

Quick Guide

HikVision ANPR Camera - DS-2CD4A26FWD-IZSWG-P

Configuration of Automatic Number Plate Recognition (ANPR) via WEB

Version	Ændring	Udført af
1.0	Første version	Jasper Johansen
1.1	Mindre korrektioner	

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1. Introduction

Using this camera, you can easily monitor road traffic, both vehicles passing by and vehicles stopping to enter a designated zone. 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 a FTP server. Connected to a NOX system via the Wiegand interface, the license plate will be converted to a card number and can be used for access control.

2. Web Configuration

Use the SADPTool (<https://www.hikvision.com/en/Support/Downloads/Tools>) to setup IP-address and password. Login to the IP Camera (IPC) via a web browser (e.g. Internet Explorer) and make sure the firmware version supports ANPR. Preferably use the Firmware version: V5.4.5 build 171222 – downloadable through our website here:

https://www.aras.dk/Files/Filer/Downloads/Værktøjer/FF_R3_EN_STD_5.4.5_171222_CAR_72bit.zip

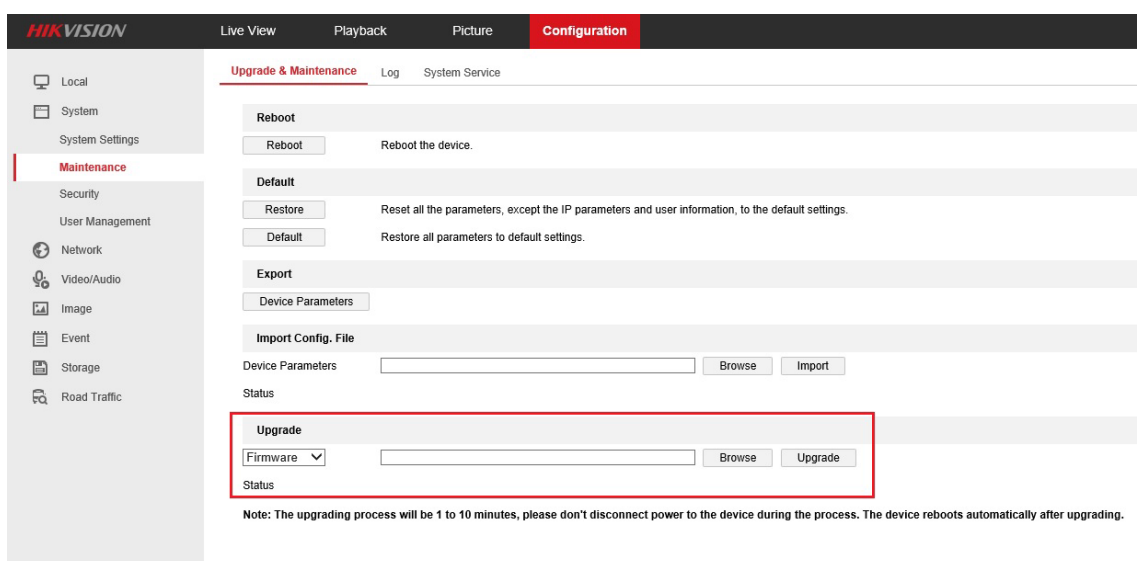


Figure 1 - Updating the firmware

2.1 Detection configuration

1. Video Content Analysis (VCA) must be setup to the intended use to get the best performance. Two modes of VCA resource allocation are supported:

- Smart Event
- Vehicle detection

Go to *Configuration > Advanced Configuration > System > VCA Resource*
Select **Vehicle detection** as the VCA resource and reboot the device to activate the new setting.

NOTE.

When *Smart Event* is enabled the Vehicle Detection function is disabled.
When *Vehicle detection* is enabled, high framerate, recording on SD card, certain smart events and people counting are not supported.

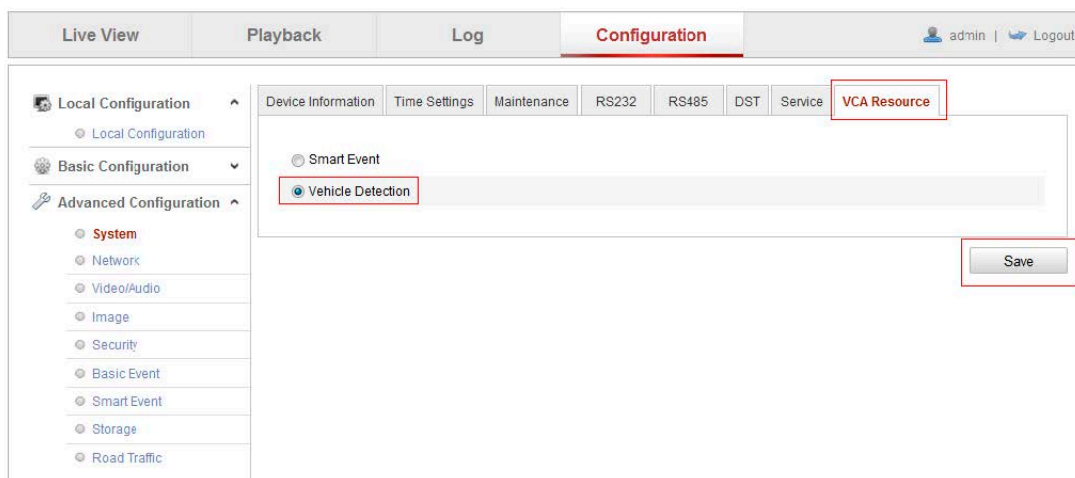


Figure 2 - VCA Resource Allocation.

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

Vehicle Detection can be selected here.

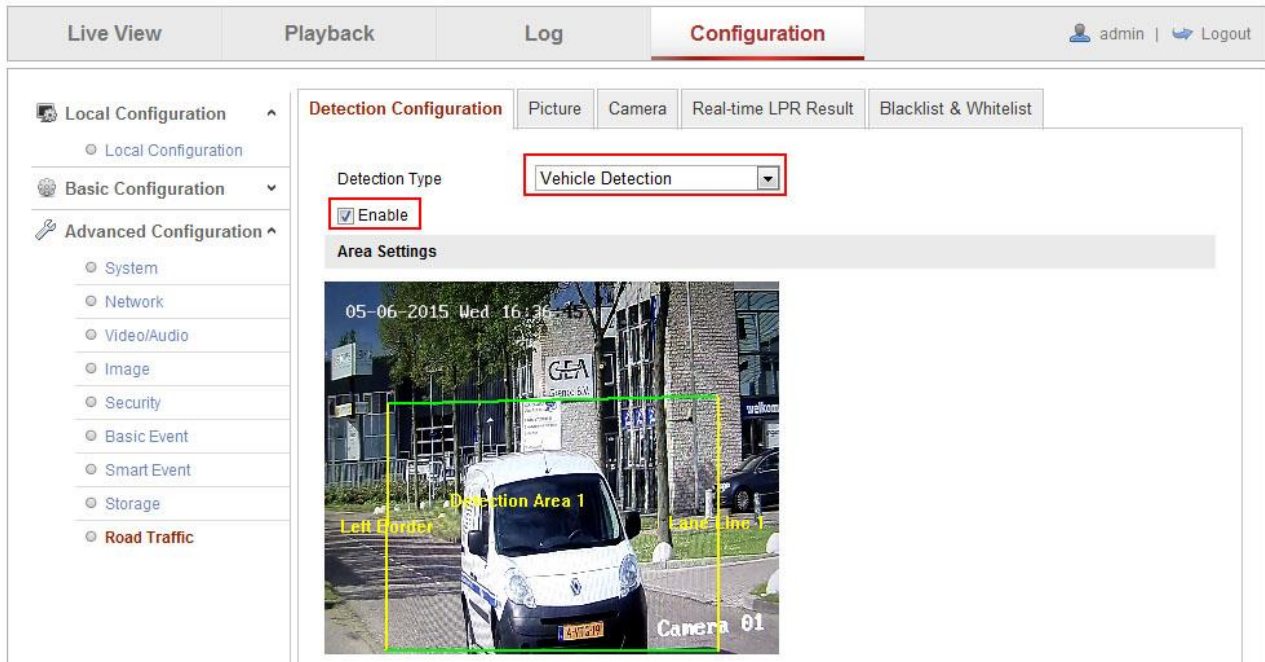


Figure 3 - Enable Vehicle Detection.

- Then Select the number of lanes and your region in the corresponding dropdown list. Up to 4 lanes and three kinds of regions are selectable.

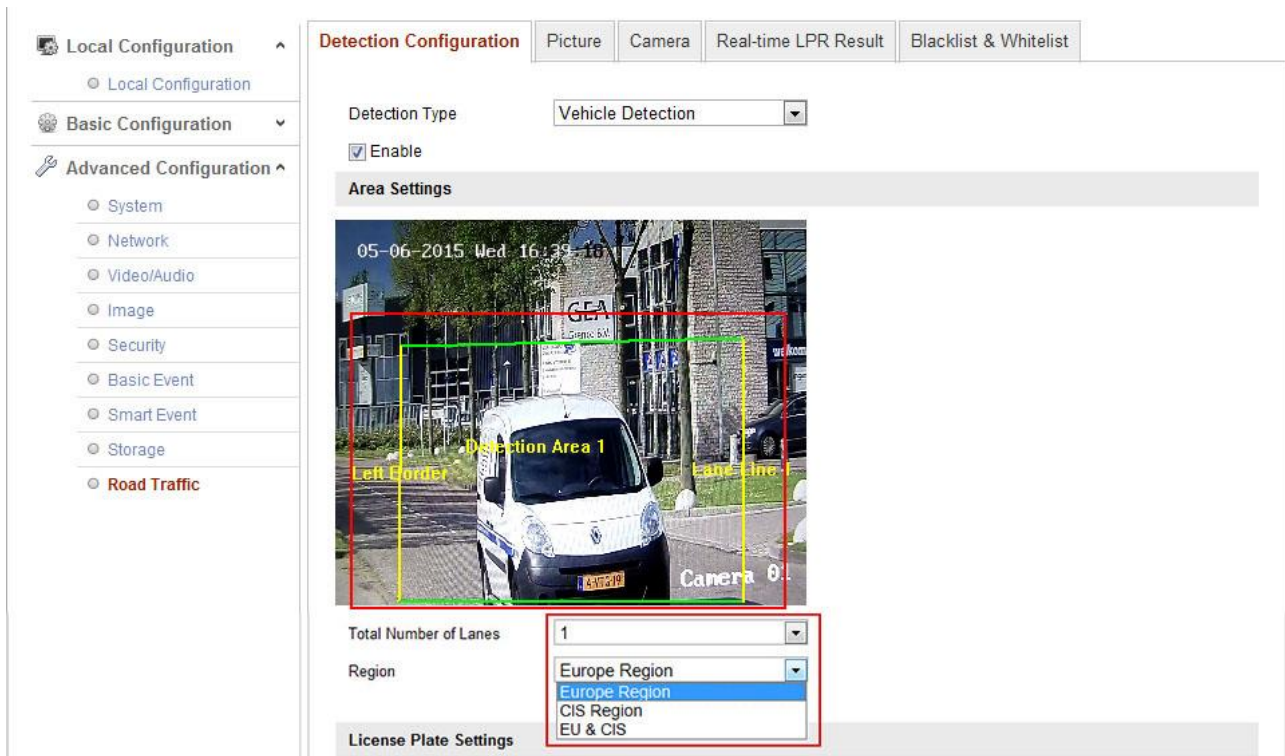


Figure 4 - Select number of lanes and Region.

4. Click and drag the lane line to set the position or click and drag the end of the line 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 the same time for each lane.

5. For high accuracy rate, it is necessary to set the maximum and minimum size of the license plates.
 - Manually take a snapshot with the camera when the license plate appears in the detection area, and then measure the width in pixels as shown in figure 4.

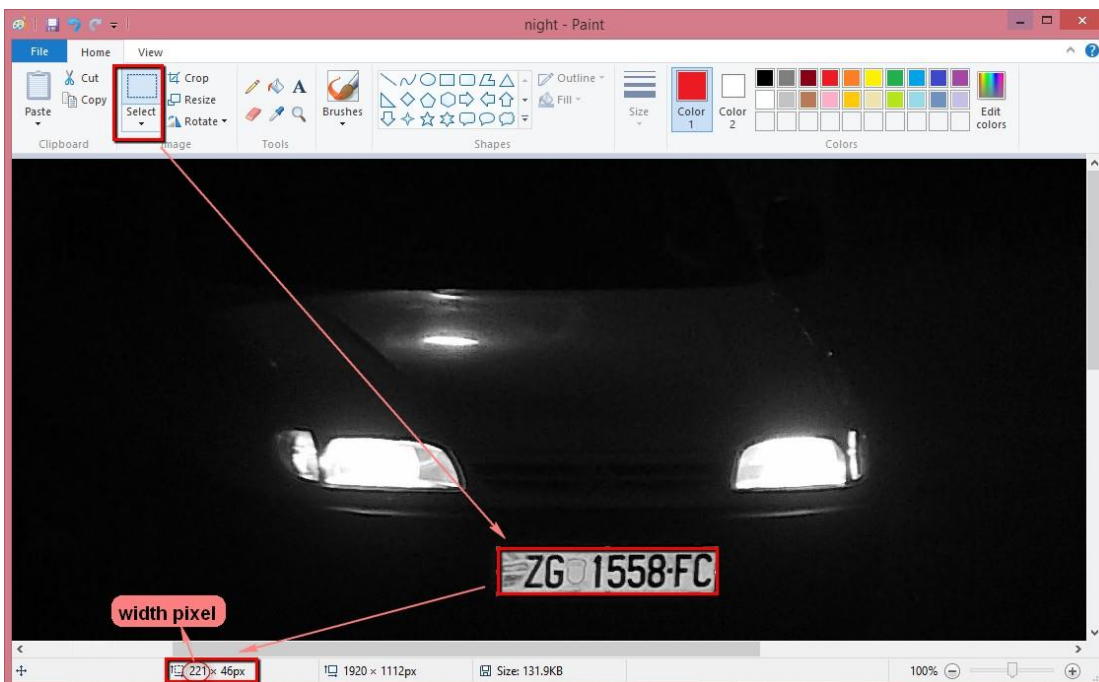


Figure 5 - How to measure a license plate pixel width using the Windows program Paint.

- Set the license plate width parameters.



Figure 6 - License Plate Region Settings

EU Region (and Universal region):

- Minimum acceptable plate width: 130 pixel, or 70 pixels for two-row plates.
- Maximum plate width: should be at least 2x minimum plate width and not exceed 3x minimum plate width.

CIS Region:

- Minimum acceptable plate width: 150 pixel, or 100 pixels for two-row plates.
- Maximum plate width: should be at least 2x minimum plate width and not exceed 3x minimum plate width.

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

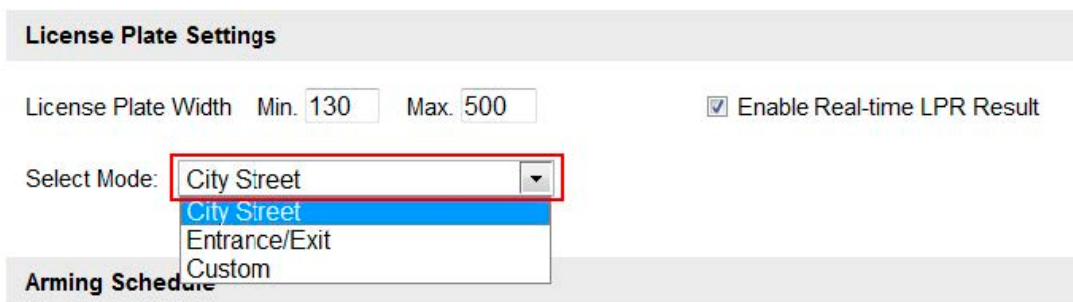


Figure 7 - Vehicle Detection Mode Settings.

City Street:

The license plate information will be uploaded after vehicle leaves the detection area.

Entrance/Exit:

The license plate information will be uploaded as soon as the 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

Figure 8 - Time Interval Settings.

7. (Optional) Arming Schedule is set to 24/7 (always on) 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													

Figure 9 - 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.

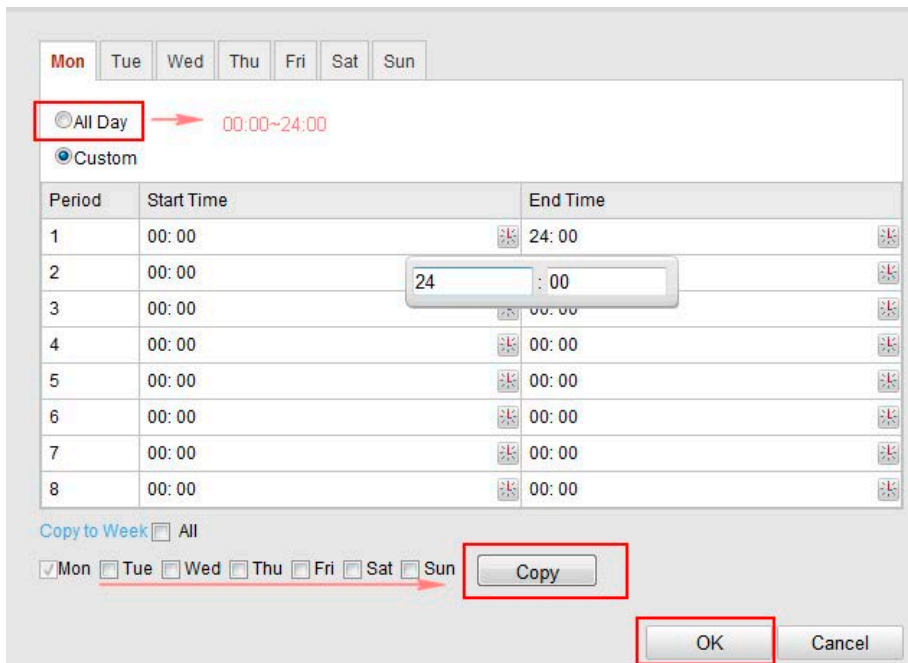


Figure 10 - How to copy the Arming Schedule.

Note. The time of each period cannot overlap.

8. (Optional) Set the Linkage Method.

By default the **Triggering Source** is checked to include **All** (Whitelist, Blacklist and Other). You can also uncheck **All** and select a source in the dropdown list.



Figure 11 - Triggering Source Configuration

Notify Surveillance Center is checked by default and other linkage methods such as **Upload to FTP**, and **Trigger Alarm Output** can be selected.

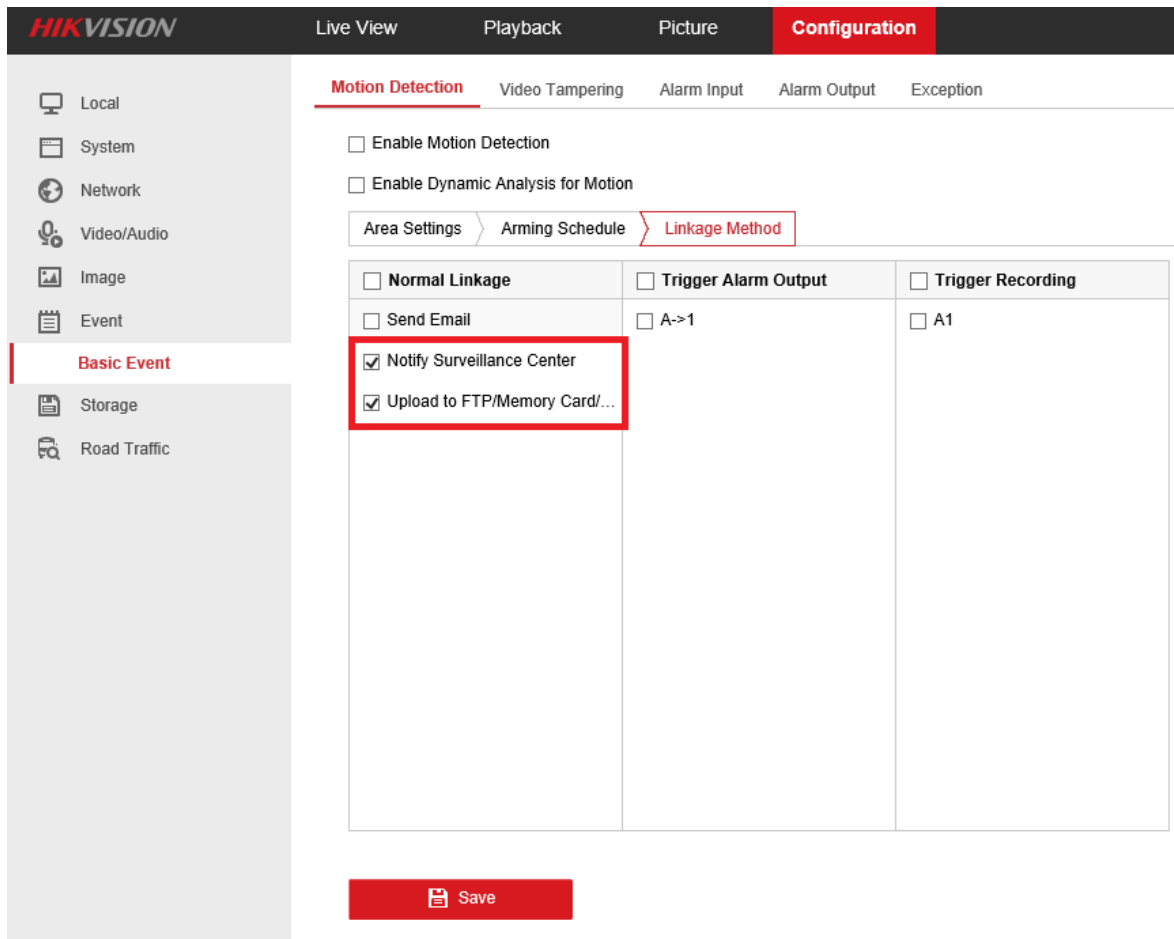


Figure 12 - Notify Surveillance/Upload to FTP Configuration

Notify Surveillance Center:

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

Upload to FTP:

Save pictures directly to a FTP server. After checking the **Upload to FTP** box, you have to setup the FTP server information on the camera.

The screenshot shows the Hikvision web interface with the 'Configuration' tab selected. The 'FTP' sub-tab is active, displaying the following configuration fields:

- Server Address: 192.168.X.XX
- Port: 21
- User Name: cam Anonymous
- Password: [masked]
- Confirm: [masked]
- Directory Structure: Save in the child directory
- Parent Directory: Custom scan
- Child Directory: Custom scan
- Picture Filing Interval: OFF Day(s)
- Picture Name: Default
- Upload Picture
- Test button
- Save button

Figure 13 - Configuring FTP server information on the camera

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
3. Select the information for the text overlay by checking the boxes (**Camera no.**, **Camera info**, **Device No.**, **Capture Time**, **Plate No.**). You can also click the up and down arrows to adjust the sequence of the text.

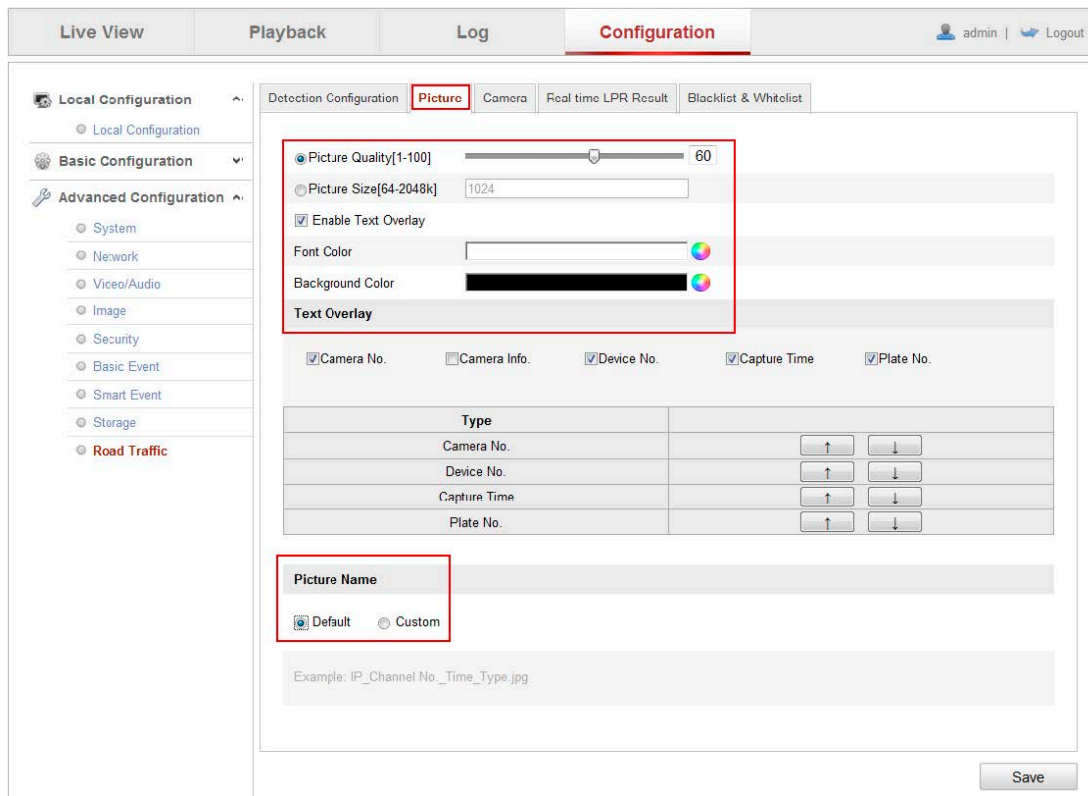


Figure 14 - Uploaded Picture Configuration

4. (Optional) Select **Custom** to set the **Picture Name**. Here you select which information should be included in the text overlay, including **Capture Time**, **Plate No.**, **Alarm Type** and **Camera Name**.

Use the arrows to adjust the sequence.

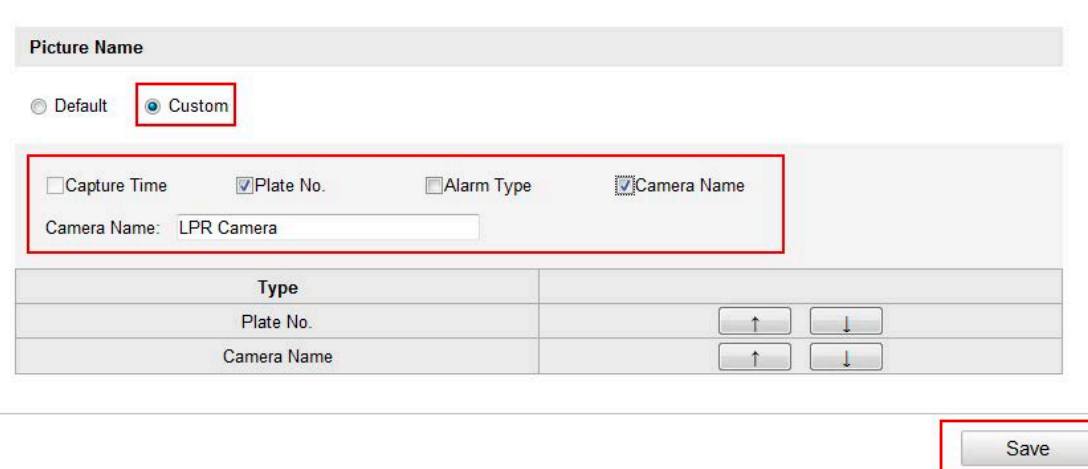


Figure 15 - Picture Name Configuration

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 fields.
2. Click the **Save** button to activate settings.

The screenshot shows the 'Configuration' tab selected in the top navigation bar. On the left, a sidebar menu lists various configuration categories, with 'Road Traffic' highlighted. The main content area is divided into several tabs: 'Detection Configuration', 'Picture', 'Camera', 'Real-time LPR Result', and 'Blacklist & Whitelist'. The 'Camera' tab is active, displaying three text input fields: 'Device No.' (Camera 01), 'Camera No.' (DS-2CD4026FWD-AP), and 'Camera Info.' (EU). A 'Save' button is located at the bottom right of the configuration area.

Figure 16 - Overlay Content Configuration

2.4 Real-time LPR (License Plate Reading) Result

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

Hikvision ANPR Configuration – Quick guide

Local Configuration ^

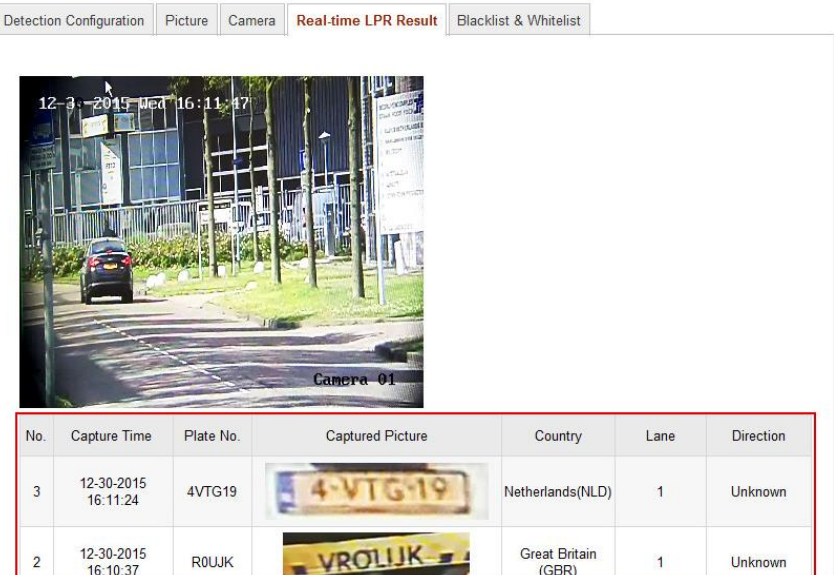
- Local Configuration

Basic Configuration v

Advanced Configuration ^

- System
- Network
- Video/Audio
- Image
- Security
- Basic Event
- Smart Event
- Storage
- Road Traffic**

Detection Configuration | Picture | Camera | **Real-time LPR Result** | Blacklist & Whitelist



The screenshot displays a camera view of a road with a car. The timestamp is 12-30-2015 Wed 16:11:47. The camera is labeled Camera 01. Below the video is a table of detected license plates.



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

Figure 17 - Real-time LPR Result

3. Result Query

Go to *Playback > Download pictures* and select the **Vehicle Detection** option. Here you can search for license plate pictures and information on the SD card.

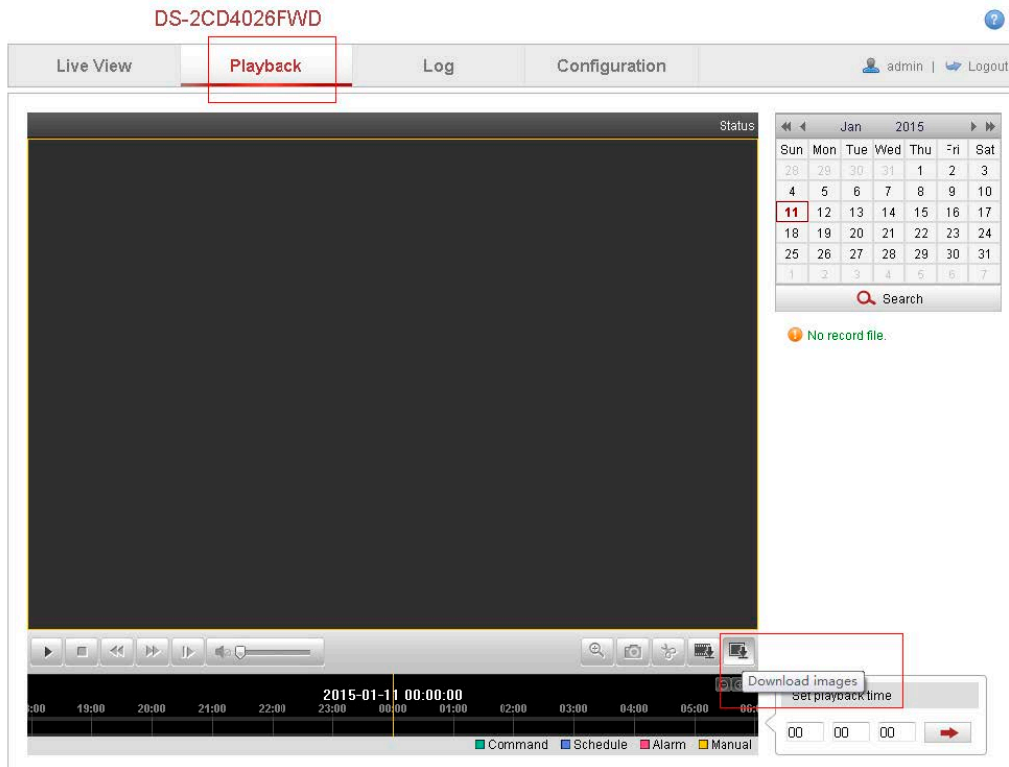


Figure 18 - Search for License Plate Pictures



Figure 19 - Search Results

4. Parameter Recommendation

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

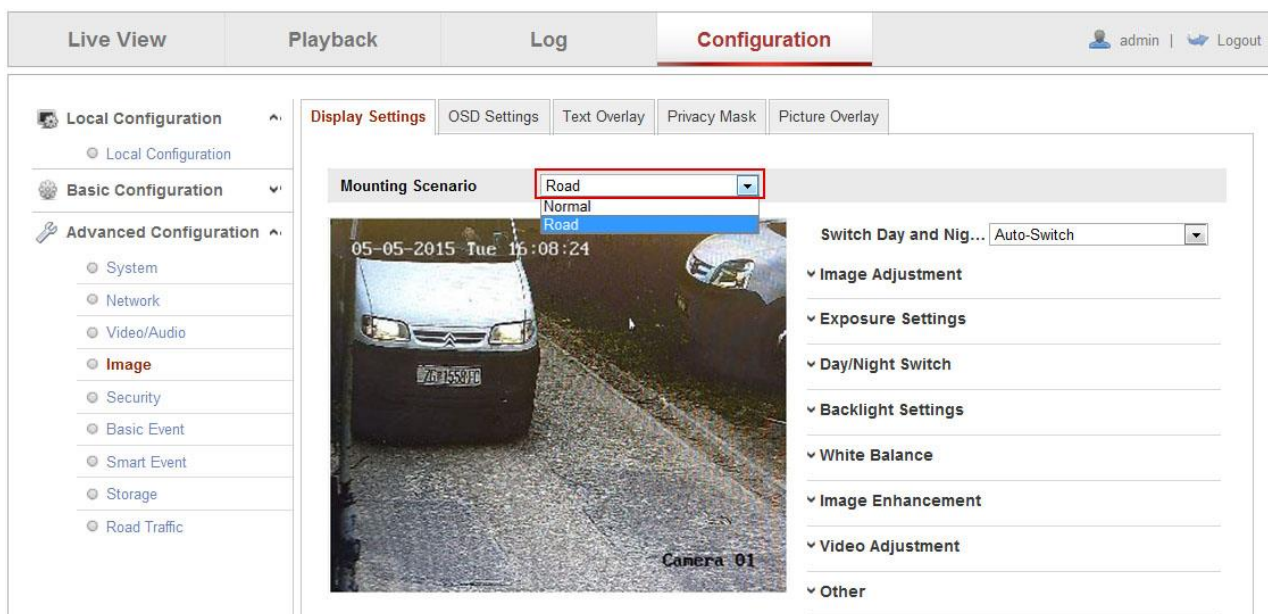


Figure 20 - Mounting Scenario Setting

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

4.1 Exposure Settings

- Iris Mode: Auto
- Auto Iris Level: 50
- Exposure Time: 1/1000
- Gain: 20

^ 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 (<30m/h). Exposure time: 1/150-1/200

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

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

For **Gain**, to ensure high recognition rate:

- When WDR is set to OFF, gain level should be set to less than 30.
- When WDR is set to ON, gain level should be set to 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

Day/Night Switch Auto

Sensitivity 4

Filtering Time 5

Smart IR ON

Mode Auto

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

^ Day/Night Switch

Day/Night Switch

Sensitivity

Filtering Time

Smart IR

Auto
Day
Night
Auto
Scheduled
Triggered by Alarm Input
Triggered by Video

- **Day:** The camera stays on day mode.
- **Night:** The camera stays on night mode.
- **Auto:** The camera switches between day mode and 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

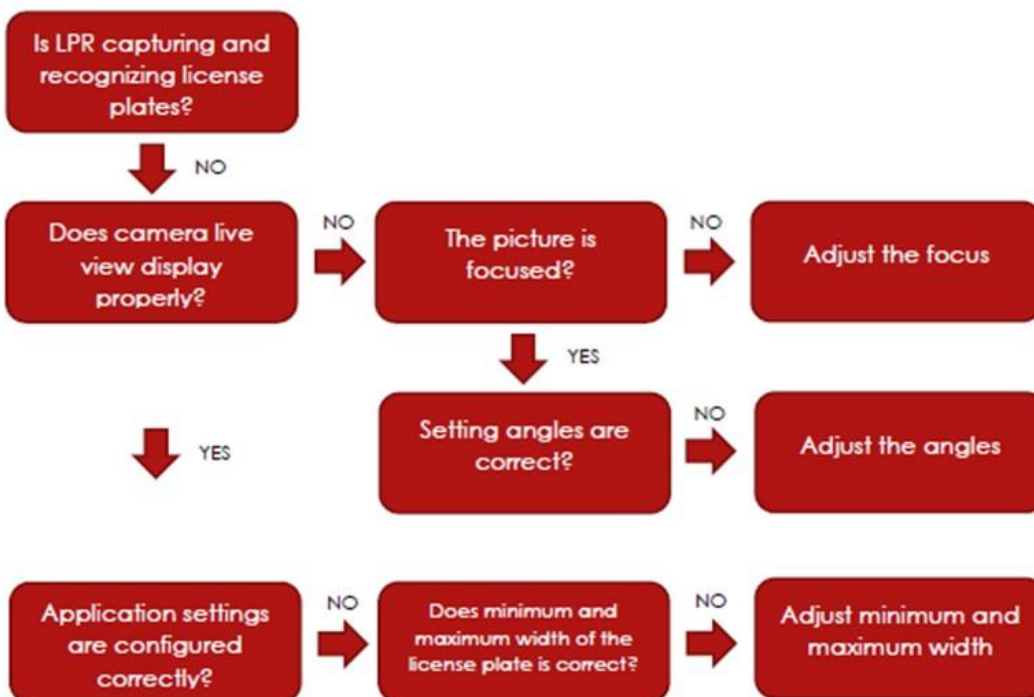
^ Backlight Settings

BLC Area

WDR

5. FAQ

The troubleshooting flowchart is like this:



5.1 License Plate Tilt Angle



Solution: Notice the license plate tilt angle. License plate tilt angle must be within +/- 5 degrees.

5.2 Depth of focus



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



In 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 IR-LED (for the night).

5.4 License plate width



Solution: It seems the license plate is well lit and readable by eye. However, if we measure full frame in photoshop (or Paint), we see that ANPR width is under 90 pixels 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. 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