

Structure

Hikvision ANPR Camera uses video analysis technology to do the number plate recognition. Both Footage and number plate captures can either be stored in the iVMS-5200Pro directly or in the NVR.

Here the NVR model is **7608NI-I2/8P, 7616NI-I2/16P, 7732NI-I4/16P, 96xxNI-I8 and 96xxNI-I16.**

Please note if we store captures in the NVR and add the NVR in the 5200Pro, 5200Pro cannot get captures from NVR at this stage. However, we are in the process of updating 5200Pro to support such topology.

Hikvision ANPR Camera has a SDK for integration which includes the number plate info, such as exact number plate, capture time, etc. therefore, if third-party VMS wants to do integration, please get to Hikvision web site to download the latest version of SDK. If you have any query during development, please feel free to contact Hikvision Australia Team. The Free landline is 61 2 85994233.

Basic preparation before Installation

1、 Cam part number:

Hikvision supply 2 shapes of ANPR Cameras: full body and bullet. For full body the models are **DS-2CD4026FWD/P-IR5 (3.8-16mm)**, **DS-2CD4026FWD/P-L (3.8-16mm)**. For bullet, the models are **DS-2CD4A26FWD-IZS/P (2.8-12mm)**, **DS-2CD4A26FWD-LZS/P (2.8-12mm)**. For the 2X4026 cameras, they are equipped with a waterproof housing. See the figure below. Inside the housing, there is a module which is used to transmit external power to the EXIR lights and camera. This module has a power input and power output. So user need to connect an external power into this module.



Regarding the characters in the part number, I will give you a quick explanation: 'IR' or 'I' means camera has IR lights. For 4026, it has 6 pcs built-in IR lights; for 4A26, it has 4 IR lights. 'Z' means camera has motorized lens so use can do one-touch focus in the browser. 'S' means camera support alarm input, output and audio in, out.

Basic Set-up in the Browser

- 1、 While installing the Cam, please plug a SD card into the Cam.
- 2、 Run the browser as admin. Login the camera and go to Initialize the SD card, note that user needs to adjust the percentage of picture as will.

The screenshot shows the Hikvision web interface. The top navigation bar includes 'Live View', 'Playback', 'Picture', and 'Configuration'. The left sidebar lists various settings categories, with 'Storage Management' highlighted. The main content area is titled 'HDD Management' and contains a table with the following data:

HDD No.	Capacity	Free space	Status	Type	Property
1	14.84GB	5.00GB	Normal	Local	R/W

Below the table, there are 'Quota' settings with input fields:

- Max. Picture Capacity: 10.75GB
- Free Size for Picture: 1.25GB
- Max. Record Capacity: 3.75GB
- Free Size for Record: 3.75GB
- Percentage of Picture: 75%
- Percentage of Record: 25%

The 'Percentage of Picture' and 'Percentage of Record' fields are highlighted with a red box.

- 3、 Go to set up a proper exposure time. The brightness of the site affects the value of the exposure time. User needs to go to menu 'Capture' to check several captures to make sure the recognized number plate is clear.

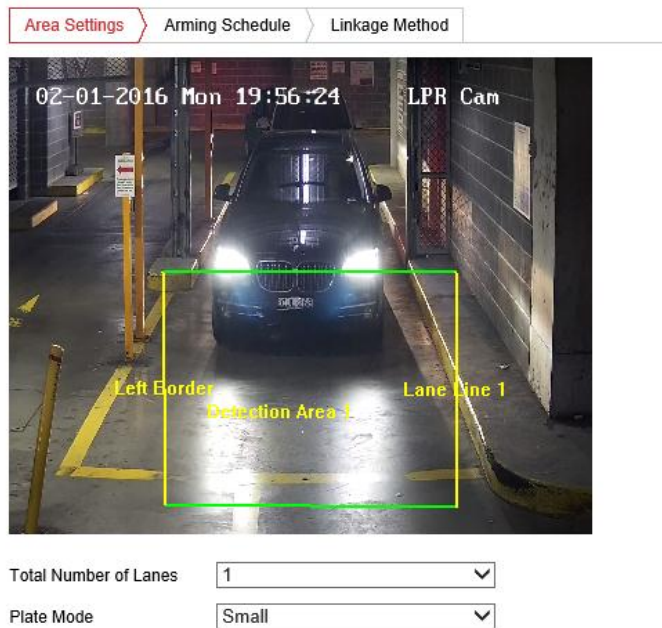
The screenshot shows the Hikvision web interface with the 'Display Settings' menu open. The top navigation bar includes 'Display Settings', 'OSD Settings', 'Privacy Mask', and 'Picture Overlay'. The left sidebar lists various settings categories, with 'Display Settings' highlighted. The main content area shows a live camera feed of a parking garage entrance with the following OSD information: '02-01-2016 Mon 19:46:17 LPR Cam'. To the right of the feed, there are several configuration options:

- Switch Day and Night Set...: Auto-Switch
- Image Adjustment:
 - Exposure Settings:
 - Iris Mode: Auto
 - Auto Iris Level: 50
 - Exposure Time: 1/150
 - Day/Night Switch
 - Backlight Settings
 - White Balance
 - Image Enhancement
 - Video Adjustment
 - Other

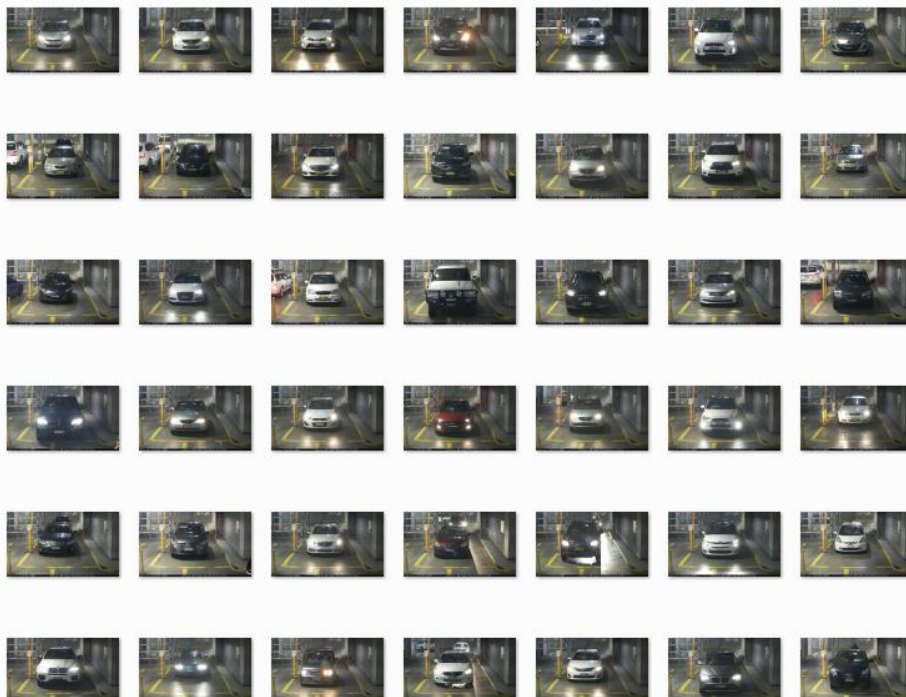
- 4、 Draw a recognition area. Like step 3, user needs to check several captures to make sure the recognized vehicle is driving straightly and the number plate is horizontally. **Most importantly please make sure the number plate is included in the recognition area.**

Both step 3 and step 4 are used to get a proper ANPR image.

User needs to do step 3 and step 4 repeatedly until a proper image is captured.

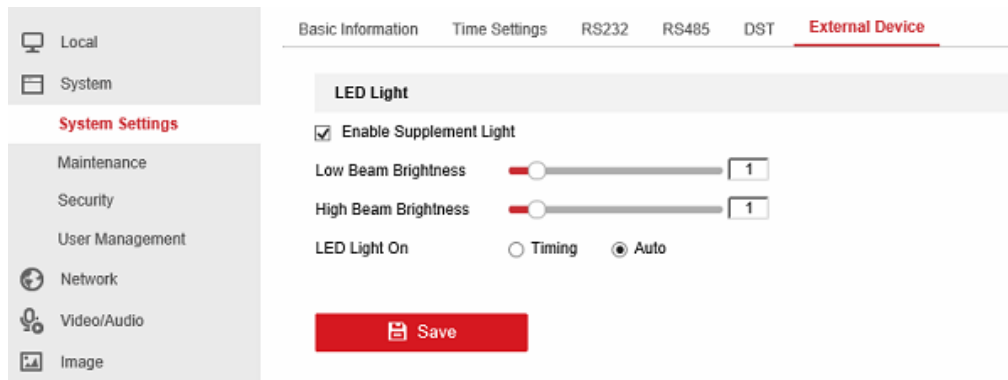


- 5、 In the proper captures gallery, **vehicle and number plate should be horizontal and centralized**. See the samples below.



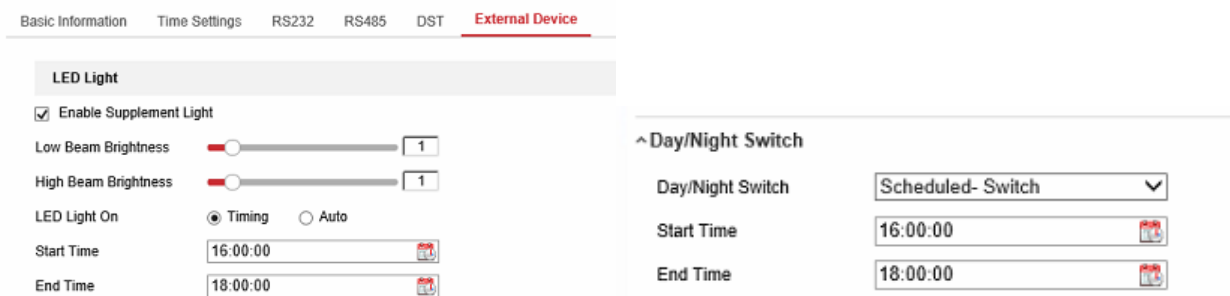
6 if end user needs to use IR lights to do the ANPR job. In the browser, end user needs to set up the IR lights. Otherwise, step 6 can be ignored.

See the settings in menu Configuration—System—System Settings—External device.



If option 'LED Light On' is set up with Auto, it means when camera stay in color mode, the IR will not boot up. **Only when camera switches to Black/White mode, the IR lights will boot up. And in the Day/Night Switch settings, user needs to set up 'Auto' as well.**

If Option 'LED Light On' is set up with Timing, in the Day/Night Switch settings, user needs to **set up same time range as well.** See the figures below.



Please note the Beam Brightness needs to be adjusted several times according to the image quality. Focus on whether the image is overexposed, etc.

A Few Key Points

How accurate can Hikvision ANPR Camera be?

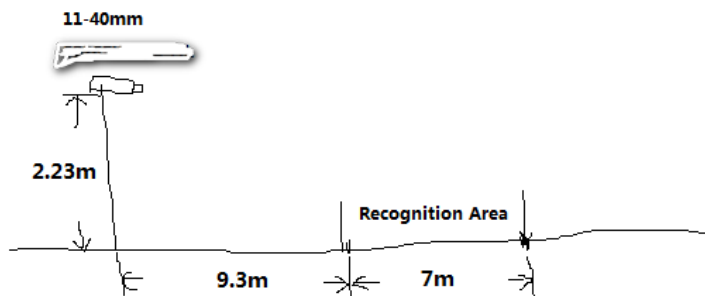
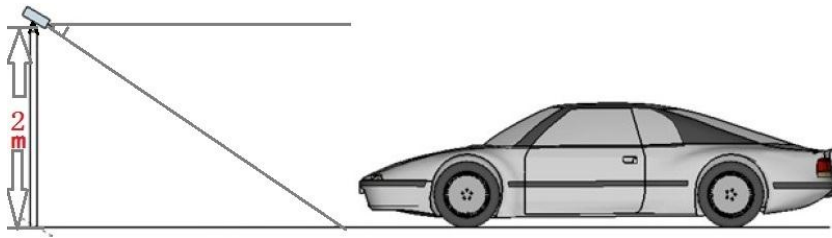
It could be 97% accurate. In my test, I checked 1000 pcs captures. I got 97% accurate images.

Why I said 'could be'?

Because the accuracy is affected by 3 key factors: Image quality, Installation position and angle, depth of scenario.

Image Quality effects the accuracy

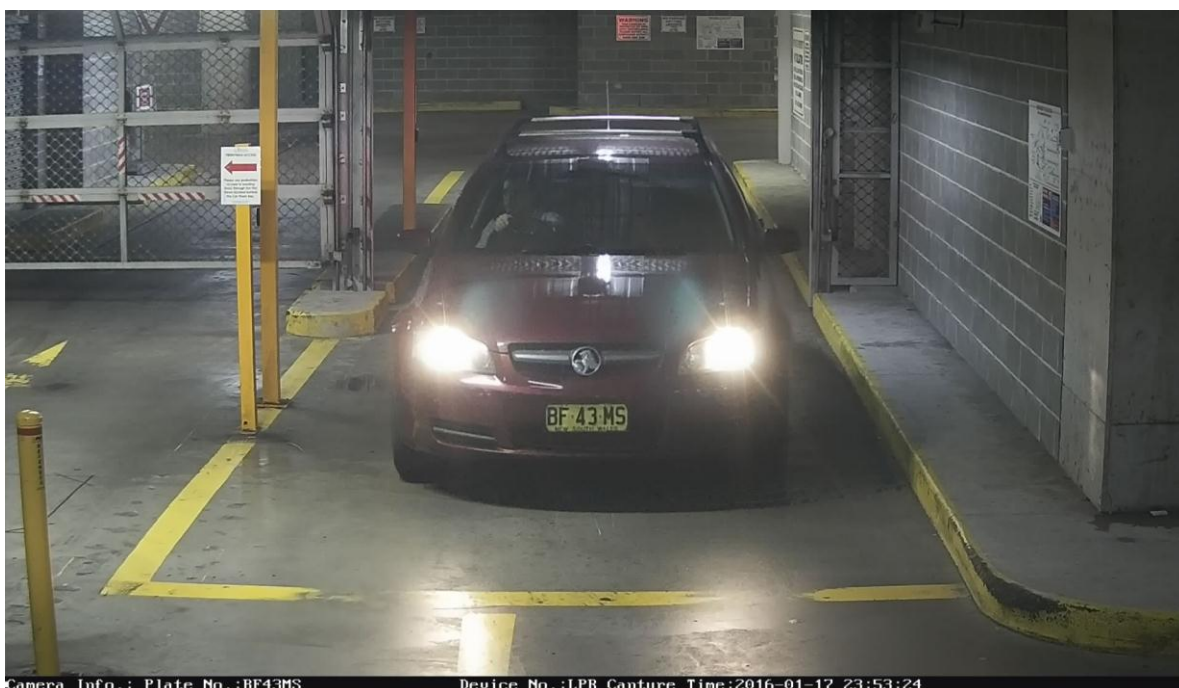
Firstly, the Cam should be installed 2m high approximately. The lens should be wide range, like 8-32mm. For some sites, 2.8-12mm may be enough.



For a good ANPR image, it is not as bright as a normal image.

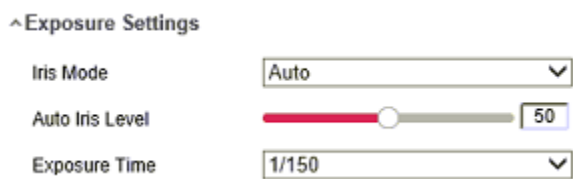
The figure below is a perfect number plate sample. As you can see we cannot see the driver clearly. That is because **I lowered the exposure time**.

For some scenarios with strong backlight, user can try to enable the WDR feature. But don't forget to lower the exposure time if WDR doesn't improve the number plate image a lot.



See the figure below. The exposure time is 1/150, which is quite small to suppress the effect of the bright headlight.

If you don't lower the exposure time, the lights from headlight will make the number plate too dark to be recognized. As you know the lens is not like human eyes.



As you see in the sample image above, the car park is quite bright, because there are LED lights being there always.

So for the projects planning to use the ANPR Cam, it is recommended the **Cam should be installed near the illuminant**. For the site with **not much light**, please use ANPR camera with IR lights. The models

should be **DS-2CD4026FWD/P-IR5 (with 6 EXIR lights) and DS-2CD4A26FWD-IZS/P (with 4 EXIR lights)**. For camera 4026 the IR lights are built in the housing, so installer need to connect the external power supply to a power module built in the housing.

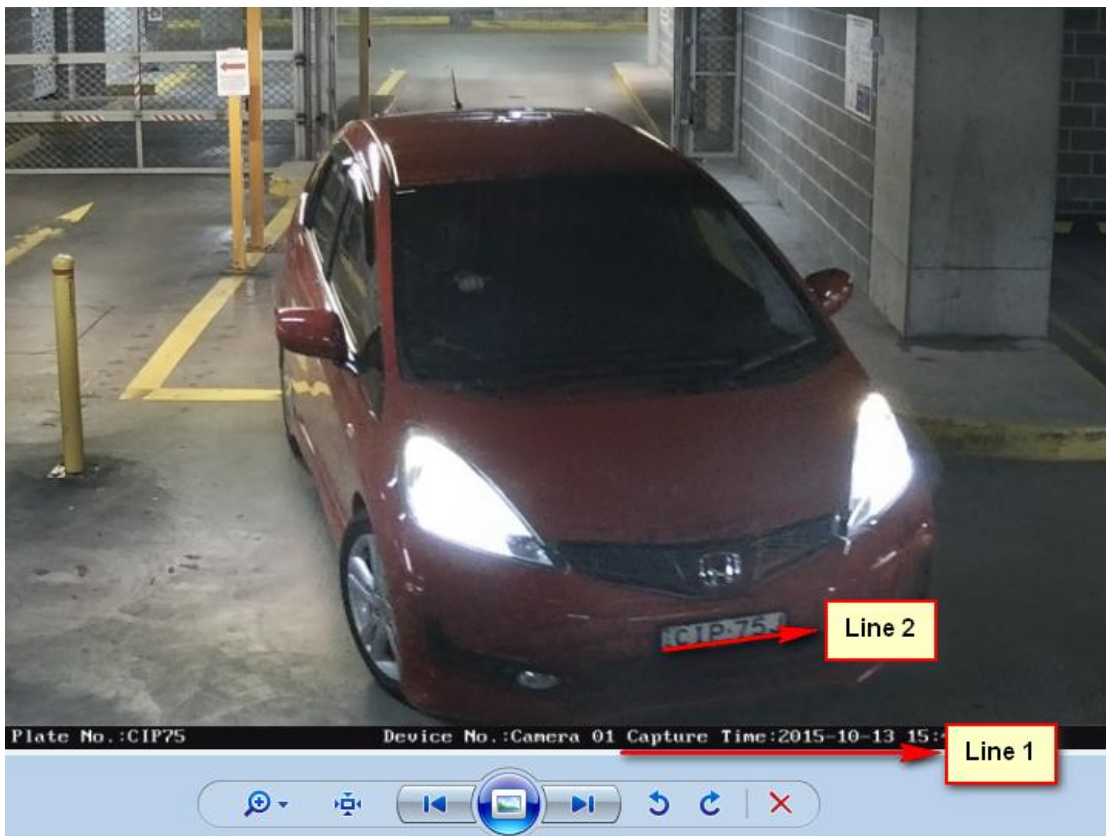
For camera 4A26, the IR lights are built in the camera itself.

Installation position and angle

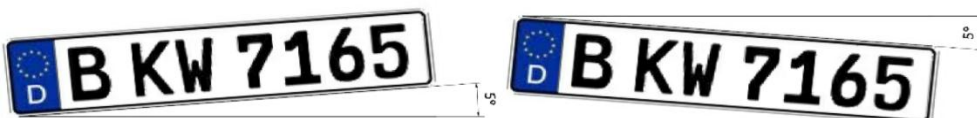
Hikvision ANPR Cam is using video analysis technology to recognize the number plate.

The horizontality of the number plate in the recognition area is another key point affecting the accuracy.

See the figure below. Line 1 is the standard horizontality. You can see line 2 is roughly 15° away. So the last character 'J' is not recognized.



Acceptable angle is +/- 5 degrees.



Only dedicated area is available to recognize the number plate. And such area is adjustable.

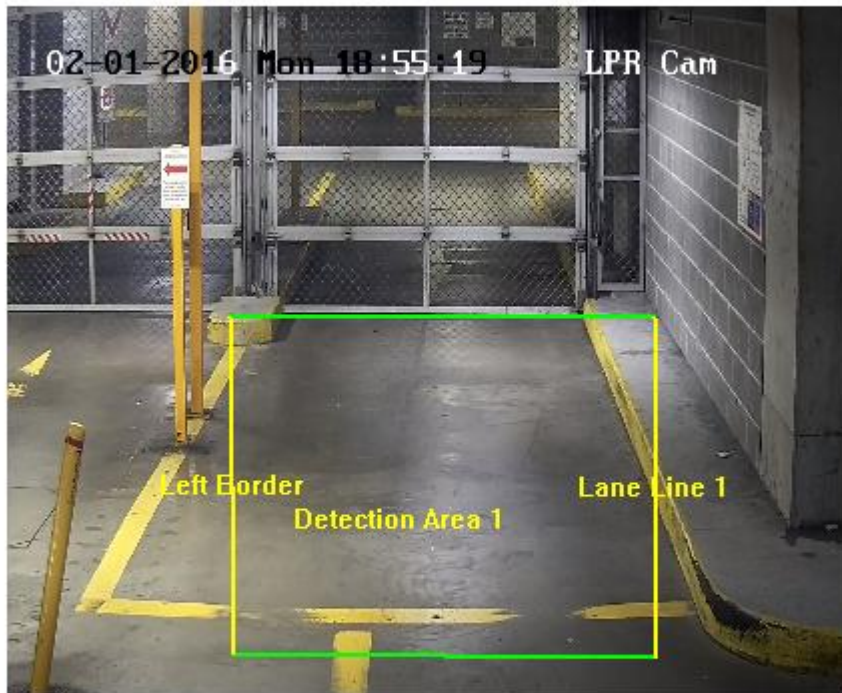
See the image below. At the beginning 2 yellow lines are visible, 2 green lines are invisible. End user need to adjust the yellow line to a proper position, click save button. Then the green lines will pop up. **Vehicle needs to come in from top green line and drive away straightly towards bottom green line (no turning before number plate across both Green lines).**

Enable

Area Settings

Arming Schedule

Linkage Method



Total Number of Lanes

1

Plate Mode

Small

User needs to check several captures in the browser to see if the number plate is horizontal and proper. If not, user needs to adjust the Cam position or angle and come back to check the captures again. So **choosing a proper recognition area is very important.**

Depth of Scenario

In a car park, we can see many times that a flow of vehicles waiting to be parked. And that is why we call the bad traffic the car park.

Front vehicle definitely will affect the back vehicle. Front vehicle will cover the number plate of back vehicle for a long time. So keep a proper depth can help to create enough time for the Cam to recognize the back vehicle.

See the figure below. When the front vehicle turns, the number plate of back vehicle just pops up in the recognition area. This is a good situation, because front vehicle gives enough time to back vehicle to show up its number plate in the recognition area.

