



---

# Fixed LPR Camera System Installation Guide

**DECEMBER 2021**

© 2021 Motorola Solutions, Inc. All rights reserved



MN007807A01-AB

# Legal and Support

## Intellectual Property and Regulatory Notices

### Copyrights

The Motorola Solutions products described in this document may include copyrighted Motorola Solutions computer programs. Laws in the United States and other countries preserve for Motorola Solutions certain exclusive rights for copyrighted computer programs. Accordingly, any copyrighted Motorola Solutions computer programs contained in the Motorola Solutions products described in this document may not be copied or reproduced in any manner without the express written permission of Motorola Solutions.

No part of this document may be reproduced, transmitted, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, without the prior written permission of Motorola Solutions, Inc.

### Trademarks

MOTOROLA, MOTO, MOTOROLA SOLUTIONS, and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners.

### License Rights

The purchase of Motorola Solutions products shall not be deemed to grant either directly or by implication, estoppel or otherwise, any license under the copyrights, patents or patent applications of Motorola Solutions, except for the normal non-exclusive, royalty-free license to use that arises by operation of law in the sale of a product.

### Open Source Content

This product may contain Open Source software used under license. Refer to the product installation media for full Open Source Legal Notices and Attribution content.

### European Union (EU) and United Kingdom (UK) Waste of Electrical and Electronic Equipment (WEEE) Directive



The European Union's WEEE directive and the UK's WEEE regulation require that products sold into EU countries and the UK must have the crossed-out wheellie bin label on the product (or the package in some cases). As defined by the WEEE directive, this crossed-out wheellie bin label means that customers and end-users in EU and UK countries should not dispose of electronic and electrical equipment or accessories in household waste.

Customers or end-users in EU and UK countries should contact their local equipment supplier representative or service centre for information about the waste collection system in their country.

### Disclaimer

Please note that certain features, facilities, and capabilities described in this document may not be applicable to or licensed for use on a specific system, or may be dependent upon the characteristics of a specific mobile subscriber unit or configuration of certain parameters. Please refer to your Motorola Solutions contact for further information.

## Contact Us

For inquiries, see [https://www.motorolasolutions.com/en\\_us/support.html](https://www.motorolasolutions.com/en_us/support.html) > **License Plate Recognition (Vigilant)** or contact our 24 hours support staff at:

- Tel: 925-398-2079
- Fax: 925-398-2113
- Email: [vigilantsupport@motorolasolutions.com](mailto:vigilantsupport@motorolasolutions.com)

## Document History

Version	Description	Date
MN007807A01-AA	Initial Release	March 2021
MN007807A01-AB	The following section is added for this release: <ul style="list-style-type: none"> <li>• <a href="#">Camera Aiming Instructions on page 40</a></li> </ul>	December 2021

## 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
<b>Menu</b> key or <b>Camera</b> button	Bold words indicate a name of a key, button, or soft menu item.
The display shows <code>Settings Applied</code> .	Typewriter words indicate the MMI strings or messages displayed.
<i>&lt;required ID&gt;</i>	The courier, bold, italic, and angle brackets indicate user input.
<b>Setup</b> → <b>Settings</b> → <b>All Settings</b>	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>.

<b>Part Number</b>	<b>Title</b>
MN007806A01	<i>Vigilant ClientPortal User Guide</i>
MN008501A01	<i>Vigilant PlateSearch User Guide</i>
MN007808A01	<i>VLP Processor Installation Guide</i>
MN007809A01	<i>TAS User Guide</i>

## Chapter 1

# Hardware Overview

This section helps you to install a L5F Fixed LPR camera system.

### Third-Party Hardware Components

The third-party installers provide the hardware components for installing the camera:

- ¼ in. cable for Cat6e/data to cameras.
- ½ in. liquid tight connectors and flex conduit for 120 VAC power.
- Two Metal banding and clips.<sup>1</sup>
- ½ in. or ¾ in. for metal cord grip for the camera cables that taps into the pole.
- Copper cabling to pull 120 VAC power from pole, photocell, or pedestal into the communications box (lengths vary by installation type).

If no premade CAT6e cables were ordered, the contractor will need to supply outdoor or UV rated Cat6e cable and RJ-45 connectors for each camera. Premade cables are available for order in 15 ft, 30 ft, and 60 ft lengths.

### Additional Tools for Installation

The following additional tools are needed to perform the installation:

- Wire cutter or box cutter
- Cable stripping tool
- Needle nose pliers
- Crimp tool for shielded RJ-45 plugs with a removable die

### Common Parts List

The following common parts list example are supplied by the installer:

Table 2: Item Parts List

Item	Part Number	Supplier	Quantity
Stainless Steel Banding	S-14377	ULINE	2 per box
Stainless Steel Banding Clips	S-14378	ULINE	2 per box
UV Rated Outdoor Cat6e	J362404DB	Omni	15-60 ft per camera
Cat6e Metal Cord Connector	LPCG503	Arlington	1 per camera
½ in. Flexible Conduit	LTCUA050GY	Liquidtite	2-3 ft per box

<sup>1</sup> Simple banding is supplied for small diameter poles but most contractors opt to use their own banding rated for large diameter traffic poles.

<b>Item</b>	<b>Part Number</b>	<b>Supplier</b>	<b>Quantity</b>
½ in. Flexible Conduit Connector	NMLT50	Arlington	1 per box
¾ in. Flexible Conduit	LTCUA075GY	Liquidtite	2-3 ft per box
¾ in. Flexible Conduit Connector	NMLT75	Arlington	1 per box
UV Tie Wraps	DTP6	Dottie	Varies
1/4-20 Machine Screws	254 002	Everbilt	2 per camera
1/4-20 Locking Nuts	571 569	Everbilt	2 per camera

Table 3: Power Parts List

<b>Item</b>	<b>Part Number</b>	<b>Supplier</b>	<b>Quantity</b>
#12 Wire White	#12 Wire White	Southwire	Varies
#12 Wire Black	#12 Wire Black	Southwire	Varies
#12 Wire Green	#12 Wire Green	Southwire	Varies
Fuse Holder	Fuse Holder	Bussman	1 per box
Fuses 10 Amp	Fuses 10 Amp	Bussman	1 per box

## Chapter 2

# Shielded CAT6 Termination

Figure 1: Cat6e Connector



### Specifications

- Connectors: RJ45 Plugs
- Rating: Cat6A
- Compatibility: 22–24 AWG stranded STP cable or ReaperHD Camera Cable

### Tools

- Wire cutter or box cutter
- Cable stripping tool
- Needle nose pliers
- Crimp tool for shielded RJ45 plugs with a removable die

### Cables

Table 4: Cable Pair Colors

Color Code	W	G	O	BL	BR
Description	White	Green	Orange	Blue	Brown

Table 5: Destination TS688 8-Position jack pin/pair assignments

Position	1	2	3	4	5	6	7	8
Color	WO	O	W-G	BL	W-BL	G	W-BR	BR

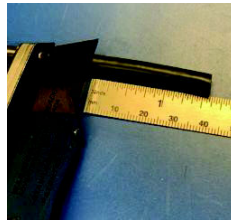
### 2.1

## Terminating CAT6 Cable

### Procedure:

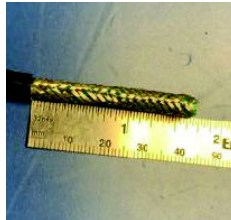
- 1 Slide the strain relief boot onto the cable and secure with removable tape.
- 2 Trim the cable jacket back about 1.5 in.

**Figure 2: Trimming the Cable Jacket**



- 3 Unbraid stranded ground wires, coil together, and move to the side.

**Figure 3: Unbraiding the Stranded Ground Wires**



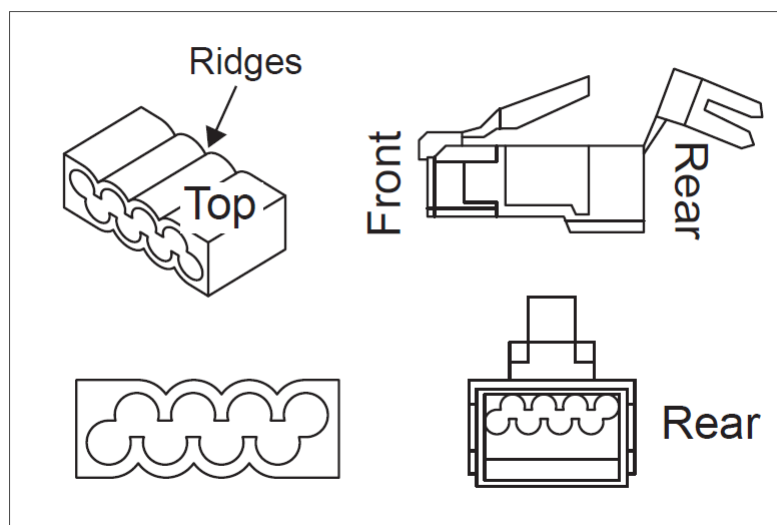
- 4 Cut the center spline.
- 5 Trim the foil and green paper shielding.

**Figure 4: Cutting the Center Spline and Trimming the Shielding**



- 6 Orient the load bar to mate with the connector.

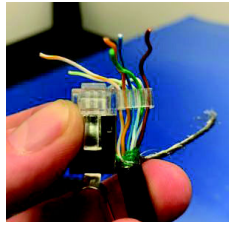
**Figure 5: Orienting the Load Bar**



- 7 Insert narrow end first and ensure that the ridges are facing up.
- 8 Trim the wires at an angle and gently insert the wires into the wide end.

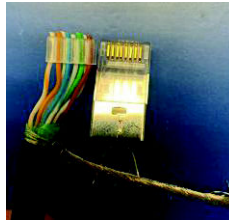


**Figure 6: Trimming the Wire**



9 Trim the wires flush with the load bar.

**Figure 7: Trimming the Wire Flush**



10 Check if the cable jacket fits into the plug housing.

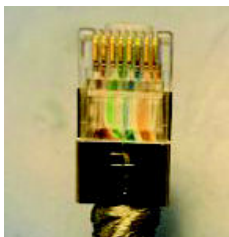
11 Insert the load bar and wires into the connector.

**Figure 8: Inserting the Load Bar**



12 Wrap the ground wire around the grounding collar.

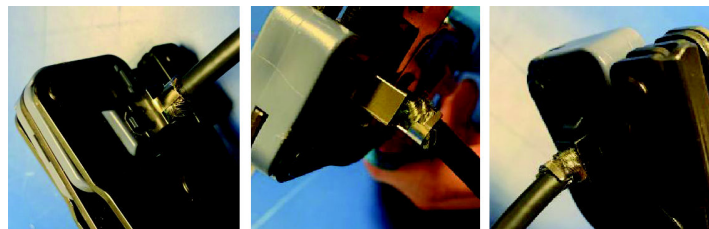
**Figure 9: Wrapping the Ground Wire**




13 Use a crimp tool with a removable punch die so the housing is not pierced.

14 Firmly crimp the connector.

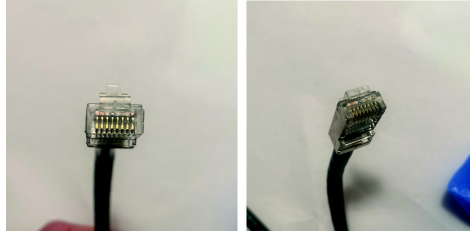
**Figure 10: Crimping the Connector**



15 Visually check the wires are fully inserted.

 **NOTE:** For the wire color codes descriptions, see [Table 5: Destination TS688 8-Position jack pin/pair assignments on page 7](#) .

**Figure 11: Fully Inserted Wires**



16 Verify the ground collar is wrapped around the cable with pliers.

17 Pull the strain relief boot over the connector.

**Figure 12: Pulling the Strain Relief Boot**



Chapter 3

# Hardware Assembly

This section helps you to perform the hardware assembly for the L5F Fixed LPR Camera System.

3.1

## Camera Bracket

Figure 13: Dual-Pole Bracket

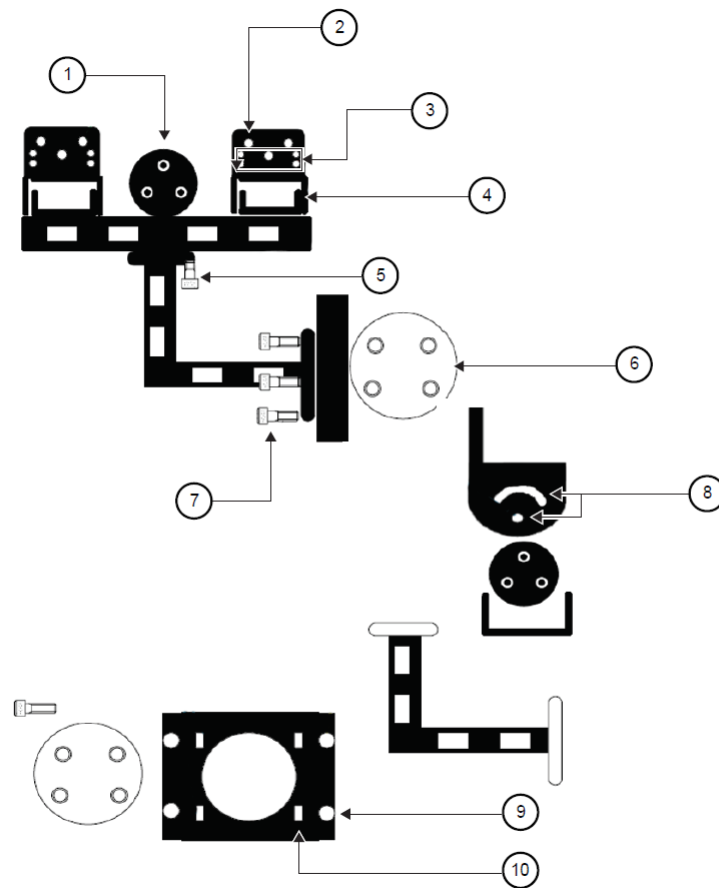


Table 6: Dual-Pole Bracket Parts Description

Parts	Description	Quantity
1	10-32 Hexagon Socket Head Cap Screws	3
2	M6-10 Button Socket Head Cap Screws.	3

<b>Parts</b>	<b>Description</b>	<b>Quantity</b>
3	R3 Camera Holes. Only used when mounting an R3 Camera.	n/a
4	10-32 Button Socket Head Cap Screws	8
5	10-32 Hexagon Socket Head Cap Screws. Use to mount rotating "U" shaped bracket	3
6	Round Aluminum Plate	n/a
7	5/16 in. Hexagon Socket Head Cap Screws	4
8	10/32 in. Button Socket Head Screw Caps	8 (for two cameras)
9	Use when mounting to a flat surface.	n/a
10	Use when mounting to poles; use straps provided according to pole dimensions.	n/a

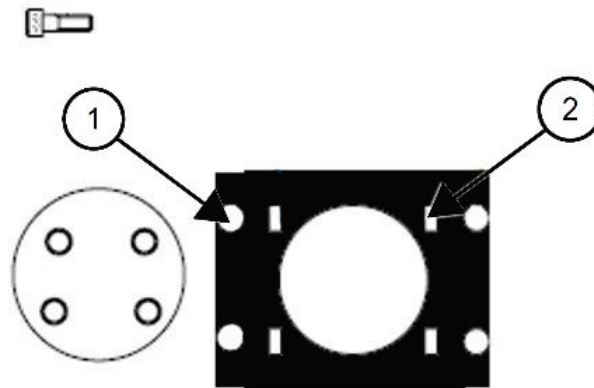
### 3.1.1 **Assembling Camera Bracket**

**Procedure:**

- 1 To mount the camera to the bracket, screw down the three button socket head cap screws for each side.
- 2 Screw down the round bracket with three hexagon socket head cap screws.
- 3 To mount the bracket to the pole, use the round aluminum plate with the flat side against back of pole or wall mounting plate.
- 4 Screw down all all four hexagon socket head cap screws in position.
- 5 To mount the pole or wall mounting plate, perform one of the following actions:

<b>Option</b>	<b>Actions</b>
<b>Mounting the plate to a wall.</b>	Use the round screw hole.
<b>Mounting the plate to a pole.</b>	Use the rectangle screw hole.

**Figure 14: Pole/Wall Mounting Plate**



**Table 7: Pole/Wall Mounting Plate Description**

Number	Description
1	Round hole for wall mounting
2	Square hole for pole mounting

### 3.2

## Uni-Pole Mount Assembly

This section describes the assembly process of mounting the camera to a uni-pole mounting kit.

The Uni-pole Mounting Kit (UNI-POLE-MNT REV.D) includes the the following mounting hardware:

**Table 8: Uni-Pole Mounting Kit Parts**

Parts	Quantity
¼ in. 20 Hex Screw	2
¼ in. 20 Self-clinching Nut	2
5/16 in. Hex Screw	2
5/16 in. Self-clinching Nut	2
6 in. Pole Strap	2
12 in. Pole Strap	2
Pole Bracket Base Plate	1
Mounting Arm	1
Knurl Ball	1

### 3.2.1

## Mounting to a Vertical Pole



### Procedure:

- 1 Use two 1/4 in.-20 Hex Screws to attach the Knurl Ball to the Mounting Arm.
- 2 Secure the 1/4 in.-20 Hex Screws with two 1/4 in.-20 Self-clinching Nuts.
- 3 Orient the Mounting Arm with the Knurl Ball facing up and the Pole Bracket Base Plate with the slots oriented horizontally as shown in the image.
- 4 Use two 5/16 in. Hex Screws to attach the Mounting Arm to the Pole Bracket Base Plate.
- 5 Secure the 5/16 in. Hex Screws with two 5/16 in. Self-clinching Nuts.
- 6 Slide two Pole Straps through the slots in the Pole Bracket Base Plate. The two shorter Pole Straps fit up to a 6 in. circumference pole. The longer Pole Straps fit up to a 12 in. circumference pole.



**NOTE:** Make sure that the tightening screw on each Pole Strap is facing out.

### 3.2.2

## Mounting to a Horizontal Pole

Figure 15: Mounting to a Horizontal Pole



### Procedure:

- 1 Use two 1/4 in.-20 Hex Screws to attach the Knurl Ball to the Mounting Arm.

- 2 Secure the 1/4 in.-20 Hex Screws with two 1/4 in.-20 Self-clinching Nuts.
- 3 Orient the Mounting Arm with the Knurl Ball facing up and the Pole Bracket Base Plate with the slots oriented vertically as shown in the image.
- 4 Use two 5/16 in. Hex Screws to attach the Mounting Arm to the Pole Bracket Base Plate.
- 5 Secure the 5/16 in. Hex Screws with two 5/16 in. Self-clinching Nuts.
- 6 Slide two Pole Straps through the slots in the Pole Bracket Base Plate. The two shorter Pole Straps fit up to a 6 in. circumference pole. The longer Pole Straps fit up to a 12 in. circumference pole.



**NOTE:** Make sure that the tightening screw on each Pole Strap is facing out.

### 3.2.3

## Mounting to a Wall or Flat Surface

Figure 16: Mounting to a Wall or Flat Surface



### Procedure:

- 1 Use two 1/4 in.-20 Hex Screws to attach the Knurl Ball to the Mounting Arm.
- 2 Secure the 1/4 in.-20 Hex Screws with the two 1/4 in.-20 Self-clinching Nuts.



**NOTE:** Screws for attaching the Mounting Arm to a wall or other flat surface are not provided. The installer must determine the appropriate fasteners for the surface that the Mounting Arm is being attached to.

### 3.2.4

## Mounting to a Pole without the Mounting Arm

Figure 17: Mounting to a Pole without the Mounting Arm



#### Procedure:

- 1 Use the two 1/4 in.-20 Hex Screws to attach the Knurl Ball to the Pole Bracket Base Plate.
- 2 Secure the 1/4 in.-20 Hex Screws with the two 1/4 in.-20 Self-clinching Nuts.
- 3 Slide two Pole Straps through the slots in the Pole Bracket Base Plate. The two shorter Pole Straps fit up to a 6 in. circumference pole. The longer Pole Straps fit up to a 12 in. circumference pole.



**NOTE:** Make sure that the tightening screw on each Pole Strap is facing out.

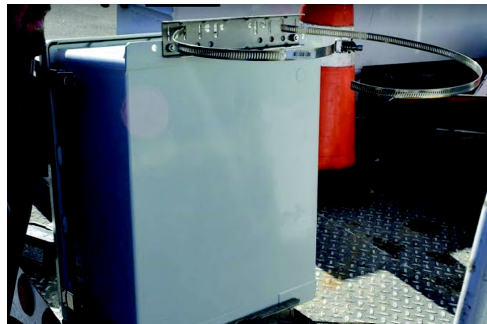
### 3.3

## Installing VLP Communications Box

#### Procedure:

- 1 To set up the VLP Communications box, place straps through the top and bottom bracket.

Figure 18: Strapping the VLP Communications Box



- 2 Once straps are run through the top and bottom bracket, raise the box to your preferred height.
- 3 Wrap both straps around the pole.



**Figure 19: Wrapping the Strap**



- 4 Once the desired configuration of the VLP Communications box is achieved, tighten both straps to secure the VLP Communications box.

**Figure 20: Securing the VLP Communications Box**



- 5 Once the straps are fully secured, route the power and camera cable connections into the box using conduit.

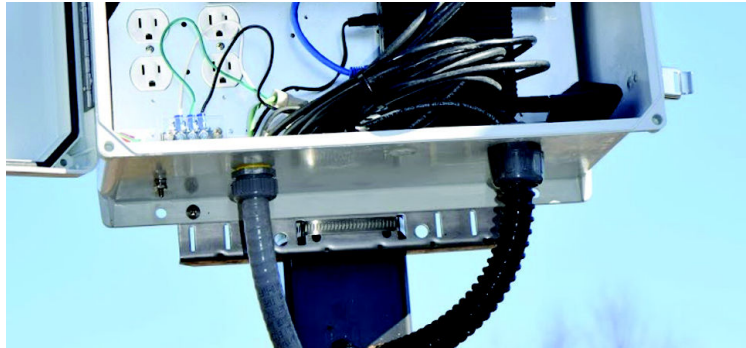
**Figure 21: Routing the Power and Camera Cables**



- 6 Use ½ in. liquid tight connectors and flex conduit for the incoming 120 VAC power connection.

- 7 Use ¾ in. liquid tight connectors and flex conduit for the incoming CAT6 L5F camera cables.

**Figure 22: Installing the Liquid Tight Connectors**



- 8 After the power has been connected to the box, the VLP Processor will startup.
- 9 Once the VLP Processor has fully booted, the L5F Fixed LPR Cameras will power up and start normal operation within 1–2 minutes.
- 10 Verify that each camera is operating by connecting UbuntuHD Control tool to the VLP Processor using a Windows computer.

**Figure 23: Connecting UbuntuHD Control tool to the VLP Processor**



- 11 Use UbuntuHD Control tool to configure the system for Vigilant PlateSearch. See [Configuring System Using UbuntuHD Control on page 35](#).

## Chapter 4

# Software Installation

## Windows Operating System Overview

For Windows Operating System, Vigilant CarDetector Fixed (Vigilant CDF) is installed as a client application with GUI that shows live video of connected cameras and lists accumulated plate detections with vehicle images. The Vigilant CarDetector Fixed application on Windows allows Target Alert Service (TAS) to connect directly to the VLP Processor inside the VLP Communications Box for expedited alerting on plates of interest (hits or plates on a hot list). The GUI can be monitored using remote desktop or using a display monitor, however it will also run unattended depending on user preference. A connection file created then exported from Vigilant PlateSearch (cloud, backend server), will need to be saved to the Vigilant CarDetector Fixed file directory

## Linux Operating System Overview

The OCR application and Linux OS run on the VLP Processor inside the VLP Communications Box. Cameras connect to the VLP Processor as it operates headless with no monitoring required or GUI available. The VLP Processor running Linux can be configured and diagnosed using an external windows PC with UbuntuHD Control tool (MiniCC) installed. MiniCC allows you to enter Vigilant PlateSearch credentials, change network scheme (ips, subnet, gateway, DNS), and view live video for aiming.

### 4.1

## Vigilant CarDetector Fixed Configuration

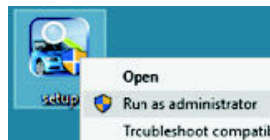
### 4.1.1

## Installing the Application

### Procedure:

- 1 Download the latest Vigilant CarDetector Fixed (CDF) installer at <https://get.vaasfiles.com/CDF>.
- 2 Right-click the setup.exe icon and select **Run as administrator**.

**Figure 24: Running the CDF Installer**



- 3 Accept the license agreement.
- 4 Follow the prompts onscreen to select primary OCR region and optional GPS device settings.
- 5 Exit installer when prompted and find the application shortcut on your desktop.

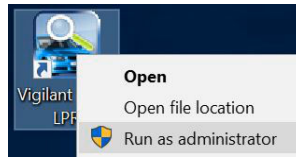
### 4.1.2

## Configuring the Application

### Procedure:

- 1 Right-click the application shortcut on your desktop.
- 2 Click **Run as administrator**.

**Figure 25: Run the CDF Software**



You will be prompted to enter a license key.

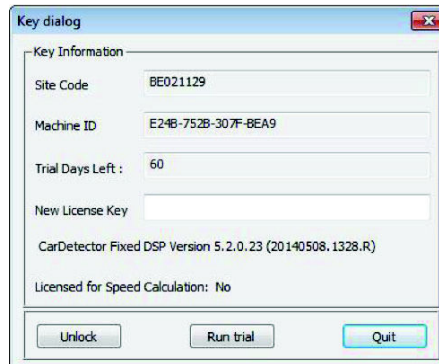
- 3 If you have not yet received the license for this system, click **Run trial**.



**NOTE:** The trial installation will function for 60 days before requiring a license key.

- 4 If a machine has previously been licensed or already used up its trial license, this option will be disabled and a new license key will be required to proceed.

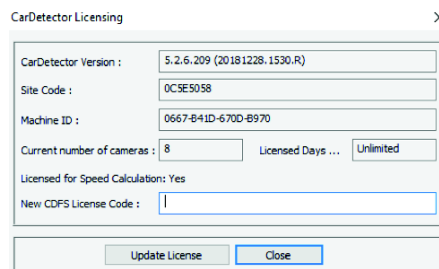
**Figure 26: Key Dialog**



- 5 To request a new license key, fill out the form at: [https://www.motorolasolutions.com/en\\_us/support/vigilant-license-key-request.html](https://www.motorolasolutions.com/en_us/support/vigilant-license-key-request.html).
- 6 To enter the key, perform one of the following actions:

Option	Actions
Inserting the key during installation,	click <b>Unlock</b> in the dialog box to enter the key.
Inserting the key after installing and configuring Vigilant CarDetector Fixed,	<ol style="list-style-type: none"> <li>From the Help menu, click <b>CarDetector Licensing</b>.</li> <li>Enter the new license key and click <b>Update License</b>.</li> </ol>

**Figure 27: CDF Licensing**


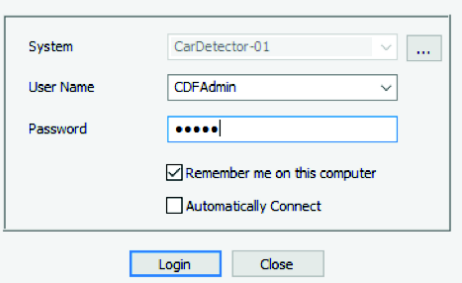



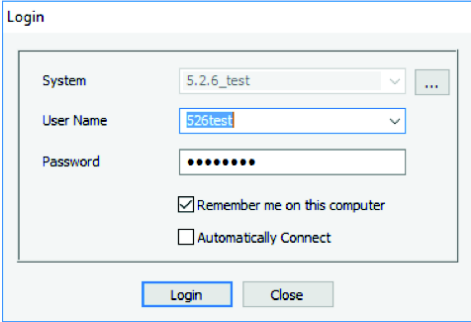
### 4.1.3 Logging Into the Application

**Prerequisites:** You can log into the application with or without connecting it to Vigilant PlateSearch.

**Procedure:**

- 1 Perform one of the following actions:

Option	Actions
<p><b>Log in without a Vigilant PlateSearch connection,</b></p>	<ol style="list-style-type: none"> <li>Select one of the two default usernames (CDFAdmin or CDFOperator) from the dropdown menu.</li> <li>Enter the password and click <b>Login</b>.   <b>NOTE:</b> The default password for both logins is 12345.</li> <li>Select the <b>Automatically Connect</b> check box to avoid having to confirm these credentials on future logins.</li> </ol> <p><b>Figure 28: Logging In to CDF Without Vigilant PlateSearch Connection</b></p>  <ol style="list-style-type: none"> <li>Install your system connection file in this directory: C:\Program Files (x86)\Vigilant Solutions\Vigilant CarDetector Fixed.</li> <li>Relaunch the application.</li> <li>Select your username from the dropdown menu and log in using the Vigilant PlateSearch password.</li> <li>Select the <b>Automatically Connect</b> check box to avoid having to confirm these credentials on future logins.</li> </ol>  <b>NOTE:</b> When used without a Vigilant PlateSearch connection, Vigilant CarDetector Fixed will not upload your data to another server or synchronize hot list data automatically.
<p><b>Log in with a Vigilant PlateSearch connection,</b></p>	<ol style="list-style-type: none"> <li>Install your system connection file in this directory: C:\Program Files (x86)\Vigilant Solutions\Vigilant CarDetector Fixed.</li> <li>Relaunch the application.</li> <li>Select your username from the dropdown menu and log in using the Vigilant PlateSearch password.</li> <li>Select the <b>Automatically Connect</b> check box to avoid having to confirm these credentials on future logins.</li> </ol>

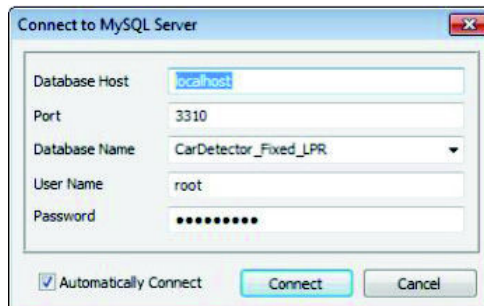
Option	Actions
	<p><b>Figure 29: Logging In to CDF with Vigilant PlateSearch Connection</b></p> 

#### 4.1.4 Connecting to Database


**Procedure:**

- 1 In the **Connect to MySQL Server** window, connect the CDF software to a MySQL database.

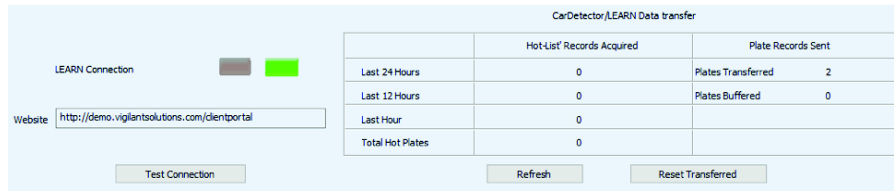
**Figure 30: Connect to MySQL Server**



- 2 Perform one of the following actions:

Option	Actions
<p><b>For new installation,</b></p>	<ol style="list-style-type: none"> <li>a Leave all default values in place except the database name that can be changed if desired.</li> <li>b Click <b>Connect</b>, then click <b>Yes</b> when prompted.</li> </ol>
<p><b>For existing system connection,</b></p>	<ol style="list-style-type: none"> <li>a Verify that the connection is live by clicking <b>System Configuration</b>.</li> </ol> <p><b>Figure 31: Verify System Configuration</b></p> 

**Figure 32: LEARN Connection**



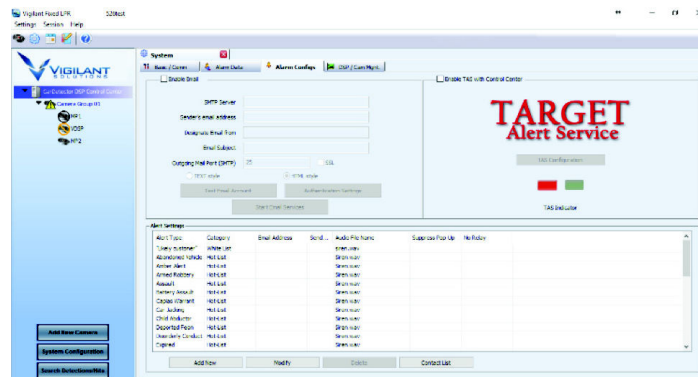
- 3 To verify your Vigilant Platesearch connection is active, click **Test Connection**.

#### 4.1.5 Configuring TAS

**Procedure:**

- 1 To configure TAS, click **System Configuration** and click on the **Alarm Configs** tab.
- 2 Select the **Enable TAS Control Center** check box.
- 3 Click **TAS Configuration**.

**Figure 33: TAS Configuration**



- 4 You will be prompted to create or connect to the TAS database.
- 5 If this is a new installation, leave all default values in place except database name which can be changed if desired.
- 6 Click **Connect**, then click **Yes** when prompted to create the new database.

**Figure 34: Connect to MySQL Server**

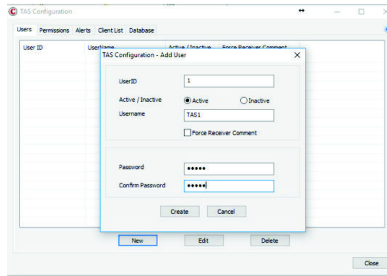


The TAS Configuration window will open.

- 7 On the Users tab, click **New** at the bottom left to add a TAS user.
- 8 UserID will start at one and increment for each user you add.

- 9 Enter the desired TAS username and password in the labeled blanks and click **Create** to add the user.
- 10 The user can now connect to this CDF server using TAS client.

**Figure 35: TAS Configuration-Add New User**



#### 4.1.6

### Adding Cameras

**Procedure:**

- 1 To add the first camera, click **Add New Camera**.

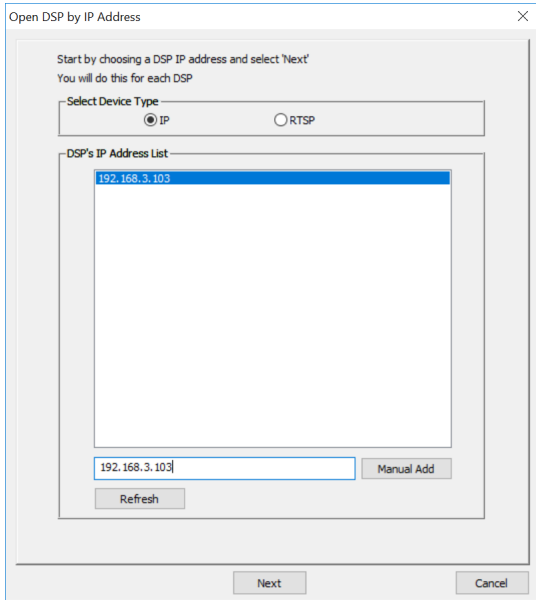
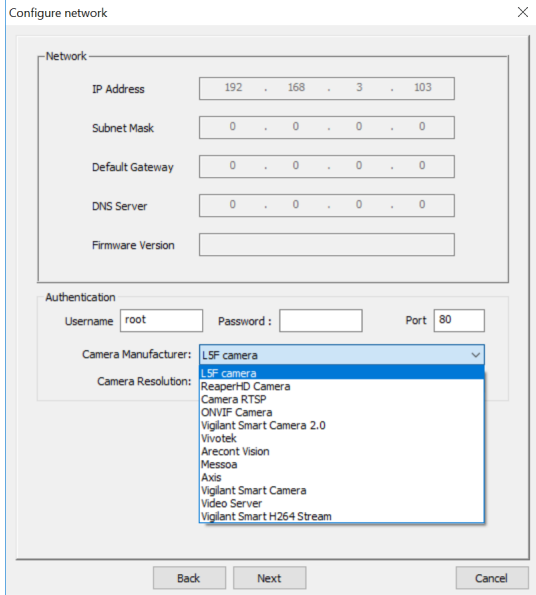
**Figure 36: Add New Camera**

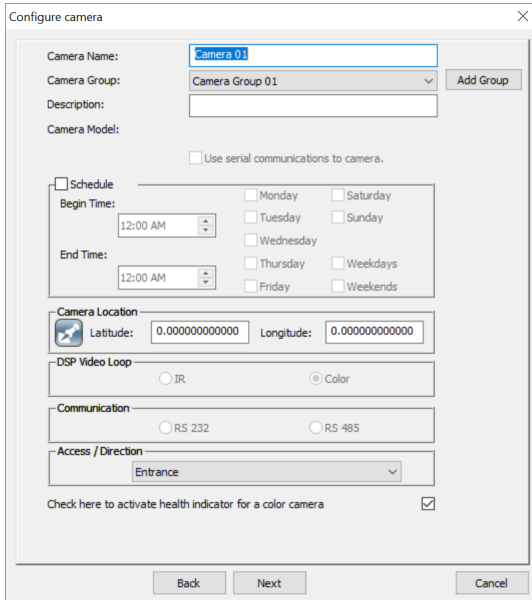


- 2 Depending on the type of camera that you want to add, perform one of the following actions:

Option	Actions
<b>Using L5F Cameras</b>	<ol style="list-style-type: none"> <li>a Select the <b>L5F</b> radio button. The IP addresses of all L5F cameras on the network appears in the box.</li> <li>b Select the desired camera and click <b>Next</b>.</li> <li>c If you do not see it in the list, enter the IP address of the L5F camera and click <b>Manual Add</b>.</li> <li>d Select the camera in the list and click <b>Next</b>.</li> </ol>



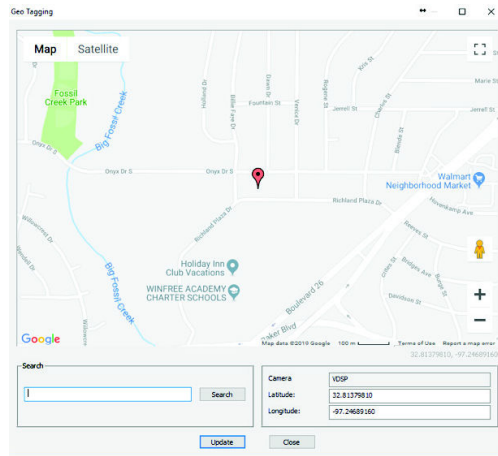
Option	Actions
	<p data-bbox="911 241 1263 275"><b>Figure 37: Add L5F Camera</b></p>  <p data-bbox="873 905 1393 1150"><b>e</b> Confirm that the boxes are populated and click <b>Next</b>. <b>f</b> If the boxes are not populated, double-check your IP address for the camera. <b>g</b> Connect to the camera from MiniCC and verify it is functioning and responding properly before continuing.</p> <p data-bbox="911 1167 1289 1201"><b>Figure 38: Configure Network</b></p>  <p data-bbox="873 1829 1393 1923"><b>h</b> In the <b>Configure Camera</b> window, edit the text boxes as desired to configure Camera Name and Description.</p>

Option	Actions
	<p>i You can create camera groups to organize your cameras on a multicamera system.</p> <p>j If you want the camera to only operate at specific times, use the <b>Schedule</b> feature to configure those times.</p> <p><b>Figure 39: Configure Cameras</b></p>  <p>k Click the pin icon under Camera Location to open the GPS search screen.</p> <p>l To set GPS coordinates, type the nearest address to the camera in the Search box at the bottom left and click <b>Search</b>.</p> <p>m Results will be shown on the left side of the map.</p> <p>n Click the address you want to use, and the map will update to show the location selected. Adjust the position of the pin as necessary to mark the camera's location precisely.</p> <p>o Click <b>Update</b>, then click <b>Close</b> to save the coordinates you've selected.</p>

Option

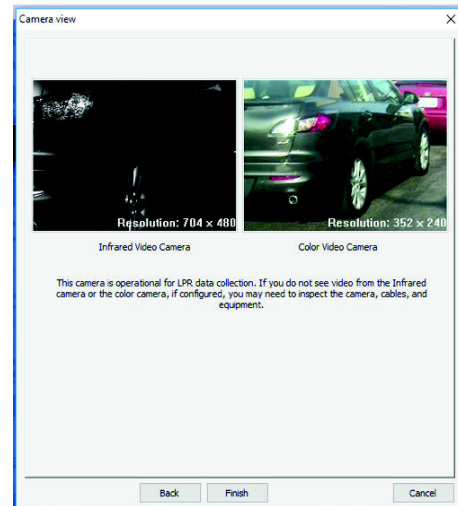
Actions

Figure 40: Geo Mapping

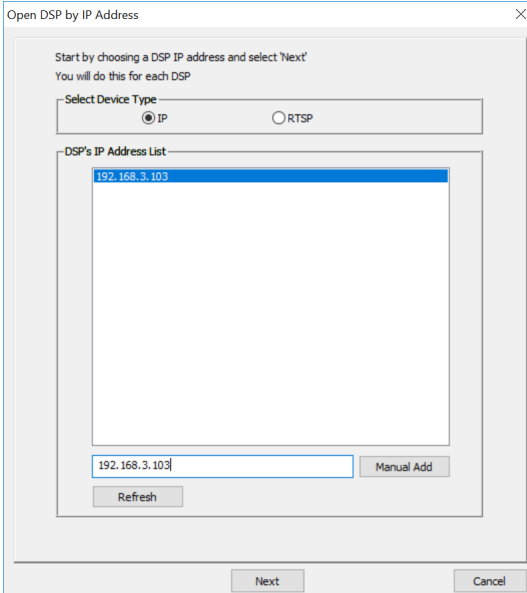


- p When you're done with name, schedule, and GPS setup, click **Next**.
- q Confirm that the camera is sending video to the CarDetector software.
- r In the Camera view window, you will see live video streams from both the IR and color overview cameras of the L5F.
- s Verify that both streams are live and click **Finish**.

Figure 41: Camera View



**CAUTION:** The software will immediately update the firmware version on the L5F camera if an update is available. Do not interrupt or disconnect either device during the firmware update process. Doing so may seriously damage your L5F camera.

Option	Actions
<b>Using Third-Party Camera</b>	<p><b>a</b> To add the camera, select the <b>IP</b> radio button.</p> <p><b>b</b> Enter the IP address of the Third-Party Camera and click <b>Manual Add</b>. If the device is on the network, it will appear in the box above.</p> <p><b>c</b> Select the IP address in the box and click <b>Next</b>.</p> <p><b>Figure 42: Third-Party Camera IP Address</b></p>  <p><b>d</b> Confirm that the Network boxes are populated.</p> <p><b>e</b> Enter the camera's username, password, and http port (80 by default) in the provided boxes.</p> <p><b>f</b> Select <b>Vigilant Smart Camera 2.0</b> from the dropdown menu and click <b>Next</b>.</p>

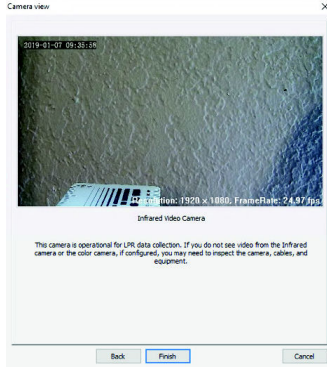
**Option**

**Actions**

**Figure 43: Third-Party Camera Configure Network**

- g** If the **Next** button is unavailable, the software cannot ping the camera. Try connecting to it in Internet Explorer to verify it's online and check your credentials.
- h** Fill in camera name, schedule (optional), GPS coordinates, and access/direction (optional).
- i** Click **Next**.

**Figure 44: Third-Party Camera Configure Camera**

Option	Actions
	<p><b>j</b> Confirm that the camera is sending video to the Vigilant CarDetector software.</p> <p><b>k</b> Verify that the video stream in the window is live, then click <b>Finish</b>.</p> <p><b>Figure 45: Third-Party Camera View</b></p>  <p><b>l</b> If the stream does not appear, verify you can connect to the camera and view the stream with Internet Explorer.</p> <p><b>m</b> You will still need to configure your Third-Party Camera to optimize it for LPR performance (see separate documentation).</p>
<b>Using RTSP</b>	<p><b>a</b> To add an RTSP camera, select the <b>RTSP</b> radio button.</p> <p><b>b</b> Enter the RTSP URL of the camera. This is normally "rtsp://" followed by the IP address of the camera.</p> <p><b>c</b> Enter the Username and Password of the camera. This information is normally included in the camera documentation.</p> <p><b>d</b> When the information has been entered, click <b>Next</b>.</p>

Option

Actions

Figure 46: RTSP IP Address

Open DSP by IP Address

Start by choosing a DSP IP address and select 'Next'  
You will do this for each DSP

Select Device Type

IP  RTSP

Authentication

Url RTSP: rtsp://192.168.3.103:554

User Name: root Password: [masked]

Next Cancel

- e Fill in camera name, schedule (optional), GPS coordinates, and access/direction (optional) and click **Next**.

Figure 47: RTSP Configure Camera

Configure camera

Camera Name: Camera 01

Camera Group: Camera Group 01 Add Group

Description:

Camera Model: ReaperSD

Use serial communications to camera.

Schedule

Begin Time: 12:00 AM

End Time: 12:00 AM

Monday Tuesday Wednesday Thursday Friday Saturday Sunday Weekdays Weekends

Camera Location

Latitude: 0.0000000 Longitude: 0.0000000

DSP Video Loop

IR  Color

Communication

RS 232  RS 485

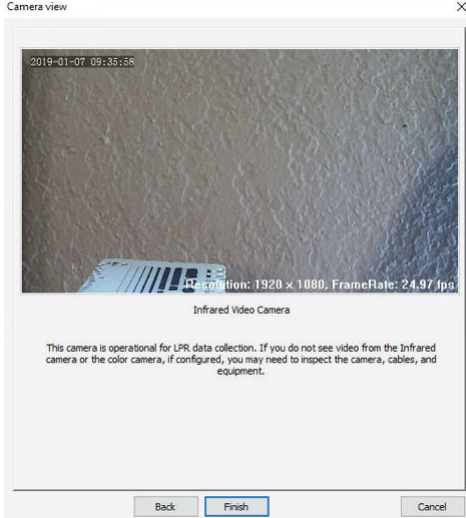
Access / Direction

None

Check here to activate health indicator for a color camera

Back Next Cancel

- f Confirm that the camera is sending video to the LPR software.
- g Verify that the video stream in the window is visible, then click **Finish**.
- h If the stream does not appear, verify you can connect to the camera and view the stream with Internet Explorer.

Option	Actions
	<p data-bbox="878 243 1256 275"><b>Figure 48: RTSP Camera View</b></p> 

- 3 Repeat step [step 2](#) to add all of your cameras to the software.

## 4.2

# Vigilant PlateSearch Camera Configuration

### 4.2.1

## Checking Operating System

### Procedure:

- 1 Check your purchase order documents.  
If Vigilant CarDetector Fixed software is listed in the product description, the Operating System (OS) on the VLP is Windows.
- 2 Connect a monitor and keyboard.

For Windows OS, a blue login screen appears.

For Linux OS, a black command line, terminal screen appears.

### 4.2.2

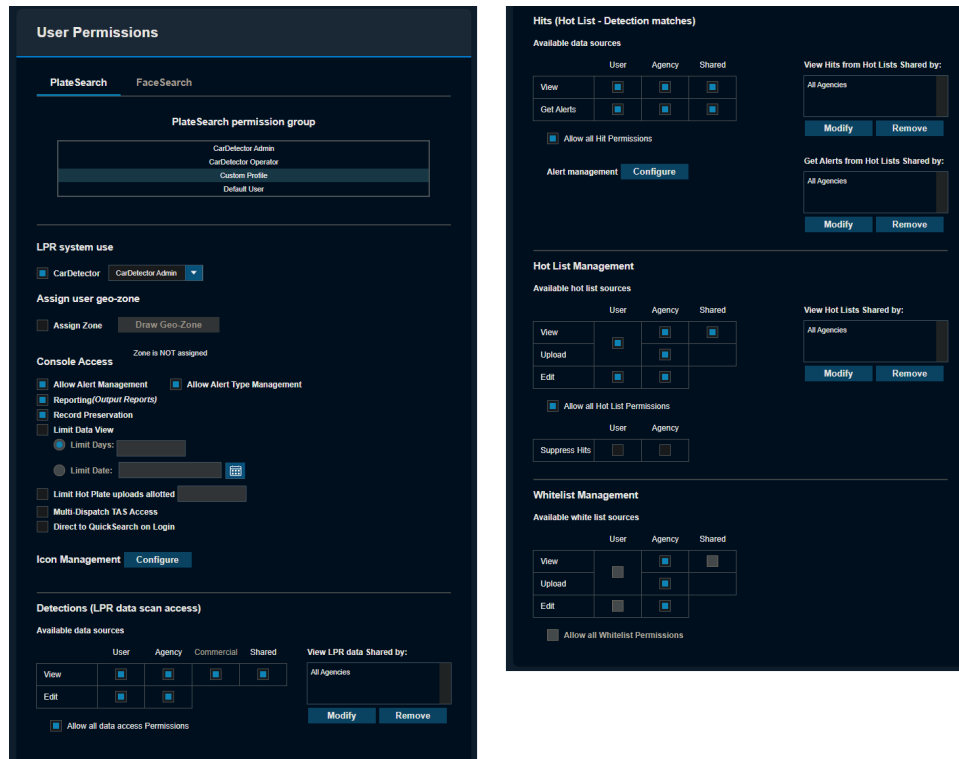
## Creating a User

### Procedure:

- 1 As an agency manager, go to **PlateSearch**→**User Management**.
- 2 Click **Add New User** or **Search/Modify Users** if the user already exists.
- 3 Ensure that the LPR System use is selected with **CarDetector Admin** in the dropdown menu.
- 4 To use this account to check data, enable the detection viewing settings.
- 5 To enable the user to generate alerts, turn on the alerting settings.
- 6 Click **Create**.



**Figure 49: User Permissions**



For Windows Operating System (OS), you will use the created user when logging into Vigilant CDF. If you have placed your connection file correctly, you should see the user as available choice from the login dropdown menu when starting Vigilant CDF.

For Linux OS, save the name of the created user as you will need to enter it into the VL Processor using UbuntuHD Control later.

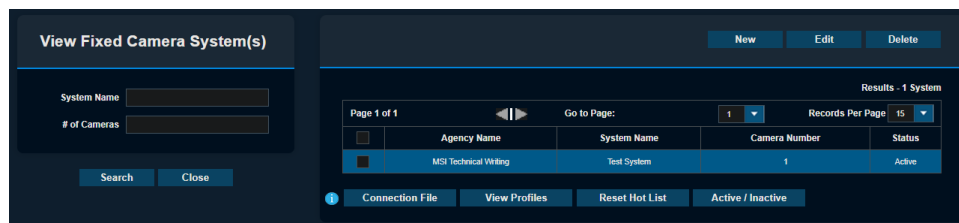
### 4.2.3 Creating a System

**Prerequisites:** This section is only applicable for the Agency Managers. To create a fixed system, ensure that the agency is already created in Vigilant Platesearch.

**Procedure:**

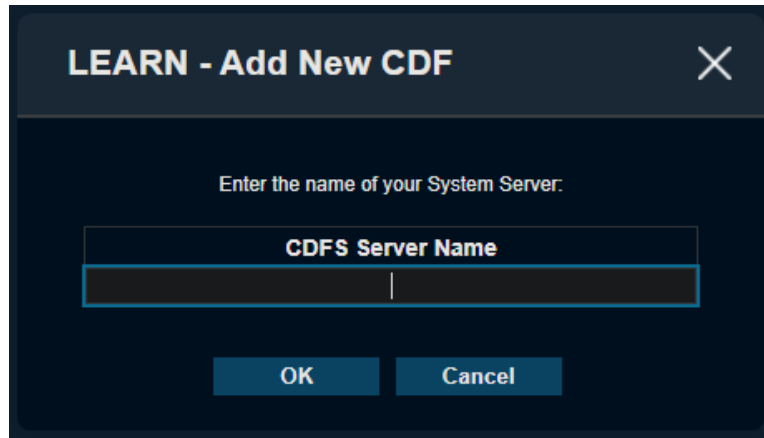
- 1 Go to **PlateSearch**→**Agency Management**→**Fixed Camera System**→**New**.

**Figure 50: Create New Fixed System**



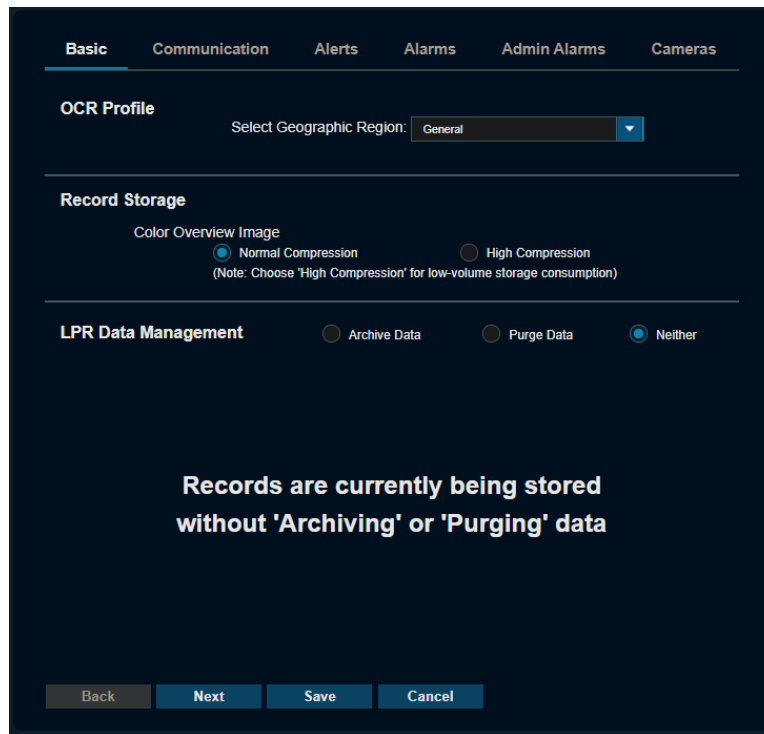
- 2 Name the camera site appropriately.

**Figure 51: New Fixed System Name**



- 3 Set the OCR Region.

**Figure 52: OCR Region**



- 4 Based on the operating system that you are using, perform one of the following actions:
  - For Windows OS, continue to [step 5](#).
  - For Linux OS, save the name of the system that you just created as you need to enter the system name into the VLP using UbuntuHD Control tool.
- 5 Click the **Admin Alarms** tab and ensure that the system is set up properly.

Figure 53: Admin Alarms

Basic Communication Alerts Alarms **Admin Alarms** Cameras

### Administrative Alert Settings

Enable Administrative Alerts

Email Address:

System launch confirmation

Successful system shut down

When the camera is activated or deactivated

Limit one system message  per

Camera Power/Connection loss after  minutes

When a camera loses video after  minutes

When a camera has not recorded a detection after  hours

When a camera becomes out of calibration (Not aimed well)

When a camera is not performing well (Too many 'Missed' plates)

Limit health messages to  per

- 6 Click **Save**.
- 7 Download your connection file by highlighting your system and click **Connection File**.

Figure 54: Connection File

View Fixed Camera System(s)

System Name

# of Cameras

Results - 1 System

Page 1 of 1 Go to Page:  Records Per Page:

	Agency Name	System Name	Camera Number	Status
<input type="checkbox"/>	MSI Technical Writing	Test System	1	Active


- 8 Save the connection file and transfer it to the VLP Processor inside the VLP Communications Box.
- 9 Place the file in the Root Directory of the Vigilant CarDetector Fixed Program: C:\Program Files (x86)\Vigilant Solutions\Fixed LPR.

#### 4.2.3.1

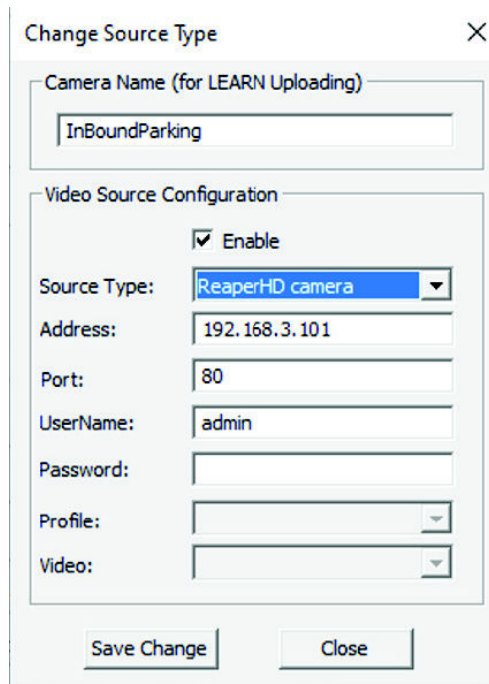
### Configuring System Using UbuntuHD Control

#### Procedure:

- 1 To configure the VLP Processor's connection to Vigilant LEARN, click **LEARN**.

- 2 Enter the username and password of the user created in Vigilant LEARN.
- 3 Enter your Agency name
- 4 Enter the System name.
- 5 Enter the Longitude and Latitude GPS coordinates by clicking the **Location** symbol.
- 6 Leave the other text boxes at the default values they have.
- 7 Click **Apply**, then click **Test Connect**.
  - If you get a success message, proceed to step [step 8](#).
  - If you get `Operation failed: Invalid Username/Password`, check the username and password.
  - If you get `Operation failed: Unknown error`, go back to **Change IP** button and check the network configuration for `<enp3s0>` (IP, Subnet, Gateway, and DNS).
- 8 Close the **LEARN** window when complete.
- 9 To name each of the camera, click **Change Source Type**.
- 10 Check the box next to **Enable**.
- 11 Enter the camera IP in the **Address** box.
  -  **NOTE:** By default, the IP addresses for cameras are 192.168.3.100-103.
- 12 Enter a Camera Name (for Vigilant LEARN Uploading) that uniquely identifies this camera.
- 13 Use **Port** of 80.
- 14 Leave the **UserName** as `<admin>` and leave the **Password** blank.

**Figure 55: Configuring Source Type**



Change Source Type

Camera Name (for LEARN Uploading)

InBoundParking

Video Source Configuration

Enable

Source Type: ReaperHD camera

Address: 192.168.3.101

Port: 80

UserName: admin

Password:

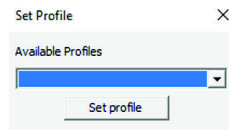
Profile:

Video:

Save Change Close

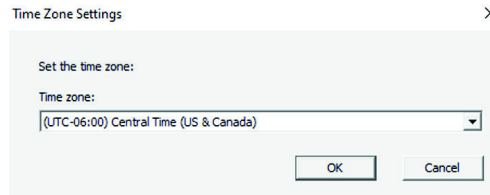
- 15 To set the OCR profile, click **Set Profile** and select the correct state OCR profile.

**Figure 56: Set Profile**



**16** To set the Time Zone, click **Set the time zone** and select the correct GMT.

**Figure 57: Time Zone Setting**



**17** To set the Network Configuration, click **Change IP**.

- a** Select **enp3s0**→**Static**.
- b** Change the IP, Subnet, Gateway, and DNS to work with your router and network settings.
- c** Check **DHC** then click **Write to Broad**.
- d** The system will save settings and do a soft reboot. Wait for 60 seconds.

**18** To check your configuration settings, click **Get Health Information**.

Verify that the following parameters are correct:

- **IP Configuration** shows the correct settings for your router.
- **Engine Profile** is the correct state profile you selected.
- **LEARN Account Information** shows the correct credentials.
- **Current Time** is accurate.
- **GPS Coordinates** is showing the correct values.
- Check **Scans Upload status**, **Total Scans Upload**, and **Total Plate in Vigilant PlateSearch queue** for the number of plates that you have scanned that should be sent to LEARN.

#### 4.2.4

## Verifying the System Connection

**Prerequisites:** Log in to Vigilant Platesearch using the credentials you just created.

**Procedure:**

- 1** Go to **PlateSearch**→**License Plate Query**→**More Options**.
- 2** Filter by the system you just created.

Figure 58: Verify System Connection

**Data Source Filters**

Vehicle Type:

Body Class:

Make:

Model:

Year:

Reg State:

Vehicle VIN:

Show Daytime image in Nighttime image

Camera Name:

Hot List Hits

Ignore Out-of-State Alerts

Perimeter Surveillance:

Whitelist Hits

Camera Direction:

Digital Chalking Hits

Unique License Plate per day

View Captured Plates

System Type:

View Captured Non-Plates

Missing Plate

Logically Deleted

All Agencies  
 Select Agencies

All Users  
 Select Users

All Systems  
 Select Systems

Enter for search

Test System

Test Camera

Past Camera

Whoville

CDM\_WBD\_1156

All Hot List Sources  
 Select Hot List Sources

All Alert Types  
 Select Alert Types

Local LEARN Server  
 Select LPR Server Links

All Whitelist Sources  
 Select Whitelist Sources

Returns generated will be plate detections from only this system.

If the system connection is created successfully, you are able to view the following results:

- Able to view the plate detections from the system.
- Vigilant CarDetector Fixed is connected.
- The detections are sent to the Vigilant Platesearch cloud server.



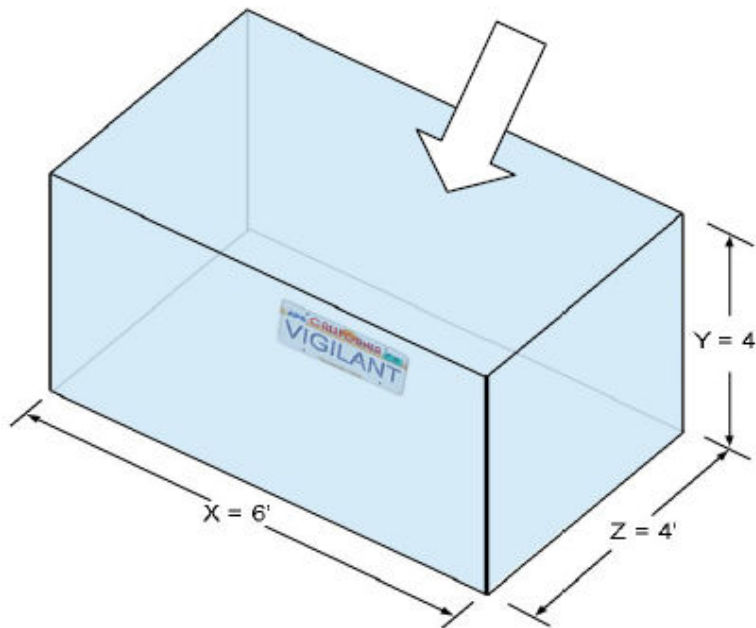
**NOTE:** If the system connection is not created successfully, contact Vigilant Support.

## Chapter 5

# Camera Aiming Instructions

## Finding the Capture Volume

The Capture Volume inside which license plates are captured when a plate passes through it can be considered the area of tolerance when aiming the LPR camera. This cubic Capture Volume represents a volume of space. If properly positioned by aiming the camera at the target capture point, will yield the most favorable capture results for any license plate that travels through it.



- 6 in. wide
- 4 in. high
- 4 in. deep



**NOTE:** Actual dimensions may vary based on application conditions.

## Considering the Half Distance Rule

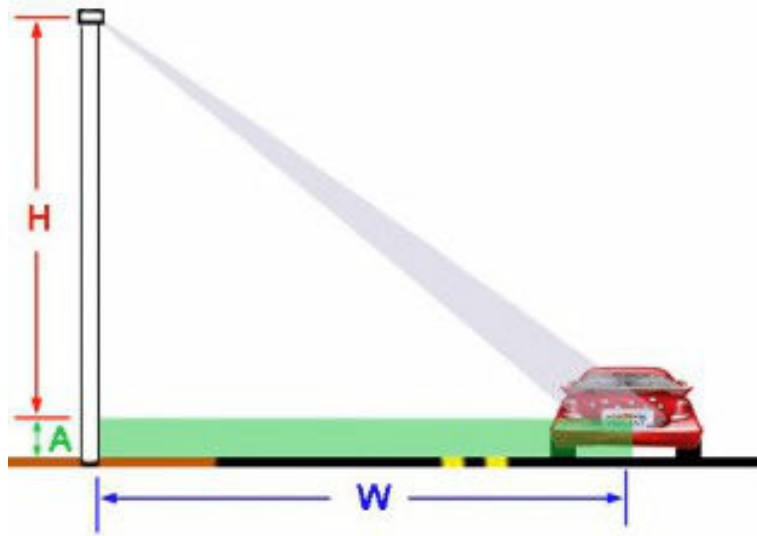
When looking straight down the direction of vehicle travel from the position of the Capture Volume (perpendicular to the face of the license plate). The greater the camera's elevation (vertical offset) and azimuth (horizontal offset) the greater the angle of deflection at which the camera can view the plate. Minimizing this angle of deflection increases the consistency and accuracy of plate reads.

Consider the "Half Distance Rule" when determining optimal fixed camera placement:

The horizontal or vertical deflection from the camera to the license plate should be less than half the distance from the camera to the plate.

**Example:** If the line of sight distance between the camera and the license plate is 100 ft, the camera should be placed less than 50 ft horizontally (H = Height) or vertically (W = Width) deflected from the direction of vehicle travel.





## 5.1 Selecting a Camera

### Procedure:

- 1 To select a camera model, consider the following tips:
  - If the actual capture distance needed is close to the capture distance of a certain camera model, choose the camera with the next highest capture distance.
  - The vertical and horizontal angle of deflection should be minimized as much as possible to provide for the most IR light possible to reflect back into the image sensor of the camera.
  - Most Vigilant Fixed LPR systems will operate optimally with a 35 mm camera. 25 mm is preferred for more of a country club or private road scenario, and 16 mm or 8 mm for a parking garage style layout.

Table 9: Camera Capture Distance

Part Number	Optimal Focal Length	Capture Range <sup>2</sup>
VSR-5x-908	14 ft	6–27 ft
VSR-5x-916	40 ft	25–55 ft
VSR-5x-925	70 ft	55–85 ft
VSR-5x-935	95 ft	85–105 ft
VSR-5x-950	115 ft	105–125 ft



**NOTE:** Every site under consideration for Fixed LPR deployments should be surveyed, measured, and officially approved by Vigilant before selecting camera types.

<sup>2</sup> Up to 2 lanes of traffic coverage in most scenarios.