

# Mobile LPR Camera System Installation Guide





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# **Read Me First**

### **Notations Used in This Manual**

Throughout the text in this publication, you notice the use of **Warning**, **Caution**, and **Notice**. These notations are used to emphasize that safety hazards exist, and the care that must be taken or observed.



**WARNING:** An operational procedure, practice, or condition, and so on, which may result in injury or death if not carefully observed.



**CAUTION:** An operational procedure, practice, or condition, and so on, which may result in damage to the equipment if not carefully observed.



**NOTE:** An operational procedure, practice, or condition, and so on, which is essential to emphasize.

### **Special Notations**

The following special notations are used throughout the text to highlight certain information or items:

#### Table 1: Special Notations

Example	Description
Menu key or Camera button	Bold words indicate a name of a key, button, or soft menu item.
The display shows Settings Applied.	Typewriter words indicate the MMI strings or messages displayed.
<required id=""></required>	The courier, bold, italic, and angle brackets indi- cate user input.
Setup→Settings→All Settings	Bold words with the arrow in between indicate the navigation structure in the menu items.

# **Related Publication**

The following list contains part numbers and titles of related publications. To find and download the publications, visit https://learning.motorolasolutions.com.

Part Number	Title
MN008501A01	Vigilant PlateSearch User Guide
MN007806A01	Vigilant ClientPortal User Guide

Part Number

MN007809A01

Target Alert Service User Guide

Title

# Contents

Legal and Support	2
Intellectual Property and Regulatory Notices	2
Contact Us	3
Read Me First	3
Related Publication	3
List of Figures	7
List of Tables	9
Chapter 1: Hardware Overview	
1.1 Types of Camera	10
1.2 VLP Processor	11
1.3 VLS Mobile Tablet	13
1.4 Other Cameras	18
1.5 Camera Mounting	
Chapter 2: System Assembly	20
2.1 Assembling Mobile LPR with VLP Processor	
2.2 Assembling VLS Mobile Tablet	22
Chapter 3: PC Configuration	26
3.1 Configuring Windows Network Settings	26
3.2 Installing CarDetector Mobile	26
3.3 Configuring Vigilant PlateSearch Server Ports (Optional)	
Chapter 4: CarDetector Mobile Configuration	
4.1 Launching the Application for the First Time	
4.2 Main Window Overview	30
4.3 Control Menu Overview	31
4.3.1 Setup	32
4.3.1.1 Configuring Camera/DSP Settings	32
4.3.1.2 Configuring Audio Settings	33
4.3.1.3 Configuring OCR Settings	
4.3.1.4 Configuring Alert Settings	35
4.3.1.5 Configuring Clean Settings	37
4.3.1.6 Configuring PlateSearch Server Settings	37
4.3.1.7 Configuring Proxy Settings	
4.3.2 Locations	
4.3.2.1 Viewing Locations	
4.3.2.2 Viewing New Locations	41

4.3.2.3 Linked Zone	42
4.3.3 Import Hot List	43
4.3.4 Start or End Shift	44
4.3.5 Add Hot Plate	44
4.3.6 Search	45
4.3.6.1 Searching for Detections	45
4.3.6.2 Searching for Hot List Records	45
4.3.6.3 Searching for Hits Window	46
4.3.6.4 Searching for White List Records	46
4.3.6.5 Searching for Digital Chalking (Parking) Records	47
4.3.7 Adjusting Day or Night Mode	49
4.3.8 Camera Navigation	50
4.3.8.1 Using the Camera Aiming Tool	50
4.3.8.2 Using Manual Capture Tool	51
4.3.8.3 Using Snap Shot Tool	51
4.3.8.4 Using Mobile Hit Hunter	51
4.3.9 Detection View	52
4.3.9.1 LIVE View	52
4.3.9.2 Plate History View	53
4.3.9.3 Detection List View	54
4.3.9.4 Viewing Hit List	55
4.3.10 LIVE View Alert Pop-Ups	56
4.3.10.1 Hot List Hit Alerts	56
4.3.10.2 Unauthorized Vehicle Hit Alerts	57
4.3.10.3 LIVE View for Additional White List Hit Views	58
4.3.10.4 LIVE View for Digital Chalking Hit Views	58
4.4 Status Lights Overview	59
4.4.1 Camera Status Lights	60
4.4.2 Vigilant Server Status Lights	60
4.4.3 GPS Status Lights	61
4.4.4 System Status Lights	62
Chapter 5: Mobile Camera Aiming Quick Reference	63
5.1 Square Parked Car Scanning	64
5.2 Angle Parked Car Scanning	65
5.3 Curb Parked Car Scanning	66
5.4 Curb Scanning–Radar Style	66
5.5 Monitoring Undivided Highways	67
5.6 Monitoring Divided Highways	68

# **List of Figures**

Figure 1: VLP Processor Wiring Harness	13
Figure 2: Possible Camera Mounting Locations	18
Figure 3: Wiring Harness to VLP Box	20
Figure 4: Ethernet Cable to VLP Box	20
Figure 5: Camera Cable to VLP Processor	21
Figure 6: GPS Cable to VLP Processor	21
Figure 7: GPS Puck	22
Figure 8: Ethernet Cable to PoE Injector	23
Figure 9: Camera Cable to PoE Injector	23
Figure 10: GPS Connector to VLS Tablet Docking Station	24
Figure 11: 4G Connector to VLS Tablet Docking Station	24
Figure 12: Ram Mount Base Plate	25
Figure 13: Ram Mount Assembly	25
Figure 14: Vigilant Mobile LPR	28
Figure 15: CarDetector Mobile Setup	28
Figure 16: Connect to Database Server	29
Figure 17: Built-In Virtual Keyboard	29
Figure 18: Main Menu Overview	30
Figure 19: Control Buttons Overview	31
Figure 20: Configuring Cameras with VLS Mobile Tablet	32
Figure 21: Configuring Cameras with M500 or VLP	33
Figure 22: Configuring Audio Settings	34
Figure 23: Configuring OCR Settings	35
Figure 24: Alert Settings Menu (Setup Alert)	36
Figure 25: Clean Settings Menu	37
Figure 26: LEARN Settings Menu	38
Figure 27: Proxy Settings Menu	39
Figure 28: Manual Zone Location	40
Figure 29: Geo-Zone Location	40
Figure 30: New Location Selected	41
Figure 31: New Location Alert	42
Figure 32: Location Exit Warning Message (exiting location warning)	42
Figure 33: Linked Locations	43
Figure 34: Import Hot List Window	43
Figure 35: Start Shift Window	44
Figure 36: Add Plate Window	44

Figure 37: Search Window	45
Figure 38: Detections Window	45
Figure 39: Hot List Record Window	46
Figure 40: Hits Window	46
Figure 41: White List Record	47
Figure 42: Expired Parking	47
Figure 43: Unauthorized Hits	47
Figure 44: Excessive Detection	48
Figure 45: Duplicate Permit	48
Figure 46: Day Mode	49
Figure 47: Night Mode	49
Figure 48: Camera Navigation Window	50
Figure 49: Camera Aiming Tool	50
Figure 50: Manual Capture Tool	51
Figure 51: Snap Shot Tool	51
Figure 52: Mobile Hit Hunter Window	52
Figure 53: Mobile Hit Hunter Configuration Window	52
Figure 54: Detection View	53
Figure 55: Plate History View	54
Figure 56: LPR Record Data Window	54
Figure 57: Detection Relevant Information	55
Figure 58: Detection Window - Manual Add	55
Figure 59: Detection Window - Manually Chalk Plate	55
Figure 60: Hit List Window	56
Figure 61: HIT View LIVE Window	57
Figure 62: Unauthorized Vehicle Hit View Window	57
Figure 63: White List Hit View Window	58
Figure 64: Digital Chalking Hit View Window	59
Figure 65: Status Lights	59
Figure 66: Camera/Connection Status Window	60
Figure 67: Communication Status Window	61
Figure 68: GPS Receiver Status Window	61
Figure 69: CarDetector Status Window	62
Figure 70: Perpendicular Parked Cars Capture Distance	64
Figure 71: Angle Parked Cars Capture Distance	65
Figure 72: Curb Parked Cars Capture Distance	66
Figure 73: In Traffic Adjacent Lane Capture Distance	66
Figure 74: In Traffic Adjacent Lane and Lane Reversed Capture Distance	67
Figure 75: "Over The Median" and "Second Lane Over" Capture Distance	68

# **List of Tables**

Table 1: Special Notations	3
Table 2: Mobile LPR Cameras	10
Table 3: List of VLP Processor Equipment	11
Table 4: VLP Processor Wiring Harness Cable Color	13
Table 5: List of VLS Tablet Equipment	13
Table 6: GPS Puck Connectors	15
Table 7: Other Cameras	18
Table 8: GPS Puck	22
Table 9: Main Menu Overview Description	30
Table 10: Control Buttons Description	31
Table 11: Configuring Cameras with M500 or VLP Description	33
Table 12: Configuring Audio Settings Description	34
Table 13: Alert Settings Menu Description	
Table 14: Search Record Window Description	45
Table 15: Search Records Type	48
Table 16: Snap Shot Window Description	51
Table 17: Hit List Window Description	56
Table 18: Alarm Priority Colors	57

# Chapter 1

# **Hardware Overview**

This section lists all of the equipment needed to configure a Mobile LPR system with a VLP Processor, VLS Mobile Tablet, or M500 In-car Video System.

### 1.1 Types of Camera

Table 2: Mobile LPR Cameras



# 1.2 VLP Processor

These are the hardware components necessary for installing a Mobile LPR system with a VLP Processor:



**NOTE:** This configuration also requires a connected Windows PC to run the CarDetector Mobile software.

#### Table 3: List of VLP Processor Equipment

Equipment	Photo
Camera and Magnet Mount Assembly	
Camera and Fixed Mount As- sembly	
VLP Processor	



#### Figure 1: VLP Processor Wiring Harness



Table 4: VLP Processor Wiring Harness Cable Color

Color	Description
Black	Ground
Red	+12 V
Yellow	Ignition



**IMPORTANT:** Do not connect cameras when wet. Ensure that cable end and camera power port are dry to avoid damaging equipment.

# <sup>1.3</sup> VLS Mobile Tablet

These are the hardware components necessary for installing a Mobile LPR system with a VLS Mobile Tablet:

#### Table 5: List of VLS Tablet Equipment

Equipment	Photo	
Camera and Magnet Mount Assembly		



Equipment	Photo
GPS Cable and Puck	

#### Table 6: GPS Puck Connectors

Number	Description
1	GPS connector
2	4G connector

Tablet



Equipment	Photo
Ram Mount Base Plate	
Ram Mount Pole Assembly	<image/>



**IMPORTANT:** Do not connect cameras when wet. Ensure that cable end and camera power port are dry to avoid damaging equipment.

MN007802A01-AD Chapter 1 : Hardware Overview

# 1.4 Other Cameras

#### Table 7: Other Cameras



### 1.5

# **Camera Mounting**

Figure 2: Possible Camera Mounting Locations



Following are the best practices for mounting the camera.

- One lane per camera.
- Camera aiming calibration is done with the IR camera, not color camera.

- Cameras should be positioned before you use the LPR scanning.
- Cameras are selected based on the use case scenarios.
- Use CarDetector "Camera Aiming Tool" for aiming assistance.

# Chapter 2

# **System Assembly**

This section helps you to install and assemble a Mobile LPR camera system.

# 2.1 Assembling Mobile LPR with VLP Processor

#### Procedure:

1 To provide power, connect the wiring harness to the VLP Processor. Figure 3: Wiring Harness to VLP Box



2 Connect both ends of the Ethernet cable to the VLP Processor and a Windows PC respectively. Figure 4: Ethernet Cable to VLP Box



3 Connect the camera cables to the PoE ports of the VLP Processor.

#### Figure 5: Camera Cable to VLP Processor



4 Connect the GPS cable to the GPS port of the VLP Processor.



**NOTE:** Ensure that the GPS puck is placed in a location with an unobstructed view of the sky, for example, at the dash of vehicle or exterior of vehicle.

#### Figure 6: GPS Cable to VLP Processor



#### Figure 7: GPS Puck



#### Table 8: GPS Puck

Number	Description
1	GPS Puck

- **5** For trunk installation, locate a suitable area for the VLP Processor so that the air can flow around outside of the enclosure.
- 6 Mount the VLP Processor using screws seated through the notches of the feet of the VLP Processor on both sides.



**NOTE:** Ensure that the VLP Processor is fully secured to avoid unnecessary vibration while vehicle is traveling.

# Assembling VLS Mobile Tablet

#### Procedure:

- 1 Plug the wiring harness into the PoE Injector.
- 2 Connect both ends of the Ethernet cable to the PoE Injector and the VLS Tablet Docking Station respectively.

#### Figure 8: Ethernet Cable to PoE Injector



3 Connect the camera cables to the PoE Injector. Figure 9: Camera Cable to PoE Injector



4 Connect both of the GPS and 4G puck connectors to the Antenna GPS and LTE connectors of the VLS Mobile Tablet respectively.



**NOTE:** The Antenna GPS and LTE connectors are located at the bottom of the VLS Mobile Tablet Docking Station.



#### Figure 10: GPS Connector to VLS Tablet Docking Station

Figure 11: 4G Connector to VLS Tablet Docking Station



- **5** For vehicle installation, locate a suitable location for the PoE Injector such that the air can freely flow around outside of the enclosure.
- 6 Mount the PoE Injector using screws seated through the notches of the feet on both sides.



**NOTE:** Ensure that the PoE Injector is fully secured to avoid unnecessary vibration while vehicle is traveling.

7 Install the Ram Mount base plate.

#### Figure 12: Ram Mount Base Plate



8 Install the Ram Mount Pole Assembly and VLS Mobile Tablet Cradle to the base plate. Figure 13: Ram Mount Assembly



### **Chapter 3**

# **PC Configuration**

This section helps you to perform the CarDetector Mobile software installation and Windows configuration on a Windows PC or VLS Mobile Tablet for a Mobile LPR camera system.

#### 3.1

# **Configuring Windows Network Settings**

Change the IP address of the Windows PC or the VLS Mobile Tablet to be on the correct subnet.

#### **Procedure:**

- 1 Open the Control Panel and click Network and Internet→ Network and Sharing Center→Change Adapter Settings.
- 2 Find the adapter that represents the Ethernet port on your PC receiving input from the VLP or Camera PoE Injector.
- 3 Right click on it, go to Properties and double-click Internet Protocol Version 4 (TCP/IPv4).
- 4 In the General tab of Internet Protocol Version 4 (TCP/IPv4), select Use the following IP address, and enter one of the following IP Addresses:
  - VLP Processor Configuration: IP Address 192.168.5.55, Subnet Mask 255.255.255.0
  - VLS Tablet Configuration: IP Address 192.168.3.1, Subnet Mask 255.255.0
- 5 Click **OK** on both windows to set the IP address.

### 3.2 Installing CarDetector Mobile

#### **Procedure:**

- 1 Download the appropriate software version of CarDetector Mobile for the hardware being used:
  - CDMP (HD) Build for VLP or M500: https://get.vaasfiles.com/CDMSHD
  - CDMP (RHD as IP) Build for VLS Mobile Tablet: https://get.vaasfiles.com/CDMSIP
- 2 Unzip the files to a folder.
- 3 Double-click setup.exe.
- 4 Click Next.
- 5 Select check box next to I accept the terms of the license agreement and click Next.
- 6 Enter a user name and company name, and click Next.
- 7 Follow the on-screen installation instructions and click **Next→Install→Finish** to complete the software installation.

#### 3.3 Configuring Vigilant PlateSearch Server Ports (Optional)

This section outlines the necessary ports and protocols to be authorized on the network for communication between Vigilant PlateSearch and the Vigilant CarDetector Mobile (CDM) application.

Communication between the VLS Mobile Tablet or In-Car Laptop and Reaper/Vigilant PlateSearch is done through TCP protocol.

The following ports must be open on the VLS Mobile Tablet/In-Car Laptop to communicate with the Reaper DSP Unit.

- TCP Port 2000
- TCP Port 5000
- TCP Port 3000
- TCP Port 22
- TCP Port 22

The Reaper DSP Unit communicates with the Vigilant PlateSearch server (Wireless Card Recommended) through the following TCP ports:

- TCP Port 80
- TCP Port 443

### **Chapter 4**

# **CarDetector Mobile Configuration**

This section helps you to use and configure the CarDetector Mobile Application with a Mobile LPR camera system.

# 4.1 Launching the Application for the First Time

#### Procedure:

- 1 To launch the software, click the Vigilant Mobile LPR desktop icon.
  - Figure 14: Vigilant Mobile LPR



- 2 Click **OK** on the Warning pop up window.
- 3 Enter a CarDetector Mobile license key into the License code field and click Unlock.



NOTE: License keys only need to be entered once for every key period..

#### Figure 15: CarDetector Mobile Setup

A WARNING	CarDetector Trial-Version
UNDER CERTAIN CIRCUMSTANCES, IT MAY BE DANGEROUS TO OPERATE A MOVING VEHICLE WHILE ATTEMPTING TO OPERATE THIS TOUCH SCREEN AND ANY OF ITS APPLICATIONS, PLEASE ACKNOWLEDGE THAT YOU AGREE TO ONLY UTILIZE THE INTERFACE TO THIS SYSTEM AT WHAT TIME IT IS SAFE TO DO SO. VIGILANT SOLUTIONS IS NOT LIABLE FOR ANY ACCIDENT CAUSED BY A RESULT OF DISTRACTION USING THIS TOUCH SCREEN WHILE OPERATING A MOVING VEHICLE.	Sile code     CEE44660       Machine ID     9665.48CE 80EE 4191       Davis Left     30       License code     CarDetector Mobile DSP Version 6.4,199.18.202107261649.R       Continue     Cancel

4 If a connection file downloaded from Vigilant PlateSearch or Client Portal is available, click **Browse** to select it now.



**NOTE:** A connection file can be added later from the Sign In window by clicking the button with three horizontal dots.

**5** To log in to CarDetector Mobile, enter your PlateSearch user credentials.



**NOTE:** If no PlateSearch user credentials are available, use the default username and password: CDMAdmin and 12345

#### Figure 16: Connect to Database Server



6 An on-screen keyboard available on various menus that can be used to type information in to text fields if a hardware keyboard is not available. Click the small keyboard icon to access the on-screen keyboard.

#### Figure 17: Built-In Virtual Keyboard



# 4.2 Main Window Overview

The main menu of CarDetector Mobile has a static control panel on the left-hand side and four responsive information windows that populate new data with each scan.

#### Figure 18: Main Menu Overview



#### Table 9: Main Menu Overview Description

Number	Description
1	Control Menu
2	Active camera feed
3	Hit list
4	Detection list

# 4.3 Control Menu Overview

The control menu offers users one-click access to customizable features and useful enforcement tools.

Figure 19: Control Buttons Overview

# Setup Location Import Hot-List Start shift Add plate Search

# Switch to Night Mode

Name	Description
Setup	Launches the main setup parameters and op- tions for CarDetector Mobile
Location	Allows the operator to set up and configure lo- cations for Parking white-listing and hit features
Import Hot List	Allows the operator to add hot list files to the hot list database
Start Shift	Bookmarks a period for reporting and exporting data records
Add Plate	Allows the operator to add single plates to the hot list database
Search	Search utility to access all LPR data in the local CDMS database

Name	Description		
Switch to Day/Night Mode	Switch between Day Mode theme and Night Mode theme		

#### 4.3.1

### **Setup**

The Setup window is used to configure Cameras, OCR Profile, Alerts, and other system settings.

#### 4.3.1.1 Configuring Camera/DSP Settings

#### Procedure:

1 To set up camera connections, click **Setup** in the Control Menu.

#### Figure 20: Configuring Cameras with VLS Mobile Tablet



Number	Description
1	Camera Tab
2	Activate Camera
3	Camera List
4	Change Camera Name
5	Change Camera IP Address
6	View Camera Information
7	Save Settings
8	Validate DPS Connection

2 In the Camera tab, select the cameras you would like to activate.

- 3 Enter the IP Address of the M500 or VLP in the drop-down menu.
- 4 Click **Test Connection** to validate the connection.

A green light will indicate a successful connection.

5 Click **Apply** to save your preferences.

#### Figure 21: Configuring Cameras with M500 or VLP



#### Table 11: Configuring Cameras with M500 or VLP Description

Number	Description
1	Camera Tab
2	Activate Camera
3	Save Settings
4	View Camera Info
5	Camera List
6	Validate DSP Connection

# 4.3.1.2 Configuring Audio Settings

#### Procedure:

Configure the sound files to be played for different enabled alert types.

#### Figure 22: Configuring Audio Settings

Camera	Audio	OCR	Alert	Clean	Server	Proxy	TASC
		Sound on	Detectio	n			
		Sound on	Camera	Name			
		Exact ma	tch				
		One-Off r	natch				
		Alert Leve	el: High				
		Alert Leve	el: Mediu	m			
Alert Level: Low							
•							
		A	pply	C	lose		

#### Table 12: Configuring Audio Settings Description

Audio Settings	Description
Sound on Detection	Plays the selected sound file when CarDe- tector Mobile Detects a license plate.
Sound on Camera Name	Plays the selected sound file when the Camera Name of a detected Hot List record matches the Camera Name of detecting camera.
Exact Match	Plays the selected sound file when a detect- ed license plate exactly matches a Hot List record.
One-Off Match	Plays the selected sound file when a detect- ed license plate differs from a Hot List record by at most one character.
Alert Level: High/Medium/Low	Plays the selected sound file based on the Hot List hit record's Alert Level.

#### 4.3.1.3 Configuring OCR Settings

#### **Procedure:**

Select the appropriate regional OCR profile for the state or region in which the CarDetector Mobile system resides.

	• •	0.00		<u></u>			<b>T</b> 100
Camera	Audio	OCR	Alert	Clean	Server	Proxy	TASC
		Sele	ect a regio	onal OCR	profile		
		Region	Select:	General		•	
l.							
		A	pply	C	lose		

#### Figure 23: Configuring OCR Settings

### 4.3.1.4 Configuring Alert Settings

#### Procedure:

Set alert parameters and notification type for the CarDetector Mobile application.

Figure 24: Alert Settings Menu (Setup Alert)

Camera	Audio	OCR	Alert	Clean	Server	Proxy	TASC
Hit	Alert Ma	atrix					
			F	late1 On	ly Plate	e1&2	
	Exact m	atch					
	One-Off	match					
				Ignore (	Out-of-Sta	ate Alerts	
	Suppres	s Duplic	ate Hit		5 Min	utes	
No	tification	s					
	Sound A	udio Ale	rt		O Yes	💿 No	
	Trigger I	Pop-Up ۱	Nindow		⊙ Yes	O No	
	Force P	op-Up Pi	riority		O Yes	No	
	Require	Hit Conf	irmation		O Yes	No	
		A	pply	С	lose		

#### Table 13: Alert Settings Menu Description

Alert Settings Menu	Description
Hit Alert Matrix	Define the method of matching of detected plates to hot lists
Notifications	Set system notification options: Enable or disable Audio Alerts and Pop-Up Windows, force Pop-Ups to always display on top, and Require user acknowledgement of Hits.

#### Plate 1 vs Plate 2

Plate 1 is the first interpretation the engine read the plate to be and Plate 2 is the second interpretation of the same plate. They are not separate detections.

#### Exact match + Plate 1 only

Make an alarm sound when any detected plate number on Plate 1 column exactly matches all characters of a plate number in the hot list.

#### Exact match + Plate 1 & Plate 2

Make an alarm sound when any detected plate number on Plate 1 column and Plate 2 column exactly matches all characters of a plate number in the hot list.

#### One-off match + Plate 1 only

Make an alarm sound when any detected plate number on Plate 1 column, which has only onecharacter difference from one of those of any plate number in the hot list (including the case of a plate with less or more than one character).

#### One-off match + Plate 1 & Plate 2

Make an alarm sound when any detected plate number on Plate 1 column and Plate 2 column, which has only one-character difference from one of those of any plate number in the hot list (including the case of a plate with less or more than one character).

### 4.3.1.5 Configuring Clean Settings

#### Procedure:

- 1 Configure your database cleanup within the Mobile LPR application.
- 2 Indicate the cleanup cycle and click Apply to save your preferences.

#### Figure 25: Clean Settings Menu



#### Delete local LPR data older than [X] days

Check to enable Archive Maintenance. Specify the maximum number of days for the archive to hold. All data older than 'X' days will be deleted.



**NOTE:** Detection records remain in Vigilant PlateSearch after local data is deleted.

#### 4.3.1.6 Configuring PlateSearch Server Settings

#### Procedure:

- 1 In the Website field, enter the URL of the PlateSearch server that CarDetector Mobile will communicate with and send detections to.
- 2 To verify that the connection to the server has been made., click Test Connection.

#### Figure 26: LEARN Settings Menu

Camera	Audio	OCR	Alert	Clean	Server	Proxy	TASC
	10/-1-	aita 🔲					
	vveb	site   <u>htt</u>	ps://learn·	-nvls.com	/learn		
			Test C	onnectior	ו		
		A	pply	С	lose		10091

Establishes data transfer from and to LEARN server.

#### 4.3.1.7 Configuring Proxy Settings

Proxy settings are only needed if the internet connection requires it.

#### Procedure:

- **1** Perform one of the following actions:
  - To use a proxy server previously set in Windows, select Use Windows Proxy Settings.
  - To manually set a proxy server, select Use CarDetector Settings.
- 2 To set the address and port of the proxy server, click Using Proxy Server for your LAN.

Camera	Audio	OCR	Alert	Clean	Server	Proxy	TASC
	οι	Jse Windo	ws Prox	y Setting	s		
	⊚ ι	Jse CarDe	etector S	ettings			
	C	] Using F	Proxy Sei	rver for y	our LAN		
	A	ddress			Ad	vanced	
	F	Port			_		
	٢	] Bypass	proxy se	erver for	local addi	ress	
		٨	anly				
		- Αμ	ру		lose		

#### Figure 27: Proxy Settings Menu

U
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**NOTE:** Contact your local IT Department if you are having problems connecting to the internet.

### 4.3.2 Locations

Viewing and editing locations requires that Parking permissions to be enabled for the PlateSearch user currently logged into the CarDetector Mobile application.

# 4.3.2.1 Viewing Locations

This feature allows CarDetector Mobile operators to select and view defined locations that the system is currently operating in for Parking enforcement features.

#### **Procedure:**

- 1 Click the Locations button.
- 2 Select one of the following tabs:
  - Geo-Zone
  - Manual Zone
  - Linked Zone

**NOTE:** No-Zone locations will automatically sort based on your GPS and the address that you set up when creating this location.

3 Clicking on the location will show a thumbnail image of the geo-location for this location.

#### Figure 28: Manual Zone Location

SEL	ECT LOCATION
	Geo-Zone Manual Zone Linked Zone
	No Zone Test
Т	Total location(s): 1
C	☐ Auto confirm location when selected
	Close

#### Figure 29: Geo-Zone Location

DuplicatePermitID     3 Min Chalk     Test Chalk       2 Min Chalk     Testing Excessive Det     West Town DC	DuplicatePermitID     3 Min Chalk     Test Chalk       2 Min Chalk     Testing Excessive Det     West Town DC	DuplicatePermitID     3 Min Chalk     Test Chalk       2 Min Chalk     Testing Excessive Det     West Town DC	Geo-Zone Manual Zone L	inked Zone	1 Hr Chalk
2 Min Chalk Testing Excessive Det West Town DC	2 Min Chalk Testing Excessive Det West Town DC	2 Min Chalk Testing Excessive Det West Town DC	DuplicatePermitID	3 Min Chalk	Test Chalk
		Total location(s): 9	2 Min Chalk	Testing Excessive Det	West Town DC
Total location(s): 9 □ Auto confirm location when selected			Total location(s): 9 ☐ Auto confirm location when sele	sted	

#### Figure 30: New Location Selected



# 4.3.2.2 Viewing New Locations

#### Procedure:

1 When CarDetector Mobile detects that your GPS has entered a location from your location list, an alert will pop up.

#### Figure 31: New Location Alert





NOTE: A warning message pops up when system exits a location.

#### Figure 32: Location Exit Warning Message (exiting location warning)



#### 4.3.2.3 Linked Zone

The Linked Zone tab allows you to link multiple existing locations to share common digital chalking rules without losing the individual existing rules of the location.

Each location can maintain separate lists of permitted vehicles (whitelist) while sharing a digital chalking rule.

#### Figure 33: Linked Locations

nked zone: Linked Location Test				1 Statistical
New	location selected			6BCL642
Total White-Lit	st Plate(s) for this lo	cation: 0		
Schedule # 1				and the second division of the second divisio
Total White-Lis	t Plate(s) for this St	chedule: 0		
Digital chalking		Enforceme	ent hours:	
- Alert on duplicates greater than 0 hour(s) 2	minute(s) apart	Monday	12:00AM - 11:59Ph	4
within 1 day(s) and 12 hour(s) pendo.	Linked zone:	Linked Loca	tion Test	
	We	st Town Mail	2 Blended	DuplicatePermitID
	7			
Details	- 25	-	1.0	No. or other
× 68.11927			A Contraction	No zone area
× (mm)				
tinwati	-		\	
× 4007099			Close	

**NOTE:** For example, three locations have separate lists of permitted vehicles (whitelists) but all three locations follow the same digital chalking rule that allows a maximum of 2 hours of parking. Each location can be created with its own whitelist, and then be configured to share the two-hour limit rule.

# 4.3.2.3.1 Viewing Linked Zone

#### **Procedure:**

- 1 To view linked locations, click the Linked Zone tab .
- 2 To view the detailed linked locations for this zone, click Details.

#### 4.3.3 Import Hot List

The Import Hot List Window allows local Hot Lists to be manually loaded into CarDetector Mobile..

#### Figure 34: Import Hot List Window

Select a File:			Brows
Select a Template:	-Select-	•	Impor
Assign Alert Level:	-Select-	~	
Application:	Add as New	*	
	Make Inactive after 0 Day(s)		

The Import Hot-List Window is where you would upload your BHL file from LEARN if you are doing a Make Base Hot List to load your hot list. Please contact your Agency Manager for more information on Make Base Hot Lists.

#### MN007802A01-AD Chapter 4 : CarDetector Mobile Configuration

### 4.3.4 Start or End Shift

Use the End Shift report window to bookmark a detection period to create reports or export data for review.



#### Figure 35: Start Shift Window

Export	Detections		-		
	Detections				
	Hits				
	Expired Parking		s	-	
	Authorized Parking		7.04	00.00.50 PM	
	Duplicate Permit	114	-21	06:38:56 PM	
	Linauthorized Hit	חונ	7-21 •	06:38:59 PM	-
	Authorized Hit			1	•
Height Charae Scanned by Latitude Longitude Accuracy State	cter	Remove	Vehicle Imag Camera Nar	je ne	Down
	Order:	Newest to Ol	dest		

The **Export** button provides the ability to export detections and hits for uploading to Vigilant PlateSearch. This is useful when a system is unable to have continuous connection to Vigilant PlateSearch.

### 4.3.5 Add Hot Plate

1

Use the Add Hot Plate window to manually add a single license plate to the local hot list.

**NOTE:** Right-click on a license plate in the main CarDetector Mobile window and select Add to Hot-List to add a plate directly from the detection list.

#### Figure 36: Add Plate Window

	Enter Details - Notes; Case #; Suspect Info; etc.	Add Hot Plate	Cancel
		Distribute Hot-List	Current User Only     All Agency LPR Systems
Title	Add Additional Hot-List Fields	Expire After	0         Hour(s)           0         Days
Alert Type	Select- Add Alert Type		
Owner / VIN Year / Make / Model		Subject	Comments / Message / Log
License Plate #	State AK .	Ado	Comments to Record

#### 4.3.6 Search

The Search feature can be used to perform local license plate searches among local detections, hot lists, hits, and other sources for this CarDetector Mobile system.

#### Figure 37: Search Window



#### Table 14: Search Record Window Description

Number	Description
1	Select search options
2	Search Results
3	Hot List record detail
4	Add and view hot list record comments

# 4.3.6.1 Searching for Detections

#### Procedure:

- 1 Use the **Record Type** drop-down menu to select **Detection** and click **Execute Search**.
- 2 From the search results, select any record to view its details.
- 3 Click Location to view the nearest address and Location information for the detection record.

#### Figure 38: Detections Window

	Search Options		1000	and the second	2000		
icense Plate #			15	- Carlor	4	ZMV648	1
ecord Type	Detection						
iource	N/A			THINKING AS	Plate N	umber 4ZMV648	3
latch Type	All					Detected	
artial Plate	Exact		Latituda	05.047	Data	07 07 0004	
lecord Volume	Last 50 Reco	rds	Longitude	-84 075	Time	06:29:05 PM EDT	r
	Execute Search	l					
	Search Return	(60 Benords)	Comments	Com	ments / Message / Lo	g	
Plate Number	Date	Type			-	^	
4ZMV648	07-27-2021	Detection	Subje	ect		S	ave
5RDH081	07-27-2021	Detection				×.	
4SDK838	07-27-2021	Detection					
CAD0775	07-27-2021	Detection					

# 4.3.6.2 Searching for Hot List Records

#### Procedure:

Use the **Record Type** drop-down menu to to select **Hot-List** and click **Execute Search**.

#### Figure 39: Hot List Record Window

earch EPTK Neccius						
	Search Options					
License Plate #				Hot	t-List File Record	6DOL530
Record Type	Hot-List		Alert		Abandoned Ve	shicle
	-		State	-	CA	
Source	CDN	IS Client	<ul> <li>Hot-List</li> </ul>	Source	CDMS Client	
Motob Turos	41		- Date of	Load	02-22-16	
viatori i ype	p or		Date of	Order	02-22-16	
Partial Plate	Exact		-			
Record Volume	Last 50	Records				
1	Execute Search					
	Search Retu	m (27 Decembra)	Commer	nts	Comments / Message / Lo	a
Plate Number	Date	Source			_	~
69MXNVW	03-31-21	CDMS Client		subject	_	Save
6DOL530	02-22-16	CDMS Client				Edit
6FEY408	12-02-16	CDMS Client				
7UOE689	08-29-19	CDMS Client				
Output Report	<b>E-40</b>			Close	Diemiee	55

# 4.3.6.3 Searching for Hits Window

#### **Procedure:**

Use the **Record Type** drop-down menu to select **Hit** and click **Execute Search**.

#### Figure 40: Hits Window

	Search Options					is the particular		
icense Plate #					1		273	KPN
lecord Type	Hit		•			-	Detected Plate:	273KPN
ource	All		•	(2)	And a state		Hot Plate:	273KPN
latch Type	All		•	273C KPN			Battery	Assault
artial Plate	Exact		÷					
Pacard Voluma	Last 50 Rec	cords		Latitude	10.796	Da	10	07-27-2021
Cold Volume	Last ou Hor	-	_	Longitude	106.679	Tin	ne 10:09:	14 AM GMT+07:0
	Execute Search			Location	N/A			
	Search Return	(50 Records)		Comments	Com	ments / Me	ssage / Log	
Plate Number	Date	Type						^
273KPN	07-27-2021	CDMS Client		Subject				Save
273KPN	07-27-2021	CDMS Client						~
Z15ALB	07-27-2021	CDMS Client						
JUDAKA	07-27-2021	CDMS Client						

# 4.3.6.4 Searching for White List Records

#### Procedure:

1 Select the **Record Type** to **White list** and click **Execute Search**.

#### Figure 41: White List Record

	Search Options					
icense Plate #				Whit	e-List File Record	4RQR604
Record Type	White-List		•	Date of Load	06-21-	21
			-	Date of Order	06-21-	21
ource			•	Active Date	04-30-	21 13:01:18 GMT+07:00
latch Type	All		¥	Expire Date	08-29-	21 17:59:18 GMT+07:00
			_	PermitID	MAP-8	04702029
Partial Plate	Exact		~	Note 1	Wever	ton Cliff Rd Knoxville
Record Volume	Last 50 Reco	ords	•			
I	Execute Search					
	Search Return	(21 Percente)		Comments	Comments / Mess	age / Log
Plate Number	Date	Source				^
4RQR604	06-21-21	PermitID		Subject	_	Sav
558MKW	06-21-21	PermitID		1		Ed
5VUT135	06-21-21	PermitID				
EMAKEODE	06 01 01	DormitID				



**NOTE:** You will only be able to search the white list associated with the location you are currently in.

#### 4.3.6.5 Searching for Digital Chalking (Parking) Records

#### **Procedure:**

Select a Parking **Record Type** to view Parking related detections.

#### Figure 42: Expired Parking

	Search Options				and the second second				
icense Plate #				1	AND DEC				TRY
Record Type	Expired P	arking	•		End				
Source	N/A		*	660		No.	Detected	Plate:	698TRV
latch Type	All		*	<b>Generativ</b>		19		Expired P	arking
Partial Plate	Exact		¥	Latitudo	40.7	0.0	Data		7 07 0004
Record Volume	Last 50 R	ecords	•	Longitude	106.6	90 578	Time	10:05:4	5 AM GMT+07:00
	Execute Search			Location	88THLPh	ongTest	Chalked Typ	e	Auto Chalk
	Search Return	(50 Pacarda)		Comments		Comme	nts / Message / Lo	a	
Plate Number	Date	Type							^
698TRV	07-27-2021	Expired Parking		Subject					Save
N452MJ	07-27-2021	Expired Parking							~
IJNA04	07-27-2021	Expired Parking							
HGS6837	07-27-2021	Expired Parking							

#### Figure 43: Unauthorized Hits

Search LPR Records

	Search Options					NE 011				
License Plate #				A land				215	MSH	S.T.A
Record Type	Unauthoriz	ed Hit	•	the loss		AC				
Source	N/A		÷				Detec	ted Plate:	215M	sw
Match Type	All		Ŧ	2 2 is with the	-			Unautho	rized	
Partial Plate	Exact		Ŧ	Latitude	10.79	3	Date	(	7-27-2021	
Record Volume	Last 50 Re	cords	-	Longitude	106.67	9	Time	10:12:4	5 AM GMT	+07:00
	Execute Search			Location	No Zone M	1500				
	Search Return	(60 Becords)		Comments		Comments /	Message /	Log		
Plate Number	Date	Type			Г				~	
215MSW	07-27-2021	Unauthorized		Subject					1.0	Save
	07-27-2021	Unauthorized		1					~	
S56GGS										
S56GGS 882MEQ	07-27-2021	Unauthorized								

#### Figure 44: Excessive Detection

Search LPR Records	Court Online								
License Plate # Record Type Source Match Type	Exces	s	•	A REAL			Dete	cted Plate:	N538EQ Detection
Partial Plate Record Volume	Exact	0 Records	•	Latitude Longitude	10.7 106.6	95 679	Date Time	10:29:	07-27-2021 33 AM GMT+07:00
	Execute Searc	h		Location	NOzone	Dinh			
Plate Number	Search Ret Date	urn (24 Records) Type		Comments		Comment	s / Message	/ Log	^
N538EQ	07-27-2021	Excessive Detection		Subject					Save
BGEE57	07-27-2021	Excessive Detection							~
EZTD42	07-27-2021	Excessive Detection							
Y70QDV	07-27-2021	Excessive Detection							
Output Report				Close		Map It		Location	

#### Figure 45: Duplicate Permit

	Search Options			Strength Management of	Contraction of the local division of the				
icense Plate #						A COMPANY		MAS	ASS
Record Type	Duplicate	Permit Hit	*		No.	-36-			
Source	N/A		*	- ED			Detected	i Plate:	ENAV22
fatch Type	All		¥	ENAT- Y22				Duplicate P	ermit
Partial Plate	Exact		÷	Latitude			-1-		
Record Volume	Last 50 R	ecords	*	Lautude	10.795	т	ate	10:27:31	-27-2021 AM_GMT+07:00
	Execute Search			Location	NOzone Dinh	P	ermitID	MAP-	790612029
	Search Return	(47 Decembra)		Comments	C	omments / M	essage / L	na	
Plate Number	Date	(17 Records) Type						- 3	^
ENAV22	07-27-2021	Duplicate Permit		Subject					Save
ENAV22	07-27-2021	Duplicate Permit		I					~
ENAV22	07-27-2021	Duplicate Permit							
Y58URI	07-26-2021	Duplicate Permit							

#### Table 15: Search Records Type

Search Records	Description
Authorized Hit	This vehicle is authorized to be in the Park- ing Location at the time of detection
Unauthorized Hit	This vehicle is not authorized to be in the Parking Location at the time of detection
Chalked Plate	This vehicle is marked to be watched for movement within the Parking Location
Expired Parking	This vehicle's allotted parking permit time has elapsed and it is a candidate for citation
Excessive Detection Hit	This vehicle has been scanned in this loca- tion more times than has been allotted in the specified timeframe
Duplicate Permit Hit	More vehicles using the same permit ID have been scanned in this Location than al- lowed

### 4.3.7 Adjusting Day or Night Mode

#### Procedure:

To toggle between Day Mode and Night Mode, click **Switch to Night Mode** or **Switch to Day Mode** in the Control Menu.

#### Figure 46: Day Mode

😑 😬 CarDetector 🔤			Geo-Zone: Knox	Office 🍨 🛃	am_tjorgensen	_ ×
Camera #1 🔻	II 🕸 🗄	Latest C	Capture			
		T	LTML512		TRA .	ST
			4TML512	-	-	
			Camera #1	69.	10	19.1
			G			-
Oupley Video Time Left: 9:30 Read	fation: 720 x 400, FrameRate: 21.00 Ips			- CP-		Contraction of the second second
Hits	C) III	Plate	Plate Number	Sta	te	Camera
GOTGASP	×	LITHLE12	4TML512	C	4	Camera #1
6DOL530	×	STIVIEOI	5TVY501	C	4	Camera #1
4LKU026	×	MISJBLL	4NSJ844	C	4	Camera #1
5RRD675	×	4FEC133	4FEC133	C	4	Camera #1
		5XCXX948	5XCX948	C	4	Camera #1
		4200	4200	M	т	Camera #1
		LIVENSIR	4MGW512	C	٩	Camera #1

#### Figure 47: Night Mode

🚍 😬 CarDetector 🔤 🖾			Geo-Zone: Knox Office 💡	🐼 🚇 am_tjorgensen	_ ×
Camera #1 👻 📕 🍇		Latest Capture			
		AMGW 4MGW Camera ©	512 512		
Display Video Time Let: 9:54. Resolution: 720 x 400, FrameRa	ne: 17.00 lps		Sec.		
Hits ()	目	Plate Plate	e Number	State	Camera
GOTGASP	×	AMA	GW512	CA	Camera #1
6DOL530	×	4W	'RM987	CA	Camera #1
4LKU026	×	5Y.	AD559	CA	Camera #1
5RRD675	×	SWC	QU915	CA	Camera #1
		STITUL 5B	YP824	CA	Camera #1
		5UIZA 5V	JZ267	CA	Camera #1
		SHIEGTS 5H	SE673	CA	Camera #1

### 4.3.8 Camera Navigation

The Camera Navigation menu shows options for using and configuring the camera feeds of the system.

#### Figure 48: Camera Navigation Window





**WARNING:** Live video rendering should only be used while aiming cameras. This helps to preserve computer resources.

### 4.3.8.1 Using the Camera Aiming Tool

All cameras will render simultaneously and allow the user to correctly aim each camera.

#### Procedure:

- 1 From the Camera Navigation Menu click the Camera Aiming list item.
- 2 Select the camera to aim from the Select Camera drop-down menu.

#### Figure 49: Camera Aiming Tool



# 4.3.8.2 Using Manual Capture Tool

#### Procedure:

1 From the Camera Navigation Menu , click the Manual Capture list item.

#### Figure 50: Manual Capture Tool



#### 2 Select a camera.

3 When the desired license plate or vehicle is in the frame, click the Capture button.

### 4.3.8.3 Using Snap Shot Tool

#### **Procedure:**

From the Camera Navigation Menu, click the Snap Shot list item.

Take a snap shot of live IR or color video.

Figure 51: Snap Shot Tool



#### Table 16: Snap Shot Window Description

Number	Description
1	Target image
2	Select camera
3	Select view
4	Capture

#### 4.3.8.4 Using Mobile Hit Hunter

Procedure:

- 1 From the Camera Navigation Menu, click the Mobile Hit Hunter icon.
- 2 Click on the **Tick Mark** on the map to get info on the hit.

#### Figure 52: Mobile Hit Hunter Window



The color of the Tick Marks on the map denote the position of different vehicles:

- Green: the position of the user
- · Blue: the position of detected license plates
- Red: the position of the hit license plate
- **3** To configure what information is displayed on the Mobile Hit Hunter map, click the **Configure** button.

#### Figure 53: Mobile Hit Hunter Configuration Window



### 4.3.9 Detection View

The Detection View pane on the main CarDetector Mobile screen allows you to view various information about detections the system has made.

#### 4.3.9.1 LIVE View

LIVE viewing provides an IR image of the license plate and also the color overview of the vehicle. Verification can be made when the plate number matches the OCR results.

#### Figure 54: Detection View



## 4.3.9.2 Plate History View

Plate History view allows you to perform the following actions:

- Choose hits or detections.
- Shows history of the plate.
- Search by a specified time frame.
- Show the date, time, address, city, state, and zip of locations (if available).
  - **NOTE:** The pin marks on map show a quick-view of detections.

#### Figure 55: Plate History View



#### 4.3.9.3 Detection List View

On the main screen of CarDetector Mobile, the Detection List includes vehicle images, OCR results, GPS data, Date/Time stamp, and camera data.

#### Figure 56: LPR Record Data Window

Plate	Plate Number	State	Camera
LTHL512	4TML512	CA	Camera #1 🛛 🛛
5TVY501	5TVY501	CA	Camera #1
INSJALL	4NSJ844	CA	Camera #1
LFEC133	4FEC133	CA	Camera #1
5XCX948	5XCX948	CA	Camera #1
4200	4200	MT	Camera #1
4/16/1512	4MGW512	CA	Camera #1

Double-click on any record to see all relevant information.



#### Figure 57: Detection Relevant Information

Manually chalk a plate or add plate to hot list by right-clicking on a detection.

#### Figure 58: Detection Window - Manual Add

Plate	Plate Number	State	Camera
6FBN585	6FBN585	CA Add to Hotal ist	Camera #1
5V0E542	5VOE542	Manually Chalk Plate CA	Camera #1
6E96854	6E96854	CA	Camera #1

#### Figure 59: Detection Window - Manually Chalk Plate

N	1anually Chalk Plate			
	Ruleset:			
	Alert on Duplicates greater than 0 = hours and 1 = Minutes apart			
	within 0 a days and 0 a hours			
	Manually Chalk Cancel			

# 4.3.9.4 Viewing Hit List

This section shows the different information and options in the Hit List table on the main screen of the CarDetector Mobile application.

#### MN007802A01-AD Chapter 4 : CarDetector Mobile Configuration

#### Figure 60: Hit List Window



#### Table 17: Hit List Window Description

Number	Description
1	License plate hit list
2	Refresh the hit list
3	Remove all plates from the hit list
4	Click to remove this hit from the list

**NOTE:** Alarmed plates are also stored in Vigilant PlateSearch.

## 4.3.10 LIVE View Alert Pop-Ups

#### 4.3.10.1 Hot List Hit Alerts

Í.

This feature allows you to:

- View the type of Match IR image.
- View the Hot list plate and state.
- View the camera that scanned the plate.

#### Figure 61: HIT View LIVE Window



#### Table 18: Alarm Priority Colors

Colors	Description
Red	High
Orange	Medium
Yellow	Low
White	None

#### 4.3.10.2 Unauthorized Vehicle Hit Alerts

This feature allows you to:

- View the details of the unauthorized vehicle
- View the IR image.
- View how the OCR read the plate.
- View the camera that scanned the plate.

#### Figure 62: Unauthorized Vehicle Hit View Window



MN007802A01-AD Chapter 4 : CarDetector Mobile Configuration

#### 4.3.10.3

## LIVE View for Additional White List Hit Views

#### Alert (Unauthorized Vehicle)

Unable to validate due to no connection to Vigilant PlateSearch.

#### Alert (Authorized Vehicle)

Plate recognized as valid.

#### Figure 63: White List Hit View Window



#### 4.3.10.4 LIVE View for Digital Chalking Hit Views

This section explains the different data for a Digital Chalking hit within the CarDetector Mobile application.



#### Figure 64: Digital Chalking Hit View Window

## 4.4 Status Lights Overview

This section describes the states of camera, Vigilant PlateSearch connection, GPS, and system status lights.

Figure 65: Status Lights



MN007802A01-AD Chapter 4 : CarDetector Mobile Configuration

Status Descriptions:

Green Status OK

**Error Condition Exists** 

#### 4.4.1 Camera Status Lights

This section explains the different data under the Camera Status Lights within the CarDetector Mobile application.

#### Figure 66: Camera/Connection Status Window

Camera / Connection Status [Cam-1]	
Connection (Camera)	
Color Video	
IR Video	
Pause	Close
Pause Camera / Connection Status [Cam-2]	Close
Pause Camera / Connection Status [Cam-2] Connection (Camera)	Close
Pause Camera / Connection Status [Cam-2] Connection (Camera) Color Video	Close

### 4.4.2 Vigilant Server Status Lights

Green Indicator Lights Good Server Connection.

Good Server Connection.

Red Indicator Lights

No Connection.

- No detections sent to Vigilant Server.
- No hot list sent from Vigilant Server to vehicles.

Server Connectivity	
LPR Data Uploads	
Hot-List Downloads	
LPR Uploads	to Server
Transferred to Server	89
Currently Processing	0
Hot-List Download	ds from Server
Hot-List Downloads from Server	211416
Synchronization Status	Complete
Hot-List Synchronized as of	07/27/21 11:57:38
White-List Downloa	ads from Server
White Plates for Current User	0
Synchronization Status	Complete
White-List Synchronized as of	No White-List Available

#### Figure 67: Communication Status Window



NOTE: You are only able to see white list Plate Count while you are in a valid location.

### 4.4.3 GPS Status Lights

This section explains the different data under the GPS status light within the CarDetector Mobile application.

#### Figure 68: GPS Receiver Status Window

Driver installed	
GPS device connected	
Satellite sync	
	n coordinates (Live)
Latitude	35.947

# 4.4.4 System Status Lights

System Startup Process functions to check system hardware and software components. If system light is red, LPR system cannot function. When the system is ready and the system light is green, the system status page will display System ready.

#### Figure 69: CarDetector Status Window



# Mobile Camera Aiming Quick Reference

Mobile Camera	Suitable Usage		
ReaperHD/L5M 6 mm	Short Parking		
	Perpendicular Parke	ed	Angle Parked
ReaperHD/L5M 8 mm	Long Parking		
	Perpendicular Parked	Angle Parked	Parallel Parked
ReaperHD/L5M 12 mm	Short Traffic		
	Apple Parked	Parallel Parked	
ReaperHD/I 5M 16 mm	Traffic	Faranet Parkey	in name Aujacent Lane
	Hamo		

Mobile CameraSuitable UsageImage: Image: Im

# 5.1 Square Parked Car Scanning

This configuration is suitable for a short parking whether a perpendicular or angle parked cars. It is used for square parked cars such as in parking lots, shopping malls, and retail outlets.





Camera model: L5M 6 mm (VSR-60-906)

- Capture distance range: 4–20 ft.
- Optimal capture distance: 9 ft (character height (45–50 px.)

```
Camera model: RHD 6 mm (VSR-40-906)
```

• Capture distance range: 6-24 ft.

U

1

• Optimal capture distance: 12 ft (character height 45–50 px.)

**NOTE:** Capture distances based on plate characters 69 mm tall.

### 5.2 Angle Parked Car Scanning

This configuration is suitable for a long parking whether a perpendicular, angle or parallel parked cars. It is used for angled or square parked cars such as in parking lots, shopping malls, and retail outlets.

Figure 71: Angle Parked Cars Capture Distance



Camera model: L5M 6 mm (VSR-60-906) and L5M 8 mm (VSR-60-908)

- Capture distance range: 4–20 ft and 6–27 ft.
- Optimal capture distance: 9 ft and 14 ft (character height 45–50 px.)

Camera model: RHD 6 mm (VSR-40-906) and RHD 8 mm (VSR-40-908)

- Capture distance range: 6–24 ft and 8–36 ft.
- Optimal capture distance: 12 ft and 16 ft (character height 45–50 px.)
  - **NOTE:** Capture distances based on plate characters 69 mm tall.

### 5.3 Curb Parked Car Scanning

This configuration is suitable for a short in traffic adjacent lane. It is also suitable for angle and parallel parked cards. It is used for parallel parked cars such as on roadsides and main street shopping areas.

#### Figure 72: Curb Parked Cars Capture Distance



Camera model: L5M 8 mm (VSR-60-908) and L5M 12 mm (VSR-60-912)

- Capture distance range: 6-27 ft and 10-35 ft.
- Optimal capture distance: 14 ft. and 22 ft. (character height 45–50 px.

Camera model: RHD 8 mm (VSR-40-908) and RHD 12 mm (VSR-40-912)

- Capture distance range: 8-36 ft. and 13-48 ft.
- Optimal capture distance: 16 ft. and 24 ft. (character height 45–50 px.)

**NOTE:** Capture distances based on plate characters 69 mm tall.

### 5.4 Curb Scanning–Radar Style

This configuration is suitable for a short in traffic adjacent lane or adjacent lane reversed. It is used for roadside scanning of moving traffic on rural or urban roads.

#### Figure 73: In Traffic Adjacent Lane Capture Distance



Camera model: L5M 16 mm (VSR-60-916)

- Capture distance range: 22–55 ft.
- Optimal capture distance: 40 ft (character height 45–50 px.)

Camera model: RHD 16 mm (VSR-40-916)

- Capture distance range: 20-55 ft.
- Optimal capture distance: 34 ft (character height 45–50 px.)

**NOTE:** Capture distances based on plate characters 69 mm tall.

## 5.5 Monitoring Undivided Highways

This configuration is suitable for a short in traffic adjacent lane or adjacent lane reversed. It is used for roadside scanning of moving traffic on rural or urban roads.

Figure 74: In Traffic Adjacent Lane and Lane Reversed Capture Distance



Camera model: L5M 12 mm (VSR-60-912) and L5M 16 mm (VSR-60-916)

- Capture distance range: 10–35 ft. and 22–55 ft.
- Optimal capture distance: 22 ft and 40 ft (character height 45–50 px.)

Camera model: RHD 12 mm (VSR-40-912) and RHD 16 mm (VSR-40-916)

- Capture distance range: 13-48 ft and 20-55 ft.
- Optimal capture distance: 24 ft and 34 ft (character height 45–50 px.)



NOTE: Capture distances based on plate characters 69 mm tall.

### 5.6 Monitoring Divided Highways

This configuration is suitable for a long in traffic adjacent lane reversed or in traffic far lane. It is used for monitoring divided roads, highways, and multi-lane freeways over the median and for passing vehicles.





Camera model: L5M 25 mm (VSR-60-925)

- Capture distance range: 55–85 ft.
- Optimal capture distance: 70 ft (character height 45–50 px.)

Camera model: RHD 25 mm (VSR-40-925)

- Capture distance range: 55-80 ft.
- Optimal capture distance: 75 ft (character height 45–50 px.)

**NOTE:** Capture distances based on plate characters 69 mm tall.