GeoVision inc
The Vision of Security

# GV-DSP LPR

## User's Manual


Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

DSP23V106-A

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# Preface

Welcome to the *GV-DSP LPR User's Manual*.

The GV-DSP LPR has two models designed to meet different needs. Each model has its own firmware that can only be used on the specific model. This Manual is designed for the following models and firmware version:

| Model | Firmware Version |
|---|---|
| GV-DSP LPR V2 | 1.06 |
| GV-DSP LPR V3 | 1.06 |

This Manual provides an overview of the GV-DSP LPR and its accessories. The instructions will guide you through the installation and use of the GV-DSP LPR as well.

# Contents

# Recognition Engine Version

**GV-DSP LPR V2 / V3** of firmware version 1.06 only supports the following versions of recognition engines:

| No. | Country | Engine Version | No. | Country | Engine Version |
|---|---|---|---|---|---|
| 1 | Arabia | × | 22 | Italy | V4030 |
| 2 | Australia | V4030 | 23 | Japan | × |
| 3 | Austria | V6004 | 24 | Malaysia | V6003 |
| 4 | Belgium | V2000 | 25 | Mexico | V4030 |
| 5 | Brazil | V3100 | 26 | New Zealand | V6005 |
| 6 | Bulgaria | V6002 | 27 | Norway | V2000 |
| 7 | Canada | × | 28 | Poland | V6004 |
| 8 | Chile | V3200 | 29 | Portugal | V3000 |
| 9 | China | V4209 | 30 | Russia | V4211 |
| 10 | Columbia | V2000 | 31 | Serbia | × |
| 11 | Croatia | × | 32 | Slovenia | × |
| 12 | Cyprus | V2000 | 33 | South Africa | V6009 |
| 13 | Czech | V6004 | 34 | Spain | V3110 |
| 14 | France | V6004 | 35 | Taiwan | V4032 |
| 15 | Germany | V6004 | 36 | Taiwan Moto | V4021 |
| 16 | Global | V6004 | 37 | Thailand | × |
| 17 | Guernsey | V2000 | 38 | Turkey | × |
| 18 | Hong Kong | V6004 | 39 | UAE | × |
| 19 | Hungary | V6004 | 40 | UK | V6004 |
| 20 | Ireland | V6004 | 41 | USA | V4209 |
| 21 | Israel | V3000 | | | |

# Chapter 1 Introduction

The GV-DSP LPR is a Linux-based system built in a small box without a fan and hard drive. Integrating with a Web server, the GV-DSP LPR can deliver live images and host its own Web site, as well as sending recognition results and captured images to the GV-LPR System and GV-LPR Center. The GV-DSP LPR is beneficial for license plate recognition over long distance and in an outdoor environment.

## 1.1 Key Features

- Non-PC based solution for 1 port traffic or mobile license plate recognition
- Wide operating temperature range
- Web-based configuration for image, security settings and firmware upgrade
- Recognition triggered by video motion detection or sensor inputs
- Compatible with GV-LPR System and GV-LPR Center
- Digital watermark
- Hardware watchdog
- IP address filtering
- Wi-Fi
- UMTS
- GPS Tracking
- Recognition results, images and live videos compatible with other system through OCX SDK

## 1.2 Packing List

1. Power Adaptor x 1
2. Wall Hook x 1
3. Conical Anchor x 4
4. Screw x 4
5. I/O Cable with RJ-45 Connector x 1
6. GV-LPR Software DVD x 1
7. GV-DSP LPR User's Manual on Software DVD
8. GV-LPR User's Manual on Software DVD
9. USB dongle for GV-LPR Software

## 1.3 System Requirements

These are the requirements for the computer that displays the image or controls the GV-DSP LPR.

- **OS:** 32-bit Windows XP / Vista / 7 / Server 2008; 64-bit Windows 7 / Server 2008
- **Web Browser:** Internet Explorer V7.0 or later

## 1.4 Options

| | |
|---|---|
| **GV-GPS Receiver** | GV-GPS Receiver is a Global Position System receiver, allowing you to perform vehicle tracking and location verification functions. |
| **GV-Relay V2** | Working with this module, GV-DSP LPR can drive the loads of relay outputs over 5 volts. |

## 1.5 Physical Description

This section identifies the various components of the GV-DSP LPR.

### 1.5.1 Front View

#### GV-DSP LPR V2 / V3

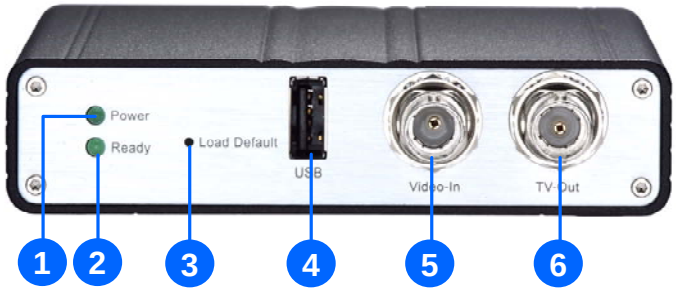


*Figure 1-1*

| No. | Name | Function |
|---|---|---|
| 1 | Power LED | Indicates the power is supplied. |
| 2 | Ready LED | Indicates the unit is ready for connection. |
| 3 | Load Default Button | It resets all configurations to their factory settings. See *5.3 Restoring to Factory Default Settings*. |
| 4 | USB Port | Connects a UMTS modem. See *4.5.3 UMTS*. |
| 5 | Video In | Connects a camera. |
| 6 | TV-Out | Connects an external monitor to output live videos and recognition results immediately. It is useful when you cannot access the GV-DSP LPR through the network. |

### 1.5.2 Rear View

#### GV-DSP LPR V2 / V3

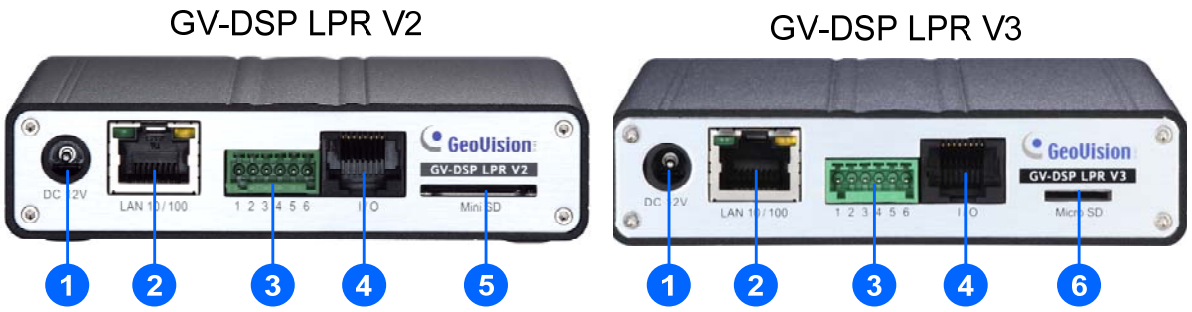


*Figure 1-2*

| No. | Name | Function |
|---|---|---|
| 1 | DC 12 In | Connects the supplied power adaptor. |
| 2 | Ethernet Port | Connects a 10/100 Ethernet network. |
| 3 | Terminal Block | Connects RS-232 devices. See *Chapter 6 The I/O Terminal Block*. |
| 4 | I/O Port | A port for digital inputs and relay outputs. Insert the supplied **I/O Cable with RJ-45 Connector** to this port. See *Chapter 6 The I/O Terminal Block*.<br>**Note:** The Wiegand interface is NOT functional now. |
| 5 | Mini SD Card Slot<br>(only for GV-DSP LPR V2) | Inserts a Mini Secure Digital (SD) card. The Mini SD card is used for storing recognition images, and backing up offline data when the connection between GV-DSP LPR and GV-LPR System or the GV-LPR Center is interrupted. |
| 6 | Micro SD Card Slot<br>(only for GV-DSP LPR V3) | Inserts a Micro Secure Digital (SD) card. The Micro SD card is used for storing recognition images, and backing up offline data when the connection between GV-DSP LPR and GV-LPR System or the GV-LPR Center is interrupted. |

# Chapter 2 Getting Started

This section provides basic information to get the GV-DSP LPR working on the network.

## 2.1 Installing on a Network

These instructions describe the basic connections to install the GV-DSP LPR on the network. Here we use the GV-DSP LPR V3 as the example to demonstrate the steps.

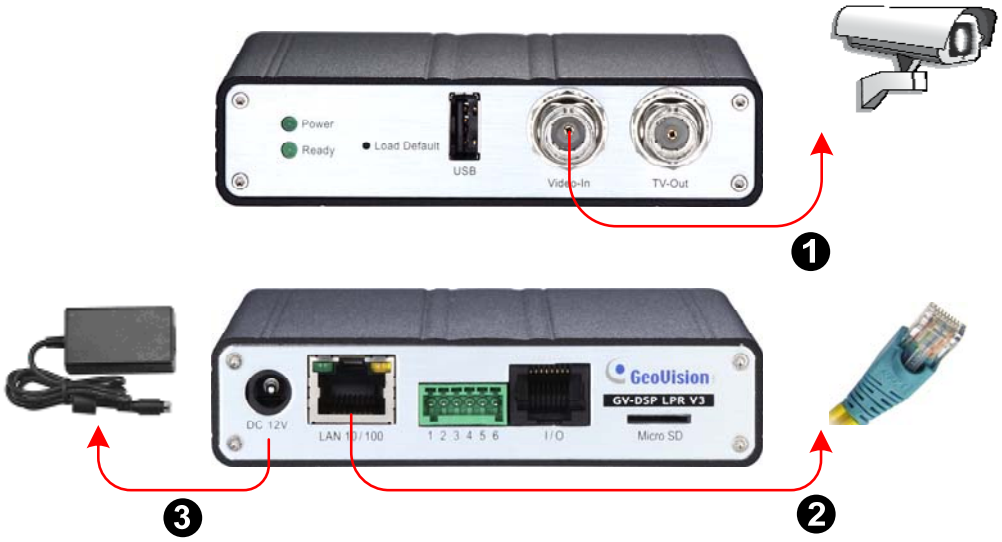


*Figure 2-1*

1. Connect the video output of your camera to the BNC video input.
2. Connect the hub or switch on the LAN to the unit's 10/100 Mbps Ethernet port.
3. Connect the power supply to the power input.
4. Wait until both Power and Ready LEDs are on and then you can set the IP address for the unit.

## 2.2 Assigning an IP Address

Designed for use on an Ethernet network, the GV-DSP LPR must be assigned an IP address to make it accessible.

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**Note:** The GV-DSP LPR has a default address of **192.168.0.230**. The computer used to set the IP address must be under the same IP and subnet sequence assigned to the unit.

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1. Open your Web browser, and type the default IP address http://192.168.0.230/
2. In both Login and Password fields, type the default value **admin**. Click **Apply**.
3. In the left menu, select **Network** and then **LAN** to begin the network settings.

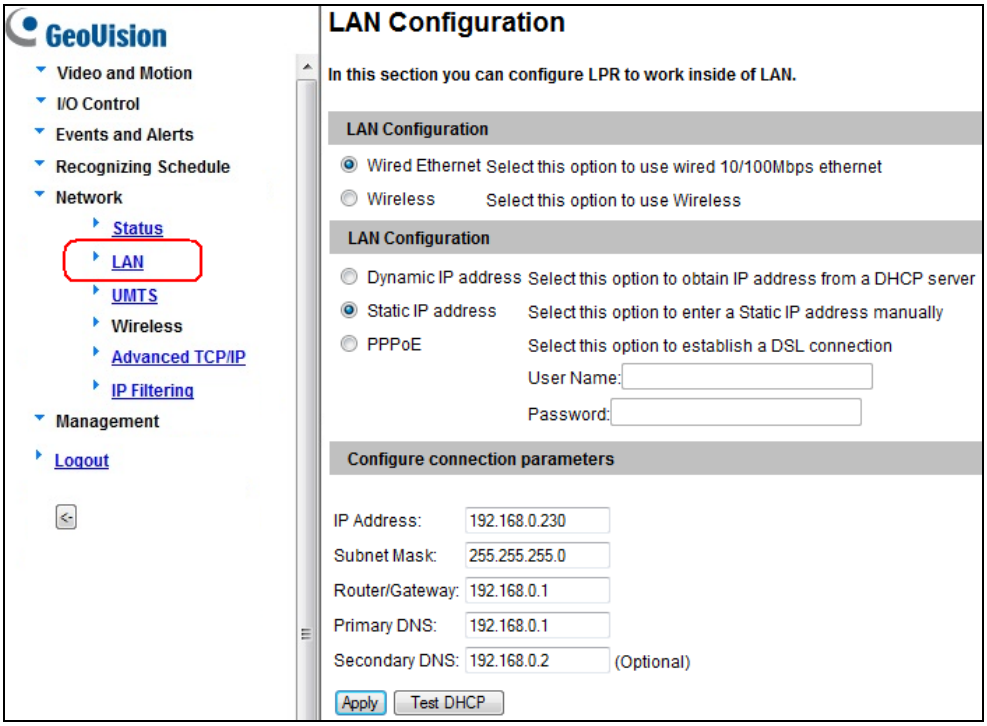


*Figure 2-2*

4. Select **Static IP address**. Type IP Address, Subnet Mask, Router/Gateway, Primary DNS and Secondary DNS in the **Configure connection parameters** section.
5. Click **Apply**. The GV-DSP LPR is accessible by entering the assigned IP address on the Web browser.

**Important:**

- **Dynamic IP Address**, **PPPoE** and **UMTS** should only be enabled if you know which IP address the GV-DSP LPR will get from the DHCP server or ISP. Otherwise you must use the Dynamic DNS service to obtain a domain name linked to the GV-DSP LPR's changing IP address first.

  For details on Dynamic IP Address and PPPoE settings, see *4.5.5 Advanced TCP/IP.*

- If **Dynamic IP Address**, **PPPoE** or **UMTS** is enabled and you cannot access the unit, you may have to reset it to the factory default and then perform the network settings again.

  To restore the factory settings, see the **Default** button in *1.5.1 Front View*.

## 2.3 Configuration Basics

Once the camera is properly installed, these important features can be configured using the browser-based configuration page and are discussed in the following sections in this manual:

- **Date and time adjustment:** see *4.6.1 Date & Time Setting*.
- **Login and privileged passwords:** see *4.6.3 User Account*.
- **Network gateway:** see *4.5 Network*.
- **Video attribute (Brightness, Contrast, Saturation and Hue):** see *3.2.2 Adjustment of Video Attributes.*
- **Video format, resolution and frame rate:** see *4.1.1 Video Settings*.

# Chapter 3 Accessing the GV-DSP LPR

Two types of users are allowed to log in the GV-DSP LPR: Administrator and Guest. The Administrator has unrestricted access to all system configurations, while the Guest has the access to live view and network status only.

## 3.1 Accessing Your Surveillance Images and Recognition Results

Once installed, your GV-DSP LPR is accessible on the network. Follow these steps to access your surveillance images and recognition results:

1. Start the Internet Explorer browser.
2. Enter the IP address or domain name of the GV-DSP LPR in the **Location/Address** field of your browser.

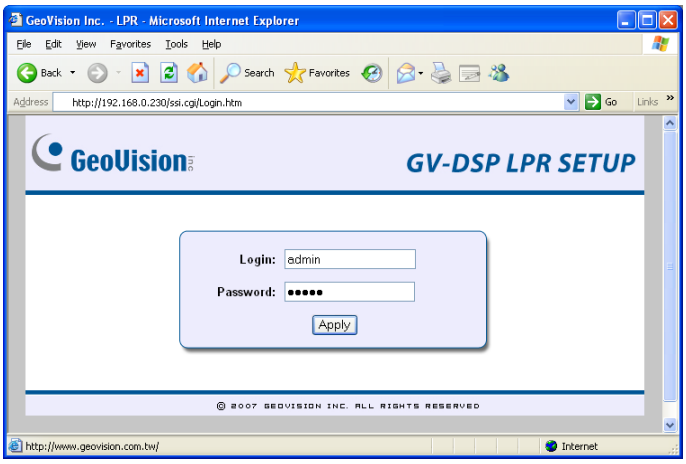


*Figure 3-1*

3. Enter a login name and password.
   - The default login name and password for Administrator are **admin**.
   - The default login name and password for Guest are **guest**.
4. A video image, similar to the example on Figure 3-2, is now displayed in your browser.

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**Note:** To enable the updating of images in Internet Explorer, you must set your browser to allow ActiveX Controls and perform a once-only installation of GeoVision's ActiveX component onto your computer.

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## 3.2 Functions Featured on the Main Page

This section introduces the features of the Live View window and Network Status on the main page. The two features are accessible by both Administrator and Guest.

### Main Page of Guest Mode

- ▼ **Video and Motion**
  - ► **Live View**
- ▼ **Network**
  - ► **Status**

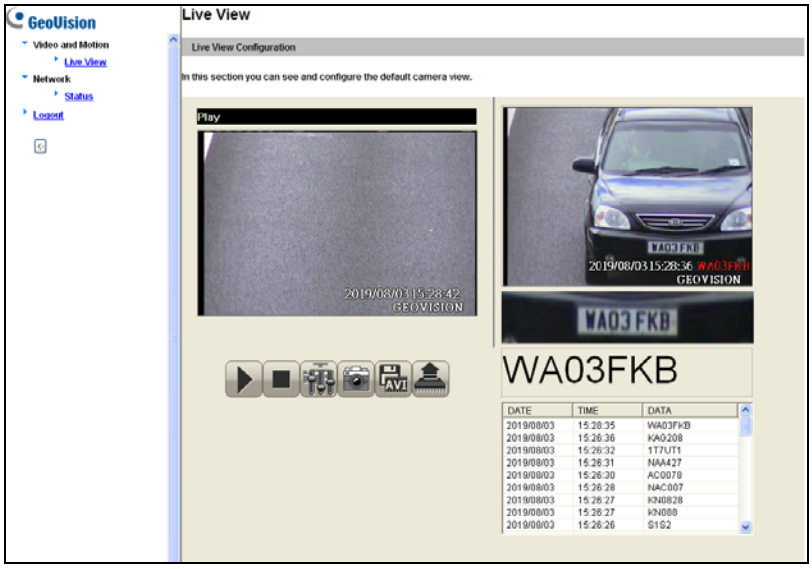



*Figure 3-2*

## 3.2.1 The Live View Window

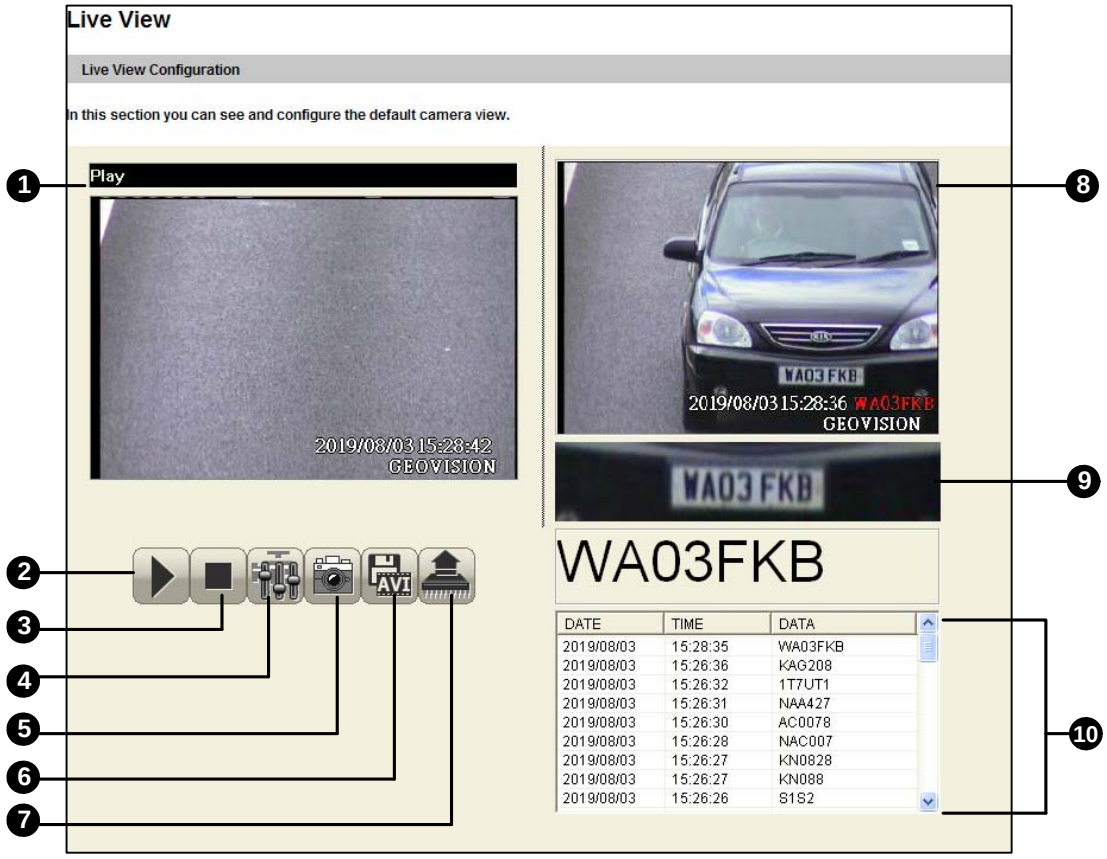



*Figure 3-3*

| No. | Name | Function |
|---|---|---|
| 1 | Live View | Displays live video. |
| 2 | Play | Starts the connection and plays live video. |
| 3 | Stop | Terminates the connection. |
| 4 | Remote Config | Adjusts video attributes of the live video. |
| 5 | Snapshot | Takes a snapshot of live video. |
| 6 | File Save | Records the live video and saves in .avi format. |
| 7 | Firmware Upgrade | Upgrades the firmware of GV-DSP LPR. |
| 8 | Recognition Display | Displays the recognition image. |
| 9 | Number Display | Displays the plate number. |
| 10 | Record List | Lists the dates and times of detection results. |

### 3.2.2 Adjustment of Video Attributes

To adjust video attributes of the live video, follow these steps:

1. Click the **Remote Config** button (No. 4, Figure 3-3).
2. Move the slide bars (Brightness, Contrast, Saturation and Hue) to adjust video attributes. Only the Administrator is allowed to adjust the configurations.

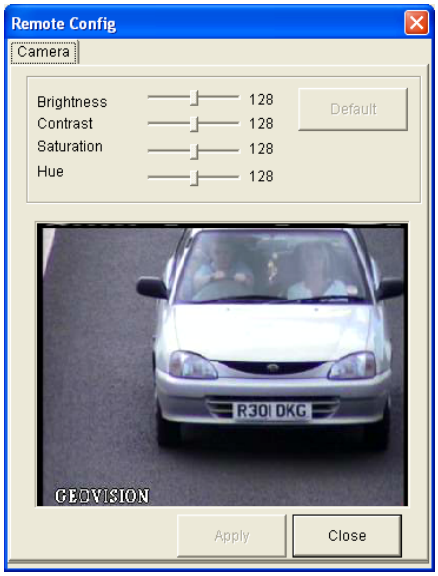



*Figure 3-4*

### 3.2.3 Snapshot of a Live Video

To take a snapshot of a live video, follow these steps:

1. Click the **Snapshot** button (No. 5, Figure 3-3). The Snapshot window appears.
2. Click the **Print** button to print out the displayed image. Or click the **Save** button to save the image to the local computer.

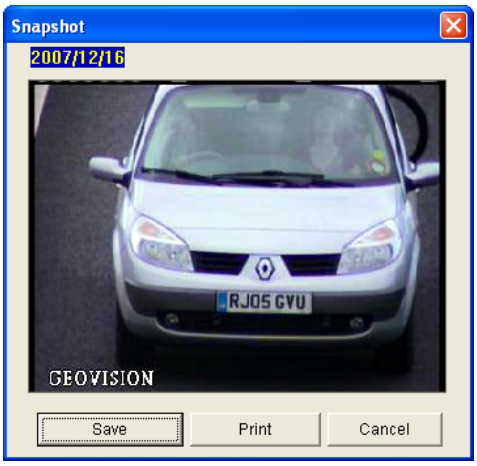



*Figure 3-5*

### 3.2.4 Video Recording

You can record live video for a certain period of time to your local computer.

1. Click the **File Save** button (No.6, Figure 3-3). The Save As dialog box appears.

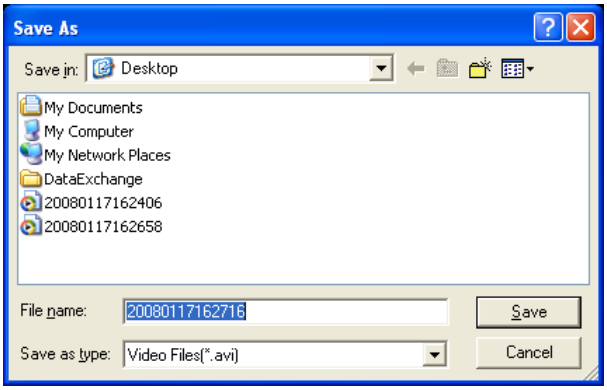



*Figure 3-6*

2. Specify **Save in**, type the **File name**, and click the **Save** button to start recording.
3. To stop recording, click the **Stop** button (No.3, Figure 3-3).

### 3.2.5 Firmware Upgrade

This window allows you to upgrade the firmware over LAN. For details, see Chapter 5.

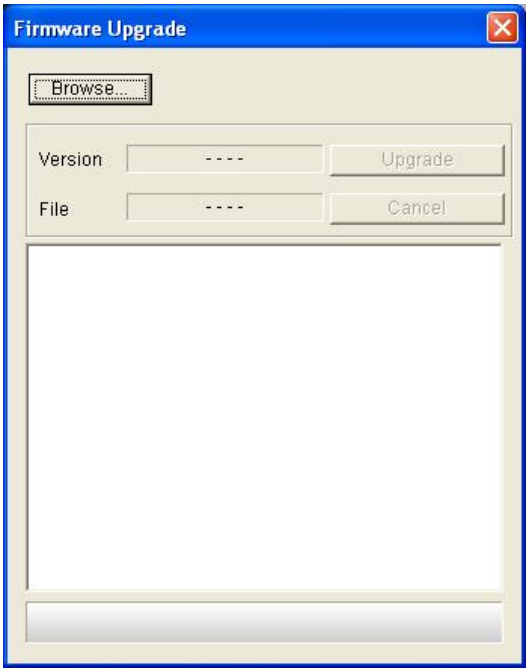



*Figure 3-7*

### 3.2.6 Network Status

To view the network status, in the left menu, click **Network** and select **Status**.

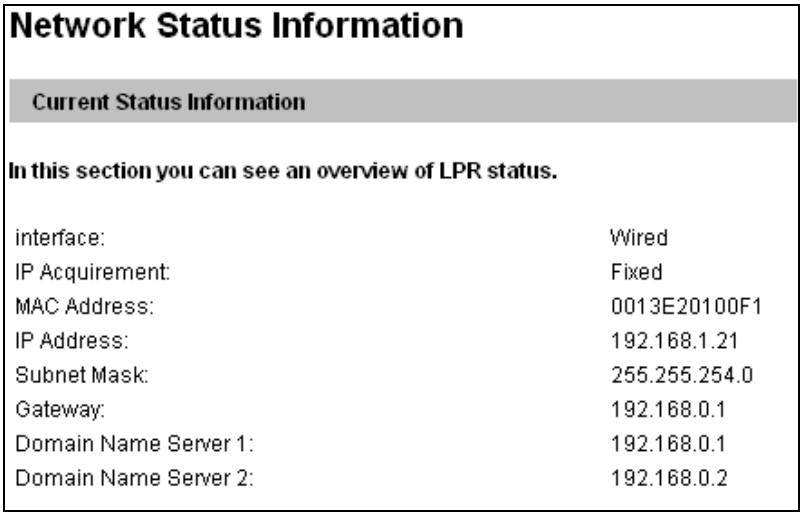



*Figure 3-8*

# Chapter 4 Administrator Mode

The Administrator can access the system configuration via the Internet. Six categories of configurations are involved in the system configuration: **Video and Motion**, **I/O Control**, **Events and Alerts**, **Recognizing Schedule**, **Network**, and **Management.**

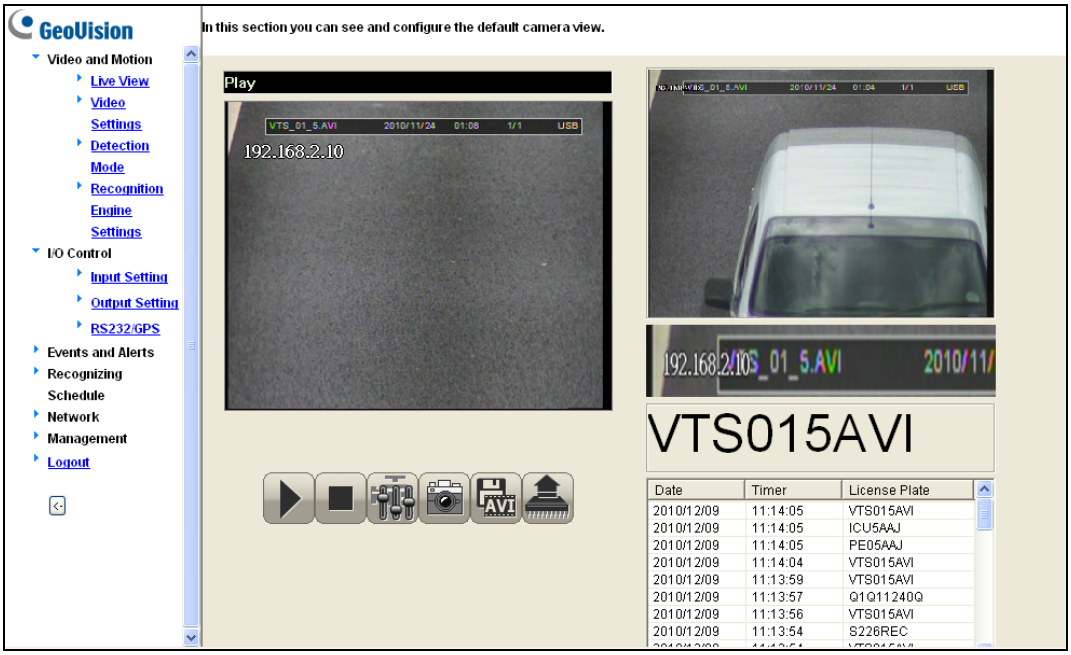



*Figure 4-1*

## List of Menu Options

Find the topic of interest by referring to the section number prefixed to each option. The available options vary among video server models.

| | |
|---|---|
| **4.1 Video and Motion** | 4.1.1 Video Settings<br>4.1.2 Detection Mode<br>4.1.3 Recognition Engine Settings |
| **4.2 I/O Control** | 4.2.1 Input Setting<br>4.2.2 Output Setting<br>4.2.3 RS232 / GPS |
| **4.3 Events and Alerts** | 4.3.1 LPR Remote Server<br>4.3.2 VSM<br>4.3.3 FTP |
| **4.4 Recognizing Schedule** | |
| **4.5 Network** | 4.5.1 Status<br>4.5.2 LAN<br>4.5.3 UMTS<br>4.5.4 Wireless<br>4.5.5 Advanced TCP/IP<br>4.5.6 IP Filter |
| **4.6 Management** | 4.6.1 Date & Time Setting<br>4.6.2 Storage Settings<br>4.6.3 User Account<br>4.6.4 Log Information<br>4.6.5 Tools |

## 4.1 Video and Motion

This section includes video settings and detection methods to activate license plate recognition.

### 4.1.1 Video Settings

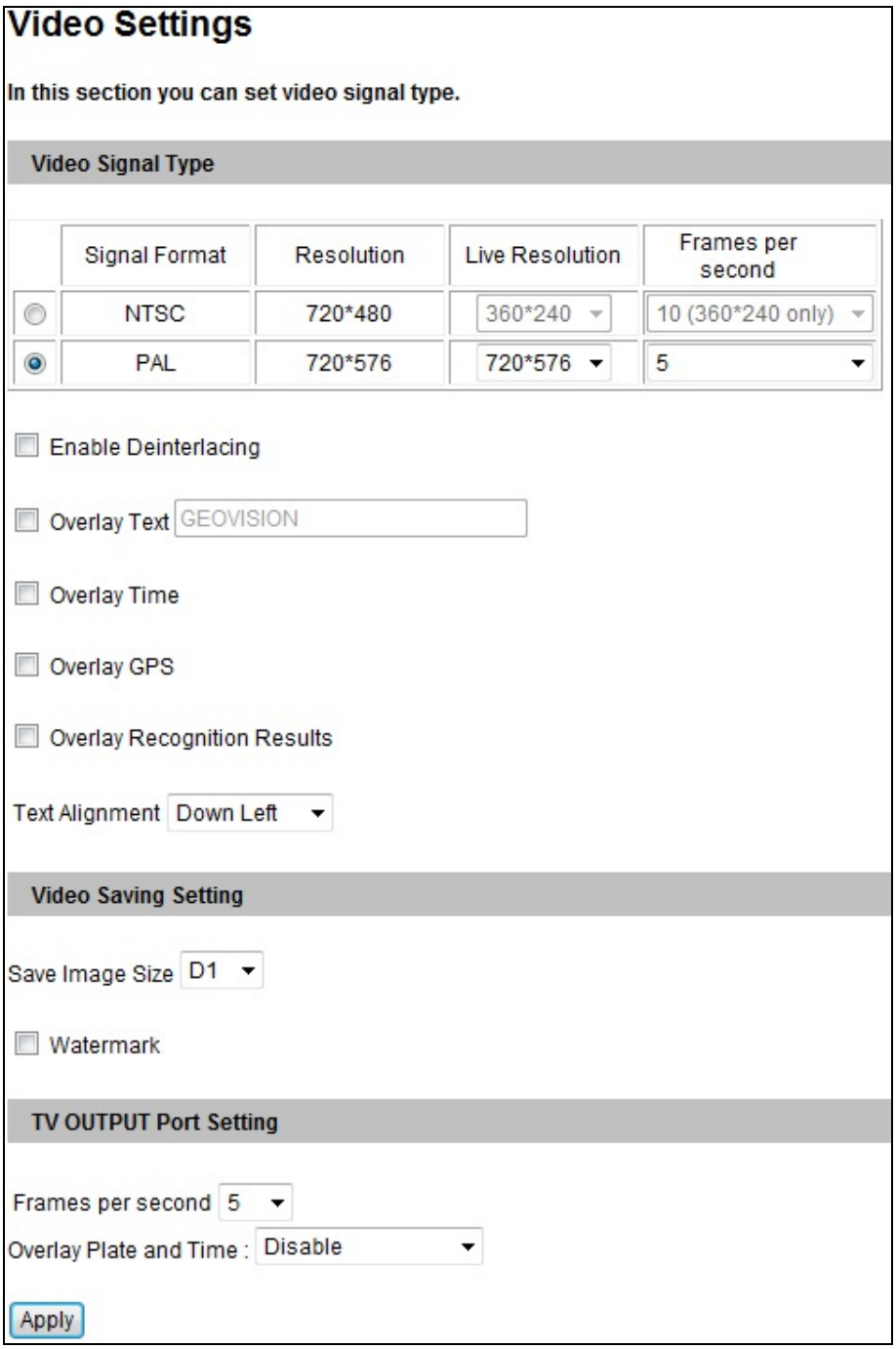



*Figure 4-2*

**[Video Signal Type]** The GV-DSP LPR supports both NTSC and PAL video signals. Select either **NTSC** or **PAL**.

There are several resolution and frame rates available. Note that **10** fps is only available when the resolution is set to 360 x 240 (360 x 288).

| NTSC | PAL |
|---|---|
| 720 x 480 | 720 x 576 |
| 360 x 240 | 360 x 288 |

| | | |
|---|---|---|
| **Frame Rate** | **NTSC** | 1, 3, 5, 7, 10 |
| | **PAL** | 1, 3, 5, 8, 12 |

- **Enable Deinterlacing:** Select this option to avoid interlace of the odd and even video lines.
- **Overlay Text:** Enter a text message that will be overlaid on live and captured images, e.g. company name.
- **Overlay Time:** Select this option to display the time stamp on live and captured images.
- **Overlay GPS:** Select this option to display the GPS data (coordinates of the vehicle) on live and captured images. For this function to work, you need to connect a RS-232 GPS Receiver to the terminal block on the GV-DSP LPR. See *6.2.2 Terminal Block*.
- **Overlay Recognition Results:** Select this option to display the recognition result on the live and captured images.
- **Text Alignment:** Select a position for the text, time stamp and recognition results to appear on live and captured images, e.g. down left, down right, top left or top right.

**[Video Saving Setting]**

- **Save Image Size:** Select the size of the captured image that is saved to the memory card.
- **Watermark:** Enable the watermark overlay that appears on captured images. Note that this feature is NOT functional now.

**[TV Output Port Setting]** The unit allows the direct connection of an external monitor to output live images and recognition results immediately. When the unit is installed at the place where the network is not accessible, the TV-Out port can be used for camera adjustment to ensure the image of license plate is captured properly. Select the frame rate and text overlay for the TV output.

### 4.1.2 Detection Mode

You can activate license plate recognition by motion detection or sensor triggers. For motion detection, up to 8 detection areas can be defined; whenever vehicles cross the defined detection areas, the license plate recognition will be activated.

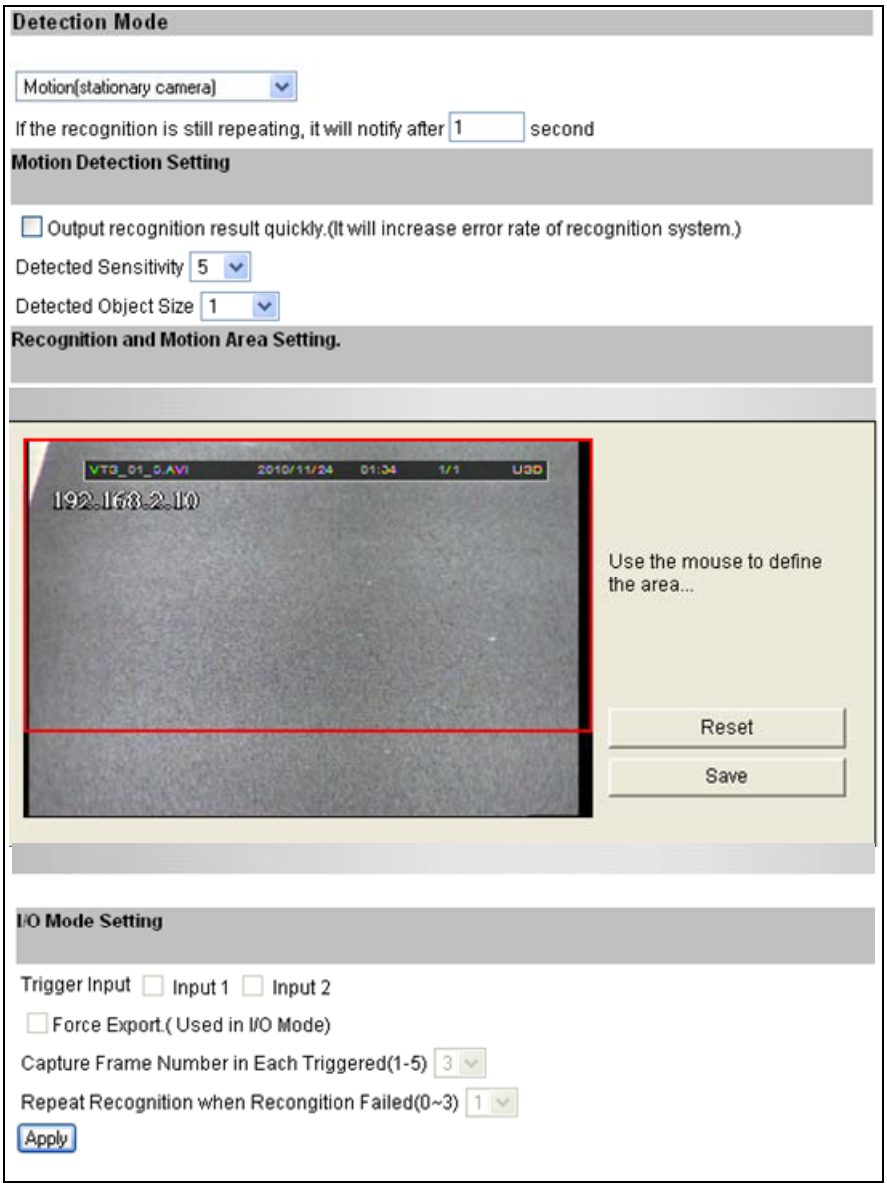



*Figure 4-3*

**[Detection Mode]** From the drop-down list on top left, select the method to activate license plate recognition.

- **Disable:** Deactivate recognition.
- **Motion (Stationary Camera):** Activate recognition by motion detection. Select this mode if your camera is fixed at one place.

- **Motion (Mobile Camera):** Activate recognition by motion detection. Select this option if your camera is not fixed at one place or is installed on a vehicle.
- **Motion (Continuous Recognition):** Activate round-the-clock recognition.
- **Parking (I/O):** This option is designed for parking areas. The recognition is activated by input triggers at the parking area. Select which inputs will trigger recognition in the **I/O Mode Setting** section below.
- **Parking (Motion):** This option is designed for parking areas. The recognition is activated by motion detection at the parking area. Select this option if the parking area is without a gate installed to trigger the recognition.
- **If the recognition is still repeating, it will notify after the specified second:** Select this option to avoid multiple recognition results for the same license plate due to the position of the camera. Specify the duration of a recognition result to be displayed if the next license plate recognized is the same as the previous one.

**[Motion Detection Setting]**

- **Output recognition result quickly (It will increase error rate of recognition system):** Select this option if you want to have a faster recognition result at the cost of accuracy. This option is suitable for a large amount of traffic and every frame received by the GV-DSP LPR will go through a fast recognition process (approximately at the processing rate of 1 frame per second).
- **Detected Sensitivity:** Select the sensitivity level of motion detection from the drop-down list. The default value is set to 5. The higher the value, the more sensitive the system is to the motion.
- **Detected Object Size:** Select the value of the targeted object's normal size. The default value is set to 1. The higher the value, the bigger the object's size is.

**[Recognition and Motion Area Setting]** To configure the area of motion detection, first click **Reset** to clear the default setting. Then drag the mouse button to select an area of the image. You can define up to 8 areas to outline your detection areas. Every time when an area is selected, you will be prompted for confirmation.

1. Click **Save** to save the defined areas.
2. Click **Apply** to take effect.

**[I/O Mode Setting]**

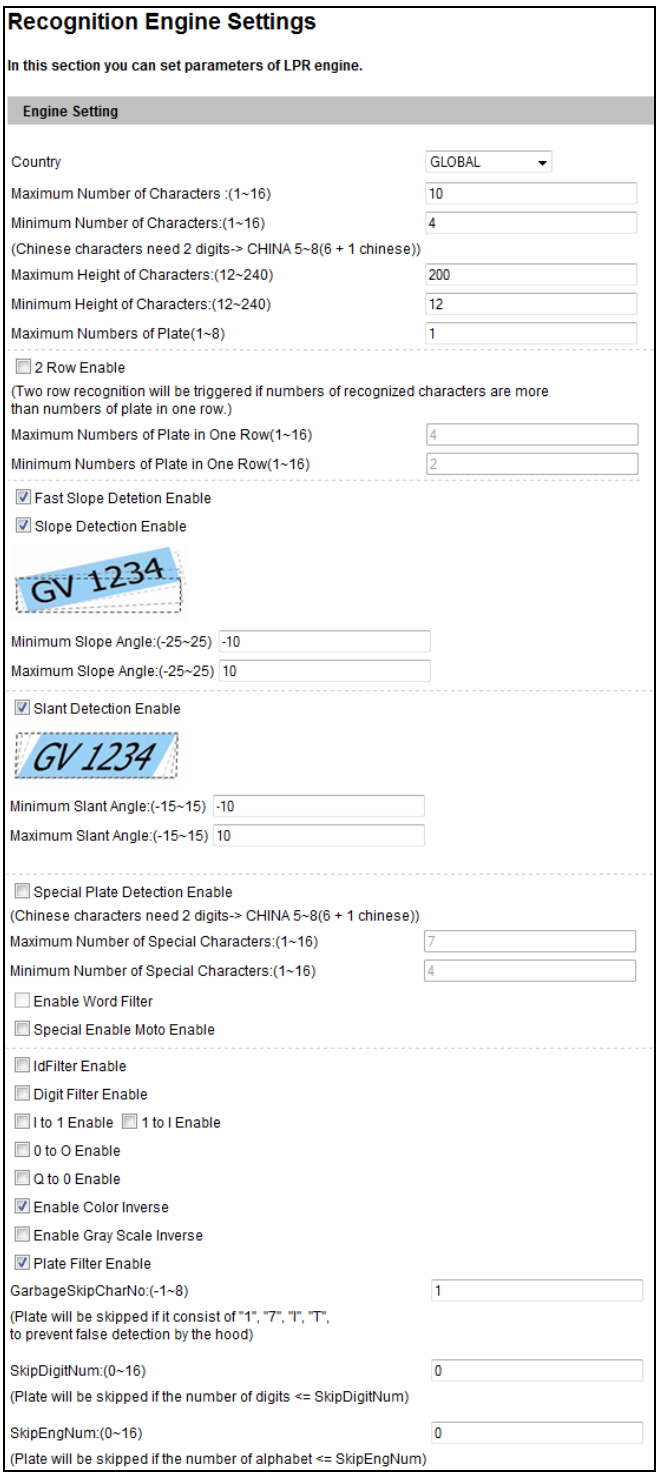
- **Trigger Input:** Select to trigger **Input 1** or **Input 2**.
- **Force Export (Used in I/O Mode):** Select to display the symbol ****** to represent unknown license plates even though the recognition fails. If the option is not selected, the recognition failure will not be recorded.
- **Capture Frame Number in Each Triggered (1~5):** Select the number of image frames from 1 to 5 to be captured when the recognition is activated by input trigger.
- **Repeat Recognition when Recognition Failed (0~3):** Select the number of recognitions from 1 to 3 to be performed after the recognition fails after being activated by input trigger.

For the related settings of input devices, see *4.2.1 Input Setting*.

### 4.1.3 Recognition Engine Settings

You can adjust the recognition engine to improve the recognition process and increase the accuracy.

Note this page is only available on the following engines: Australia, Austria, Brazil, Chile, China, Czech, France, Germany, Global, Israel, Italy, Mexico, Poland, Portugal, South Africa, Spain, Taiwan, UK and USA.



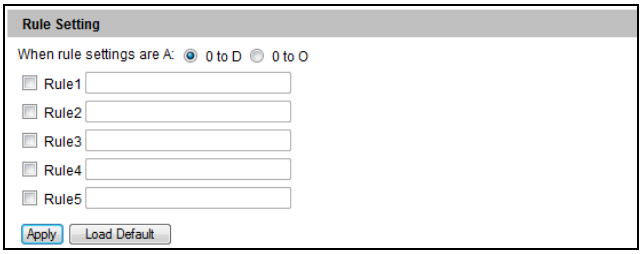



*Figure 4-4*

**[Engine Setting]**

- **Country:** Select a recognition engine to be set up.
- **Maximum number of characters:** Set the maximum number of characters allowed on the license plate to activate the recognition process. If the number of characters exceeds the limit, the system will not start the recognition.
- **Minimum number of characters:** Set the minimum number of characters allowed on the license plate to activate the recognition process. If the number of characters does not reach the minimum requirement, the system will not start the recognition.
- **Maximum height of characters:** You can set the maximum height of characters on the license plate in pixels to activate the recognition process.
- **Minimum height of characters:** Set the minimum height of characters on the license plate in pixels to activate the recognition process.
- **Maximum number of plates:** Set the maximum number of plates to be recognized simultaneously.
- **Two Row Enable:** This option can recognize two rows of characters on license plates. Note this option is only available on the engine version of V5000 or later.
- **Maximum numbers of plate in one row:** Set the maximum number of characters in one row allowed on the license plate to activate the recognition process. If the number of characters exceeds the limit, the system will not start the recognition.
- **Minimum numbers of plate in one row:** Set the minimum number of characters in one row allowed on the license plate to activate the recognition process. If the number of characters does not reach the minimum requirement, the system will not start the recognition.
- **Fast Slope Detection Enable:** This option can increase the recognition speed by 10 % but decrease the accuracy by 3%.
- **Slope Detection Enable:** The license plate tilting in a horizontal direction can be detected.

- ⊙ **Minimum angle of slope:** Set the minimum tilt angle to be allowed to activate the recognition process.
- ⊙ **Maximum angle of slope:** Set the maximum tilt angle to be allowed to activate the recognition process.

- **Slant Detection Enable:** The license plate tilting in a vertical direction can be detected.
  - ⊙ **Minimum angle of slant:** Set the minimum tilt angle to be allowed to activate the recognition process.
  - ⊙ **Maximum angle of slant:** Set the maximum tilt angle to be allowed to activate the recognition process.
- **Special Plate Detection Enable:** This option can recognize traditional Chinese characters. This option and the following sub options are only available on the Taiwan recognition engine.
  - ⊙ **Maximum number of characters:** Set the maximum number of special characters allowed on the license plate to activate the recognition process. If the number of characters exceeds the limit, the system will not start the recognition.
  - ⊙ **Minimum number of characters:** Set the minimum number of special characters allowed on the license plate to activate the recognition process. If the number of characters does not reach the minimum requirement, the system will not start the recognition.
  - ⊙ **Enable Word Filter:** Enable the recognition for the character “軍”on license plates of military vehicles. Note this option is only available on the engine of Taiwan.
  - ⊙ **Special Enable Moto Enable:** Enable the recognition for motorcycle license plate.
  - ⊙ **IdFilter Enable:** Select this option to filter out extraneous alphabetical characters around the license plate and increase recognition accuracy.
  - ⊙ **Digit Filter Enable:** Select this option to filter out extraneous numerical characters around the license plate and increase recognition accuracy.

The following options can be enabled to avoid misidentification of certain characters in some countries.

- **I to 1 Enable:** Always identify the character “I” as “1” (one).
- **1 to I Enable:** Always identify the character “1” as “I” (letter I).
- **0 to O Enable:** Always identify the character “0” as “O” (letter O).
- **Q to 0 Enable:** Always identify the character “Q” as “0” (zero). Note this option is only available on the engine version of V5000 or later.

- **Enable Color Inverse:** Enable the recognition for both license plates of “white characters on black background” and “black characters on white background”. By default, this option is enabled. Note this option is only available on the engines of China and Global.
- **Enable Gray Scale Inverse:** Enable the recognition for the license plate of “white characters on black background” only. By default, this option is disabled. Note this option is only available on the engines of China and Global.
- **Plate Filter Enable:** Enable this option to skip the recognition when the license plate is partially covered by objects.
- **GarbageSkipCharNo (-1~8):** Enable this option to skip the recognition when the license plate is composed of the characters of 1, 7, I and T. You can type the value according to the following formula. By default, the value is set to “-1”, meaning the option is disabled.

  **(Total No. of characters on the license plate) – (Total No. of “1, 7, I and T” characters on the license plate) ≤ GarbageSkipCharNo**

  For example, you type “5”. When the license plate is G**IT**00**77**, the system will not activate the recognition because the total number of characters on the license plate minus the total number of “1, 7, I and T” characters on the license plate equals three, which is less than five (7 – 4 = 3; 3 < 5).
- **Skip Digit Number:** Type the number of digits on the license plate to skip the recognition. For example, you type “3”. When the license plate is T4G23, the system will not activate the recognition because three digits “4, 2 and 3” are detected.
- **Skip Engine Number:** Type the number of alphabetical characters on the license plate to skip the recognition. For example, you type “3”. When the license plate is T4GL23, the system will not activate the recognition because three alphabets “T, G and L” are detected.

**[Rule Setting]** You can set up recognition rules to increase recognition accuracy. The rule can only consist of letters A and D, and its length must equal that of the license plate number. Use “A” and “D” to represent one alphabetical character and one numerical character of your license plate number respectively. For example, if the license plate is “ABC123” you can type “AAADDD” in one of the Rule fields. Up to 5 rules can be set.

- **(When rule settings are A) 0 to D:** Always identify the letter “O” as letter “D”. This is the default setting. It is useful to avoid misidentification in some countries’ license plates which is hard to distinguish between letter “O” and letter “D”. Select this option to activate a concurrent condition with the rules that you have set. For instance, if the rule entered in the field is “AADDD“, the recognition result will be “AD123” for license plate which appears to be “A0123”

- **(When rule settings are A) 0 to O:** Always identify the letter “O” as letter “O”. Select this option to activate a concurrent condition with the rules that you have set. For instance, if the rule entered in the field is “AAADDA“, the recognition result will be “IBZ02O” for license plate which appears to be “IBZ020”

## 4.2 I/O Control

The I/O terminal block on the rear panel of the GV-DSP LPR provides the interface for digital inputs and relay outputs. For details on the I/O terminal block, see Chapter 6.

### 4.2.1 Input Setting

The GV-DSP LPR can connect up to 2 input devices, e.g. sensors.

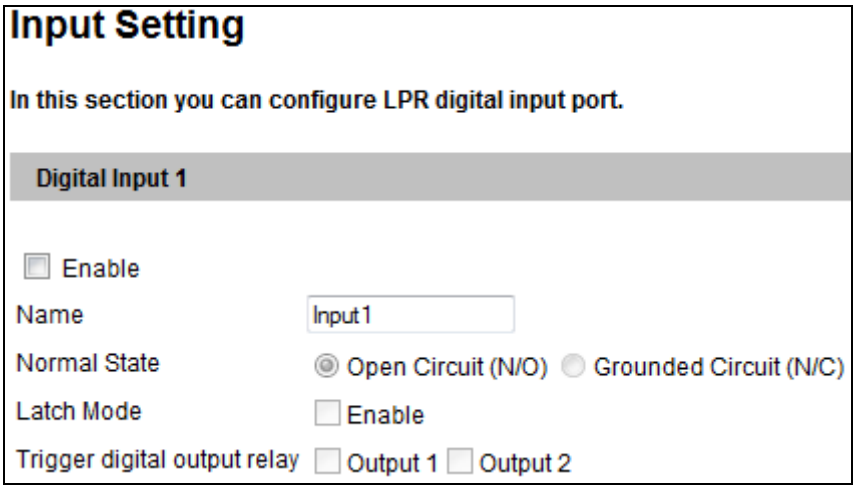



*Figure 4-5*

- **Normal State:** Set up the input state to trigger actions by selecting **Open Circuit (N/O)** or **Grounded Circuit (N/C)**.
- **Latch Mode:** Enable this option to have a momentary output alarm.
- **Trigger digital output relay:** Select the output(s) to be triggered after the input is activated.

### 4.2.2 Output Setting

The GV-DSP LPR can connect up to 2 output devices, e.g. alarms.

There are six output signals are available: N/O (Open Circuit), N/C (Grounded Circuit), N/O Toggle, N/C Toggle, N/O Pulse and N/C Pulse. Choose the one that mostly suits the device you are using. For **Toggle** output type, the output continues to be triggered until a new input trigger ends the output. For **Pulse** output type, the output is triggered for the amount of time you specify in the Trigger Pulse Mode for x Seconds field.

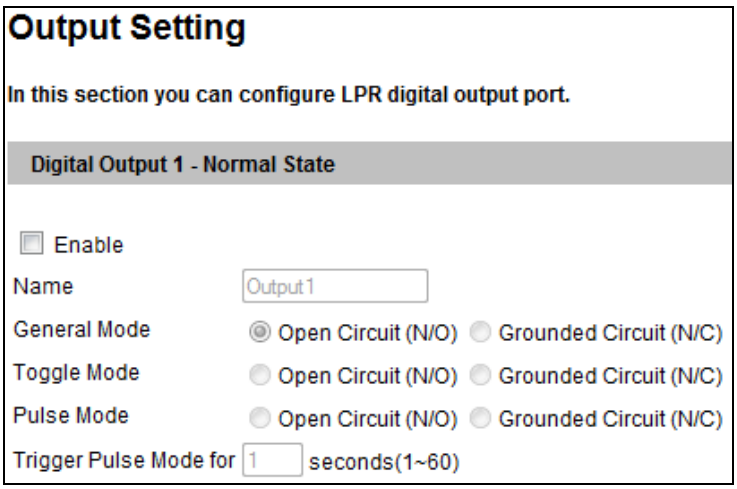



*Figure 4-6*

### 4.2.3 RS232 / GPS

By using a RS-232 cable, GV-DSP LPR can connect to the receiver's site, such as GV-System, to export the recognition data, including plate numbers and recognition time. GV-DSP LPR can also connect to the GV-GPS Receiver to display the coordinates of the vehicle on the live and captured images.

**Note:**

1. You can select either RS232 data transmission or GPS positioning function. The two functions cannot be enabled at the same time.
2. GV-DSP LPR only supports GPS receiver with RS-232 interface.

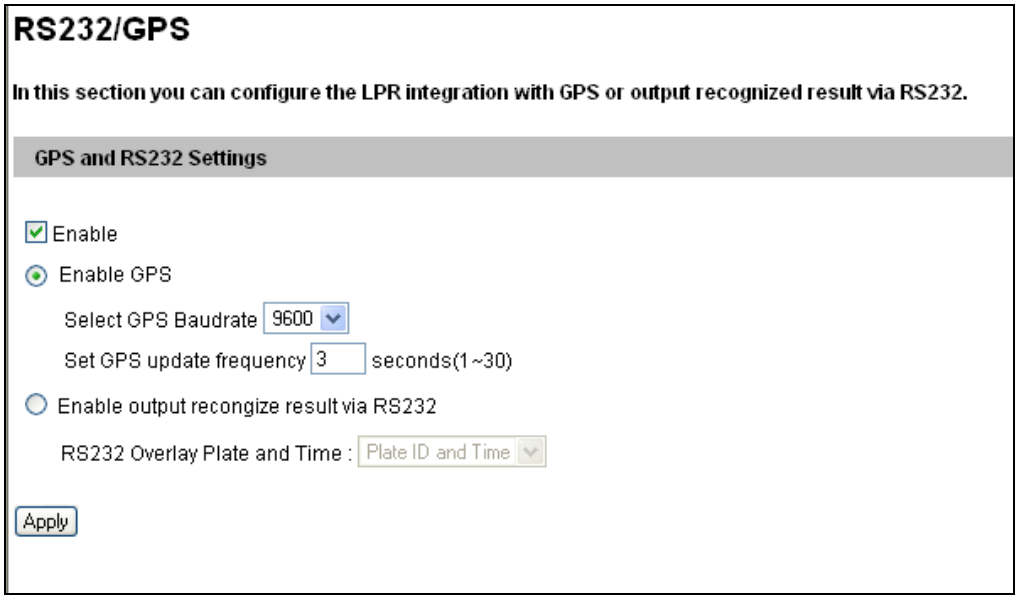



*Figure 4-7*

- **Enable GPS:** Select this option to enable the GPS positioning function.
  - **Select GPS Baudrate:** Two baud rate options are available: 9600 and 4800. By default the value is 9600.
  - **Set GPS update frequency:** Set the frequency in seconds for GPS data updated from the satellite.
- **Enable output recognize result via RS232:** Select this option to enable RS-232 data transmission.
  - **RS232 Overlay Plate and Time:** Select the type of data you want to export: **Plate ID Only**, **Plate ID and Time** or **Plate File Name**.

To connect the GV-GPS Receiver to the GV-DSP LPR, see *Chapter 6 I/O Terminal Block*.

## 4.3 Events & Alerts

### 4.3.1 LPR Remote Server

When the alarm events of motion detection and sensor trigger occur, the GV-LPR Center, GV-LPR System or GV-DVR System can get alerts with recognition results and captured images.

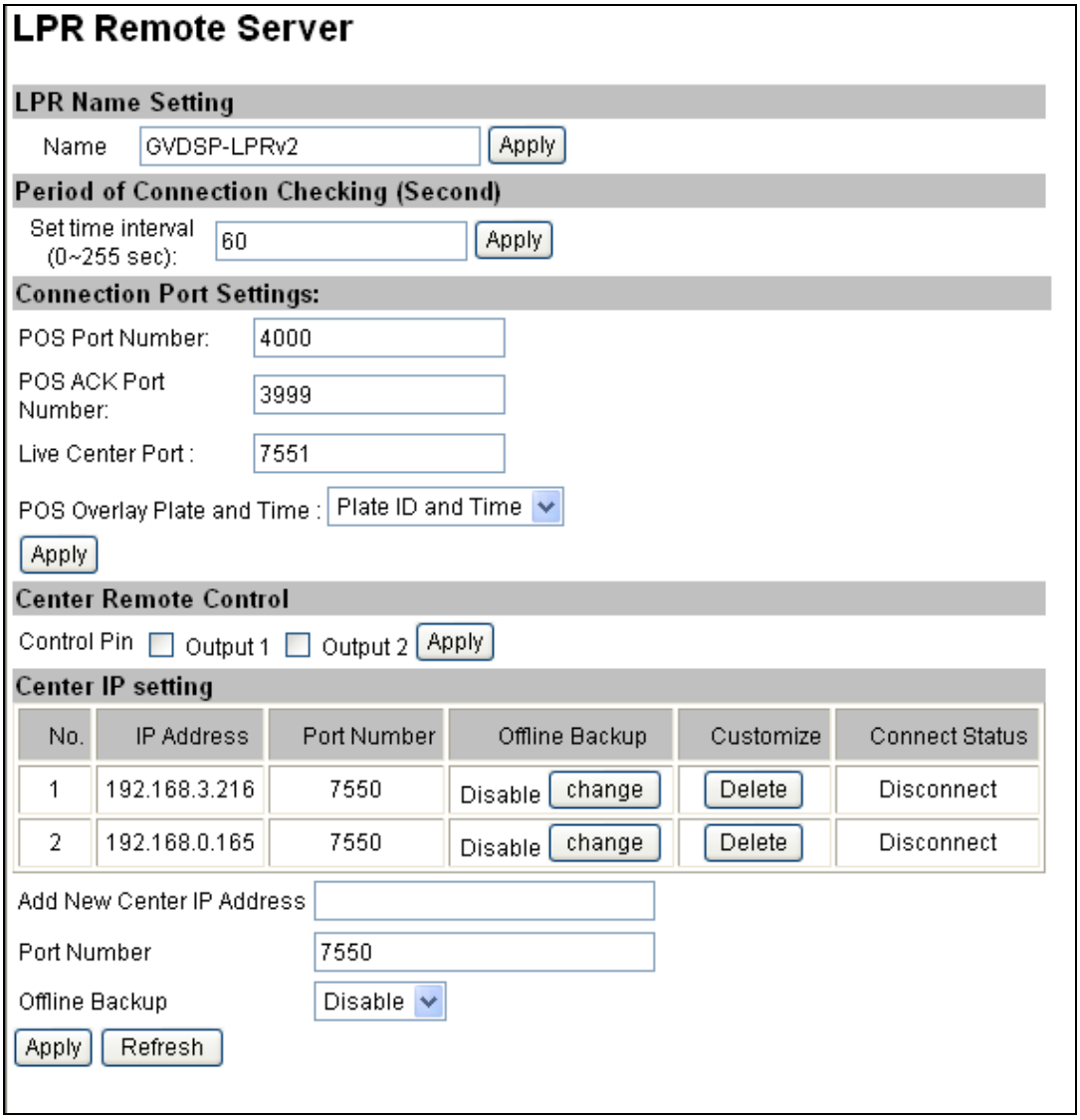



*Figure 4-8*

**[LPR Name Setting]** Type a descriptive name for the GV-DSP LPR.

**[Period of Connection Checking]** Set the time interval in seconds of each reconnection attempt.

**[Connection Port Settings]** Both of **POS Port** and **POS ACK Port** are used for transmitting the recognition result to the GV-DVR System. The default port numbers are 4000 and 3999 respectively. The **LPR Live Center Port** is used for displaying the recognition result on the live view. When you want to access more than one GV-DSP LPR on the browser screen, set different LPR Live Center Ports for each GV-DSP LPR; otherwise you cannot see the recognition result on the live view.

- **POS Overlay Plate and Time:** Select whether the recognition results will contain Plate ID and Time or only Plate ID when they are transmitted to the GV-DVR System.

**[Center Remote Control]** Select outputs allowed to be triggered by the GV-LPR Center or GV-LPR System remotely.

**[Center IP Setting]** Connect the GV-DSP LPR to the GV-LPR Center or GV-LPR System for central monitoring. The maximum of 4 GV-LPR Centers can be connected at one time.

- **Add New Center IP Address:** Type the IP address of the GV-LPR Center or GV-LPR System you want to enable connection. Then click **Apply** for connection.
- **Offline Backup:** When disconnected from the GV-LPR Center or GV-LPR System, the GV-DSP LPR can store recognition data to the SD card. When the connection recovers, the GV-DSP LPR can immediately send the stored data to the GV-LPR Center or GV-LPR System. For the Offline Backup to work, you must select **Enable saving results on SD Card** in Storage Settings (Figure 4-19) ahead.

---

**Note:** The GV-DVR System refers to GV-System or GV-NVR.

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### 4.3.2 VSM

GV-DSP LPR can connect up to two Vital Sign Monitors (VSM). After a system event occurs, such as Log In, Log Out or Video Lost, the central monitoring station VSM can get notified by text alerts. Up to two VSM servers can be connected simultaneously. For the live monitoring through VSM, you must already have a subscriber account on VSM.

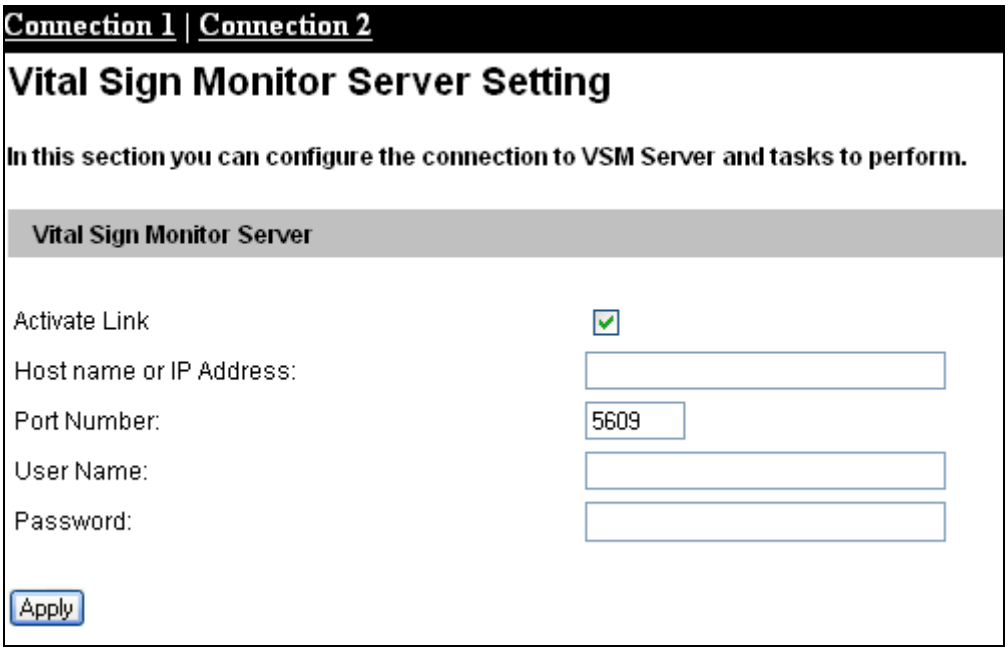


*Figure 4-9*

To enable the VSM connection:

1. **Activate Link:** Enable the monitoring through VSM.
2. **Host Name or IP Address:** Type the host name or IP address of VSM.

   **Port Number:** Match the port to **Port 2** on VSM. Or keep the default value 5609.
3. **User Name:** Type a valid user name to log into VSM.
4. **Password:** Type a valid password to log into VSM.
5. Click **Apply.** Once the connection is established, the Status section will display "Connected" and connected time.
6. Click the **Connection 2** tab to create connection to the other VSM if available.
7. At the VSM site, set the appropriate port connecting to the GV-DSP LPR.

   A. Click the **Preference Settings** button, select **System Configure**, click the **Network** tab, and check **Accept connections from GV-Compact DVR, Video Server & IP Cam.**

   B. Keep the default port **5609** for the Port 2 option, or modify it if necessary.

### 4.3.3 FTP

The GV-DSP LPR can act as a FTP server, sending its own captured images and overview images from GV-Video Server together to GV-LPR Center or GV-LPR System. You can also download the captured images recorded on the SD card via the FTP server.

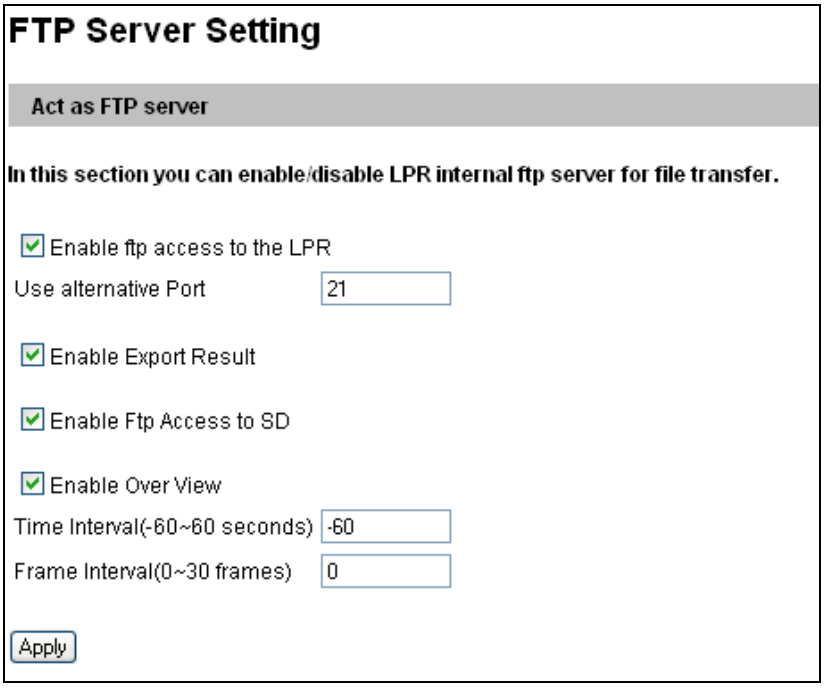


*Figure 4-10*

To build the connection among GV-DSP LPR, GV-Video Server and GV-LPR Center or GV-LPR System, follow the steps below:

1. On the GV-DSP LPR, select **Enable ftp access to the LPR** to act as a FTP server and click **Apply**. The default port is 21. Modify the port value if necessary.
2. Select **Enable Export Result**, and the captured images will be exported to the FTP.
3. Select **Enable Over View**, and the overview images from the GV-Video Server will be exported to the FTP.
4. There might be a time or a frame gap between the captured images from GV-DSP LPR and the overview image from GV-Video Server. To ensure the two images match each other, you can set the **Time Interval** or **Frame Interval**.

   For example, the time difference between the captured image (GV-DSP LPR) and the overview image (GV-Video Server) is 60 seconds. To prevent from any matching errors, setting 60 in the Time Interval field can ensure the images match each other at the GV-LPR Center or GV-LPR System.

5. To connect to GV-LPR Center or GV-LPR System, in the left menu (Figure 4-1), click **Events and Alerts**, click **LPR Remote Server**, and type the IP address of the GV-LPR Center or GV-LPR System in the Add New Center IP Address field. For details, see *4.3.1 LPR Remote Server*.
6. At the GV-Video Server site, on the FTP setting page, enable the FTP function and type the IP address, User Name and Password to access the FTP server of the GV-DSP LPR. Make sure the port value is the same as that of the GV-DSP LPR.

To access the SD card data via the FTP, select **Enable Ftp access to SD**. The GV-DSP LPR will act as a FTP server allowing users to download image files.

To access the internal FTP server through a web browser, enter the IP address or the domain name of the GV-DSP LPR in your browser like this:
ftp://192.168.0.230
When you are prompted for Username and Password, enter the default value **lprfptserver** in both fields. Then you should find the image files recorded after recognition.

To change login information of the internal FTP server, see *4.6.3 User Account*.

## 4.4 Recognizing Schedule Settings

You can set up the schedule for the recognition to start.

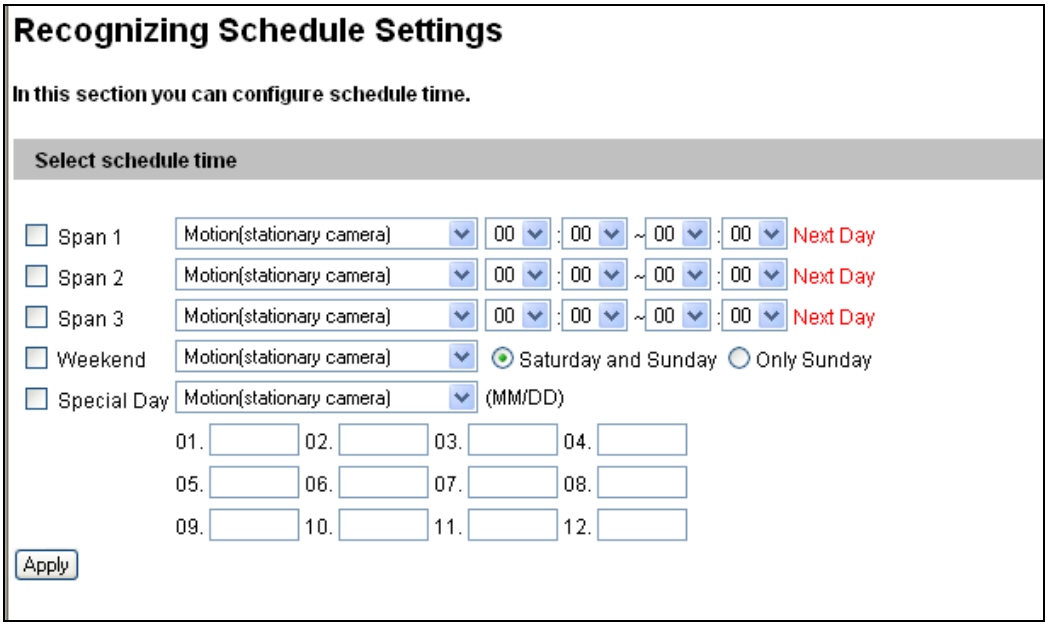


*Figure 4-11*

- **Span 1- Span 3:** Set a different recognition mode for each time frame during the day. Each day can be divided into 3 time frames, represented by Span 1 to Span 3. The time frame settings will work from Monday through Sunday.
- **Weekend:** Enable this option to have a whole-day recognition on the weekend and select a recognition mode to be used. Define whether your weekend includes **Saturday and Sunday** or **Only Sunday**.
- **Special Day:** Set the recognition mode on a specified day.

---

**Note:** If the settings for Special Day conflict with those for Span 1-3 or Weekend, the Special Day settings will get priority.

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## 4.5 Network

The Network section includes some basic but important network configurations that enable the GV-DSP LPR to be connected to a TCP/IP network.

### 4.5.1 Status

To view the network status, click **Network** and select **Status**.

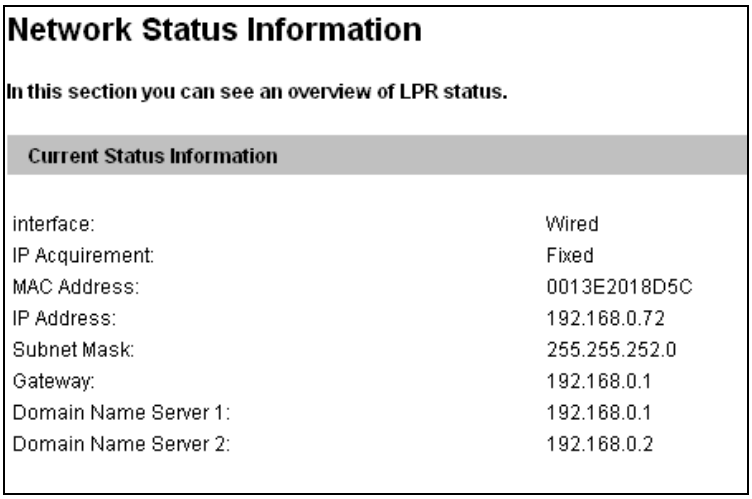


*Figure 4-12*

## 4.5.2 LAN

According to your network environment, select among Static IP, DHCP, PPPoE and UMTS.

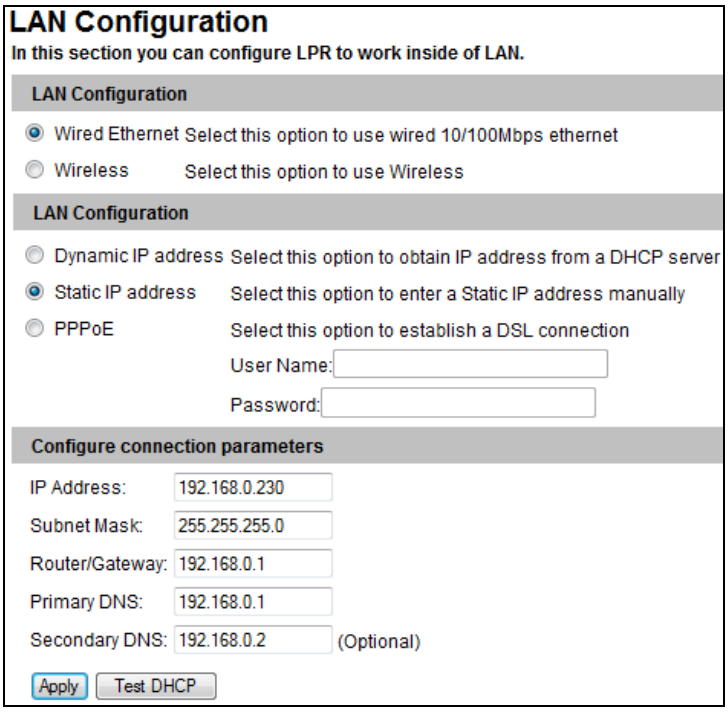


*Figure 4-13*

**[LAN Configuration]**

According to the network environment, select **Wired** or **Wireless**. Before enabling the **Wireless**, set up **WLAN configuration** first. For setup details, see *4.5.4 Wireless*.

**[LAN Configuration]**

- **Dynamic IP address:** The network environment has a DHCP server. This option should only be enabled if you know which IP address the GV-DSP LPR will get from the DHCP server, or you have obtained a domain name from the DDNS service provider.
- **Static IP address:** Assign a static IP or fixed IP to the GV-DSP LPR. Type TCP/IP and DNS parameters of the unit in the **Configure connection parameters** section.
- **PPPoE:** The Network environment is xDSL connection. Type the Username and Password provided by ISP to establish the connection. If you use the xDSL connection with dynamic IP addresses, you must use the DDNS function to obtain a domain name linked to the changing IP address of the GV-DSP LPR first.

**[Configure connection parameters]** Type the IP address, Subnet Mask, Router/Gateway, Primary DNS server and Secondary DNS server of the GV-DSP LPR.

| Parameters | Default |
|---|---|
| IP address | 192.168.0.230 |
| Subnet Mask | 255.255.255.0 |
| Router/Gateway | 192.168.0.1 |
| Primary DNS server | 192.168.0.1 |
| Secondary DNS server | 192.168.0.2 |

For details on the DDNS function (Dynamic DNS Server), *see 4.5.5 Advanced TCP/IP.*

### 4.5.3 UMTS

UMTS stands for Universal Mobile Telephone System. UMTS is a third-generation (3G) broadband, packet-based transmission of text, digitized voice, video, and multimedia at data rates up to 2 megabits per second. UMTS offers a consistent set of services to mobile computer and phone users, no matter where they are located in the world.

After an UMTS-compatible wireless device is attached to the USB port and the UMTS function is enabled, the GV-DSP LPR can have Internet access. For supported mobile broadband devices, see *Appendix B*.

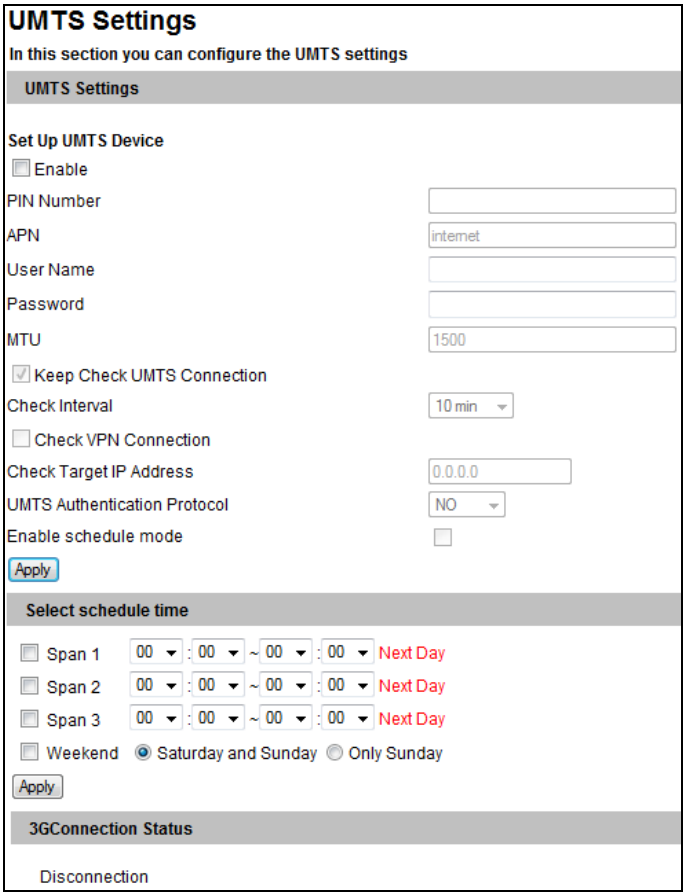


*Figure 4-14*

- **PIN number:** Type the PIN number that is provided by your network operator.
- **Access Point Name (APN):** Type Access Point Name that is provided by your network operator.
- **Username:** Type a valid username to enable the UMTS service from your network operator.
- **Password:** Type a valid password to enable the UMTS service from your network operator.

- **Maximum Transmission Unit (MTU):** Type the Maximum Transfer Unit. The default value is 1500.
- **Keep Check UMTS Connection:** Select this option to check the UMTS connection status and use the drop-down list to specify the desired time length for checking frequency. The GV-DSP LPR will rebuild the connection if disconnection is detected.
- **Check VPN Connection:** Select this option to check the VPN (Virtual Private Network) connection status. To check the IP address, type the target IP address in the **Check Target IP Address** field.
- **UMTS Authentication Protocol:** Use the drop-down list to select the UMTS Authentication Protocol provided by your network operator.
- **Enable Schedule Mode:** Starts the UMTS connection automatically based on the schedule you set in the Select Schedule Time section. Refer to *4.4 Recognizing Schedule Settings* for the same settings.
- **3G Connection Status:** Indicates the connection status of UMTS or VPN.

### 4.5.4 Wireless

To use the wireless function, a wireless LAN USB adaptor is required. The GV-DSP LPR now supports WiFi USB dongles: D-Link DWA-140 (H/W Version B1) and PEGATRON WL-166N11. For supported wireless LAN adaptors, see *Appendix A*.

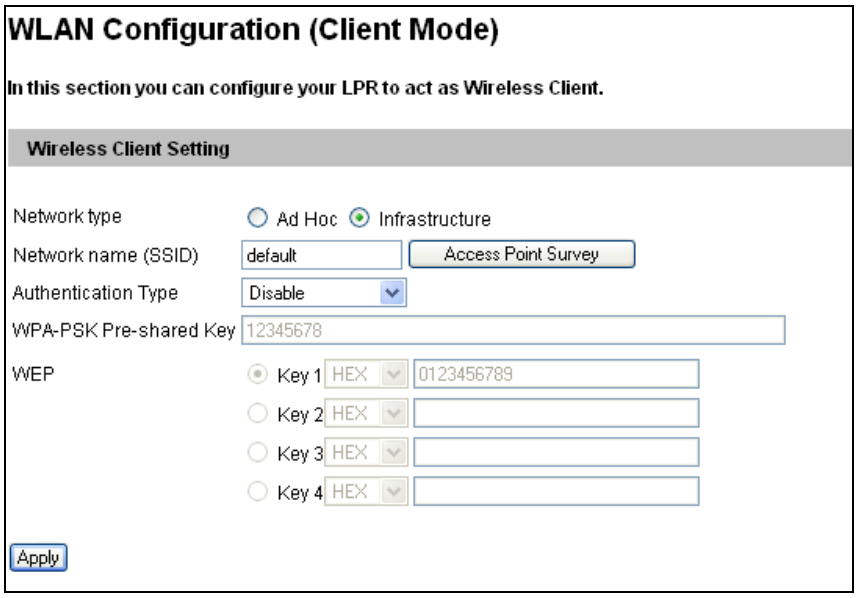


*Figure 4-15*

- **Network type:** Select the network mode **Ad Hoc** or **Infrastructure**.
- **Network Name (SSID):** The SSID (Service Set Identify) is a unique name that identifies a particular wireless network. Type SSID of the Wireless LAN group or Access Point you are going to connect to.
- **Authentication Type:** Select one of these network authentications and data encryptions: **Disable**, **WEP**, **WPAPSK-TKIP**, **WPAPSK-AES**, **WPA2PSK-TKIP** or **WPA2PSK-AES**.
  - **Disabled:** No authentication is needed within the wireless network.
  - **WEP (Wired Equivalent Privacy):** A type of data encryption. Type up to four WEP Keys in HEX or ASCII format. Note that if you use HEX format, only digits 0-9 and letters A-F, a-f are valid.
  - **WPAPSK-TKIP** and **WPA2PSK-TKIP:** Type WPA-PSK (Pre-Shared Key) for data encryption.
  - **WPAPSK-AES** and **WPA2PSK-AES:** Type WPA-PSK (Pre-Shared Key) for data encryption.

**Note:** Your encryption settings must match those used by the Access Points or wireless stations with which you want to associate.

## 4.5.5 Advanced TCP/IP

This section introduces the advanced TCP/IP settings, including DDNS Server, HTTP port, and streaming port.

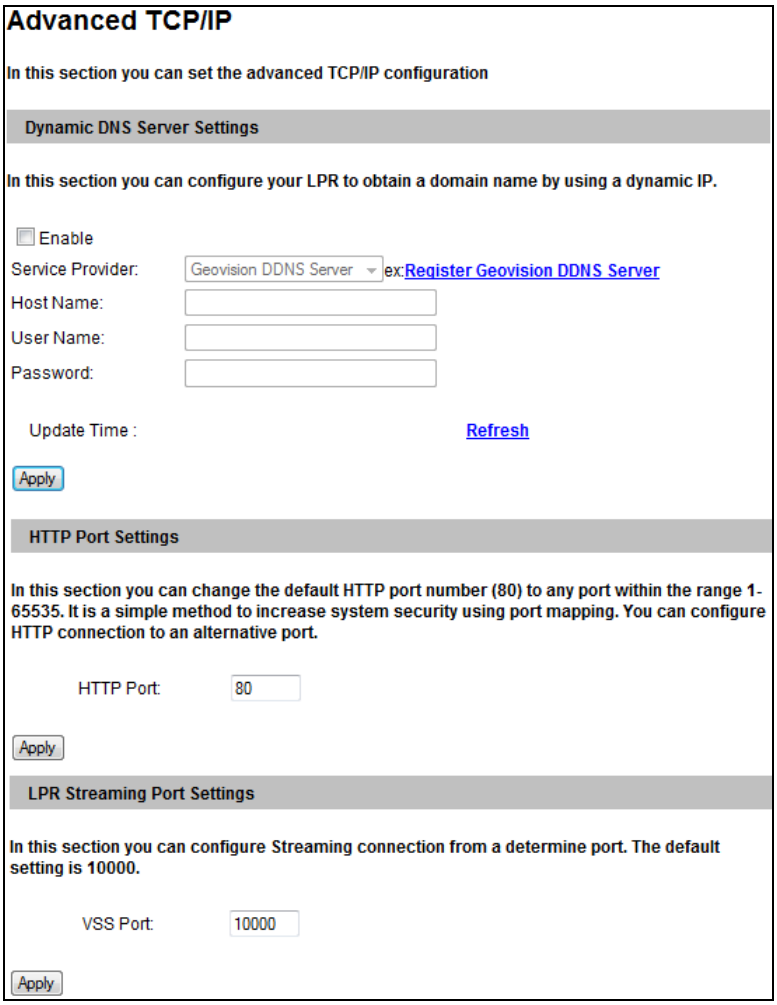


*Figure 4-16*

**[Dynamic DNS Server Settings]** DDNS (Dynamic Domain Name System) provides a convenient way of accessing the GV-DSP LPR when using a dynamic IP. DDNS assigns a domain name to the GV-DSP LPR, so that the Administrator does not need to go through the trouble of checking if the IP address assigned by DHCP Server or ISP (in xDSL connection) has changed.

Before enabling the DDNS function, the Administrator should apply for a host name from the DDNS service provider's website. There are 2 providers listed in the GV-DSP LPR: GeoVision DDNS Server and DynDNS.org.

**To enable the DDNS function:**

1. **Enable:** Enable the DDNS function.
2. **Service Provider:** Select the DDNS service provider you have registered with.
3. **Host Name:** Type the host name used to link to the GV-DSP LPR. For the users of GeoVision DDNS Server, it is unnecessary to enter the host name. The system will detect the host name automatically.
4. **User Name:** Type the user name used to enable the service from the DDNS.
5. **Password:** Type the password used to enable the service from the DDNS.
6. Click **Apply**. The Update Time from the DDNS will be displayed.

**[HTTP Port Settings]**

The HTTP port enables connecting the GV-DSP LPR to the web. For security integration, the Administrator can hide the server from the general HTTP port by changing the default HTTP port of 80 to a different port number within the range of 1024 through 65535.

**[LPR Streaming Port Settings]**

The VSS port enables connecting the GV-DSP LPR to the GV-LPR Center or the GV-LPR System. The default setting is 10000.

### 4.5.6 IP Filter

The Administrator can set IP filtering to restrict access to the GV-DSP LPR.

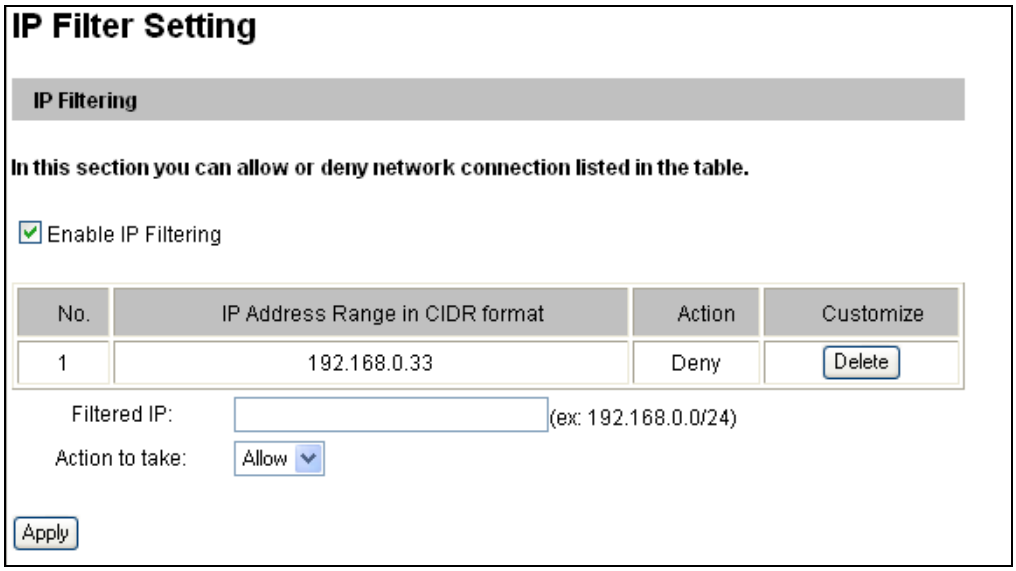


*Figure 4-17*

To enable the IP Filter function:

1. **Enable IP Filtering:** Enable the IP Filtering function.
2. **Filtered IP:** Type the IP address you want to restrict the access.
3. **Action to take:** Select the action of **Allow** or **Deny** to be taken for the IP address you have specified.
4. Click **Apply**.

## 4.6 Management

The Management section includes the settings of data and time, SD card and user account. Also you can view the firmware version and execute certain system operations.

### 4.6.1 Date & Time Setting

You can set up the date and time appearing in the image's caption.


*Figure 4-18*

**[Date & Time on LPR]** Display the current date and time on the GV-DSP LPR.

**[Time Zone]** Set the time zone for local settings. Select **Enable Daylight Saving Time** to automatically adjust the GV-DSP LPR for daylight saving time. Type the Start Time and End Time to enable the daylight saving function.

**[Synchronized with a Network Time Server]** Use the NTP server to automatically update the date and time of the GV-DSP LPR every 24 hours. Type the host name or the IP address of the NTP server for connection and select the desired time for the update.

**[Synchronized with your computer or modify manually]** Manually change the date and time of the GV-DSP LPR. Or, synchronize the date and time of the GV-DSP LPR with those of the local computer.

## 4.6.2 Storage Settings

The GV-DSP LPR V2 has a mini-SD card slot and the GV-DSP LPR V3 has a micro-SD card slot. You can store the recognition results or images to the SD card. The image is stored in the JPEG compressed format.

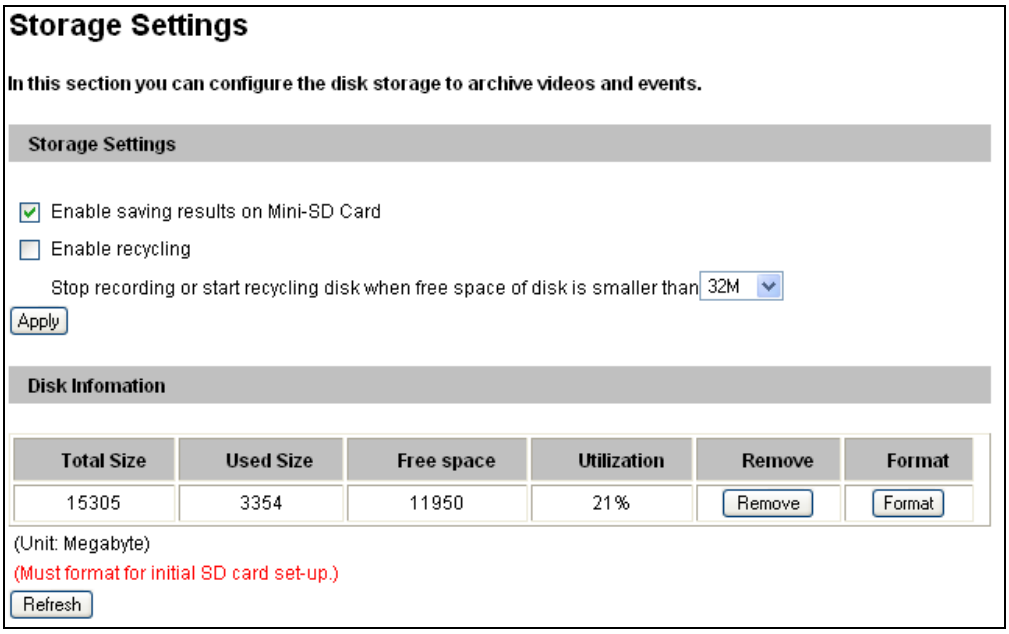


*Figure 4-19*

**To add a Mini-SD/Micro SD card:**

1. Insert a memory card to the card slot.
2. Click the **Refresh** button to detect the memory card. The total size, used size, free space and utilization of the memory card will be displayed. Note that it may take several seconds for your web browser to update the information of the memory card.
3. If you like to format the memory card or erase all data stored on it, click the **Format** button.

**To remove a Mini-SD/Micro-SD card:**

1. Click the **Remove** button.
2. When you are prompted to ensure the action, click **Yes**. The page will be refreshed and the displayed information of the will be cleaned.
3. Remove the memory card from the card slot.

**Note:** The captured images may be lost if you do not remove the memory card properly.

**[Storage Settings]**

- **Enable saving results on Mini-SD Card:** Enable this option to save the recognition results or images onto the SD card.
- **Enable recycling:** If this option is checked, the system will overwrite the oldest stored files when the space of the SD card is lower than the specified space. If this option is not checked, the system will stop recording when the specified space is reached.

### 4.6.3 User Account

The GV-DSP LPR has two types of password protection: Guest password for restricting unwanted users from accessing the GV-DSP LPR, and Administrator password for restricting who can enter privileged commands.

Default Guest login name and password are **guest.** Default Administrator login name and password are **admin.**

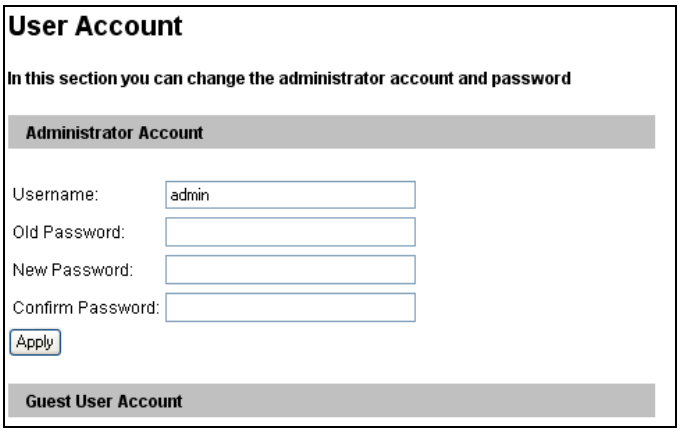


*Figure 4-20*

### 4.6.4 Log Information

The log contains dump data that is used by service personnel for analyzing problems.

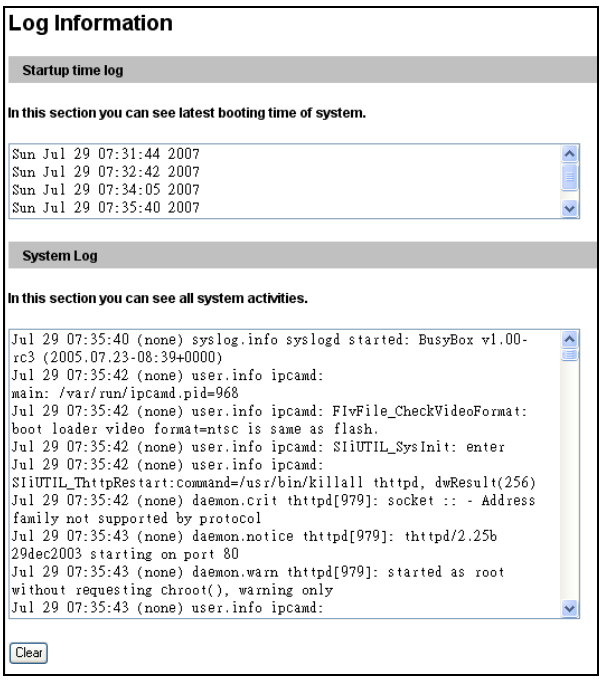


*Figure 4-21*

### 4.6.5 Tools

This section allows you to execute certain system operations and view the firmware version.

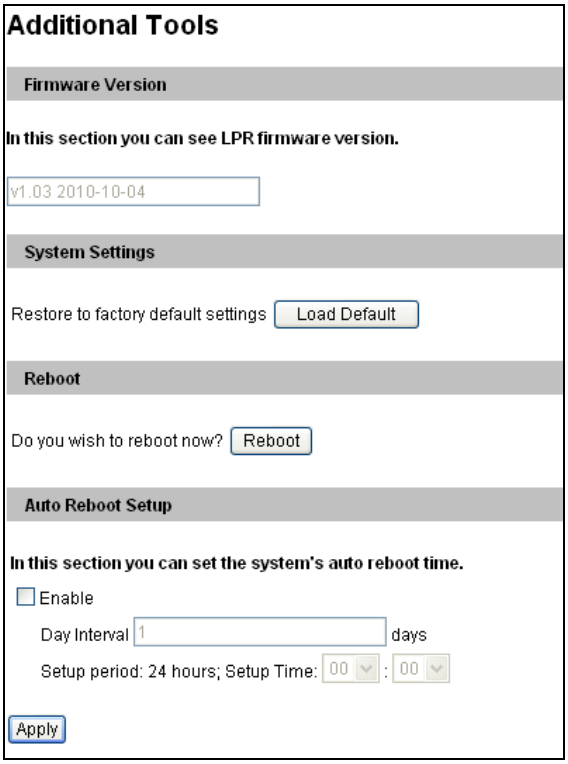


*Figure 4-22*

**[Firmware Version]** This section displays the firmware version of the GV-DSP LPR.

**[System Settings]** Clicking the **Load Default** button will make the GV-DSP LPR restore factory default settings. The Ready LED on the front panel will turn off. Wait until the Ready LED turns on and then you can re-log in the GV-DSP LPR.

---

**Note:** After applying default settings, you will need to configure the GV-DSP LPR's network settings again.

---

**[Reboot]** Clicking the **Reboot** button will make the GV-DSP LPR perform software reset. The Ready LED on the front panel will turn off. Wait until the Ready LED turns on and then you can re-log in the GV-DSP LPR.

**[Auto Reboot Setup]** Selecting **Enable** will make the GV-DSP LPR perform software reset automatically at the specified time in the specified day interval.

# Chapter 5 Advanced Applications

This chapter introduces more advanced applications.

## 5.1 Upgrading System Firmware

GeoVision will periodically release the updated firmware on the website. The new firmware can be simply loaded into the GV-DSP LPR over LAN or by using the IP Device Utility included in the Software DVD.

### Important Notes before You Start

Before you start updating the firmware, please read these important notes:

1. While the firmware is being updated,
   A. the power supply must not be interrupted, and
   B. do not unplug the Ethernet cable if the cable is the source of power supply (Power over Ethernet or PoE supported).
2. Do not turn the power off in 5 minutes after the firmware is updated.
3. If you use the IP Device Utility for firmware upgrade, the computer used to upgrade firmware must be under the same IP and subnet sequence of the GV-DSP LPR.

---

**WARNING:** The interruption of power supply during updating causes not only update failures but also damages to your GV-DSP LPR. In this case, please contact your sales representative and send your device back to GeoVision for repair.

---

### 5.1.1 Upgrading Firmware over LAN

1. In the Live View window, click the **Firmware Upgrade** button (No. 7, Figure 3-3). This dialog box appears.

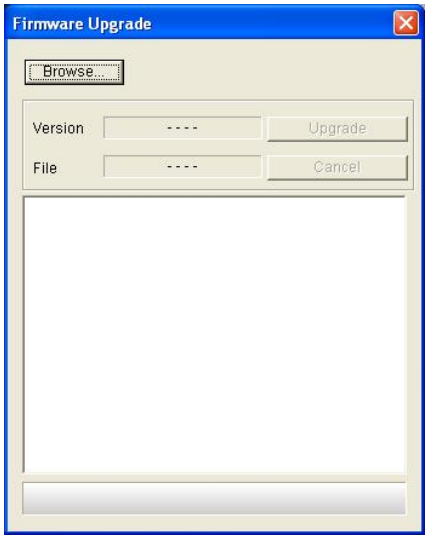


*Figure 5-1*

2. Click the **Browse** button to locate the firmware file (.img) saved at your local computer.
3. Click the **Upgrade** button to process the upgrade.

### 5.1.2 Upgrading Firmware by Using the Utility

The IP Device Utility provides a direct way to upgrade the firmware to multiple GV-DSP LPRs. Note the computer used to upgrade firmware must be under the same IP and subnet sequence of the GV-DSP LPR.

1. Insert the Software DVD, select **IP Device Utility**, and follow the onscreen instructions to install the program.

2. Double-click the **GV IP Device Utility** icon created on your desktop. This dialog box appears.

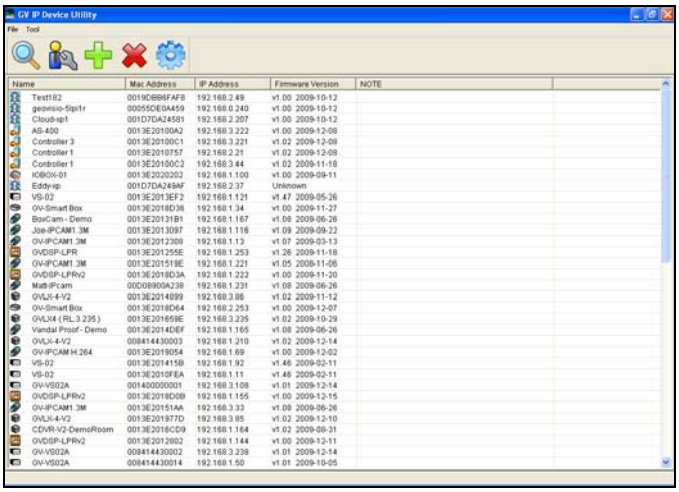

*Figure 5-2*

3. Click the **Search** button  to locate the available GV-DSP LPRs on the same LAN.

   Or click the **New** button and assign the IP address to locate a GV-DSP LPR over the Internet. Or highlight one GV-DSP LPR in the list and click the **Delete** button to remove it.

4. Double-click one GV-DSP LRP in the list. This dialog box appears.

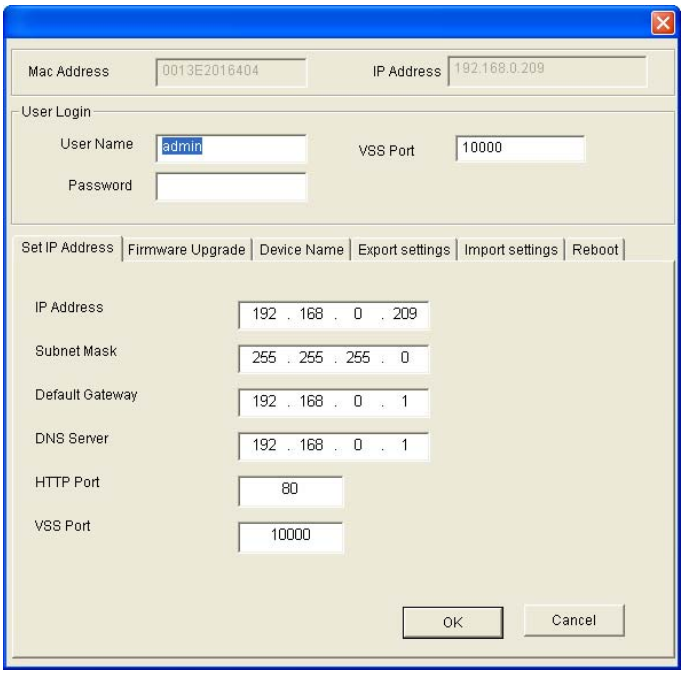


*Figure 5-3*

5. Click the **Firmware Upgrade** tab. This dialog box appears.

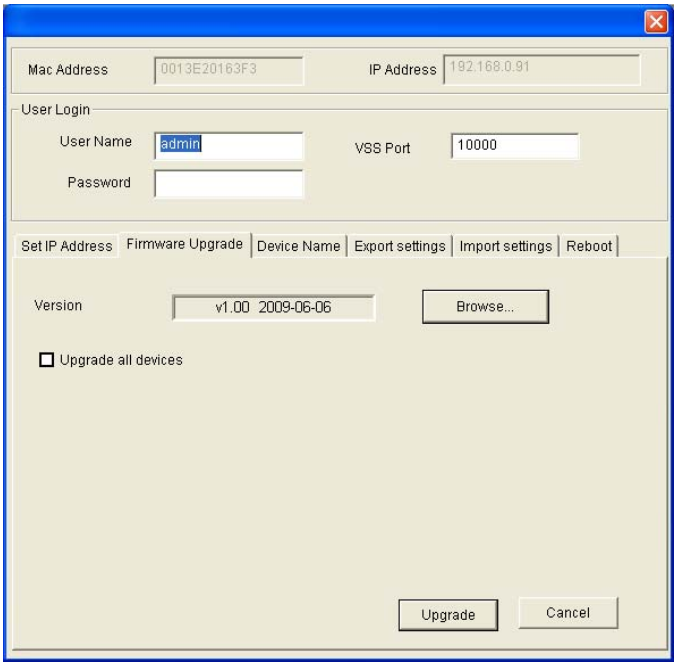


*Figure 5-4*

6. Click the **Browse** button to locate the firmware file (.img) saved at your local computer.
7. If you like to upgrade all the GV-DSP LPRs in the list, check **Upgrade all devices**.
8. Type **Password**, and click **Upgrade** to process the upgrade.

## 5.2 Restoring to Factory Default Settings

Between the two models of GV-DSP LPR, the operation of restoring the GV-DSP LPR to original default values can vary and the way the LEDs flash can also be different.

To restore to default settings, use the **Load Default** button (No. 3, Figure 1-1) on the front panel of GV-DSP LPR.

### Restoring GV-DSP LPR to Default Settings

1. Unplug and plug the power cable to start.
2. Press and hold the **Load Default** button until the Ready LED blinks. This may take up to 60 seconds. The Ready LED will blink twice.
3. Release the **Load Default** button. The process of loading default values is complete, and the GV-DSP LPR starts rebooting itself.
4. Wait until the Ready LED turns on again. After this all the settings are returned to default values.

---

**Note:** Before the **Ready LED** is on again, do not unplug the power cable; otherwise the loading of default values will fail.

---

# Chapter 6 The I/O Terminal Block

## 6.1 I/O Port

Owing to the model size, GV-DSP LPR provides the I/O Cable with RJ-45 Connector for the extensible connection to other I/O devices. A RJ-45 connector and a bundle of shielded wires are on the each end of the cable.

Strip the desired wires first, and connect the auxiliary devices with the right wires according to the following pin assignment. Then insert the RJ-45 Connector to the I/O Port on GV-DSP LPR (No. 4, Figure 1-2).

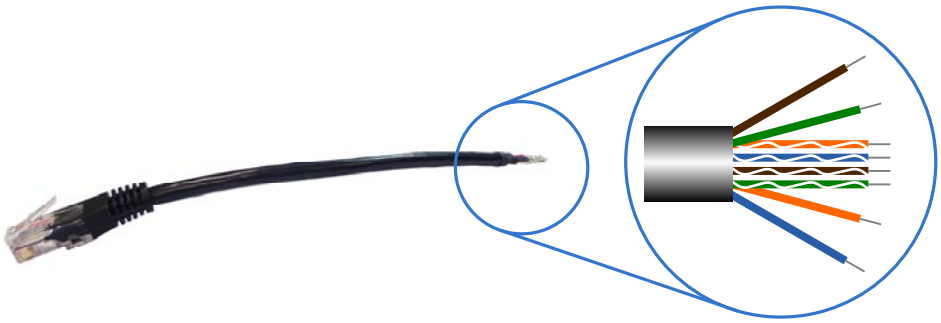

*Figure 6-1*

### Pin Assignment

The table below lists the pin assignment for the shielded wires of the **I/O Cable with RJ-45 Connector**.

| Pin | Wire | Function |
|---|---|---|
| 1 | Brown | Digital Out 1 |
| 2 | White with Brown Stripe | Digital Out 2 |
| 3 | White with Green Stripe | Ground |
| 4 | White with Blue Stripe | Digital In 1 |
| 5 | Blue | Digital In 2 |
| 6 | Green | Ground |
| 7 | Orange | Weigand D0 |
| 8 | White with Orange Stripe | Weigand D1 |

**Note:** The Weigand interface is NOT functional now.

## Relay Output

The relay outputs on the terminal block can only drive a maximum load of 5 volts. Working in conjunction with the GV-Relay V2 module, it can drive heavier loads. Refer to the figure and table below to connect the GV-Relay V2 module to the GV-DSP LPR.

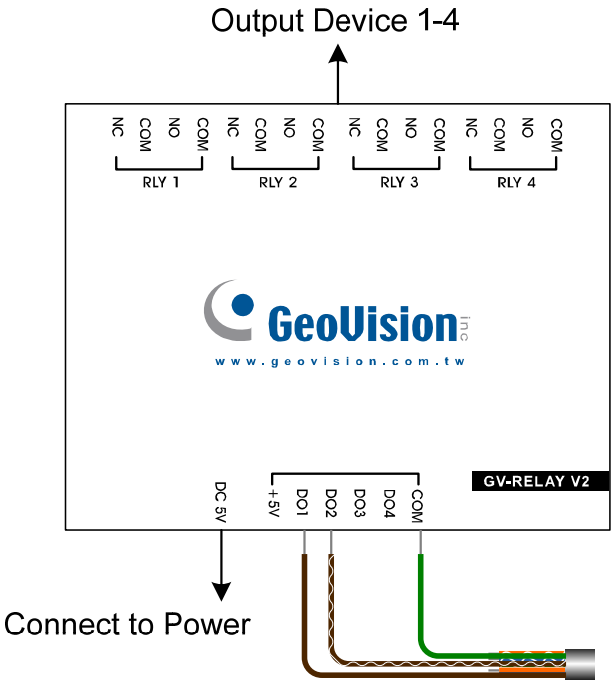


*Figure 6-2*

| GV-Relay V2 | Wire |
|---|---|
| DO 1 | Brown |
| DO 2 | White with Brown Stripe |
| COM | Green |

**Note:** The GV-Relay V2 module is an optional product.

## 6.2 Terminal Block

The 6-pin terminal block, located on the rear panel, provides the RS-232 interface. Via the RS-232, the GV-DSP LPR can connect to GV-System or the GV-GPS Receiver.

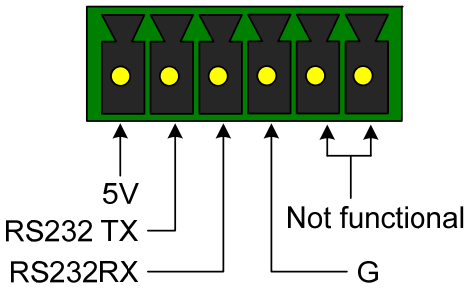


*Figure 6-3*

For data transmission using a RS-232 Cable:

| Pin | Function | RS-232 Cable Wire |
|---|---|---|
| TX | RS-232 TX (Transmit) | Brown |
| RX | RX-232 RX (Receive) | Red |
| G | Ground | Silver |

For GPS positioing using the GV-GPS Receiver:

| Pin | Function | GV-GPS Receiver Wire |
|---|---|---|
| 5V | DC 5V Out | Red |
| TX | GV-GPS TX (Transmit) | White |
| RX | GV-GPS RX (Receive) | Green |
| G | Ground | Black |

# Specifications

| Model | | GV-DSP LPR V2 | GV-DSP LPR V3 |
|---|---|---|---|
| Video Input/Output | | 1 Video In, 1 TV Out | |
| Video Compression | | JPEG | |
| Live Resolutions | | D1, CIF | |
| Live Frame Rate | NTSC | 1, 3, 5, 7, 10 | |
| | PAL | 1, 3, 5, 8, 12 | |
| Image Setting | | Brightness, Contrast, Saturation, Hue | |
| Alarm and Event Management | | • Events triggered by motion detection or sensor inputs<br>• Central monitoring by LPR Center<br>• Relay outputs triggered by sensor inputs or remotely by LPR Center | |
| Connectors | Video | 1 input (BNC port) | |
| | Ethernet | RJ-45, 10 / 100 Mbps | |
| | USB | 1 USB 2.0 (only for UMTS) | |
| | TV-Out | 1 output (BNC port) | |
| | Local Storage | Mini-SD/SDHC memory card slot (for Class 6 card or above) | Micro-SD/SDHC memory card slot (for Class 6 card or above) |
| | I/O Port | 2 digital inputs, 2 digital outputs | |
| | GPS | 1 RS-232 | |
| Security | | IP address filtering | |
| Installation | | Web-based configuration | |
| Management Maintenance | | Firmware upgrade through Web browser | |
| Protocol | | HTTP, TCP, UDP, DHCP, NTP, DDNS | |
| Operation Temperature | | -20 ~ 60°C / -4 ~ 140°F | -20 ~ 55°C / -4 ~ 131°F |
| Dimensions (W x D x H) | | 123 x 106 x 25 mm / 4.84 x 4.17 x 0.98 in | |
| Weight | | 0.345 kg / 0.76 lb | |
| Power | | DC 12V, 1A, 50~60 Hz | |

| | |
|---|---|
| **Country Support** | Australia, Austria, Belgium, Brazil, Bulgaria, Chile, China, Columbia, Cyprus, Czech Republic, France, Germany, Guernsey, Hong Kong, Hungary, Ireland, Israel, Italy, Malaysia, Mexico, New Zealand, Norway, Poland, Portugal, Russia, South Africa, Spain, Taiwan, UK, USA |
| **Note:**<br>1. The Weigand interface is NOT functional now.<br>2. GV-DSP LPR V2 / V3 (Firmware Version 1.05) stops support for UAE engine. | |

All specifications are subject to change without notice.

# Appendix

## A. Supported Wireless LAN USB Adaptor

| Vendor | Model |
|---|---|
| D-Link | DWA-140 (H/W version B1), DWL-G122 (version C1) |
| EDIMAX | EW-7318Ug, EW-7718Un |
| Linksys | WUSB54GC |
| Pegatron | WL-166N11 |
| **Note:** Linksys WUSB54GC ver. 3 is not supported. | |

## B. Supported Mobile Broadband Device

| Vendor | Model |
|---|---|
| HUAWEI | E169, E220, E1692, EC169C, E1750 USB Modem (HSDPA/UMTS/EDGE/GPRS/GSM) |
| Novatel | MC950D (HSDPA/UMTS/EDGE/GPRS/GSM) |
| Verizon | USB760 Modem (EVDO) |
| Vodafone | K3565 (Rev 2) |