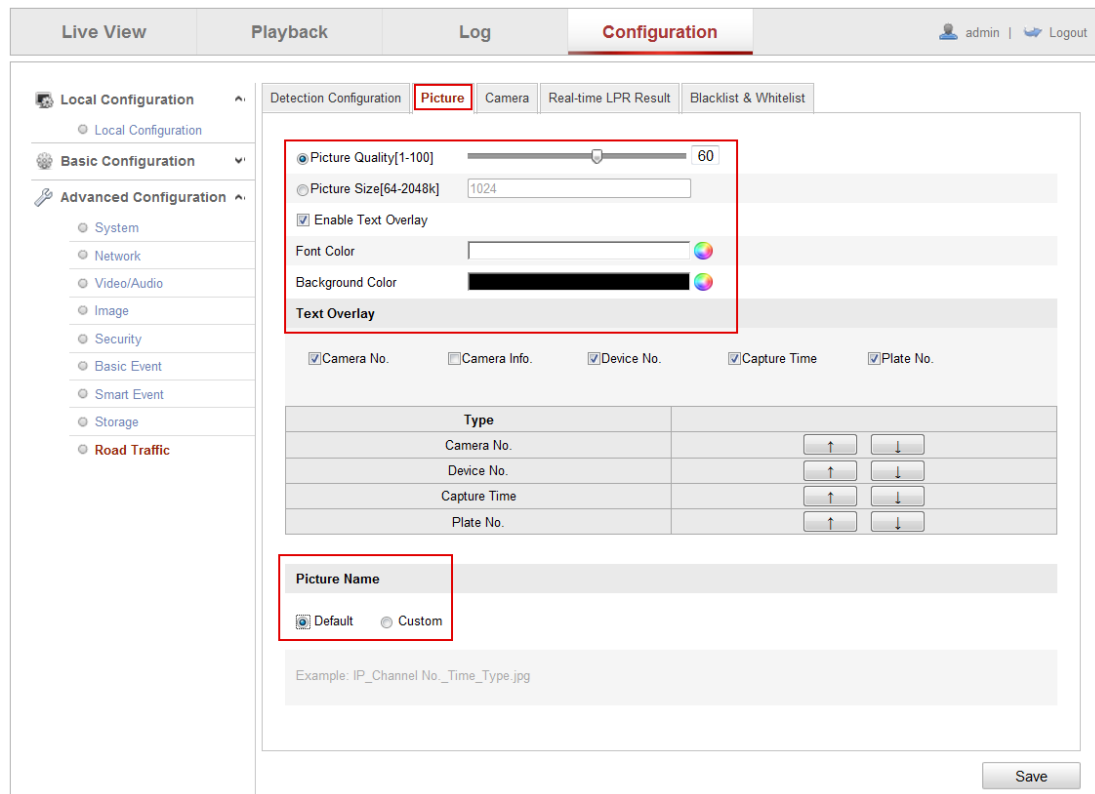


Fig.12 Uploaded Picture Configuration

4. (Optional) “**Default**” **Picture Name** is selected by default, you can select **Custom** to set the Picture Name, select the information for the text overlay, including **Capture Time**, **Plate No.**, **Alarm Type**, **Camera Name**. You can also click the up and down direction buttons to adjust the sequence of the text.

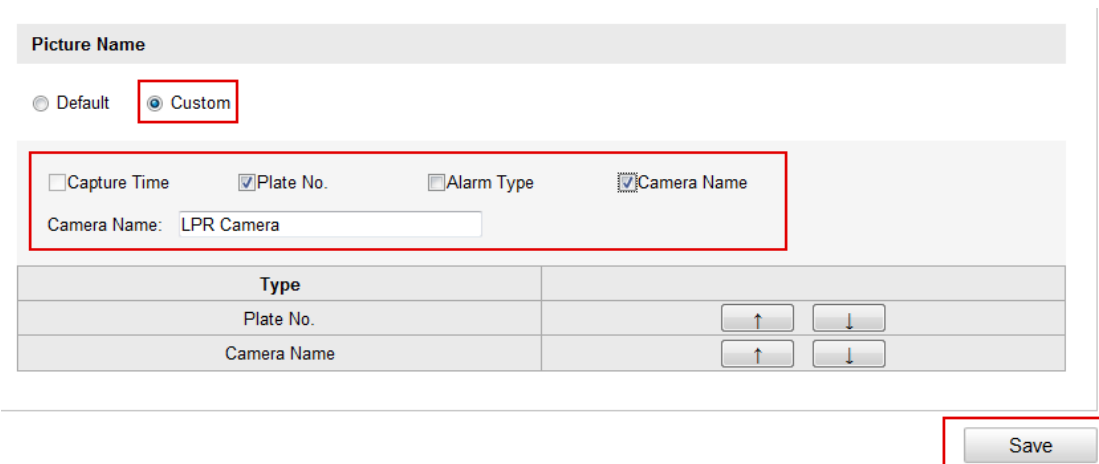


Fig.13 Picture Name Configuration

5. Click **Save** to save the **Picture** settings.

## 2.3 (Optional) Overlay Content Configuration

1. Edit the content of the *Device No.*, *Camera No.*, and *Camera Info.*, in the corresponding text filed.
2. Click the *Save* button to activate the settings.

The screenshot shows the 'Configuration' tab selected in the top navigation bar. On the left, the 'Advanced Configuration' menu is expanded, showing 'Road Traffic' as the active section. The main content area has tabs for 'Detection Configuration', 'Picture', 'Camera', 'Real-time LPR Result', and 'Blacklist & Whitelist'. The 'Camera' tab is active, displaying three input fields: 'Device No.' (Camera 01), 'Camera No.' (DS-2CD4026FWD-AP), and 'Camera Info.' (EU). A red box highlights these fields. A 'Save' button is located at the bottom right of the configuration area, also highlighted with a red box.

Fig.14 Overlay Content Configuration

## 2.4 Real-time LPR Result

Go to *Real-time LPR Result*, you can see real-time captured plate pictures and information, including *Capture Time*, *Plate No.*, *Captured Picture*, *Country*, *Lane*, *Direction*.

The screenshot shows the 'Real-time LPR Result' tab selected. It features a live video feed from 'Camera 01' showing a car on a street. Below the feed is a table with the following data:

No.	Capture Time	Plate No.	Captured Picture	Country	Lane	Direction
3	12-30-2015 16:11:24	4VTG19		Netherlands(NLD)	1	Unknown
2	12-30-2015 16:10:37	R0UJK		Great Britain (GBR)	1	Unknown

Fig.15 Real-time LPR Result

## 2.5 Blacklist and Whitelist

1. Edit the Blacklist and Whitelist file (e.g., black-white.xls) on computer as follows.

	A	B	C
1	No	Plate Num	Group(0 black list, 1 white list)
2	1	02RTL3	0
3	2	32XBZZ	1
4	3	38SB6	0
5	4	32XBZZ	1
6	5	8STL42	0
7	6	5SFT88	1
8	7	KLETP407	0
9	8	41SJT2	0
10	9	7VLP4F	0
11	10	4VTG19	0
12	11	7558H	0
13	12	8KNZ92	0
14	13	42NSNF	0
15	14	VF034P	0
16	15	08BNBF	0
17	16	50PFT	0

Fig.16 Content of black-white.xls

2. Go to **Blacklist & Whitelist**, and import the Blacklist and Whitelist file.

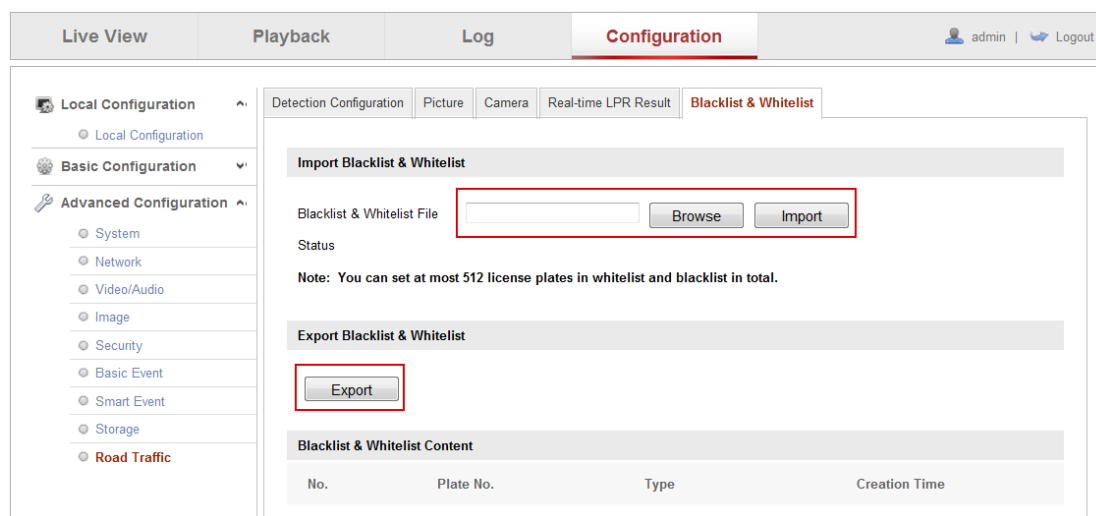


Fig.17 Blacklist & Whitelist Operation

3. **Export** the Blacklist and Whitelist. You can edit the file on computer.

## 3 Result Query

Go to **Playback->Download pictures**, and select **Vehicle Detection** option. You can search for the plate picture and information on the SD card.

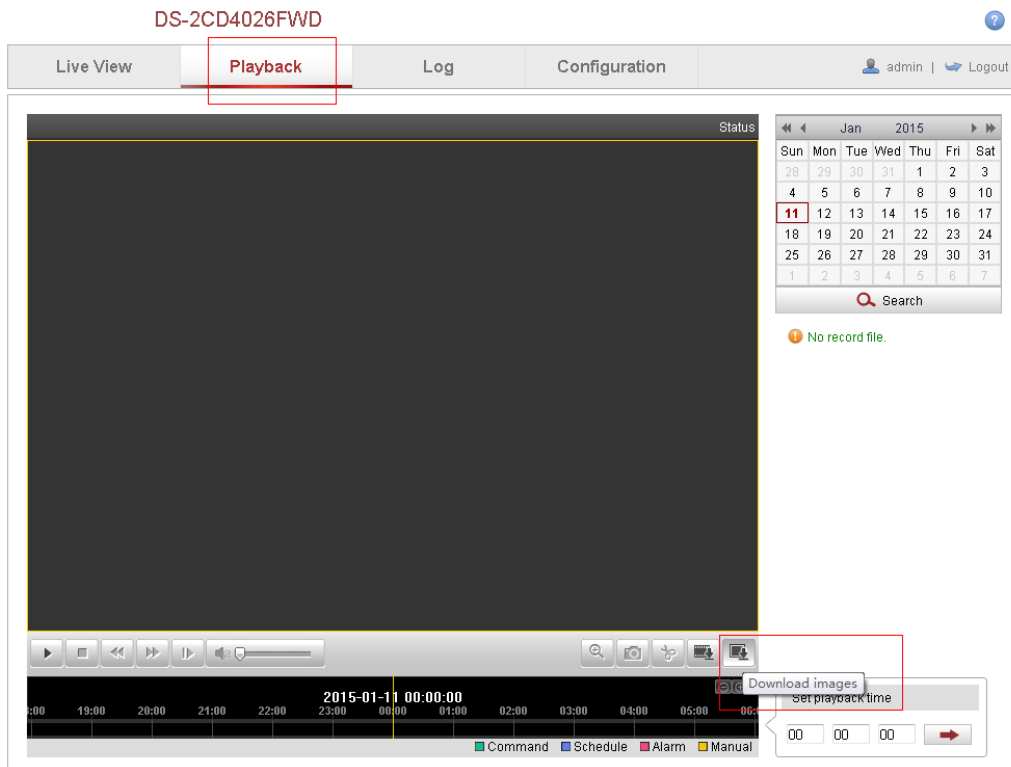


Fig.18 Search for License Plate Pictures



Fig.19 Search Results

## 4 Parameter Recommendation

To get the best performance, you need to set the suitable image parameters. For ANPR, you can select the **Mounting Scenario** “Road” in the dropdown list to set the suitable ANPR parameters automatically.

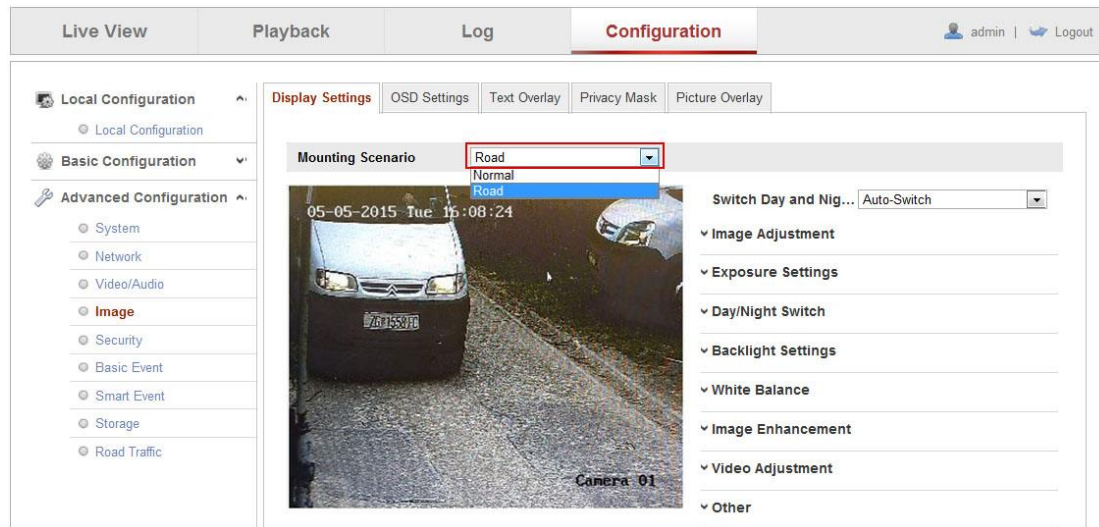


Fig.20 Mounting Scenario Setting

You can also set the parameter manually. Here are some parameter recommendations.

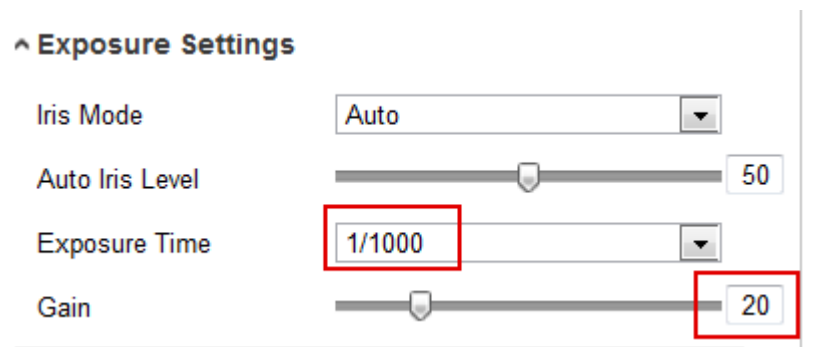
## 4.1 Exposure Settings

Iris Mode: Auto

Auto Iris Level: 50

Exposure Time: 1/1000

Gain: 20



For **Exposure Time** (shutter time), too long exposure time may make the moving license plate fuzzy. Here are some recommended exposure time settings.

**Entrance/Exit:** Low speed (<30km/h). Exposure time: 1/150-1/200.

**Street:** Medium speed (30-60km/h). Exposure time: 1/250-1/500.

**Road:** High speed (>60km). Exposure time: 1/500-1/1000.

For **Gain**, to ensure high recognition rate when WDR OFF, gain level should be set less than 30, and when WDR ON, less than 50.

## 4.2 Day/Night Switch

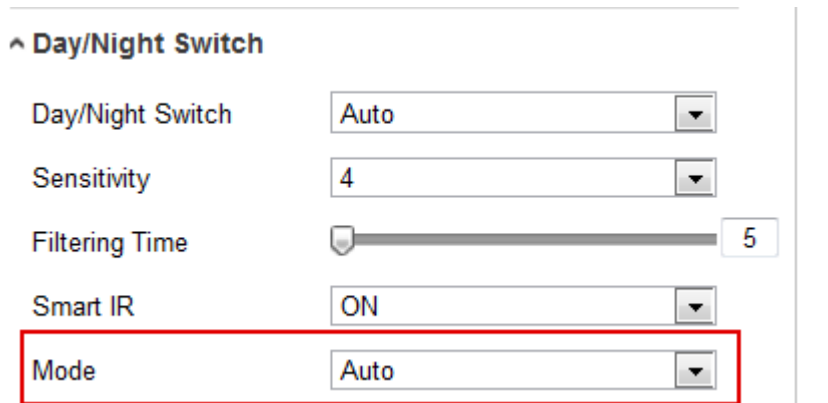
Day/Night Switch: Auto

Sensitivity: 4

Filtering Time: 5

Smart IR: ON

Mode: Auto



Day/Night Switch configuration interface showing the following settings:

- Day/Night Switch: Auto
- Sensitivity: 4
- Filtering Time: 5
- Smart IR: ON
- Mode: Auto (highlighted with a red rectangle)

For Day/Night Switch, users can select appropriate mode in the dropdown list according to the environment.



Day/Night Switch configuration interface showing the dropdown menu for Day/Night Switch:

- Day/Night Switch (highlighted with a red rectangle)
- Sensitivity
- Filtering Time
- Smart IR
- Day/Night Switch dropdown menu options: Auto, Day, Night, Auto (highlighted), Scheduled, Triggered by Alarm Input, Triggered by Video

**Day:** The camera stays at day mode.

**Night:** The camera stays at night mode.

**Auto:** The camera switches between the day mode and the night mode according to the illumination automatically.

**Schedule:** Set the start time and the end time to define the duration for day/night mode.

**Triggered by alarm input:** The mode is triggered by alarm input, and you can set the triggered mode to day or night.

**Triggered by video:** The camera switches between the day mode and the night mode according to the video brightness automatically.

## 4.3 Backlight Settings

BLC Area: OFF

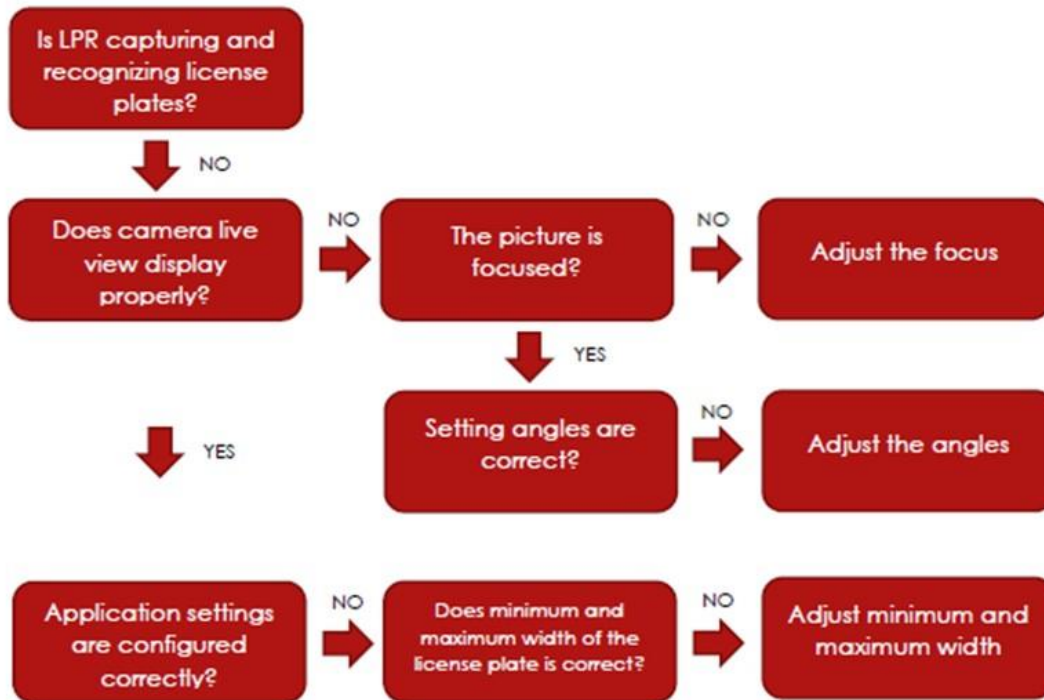
WDR: OFF

^ **Backlight Settings**

BLC Area	OFF	▼
WDR	OFF	▼

## 5 FAQ

The troubleshooting flowchart is as following:



## 5.1 License plate tilt angle



**Solution:** Notice the license plate tilt angle. License plate tilt angle must be within  $\pm 5$  degrees.

## 5.2 Depth of focus



**Solution:** Notice the focus distance of the camera. Car with a green frame will be detected, and other cars will not. Adjust the focus distance to a proper degree.



For these examples, you can adjust the focus distance or shutter speed.

## 5.3 Lighting





**Solution:** License plate is overexposed, image parameters should be adjusted. You can either adjust the shutter speed, or disable the IR-Led(for the night)

## 5.4 License plate width



**Solution:** It seems that LP is well lit and readable by eye. However, if we measure full frame in photoshop, we will see that ANPR width is under 90px which is not enough. License plate width in the frame should be increased and be at least 130 pixels.

## 5.5 Low sharpness



**Analysis:** With proper sharpness value, license plate number can be clear.

## 5.6 Insufficient light



**Analysis:** Recognition performance is degraded with insufficient light. The camera must be set to night mode and infrared light should be used.

## 5.7 High Exposure time



**Solution:** Set the exposure time to 1/250 , 1/500 or 1/1000 depending on vehicle speed and lighting.

## 6 Appendices

### Supported countries

EU region					
	Slovakia	SVK		Portugal	PRT
	Italy	ITA		Macedonia	MKD
	Spain	ESP		Croatia	HRV
	France	FRA		Finland	FIN
	Germany	DEU		United Kingdom	GBR
	Poland	POL		Romania	ROU
	Czech Republic	CZE		Serbia	SRB
	Netherlands	NLD		Bulgaria	BGR
	Belgium	BEL		Norway	NOR
	Denmark	DNK		Israel	ISR
	Luxembourg	LUX		Hungary	HUN
	Greece	GRC		Austria	AUT
	Albania	ALB		Vatican city state	VAT
	Bosnia and herzegowina	BIH		Cyprus	CYP
	Ireland	IRL		Iceland	ISL
	Malta	MLT		Slovenia	SVN
	Sweden	SWE		Turkey	TUR
	Switzerland	CHE			
RU region					
	Azerbaijan	AZE		Russian Federation	RUS
	Kazakhstan	KAZ		Ukraine	UKR
	Lithuania	LTU		Moldova	MDA
	Georgia	GEO		Belarus	BLR
	Estonia	EST		Turkmenistan	TKM
	Latvia	LVA		Uzbekistan	UZB
	Armenia	ARM			

Universal region					
	Slovakia	SVK		Portugal	PRT
	Italy	ITA		Macedonia	MKD
	Spain	ESP		Croatia	HRV
	France	FRA		Finland	FIN
	Germany	DEU		United Kingdom	GBR
	Poland	POL		Romania	ROU
	Czech Republic	CZE		Serbia	SRB
	Netherlands	NLD		Bulgaria	BGR
	Belgium	BEL		Norway	NOR
	Denmark	DNK		Israel	ISR
	Luxembourg	LUX		Hungary	HUN
	Greece	GRC		Austria	AUT
	Albania	ALB		Vatican city state	VAT
	Bosnia and herzegowina	BIH		Cyprus	CYP
	Ireland	IRL		Iceland	ISL
	Malta	MLT		Slovenia	SVN
	Sweden	SWE		Turkey	TUR
	Switzerland	CHE		Armenia	ARM
	Azerbaijan	AZE		Russian Federation	RUS
	Kazakhstan	KAZ		Ukraine	UKR
	Lithuania	LTU		Moldova	MDA
	Georgia	GEO		Belarus	BLR
	Estonia	EST		Turkmenistan	TKM
	Latvia	LVA		Uzbekistan	UZB

## 7 Revision History

Revision History	Description	Reviser	Date
Version 1.0 Revision 1	Initial version	Shuixiu You	2015-10-26
Version 1.1 Revision 1	Firmware Version: V5.3.8 Add function configurations: (1) Mode select and time interval setting. (2) Triggering Source setting . (3) Set Picture Name. (4) Blacklist & Whitelist operation. (6) Set the suitable ANPR parameters automatically by Mounting Scenario setting.	Shuixiu You	2015-12-30

