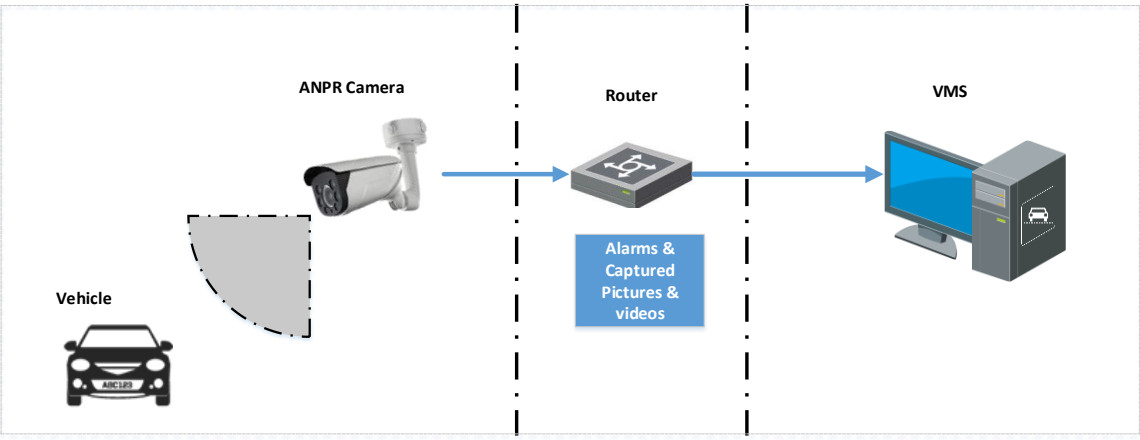
7xxx ANPR Installation & Configuration Guidance

Chapter 1 Solution Combinations

1.1 ANRP Camera + NVR

In this solution, we can use the ANPR camera to capture & save the license plate pictures, and use the NVR to save both the license plate pictures & videos.

1.1.1 Topology



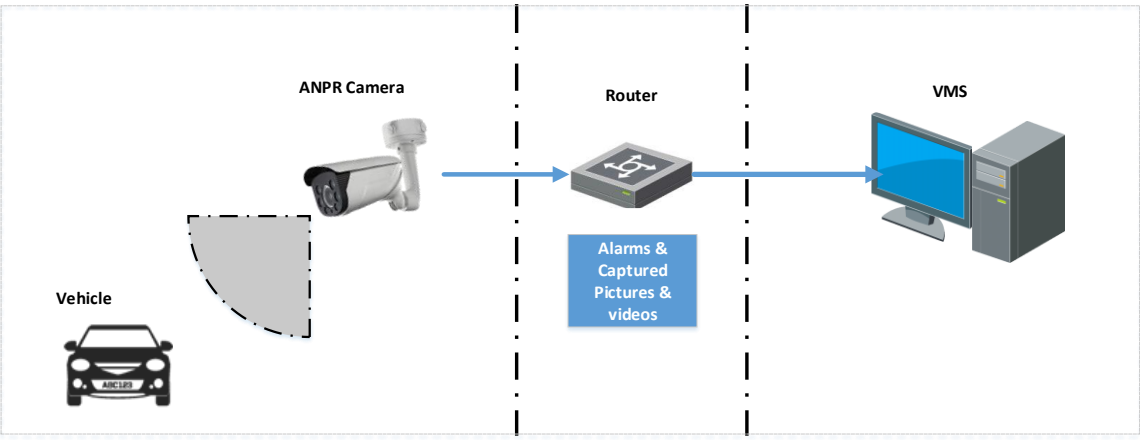
1.1.2 Models and software version requirement:

	Model	Version
CAMERA	DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)SY [Y → the Wiegand model] iDS-2CD7026G0/P-IZ(H)S	Latest baseline version
NVR	–E/-K/-I series	Latest baseline version
AI NVR	All series	Latest baseline version

1.2 ANPR Camera + VMS

In this solution, we can use the ANPR camera to capture & save the license plate pictures, and use the VMS to save both the license plate pictures & videos.

1.2.1 Topology



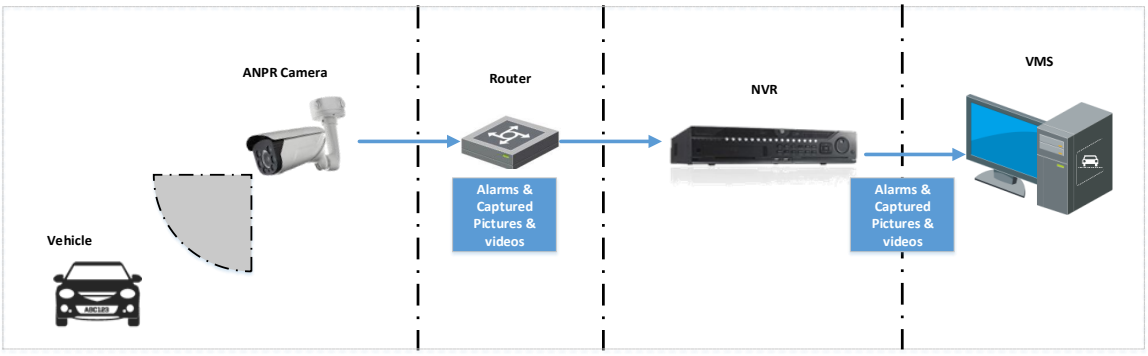
1.2.2 Models and software version requirement:

	Model	Version
Camera	DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)SY [Y → the Wiegand model] iDS-2CD7026G0/P-IZ(H)S	Latest baseline version
VMS	iVMS-4200	Latest baseline version

1.3 ANPR Camera + NVR + VMS

In this solution, we can use the ANPR camera to capture & save the license plate pictures, and use either the NVR or VMS to save both the license plate pictures & videos.

1.3.1 Topology



1.3.2 Models and software version requirement:

	Model	Version
Camera	DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)SY [Y → the Wiegand model] iDS-2CD7026G0/P-IZ(H)S	Latest baseline version
NVR	–E/-K/-I series	Latest baseline version
AI NVR	All series	Latest baseline version
VMS	iVMS-4200	Latest baseline version

Chapter 2 7xxx ANPR Camera Installation Specifications

In order to have a better ANPR performance, please refer to this chapter for camera installation.

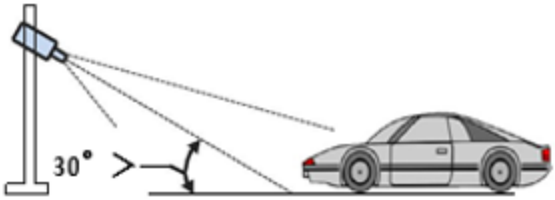
Note:

- It's recommended to cover one lane for each 2MP camera;
- It's recommended the min height of a license plate **characters** should be 20 to 30 pixels and the width of the license plate **characters** should be more than 100 and less than 200 pixels in the image captured by a 2MP resolution camera.

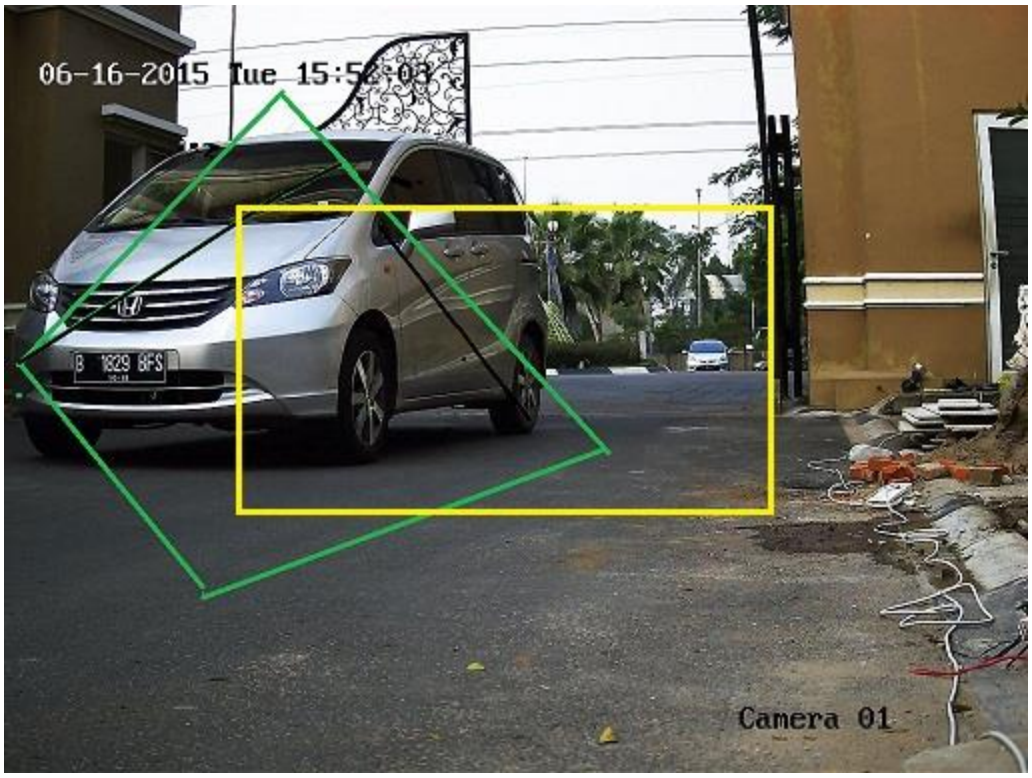
7 series camera is different from the 4 series camera. 7 series need to recognize **with the looking down full scale of the vehicle** first, then recognize the vehicle plate. This mechanics will significantly improve the recognition rate and filter the false plate recognition. And you can configure the settings to switch the camera recognize the vehicle and plate in order, or recognize the vehicle and plate simultaneously.

Vertical angle

The angle between lens direction and horizontal should be less than 30 degrees.



Normal 7 series ANPR monitoring scenario (**Looking down is Important**)



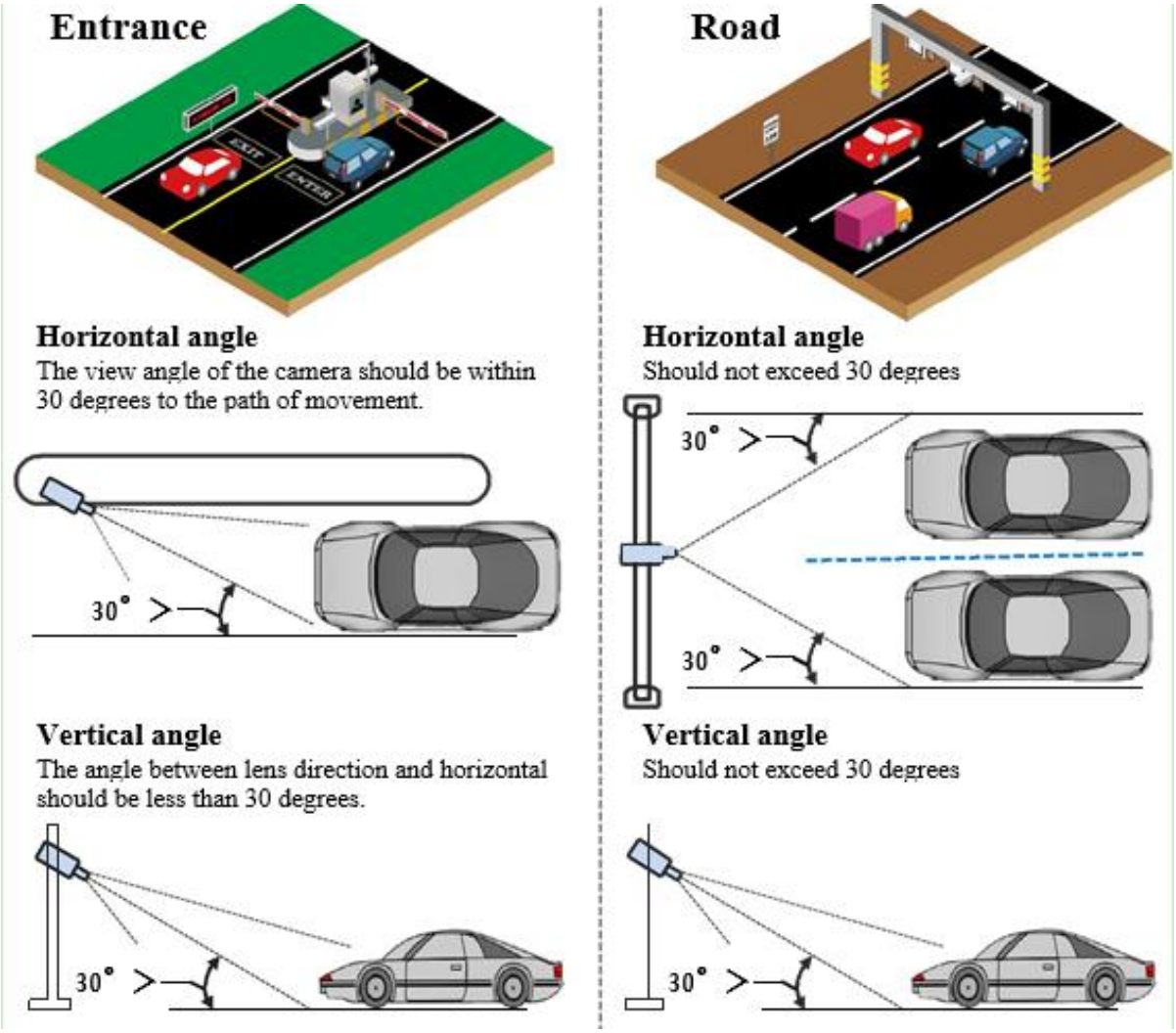
Normal 4 series ANPR monitoring scenario

The ANPR scenario that 4 series CAN'T handle with but 7 series CAN do

The ANPR scenario that 7 series CAN'T handle with because of the **incomplete vehicle scale**

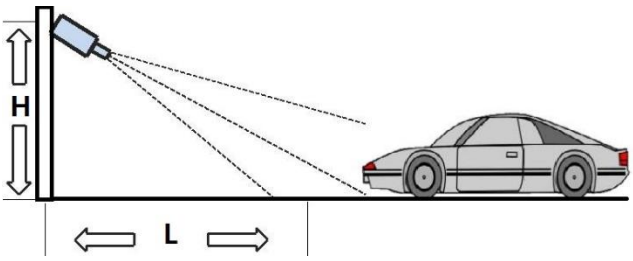
2.1 Camera Installation Angle

Hikvision Automatic Number Plate Recognition cameras help users detect passing vehicles and capture the license plates. To obtain the maximum license plate recognition accuracy, you need to install the ANPR camera in a proper way to get a clear image.



2.2 Camera Installation Height

The installation height (H) needs to be fixed firstly, and then the detection range (L) could be calculated by a simple equation L = cot 30*H.



L = cot 30° *H = 1.7*H

Height(m)	Min L (m)
1.5	4
2	4
3	5.1
3.5	6
4	6.8

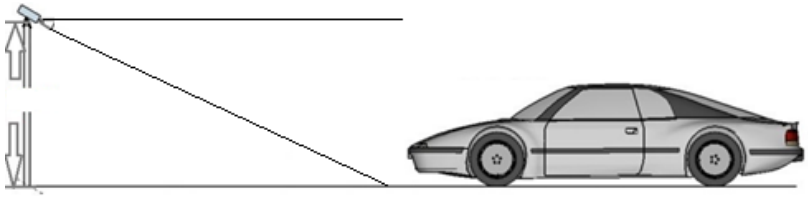
Note:

For entrance application, it's better to install the camera between the height 1.5m and 4m, and ensure the detection range is no longer than 4m.

For checkpoint application, it's better to install the camera with height 6 m.

2.3 Camera Lens Selection

The recognition distance is based on the camera focal length. You should select a proper lens In order to get enough pixels in the frame.



The table below is for your reference:

Camera	Lens(mm)	Min recognition distance (m)	Max recognition distance (m)
DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)S iDS-2CD7A26G0/P-IZ(H)SY [Y → the Wiegand model] iDS-2CD7026G0/P-IZ(H)S	2.8~12	2.5	12
	8~32	7.2	28.9

2.4 License plate tilt angle

The license plate should be as horizontal as possible and the recommended tilt angle is within +/-5 degrees.

Also, the vehicles in the detection area should go as straight as possible instead of turning left or right.

2.5 Bullet Camera Installation

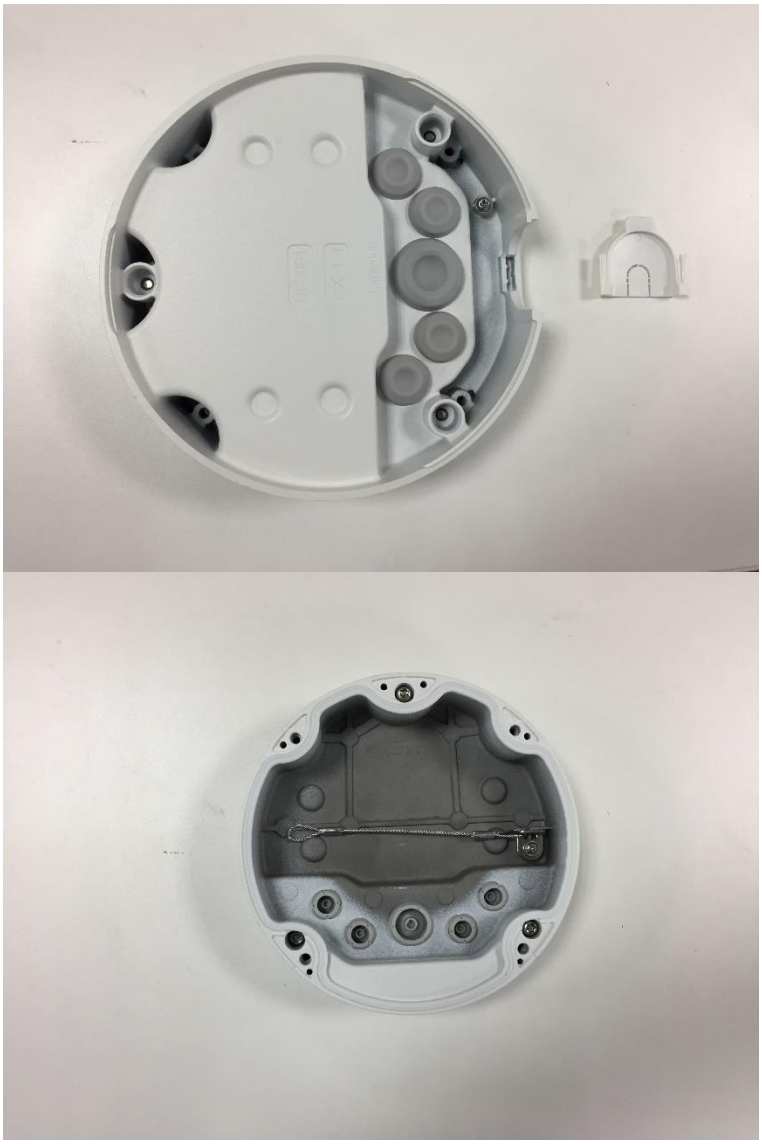
2.5.1 Camera accessories

		Bullent Camera Body and Sun Shield
		Power Adaptor
		Mounting Base
		Junction Box
		One Wiring Clamp， One Bag of Screws， One Perforator One Inner Hexagon Spanner

2.5.2 Installation Steps

Step1: Use four expandable screws to fix the mounting base on the wall:

Step2： Tidy cables, including the power line of the camera, reticle as well as other cables and do the insulation of the power line. If the cables need to be connected from the side during the actual use, please remove the side outlet block first before connecting cables such as power line through this hole and fix them on the wall；If the cables are connected from the rear, please pass them through the circular hole in the mounting base. After arranging the cables, pierce the waterproof silica gel with a perforator, and then cross the reticle and power line from different holes to the junction box. Next, the FRONT end of the junction box is fixed forward to the mounting base. Finally, tighten the three screws.



Step3：fixed camera： Hook up the bullet camera’s cramp ring use anti stripping cable from junction box to prevent the camera from falling off during installation, after connecting the reticle and power line, use four screws to fix the camera to the junction box.

Step4： Unscrewing the screws to adjust the lens angle in order to adjust the image to the required monitoring site.

Chapter 3 Configurations

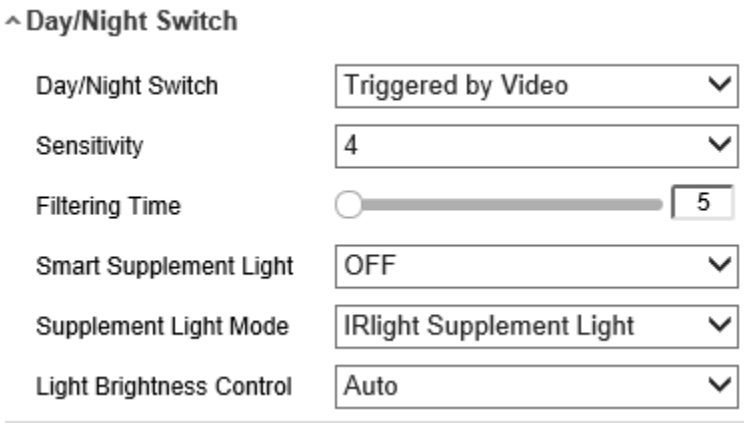
You can set the ANRP function via camera or NVR from web configuration interface, local configuration interface or iVMS client.

The steps are similar.

3.1 Set ANRP Function via Camera Web Configuration Interface

Steps:

1. Go to **Image>Display Settings>Day/Night Switch** and set the Day/Night Switch to the "Triggered by Video" ;



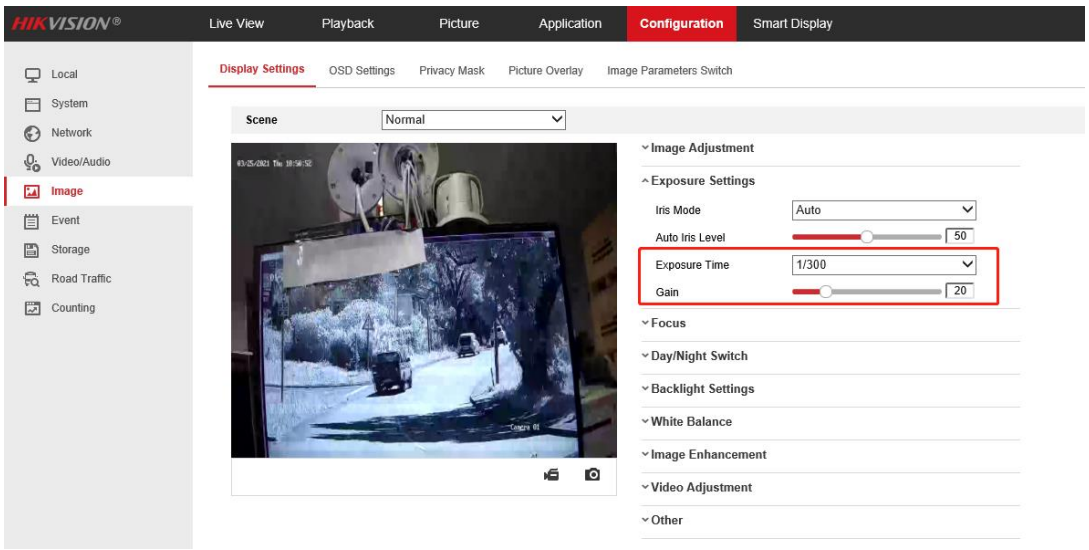
2. Go to **Image Display Settings** to change **Exposure Time** and **Gain** according to the standard below (the Gain control can be operated only after step 1 is finished):

   Speed < 30km/h — Exposure Time : **1/150-1/200**;

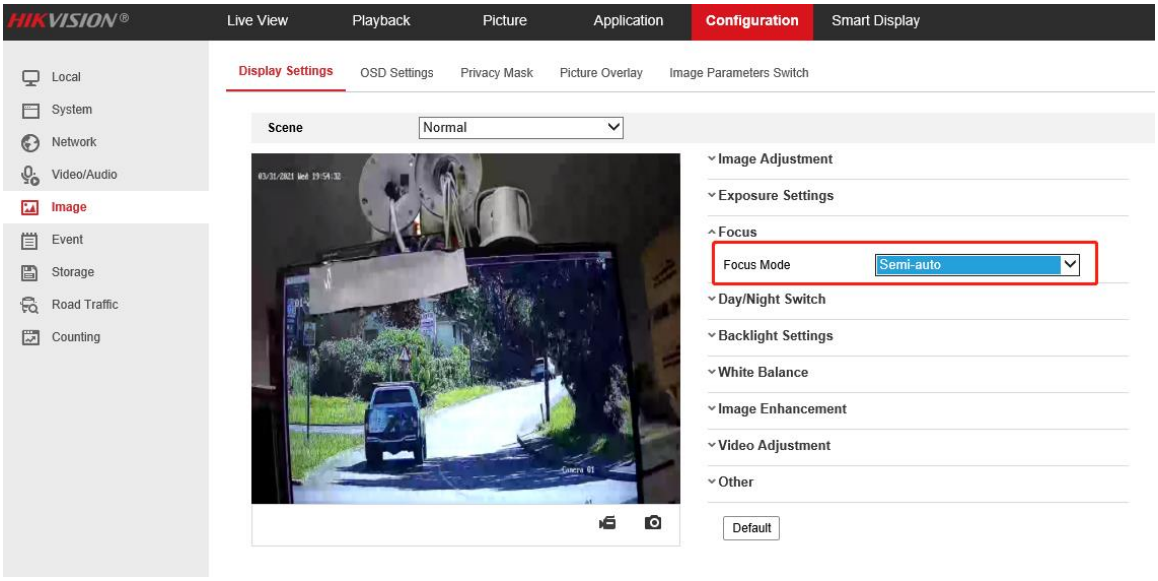
   30km/h < Speed < 60km/h — Exposure Time : **1/250-1/500**;

   60km/h < Speed — Exposure Time : **1/500-1/1000**

   Gain : Generally set as **20** and we usually don't change this.

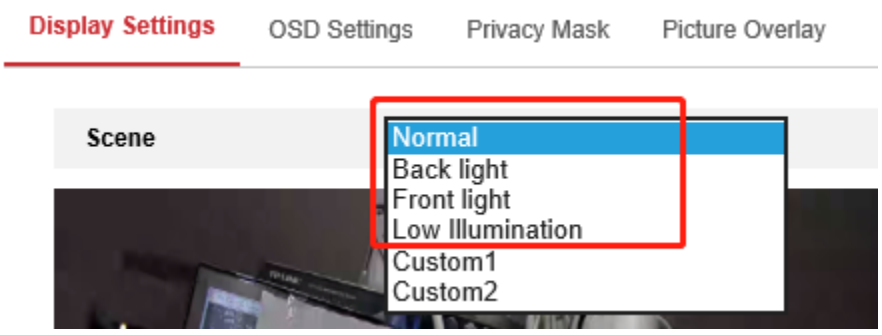


3. Make sure the **Focus Mode** is semi-auto.

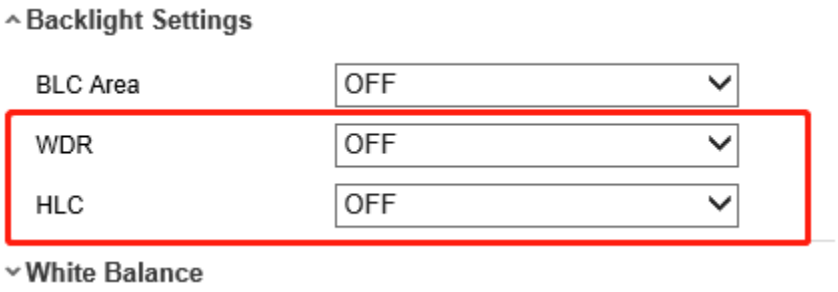


4. If the image effect is not satisfied:

   a. Choose the pre-settings Scene and the referring using scenario to try whether the effect is getting better.

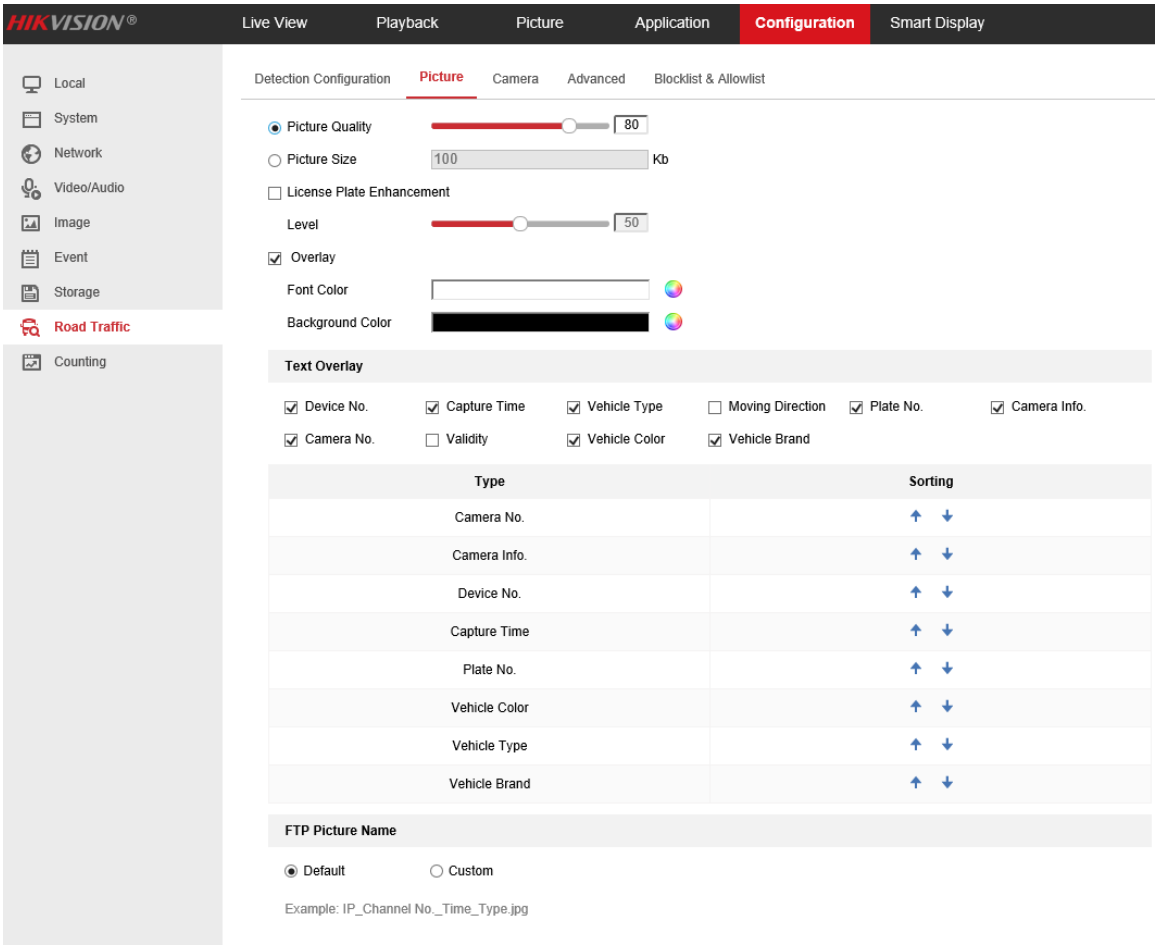


   b. WDR or HLC will make the image easier to perform the “ghost image” or detail lost. So if the strong light can be solved by the exposure and gain settings, we don’t recommend you enable these to counter strong lights.



c. Double check whether the installation angle is smaller than 30° and the installation height satisfy the full observation of full scale of vehicle.

5. Go to **Picture** to choose the text overlay on the picture as the scenario needs;



6. Go to **Road Traffic** to select detection type;

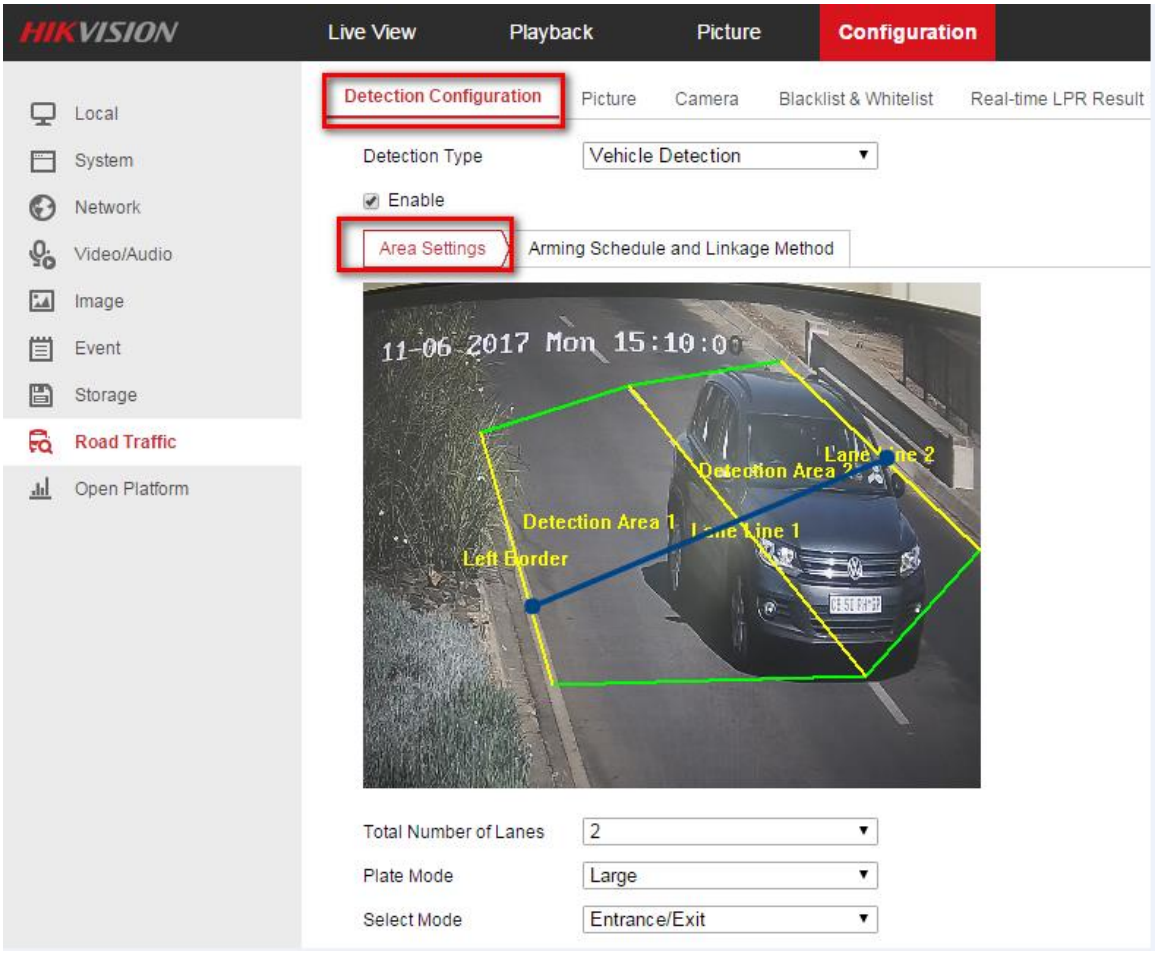
Detection type can be set as Vehicle detection or Mixed-traffic Detection.

Vehicle detection: the passed vehicle can be detected and the picture of its license plate can be captured.

Mixed-traffic Detection: motor vehicle and non-motor vehicle can be detected, and the picture of the object or license plate can be captured

Note: Only one lane supported at mixed-traffic detection type.

7. Go to **Road Traffic** to select lane numbers (1~2) and traffic mode;



Note:

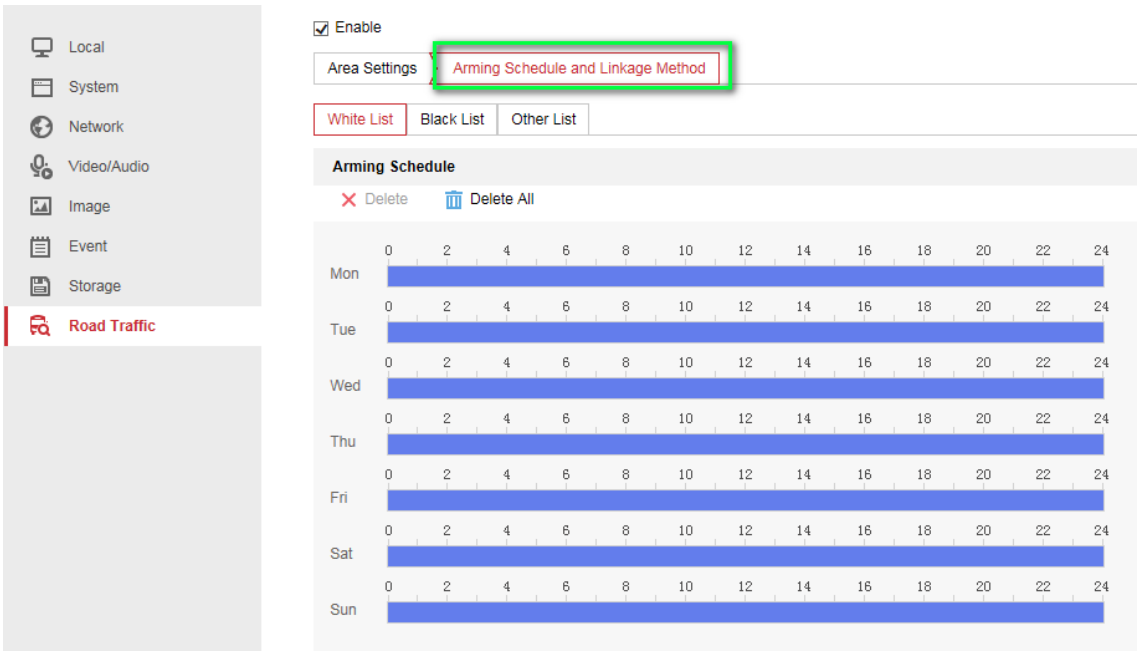
- **Blue Detection Line**: Mainly used for Entrance/Exit with a purpose of improving the capture efficiency. The line is the trigger line of license plate and we highly recommend you put it middle-lower of the screen to make sure the car can pass it with the plate and the full scale.
- **Detect Area:** The Actual detect area is the 2 yellow lane and the square they seized.
- **Entrance & Exit:** It means the camera is set to monitor the Entrance & Exit and will get a better performance at this scenario. Also, E&E mode only supports 1 lane.
- **City Street:** It means the license plate information of the detected vehicle will be uploaded when the vehicle passes the detection area and triggers

the detection. City Street can support 2 lanes.

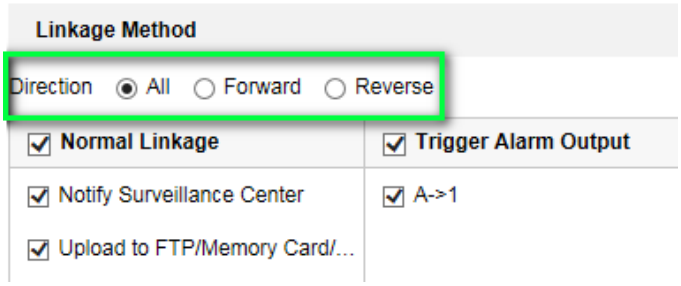
- **Alarm Input:** It means the input alarm will trigger a license plate capture and recognition action.
- **Detection Mode:** Vehicle priority and License plate & Vehicle mode:
  Vehicle priority mode: the classic mode of the ANPR camera, it will detect the vehicle scale first, then catch the plate out to make the analysis. It will get the better accuracy but sometimes it will lose some results in the not-satisfied installation scenario.
  License plate & Vehicle mode: this mode will allow the ANPR camera to capture the vehicle plate simultaneously with the scale of vehicle is detected. This mode will greatly improve the recognition at some not-satisfied installation scenario.

  So we recommend you to use **Vehicle priority mode first** if there is no issues on installation and filling lights. After the issues of plate recognition is carried out, you can **switch the mode to License plate & Vehicle mode.**

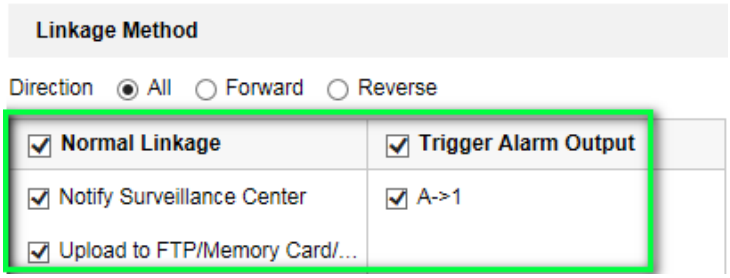
8. Go to **Arming Schedule** and **Linkage Method** to continue; here you can set the arming schedule and linkage action **independently** for white list, black list and other list, so you need to set them one by one;



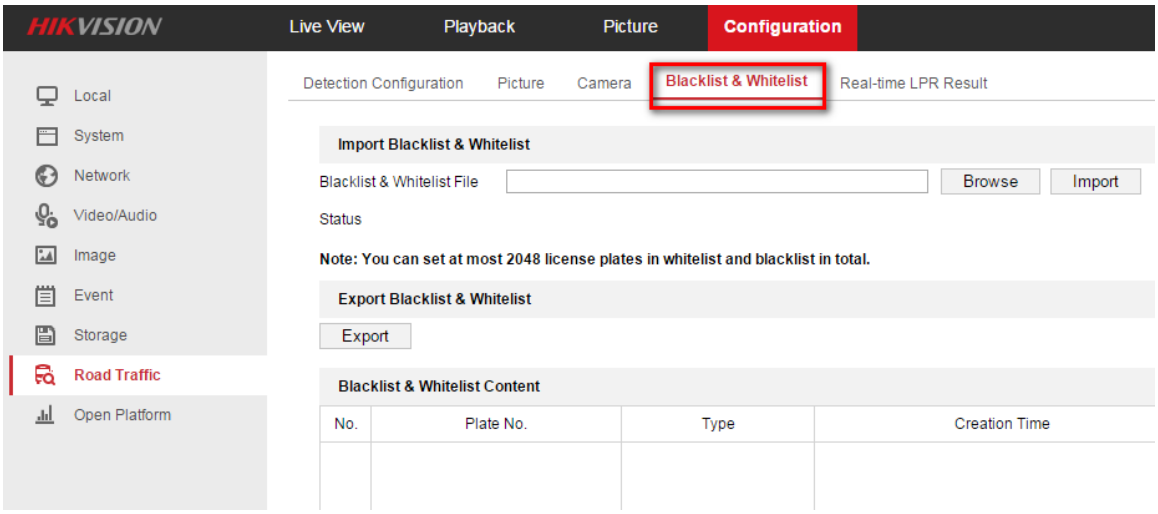
7. Select a direction here. The **Forward** means vehicle moves toward the camera; **Reverse** means vehicle moves away from the camera. Only the vehicles moving as the selected direction can trigger selected linkage methods. **We highly recommand you choose All if there is no special use**;



8. Remember to enable **Notify Surveillance Center** and Upload to FTP/xxxx;

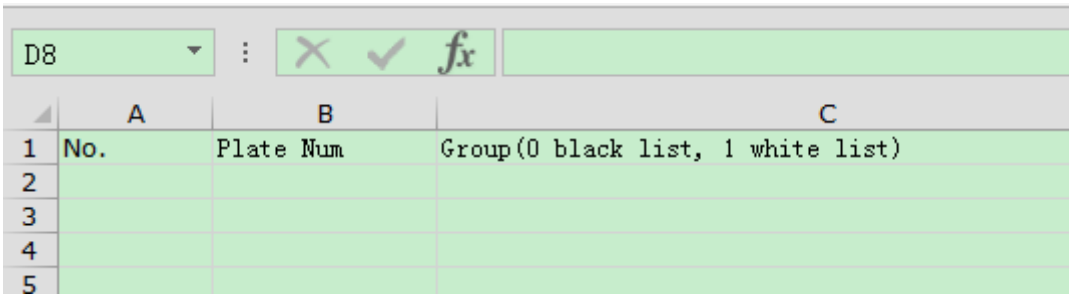


9. The last part is to import the **Blacklist & Whitelist**. If you don't have such a list in advance, export the template first to make one;



The template looks like this:

(when inputting the plate number, input several consecutive numbers/letters with no blank included.)



3.2 Set ANRP Function via NVR Web Configuration Interface

Please refer to Chapter 3.1;

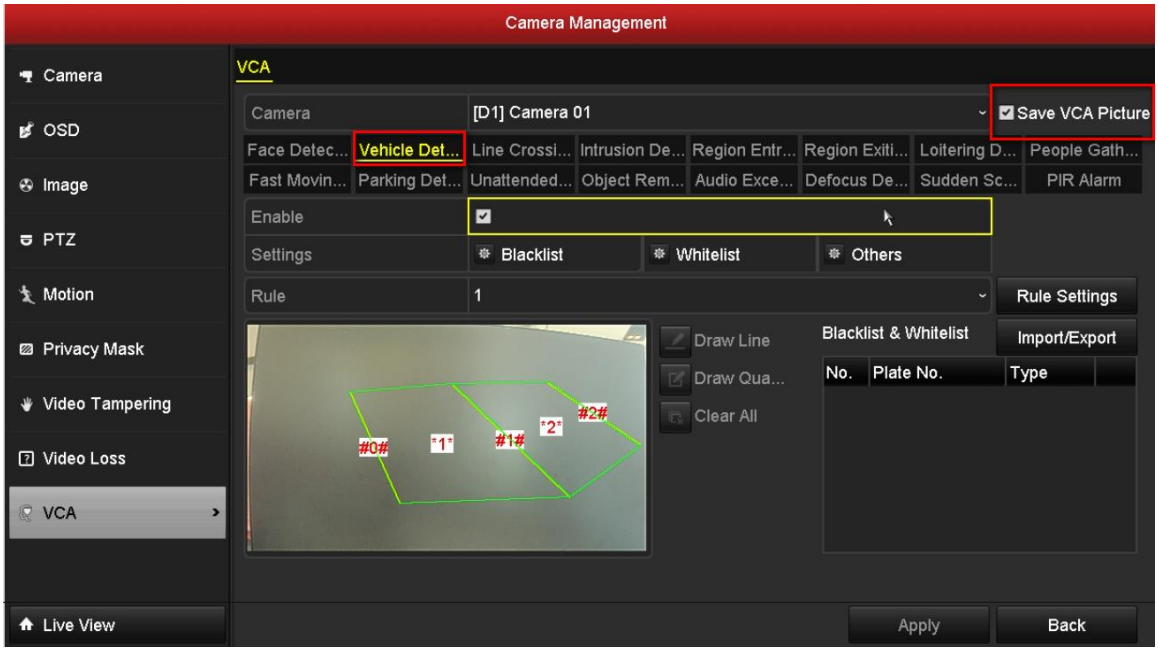
3.3 Set ANRP Function via NVR Local Configuration Interface with GUI 3.0

Preparations:

Please refer to chapter 3.1 & chapter 3.3;

Steps:

1. Go to **Menu->Camera Management->VCA->** select the camera channel->Vehicle Detection to enable ANPR function. Remember to check Save VCA Picture.
2. For detailed steps, please refer to chapter 3.1 & chapter 3.3;



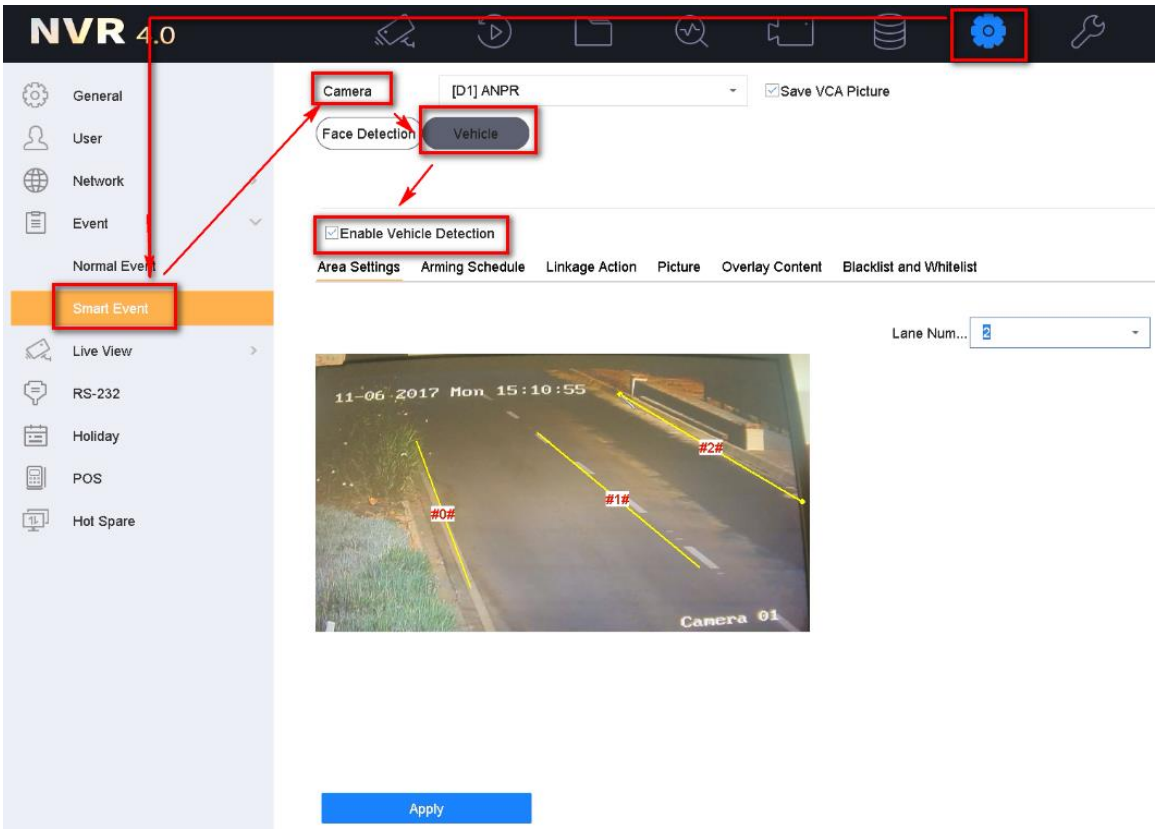
3.4 Set ANRP Function via NVR Local Configuration Interface with GUI 4.0

Preparations:

Please refer to chapter 3.1 & chapter 3.3;

Steps:

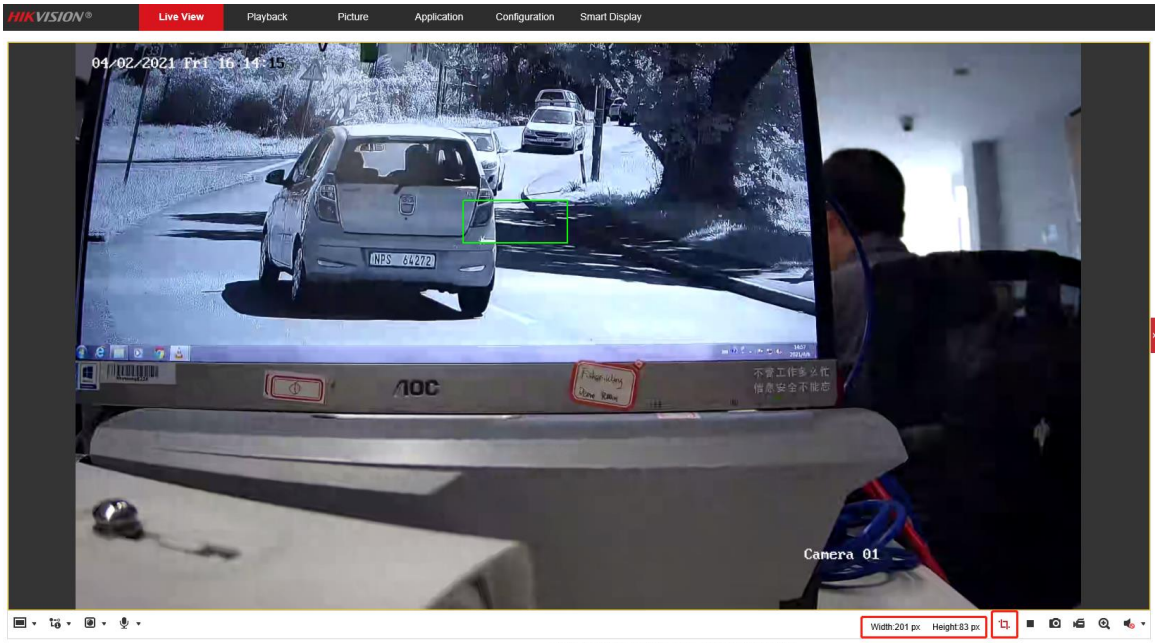
1. Go to **System->Event->Smart Event**-> select the camera channel->Vehicle to enable ANPR function. Remember to check Save VCA Picture;
2. For detailed steps, please refer to chapter 3.1 & chapter 3.3.



3.5 Method to check ANPR picture pixels

Steps:

1. Save a picture with vehicle license plate information to PC, then open it with paint tool；
2. Click Select, draw a rectangle to cover the vehicle license plate;
3. Check the pixel at the bottom of the picture.


HIKVISION
Live View
Playback
Picture
Application
Configuration
Smart Display
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Camera 01
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Height:83 px
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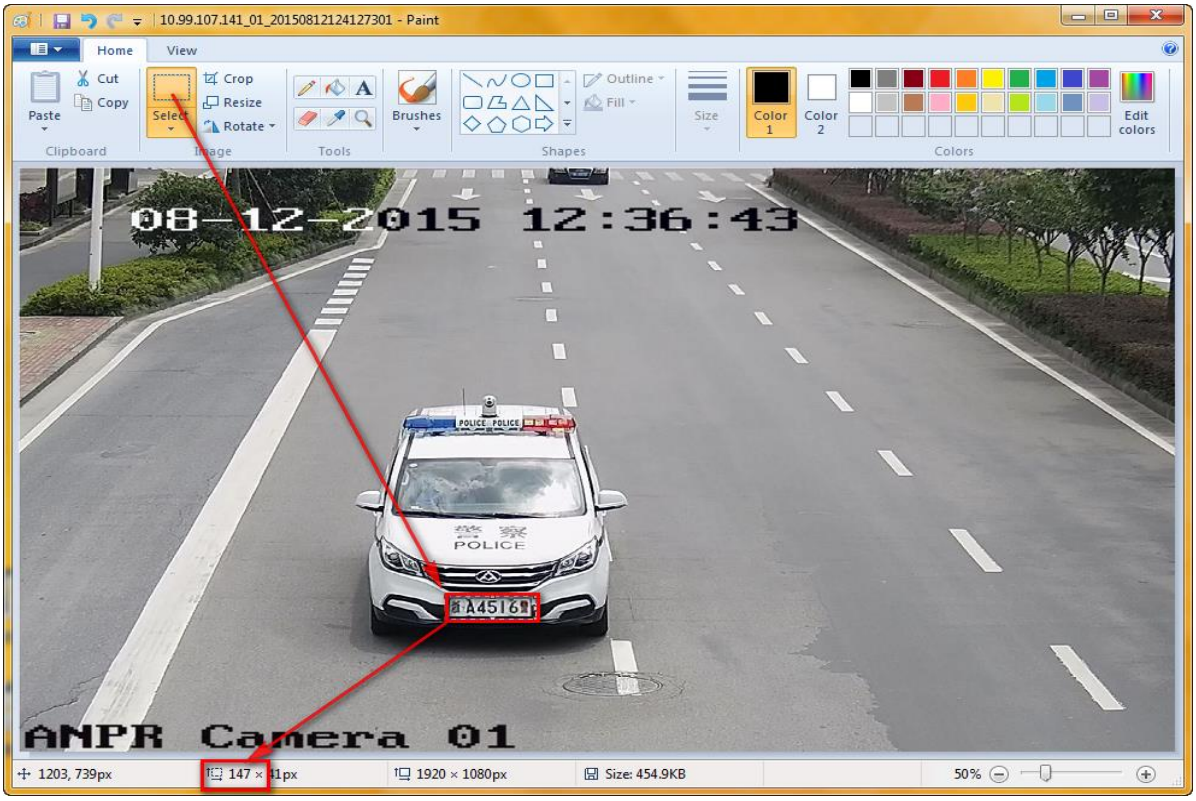
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ANPR Camera 01
1203, 739px
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1920 × 1080px
Size: 454.9KB
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Chapter 4 Performance

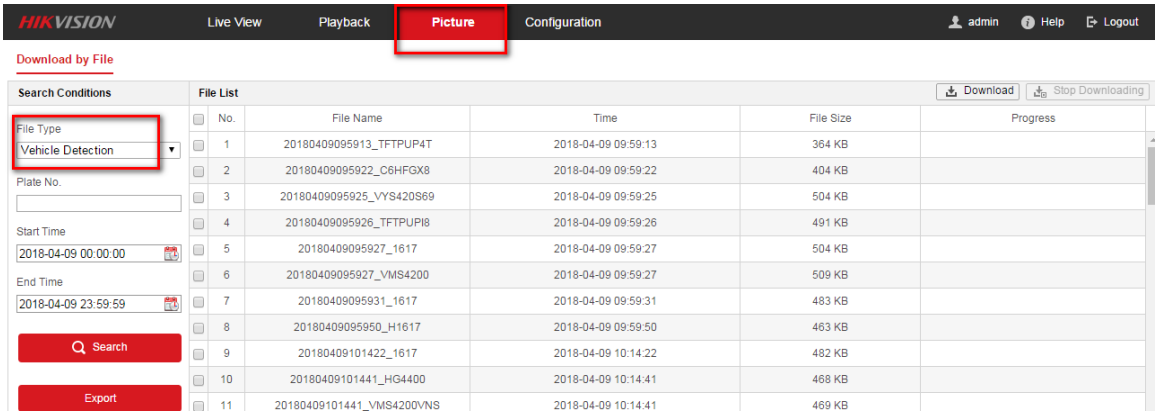
4.1 Search ANRP pictures & videos via Camera Web Configuration Interface

Steps:

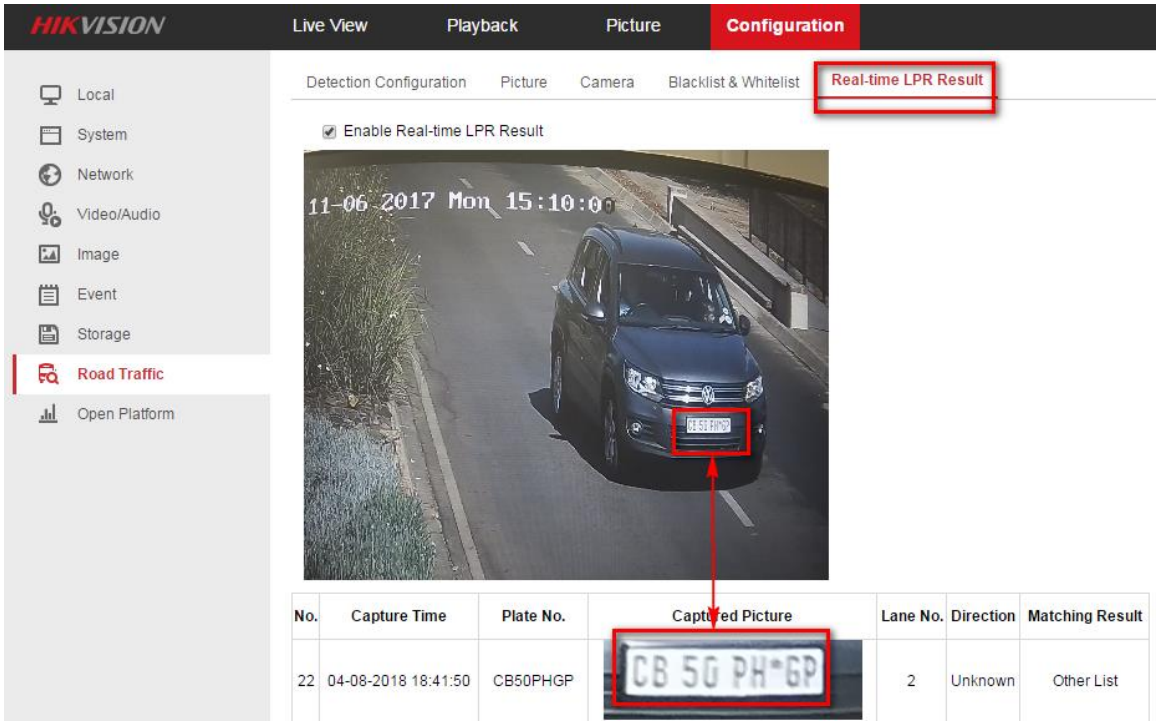
1. You can search or download the pictures in Picture interface by selecting the File Type as Vehicle Detection.

Note:

Make sure the SD card in camera is working.



2. You can also check the real-time captured license plate in **Real-time LPR Result** interface;



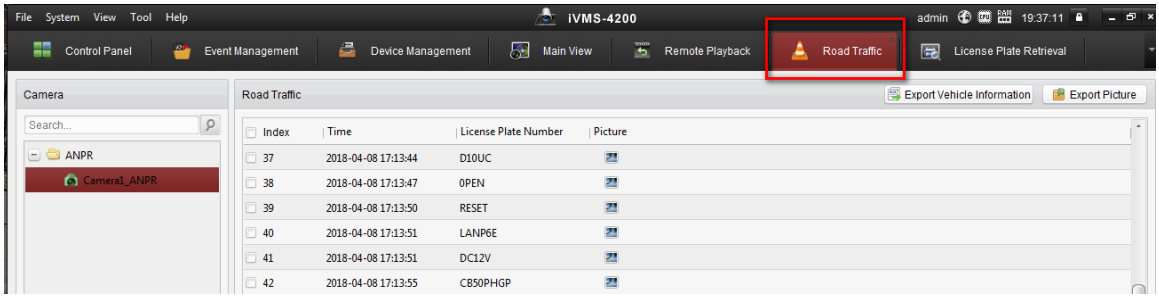
4.2 Search ANRP pictures & videos via iVMS-4200

Steps:

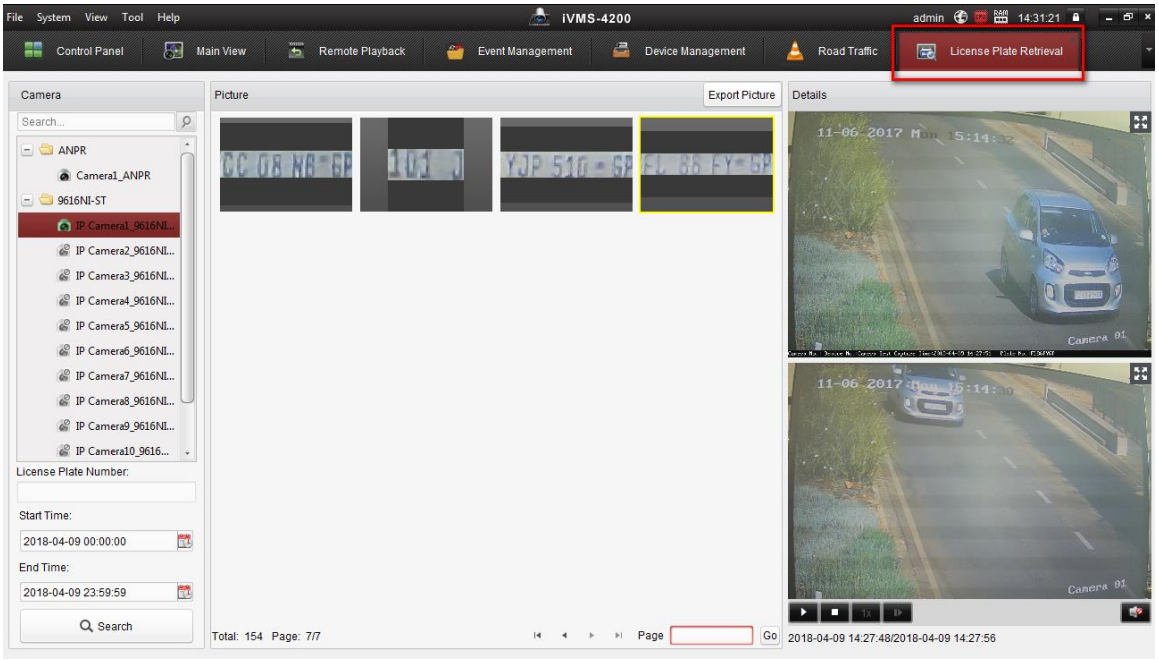
1. You can search or download the captured pictures in Road Traffic interface. Vehicle Information could also be exported here;

   Note:

   Make sure the SD card in camera is working, or you have set up storage server for iVMS-4200;

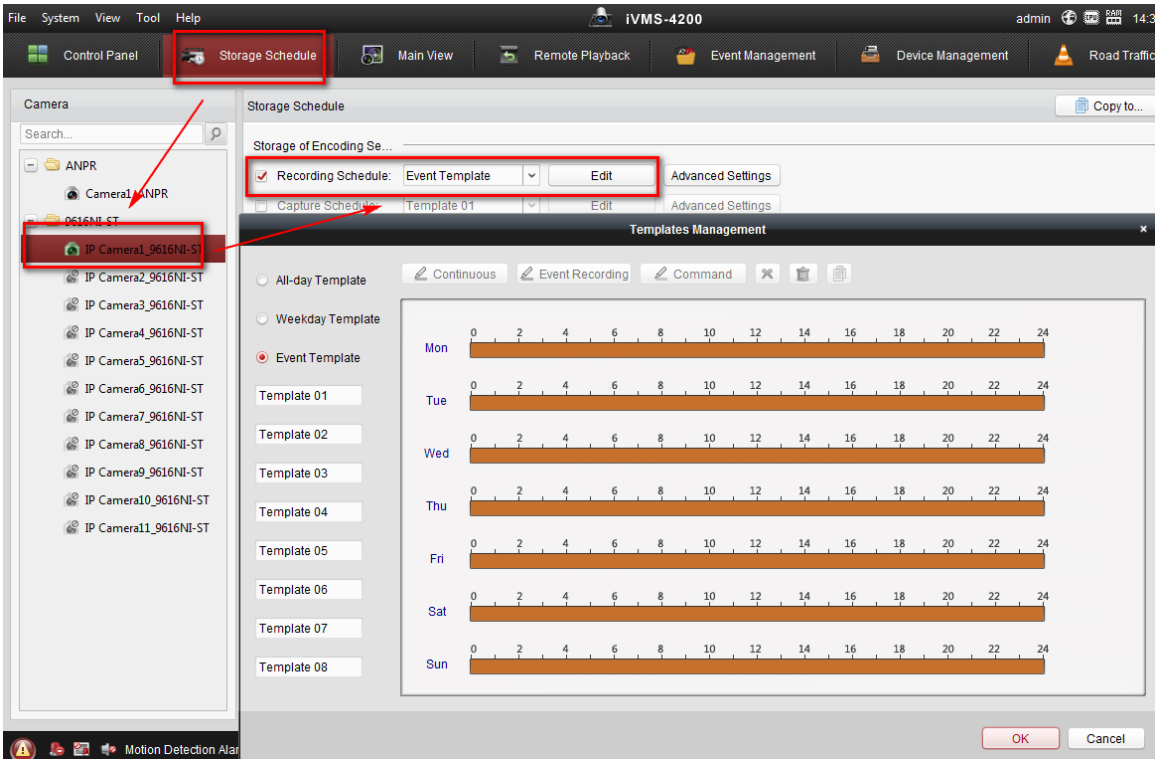


2. If the camera is also added into NVR, you can search or download the captured pictures in **License Plate Retrieval** interface;



3. You need to set an EVENT recording schedule in NVR in advance.

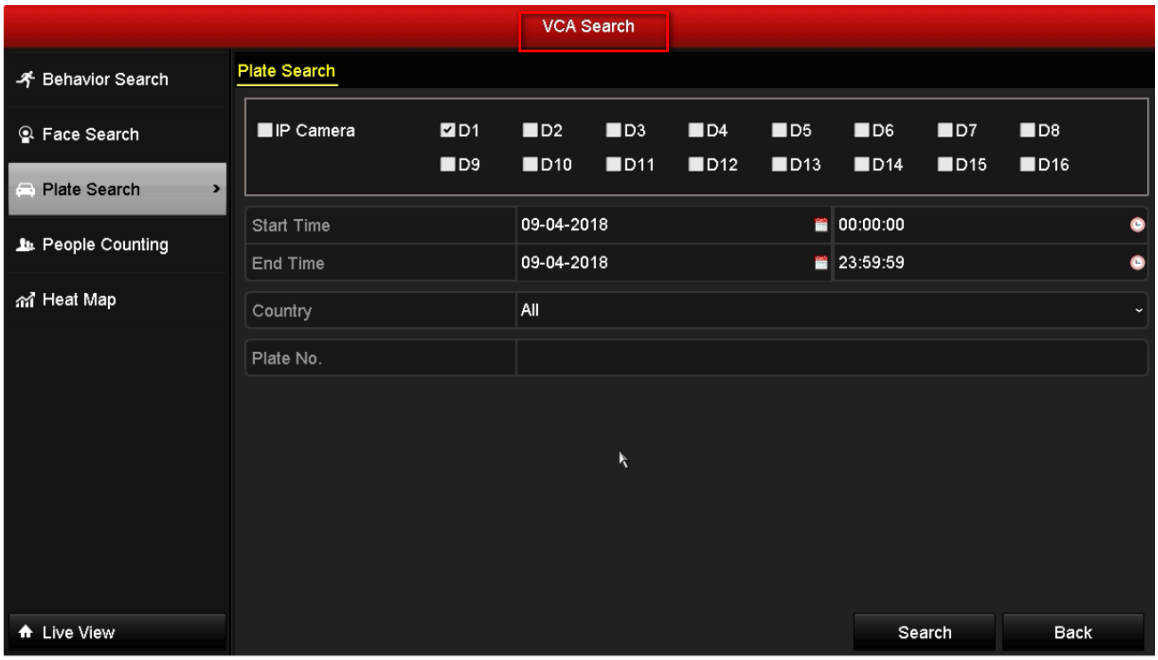
   Otherwise there will be only pictures;



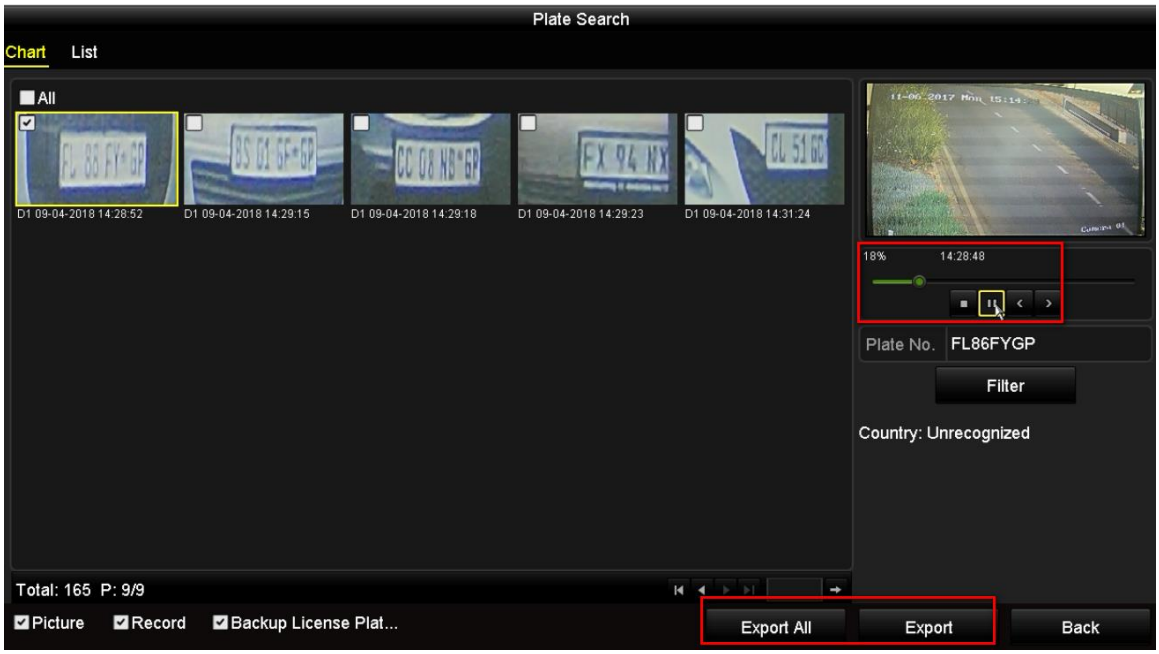
4.3 Search ANRP pictures & videos via NVR Local Configuration Interface with GUI 3.0

Steps:

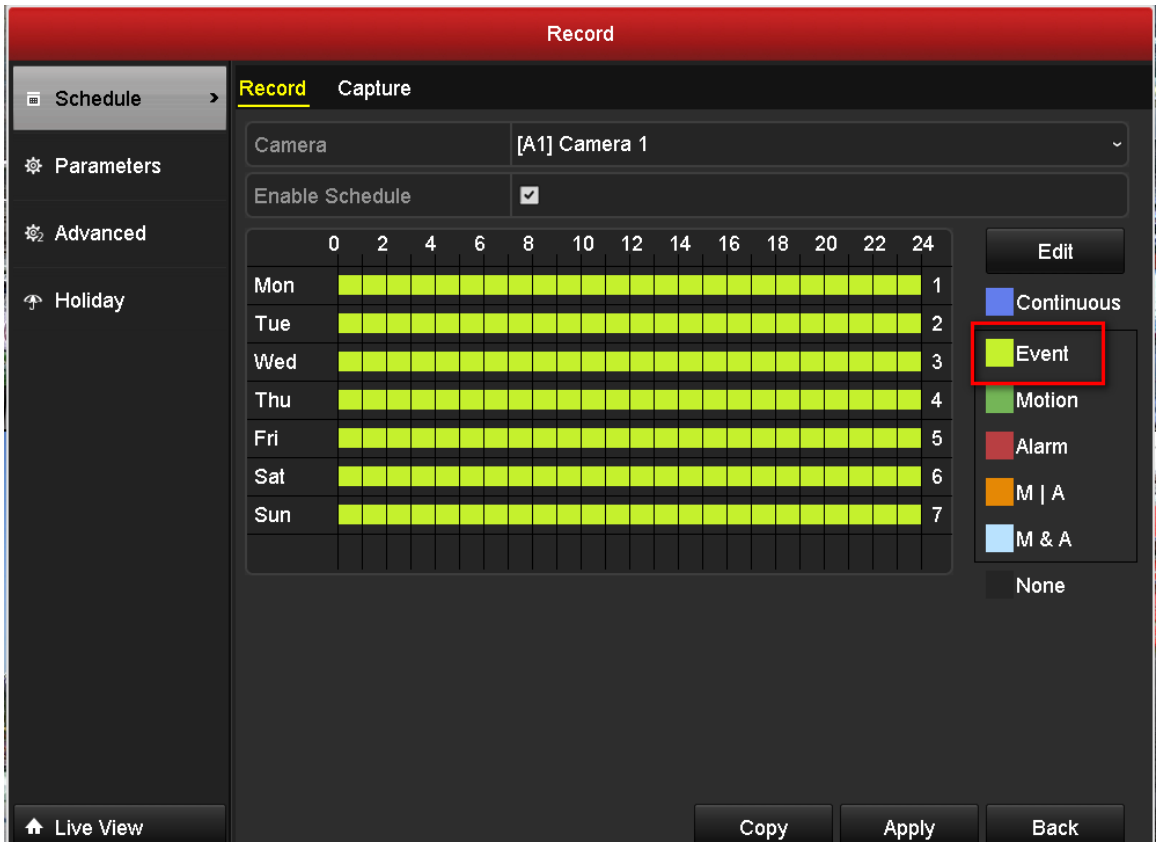
1. Go to **Menu->VCA Search->Plate Search** to search & export the captured license plate pictures & videos;



2. After clicking Search button, all the captured license plate pictures & videos would be displayed;



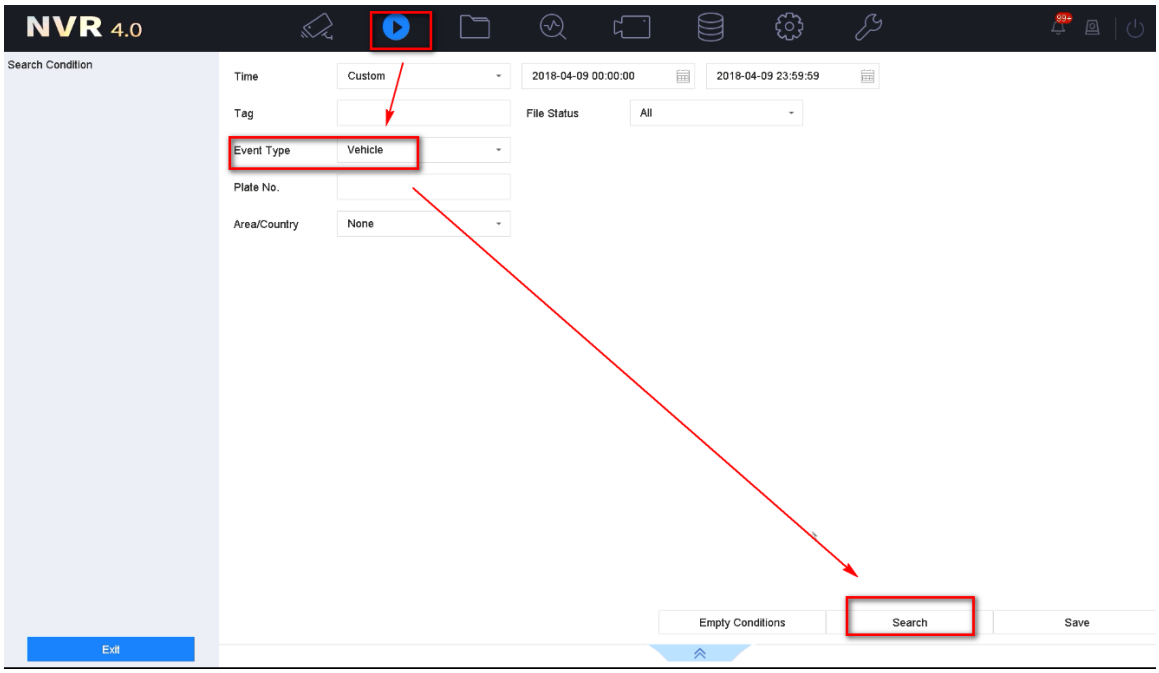
3. You need to set an **EVENT recording schedule** in NVR in advance. Otherwise there will be only pictures;



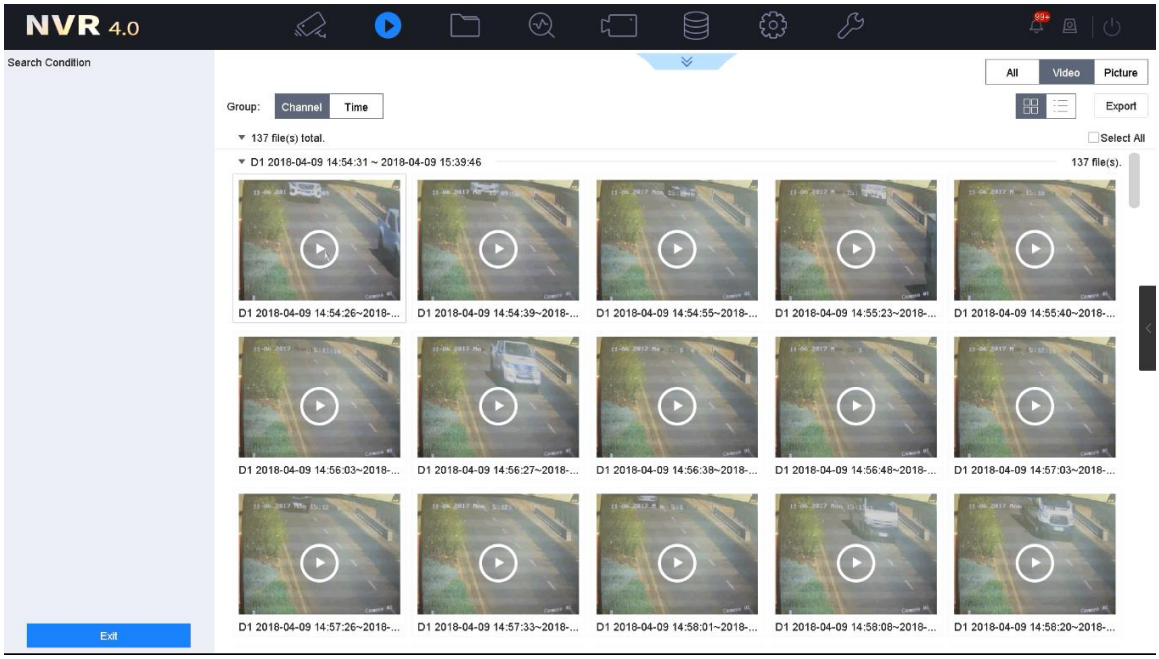
4.4 Search ANRP pictures & videos via NVR Local Configuration Interface with GUI 4.0

Steps:

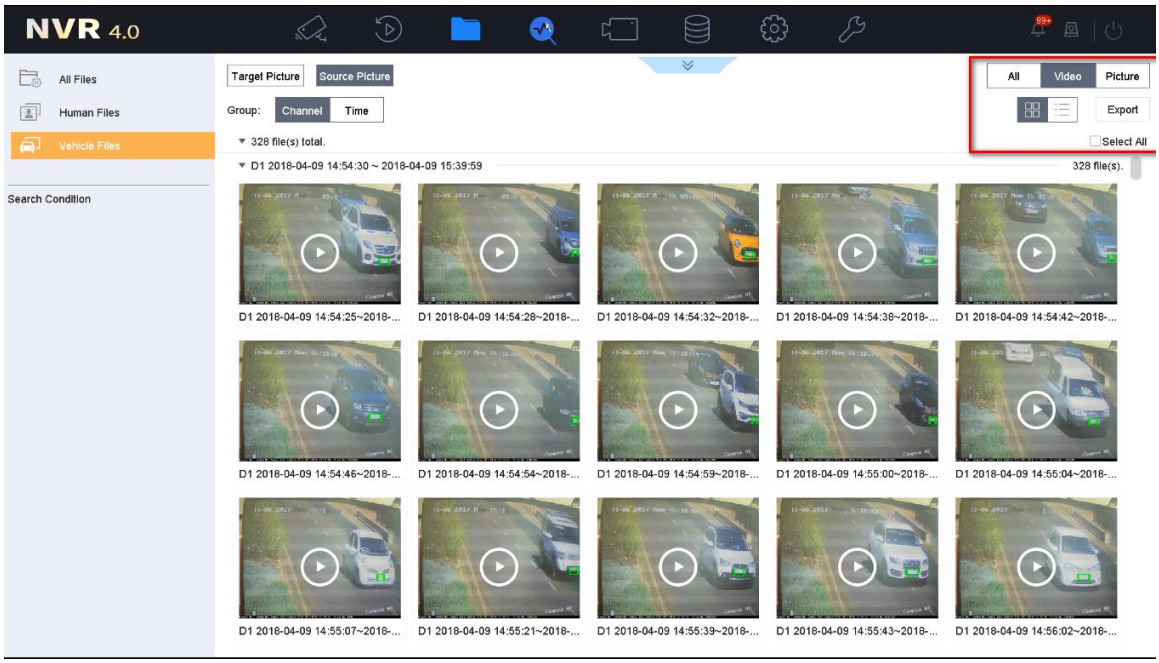
1. You can go to **Playback-> Custom Search->** select the Event Type as Vehicle to search & export the captured license plate pictures & videos;



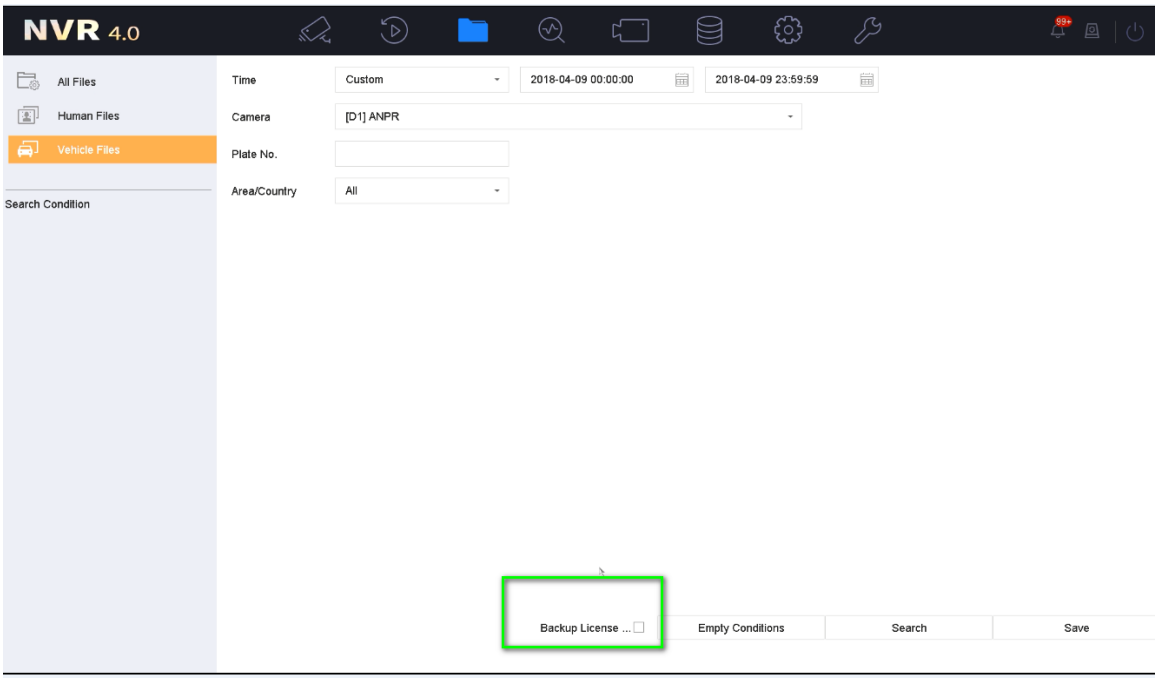
2. After clicking Search button, all the captured license plate pictures & videos would be displayed. You can click any of these to watch the video;

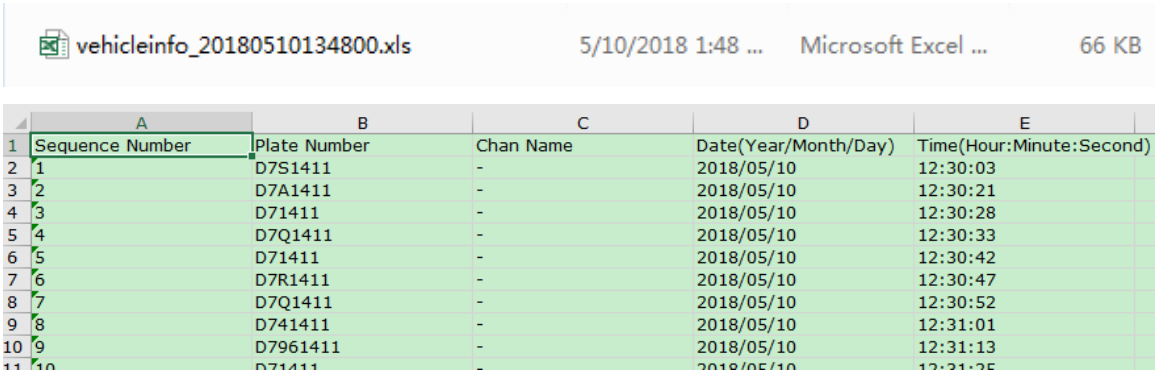


3. You can also go to **File Management->Vehicle Files** ->click Search button, then all the captured license plate pictures & videos would be displayed. You can click any of these to watch the video;



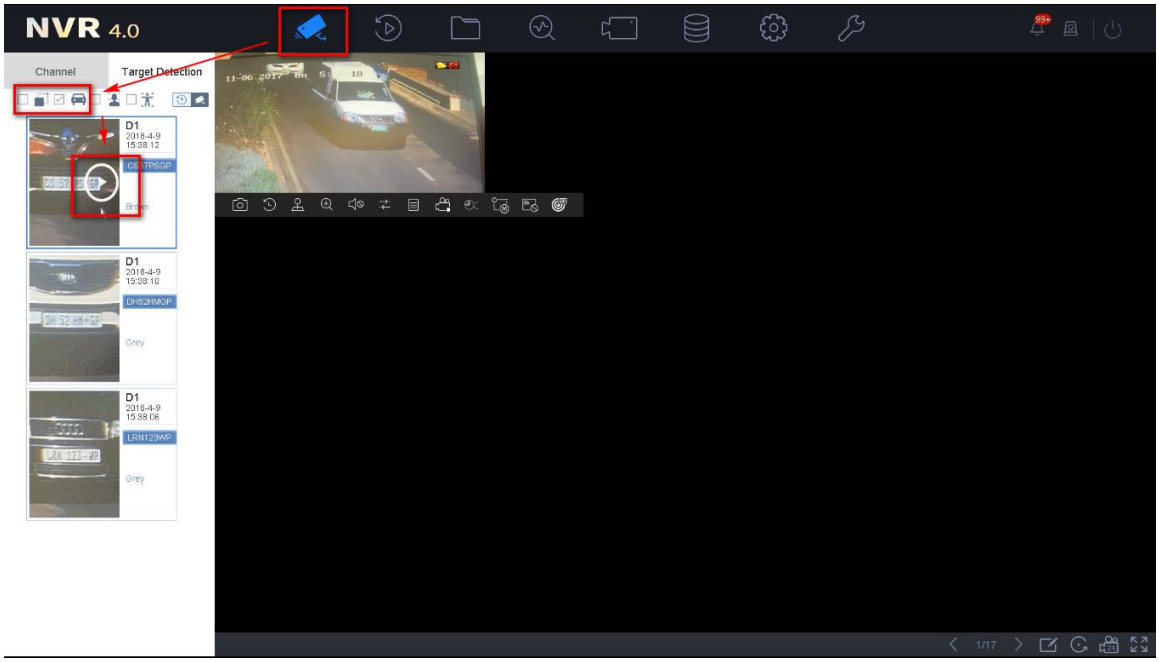
4. Vehicle detailed information could also be exported later if you enable the **Backup License Plate Statistics Info,** which would be included in an .excel file;

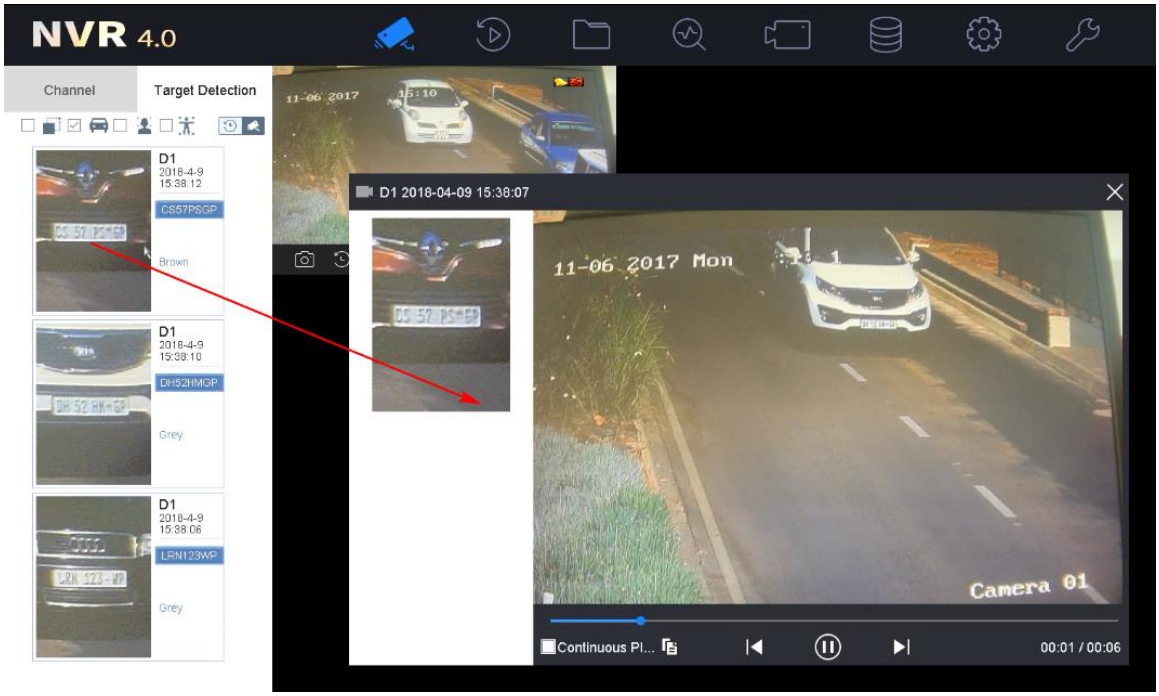




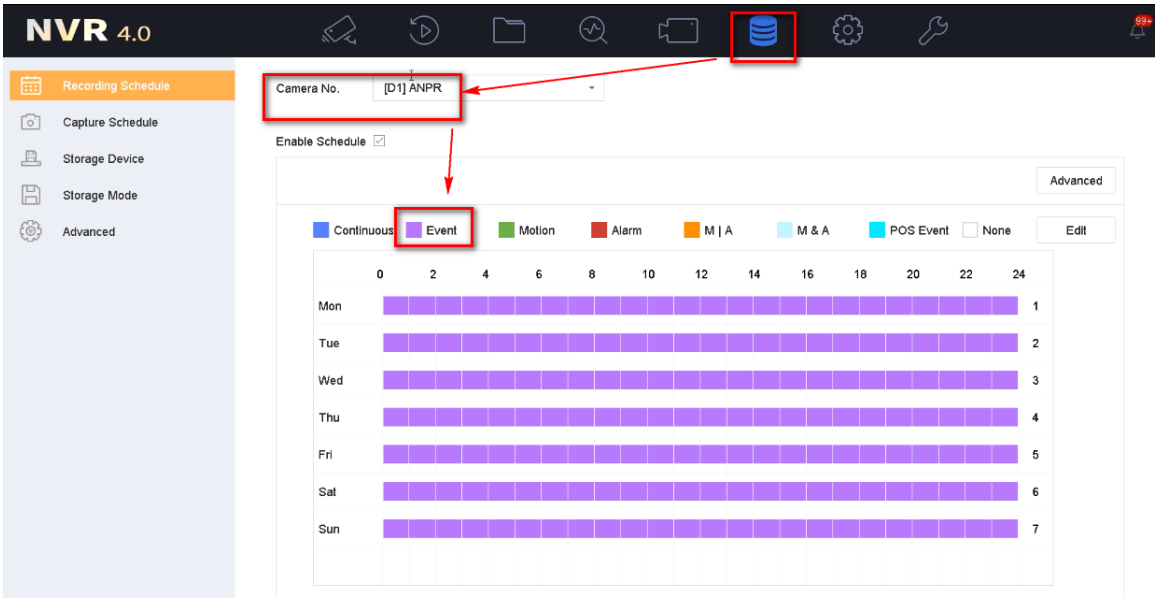
	A	B	C	D	E
1	Sequence Number	Plate Number	Chan Name	Date(Year/Month/Day)	Time(Hour:Minute:Second)
2	1	D7S1411	-	2018/05/10	12:30:03
3	2	D7A1411	-	2018/05/10	12:30:21
4	3	D71411	-	2018/05/10	12:30:28
5	4	D7Q1411	-	2018/05/10	12:30:33
6	5	D71411	-	2018/05/10	12:30:42
7	6	D7R1411	-	2018/05/10	12:30:47
8	7	D7Q1411	-	2018/05/10	12:30:52
9	8	D741411	-	2018/05/10	12:31:01
10	9	D7961411	-	2018/05/10	12:31:13

5. Go to **Live view->Target Detection->** Select Vehicle Detection to watch the real-time captured license plate pictures & videos;





6. You need to set an EVENT recording schedule in NVR->Storage->Recording Schedule in advance. Otherwise there will be only pictures.


NVR 4.0
Recording Schedule
Capture Schedule
Storage Device
Storage Mode
Advanced
Camera No.
[D1] ANPR
Enable Schedule
Advanced
Continuous
Event
Motion
Alarm
M | A
M & A
POS Event
None
Edit
0 2 4 6 8 10 12 14 16 18 20 22 24
Mon 1
Tue 2
Wed 3
Thu 4
Fri 5
Sat 6
Sun 7

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