



# **MPH™ 900**

## **User's Guide**



Rev. D



MPH<sup>TM</sup>900 is a trademark of Eltag North America, LLC.

All rights reserved. Reproduction of any part of this guide in any form whatsoever requires express written permission of Eltag North America. The contents of the guide are subject to change, and Eltag North America can accept no responsibility for any errors, or their consequences.

Copyright © 2009 by Eltag North America, LLC.

If you need technical assistance, please contact us at

Eltag North America

866 967 4900 or 1-866-9MPH900  
336 379 7135

e-mail [techsupport@elsagna.com](mailto:techsupport@elsagna.com)

web [WWW.ELSAGNA.COM](http://WWW.ELSAGNA.COM)



## About this guide

This guide is the reference manual for the CarSystem, which is the Mobile Plate Hunter™ 900 user interface.

This document is intended to provide the User with basic information on the system operations for successful use in the field. Additional information on Hot List data conversion; System Administration and Vehicle Installation are available in separate documents.

The system user interface is a software program, called CarSystem, which runs on a Mobile Data Terminal, a laptop, or any other on-board computer. The computer must be connected to the MPH™900 processor or to the MPH™900 junction box if AD3M cameras are used, as explained in the Installation manual.

Section 1 explains the general framework of the CarSystem including the Main Menu page.

Section 2 presents all the License Plate Reading (LPR) applications.

Section 3 shows the GPS Localization control page.

Section 4 is about the Hot List and section 5 explains the Virtual Fence function.

Section 6 is concerned with the Communication function.

Section 7 describes the Login and user management functionality.

Finally, section 8 includes a table with the permissions associated to users' profiles.

## Revision History

|   |            |                                           |             |
|---|------------|-------------------------------------------|-------------|
|   |            | Original Document                         | Masciangelo |
| A | 5/18/2005  | New Software Revisions                    | Child       |
| B | 10/07/2005 | Updated for 9-9 release and NYSP          | Child       |
| C | 02/28/2006 | Update for release 1.2.0; CarSystem 2.9.0 | Masciangelo |
| D | 03/31/2009 | CarSystem 4.7.1                           | Masciangelo |



## List of acronyms

---

|     |                         |
|-----|-------------------------|
| AMC | Account Manager Control |
| HL  | Hot List                |
| GPS | Geo Positioning System  |
| LAN | Local Area Network      |
| LPR | License Plate Reader    |
| OPC | Operations Center       |
| MDT | Mobile Data Terminal    |
| MWP | Elsag Middleware        |
| MPH | Mobile Plate Hunter     |
| USB | Universal Serial Bus    |





## TABLE OF CONTENTS

|                                                        |    |
|--------------------------------------------------------|----|
| Revision History .....                                 | 3  |
| List of acronyms .....                                 | 4  |
| 1 MPH900 Car System Framework .....                    | 7  |
| 1.1 Login and Main Menu Pages.....                     | 8  |
| 2 License Plate Reader function .....                  | 12 |
| 2.1 LPR – License Plate Reader – main window.....      | 12 |
| 2.1.1 Colored Sidebars.....                            | 14 |
| 2.1.2 Overview Camera .....                            | 14 |
| 2.1.3 Plate ambiguities.....                           | 14 |
| 2.2 LPR-Alarm Management.....                          | 15 |
| 2.2.1 Alarm Image Controls.....                        | 16 |
| 2.2.2 Zoomed Plate Area .....                          | 16 |
| 2.2.3 Alarm Panel .....                                | 16 |
| 2.2.4 Alarm Time-Out.....                              | 18 |
| 2.2.5 Alarm with Multiple Choice .....                 | 19 |
| 2.2.6 Zoom Button .....                                | 20 |
| 2.2.7 Alarm Class.....                                 | 20 |
| 2.2.8 Delayed Alarm .....                              | 21 |
| 2.2.9 Geofencing Alarm.....                            | 22 |
| 2.3 LPR – Last Events Panel .....                      | 25 |
| 2.4 LPR – Camera Management.....                       | 26 |
| 2.4.1 List Update Info .....                           | 26 |
| 2.4.2 LPR Cameras Control .....                        | 28 |
| 2.5 LPR – Diagnostics.....                             | 29 |
| 2.5.1 Live Mode.....                                   | 30 |
| 2.5.2 Reader Info.....                                 | 30 |
| 2.5.3 How to take a snapshot with the LPR cameras..... | 32 |
| 2.6 LPR – Other controls .....                         | 33 |
| 2.6.1 Info Button .....                                | 33 |
| 2.6.2 Setup Button.....                                | 33 |
| 2.6.3 Advanced Menu .....                              | 35 |
| 2.6.4 Menu Button .....                                | 35 |
| 2.7 LPR – Operations - Hot List Management .....       | 36 |
| 2.7.1 Search – Plate Search.....                       | 38 |
| 2.7.2 Hot List Search Results.....                     | 39 |
| 2.7.3 Insert – Plate Insertion .....                   | 40 |
| 2.7.4 Delete – Plate Deletion .....                    | 42 |
| 2.7.5 Delete Local Hot list.....                       | 42 |
| 2.7.6 Retroactive alarms .....                         | 43 |
| 2.8 LPR – Operations – Reports and queries .....       | 44 |



|       |                                        |    |
|-------|----------------------------------------|----|
| 2.8.1 | Shift Report.....                      | 45 |
| 2.8.2 | General Report.....                    | 46 |
| 2.8.3 | Queries.....                           | 47 |
| 2.8.4 | Report result page.....                | 50 |
| 2.9   | LPR – Operations – Cartography.....    | 53 |
| 3     | GPS – Localization.....                | 55 |
| 3.1   | Satellites.....                        | 56 |
| 3.2   | Diagnostic.....                        | 58 |
| 4     | Hot List Manual Import.....            | 59 |
| 4.1   | Import from a USB drive.....           | 60 |
| 5     | Virtual Fence.....                     | 62 |
| 5.1   | Geofencing Setup Check-list.....       | 63 |
| 6     | Wireless Communication Function.....   | 65 |
| 6.1   | Short-Range (Wi-Fi).....               | 65 |
| 6.1.1 | Hot List and Data Transfer.....        | 65 |
| 6.2   | Long-Range (Aircards).....             | 67 |
| 6.2.1 | Hot List Update and Data Transfer..... | 67 |
| 6.3   | Short+Long-Range.....                  | 67 |
| 7     | AMC Account Management Control.....    | 69 |
| 8     | Profile permissions.....               | 80 |



## 1 MPH900 Car System Framework

The MPH900 is a License Plate Reading System, which consists on the following components:

- a set of LPR cameras
- a processor or a junction box
- a Mobile Data Terminal (MDT) hosting the on-board user interface,

Refer to the Installation Manual for instructions on how to set up the hardware components in the car and power the system up.

The **MPH900 Car System** is a framework for the execution of different applications on-board a car.

The functions currently available on the graphic interface are:

- License Plate Reader (LPR)
- GPS Localization
- Communication to a central Operations Center
- User Login management

The Car System Graphic User Interface (GUI) has been developed to be viewed on a display at 800x600, 1024x768 resolution. At 1024x768 resolution the GUI displays the plate images at the best possible quality, while providing a good view of interface icons. At any other display resolution, the application will have a dimension of 800x600 pixels. The Car System is fully touch-screen enabled and optimized, meaning that if the vehicle MDT/PC/laptop has a touchscreen, the icons and buttons are touchscreen sensitive. Button and icon sizes have been chosen to maximize touch screen ergonomics.

The LPR application monitors the activity of the LPR cameras connected to the on-board PC. It gives the user a view of the plates being read and of the status of the system. The interface also provides the operator with important Hot List and alarm management functions.

The GPS Localization function allows the operator to monitor and manage GPS data being received from an NMEA compatible GPS receiver attached to a USB or Serial Com port.



## 1.1 Login and Main Menu Pages

The Car System must be launched from the Desktop double-clicking the following icon.

The screenshot shows the 'Car System Login' window. It has a blue header bar with the text 'Car System Login'. Below the header, there are two input fields: 'User' with the text 'lastuser' and 'Password' which is empty. Below the input fields is a numeric keypad with digits 1-0, a QWERTY keyboard layout, and a row of function keys: 'Caps', a spacebar, '#@...', and 'Canc'. At the bottom of the window are two buttons: 'OK' and 'Cancel'.

At this step, in order to access the system, the user is required to insert his credentials (username and password). The window always displays in the user name field the latest user who successfully logged on to the system. The CarSystem Login page is optional: Login control can be disabled during the CarSystem setup.

User name and password must be long from a minimum of 6 up to 20 characters and moreover the username cannot contain the chars " \ / [ ] : ; , | = + \* ? < > .

The application verifies the validity of the data inserted, allowing the user to enter the application and loading the Main page.

There are three possible operative profiles for a user:

- Administrator: role for system administrator with unrestricted functions;
- Operator: role for expert users in the system usage;
- User: role for standard users in the system usage.

In addition, an Installer maintenance profile having known passwords also exists.





This profile is only used during the first access to the application after setup, and only allows current user to add a new Administrator user.

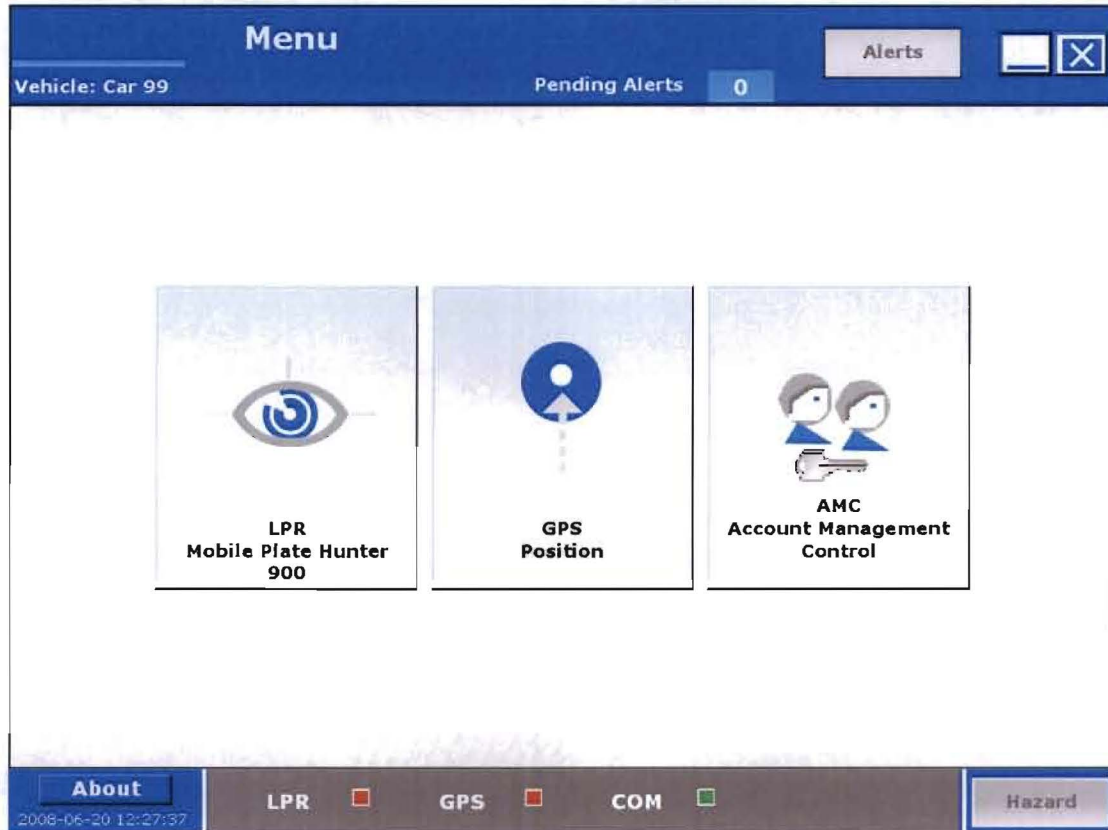
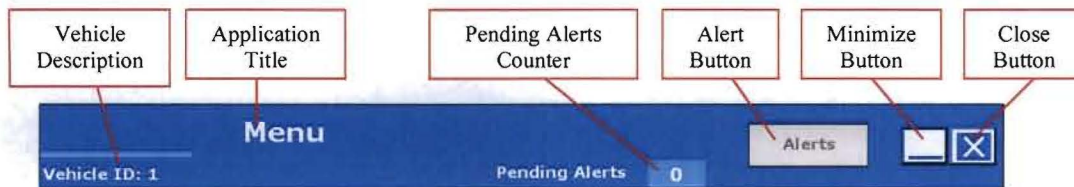


Fig. 1.1 – Main CarSystem screen

After a successful login, the main page is shown and you can select the desired application.

The top section contains the following information:



- Name of the active application (example: Menu if there isn't any active application).
- Vehicle description: Vehicle Identifier (number or alias).
- Alerts: This button blinks when there are alerts to be managed (for example, a pending alarm).
- Pending Alerts: Number of the non-managed alerts.



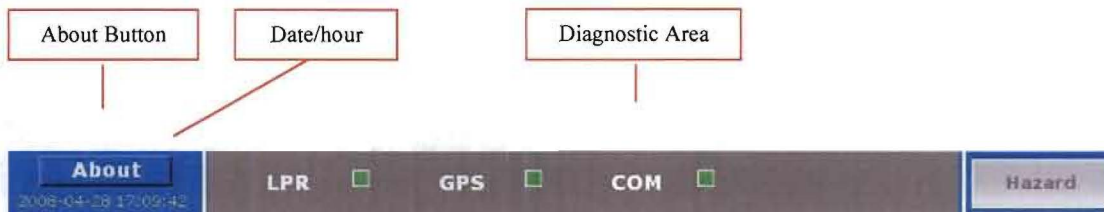
- Close button : Closes the Graphic User Interface.
- Minimize button : Minimizes the application as an icon on the taskbar.

The central section contains buttons to start the applications.

In the figure below, there is an example with the following applications installed:

LPR – License Plate Reader  
 GPS – GPS Localization;  
 COM – Radio Communication;  
 AMC–Account Management Control.

The bottom section contains the diagnostics of the system status:



Date/Time: (Date/time as per PC clock).

Diagnostic Area (for all configured services/devices): The diagnostic shows three basic statuses to help user's troubleshooting.

The status is described with the following colors:

|  |         |                                                                                                  |
|--|---------|--------------------------------------------------------------------------------------------------|
|  | Grey:   | The device/process is disabled.                                                                  |
|  | Green:  | The device/process is active and working normally.                                               |
|  | Yellow: | The device is connected but paused;<br>This status may also mean that the device is starting up. |
|  | Red:    | The device is not connected or in fault.                                                         |

**Note: While the system starts up all the status icons are grey.**

Hazard button : This button is activated only if the long range radio communication is integrated in the system (Cellular communication). By pressing this button, a panic message is sent to Operations Center. If the long range communication is not installed, this button is disabled and appears as a grey button.

About button : By selecting this button a Message Box is shown with the version of the software installed on the Car System.

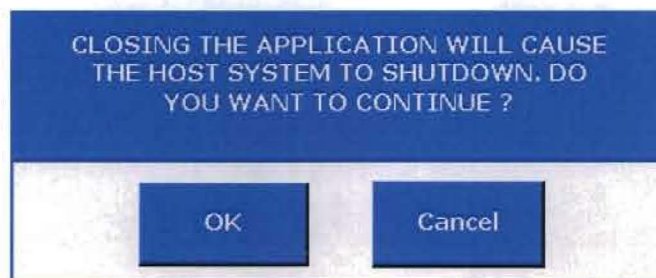
To close the Car-System application press the “Close Button” .

When the user pushes the Close button, the following Message Box is displayed asking the operator for confirmation to close the Car System application:





The Cancel button will make the application go back to the preceding window. The Switch User button will make the application return to the login window. By pressing the OK button the application will proceed to shut down and, if the application is configured to shutdown the PC hosting the services, the following message box will be displayed.



By pressing the OK button the PC (Windows XP) will shut down. Pressing the Cancel button will cause only the application to close.

By pressing the "Minimize button"  the application will be minimized and an icon will be present on the taskbar.

The user can restore the application by selecting the icon on the taskbar (or with the Alt+Tab keystroke).

**It is also possible to close the application with the Alt+F4 keystroke.**

## 2 License Plate Reader function

### 2.1 LPR – License Plate Reader – main window

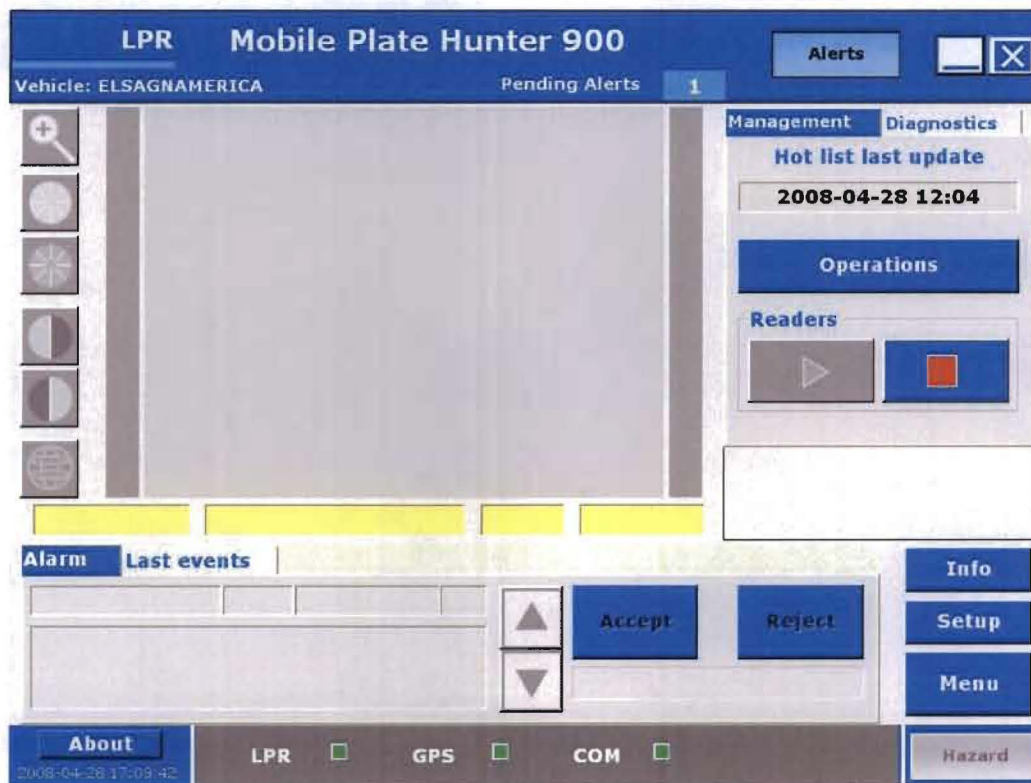


Fig. 2.1: Main LPR window

The main LPR Screen provides a number of different controls and indicators described below.

Transit/Alarm Image



**M-00**

**AZ313KH**

**I**

**11:26:48**

Camera  
Code/Alias

Plate

State/  
Country

**Fig. 2.2 Reads/Alarms View Area**

| Field / Function           | Description                                                                                                                                        |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transit/Alarm Image</b> | The image of the current Read or Alarm. Clicking on it, if the AD3 dual sensor camera is used, the panoramic color image is presented.             |
| <b>Camera Code/Alias</b>   | The code or alias of the camera which has detected the read or the alarm. The background color changes from yellow (normal reads) to red (alarms). |
| <b>Plate</b>               | The plate of the current Read/Alarm.                                                                                                               |
| <b>State/Country</b>       | The State/Country of the current Read /Alarm. A “?” means no state has been detected or state recognition function is not enabled.                 |
| <b>Transit/Alarm Time</b>  | The time stamp of the transit/alarm in the format Hour:Minute:Second.                                                                              |
| <b>Colored Sidebar</b>     | Blinking sidebars showing the side of the read if only two cameras have been configured.                                                           |



### 2.1.1 Colored Sidebars

Colored Sidebars are present at the lateral sides of the displayed image, their colors change to distinguish among reads, alarms or live images.

When the system is configured with only two cameras M-00 and M-01 (in association with elaboration unit ID=00000 and 00001) a direction arrow will be present and it identifies which camera (right=M-00, left=M-01) has read the license plate.

| SIDE BARS | Colors                                                                             |                                                                                                                                                                                                                                                                                                |
|-----------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |   | <p><b>Green</b> –Normal Read: if the displayed license plate is NOT present in the hot list it remains green until the next read</p> <p><b>Red</b> – Alarm: the displayed license plate is present in the hot list.</p> <p><b>Blue</b> – Live: the live function of the camera is enabled.</p> |
|           | Arrows Direction                                                                   |                                                                                                                                                                                                                                                                                                |
|           |  | <p><b>Right:</b> M-00 camera transit/alarm</p> <p><b>Left:</b> M-01 camera transit/alarm</p> <p>Note: the color in the bars changes as described above</p>                                                                                                                                     |

### 2.1.2 Overview Camera

The overview camera function is an optional feature of the system that provides a color image for each read or alarm.

It consists of an additional color image coupled with the B/W image which acquires a wider angle image (panoramic view) than the B/W and allows the user to see more details in the scene (e.g.: car type, color etc.).

### 2.1.3 Plate ambiguities

|     |                                                                                                                                                                                                                                                                   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [ ] | The presence of characters in brackets means that there are ambiguities in the string interpretation: CD37[0D]BF means that the third character may be either a 0 or a D. Usually both the possible strings CD370BF and CD37DBF are matched against the Hot list. |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





## 2.2 LPR-Alarm Management

When the MPH900 detects a License Plate that is in the hot list, an audible and visual alarm shows the presence and location of the alarm. This alarm can be accepted by the operator by pressing the **Accept** button whenever the actual plate matches the Hot List information, including the State. Otherwise, the operator can reject the alarm by pressing the **Reject** button. Rejected alarms are still stored, but are marked differently for after-action reporting. Typical reasons for rejecting an alarm are state mismatch or a bad plate read. The Reject could also be used to avoid duplicated alarm entries, in cases when the same alarm is hit more than once.

The Operator can zoom and adjust the image to view details.



**Note that the Tools Panel above is only active in Alarm Management Mode. That is, you can only zoom and adjust Alarm images.**

The message from the Hot List is displayed in the Alarm note box. This note is created when the Hot List extract is performed and can be general ("STOLEN VEHICLE!") or specific ("Warrant for registered Owner – John Public, 6'0" White male, ...") based on the available information.

The State displayed during an alarm represents the State that applies to that alarm/plate record.





As mentioned earlier, when an alarm is active, the zoom and image enhancement icons become active, allowing the operator to verify the plate and manipulate the image to gather information about the target vehicle.

The **Alarm** Panel shows the details of the detected plate string:

### 2.2.1 Alarm Image Controls

The commands of this section allow the user to improve the image brightness, zoom and contrast when an **alarm** occurs.

| Function          | Icon                                                                                | Description                                                   |
|-------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>Zoom</b>       |    | Zoom + : to magnify the plate area or increase map details    |
|                   |    | Zoom - : to show the full image of alarms or decrease details |
| <b>Brightness</b> |   | Brightness + : to increase the image's brightness             |
|                   |  | Brightness - : to decrease the image's brightness             |
| <b>Contrast</b>   |  | Contrast + : to increase the image's contrast                 |
|                   |  | Contrast - : to decrease the image's contrast                 |

### 2.2.2 Zoomed Plate Area

The license plate read is automatically enlarged and displayed for better viewing



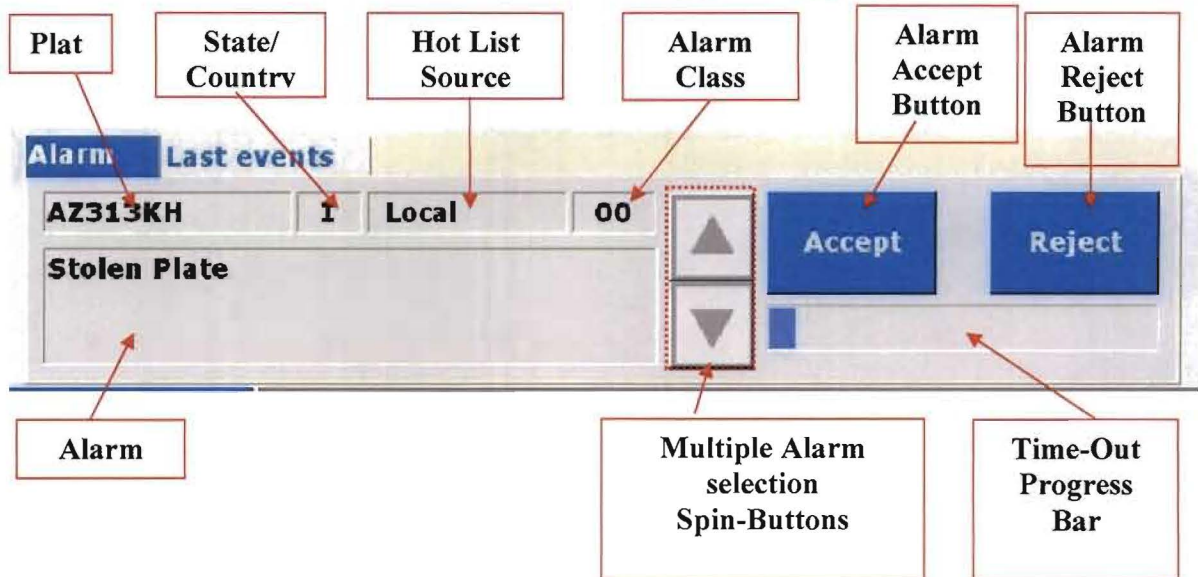
This feature is useful to check the plate at a glimpse without searching for it in the image.

### 2.2.3 Alarm Panel

The panel reports details of the license plate in alarm:

# MPH900™

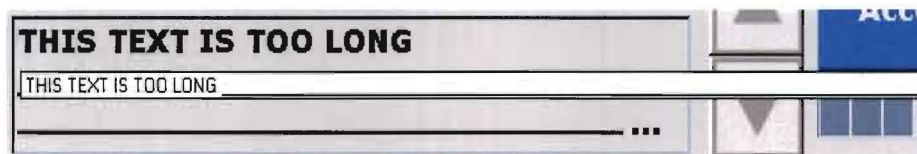
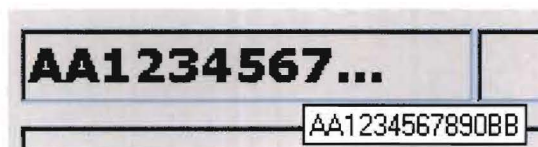
Mobile Plate Hunter 900 Series



| Field / Function                             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Plate</b>                                 | The plate of the current alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>State/ Country</b>                        | The State/Country of the current alarm detected.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hot-list Source</b>                       | Hot list that has generated the alarm.<br>A name indicates that the alarm has been generated by a match with a record in the specified hot list.<br>“Local” indicates that the alarm has been generated by a match with a record in the local user defined hot list.<br>“External” indicates that the alarm has been generated by a match with a record in the external hot list (loaded manually from a flash drive or automatically from a wirelessly connected Operations Center) |
| <b>Alarm Class</b>                           | Specifies the class of alarm associated with the plate (0-5).                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Alarm Note:</b>                           | Note associated with the license plate coming from the Hot List                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Alarm Accept Button</b>                   | Button to accept the displaying alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Alarm Reject Button</b>                   | Button to reject the displaying alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Multiple Alarm Selection Spin-Buttons</b> | Buttons to select among multiple alarms.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Time-Out Bar</b>                          | Progress bar time-out for accepting alarm by user.                                                                                                                                                                                                                                                                                                                                                                                                                                   |



If the plate, hot list source, or note, exceeds the visualized characters, the string is truncated and 3 dots are present. A tool-tip containing the entire string can be displayed by putting the pointer over the plate, hot list source, or note,



#### 2.2.4 Alarm Time-Out

The Acceptance Timer allows the user to identify a valid alarm or to reject an alarm for reasons such as state mismatch or incorrect plate reading. Both the accepted and rejected alarms are stored, but marked appropriately for after-action reporting. If the operator fails to respond within the Acceptance Period (about 3 minutes), the system times out and saves the alarm for processing at the Operations Center.

A progress bar at the bottom right of the display area shows the elapsed time; if the user fails to respond within the acceptance period a message-box is displayed. The alarm is **always** saved for further analysis.





## 2.2.5 Alarm with Multiple Choice

The system can read plates but is not always able to associate the state. If the hot list contains the same plate (e.g. the same sequence of letters and numbers) but from different states (e.g.: [ABC123, CO], [ABC123, AZ], [ABC123, NV]), the system generates an alarm and presents the various plate/state alternatives. The user can examine the different choices by means of the spin buttons  in order to select the right one.

In the example below, the same plate “AZ313KH” is present in the hot lists with two different “State” options, **I** (a) and **S** (b). The system is unable to associate the correct State/Country, in fact the field state in the Read/Alarm view area is set to “?”.



a



b

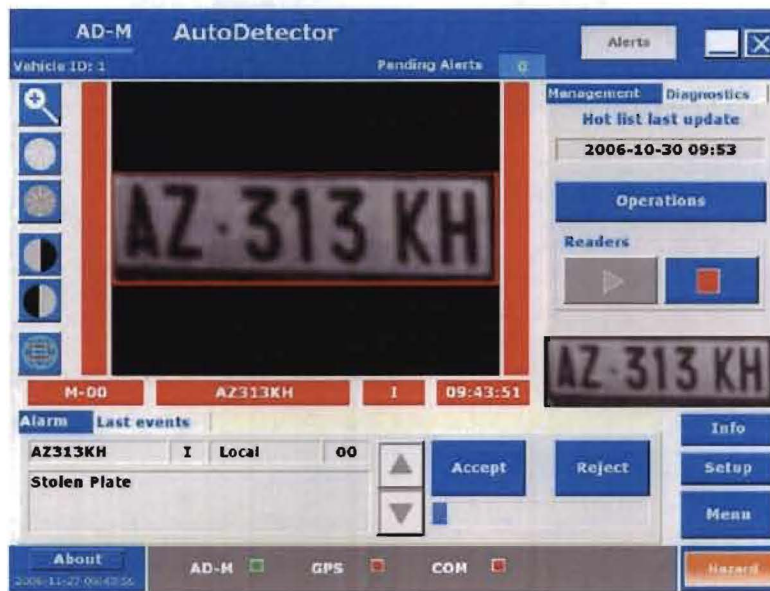
In this case the user can see the two different alarm descriptions by pressing on the up and down arrows and selecting the right one in accordance to the image displayed on the screen.





### 2.2.6 Zoom Button

Every time an alarm goes off, the alarm image controls become active. This feature allows the user to enlarge the image in order to focus on the area of interest and enhance the image quality.



### 2.2.7 Alarm Class

The system is able to manage up to 5 different alarm classes plus the standard default alarm (Class 0).

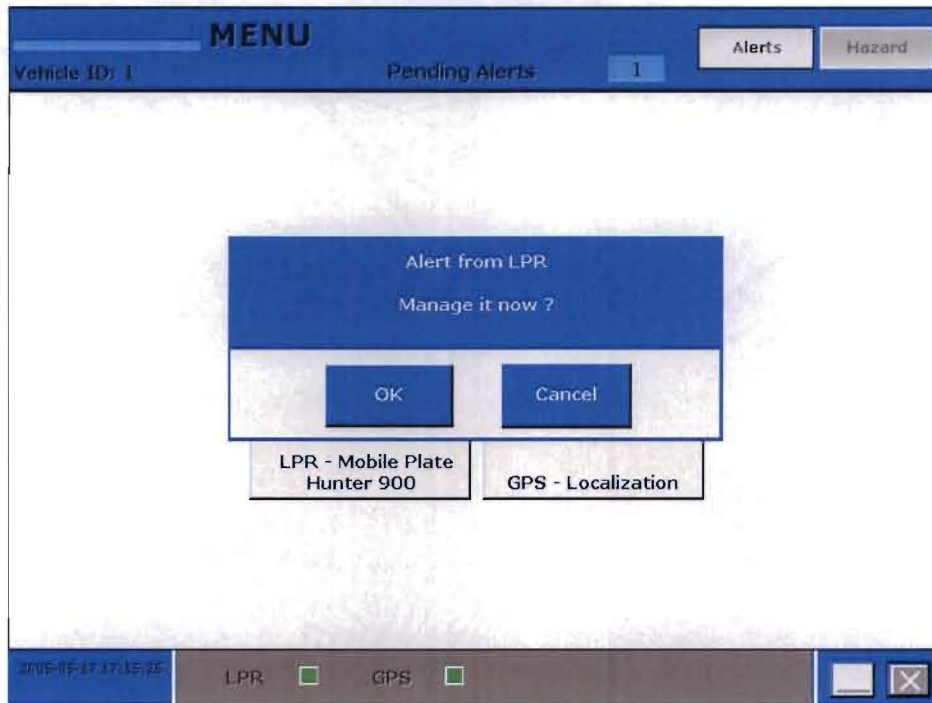
Each alarm class is associated to a customizable sound (.wav) making it possible to differentiate the level of user's attention.

This is the default Class specification:

| Class | Alarm ID          | Alarm sound file | NYSPIN Id |
|-------|-------------------|------------------|-----------|
| 1     | STOLEN VEHICLE    | Stolen2A.wav     | V         |
| 2     | WANTED PERSON     | Wanted2A.wav     | W, M      |
| 3     | STOLEN PLATE      | stolen_plate.wav | P         |
| 4     | SUSPENDED REVOKED | SUSPENDED2A.wav  | X (S)     |
| 5     | SCOFFLAW          | Scof2a.wav       |           |
| 6     | STOLEN OUT STATE  |                  | V         |
| 7     | VIOLENT GANG      |                  | T         |
| 8     | SEXUAL OFFENDER   |                  | S         |
| 9     | OTHER             |                  | C, H, N   |
| 10    | TAX SCOFFLAW      |                  |           |

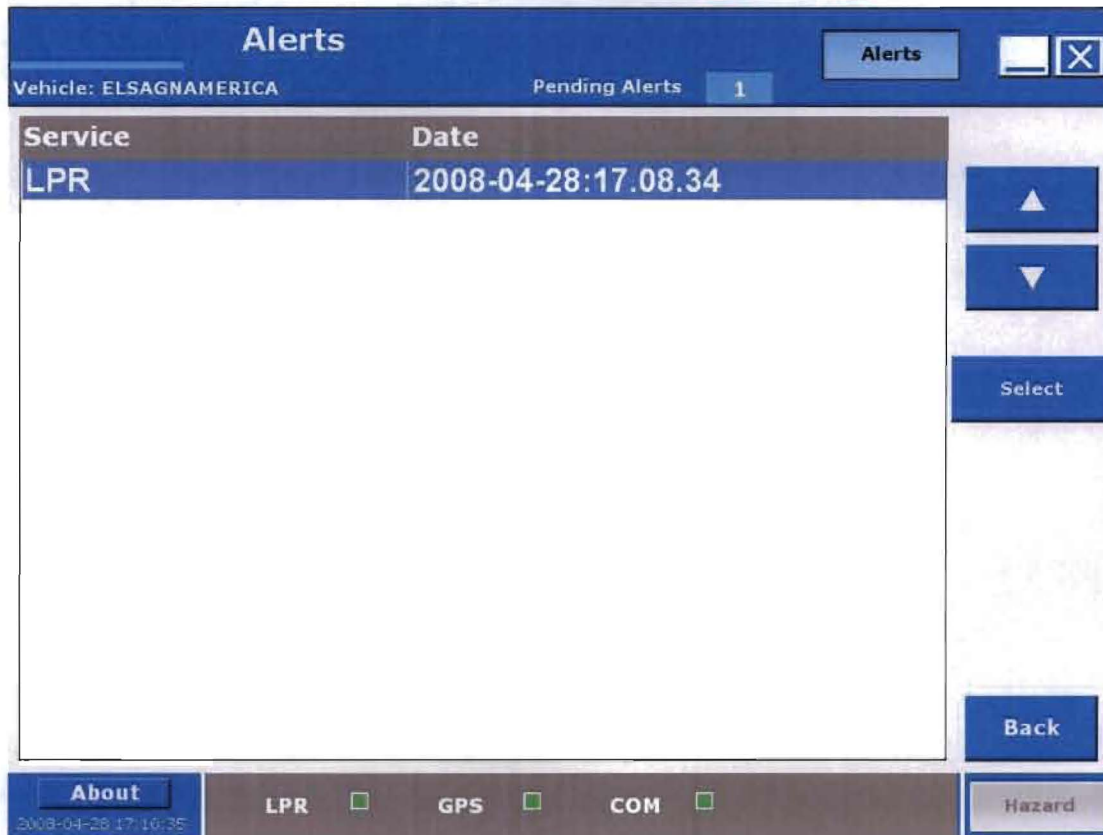
### 2.2.8 Delayed Alarm

If an Alarm goes off while the LPR main window is closed, for example, while you are viewing GPS status or running another program, a dialog box appears.



If you select **OK**, you return to the main LPR window and you can Accept or Reject the alarms. If you select **Cancel** you remain in the current window and the alarm management is postponed. The Pending Alerts counter is incremented as shown above.

If the operator wants to manage a pending alarm, it is also possible to press the **Alerts** pushbutton. The following window is displayed.



By selecting the alarm row, it is possible to open the LPR main window and manage the pending alarm.

### 2.2.9 Geofencing Alarm

A Geofencing alarm is a special kind of alarm that goes off when two conditions are met at the same time:

- We have a match in a specific class of the hot list associated to Geofencing related license plates
- The match happens within a specified area (called virtual fence) according to the GPS read.

The typical application is the protection of school areas from registered sexual offenders; also the function can be used to enforce restriction orders related to a specific house or location.

When the alarm is generated on a virtual-fence violation, and the map has been installed, this button becomes active (Fig. 2.3)



Fig. 2.3 – Virtual fence map button



**Fig. 2.4 – Geofencing alarm**

Before accepting the alarm, press this Virtual-fence map button to switch to cartography and check the position of the alerted plate inside the forbidden area. The virtual fence is enclosed in a red rectangle.

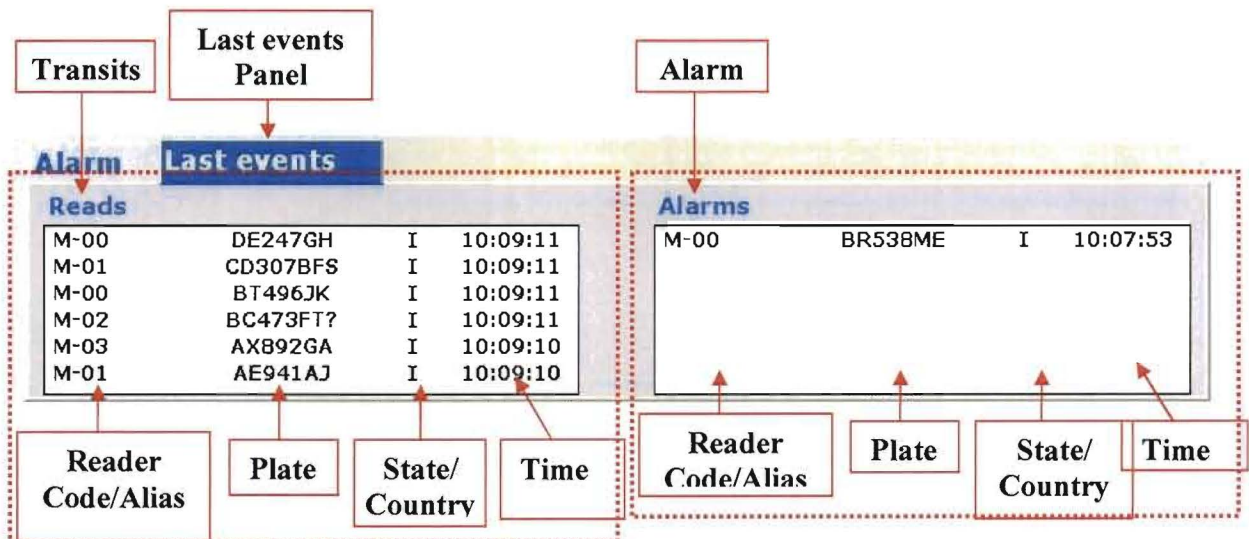




Fig. 2.5 – Geofencing alarm display

### 2.3 LPR – Last Events Panel

The “Last Events Panel” is divided in two sections: Reads and Alarms.  
The section on the left displays the last 6 reads and the right displays the alarms (if any)<sup>1</sup>.  
For each alarm/read the information of reader code/alias, plate number, state and the timestamp are shown.  
The window is continuously updated even during alarm handling.  
The LPR activity is associated to an audio “Read beeping sound” emitted, if enabled, after each completed read.



Double-clicking on an alarm present in the alarms section allows you to switch to the Report result panel.

<sup>1</sup> If the user closes the LPR window and returns to the Main menu, the last reads table is reset and begins to fill again as new plates are read.

## 2.4 LPR – Camera Management

This Section allows the user to enter the operations menu and turn on/off the plate reader. The Operations menu allows the user to look up the read and alarm database and to manage the external and local hot lists. This menu will be described in Section 2.7.

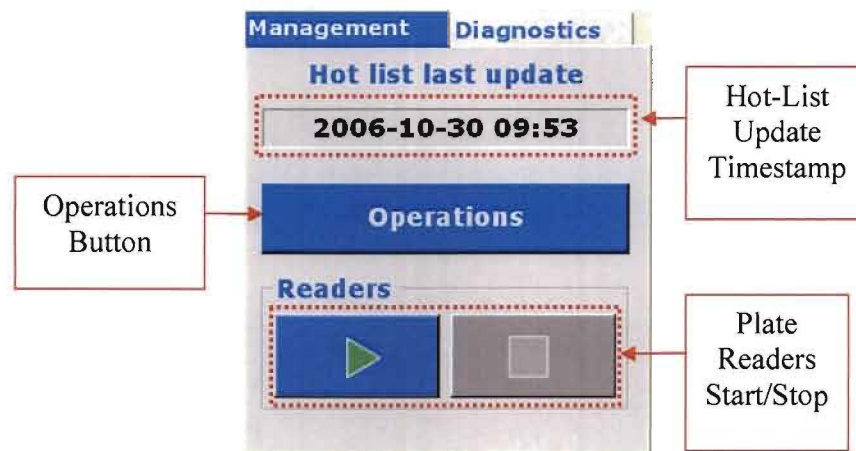


Fig. 2.6 – Management area

### 2.4.1 List Update Info

The date below “Hot list last update” shows the latest **External hot list** update. If the Hot list is not available or empty the field displays “--/--/-- --:--”. Clicking on the “Hot list last update” field displays the message box in Fig. 2.7, showing all the available information about the Hot List.

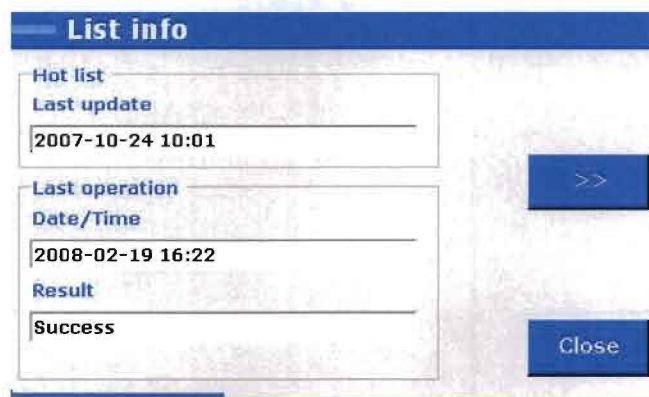


Fig. 2.7 – Hot List info

See Table 2.1 – List info descriptionfield/functions along with description.

| Field / Function | Description                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Last update      | The date and time when the last update occurred.                                                                                                                                    |
| Last operation   | The date and time when the last operation occurred (may coincide with Last update). This means the last time when the system checked for a new Hot List with the Operations Center. |
| Result           | The result of the last operation (Replace/Update/Skip/Failed). Skip means that the currently loaded Hot List is up to date.                                                         |
| >> or <<         | Toggle between Hot List and Fence information box.                                                                                                                                  |
| Close            | Closes the Info box.                                                                                                                                                                |

**Table 2.1 – List info description**

By pressing the button “>>” the message box in Fig. 2.8 is displayed, showing all the available information about the Fence List. This is the geographical description of the location protected by the Geofencing function. This can be generated and sent by the Operation Center similar to the Hot List.

**Fig. 2.8 – Fence List info**

When the Long Range Communication is enabled and a Hot List update is in progress the "In Progress" string appears in the date field (Fig. 2.9).

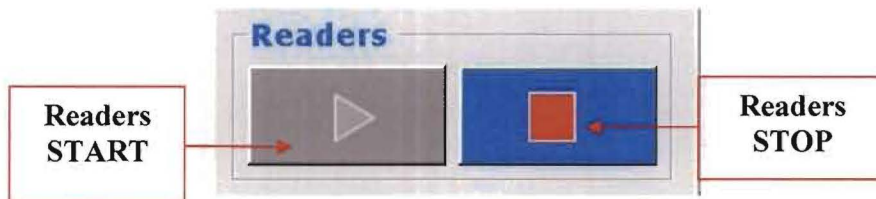
**Fig. 2.9 – Long Range updating**





#### 2.4.2 LPR Cameras Control

The plate readers can be controlled through the start/stop buttons as shown in Fig. 2.10.



**Fig. 2.10 – Start/Stop reader**

By pressing the “**Readers Start**” button all the configured cameras are set to reading mode. By pressing the “**Readers Stop**” button all the cameras are stopped.

The pressed button, Start or Stop, becomes disabled (grey); referring to Fig. 2.10 the reader is in “Start” condition.

When all the LPR cameras are stopped the LPR status indicator changes from green to yellow.

## 2.5 LPR – Diagnostics

The “Diagnostic” tab on the upper right of the interface brings the user to the Camera Diagnostics area.

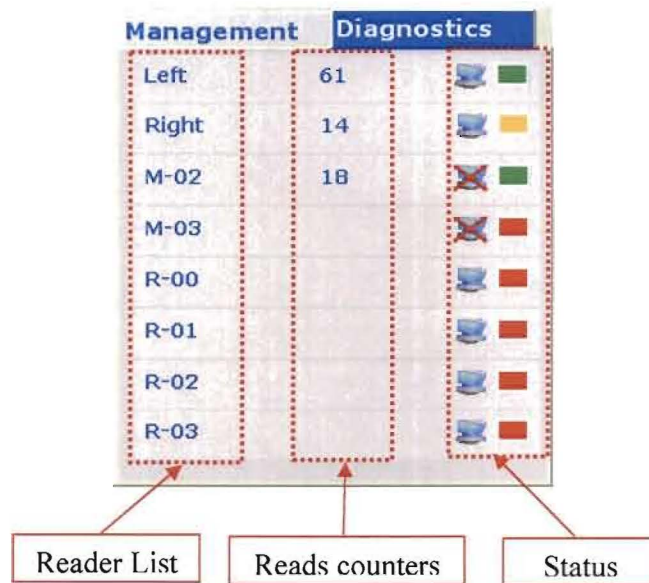


Fig. 2.11 – Diagnostic panel description

| Field / Function |        | Description                                                                                                                                               |                                                                                                                   |
|------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Reader List      |        | This section contains the list of all readers configured in the system; up to 8 readers can be present. Each reader is identified by a user-defined name. |                                                                                                                   |
| Reads counters   |        | This section shows the reads counted per LPR camera                                                                                                       |                                                                                                                   |
| Status           | View   |                                                                        | The transit/alarm images coming from the corresponding reader are displayed.                                      |
|                  |        |                                                                        | The images of transit coming from the corresponding reader are not shown. Alarms are always active and displayed. |
|                  | Reader |  <b>Green</b>                                                          | The reader is present and active (running).                                                                       |
|                  |        |  <b>Yellow</b>                                                         | The reader is present, but stopped or in live mode.                                                               |
|                  |        |  <b>Red</b>                                                            | The reader is not present, not functioning or disconnected.                                                       |

Table 2.2 – Diagnostic panel function

### 2.5.1 Live Mode

The Live function allows the user to see live images coming from the selected reader. This feature can be useful during calibration or to check the image quality of each camera.

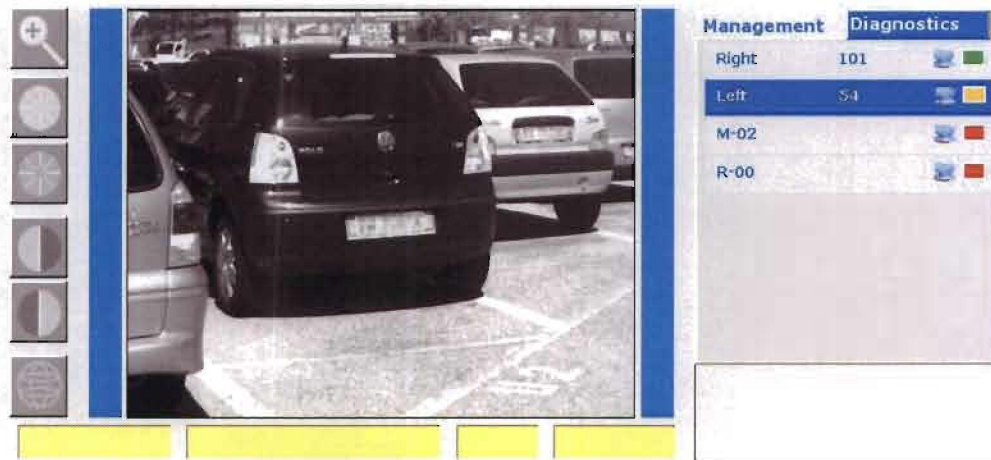
**When a camera is set to Live, active recognition and hot list checking STOP on both cameras until the stop button is pressed, returning the camera to active plate reading mode.**

The user can activate the live function by clicking on the name of the selected reader; the background color of the activated live camera and sidebars changes to blue and the status becomes yellow.

To stop live mode press the selected name again or click on the “Management” tab.

When the color camera is present, by clicking on the displayed image the user can switch between the B/W and the color image.

In Fig. 2.12 the live mode on reader “Left” is active.



**Fig. 2.12 – Live function**

**Note:**

- Only one camera can be “live” at a time.
- Only active readers can be selected.
- When a reader is set to “live” mode, plate recognition and hot list checking on all readers are suspended until the reader is set back to normal mode.

### 2.5.2 Reader Info

By moving the cursor on the status color, a tool-tip box (Fig. 2.13), containing some information on the selected reader, is shown.

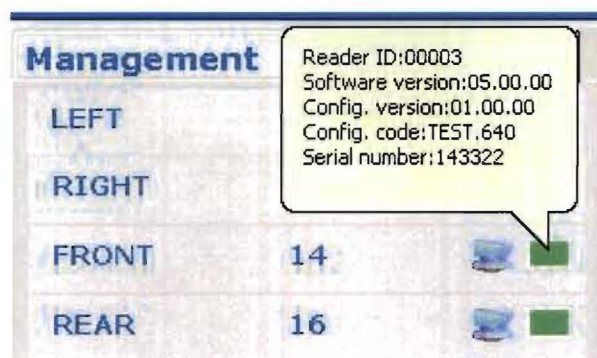


Fig. 2.13 – Reader info Tooltip

By double-clicking on the colored status indicator, a message box (Fig. 2.14) opens, displaying some information regarding the selected reader.

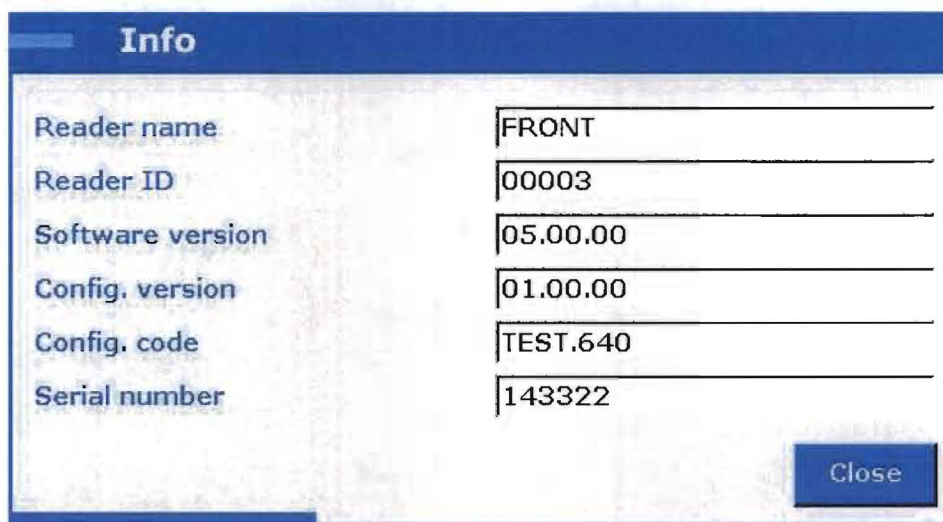


Fig. 2.14 – Reader info

| Field / Function        | Description                                                 |
|-------------------------|-------------------------------------------------------------|
| <b>Reader name</b>      | The default camera name or user defined alias of the reader |
| <b>Reader ID</b>        | The identification number of the reader                     |
| <b>Software version</b> | The version of the software installed onto the reader       |
| <b>ConFig. version</b>  | The version of the configuration installed onto the reader  |
| <b>ConFig. code</b>     | The name of the OCR protocol                                |
| <b>Serial number</b>    | The serial number of the reader                             |

Table 2.3 – Reader info fields

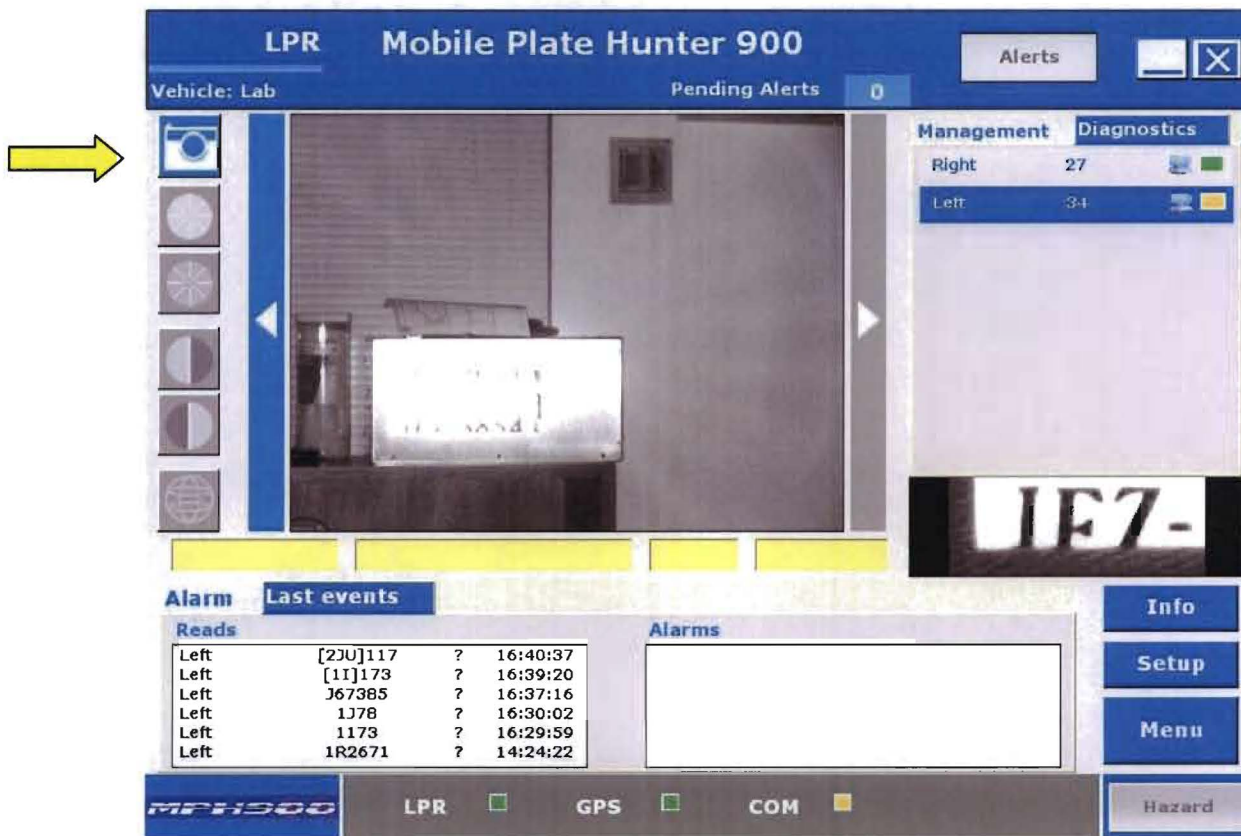




### 2.5.3 How to take a snapshot with the LPR cameras

The purpose of the function is to use the LPR cameras as normal digital cameras and to take snapshots of the scene in the camera field of view.

You have to select the Live mode by clicking on the camera status indicator under the Diagnostic tab. Then you can select either the color or the B/W image clicking directly of the live image feed area. When ready, hit the camera icon on the top left to freeze the frame.



You can then retrieve your pictures in JPG format from the Data Export folder defined in the setup phase. The installation setup default is C:\DataExport.

## 2.6 LPR – Other controls



Fig. 2.15 – Application buttons

### 2.6.1 Info Button

The **Info** button shows information about the software and configuration version installed (Fig. 2.16).

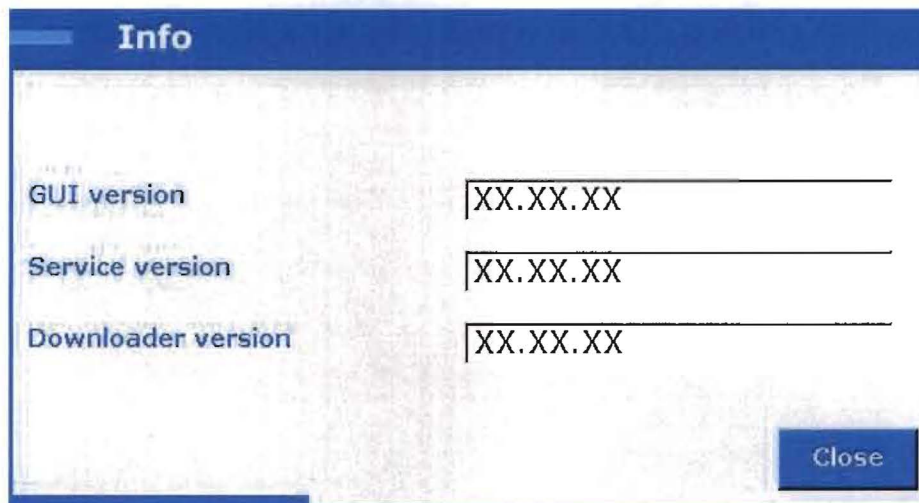


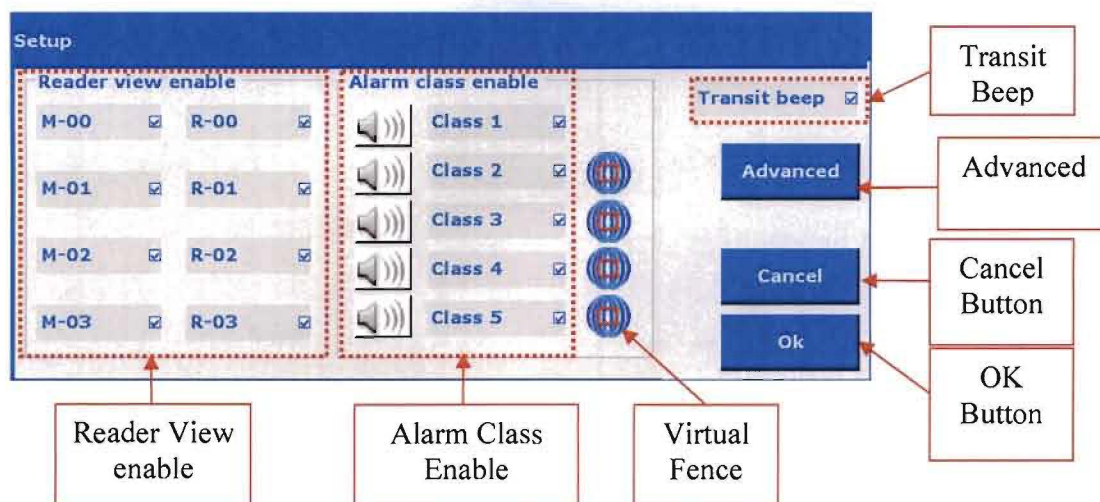
Fig. 2.16 – Info panel

| Field                     | Description                           |
|---------------------------|---------------------------------------|
| <b>GUI version</b>        | Software version of the CarSystem GUI |
| <b>Service version</b>    | Service software version              |
| <b>Downloader version</b> | Downloader software version           |

Table 2.4 – Info fields

### 2.6.2 Setup Button

The Setup button opens the configuration panel shown in Fig. 2.17



**Fig. 2.17 – Setup panel**

| Function                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Alarm class enable</b> | To enable/disable the alarm class sound.<br>Check <input checked="" type="checkbox"/> to enable.<br>If the alarm is disabled, all the alarms of that class will be silent. They will still be sent to the Operations Center, but no real-time notification will go off on-board.<br>Default start condition is Enabled for all the classes.<br>Click on the  button to preview the configured sound for that level. |
| <b>Virtual Fence</b>      | The globe  indicates that the class is associated with a virtual fence. See Section 2.2.9 for more details.                                                                                                                                                                                                                                                                                                         |
| <b>Transit beep</b>       | To enable/disable the sound generate at each read.<br>Check <input checked="" type="checkbox"/> to enable.<br>The default start condition is sound enabled.                                                                                                                                                                                                                                                                                                                                            |
| <b>Reader View enable</b> | To enable/disable the view of transits of the corresponding reader.<br>Check <input checked="" type="checkbox"/> to enable.<br>The grayed reader means that it is configured but disabled; to enable, enter “Advanced” Menu.                                                                                                                                                                                                                                                                           |
| <b>Advanced Button</b>    | To enter “Advanced” menu to change configuration settings.<br>See 2.6.3 for more details.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Cancel Button</b>      | To close the panel without changing the previous settings.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>OK Button</b>          | To close the panel acquiring the new settings (if any).                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**Table 2.5 – Setup functions**

### 2.6.3 Advanced Menu

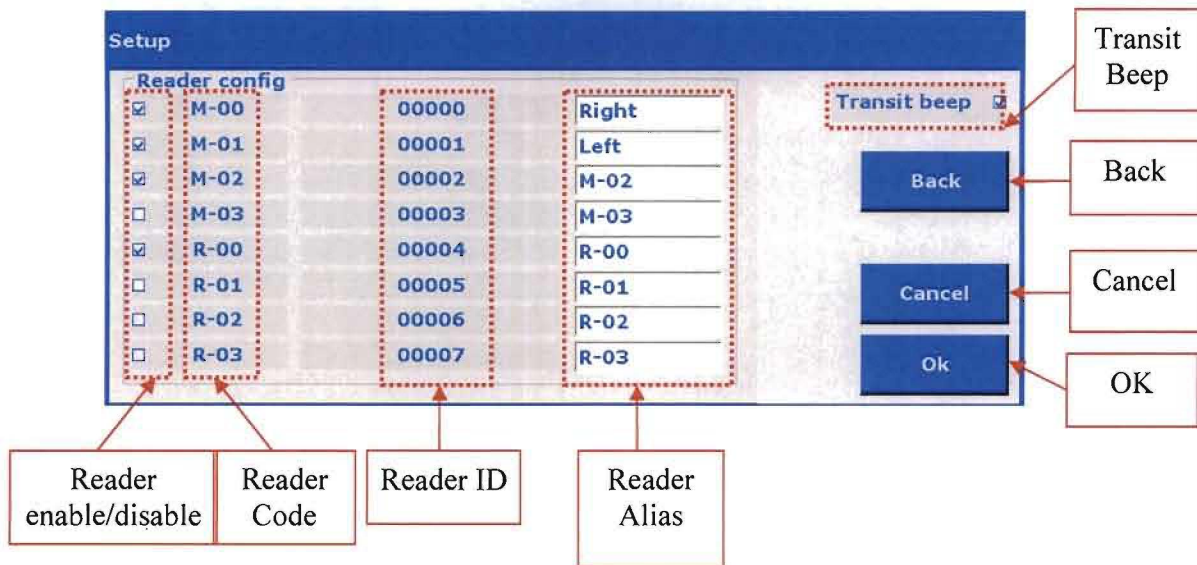


Fig. 2.18 – Advanced Setup

| Function                     | Description                                                                                                                                                                            |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transit beep</b>          | To enable/disable the sound generated at each read.<br>Check <input checked="" type="checkbox"/> to enable.                                                                            |
| <b>Reader enable/disable</b> | To enable/disable reader.<br>Check <input checked="" type="checkbox"/> to enable.<br>The disabled reader will be unavailable and no longer in the reader list in the Diagnostic panel. |
| <b>Reader Code</b>           | The internal code of the reader.                                                                                                                                                       |
| <b>Reader ID</b>             | The identification number of the reader. This is embedded in the LPR camera and cannot be changed.                                                                                     |
| <b>Reader Alias</b>          | A mnemonic name of the reader. The user can change the default name with a new one (up to 6 chars). This will be the alias referring to the reader shown for transits and alarms.      |
| <b>Back Button</b>           | To return to Setup panel.                                                                                                                                                              |
| <b>Cancel Button</b>         | To close the panel without changing the previous settings.                                                                                                                             |
| <b>OK Button</b>             | To close the panel acquiring the new settings (if any).                                                                                                                                |

Table 2.6 – Advanced Setup

### 2.6.4 Menu Button

This button closes the LPR application and returns to Main window menu.





## 2.7 LPR – Operations - Hot List Management

This area allows the operator to manage the Hot List and check a plate against the list manually.

When the **Operation** button is pressed, the screen below is shown. The following pushbuttons are available:

- **Search** - Search for a Plate in the Hot List
- **Insert** - Insert a Plate into the Hot List
- **Delete** - Delete a Plate number from the Hot List
- **Delete Local Hot List<sup>2</sup>** - Delete the temporary **Hot List**, made up of plates manually inserted by the Operator
- **Close** - Close the window and returns back to the LPR window.

<sup>2</sup> The Temporary Hot List is the set of plates entered manually since the last external hot list update. An operator may choose to delete the Temporary Hot List at the end of a shift, thereby removing all the temporary plates.

| Field / Function               | Description                                                                                                                                                                                                                     |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Function Tabs</b>           | To select one of these tabs <ul style="list-style-type: none"> <li>• Hot list</li> <li>• Hot list results</li> <li>• Reports (if enabled)</li> <li>• Report results (if enabled)</li> <li>• Cartography (if enabled)</li> </ul> |
| <b>Plate Field</b>             | Field where to input the plate string; see Table 2.8 for allowable characters                                                                                                                                                   |
| <b>Note Field</b>              | Field for the insertion of a note associated to the wanted plate (not mandatory) and set the alarm level                                                                                                                        |
| <b>State/Country Selection</b> | To select a State/Country from the list using drop-down menu or spin-buttons                                                                   |
| <b>Search Button</b>           | To search the specified string in the hot lists                                                                                                                                                                                 |
| <b>Insert Button</b>           | To insert the specified plate into the Local hot list                                                                                                                                                                           |
| <b>Delete Button</b>           | To delete the specified plate from the Local hot list                                                                                                                                                                           |
| <b>Local HL Delete Button</b>  | To delete the entire Local hot list                                                                                                                                                                                             |
| <b>Caps Lock Key</b>           | To toggle the alphabetic keys between capitol and small letters                                                                                                                                                                 |
| <b>Space Bar Key</b>           | To insert a blank space                                                                                                                                                                                                         |
| <b>Special Characters Key</b>  | To toggle between alphabetic and symbols ( returns to alphabetic after each symbol pressing)                                                                                                                                    |
| <b>Backspace Key</b>           | To erase one character at the right of the cursor                                                                                                                                                                               |
| <b>Cursor move Keys</b>        | To move the cursor in the direction of the arrows                                                                                                                                                                               |
| <b>Close Button</b>            | To close the Operations panel                                                                                                                                                                                                   |

**Table 2.7 – Hot list functions**

The Temporary Hot List is composed by all the plates inserted from the Car System interface through the Insert button. The External Hot List is the one downloaded at the beginning of the mission. The External Hot List can't be deleted from the Car System user interface.

Table 2.8 specifies the characters that can be entered in the Plate field

| Character | Description                                                                                                                                                      |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A÷Z       | Alphabetic characters                                                                                                                                            |
| 0÷9       | Numeric characters                                                                                                                                               |
| ?         | Special character which means any alphanumeric chars (A-Z and 0-9).<br>Only one '?' can be inputted in the string and it can be in any position (e.g. AB?23CD ). |

**Table 2.8 – Plate allowable characters**

If an invalid character is inserted the following message-box is displayed.



**Figure 2.19 – Invalid character message**

### 2.7.1 Search – Plate Search

This command performs a search for the specified plate in both the **Local** and **External Hot list**.

- Insert the string of the plate to be searched [Plate field]
- Select the Country/State using the drop-down list or the spin buttons [State/Country Selection]
- Press “**Search**” button

Using “?- **ALL STATES**” in State/Country all plates that match the plate string are included in the result.

To speed up the search operation, the user can press (after the insertion of the plate) the “**Enter**” key while the focus is on the “Plate” or “State” field. The Enter key is equivalent to the Search button in this context.



When the command is executed, one of two message-boxes (Fig. 2.20a-b) is shown.

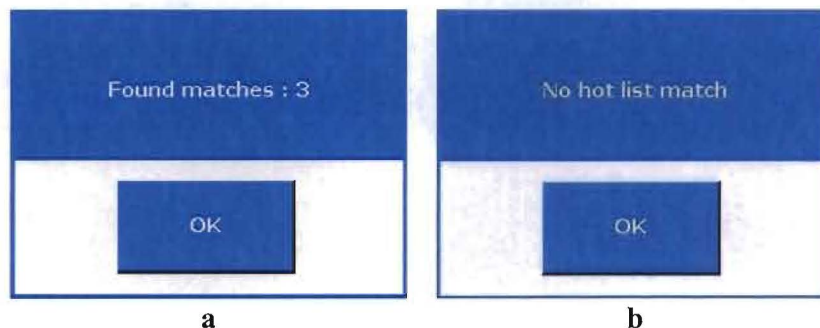


Fig. 2.20 – Search result messages

### Plate Found

The message-box in Fig. 2.20-a is shown if one or more plates are found and indicates the number of hits.

Clicking on “OK” the system presents the “Hot list panel results”.

### Plate not Found

If the searched plate is not present in Hot lists the message-box in Fig. 2.20-b is displayed. Clicking on “OK”, the system returns to “Hot list” panel (Fig. 2.6).

## 2.7.2 Hot List Search Results

Clicking on tab “Results”, after a search with at least 1 plate found (see Section 2.7.1), the panel in Fig. 2.21 is displayed.

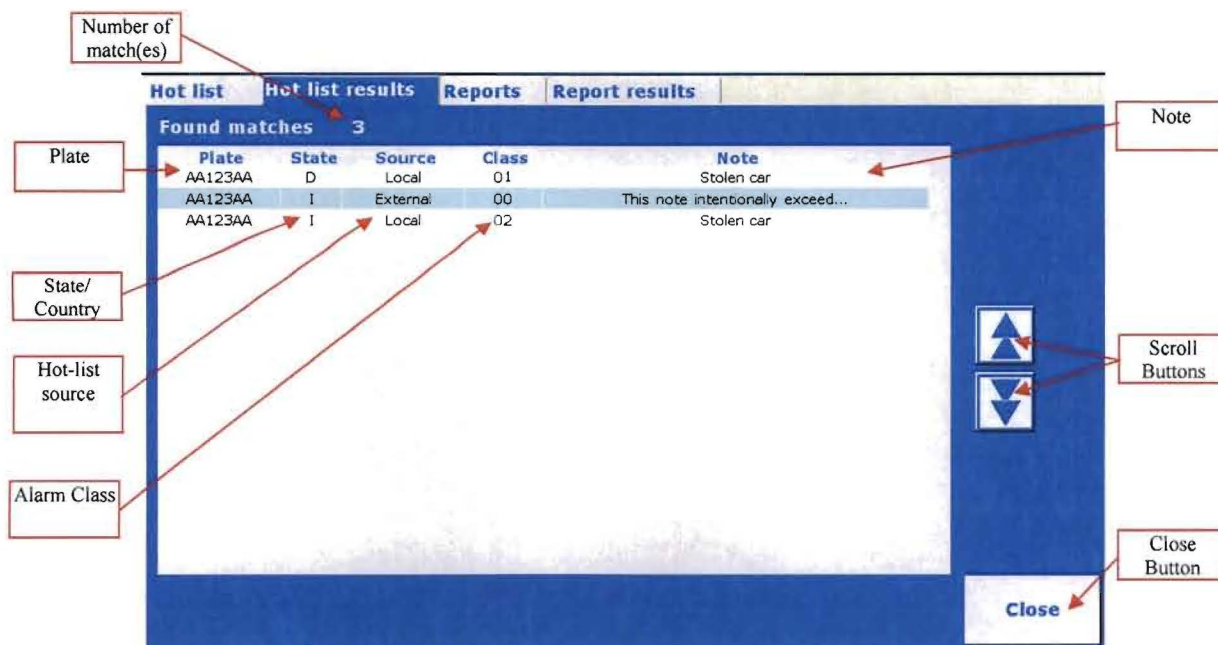
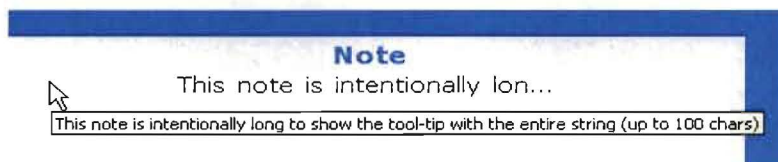


Fig. 2.21 – Hot list results panel



| Field / Function               | Description                                                                                                                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Plate</b>                   | The plate searched for.<br>It is possible to find the same plate twice, one in Local and the other in the External Hot list.                                                                                                                                                                    |
| <b>State/Country Selection</b> | The Origin State(s) or Country(ies) of the searched plate.                                                                                                                                                                                                                                      |
| <b>Hot-list source</b>         | It indicates in which list the plate is present:<br>Name of the hot list owner (e.g. "NYPD"), "External" if the list has no name or "Local" for the on board list.                                                                                                                              |
| <b>Alarm Class</b>             | It specifies the class of alarm associated with the plate (0-5).                                                                                                                                                                                                                                |
| <b>Note</b>                    | The note linked to the plate.<br>When the note is too long the field cannot show the entire string and it will be truncated. When this happens 3 dots will be present; a tool-tip containing the entire string will be displayed (Fig. 2.22); however, the string cannot exceed 100 characters. |
| <b>Scroll Buttons</b>          | To scroll the list up  or down                                                                                                |
| <b>Close Button</b>            | To close the Operations panel                                                                                                                                                                                                                                                                   |

**Table 2.9 – Hot list Results Function**



**Fig. 2.22 – Hot list Note tool-tip**

### 2.7.3 Insert – Plate Insertion

This command inserts the specified plate into the **Local Hot list**.

- Insert the string of the plate to be inserted [Plate field]
- Select the Country/State using the drop-down list or the spin buttons [State/Country Selection]
- Insert a note (optional) [Note field ]
- Press "**Insert**" button

#### **Alarm Class choice**

During the plate insertion procedure the system requires to select the Alarm Class by pressing one button present in the message box (Fig. 2.23).

Up to 5 different alarm classes can be chosen. If you don't want to select a class (standard alarm), press the "Skip" button.

Each alarm class is associated to a customizable sound message (.wav) making it possible to specify the exact meaning of the alarm (Stolen car, Wanted or missing person, etc...).



When selecting a class with an associated “Virtual fence”, the alarm goes off only if the plate is inside the fence area.

Please, select alarm class

|                   |                 |                  |
|-------------------|-----------------|------------------|
| Stolen vehicle    | Wanted person   | Stolen plate     |
| Suspended revoked | Scofflaw        | Stolen out state |
| Violent gang      | Sexual offender | Other            |
| Tax scofflaw      |                 | default          |

**Fig. 2.23 – Alarm Class choice**

If insertion succeeds, the message-box in Fig. 2.24 is shown.

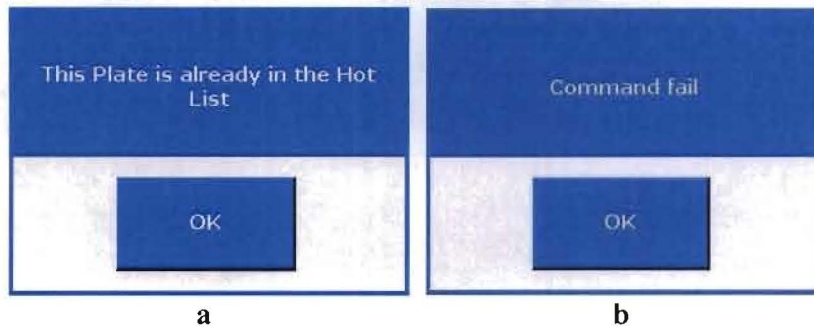
Plate insertion succeeded

OK

**Fig. 2.24 – Insertion succeed message**

If the plate has been previously inserted, the message-box in Fig. 2.25-a is presented. By clicking the “OK” button, the “Retroactive alarms” search box is shown (Fig. 2.26).

If the command fails, the message-box in Fig. 2.25-b is displayed.



**Fig. 2.25 – Insertion result messages**

Whenever a plate is inserted into the current Local Hot list an optional query on all the past reads in the database can be carried out. A dialog-box is presented for confirmation to the user (Fig. 2.26). In case of positive match a table with all the previous reads of the new wanted plates is presented. See chapter 2.8 for more details about results.



**Fig. 2.26 – Search in previous reads**

#### **2.7.4 Delete – Plate Deletion**

This command deletes the specified plate in the **Local Hot list**.

- Insert the plate number [Plate field]
- Select the Country/State using the drop-down list or the spin buttons [State/Country Selection]
- Press “**Delete**” button

Failures occur in the following conditions:

- trying to delete a plate not present in Local Hot list (e.g. wrong State/Country)
- trying to delete a plate already deleted
- trying to delete a plate in External Hot list

#### **2.7.5 Delete Local Hot list**

This command deletes the complete Local Hot list.

To execute the command follow these steps:

- Press the button “**Delete local hot list**”
- A message-box in Fig. 2.27 is presented
- To confirm the deletion of the entire Local Hot list, press “**OK**”, otherwise press “**Cancel**”



Fig. 2.27 – Local hot list delete message

When the command has been executed, the message-box in Fig. 2.28 is shown



Fig. 2.28 – Local hot list clear message

The Local Hot list is the set of plates entered manually since the last external update. A user may choose to delete the Local Hot list at the end of a shift, thereby removing the plates that have been of interest during the patrol mission.

The life time of **Local Hot list** entries is a configurable value. The default value is usually set to 5 days. After this period, the CarSystem will automatically delete the expired entries.

**Note: The External Hot list cannot be deleted by the user.**

#### 2.7.6 Retroactive alarms

Whenever a new plate is inserted into the current Temporary Hot List an optional query on all the past reads in the database shall be carried out. A Dialog Box shall ask for confirmation to the Operator. In the case of a positive match, a table with all the previous reads of the new wanted plates is presented.



Fig. 2.29 – Search in previous reads





## **2.8 LPR – Operations – Reports and queries**

The OPERATIONS button on the main page opens up the Hot List management functions and the on-board reporting.

The reporting functions are the following:

- **Shift report:** The report contains the total reads, alarms and rejected alarms of the current day. Data is presented as a table, each row containing the total numbers of reads and alarms for each one-hour time interval of the day, from 00 to 11 PM. The last row refers to 23.00 – 00.00.
- **General report:** The report contains the total daily reads and alarms for every previous operations day. This is a multi-page table where each row corresponds to a day. The total number of recorded days is an installation parameter and can be set according to the user needs.

All the previous reads and alarms are stored in the system. The user interface provides means to query and retrieve data and images.

**The reporting and query operations can be utilized even if the MDT/laptop is not connected to the MPH™900 processor.**

**Shift definition.** A Shift coincides with a solar day from 00.00 to 23:59:59

**Statistics definition.** Each statistic record shall include:

- 1) **Reads.** Any actual plate read, including alarms.
- 2) **Alarms.** Accepted (confirmed by the user) alarms by means of the Accept button on the user interface + Time-out alarms (neither confirmed nor rejected)
- 3) **Rejected alarms.** Rejected (false or repeated) alarms by means of the Reject button on the user interface

## 2.8.1 Shift Report

The Shift Report contains the total reads, alarms and rejected alarms of the current day.

Data is presented as a table, each row containing the total numbers of reads and alarms for each one-hour time interval of the day, from 00 to 23 (11 PM). The last row refers to 23:00 – 00:00

| Hour    | Reads | Alarms | Rejected alarms |
|---------|-------|--------|-----------------|
| 00 - 01 | 2276  | 0      | 0               |
| 01 - 02 | 2278  | 0      | 0               |
| 02 - 03 | 2278  | 0      | 0               |
| 03 - 04 | 2276  | 0      | 0               |
| 04 - 05 | 2274  | 0      | 0               |
| 05 - 06 | 2270  | 0      | 0               |
| 06 - 07 | 2269  | 0      | 0               |
| 07 - 08 | 2273  | 0      | 0               |
| 08 - 09 | 1244  | 5      | 7               |
| 09 - 10 | 0     | 0      | 0               |
| 10 - 11 | 0     | 0      | 0               |
| 11 - 12 | 0     | 0      | 0               |
| 12 - 13 | 0     | 0      | 0               |
| 13 - 14 | 0     | 0      | 0               |
| 14 - 15 | 0     | 0      | 0               |
| 15 - 16 | 0     | 0      | 0               |
| 16 - 17 | 0     | 0      | 0               |
| 17 - 18 | 0     | 0      | 0               |
| 18 - 19 | 0     | 0      | 0               |
| 19 - 20 | 0     | 0      | 0               |
| 20 - 21 | 0     | 0      | 0               |
| 21 - 22 | 0     | 0      | 0               |
| 22 - 23 | 0     | 0      | 0               |
| 23 - 00 | 0     | 0      | 0               |

2006-05-26

Hour

Reads

Alarms

Rejected Alarms

Export Button

Back Button

Fig. 2.30 – Shift report panel

| Field / Function | Description                                                                            |
|------------------|----------------------------------------------------------------------------------------|
| Reads            | Number of reads (including Alarms and Rejected Alarms) for the specified hour interval |
| Alarms           | Number of Alarms for the specified hour interval                                       |
| Rejected Alarms  | Number of Rejected Alarms for the specified hour interval                              |
| Export Button    | To save the query result into a file for exporting                                     |
| Close Button     | To close this panel and return to Main Window panel                                    |

Table 2.10 – Shift report functions

## 2.8.2 General Report

The **General report** contains the total daily reads and alarms for every previous operations day. This is a multi-page table where each row corresponds to a day. Fig. 2.31 shows an example of a General Report.

| Date       | Reads | Alarms | Rejected alarms |
|------------|-------|--------|-----------------|
| 2006-05-26 | 19438 | 5      | 7               |
| 2006-05-25 | 54616 | 0      | 0               |
| 2006-05-24 | 18979 | 24     | 6               |

Fig. 2.31 – General report panel

| Field / Function | Description                                                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date             | Year-Month-Day, one day per row                                                                                                                                                                                     |
| Reads            | Number of reads (including Alarms and Rejected Alarms) for the specified day                                                                                                                                        |
| Alarms           | Number of Alarms for the specified day                                                                                                                                                                              |
| Rejected Alarms  | Number of Rejected Alarms for the specified day                                                                                                                                                                     |
| Scroll Buttons   | To scroll page up  or down  to see more pages |
| Export Button    | To save the query results into a file for exporting                                                                                                                                                                 |
| Close Button     | To close this panel and return to Main Window panel                                                                                                                                                                 |

Table 2.11 – General report functions



### 2.8.3 Queries

It is possible to query the database of reads/alarms. The search input fields shall be:

- 1) Reads, alarms, rejected alarms (default = alarms)
- 2) State (default = All States)
- 3) Plates
- 4) Date Range (default = today). The Year default is the current year. A button allows changing it to the last Year.
- 5) Time Range (default = last hour)

| Field / Function             | Description                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Start Date/Time</b>       | Fields with Day-Month-Year-Hour-Minute of start for <b>searches</b> of alarms/reads stored in database; if an invalid date is entered an error message box is displayed                                                                                                                                                                                                                                               |
| <b>End Date/Time</b>         | Fields with Day-Month-Year-Hour-Minute of end for <b>searches</b> of alarms/reads stored in database; if an invalid date is entered an error message box is displayed                                                                                                                                                                                                                                                 |
| <b>Plate String</b>          | Plate number to search for.                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Input Keys</b>            | Keys to enter the string (Plate) and Date/Time values (Start and Stop). Keys are context sensitive and change in accordance with the field (highlighted); it will be like in Fig. 2.32-a for date fields, Fig. 2.32-b for hour and minute fields and Fig. 2.32-c for plate string.                                                                                                                                    |
| <b>State/Country</b>         | Country/State selection using the drop-down list or the spin buttons                                                                                                                                                                                                                                                                                                                                                  |
| <b>Search Button</b>         | To search in database with the inserted constraints                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Type Selection</b>        | Selection among Alarms/Rejected alarms/ Reads for queries <ul style="list-style-type: none"> <li>• <b>Alarms:</b> Accepted (confirmed by the user) alarms and Time-out alarms(neither confirmed nor rejected)</li> <li>• <b>Rejected alarms:</b> Rejected (false or repeated) alarms by means of the Reject button on the user interface</li> <li>• <b>Reads:</b> Any actual plate read, including alarms.</li> </ul> |
| <b>Data Download Button</b>  | To run a Data Download, that is a back up of all the reads/alarms to be manually exported to the Operations Center                                                                                                                                                                                                                                                                                                    |
| <b>General Report Button</b> | To generate a report that lists the total number of Reads, Alarms and Rejected Alarms present in database, one row per day.                                                                                                                                                                                                                                                                                           |
| <b>Shift Report Button</b>   | To generate a report that lists the total number of Reads, Alarms and Rejected Alarms present in database, one row per hour. A Shift coincides with a solar day from 00.00 to 23:59:59 (11:59:59 PM) of the current day.                                                                                                                                                                                              |



| Field / Function | Description         |
|------------------|---------------------|
| Close Button     | To close this panel |

Table 2.12 – Reports functions

**a**

**b**

**c**

The figure shows three screenshots of the MPH900 interface. Screenshot (a) shows the date selection screen with fields for Start (18/09/2008), End (18/09/2008), and State (ALL STATES). Screenshot (b) shows the date selection screen with fields for Start (18/09/2008), End (18/09/2008), and State (ALL STATES). Screenshot (c) shows the character selection screen with a grid of characters (QWERTYUIOP, ASDFGHJKL, ZXCVBNM) and buttons for Caps, #@..., Canc, and Close.

Fig. 2.32 – Input keys

If search succeeds, a panel with the results is shown, otherwise the Fig. 2.33 message-box is presented.



Fig. 2.33 – No matches found

The search field values are kept after the end of the query as the starting point for the next query. The search values returns to the default values when the Search window is closed.



As soon as the focus is on one of the input fields, the corresponding keyboard is activated. For example, if you click (or touch) the “Day” field, the 31-day keys are activated.

If the focus is on the “Hour” fields, a 24-keys “hours” keyboard shows up, replacing the 31 “Day” keys.

The search field values are kept after the end of the query as the starting point for the next query. The search values return to the default values when the Search window is closed.

### **Search for partial plates.**

---

It is possible to perform wildcard searches to find out plates compatible with partial information. The wildcard characters are:

- % corresponds to \* (every substring of any length)
- \_ means any single character
- [ab] means either a or b

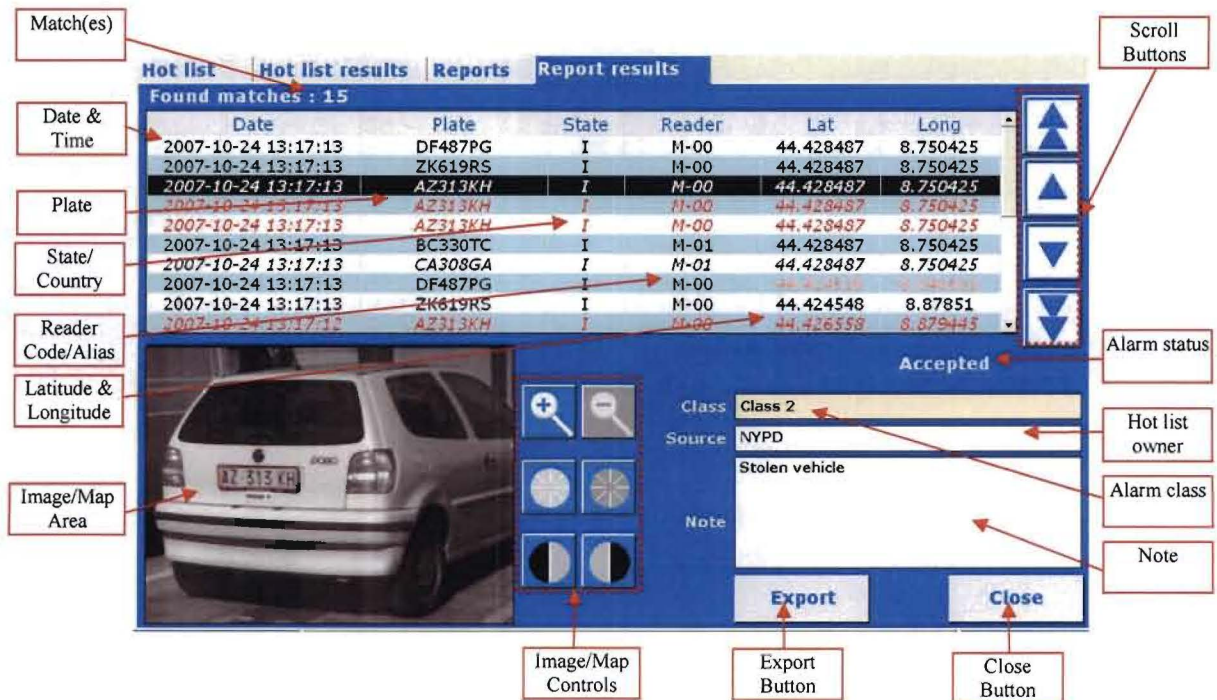
#### Examples:

XYZ% search for every plate starting with XYZ of any length.

X\_Z search for plates of length 3 with any character in the middle position

X[WY]Z search for either XWZ or XYZ

## 2.8.4 Report result page



The previous figure shows an example of the Report Results page.

The performed query returned 15 records. Every record is a row of the scroll-down table on the upper pane. The record is made up of the following fields:

- **Date.** Timestamp of the read.
- **Plate.** Read Plate string. The presence of characters in brackets means that there are ambiguities in the string interpretation. For example, 96[0O]AG means that the third character may be either a 0 or an O. Usually, both the possible strings 960AG and 96OAG are matched against the Hot List.
- **State.** Normally the reader can't determine the State so the field is filled with a '?'. If there is a match in the Hot List (alarm), the State in the Hot List associated to the Plate is placed in the State field.
- **Reader.** That field shows which camera provided the Read.
  - M-00* refers to the Right Hand camera
  - M-01* refers to the Left Hand camera
- **Lat and Long.** Those are the GPS coordinates.



## Export Function

Every result page contains the EXPORT button, including the Shift Report and general Report pages. The buttons allow saving the result of the queries in a selectable folder. The following dialog box allows the Operator to browse for the desired folder.



The output files have the following naming convention:

*Car\_<CarId>\_GeneralReport\_<date><time>.txt* is the output of the General Report Export.

*Car\_<CarId>\_ShiftReport\_<date><time>.txt* is the output of the Shift Report Export.

*Car\_<CarId>\_Query\_Reads\_<date><time>.txt* is the output file for any Search operation on the Read database.

*Car\_<CarId>\_Query\_Alarms\_<date><time>.txt* is the output file for any Search operation on the Read database.

*<CarId>* is the Car Identifier, which is a 5-character numeric string from 00001 to 99999.

*<date><time>* is the date and time of the Export operation.

The output files are Tab delimited text files, easily importable in any commercial Spreadsheet programs.

The Shift and General reports contain basically the same information of the relative tables. The result of any query contains a list of records. Each record is made up of the following fields;

1. Date of the read
2. Time of the read
3. Plate





4. State
5. Note, that is the Hot List description for alarms only
6. Latitude
7. Longitude

The record can also be directly imported on many commercially available mapping programs in order to visualize the read position on a geographical map.

If the Zip format has been selected during the setup phase, data and images will be exported as a ZIP file including an HTML file with links to both B/W and color images.

### **Database Housekeeping.**

---

Data (database records and images) shall automatically be erased after a configurable number of days. The data persistence must be selected during the software installation procedure.

It is possible to reset all statistics on-demand at any time by using a special tool, available in the following folder:

C:\Program Files\Elsag spa\Car System\LtbaData\Reset\Reset\_Ltba\_data.bat

Double-click on the above batch file and follow instructions.

## 2.9 LPR – Operations – Cartography

Cartography is the plug-in that allows the user to localize each detected transits and alarms on a map.

The user must set first the search criteria in the “Reports” tab, then clicking on the “Cartography” tab and a map with the resulting transits/alarms is shown (Fig. 2.34). The scale factor can vary to include all transits/alarms; multiple blocks (maps) are generated if they exceed the configuration limit. Each read is represented as a green circle. An alarm is shown as a red triangle.

### Cartography panel description

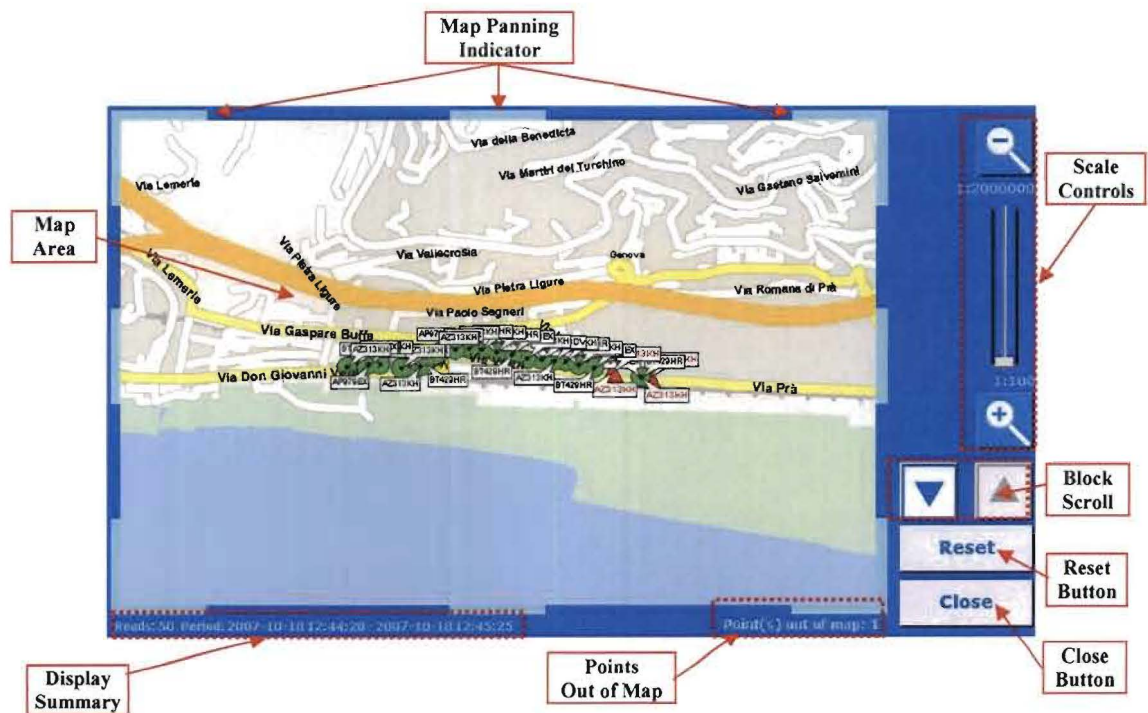


Fig. 2.34 – Cartography panel description

| Field / Function             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Scale controls</b>        | <p>To change the scale factor of the map.</p> <p>Click on  to shrink the area and see a more detailed map (max 1:100).</p> <p>Click on  for a wider area view (min 1:2000000).</p> <p>Move the slider cursor to operate in the same manner.</p> <p>The zoom factor increment/decrement is logarithmic allowing more accuracy when it operates in detail or faster panning in large area view.</p> <p>The number of steps from min to max is a configurable value.</p> |
| <b>Map Panning Indicator</b> | <p>Click inside the map near the eight light-blue zones for map panning, cursor becomes  making it possible.</p> <p>To re-center the map: point the cursor  on the wanted center-point and click.</p>                                                                                                                                                                                                                                                                |
| <b>Map Area</b>              | <p>Map displaying area.</p> <p>A flag pushpin, with a label containing the plate string, indicates the place where the transits/alarms were captured; the color change from green for transits to red for alarms.</p> <p>If an alarm was generated by a virtual fence violation the limits of the fence are also depicted.</p>                                                                                                                                                                                                                                                                                                          |
| <b>Out of Map Points</b>     | <p>It notifies if there are points not included in the displayed map (e.g. with invalid/missing coordinates) for the current block.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Block Scroll</b>          | <p>To move to  next or previous  block.</p> <p>There is a limit of transits/alarms visualized in the map, if reads/alarms exceed the limit they will split in multiple blocks (maps).</p> <p>Use this control to switch among the blocks.</p> <p>The max number of transits/alarms in a map is a configurable value.</p>                                                                                                                                          |
| <b>Display Summary</b>       | <p>Indicates the range conditions of displayed map.</p> <p>Reads/Alarms: number of transits/Alarms in the map</p> <p>Start/End Date-Time: temporal ranges</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Reset Button</b>          | To reset to first block visualization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Close Button</b>          | To close this panel and return to Main Window panel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Table 2.13 – Cartography panel functions**

### 3 GPS – Localization

The application GPS Position is developed in order to allow the customer to receive and monitor the localization data in NMEA format coming from a GPS receiver connected to the on-board PC through a USB or serial port.

The LPR system still reads plates and actively compares each to the hot list while the operator is in this mode.

To access to the GPS application, the operator selects the application button from the main window.

Once the application has started, the Graphic User Interface shows the following panel:

Localization Panel

**GPS Position**

Vehicle: ELSAGNAMERICA Pending Alerts 0

**GPS Position**

**GPS RAW DATA**

**Current Location**

Latitude 41.420027 : N

Longitude 73.572118 : W

UTC Time 13:49:12

Altitude 257.1 : M

**Current Quality**

Quality 1

Age

Station ID

Geoseparation -34.2

Number of Satellites 04

Dilution of Precision 9.1

Horizontal DOP 9

Vertical DOP 1

**Satellites**

**Current Precision**

Speed (Kph) 2.07

Speed (Mph) 1.29

Direction 23.28

**Info**

**Menu**

**About**

**LPR** **GPS** **COM**

2008-04-28 09:53:40

**Hazard**

All the fields shown in the panel are explained in the table below.



| Field / Function         |                       | Description                                                                                                                                                                                                                                                                                             |
|--------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Current Location</b>  | Latitude              | Latitude value with the hemisphere N=North / S=South                                                                                                                                                                                                                                                    |
|                          | Longitude             | Longitude value with the back E=East / W=West                                                                                                                                                                                                                                                           |
|                          | Altitude              | Mean sea level altitude (regarding the Geode) M=meters                                                                                                                                                                                                                                                  |
|                          | UTC Time              | Coordinated Universal Time hh:mm:ss                                                                                                                                                                                                                                                                     |
| <b>Navigation Info</b>   | Direction             | Direction in degrees North=0                                                                                                                                                                                                                                                                            |
|                          | Speed (Kph)           | Speed in Kilometers per hour                                                                                                                                                                                                                                                                            |
|                          | Speed (Mph)           | Speed in Miles per hour                                                                                                                                                                                                                                                                                 |
| <b>Current Quality</b>   | Quality               | GPS Quality: 0 = not valid, 1= GPS, 2 = DGPS.<br>On the right of this field a diagnostic status indicator shows the quality the GPS signal (green=good, yellow= not enough satellites, red=the receiver does not work or is not connected). It represents the same code shown in the diagnostic section |
|                          | Age                   | Time in second from last DGPS update                                                                                                                                                                                                                                                                    |
|                          | Station ID            | DGPS station Identification (0000 - 1023)                                                                                                                                                                                                                                                               |
|                          | Geoseparation         | Separation from geode                                                                                                                                                                                                                                                                                   |
|                          | Number of Satellites  | Number of satellites in view from the GPS sensor                                                                                                                                                                                                                                                        |
|                          | Dilution of Precision | A low DOP value represents a better GPS positional accuracy                                                                                                                                                                                                                                             |
|                          | Horizontal DOP        | Horizontal Dilution of precision<br>A low HDOP value represents a better GPS positional accuracy                                                                                                                                                                                                        |
|                          | Vertical DOP          | Vertical Dilution of precision<br>A low VDOP value represents a better GPS positional accuracy                                                                                                                                                                                                          |
| <b>Satellites Button</b> |                       | To open a Message box showing the information about the satellites in view                                                                                                                                                                                                                              |

### **3.1 Satellites**

By pressing the button "Satellites", the message box in Fig. 3.1 will pop up showing the information about the satellites in view.

In the upper part the Signal to Noise Ratio of each satellite is displayed with a vertical bar graph.

In the lower part the data regarding each satellite is shown.

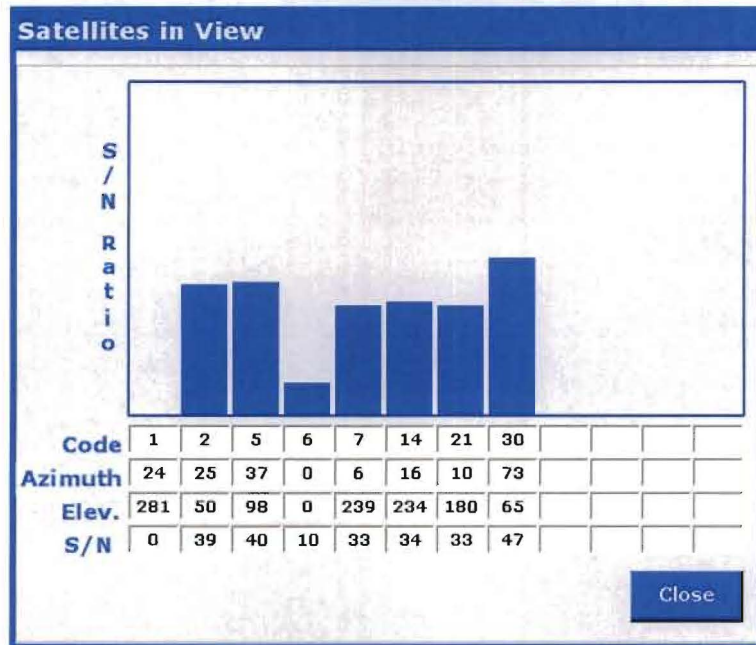


Fig. 3.1 – Satellites in view

| Field / Function | Description                                |
|------------------|--------------------------------------------|
| <b>Code</b>      | The code number of the satellite           |
| <b>Azimuth</b>   | The azimuth value of the satellite         |
| <b>Elev.</b>     | The elevation value of the satellite       |
| <b>S/N</b>       | The Signal to Noise Ratio of the satellite |
| <b>Close</b>     | To close the current view                  |



### 3.2 Diagnostic

The diagnostic related to the position service, shown in the bottom section of the application, allows the operator to understand if there is any problem about the service and the GPS sensor.

The position diagnostic can assume the following statuses:

|                                                                                   |                                                                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|  | Grey: the service hasn't sent any information about the status                                                                  |
|  | Green: the service and the GPS sensor are working                                                                               |
|  | Yellow: the sensor is connected but it isn't receiving information from enough satellites in order to give accurate information |
|  | Red: the device is not connected or is not working                                                                              |

#### **Other controls**

---

The **Version** button on the Localization application shows a message box with the information about the release of the software.

The **Menu** button closes the application and returns back to the main window.



## 4 Hot List Manual Import

A prerequisite for the MPH900 Alarm Mode function is the availability of a list of wanted License Plates or Hot List. Without a correctly loaded Hot List, the system can only work in Data Collection Mode, meaning it just reads and stores every plate that crosses the cameras field of view.

The MPH900 uses a very simple format for Hot List entry. Records consist of an 8-character plate number, a 2-character state and a note or comment field that can be up to 100 characters long. The note field is displayed to the operator on an alarm and can be unique to the record.

Once a properly formatted hot list is prepared and placed in a .txt file, copy the file to the MDT folder:

<path>\hotlist

Where:

<path> is the installation drive (for example C: )

The Hot list file name can have the format: <AnyName>.<ext>;

Where:

|         |                                                                                                     |
|---------|-----------------------------------------------------------------------------------------------------|
| AnyName | a generic or mnemonic alphanumeric name                                                             |
| ext     | file extension (for example TXT) as defined in the configuration file. The default extension is TXT |

When a Hot List with a generic filename is imported, the GUI shows the load time.

If the Hot List filename is in the format: YYYYMMDDhhmmss.TXT,

where:

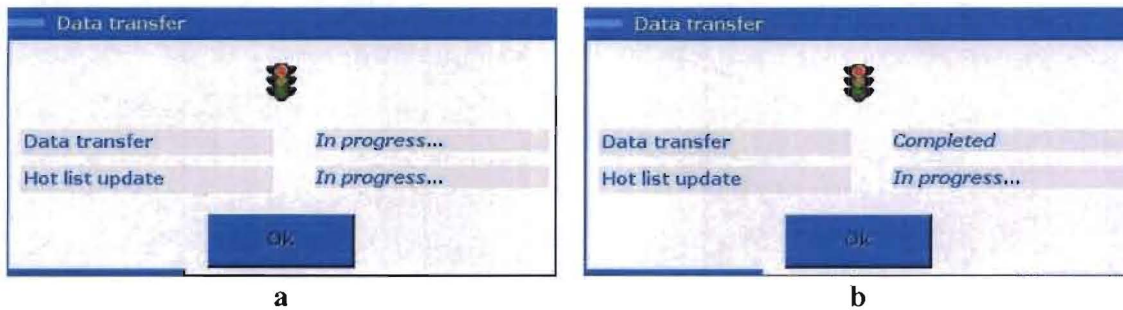
| Field | Description | Value |
|-------|-------------|-------|
| YYYY  | year        | 1900→ |
| MM    | month       | 01-12 |
| DD    | day         | 00-31 |
| hh    | hours       | 00-23 |
| mm    | minutes     | 00-59 |
| ss    | seconds     | 00-59 |

the GUI shows the date and time as specified in the filename;



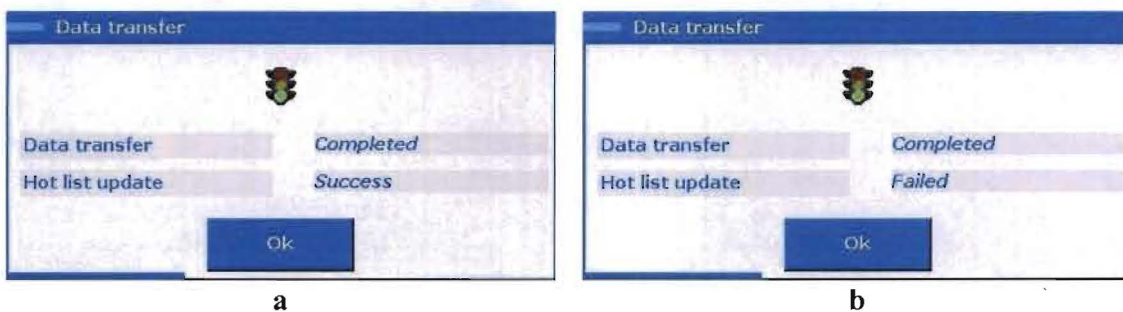


After the Hot list file has been copied into the specified directory, the system starts transferring and the message in Fig. 4.1-a is shown; as the transfer ends, the Hot list update process begins.



**Fig. 4.1 – Hot list import**

At the end of update process, the message in Fig. 4.2-a is displayed if the operation succeeded. If something went wrong, the message box in Fig. 4.2-b appears. Inform your administrator or technical support if a failure occurs.



**Fig. 4.2 – Hot list import result**

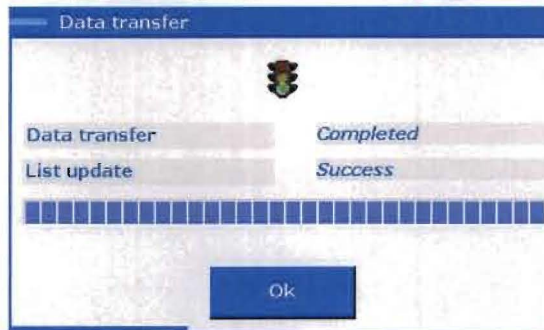
Click on the “OK” button to close the message box.

When the Traffic light turns green, the operator hits OK and the Hot List is loaded. It is a good idea to perform a Search for a few plates in the Operation area to assure that the list is correctly formatted and loaded before the start of the Shift.

#### **4.1 Import from a USB drive**

The import of a HotList from an USB drive can be enabled by setting the proper parameter in the configuration file or can be specified during the setup procedure.

After the insertion of the USB drive the import starts and the HotList is downloaded. When the importing is successfully completed the message box in Fig. 4.3 is presented.



**Fig. 4.3 – Hot list import success**

The HotList is detected in any drive associated to the thumb drive. The HotList file must be placed in the drive root and shall not be deleted so that the same thumb drive could be used many times.

**Warning:** The event that triggers the HotList download is the insertion of the thumb drive; therefore, if the drive is already inserted at the PC startup, the HotList is not loaded.

## 5 Virtual Fence

The Virtual fence is a feature that allows the system to generate an alarm when two conditions are met:

- Match on a record of the HotList when the plate belongs to a specific class (normally class 8, Sexual Offenders)
- The read GPS location is inside an area called Virtual Fence.

The typical application is the protection of school areas from registered sexual offenders; also the function can be used to enforce restriction orders related to a specific house or location.

The virtual fence is defined and attached to one of the alarm classes through a fence configuration file (.fc).

The map, generated by a virtual fence violation, shows the plate detected, the area-limits and the area-center (Fig. 5.1).

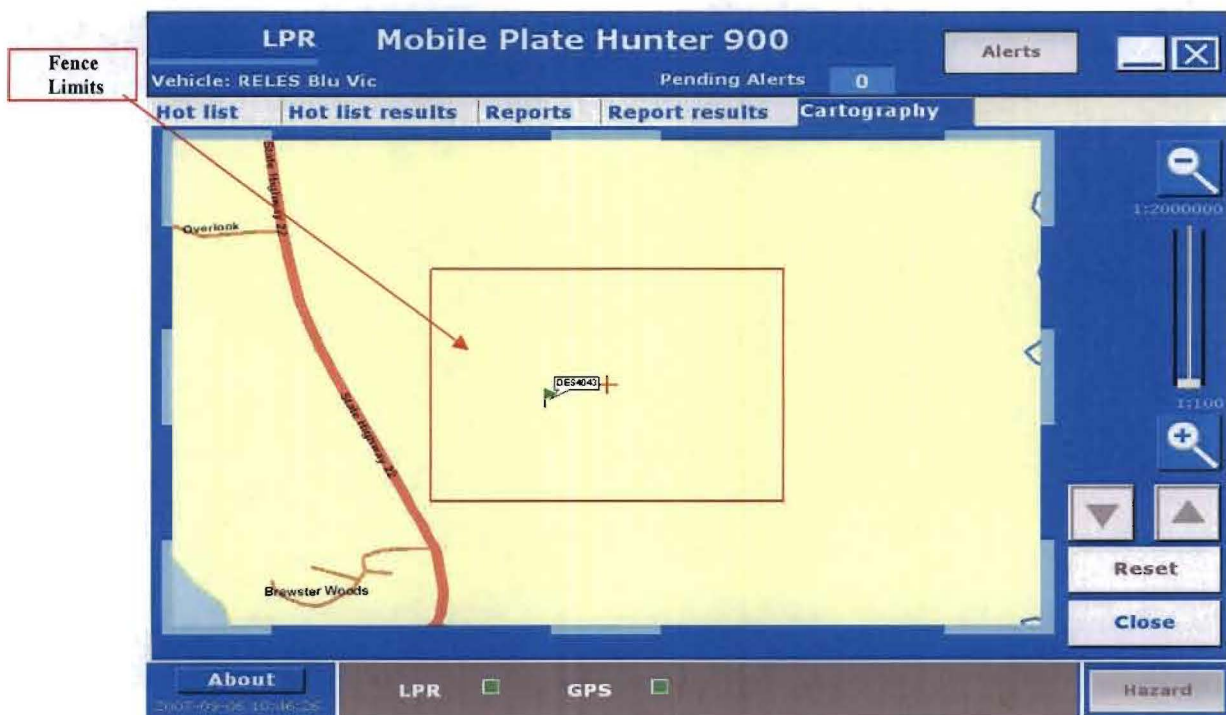


Fig. 5.1 – Virtual Fence map

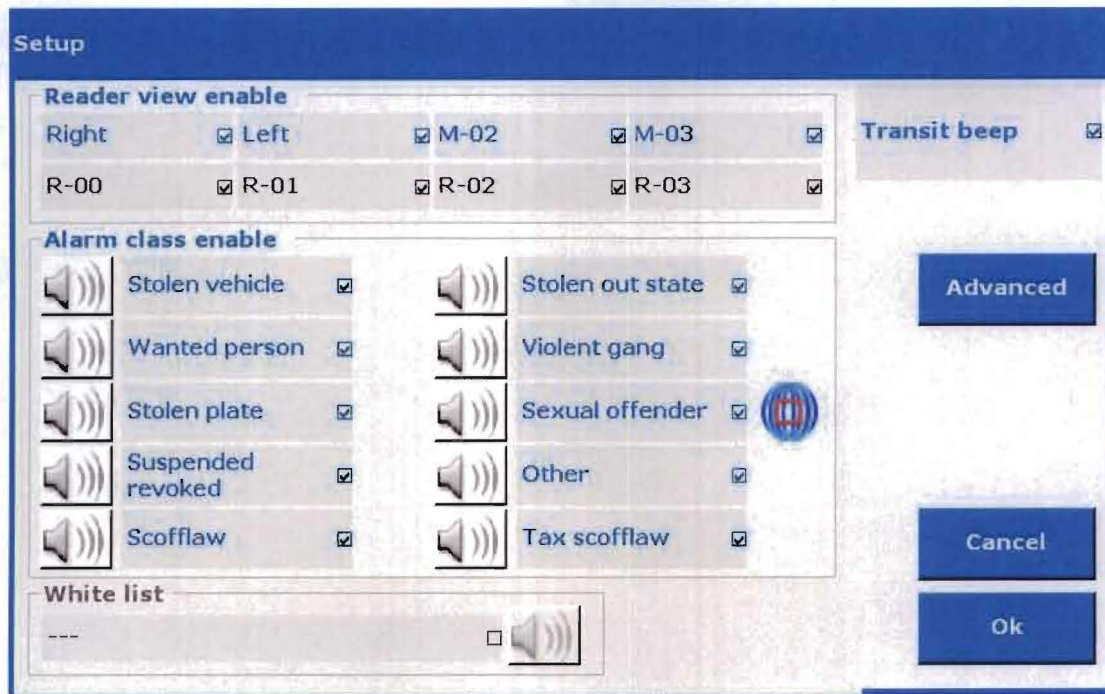


## 5.1 Geofencing Setup Check-list

1. Decide which alarm class to use for Geofencing. It is recommended to use class 8 or a class that you are not using. Prepare your Hot List accordingly.
2. Get the addresses you want to put a fence around and then find the coordinates of those areas like schools, parks, etc. You can find coordinates of those places on the internet that can give you this information. For example you can use this site <http://www.batchgeocode.com/lookup/>.
3. In the folder <Kit\KIT\_AD3M\_2.3.1\Utility , open the file with the name 20071101134525fr.fc. The file can be opened with notepad or any text editor.
4. Inside that file you will see an entry: 6 41,4202 -73,5720 100 . You must follow this format for the fencing to work. The entry format is as follows:
  - 6 - represent the alarm class to use
  - 41,4202 -73,5720 - is the coordinates of the center of the area to fence
  - 100 - is the radius in yards of the area
5. Enter one line for every area to fence.
6. The file then must be renamed in a timestamp format. yyyyymmddhhmmssfr.fc where:
  - <yyyy> 4 digit year
  - <mm> 2 digit month
  - <dd> 2 digit day
  - <hh> 2 digit hour
  - <mm> 2 digit minute
  - <ss> 2 digit second
  - <fr> leave as it is
  - <.fc> this is the extension that must be fc
7. After entering the information to the file, save and then copy it to the c:\hotlist folder.

If you need to update the Geofence, you must append to the last file you created and rename it to the current timestamp. The new file will replace the previous file, so you would need to update the file as needed by adding or removing coordinates.





**Fig. 5.2 – Geofence alarm class**

If the Geofence file has been loaded, the Geofence alarm class is shown in the Setup menu as in Fig. 5.2.

## 6 Wireless Communication Function

This section describes the connection to the Elsas Operations Center (EOC) via a wireless network. This function is optional and the following pre-requisites are required:

- A central server must be installed with the EOC software.
- A TCP/IP wireless network must connect the CarSystem MDT to the central server.

### 6.1 Short-Range (Wi-Fi)

The Short-Range connection is usually achieved via system such as WiFi IEEE802.11b-g.

The connection to the operations center (EOC) is started automatically when the LPR car is in the Wi-Fi Access Point coverage area.

During this phase the Operations Center establishes a connection with the system to carry out the following operations:

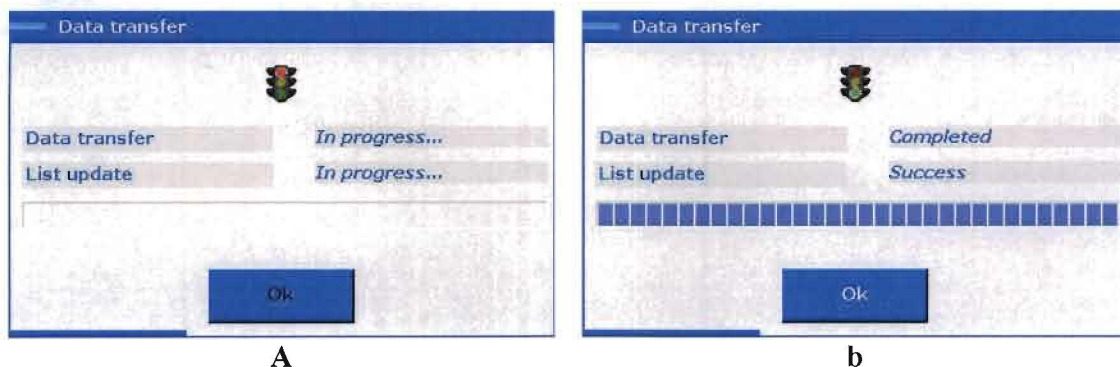
| Task                         | Direction  |
|------------------------------|------------|
| Hot List replace/update      | Center→Car |
| Fence list replace           | Center→Car |
| Locally Stored reads upload  | Car→Center |
| Locally Stored alarms upload | Car→Center |

**Table 6.1 – Short Range tasks**

#### 6.1.1 Hot List and Data Transfer

The user is informed of the operations status by the messages presented on the Data Transfer dialog box.

At the beginning of operations the dialog box in Fig. 6.1-a pops up. The traffic light is red, which means that the user has to wait until the end of the operations without moving the patrol car outside the Access Point range.

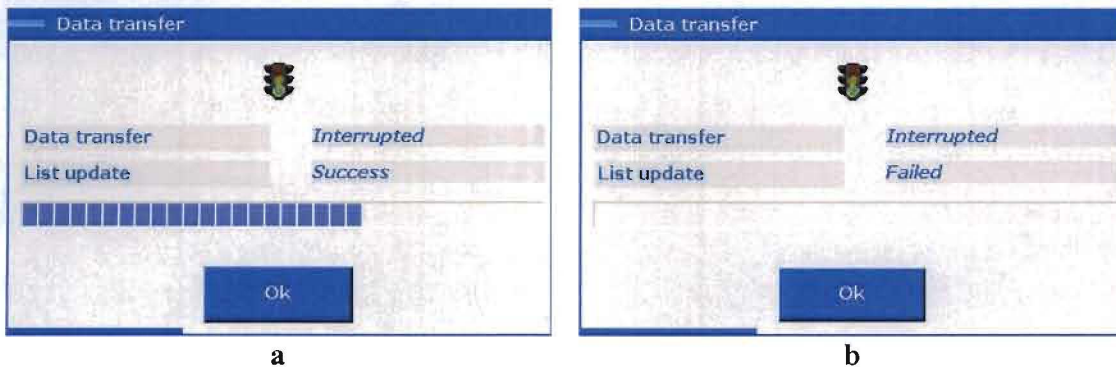


**Fig. 6.1 – Data transfer status**

When data transferring and hot list / fence list updating operations are successfully completed, the dialog box in Fig. 6.1-b is displayed. The traffic light is green and the OK button is enabled. The user must close the dialog box by clicking on the OK button to terminate the procedure.

During data transferring, the communication between the patrol car and operations center might be broken up. In this case, if the Hot List update file has been transferred and processed correctly by the system, Fig. 6.2-a is displayed, otherwise, Fig. 6.2-b is displayed. In both situations the user must close the dialog box by clicking on the OK button.

To start the connection over, the user can drive away from the Access Point range and then back inside. Otherwise the user can close and open the Wi-Fi link (for example, Disable and Enable the Wi-Fi network connection).



**Fig. 6.2 – Data transfer interrupted**

The Hot list update process might fail even if the data transfer process was correctly completed (e.g. bad format file). In this case, the dialog box in Fig. 6.3 is displayed. The user must close the dialog box by clicking on the OK button and can start patrolling. It is recommended to signal this event to the system administrator.



**Fig. 6.3 – Data transfer completed**



## 6.2 Long-Range (Aircards)

The Long-Range connection is usually achieved via systems such as high bandwidth Cellular modems (EV-DO).

The Operations Center establishes a connection with the CarSystem to carry out the following operations:

| Task                                        | Direction  |
|---------------------------------------------|------------|
| Hot list replace/update                     | Center→Car |
| Fence list replace                          | Center→Car |
| Single plate in Hot list                    | Center→Car |
| Single alarm upload (during the patrolling) | Car→Center |
| Locally Stored reads upload                 | Car→Center |
| Locally Stored alarms upload                | Car→Center |
| Messages send/receive (if enabled)          | Car↔Center |
| GPS coordinates (future function)           | Car→Center |

Table 6.2 – Long Range tasks

### 6.2.1 Hot List Update and Data Transfer

When the Operation Center performs a Hot list updating the user is informed by the string "In progress" in the date field (Fig. 6.4).



Fig. 6.4 – Long Range updating

The user can control the result of the operation by clicking on the date.

## 6.3 Short+Long-Range

The Short and Long Range connections can coexist in the same CarSystem. When both channels are active at the same time, the tasks are assigned as described in Table 6.3.





| Task                                        | Direction  | Connection  |
|---------------------------------------------|------------|-------------|
| Hot list replace/update                     | Center→Car | Short range |
| Fence list replace                          | Center→Car | Short range |
| Single plate in Hot list                    | Center→Car | Long range  |
| Single alarm upload (during the patrolling) | Car→Center | Long range  |
| Locally Stored reads upload                 | Car→Center | Short range |
| Locally Stored alarms upload                | Car→Center | Short range |
| Messages send/receive (optional)            | Car↔Center | Long range  |
| GPS coordinates (future)                    | Car→Center | Long range  |

**Table 6.3 – Short/Long Range tasks**

The Short range tasks take place only within the Wi-Fi range. When the Wi-Fi connection is not available the Long Range mode takes over all the communications, including Read uploads.

**The double channel means that the Central Server must be accessible through two separate TCP/IP networks (different IP addresses).**

## 7 AMC Account Management Control

The **AMC** (Account Management Control) plug-in has been developed in order to manage users' accounts and their profiles in the Car System.

In order to access the **AMC** application, the user has to press the relative application button in the main window Menu (Fig. 7-1).

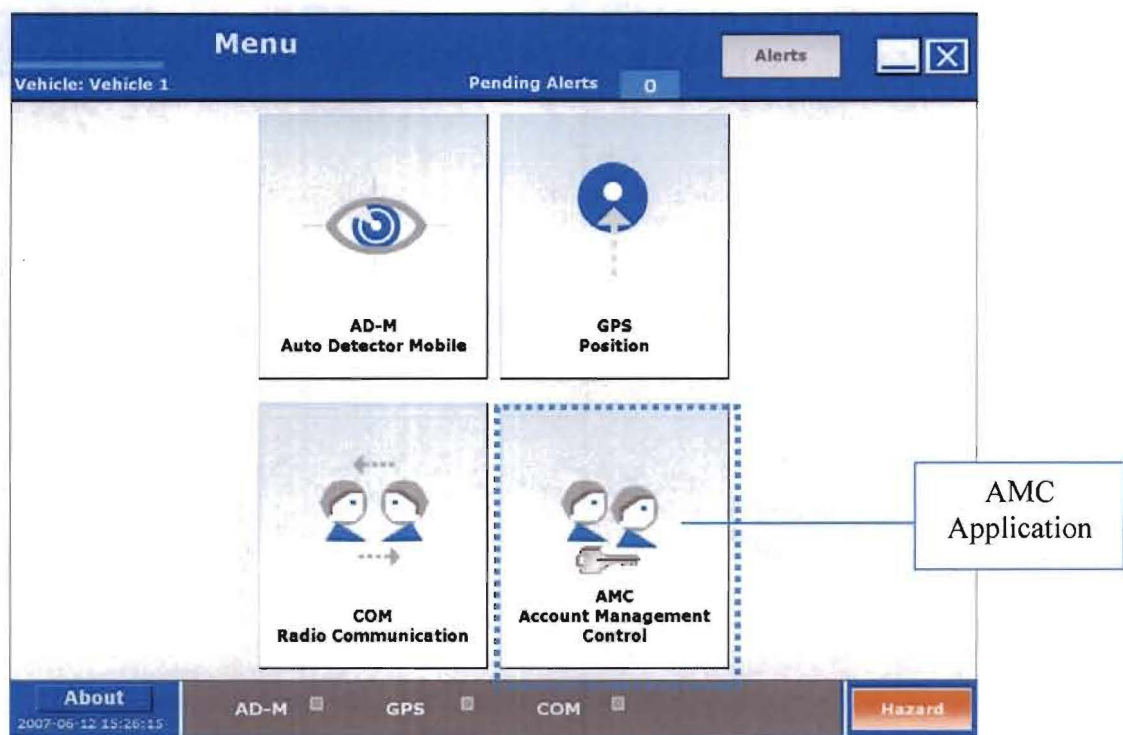


Fig. 7-1 – Main Menu



Once the application has started, the Graphic User Interface shows the following window:

Fig. 7-2 – AMC Main window

The application allows the user to manage Car System users' accounts and their passwords.

The available profiles for a new user are:

- *Administrator*: role for system administrator with unrestricted privileges
- *Limited\_Admin*: role for system administrator with restricted privileges
- *Operator*: role for expert users
- *User*: role for standard users
- *Limited*: role for users with restricted

See section 8 for a description of the privileges for each profile.

In addition an *Installer* service profile, with known password, also exists.

This profile is only used at the very first access to the application after setup, and allows the operator to add a new *Administrator* user. The *Installer* user is deleted immediately after that.



As shown above, once the user enters the plug-in, the following commands are available, depending on the role:

- *Search;*
- *Insert;*
- *Modify;*
- *Modify Password;*
- *Delete;*
- *Reset;*
- *Export Log;*
- *Info;*
- *Menu.*

In order to be used on a touch screen monitor every window in the plug-in has an embedded keyboard component that allows the user to edit the required fields.

## **Search**

---

The **Search** function allows the current user to look up any user in the database in order to check the consistency of his data and perform updates, using the username field as a search key.

If the user doesn't exist, the following message box will appear:



**Fig. 7-3 – No User**

If the user data is found, every field in the window will be populated with the data retrieved from the database, and the current user can perform administrative tasks on them, as explained in the next paragraphs.



## Insert

This function is accessible only to a user with an administrative profile and allows the insertion of a new user account into the database.

A screenshot of a web form titled 'New User Insertion Fields'. The form has a blue header and three input fields: 'User Name' (a text box), 'Profile' (a dropdown menu), and 'Description' (a text box).

Fig. 7-4 – New User Insertion Fields

Username and profiles are mandatory fields, therefore when one of them is missing, a message box (Fig. 7-5) warns the user.

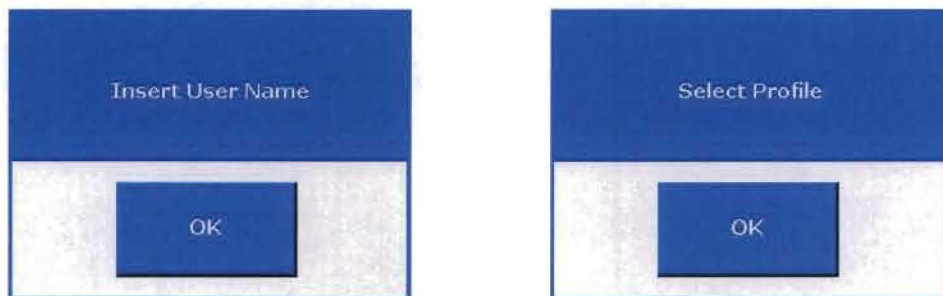


Fig. 7-5 – Fields missing message boxes

A User Name must be a string anywhere between 6 and 20 characters; the username cannot contain the chars " \ / [ ] : ; , | = + \* ? < > .

The profile can be chosen among one of those available on the profile combo box.

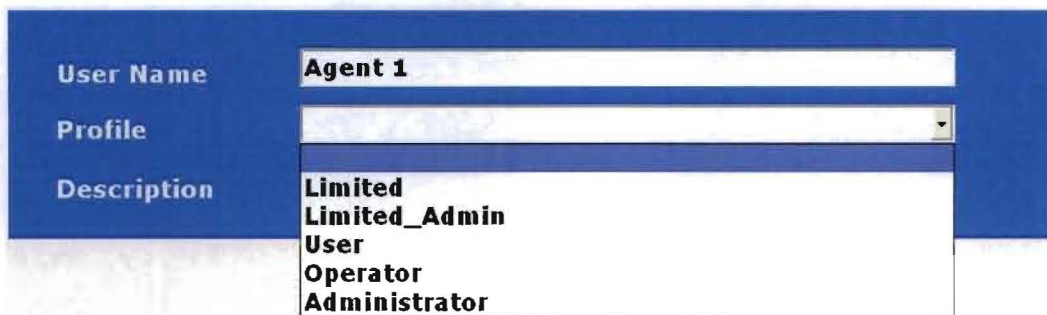
A screenshot of the 'New User Insertion Fields' form with the 'Profile' dropdown menu open. The dropdown list shows five options: 'Limited', 'Limited\_Admin', 'User', 'Operator', and 'Administrator'. The 'User Name' field contains the text 'Agent 1'.

Fig. 7-6 – Profile Selection



After the mandatory data is inserted, the user is required to insert the password in the following window.

A screenshot of a password setting window. It has a blue background. On the left, the word "Password" is written in white. To its right is a white rectangular input field. Below "Password", the words "Confirm Password" are written in white. To its right is another white rectangular input field.

Fig. 7-7 – Password Setting

By pressing the button “**Cancel**” the user returns to the previous window and no user is inserted.

The password may contain any character and must be a string anywhere between 8 and 20 characters. If less than required characters are inserted, the message box in Fig. 7-8 will be displayed.

A screenshot of a message box. It has a blue header with the text "The password must be from 8 up to 20 chars long" in white. Below the header is a white rectangular area containing a blue button with the text "OK" in white.

Fig. 7-8 – Password too short

The user can also create an account with an empty password. In this case, by pressing the “**OK**” button the following message box will appear:

A screenshot of a confirmation message box. It has a blue header with the text "Create a user with empty password?" in white. Below the header is a white rectangular area containing two blue buttons: "OK" and "Cancel", both with white text.

Fig. 7-9 – Empty Password confirmation

After the successful creation of the new account, the following notification message box will show up:



**Fig. 7-10 – New User Inserted**

The created accounts have different password expiry policies depending on its password:

- Users with empty password never expire;
- Users with non empty password expire 90 days after the date of creation.

Once a user expires he will be warned at the next logon to the system and redirected to the **AMC** main page where he is asked to modify the password in order to renew his credentials, otherwise any other system functionality won't be accessible.

## **Modify**

---

This function is accessible by users of any profile and allows the user to modify any existing user accounts.

The administrator profile can modify the description and the profile of any other user in the database, but cannot modify its own profile.

The operator and user profiles may only modify their own description field.

By pressing the “**Modify**” button, a message box window appears asking the user whether he is sure to proceed or not:



**Fig. 7-11 – Modify confirmation**

By pressing the “**Ok**” button, the updates will take place on the user database.

## Modify password

This function is accessible by users of any profile and allows the user to modify the password.

The administrator profile user can modify the password of any other user in the database, while operator and user profiles may only modify their own passwords.

By pressing the “**Modify Password**” button the following window appears:

|                  |   |   |   |   |   |       |   |      |   |        |
|------------------|---|---|---|---|---|-------|---|------|---|--------|
| Old password     |   |   |   |   |   |       |   |      |   | OK     |
| Password         |   |   |   |   |   |       |   |      |   | Cancel |
| Confirm Password |   |   |   |   |   |       |   |      |   |        |
| 1                | 2 | 3 | 4 | 5 | 6 | 7     | 8 | 9    | 0 |        |
| q                | w | e | r | t | y | u     | i | o    | p |        |
| a                | s | d | f | g | h | j     | k | l    | ▲ |        |
| z                | x | c | v | b | n | m     | ◀ | ▼    | ▶ |        |
| Caps             |   |   |   |   |   | #@... |   | Canc |   |        |

Fig. 7-12 – Modify Password panel

The user is required to edit the old password as well as the new one and confirm it. The password must be between 6 and 20 characters, and may contain any character.

The system checks the correctness of the old password warning the user in case of wrong editing:





Fig. 7-13 – Wrong Old Password

In case the new passwords inserted don't match, the user is warned with the following message-box:



Fig. 7-14 – New Passwords mismatch

Once all data is correct, the update of the password takes place on the users' database.

**Note: a user's non empty password cannot be replaced with an empty password.**

By pressing the button "**Cancel**" the user returns to the previous window.

### Delete

---

This function is accessible only by a user with administrative profile and allows the deletion of a user account.

By pressing the "**Delete**" button, a message box window will appear asking the user whether they are sure to proceed:



Fig. 7-15 – Delete Confirm dialog box

By pressing the “Ok” button, the deletion will have effect on the user database, showing the following message box:



Fig. 7-16 – User Deleted

### **Reset**

This function simply clears the form, prompting current user for a new database search.

### **Export Log**

Pressing the button "Export Log" a dialog box is opened (Fig. 7-17).

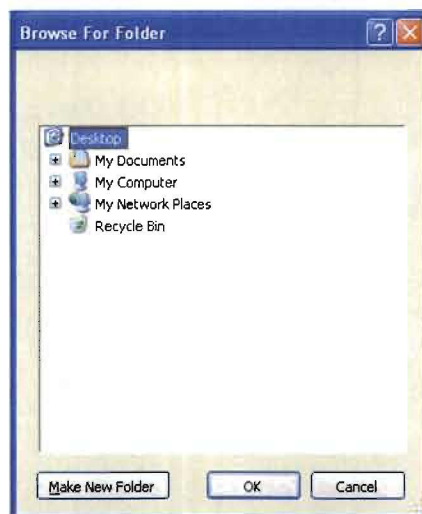


Fig. 7-17 – Export dialog box



Select the folder in which to save the exported file named  
"Car\_<CarId>\_User\_Log\_<date><time>.txt".

Where:

<CarId> Car Identifier, which is a 5-character numeric string from 00001 to 99999.

<date> date of the export operation in YYYYMMDD format

<time> time of the export operation in hhmmss format.

(Ex: Car\_00001\_User\_Log\_20080131134522.txt)

**Note:** when USB is specified in the configuration file, the dialog box above is not shown and the exported file is sent directly to USB drive. If the USB drive is not present the message box, Fig. 7.18 is displayed; click "OK", connect an USB drive and try again.



Fig. 7.18 – USB drive not found



If the export succeeded, the message box in Fig. 7-19-a is shown, otherwise a failure message is displayed (Fig. 7-19-b).

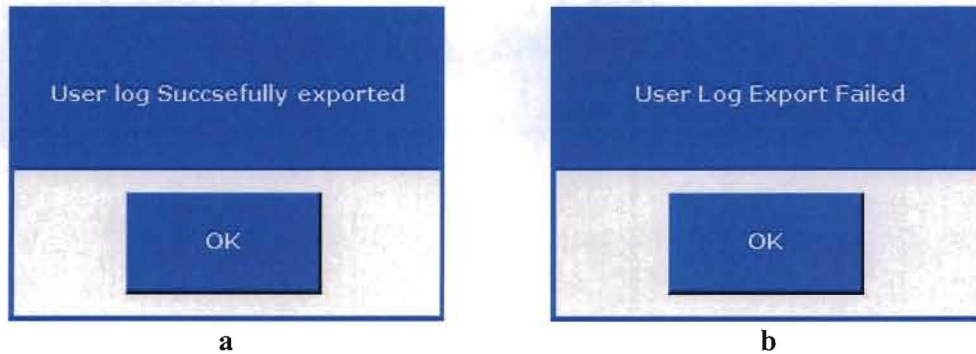


Fig. 7-19 – Export result

### Info

The Info button on the AMC application shows a message box with the information about the release version of the software (Fig. 7-20).

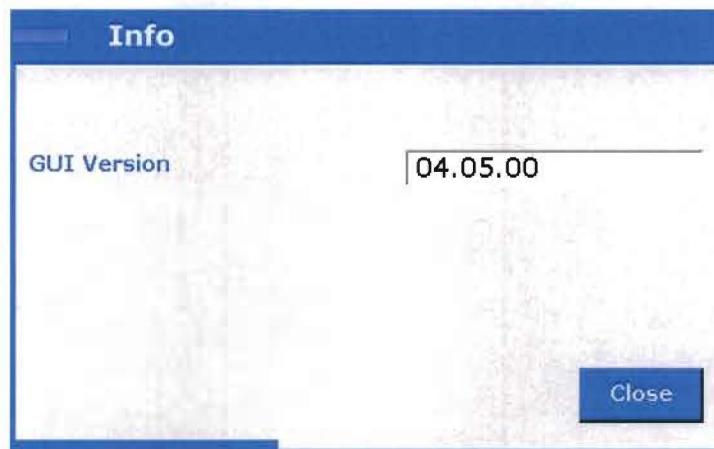


Fig. 7-20 – Info Window

The information shown in this Message Box is:

- **GUI Version:** Graphic User Interface Version;

### Menu

The **Menu** button closes the application taking the user back to the car system Main window.



## 8 Profile permissions

The Table 8.1 shows the permitted functions for each profile, relative to the User Management function.

| Function                   | Profile       |          |      |         |               |
|----------------------------|---------------|----------|------|---------|---------------|
|                            | Administrator | Operator | User | Limited | Limited Admin |
| User search                | ✓             | ⊗        | ⊗    | ⊗       | ✓             |
| User insert                | ✓             | ⊗        | ⊗    | ⊗       | ✓ ②           |
| User modify                | ✓             | ✓ ①      | ✓ ①  | ✓ ①     | ✓ ②           |
| Password modify            | ✓             | ✓ ①      | ✓ ①  | ✓ ①     | ✓ ②           |
| User deletion              | ✓             | ⊗        | ⊗    | ⊗       | ✓ ②           |
| Users' activity log export | ✓             | ✓        | ⊗    | ⊗       | ✓             |

**Table 8.1 – Profile permissions**

✓ = Permitted      ⊗ = Denied

① For own user only

② For user with 'Limited' profile only

Table 8.2 shows permissions for LPR related functions.

| Function                                                   | Profile       |          |      |         |               |
|------------------------------------------------------------|---------------|----------|------|---------|---------------|
|                                                            | Administrator | Operator | User | Limited | Limited Admin |
| Transits and alarms displaying                             | ✓             | ✓        | ✓    | ✓       | ✓             |
| Alarms management                                          | ✓             | ✓        | ✓    | ✓       | ✓             |
| Start/stop readers                                         | ✓             | ✓        | ✓    | ✓       | ✓             |
| Cameras Live                                               | ✓             | ✓        | ✓    | ✓       | ✓             |
| Enable/disable images displaying                           | ✓             | ⊗        | ⊗    | ⊗       | ⊗             |
| Enable/disable alarm classes                               | ✓             | ⊗        | ⊗    | ⊗       | ⊗             |
| Readers configuration                                      | ✓             | ⊗        | ⊗    | ⊗       | ⊗             |
| Query for plates in local hot list                         | ✓             | ✓        | ⊗    | ⊗       | ⊗             |
| Local hot list plates insertion                            | ✓             | ✓        | ⊗    | ⊗       | ⊗             |
| Local hot list plates removing                             | ✓             | ✓        | ⊗    | ⊗       | ⊗             |
| Query for plates in local and external hot list            | ✓             | ✓        | ⊗    | ⊗       | ⊗             |
| Local hot list deletion                                    | ✓             | ⊗        | ⊗    | ⊗       | ⊗             |
| Query for alarms in database                               | ✓             | ✓        | ✓    | ✓       | ✓             |
| Query for rejected alarms in database                      | ✓             | ✓        | ✓    | ⊗       | ⊗             |
| Query for reads in database                                | ✓             | ✓        | ✓    | ⊗       | ⊗             |
| Drill down (images and data displaying for latest alarms ) | ✓             | ✓        | ✓    | ✓       | ✓             |
| Shift report                                               | ✓             | ✓        | ✓    | ⊗       | ✓             |
| General report                                             | ✓             | ✓        | ✓    | ⊗       | ✓             |
| Query result data Export                                   | ✓             | ✓        | ⊗    | ✓       | ✓             |
| Data Download                                              | ✓             | ✓        | ⊗    | ⊗       | ⊗             |

Table 8.2 – Profile permissions

## Department of State Police LPR Deployment

### Division 1 Richmond – Five Mobile Units Deployed

- 1 – Area 04 Mineral
- 1 – Area 06 Chesterfield
- 1 – Area 07 Petersburg
- 1 – Area 08 Richmond
- 1 – Area 44 Bowling Green

### Division 2 Culpeper – Three Mobile Units Deployed

- 1 – Area 05 Fredericksburg
- 1 – Area 12 Warrenton
- 1 – Area 13 Winchester

### Division 3 Appomattox – Three Mobile Units Deployed

- 1 – Area 18 Charlottesville
- 1 – Area 20 Lynchburg
- 1 – Area 22 South hill

### Division 4 Wytheville – Two Mobile Units Deployed

- 1 – Area 26 Wytheville
- 1 – Area 27 Bristol

### Division 5 Chesapeake – Six Mobile Units Deployed

- 1 – Area 32 Norfolk
- 1 – Area 35 Emporia
- 1 – Area 36 Waverly
- 1 – Area 37 Williamsburg
- 1 – Area 46 Hampton/Newport News
- 1 – Area 47 Chesapeake

### Division 6 Salem – Four Mobile Units Deployed

- 1 – Area 39 Lexington
- 1 – Area 40 Salem
- 1 – Area 42 Martinsville
- 1 – Area 43 Chatham

### Division 7 Fairfax – Eleven Mobile Units Deployed

- 3 – Area 09 Fairfax
- 2 – Area 10 Loudoun
- 2 – Area 11 Prince William
- 2 – Area 45 Arlington
- 2 – Area 48 Springfield