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Headquarters

No.555 Qianmo Road, Binjiang District,
Hangzhou 310051, China
T +86-571-8807-5998
overseasbusiness@hikvision.com

HIKVISION ANPR Setup for Paxton Net2

1 Overview

The document is mainly used to introduce how to install Hikvision ANPR Wiegand camera and connect with Paxton Net2 software to manage the vehicle license plate recognition.

2 Product

2.1 ANPR Wiegand Camera

Model number: iDS-2CD7A26G0/P-IZHSY (2.8-12 mm)(C)
iDS-2CD7A46G0/P-IZHSY (2.8-12 mm)(C)
iDS-2CD7A26G0/P-IZHSY(8-32mm)(C)
iDS-2CD7A46G0/P-IZHSY(8-32mm)(C)
iDS-2CD7547G0/P-XZHSY(2.8-12mm)

Firmware version: Baseline version

2.2 Specification



ANPR Bullet Camera

iDS-2CD7A46G0/P-IZHSY

- Wiegand Interface
- Dedicated Image Control Design for ANPR
- License Plate Recognition $\geq 98\%$ Accuracy
- Blocklist and allowlist: up to 10,000 records
- Vehicle Direction Recognition
- Vehicle attribute detection, including vehicle type, color, brand, etc
- IP67, IK10, NEMA 4X, PVC Free

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HIKVISION Website Product Link <https://www.hikvision.com/europe/products/IP-Products/Network-Cameras/DeepinView-Series/ids-2cd7a46g0-p-izhs-y/>



ANPR PTRZ Dome Camera
iDS-2CD7547G0/P-XZHSY

- 4MP; 2.8~12mm Lens
- Wiegand Interface
- Pan, Tilt, Zoom, Rotate Remote Control for Easy Installation
- Dedicated Image Control Design for ANPR
- License Plate Recognition $\geq 98\%$ Accuracy
- Blocklist and allowlist: up to 10,000 records
- Vehicle Direction Recognition
- Vehicle attribute detection, including vehicle type, color, brand, etc
- IP67, IK10, NEMA 4X, PVC Free

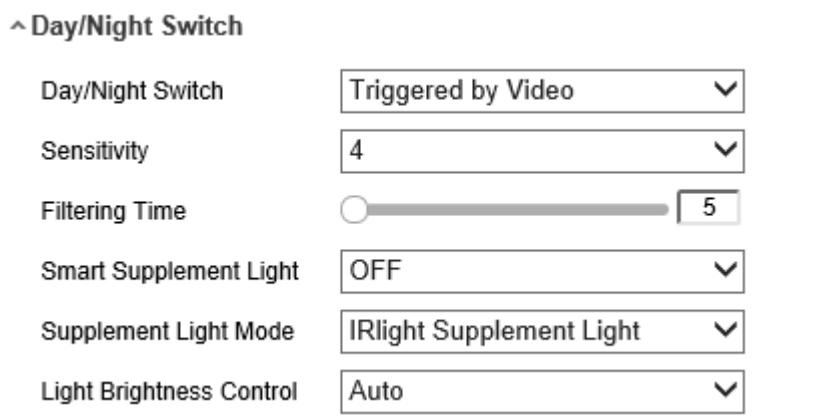
HIKVISION Website Product Link:

<https://www.hikvision.com/europe/products/IP-Products/Network-Cameras/DeepinView-Series/ids-2cd7547g0-p-xzhs-y/>

3 Configuration

3.1 Image Settings

Go to **Image>Display Settings>Day/Night Switch** and set the **Day/Night Switch** to the “**Triggered by Video**”, as follows, Pic 1.



Pic 1

In addition, you can also manually modify/configure the image parameters according to different scenarios, as follows, Figure 1.

| Vehicle speed(km/h) | Exposure time(s) | Gain | WDR and BLC |
|---------------------|------------------|------|-------------|
| 5 | 1/100 | 20 | OFF |
| 40 | 1/500 | 20 | OFF |
| 100 | 1/1000 | 20 | OFF |
| 200 | 1/2000 | 20 | OFF |

Figure 1

Note: The table is for reference only. The configuration may be different for different scenarios.

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)

Note: For general projects, a configuration with **Exposure Time** of 1/1000 and **Gain** of 20 can cover more than 80% of the scenes, as follows, Pic 2. Other scenes can be satisfied by adjusting Gain according to the degree of light and darkness.

▼ Image Adjustment

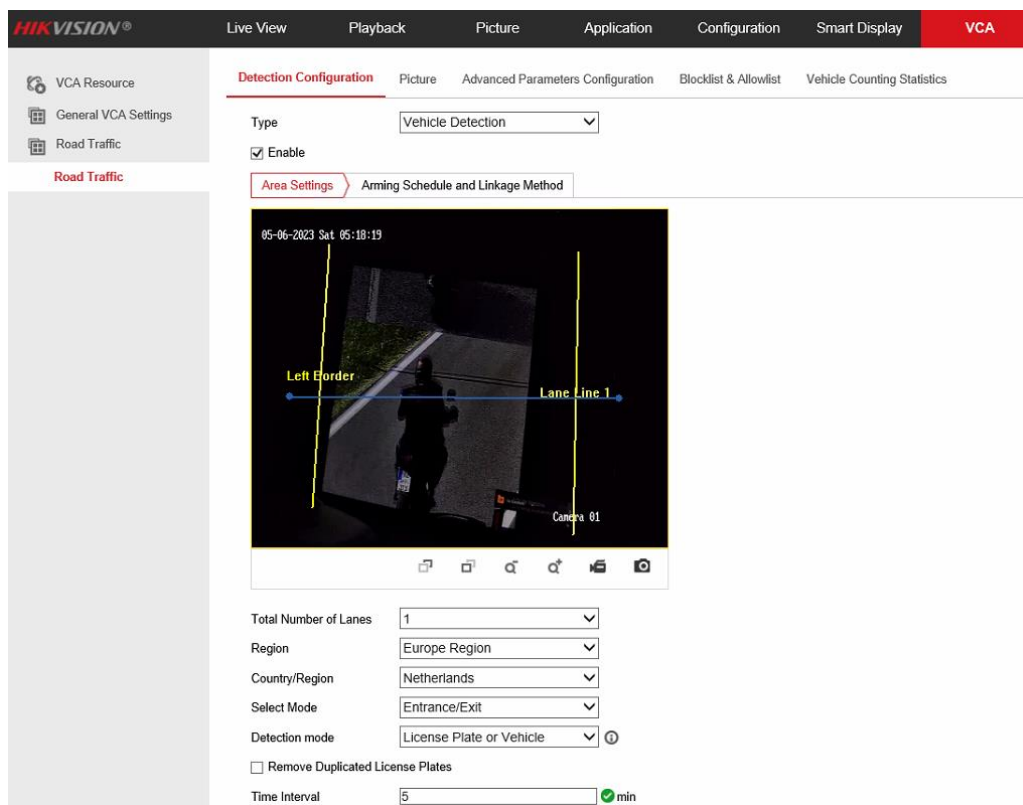
^ Exposure Settings

| | |
|-----------------|----------------------------------|
| Iris Mode | Auto |
| Auto Iris Level | <input type="range" value="50"/> |
| Exposure Time | 1/1000 |
| Gain | <input type="range" value="20"/> |

Pic 2

3.2 ANPR settings

VCA->Road Traffic->Detection Configuration -> Tick the “Enable” box to enable the ANPR feature, and click and drag the yellow lane line and blue lane line to set the position, Pic 3.



The screenshot shows the HIKVISION VCA Detection Configuration interface. The top navigation bar includes Live View, Playback, Picture, Application, Configuration, Smart Display, and VCA. The left sidebar shows VCA Resource, General VCA Settings, and Road Traffic. The main content area is titled 'Detection Configuration' and includes a 'Type' dropdown set to 'Vehicle Detection', an 'Enable' checkbox which is checked, and tabs for 'Area Settings' and 'Arming Schedule and Linkage Method'. The 'Area Settings' tab is active, showing a video feed with a yellow 'Left Border' and a blue 'Lane Line 1' overlaid on the scene. Below the video feed, there are several configuration options: 'Total Number of Lanes' (1), 'Region' (Europe Region), 'Country/Region' (Netherlands), 'Select Mode' (Entrance/Exit), 'Detection mode' (License Plate or Vehicle), 'Remove Duplicated License Plates' (checkbox), and 'Time Interval' (5 min).

Pic 3

- **Blue Trigger 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

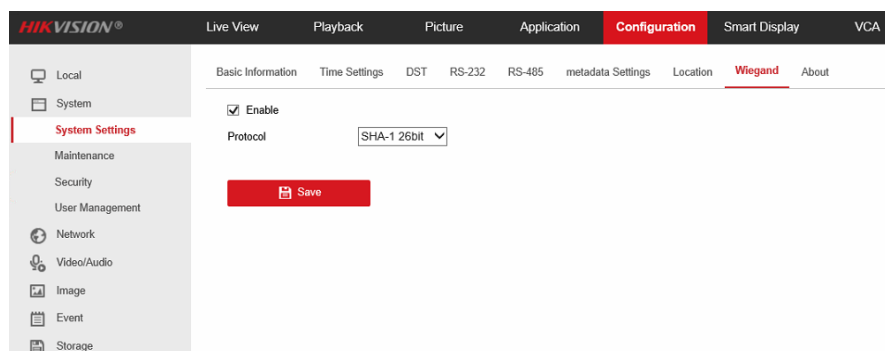
Recommend you put it middle-lower of the screen to make sure the car can pass it with the plate and the full scale.

- **Detect Area:** The Actual detect area is the 2 yellow lane and the square they seized.
- **Select Mode:**
 - **Entrance & Exit:** It means the camera is set to monitor the Entrance & Exit and will get a better performance at this scenario. Also, Entrance & Exit 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 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**.

3.3 Wiegand protocol configuration

Configuration->System Settings-> Wiegand Type -> Tick the “Enable” box to enable the **Wiegand feature** and choose **SHA-1 26bit** and save it, as follows, Pic 3.



Pic 3

3.4 Connection with Net2 ACU

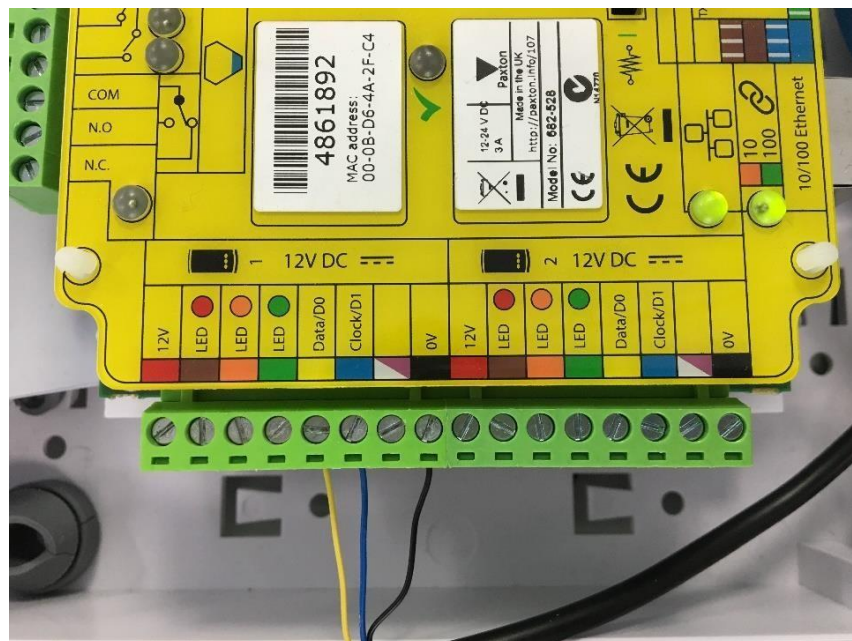
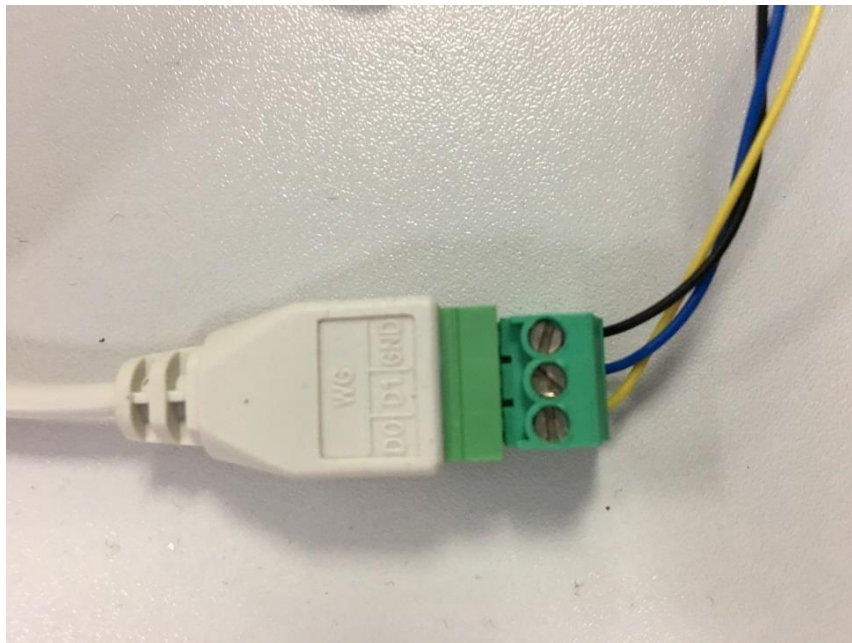
Step 1,

The connections for the ANPR Camera and Reader port using a Belden reader cable (as per Paxton specification) on the Net2 ACU are as follows:

Blue wire: D1 at ANPR – Clock/D1 on Net2 ACU Reader Port

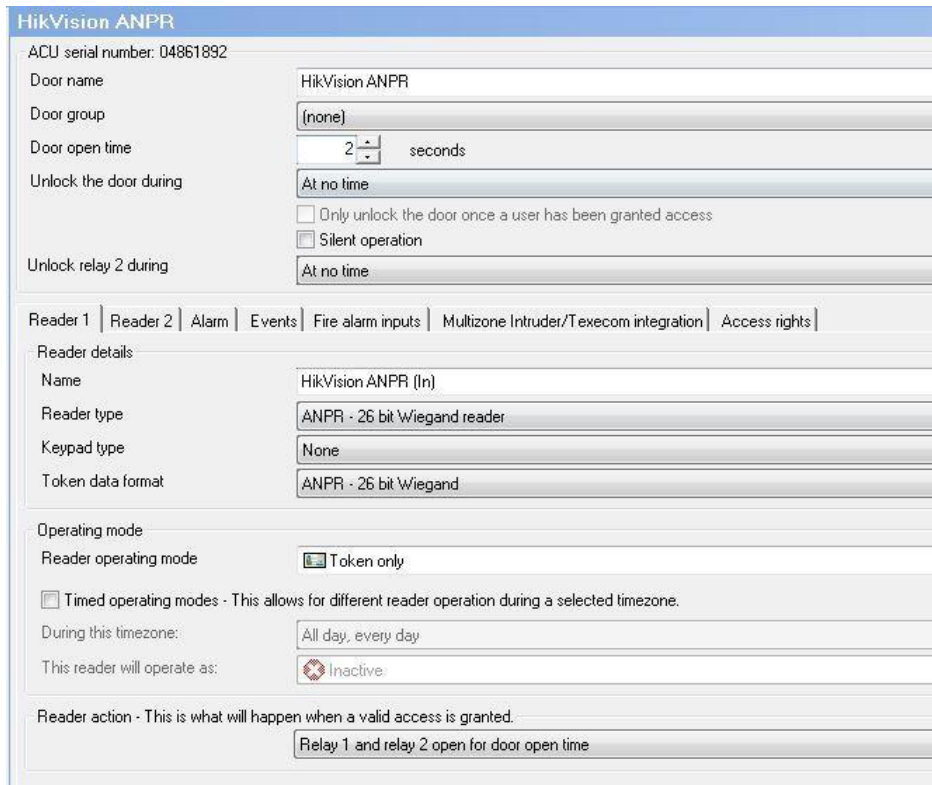
Yellow wire: D0 at ANPR – Data/D0 on Net2 ACU Reader Port

Black wire: GND at ANPR – 0v on Net2 ACU Reader Port



Step 2,


In the door settings for the ACU that will be connected to the ANPR camera, set the door up as follows and apply:



The screenshot shows the 'HikVision ANPR' configuration window. The 'ACU serial number' is 04861892. The 'Door name' is 'HikVision ANPR'. The 'Door group' is '(none)'. The 'Door open time' is set to 2 seconds. The 'Unlock the door during' option is 'At no time', with checkboxes for 'Only unlock the door once a user has been granted access' and 'Silent operation'. The 'Unlock relay 2 during' option is also 'At no time'. Below this are tabs for 'Reader 1', 'Reader 2', 'Alarm', 'Events', 'Fire alarm inputs', 'Multizone Intruder/Texcom integration', and 'Access rights'. The 'Reader details' section shows 'Name: HikVision ANPR (In)', 'Reader type: ANPR - 26 bit Wiegand reader', 'Keypad type: None', and 'Token data format: ANPR - 26 bit Wiegand'. The 'Operating mode' section has 'Reader operating mode' set to 'Token only' and 'Timed operating modes' checked. 'During this timezone:' is 'All day, every day' and 'This reader will operate as:' is 'Inactive'. The 'Reader action' is 'Relay 1 and relay 2 open for door open time'.

Step 3,

In the user record, select the 'Tokens' tab and select 'New Token' to open the 'Add new token' window:



The 'Add new token' dialog box shows '1) Select token type' with a list of radio button options: 'Unspecified', 'Proximity card', 'Proximity ISO card', 'Proximity ISO card no magstripe', 'Keyfob', 'Hands free token', 'Hands free keycard', 'Watchprox', 'Vehicle number plate' (which is selected), 'Fingerprint verification card', and 'Telephone Number'. There is an icon of a red car. Below this is '2) Enter token number' with a text box containing 'BR07 UMM'. 'OK' and 'Cancel' buttons are at the bottom.

Step 4,

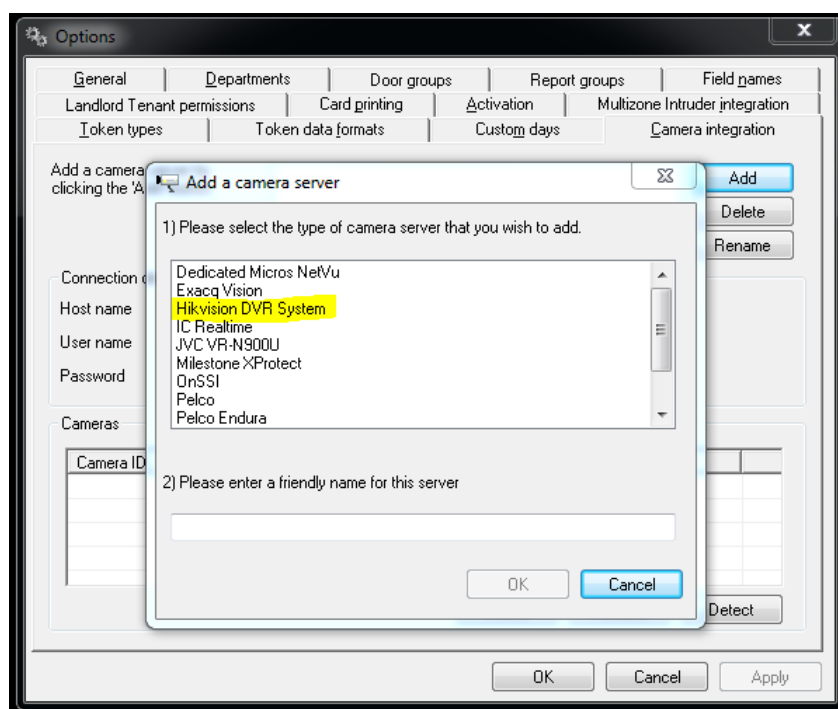
- Select 'Vehicle number plate' and enter the license plate number you wish to add for the user; e.g. BR07 UMM
- Click OK then Apply.
- As the license plate is read by the ANPR camera, it will send the converted token number to the Net2 ACU.

| Events | | | | | | |
|---------------------|---------------|--------------|---------------------|-------------------------|---------|--|
| Date/time | User | Token number | Where | Event | Details | |
| 07/07/2017 13:51:28 | Wrench, Chris | | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |
| 07/07/2017 13:51:23 | Wrench, Chris | | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |
| 07/07/2017 13:51:17 | Wrench, Chris | | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |
| 07/07/2017 13:51:11 | Wrench, Chris | | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |

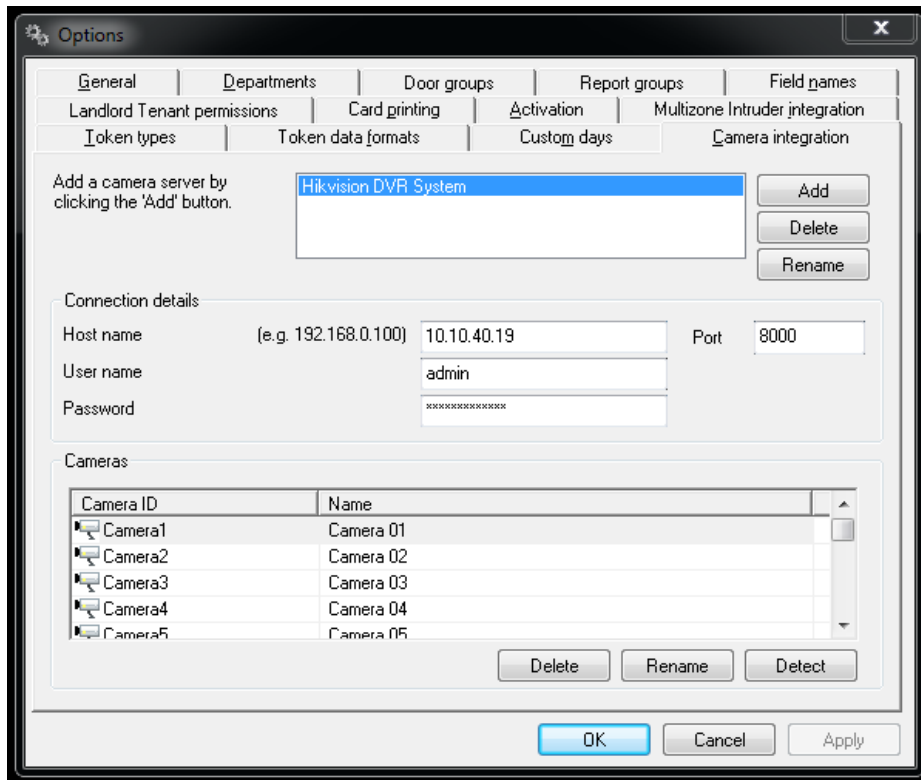
3.5 Viewing the ANPR capture in Net2

Hikvision have a second integration with Net2 that allows users to view DVR/NVR video from within the Net2 UI. This integration can be used in conjunction with the ANPR camera to show the capture of the licence plate as it is read by the camera.

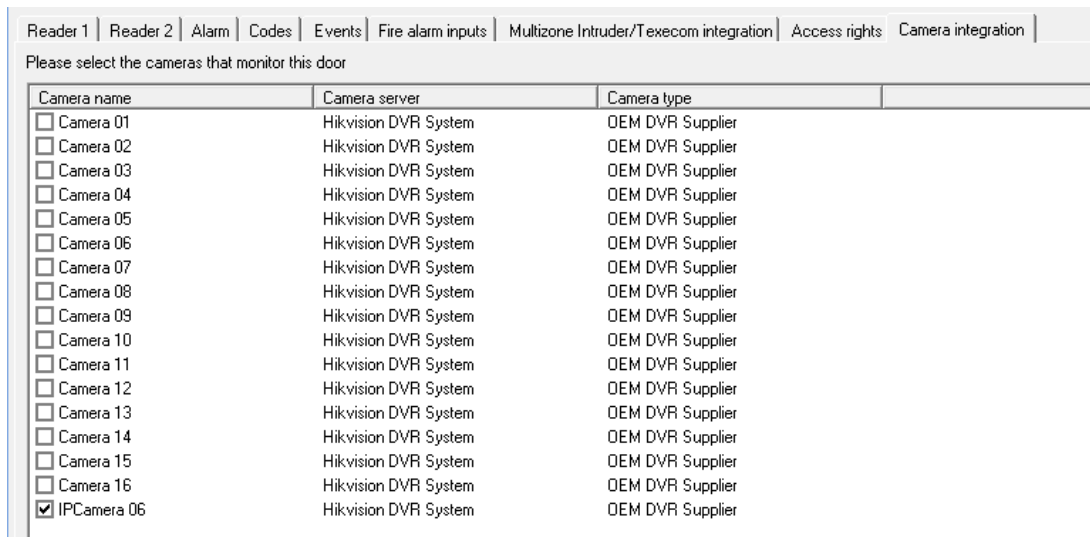
- Download the plugin from here:
ftp://Hik_Paxton:Paxton_Hik@ftp.hikvision.com
- Once installed, in Net2 go to Options>Camera Integration>Add and select Hikvision DVR System from the list of camera servers.



- Add the DVR credentials to authenticate and detect the associated cameras:



- Click OK, then go to the ACU that is associated with the ANPR camera and select it as the camera that is monitoring the door:



- As the ANPR camera generates events in Net2, a camera icon will appear next to the event. Clicking the icon will show the video associated with the ANPR event.

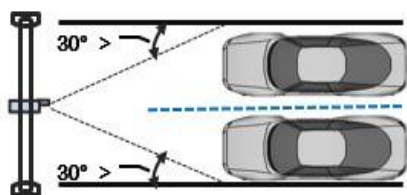
| | | | | | |
|---------------------|---------------|---------------------|-------------------------|---------|--|
| 07/07/2017 13:51:23 | Wrench, Chris | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |
| 07/07/2017 13:51:17 | Wrench, Chris | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |
| 07/07/2017 13:51:11 | Wrench, Chris | HikVision ANPR (In) | Access permitted - ANPR | BR07UMM | |

4 Appendix

4.1 ANPR Installation

ANPR Installation Data Table

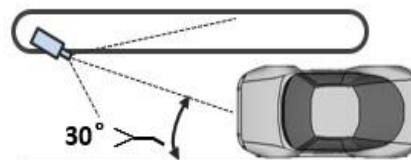
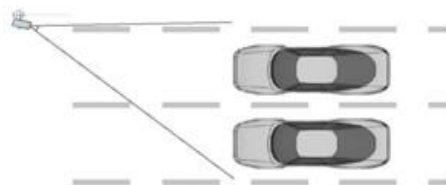
| Camera Position | Lens | Height | Suggested Vertical Angle | Suggested Trigger Distance | Max. Coverage Width | Max. Horizontal Angle | Vertical Angle Range | Capture Range |
|------------------|----------|--------|--------------------------|----------------------------|---------------------|-----------------------|----------------------|---------------|
| Side of the Lane | 2.8~12mm | 1.5m | 20° | 4m | 4.5m | 30° | 15°~30° | 2.5~5.5m |
| Side of the Lane | 2.8~12mm | 2m | 20° | 5.5m | 4.5m | 30° | 15°~30° | 3.5~7.5m |
| Side of the Lane | 2.8~12mm | 2.5m | 20° | 6.5m | 4.5m | 30° | 15°~30° | 4.5~9m |



Horizontal angle demand

The view angle of the camera should be within 30 degrees to the path of movement.

- Car speed < 60km/h: One camera can cover two lanes.
- Car speed > 60km/h: One camera is recommended for one lane.



4.2 Installation angle

When ensuring the camera is set up correctly and the best field of view is set with the lens – make sure the tilt angle of the plate to the horizontal plane is not more than 5 degrees, otherwise you will get a poor or incorrect read's.

This road is uphill and with an adverse camber, which causes an offset of the plate to the horizontal plane – this plate still read perfectly well, but with anything more than this there could be problems so check your scene before hand.



Headquarters

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