



# **VaxALPR On-Mobile for ANDROID**

## **Software Setup and Configuration**

**Version 1.0**

**March 2021**

## INDEX

1. Introduction .....	3
2. Smart Device Requirements.....	3
3. Requirements for Capturing License Plate Images .....	4
3.1 Good Imaging .....	4
3.2 Smartphone Camera Orientation – How to hold your device .....	5
3.3 Distance to Subject.....	5
4. Smart Device setup and configuration for License Plate Recognition .....	7
4.1 Set the date and time of the device .....	7
4.2 Recommended shutter speeds and resolution .....	7
5. Downloading and Installing the App .....	7
6. Installing the License .....	8
7. Configuring the VaxALPR On Mobile App .....	8
7.1 Settings.....	9
7.1.1 License .....	10
7.1.2 Clear / Restore.....	10
7.1.3 VaxALPR Settings: Country options.....	12
7.1.4 VaxALPR Settings: Camera Settings.....	14
7.1.5 VaxALPR Settings: Plate Settings.....	15
7.1.6 VaxALPR Settings: Environment Settings .....	17
7.1.7 VaxALPR Settings: Multiplate Settings .....	18
7.1.8 VaxALPR Settings: OCR Settings .....	20
7.1.9 VaxALPR Settings: Reporting options.....	22
7.2 VaxALPR Home Screen .....	25
7.2.1 Search Plates .....	25
7.2.2 Display Plate Read Details .....	26
7.3 VaxALPR Region of Interest.....	28
7.4 Export .....	29

## 1. Introduction

The Vaxtor ALPR Engine is now available as an Android SDK for you to develop your own Application (App) and the SDK kit includes a demo application. Vaxtor has also developed this demonstration application and the SDK purchaser will also receive the full source code of this App which is intended to accelerate in-house development of your own custom Apps.

*This demonstration App, although fully functioning, is intended for demonstrating the speed and accuracy of the ALPR engine and so is not supported by Vaxtor in the same way as our commercially available products.*

The ALPR engine can be used in one of two ways: synchronously and asynchronously. Asynchronous mode is where the engine continuously scans for plates and records / reports them as it detects them. For example, when using a hand held or vehicle mounted device to record all the plates in a car park for later use such as a car-park audit.

Synchronous mode is when you instruct the engine to look for and process a plate. For example, if a police officer, traffic warden or security guard wants to spot check a vehicle against a database in real time – or simple record the plate details together with GPS position, time and date, - then an App could call the engine to process the current field of view.

This demonstration App runs in asynchronous mode.

This guide will take you through some basics of ALPR camera setup and help you to install and correctly configure the VaxALPR software to run on an Android device.

## 2. Smart Device Requirements

The VaxALPR On-Mobile Software is a real-time solution for Automatic License Plate Recognition (ALPR) that runs on Smartphones or Tablets running Android version 10 or later. (It may also run on older versions on some devices).

If you are unsure then this App is available free of charge for a 15-day trial period to allow you to test each device.

Android devices are very varied and some will have better cameras and lenses than others; some will allow you to control the shutter speed for clearer imaging of moving vehicles. The brighter the image (or plate) then the faster the shutter speed that the Android device will use.

Note that additional clamp-on lenses are available for most devices if you need to capture plates at a greater range.

### 3. Requirements for Capturing License Plate Images

#### 3.1 Good Imaging

LPR (License Plate Recognition) is an image processing technology used to identify vehicles by their license plates. It is also known as ALPR (Automatic License Plate Recognition) and ANPR (Automatic Number Plate Recognition) among other names. The software will only recognize license plates correctly if there is a good image to work with. Dark conditions can be a problem for a hand-held device and so there may be a need to add external illumination such as a white-light source in order to be able to see the plates clearly at night.



Ideal daytime license plate image



Ideal night-time license plate image

The engine is very resilient, but recognizing the license plate is more challenging if the images have any of the following characteristics or artifacts:

- Overexposed
- Blurred
- Distorted
- Unevenly lit
- Low contrast
- Bad weather conditions



*Although undesirable, most of these license plate images will probably be read but are more likely to have errors.*

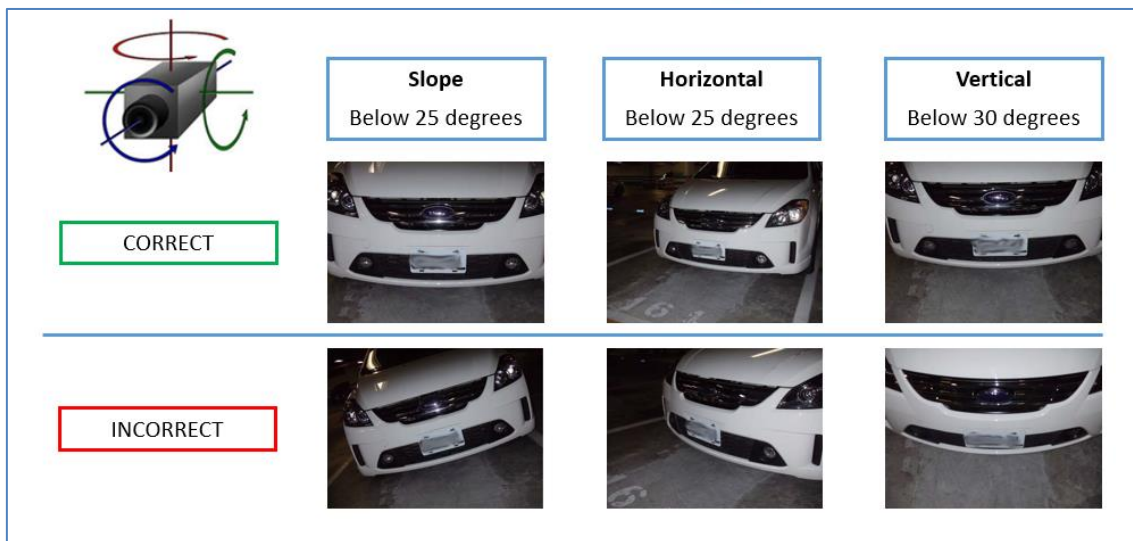
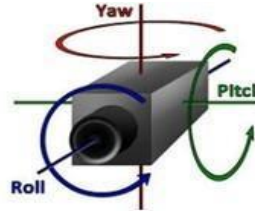
The less clear that the plate images are, then the more likely it is that ALPR software will report them incorrectly: **Garbage In → Garbage Out.**

As a general guide, if a human has difficulty reading a plate, then so will ALPR software!

### 3.2 Smartphone Camera Orientation – How to hold your device

The image orientation is a key factor in achieving the maximum OCR efficiency. It is recommended that you stay within the following thresholds:

**Pitch (Vertical) should be:**  $< 30^\circ$   
**Roll (Slope) should be:**  $< 25^\circ$   
**Yaw (Horizontal) should be:**  $< 25^\circ$



*Examples of different camera orientations.  
Accuracy will decrease significantly if these guidelines are not adhered to.*

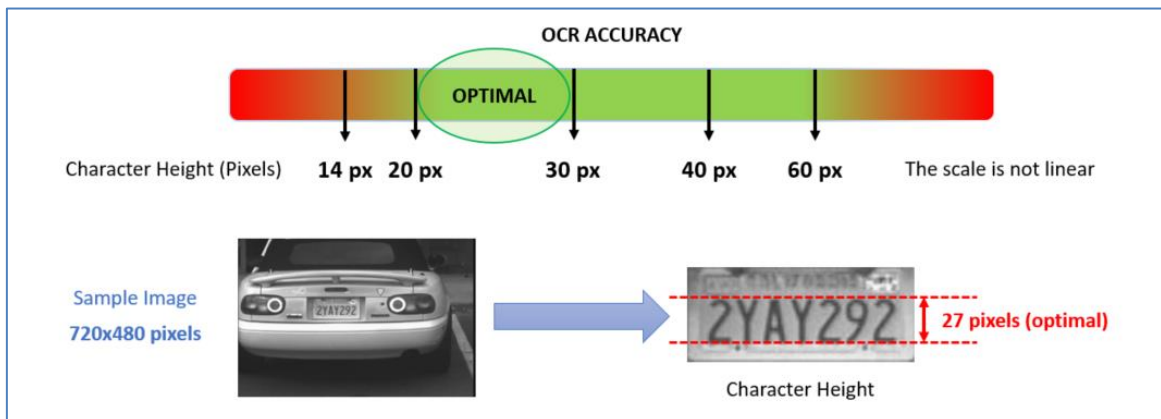
### 3.3 Distance to Subject

The objective of an ALPR system is to capture an image with a good readable plate. In order to achieve this the characters on the plate should have a height between 20 and 30 pixels for larger plate formats (e.g. EU 50cm plates) and about 25-35 pixels for USA-style plates which are physically smaller and have a narrow character stroke width in many states.

Certain Middle East and Arabic plates are smaller still and will need an even greater character pixel height of say 30-40 pixels. For example, in Abu Dhabi the small characters next to or above the main characters are only 3cm high and may require a much higher camera resolution.

After setting up you can review your initial plate reads and see what size (height) they were read at. In this case 26 pixels is perfect for larger style plates:

Multiplate	3
Confidence	99.00%
ROI	-1
Processing Time	34.537ms
Character Height	26px



Optimal character height in pixels

*Note that for small plates such as most Arabic plates - or plates with additional small characters such as Costa Rica, – then a minimum character pixel height of 30 pixels is recommended.*

Another way that you can estimate this when selecting and setting up your camera is to use the horizontal pixels per meter. A large EU plate needs a minimum 256-300 pixels per meter – so a typical lane = 3m – so can be read with a resolution of 1024h or 1280h. Wide lanes are about 6m – so use 1600h if available. In the USA the plates are smaller and so a resolution of 300-320 pixels per meter is best. (1 lane = 3m = 10'). In countries with Arabic characters then higher resolutions (e.g. double) will produce better results – for example 1920h for a single lane. Note that this has an effect on processing times.



## 4. Smart Device setup and configuration for License Plate Recognition

### 4.1 Set the date and time of the device

Ensure that your device has the correct date and time, especially if working offline.

### 4.2 Recommended shutter speeds and resolution

Some devices have a “Pro” mode which allows you to set the shutter speed to a higher value such as 1/250<sup>th</sup> sec for medium speed vehicles. Note that some devices do not carry this setting forward into the App and the camera will revert to an “Auto” mode. In this case ensure that the images are bright (especially for moving plates) to “freeze” them as they move.

The image resolution used by the App is set within the App itself and not in the phone’s camera settings.

## 5. Downloading and Installing the App

From your device download the VaxALPR Demonstration App from the Google Play Store:

<https://play.google.com/store/apps/details?id=com.vaxtor.demo>

Or scan here:



Once installed, click the Vaxtor Icon to run the application:



## 6. Installing the License

When first run, the App a message will appear offering you the option of requesting a 15-day trial license or entering a license code which you have already received.

Please complete the following registration details as requested:

Full Name:  
Company Name:  
Phone Number:  
E-mail Address:

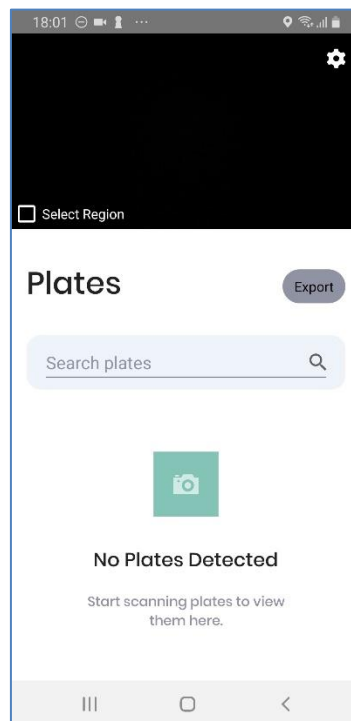
You will receive an email containing the trial code within 24 hours along with instructions on how to purchase a permanent license for your devices.

Purchasing a permanent license gives you full access to the Android SDK and demonstration App source code.

## 7. Configuring the VaxALPR On Mobile App

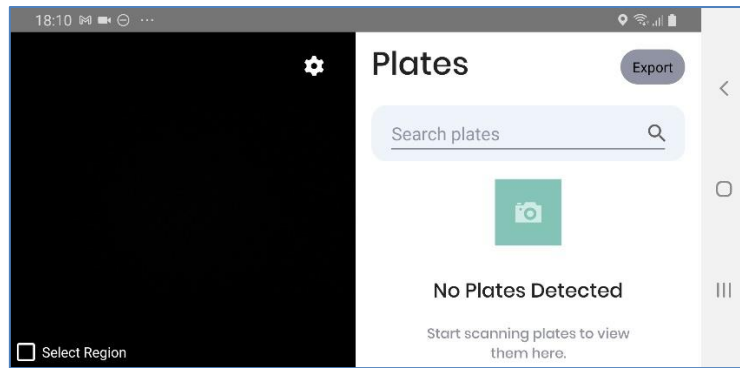
Once running we need to configure the VaxALPR software for optimum accuracy in your region or scenario.

The App has different screen layouts in portrait or landscape mode as shown below:



VaxALPR On Mobile interface – Portrait Mode



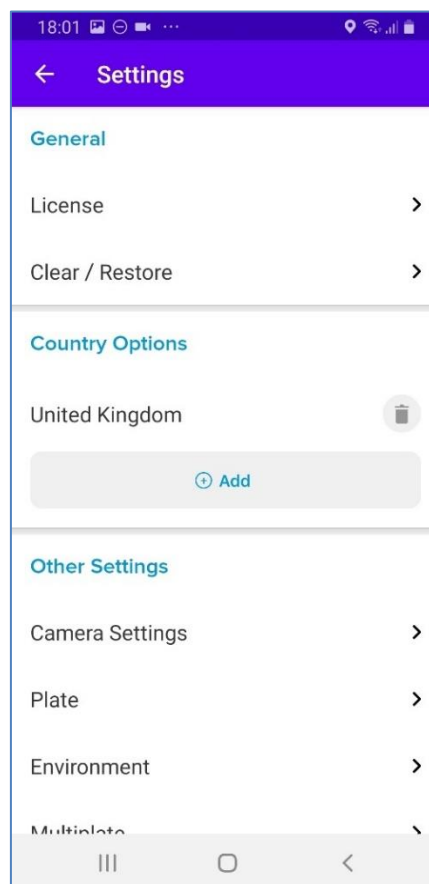


VaxALPR On Mobile interface – Landscape Mode

Portrait mode would normally be used when using it as a hand-held device – and landscape mode when mounted in a vehicle or when tripod mounted for example when being used at a temporary site entrance.

## 7.1 Settings

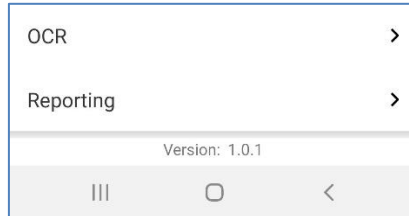
Clicking the gear icon at the top right of the camera image reveals the settings menus:



Scroll down to screen to view all of the settings.

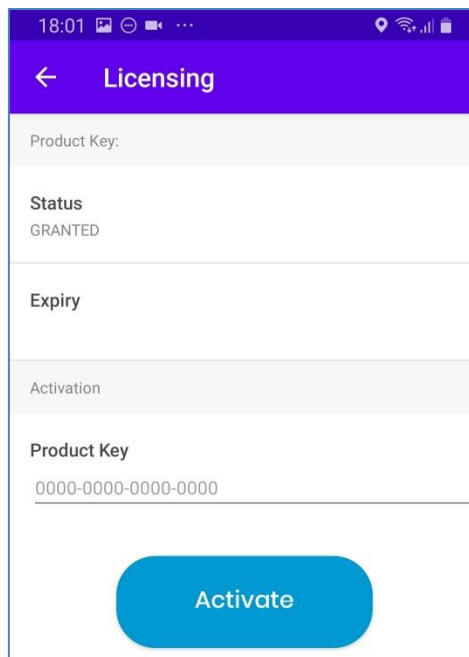
The settings are divided in several different sections.

Note that the software version number is displayed after the last option:



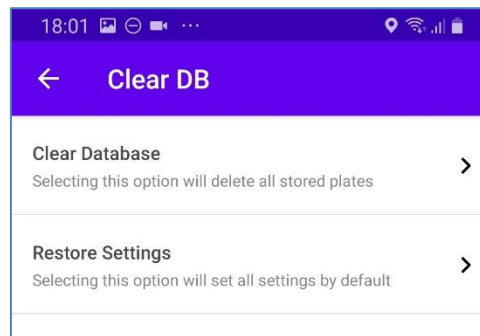
### 7.1.1 License

Select this option to view your current license status and Product Key:

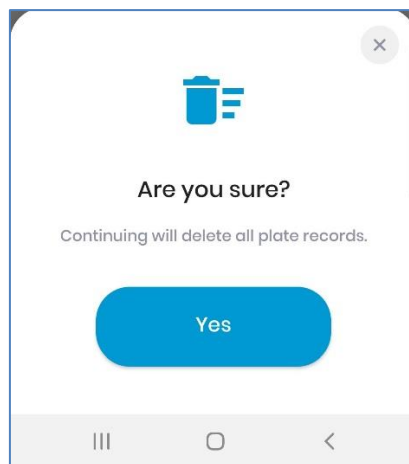


### 7.1.2 Clear / Restore

This option allows you delete all of the recorded license plates from your device and restore all of the App's settings to their default values.

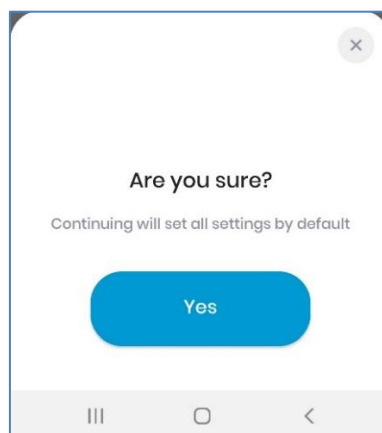


When you select Clear Database a confirmation box will appear as follows:



This action cannot be reversed.

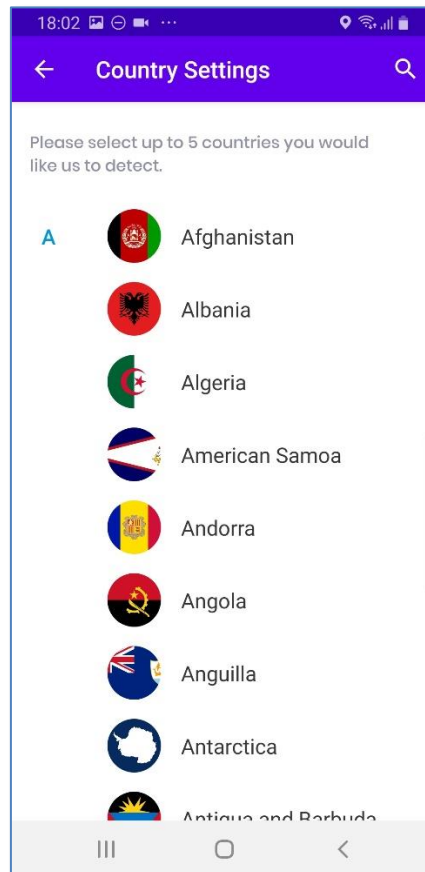
Similarly, restoring all settings to their default values causes a similar confirmation dialogue box to appear:



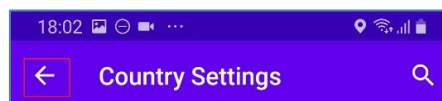
### 7.1.3 VaxALPR Settings: Country options

The ALPR engine contains four different neural nets and can be used around the world in most countries. It can recognize Latin, Thai and Arabic character sets and can use the syntax rules from over 150 countries. At least one country must be selected and up to five countries may be included.

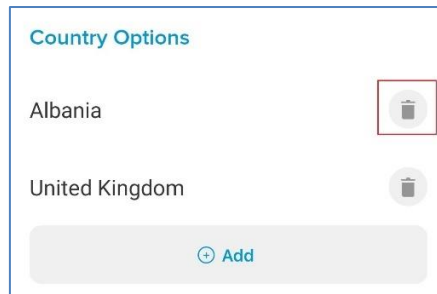
Click the **+ Add** button to select a country from the drop-down list.



Tick up to five countries and return to the main settings menu by clicking the left arrow in the header bar:

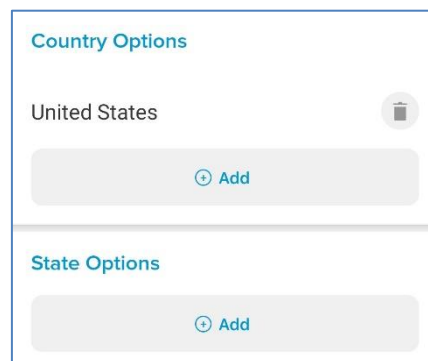


To remove a country from the list, click the bin button next to it.

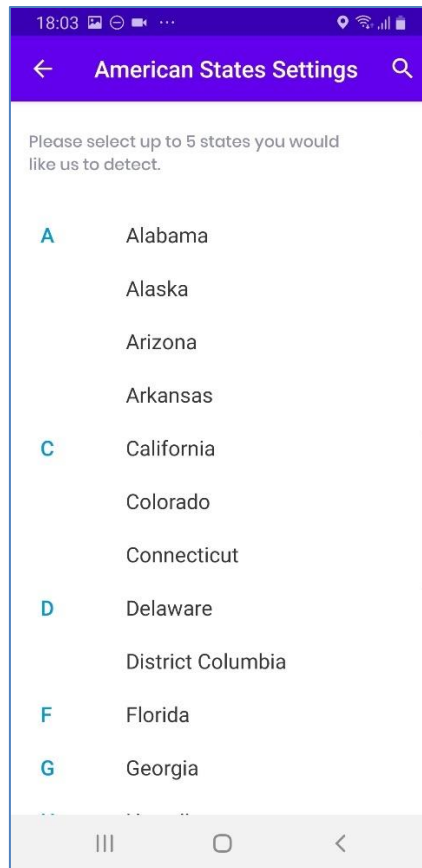
A screenshot of the 'Country Options' menu. It shows a list with 'Albania' and 'United Kingdom'. Each entry has a trash icon to its right. The 'Albania' trash icon is highlighted with a red square. At the bottom is a grey button with a plus icon and the text 'Add'.

Additional countries will be added to the bottom of the list. Make sure that the list is ordered so that those countries with the higher probability of occurrence appear first. *(Tip: Think about this first and then add the countries one-by-one. If you make a mistake you will have to delete one or more entries and add them again.)*

### Required State (1-5)

A screenshot showing two sections: 'Country Options' and 'State Options'. The 'Country Options' section has 'United States' listed with a trash icon to its right. Below it is a grey button with a plus icon and the text 'Add'. The 'State Options' section is below a horizontal separator and has a grey button with a plus icon and the text 'Add'.

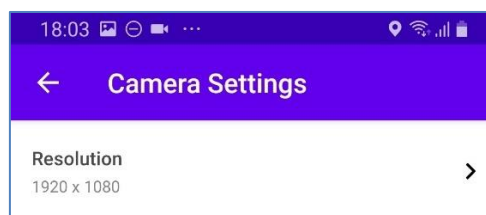
If one of selected countries is *United States*, a main state must be selected from the State Options menu. A total of five states can be added, – again in likely order of occurrence.



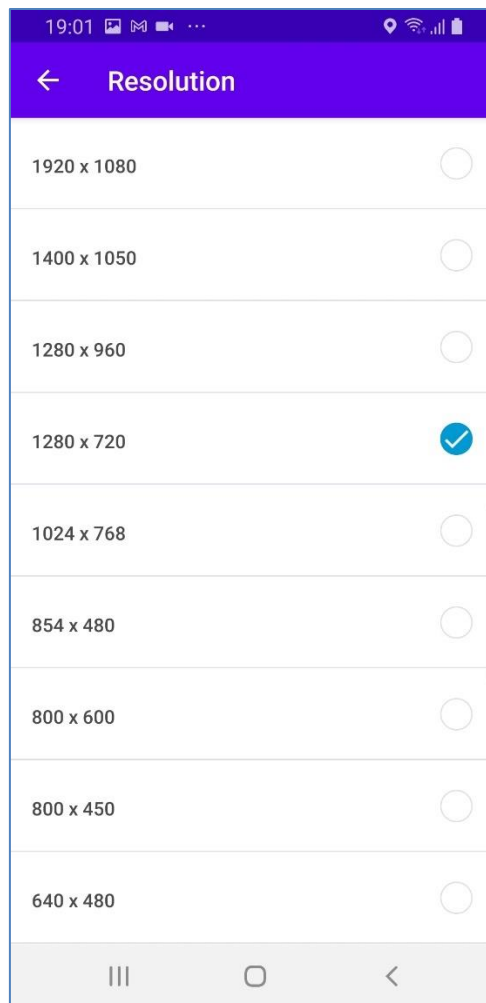
*Note that the same neural engine (used for matching character shapes) is used for all of the Americas. Selecting the state simply loads the possible syntax (grammar) for those states to help with the letter O and zero for example. Other states not in the list will still be recognized.*

#### 7.1.4 VaxALPR Settings: Camera Settings

The ALPR engine takes frames directly from the camera so it doesn't matter what resolution your device camera is set to, - it is here that you define the image resolution to be used by the ALPR engine.



Click on the right arrow to select from the list of available resolutions on your device:

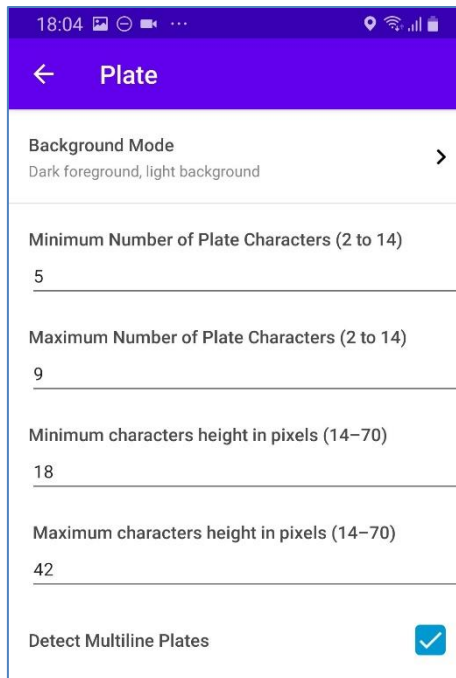


**NOTE:** when the camera is setup to read plates in a single lane then a resolution of 1280x720 is normally sufficient. When the camera is setup to read plates in wide or multiple lanes, a resolution of 1600x1080 (if available) or 1920x1080 is recommended. You only need about 300 pixels per horizontal meter to read plates and if you are using the App in a moving vehicle then the lower the resolution then the faster the engine will operate.

#### 7.1.5 VaxALPR Settings: Plate Settings

In this section you can define the characteristics of the plates seen in your region.





### Background Mode

Select the option from the list that best defines the colors of the target license plate. There are three possibilities:

- *Dark foreground, light background*: The plate background color is lighter than the characters (e.g. black fonts on white background).
- *Light foreground, dark background*: The plate background color is darker than the characters (e.g. white fonts on black background)
- *Both*: Plates are expected in both forms.

*NOTE: Do not select **Both** unless it you need to recognize both types as this can affect OCR performance.*

### Minimum Number of Plate Characters (2-14)

Set the minimum number of characters that you expect to see in your region.

### Maximum Number of Plate Characters (2-14)

Set the maximum number of plate characters that expect to see in your region.

### Minimum Character Height (14-70 pixels)

This is the minimum height that a license plate's characters should be before being read. Hold the device at a distance from a vehicle so as to read the plate characters at a height of about 20-40 pixels high. Set this too small and tiny plates may cause misreads.

*Note that for small plates such as most Arabic plates - or plates with additional small characters such as Costa Rica, – then a minimum character pixel height of 30 pixels is recommended.*

**NOTE:** The recommended difference between the min and max heights is about 10-20 pixels.

### Maximum Character Height (14-70 pixels)

Set the maximum height of the plate's characters in pixels.

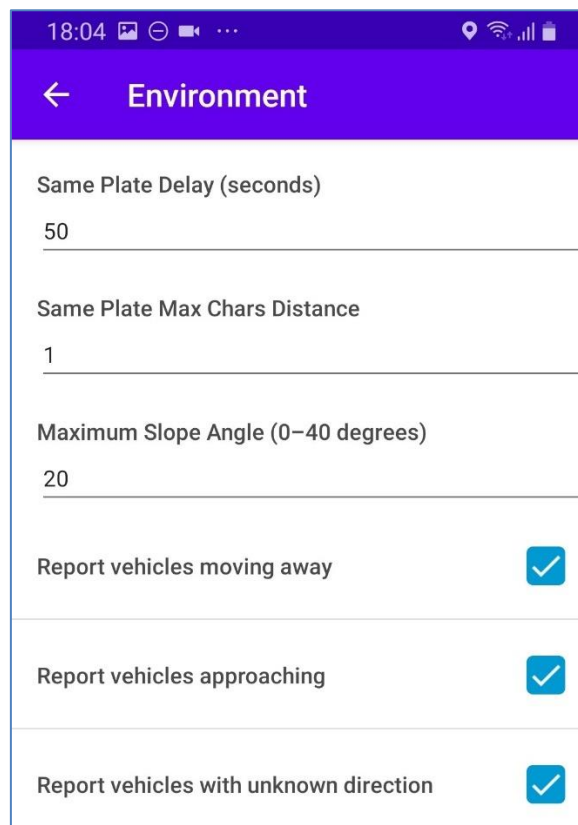
**NOTE:** The recommended difference between the min and max heights is about 10-20 pixels.

### Detect multiline plates

Some countries or regions do not have two or three-line plates. If this is the case then unticking this option will allow the engine to run faster.

#### 7.1.6 VaxALPR Settings: Environment Settings

These settings filter the plate reading:



The screenshot shows a mobile application interface for 'Environment' settings. The screen has a purple header with a back arrow and the title 'Environment'. Below the header, there are five settings, each with a label, a value field, and a checkbox. The settings are: 'Same Plate Delay (seconds)' with a value of 50, 'Same Plate Max Chars Distance' with a value of 1, 'Maximum Slope Angle (0-40 degrees)' with a value of 20, 'Report vehicles moving away' with a checked checkbox, 'Report vehicles approaching' with a checked checkbox, and 'Report vehicles with unknown direction' with a checked checkbox.

Setting	Value	Checkbox
Same Plate Delay (seconds)	50	
Same Plate Max Chars Distance	1	
Maximum Slope Angle (0-40 degrees)	20	
Report vehicles moving away		<input checked="" type="checkbox"/>
Report vehicles approaching		<input checked="" type="checkbox"/>
Report vehicles with unknown direction		<input checked="" type="checkbox"/>

**Same Plate Delay (seconds)**

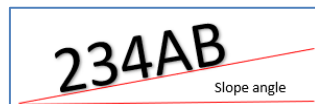
Set the number of seconds that should elapse before reading the same plate twice. This is to prevent multiple reporting of the same plate in situations when the traffic is slow or stationary. For example, if a vehicle stops at a barrier and the plate is reported but the car doesn't move for 30 seconds, then this delay should be set to say 60 seconds or more to prevent a duplicate read.

**Same Plate Max Chars Distance**

Set the number of characters that two plates must differ by to be considered different. Smart phones are capable of reading a plate several times as it passes through the field of view. If one character is misread on one of the reads then by setting this value to 2 then both reads will contribute towards the reported plate text.

**Maximum Slope Angle (0-40 degrees)** (Advanced option – Default 20)

Set the angle of slope of a plate that the engine should attempt to read up to.



*NOTE: If you know that the plates will be skewed then by setting this parameter higher you can force the engine to look for plate shapes that are more skewed. However, you should setup your device to keep plates as close to the horizontal as possible.*

**Directional Filtering**

The next three options allow you to only report vehicles moving in a particular direction.

**Report vehicles moving away**

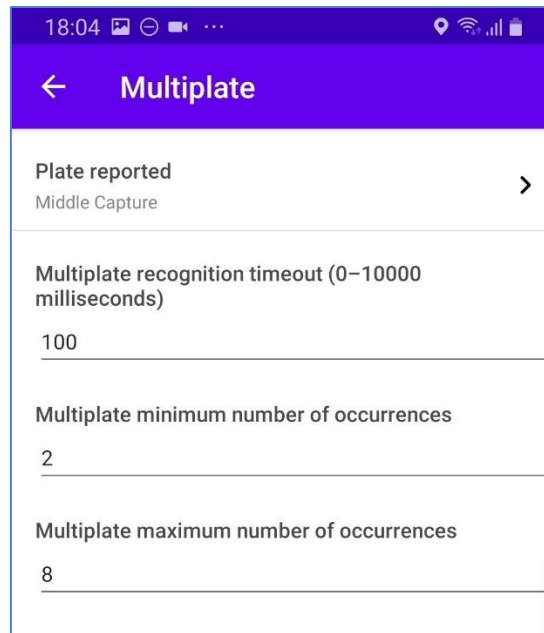
**Report vehicles approaching**

**Report vehicles with unknown direction**

These features are normally only used at say a bi-directional site entrance and all should be selected for normal hand-held use.

**7.1.7 VaxALPR Settings: Multiplate Settings**

These options control the timings of the plate reading:



### Plate reported

A plate is normally read several times as it passes through the camera's field of view. You may want to use the largest (Last) image for oncoming traffic & the First image for vehicles moving away from the camera.

Select which plate image should be saved from the options:

- First capture*
- Middle capture*
- Last capture*

### Multiplate Recognition Timeout (0-10000 milliseconds)

Set the number of milliseconds that the engine should spend analyzing a plate.

*(1000 milliseconds = 1 second)*

In free-flow mode the engine continuously analyses video frames and reads and reports plates. It makes a final decision on the plate read after an interval of time - the maximum recognition timeout period. There is a dedicated time counter for every plate which starts counting after the first read. When it reaches the preset timeout it stops, checks the number of samples read of the same plate and returns the "best" result.

*If an instantaneous plate read is not needed then set this timer to say 1000ms (1 second or more) so that the engine continues to look for the same plate to read again for as long as possible. Note that if a new plate is spotted, the old one will be reported and a new plate-trace started.*

We call the number of times the same license plate has been read within the maximum recognition period the **multiplate rate**. Several reads of each plate are good and produce better results.

### Multiplate minimum number of occurrences

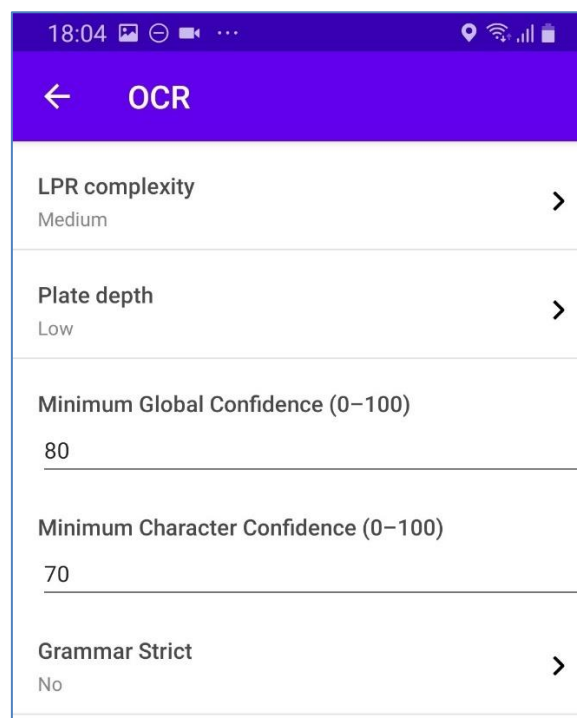
Set the minimum number of times that a plate should be read within the Timeout period to be considered a valid plate.

### Multiplate maximum number of occurrences

Set the maximum number of times that a plate should be read before being reported (this may happen before the timeout).

## 7.1.8 VaxALPR Settings: OCR Settings

These settings control the level of complexity of the engine and allow filtering on confidence.



### LPR Complexity

This is the complexity of the analytics to be applied during the ALPR Engine's stage of plate reading. Set this according to the OCR mode and type of traffic expected.

There are three possibilities:

**Low:** Recommended for very high-speed traffic where the OCR needs to work faster and your preference is for plate detection over perfect recognition.

**Medium** (Default): Recommended for normal use.

**High:** Recommended for reading very complex scenes.

*NOTE: Higher complexities give more accurate reading but make the ALPR engine run slower.*

### **Plate depth**

This is the complexity of the analytics to be applied during the ALPR Engine's stage of plate finding. Set this to one of the following three values:

**Low:** – apply up to 3 levels

**Medium:** – apply up to 8 levels

**High:** – apply up to 12 levels

*NOTE: Use Medium unless you are losing plates because of processing power.*

### **Minimum MMC Confidence (0-100)**

If you have the MMC (Make , Model & Color Recognition) option, then the minimum confidence level that the MMC read must meet in order to be accepted

### **Minimum Character Confidence (0-100)**

Set the minimum confidence level that a single character must meet in order to be accepted. The recommended value is 50.

*TIP: In regions with open grammars such as the USA keep this value high, e.g. 90+. Higher values mean a lower probability of false positives but a lower probability of missing plates.*

### **Grammar Strict**

Select this to force the Engine to only use the syntax from countries or states that you have selected. Plates that do not match these rules will **not** be reported. This is the recommended option for using ALPR for access control where exact matches are required.

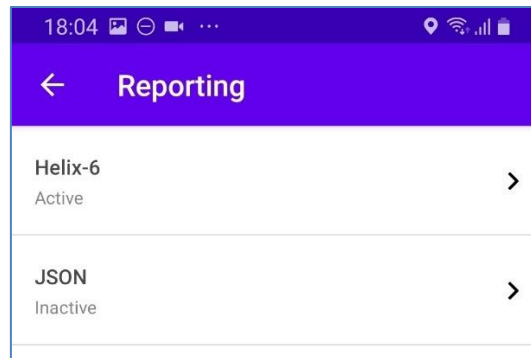
Do not select this checkbox when you want to report ALL valid license plates.

In the USA, plates are often seen from multiple States – and so the recommended setting is **OFF**.

### 7.1.9 VaxALPR Settings: Reporting options

The App stores all the plate reads in the devices internal memory where they can be viewed or exported. In this section you can specify where the saved reads should be sent.

The demonstration App has two reporting options, Helix-6 and JSON.

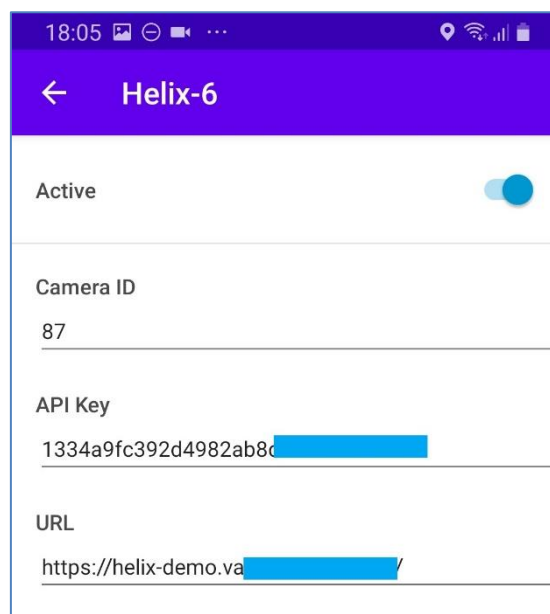


Helix-6 is Vaxtor's powerful Back Office, which can accept and store plate reads from hundreds of devices whether they be Android devices, PCs running VaxALPR or On-Camera versions of VaxALPR running on intelligent cameras such as those from Axis and Mobotix.

See [www.vaxtor.com](http://www.vaxtor.com) for more details on what Helix has to offer.

*In this demonstration App the results are not sent in real time – but when the **Export** icon is selected on the Home Screen. The source code of the App is available for you to add or change any of these options.*

#### Helix



Select the URL of your Helix Back Office.

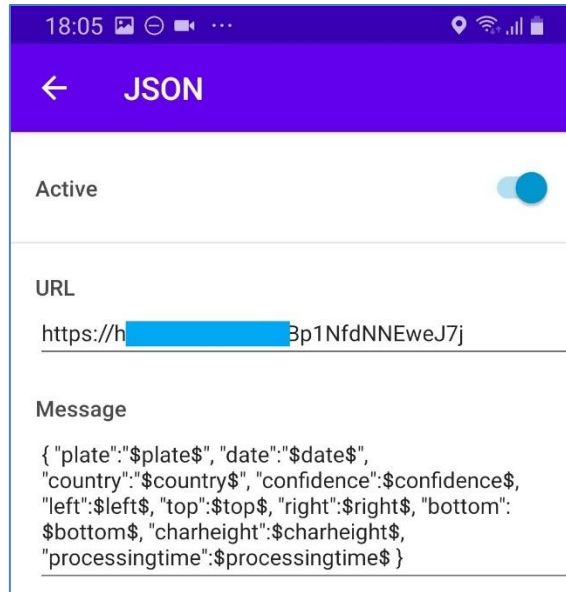
*Note that this can be an http or an https address supporting data encryption. In this case the*



App will send all the cached plate reads in encrypted format to the remote server using the specified API key.

The Camera ID must match the one set up on Helix.

## JSON



18:05

← JSON

Active ☒

URL

[https://h\[redacted\]Bp1NfdNNEweJ7j](https://h[redacted]Bp1NfdNNEweJ7j)

Message

```
{ "plate": "$plate$", "date": "$date$",
  "country": "$country$", "confidence": $confidence$,
  "left": $left$, "top": $top$, "right": $right$, "bottom":
  $bottom$, "charheight": $charheight$,
  "processingtime": $processingtime$ }
```

This option sends HTTP / HTTPS POST messages as a JSON object.

Enter the **URL**. The URL should be a 'well-formed' URL such as:

<http://myserver.com/> or <https://myserver.com:port/destination/mypage.php>.

Both domain names or IP address can be used.

Modify the message as needed. The message can use Dynamically replaced text as follows:

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$**: JPEG size in bytes.
- **\$date\$**: Timestamp in ISO8601 format
- **\$plate\$**: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- **\$state\$**: Plate State for USA.
- **\$category\$**: Plate category for countries that support it. E.g. the small prefix on some UAE plates.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.
- **\$ifblacklist\$ .... \$ifblacklist\$**: If the plate is on the blacklist, the text in the 'if clause' will be displayed.

- **\$ifwhitelist\$ .... \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$**: If the plate is not on a list, the test in the 'if clause' will be displayed.
- **\$confidence\$**: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- **\$left\$**: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- **\$bottom\$**: Bottom coordinate for the plate on the image (pixels).
- **\$absoluteleft\$**: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- **\$absoluteright\$**: Plate right position based on the total image width (0-1).
- **\$absolutebottom\$**: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- **\$height\$**: OCR image height.
- **\$ip\$**: Camera IP address.
- **\$roid\$**: Roi ID where the plate number is found.
- **\$make\$**: The vehicle make
- **\$model\$**: The vehicle model
- **\$color\$**: The vehicle color
- **\$class\$**: The vehicle classification (type – e.g. car, van etc)
- **\$speed\$**: Vehicle speed (Km/h).
- **\$multiplate\$**: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read was caused by a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d\_%H%M%S in the camera time zone (Useful for filenames).
- **\$localdate\$**: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- **\$platejpegsize\$**: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdatetime\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- **\$etx\$**: End transmission character (03)
- **\$stx\$**: Start transmission character (02)

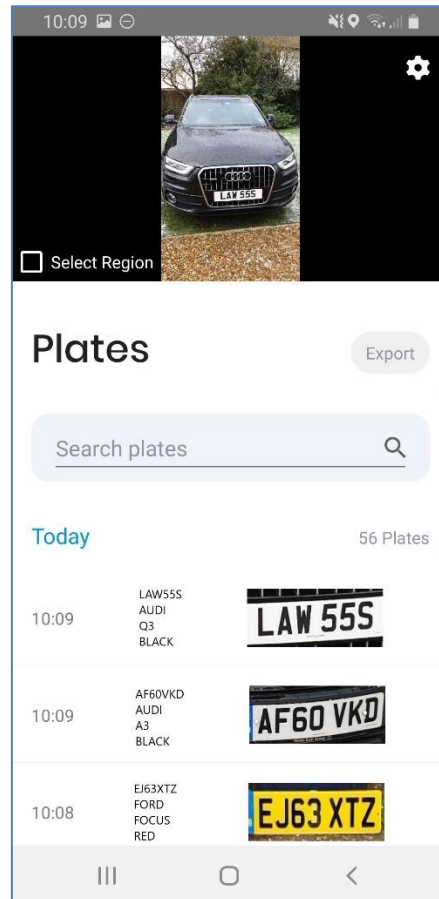
You can add your own parameters into the message, so if you want to add say a site ID, your message might look like this:

```
{ "plate": "$plate$", "date": "$date$", "ip": "$ip$", "country": "$country$", "sitecode": 12345 }
```

Once all the settings are complete, return to the Home Screen

## 7.2 VaxALPR Home Screen

All the recent plate reads and images are stored in the Android device's memory in a circular buffer and are automatically displayed on the App's Home Screen.

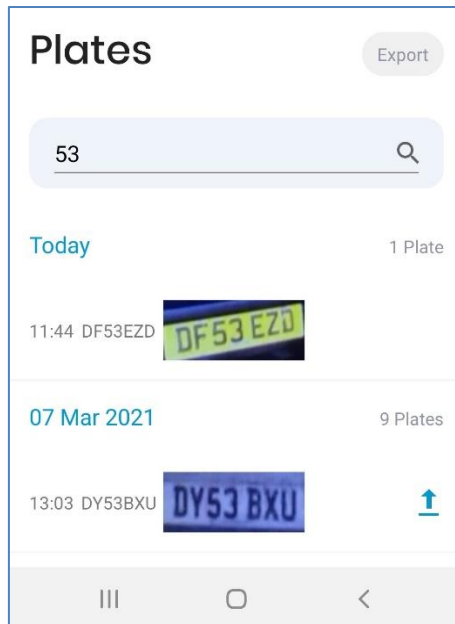


*The number records that can be saved is dependent on the memory available in your device and as a guide 8GB of memory will accommodate about 25,000 plate reads and images.*

You can scroll down this list or use the Search function as described below.

### 7.2.1 Search Plates

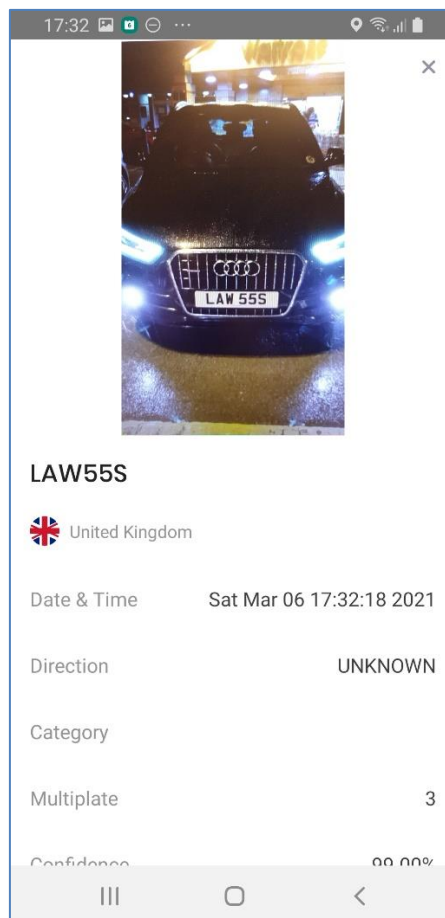
You can perform a simple search on this short list by entering a plate or partial plate in the 'Search plates' box. For example, search for all plates that contain '53' in this case displays:



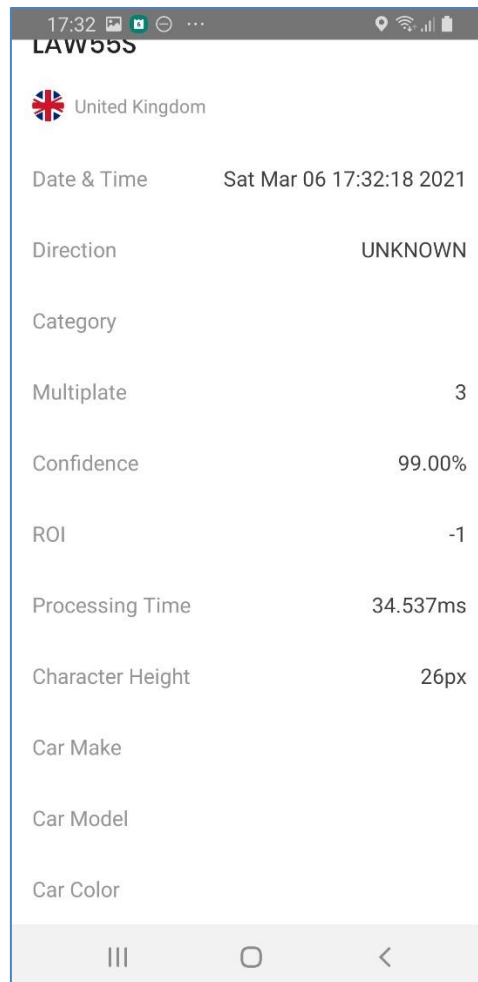
In this case two plates were found, captured on different dates.

### 7.2.2 Display Plate Read Details

Click on any of the plates to view the details of the plate capture:



Scroll down to view all of the fields including the Date and Time of capture and many other useful items of metadata such as the character height (useful when tuning the minimum and maximum pixel height in Settings) and if you have licensed the MMC option then the Make, Model and Color of the vehicle will be displayed.



*Note that some of these fields may not be available in your version of the software or are used for internal purposes such as communicating with certain third-party applications of Back Offices or VMS systems such as Genetec or Milestone.*

When setting up a system the most useful to display include the Height (average character height), OCR (processing time), Confidence, Multiplate (how many reads were processed) etc.

### **Processing Time**

*When you view the OCR processing time you will see the multiplate rate above it. So if the multiplate rate is say 5 and the OCR processing time shows as 50ms, – then that means that **ONE** of the 5 reads (the one used to display the actual read being examined) took 50ms.*

Click the X in the top right corner of the page to return to the Home Screen.

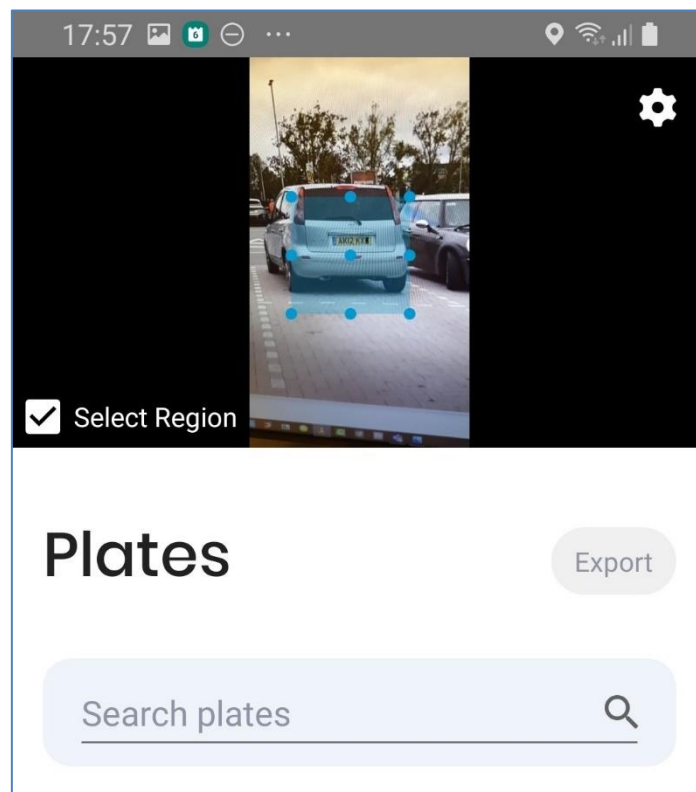
### 7.3 VaxALPR Region of Interest

A Region of Interest (ROI), sometimes known as the Crop Zone, is used to define an area within the video frame where the OCR analytics takes place. The user can define a rectangular area on the video image and only plates that are seen within this rectangle will be read.

When using the App in a hand-held device by say a Police or Traffic Warden then it might be useful to define an ROI in the center of the screen to avoid accidentally capturing the plate of any vehicles parked to the side of the one in question.

*Note that the whole license plate must be in or out the ROI to pass the test.*

Tick 'Select Region' to display the default ROI.



Define the size of the required ROI by moving the eight perimeter dots.

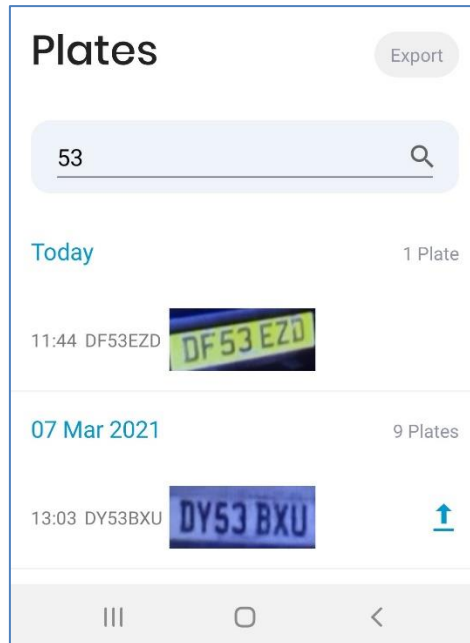
Move the ROI around the screen by using the center dot.


Untick the 'Select Region' box to stop using the ROI and return to full screen use.

## 7.4 Export

Select the '**Export**' button to send ALL locally stored plates to your chosen Back Office.

Note that you cannot interrupt this operation.



An icon  is displayed next to plates that have been successfully exported.

Once completed an "Upload Successful" message will be displayed.

***There may be more recent releases of this App, - check with the Google Play store.***

***For more details about Vaxtor and for more information on this and any of our other OCR products and platforms, visit [www.vaxtor.com](http://www.vaxtor.com)***

***Ends.***