GV-LPR

License Plate Recognition

User Manual

V3.0

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CHAPTER 1

Hardware Installation

The Hardware components included in your system may vary depending on the model or optional features you purchased. This chapter will describe all available hardware components of the GV-LPR system and its installation procedures.

1.1 Install Video Capture Card

GV-LPR supports these GV video capture cards: GV-600, GV-650, GV-800, GV-1120, GV-1240 and GV-1480. To install your purchased GV video capture car properly, follow these steps.

1.1.1 Connections of Video Captured Card

GV-1120, GV-1240, GV-1480

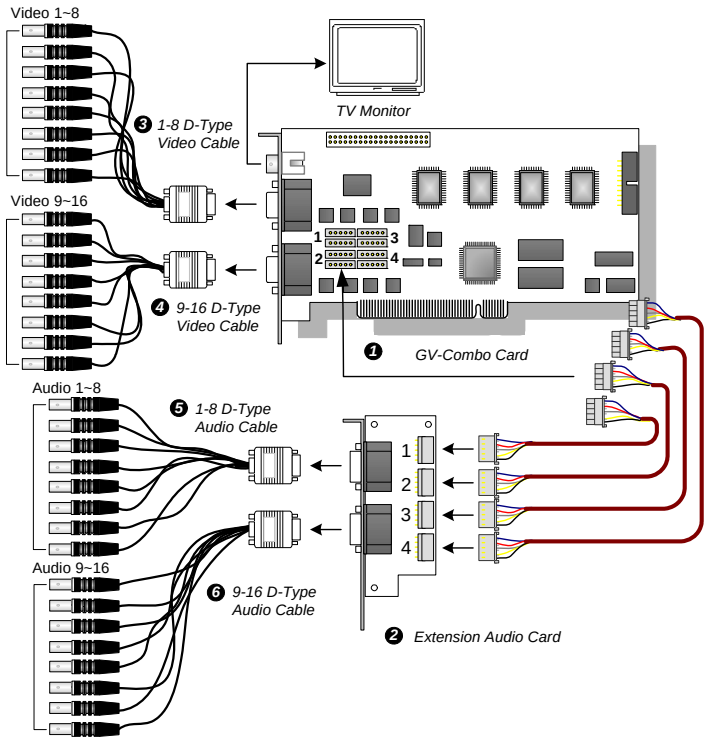


Figure 1-1

GV-650, GV-800

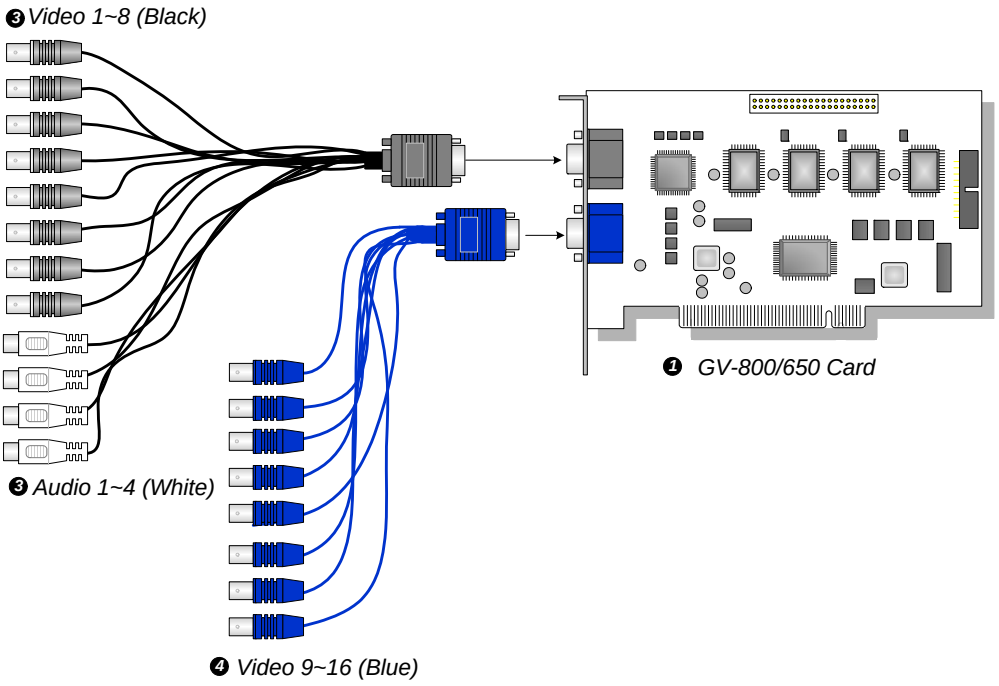


Figure 1-2

1.1.2 Install Driver

After you install the GV-Video Capture Card on the computer, the Found New Hardware Wizard will automatically detect the device. Ignore the wizard and follow these steps to install driver:

1. Insert the GV-LPR CD, select [My Computer], locate and double-click the CD/DVD Drive icon [GV-LPR V3.0].
2. Double-click the [Driver] folder, and then run [DrvInst.exe]. This dialog box appears.

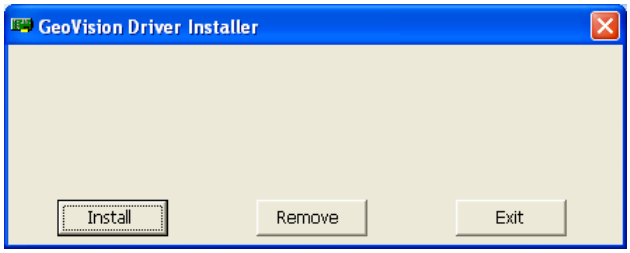


Figure 1-3

3. Click [Install] to install the driver. When the installation is complete, this message will appear: “Install Successfully.”
4. Click [Exit] to close the dialog box

Note: GV-LPR does not support GV-2004 and GV-2008 video capture cards. However, when GV-LPR is integrated with GV-System on the same PC, it is compatible with all series of GV-Video Capture Cards.

1.1.3 Connect Hardware Watchdog

To reboot the computer by the hardware watchdog on the GV-Video Capture Card, a connection needs to be made from the card to the motherboard.

1. Using the supplied jumper wire, connect the reset jumper pins on the card and on the motherboard.

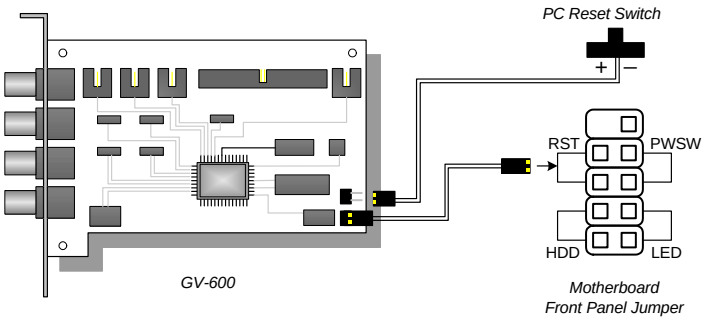


Figure 1-4

2. If the computer has a reset switch, the switch's jumper wire should already be connected to the motherboard's reset jumper pins. Remove the switch wire from the motherboard and connect it to the reset jumper pins on the card.

1.2 Install Dongle

It is required to install a dongle before you run GV-LPR. Two types of dongles are provided for different installations.

1.2.1 With a GV Video Capture Card on GV-LPR System

The dongle is a 4.7 cm x 2 cm x 0.9 cm blue color USB plug-in key. It can be used for the USB port that supports USB 1.1 or above. Please plug in the dongle in the USB port before lunching the GV-LPR system. The dongle for 1, 2, 4, 6 and 8 lanes are different. Without the dongle the system cannot be run.

Figure 1-5

1.2.2 Without a GV Video Capture Card on GV-LPR System

You can run GV-LPR system without a GV Video Capture Card. Before running the system, you must insert a the required black dongle and install the dongle driver. For details about installing the driver, see *1.2.3 Install Driver.*

Figure 1-6

1.2.3 Install Driver

If you run GV-LPR system without a GV Video Capture Card, you must insert a black dongle and install the necessary driver. Follow these steps:

1. Insert the GV-LPR CD, select [My Computer], locate and double-click the CD/DVD Drive icon [GV-LPR V3.0].
2. Double-click the [Driver] folder, and then run [GvUSB.exe]. This dialog box appears.

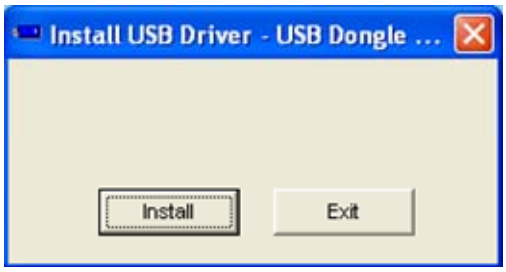


Figure 1-7

3. Click [Install] to install the driver. When the installation is complete, this message will appear: *Install done!*
4. Click [Exit] to close the dialog box.
5. To verify the driver is installed correctly, go to [Device Manager]. Expanding the [Ports] field, you should see one entry for Prolific USB-to-Serial Bridge.

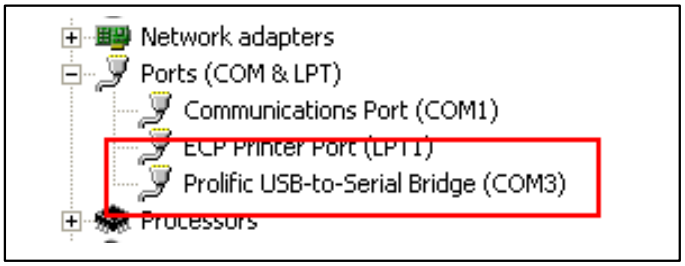


Figure 1-8

1.3 Install I/O Module

GV-LPR supports I/O detection mode so that sensors can trigger the GV-LPR to do recognition. This section describes the installation of the I/O modules.

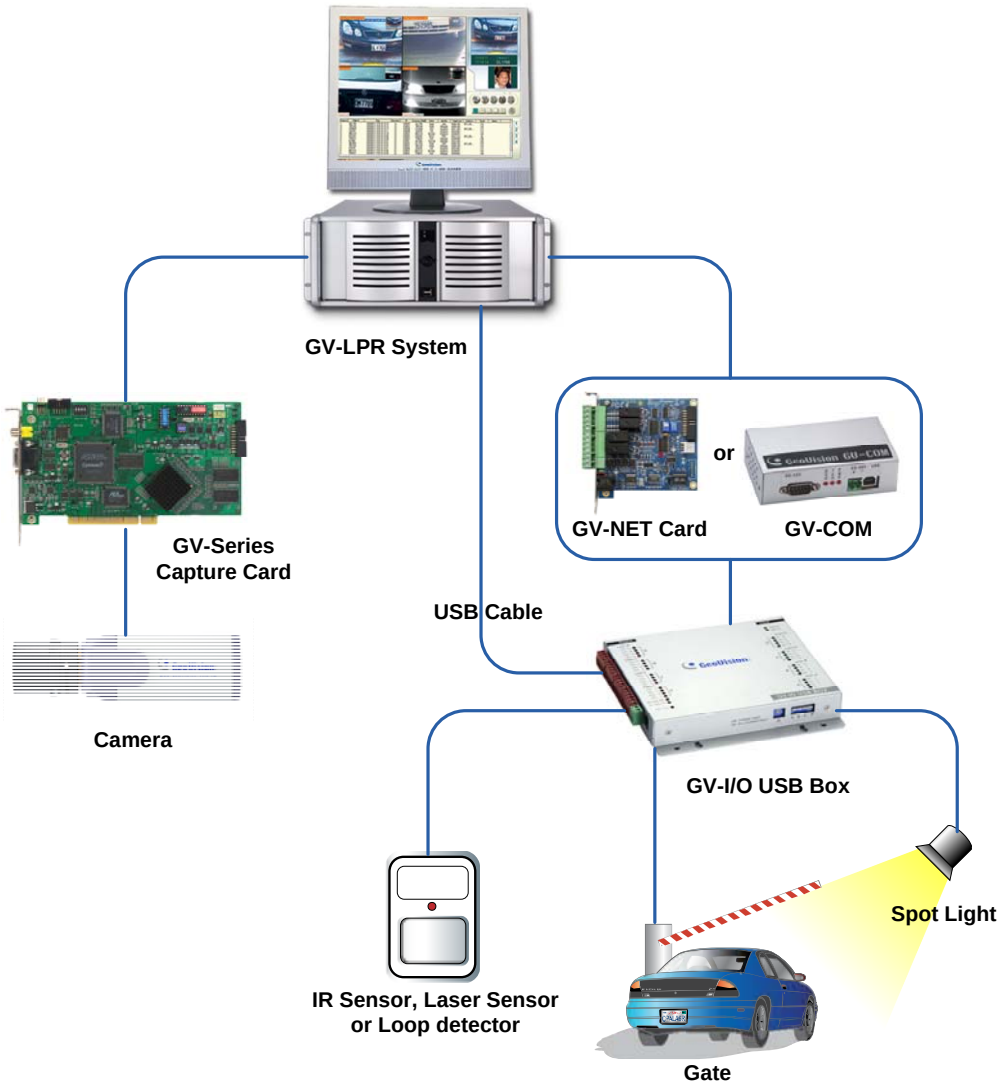


Figure 1-9

1.3.1 Install GV-NET Card V3.1

The GV-NET Card is a RS-485 / RS-232 interface converter. This Card connects to the RS-232 port or USB port on your computer, and allows RS-485 devices to be connected through the Card.

Specification

Interface	RJ-11 to DB9 (RS-232)
	RJ-11 to USB
	3-Pin Internal USB to Internal USB
	RS-485+ / RS-485-
Communication	RS-485 1,200~115,200 bps; USB
Environmental Condition	0°C-55°C, 5%-95% (Non-Condensing)
Compatible Model	All GV-Video Capture Card Models
Dimensions	97 (W) x 90 (H) mm

1.3.2 Install GV-NET I/O Card V3.1

The GV-NET/IO Card is a RS-485 / RS-232 interface converter, providing 4 inputs and 4 relay outputs as well. It supports both DC and AC output voltages.

Specifications

Input	Input	4	
	Input Signal	9~30V AC/DC	
Output	Relay Output	4	
	Relay Status	Normal Open	
	Relay Capacitance	USB Connection	30V DC, 3A
		RS-232 Connection	125 / 250V AC, 3A 30V DC, 3A
Interface	RJ-11 to DB9		
	RJ-11 to USB		
	3-Pin Internal USB to Internal USB		
Mode Switch	I/O Box Mode	Without GV-Video Capture Card	
	NET/IO Card Mode	With GV-Video Capture Card	
Address	1~4		
Communication	RS-485, USB, RS-232		
Environmental Condition	0°C-55°C, 5%-95% (Non-Condensing)		
Compatible Model	All GV-Video Capture Card Models		
Dimensions	99 mm x 90 mm		

1.3.3 Install GV-COM

GV-COM is a device that converts USB to RS-485 or RS-232. It is to be connected to the USB of your computer.

Specification

Serial Interface	RS-232	Signal: DCD, RxD, TxD, DTR, GND, DSR, RTS, CTS
		Connecter: DB9 Male
	RS-485	Signal: D+, D-
		Connector: Terminal Block
	Serial Line Protection	16 KV ESD for All Signals
USB	Compliance	USB 1.1, 1.0
		USB 2.0 Backward Compatible
	Speed	Full speed 12 Mbps
Communication Parameters	Parity	None, Even, Odd
	Data Bit	7, 8
	Stop Bit	1 (Default), 2
	Flow Control	RTS/CTS, XON/XOFF
	Speed	600 bps to 115,200 bps
Environmental Conditions	0°C-55°C, 5%-95% (Non-Condensing)	
Dimensions	103 (W) x 32 (H) x 64 (D) mm	

1.3.4 Install GV-I/O USB Box

The GV-IO USB Box provides 16 inputs and 16 relay outputs. It not only supports both DC and AC output voltages but also provides a USB port.

Specification

Input	Input	16	
	Input Signal	9-30V AC/DC	
Output	Relay Output	16	
	Relay Status	Normal Open	
	Relay Capacitance	USB Connection	30V DC, 3A
		RS-485 Connection	125 / 250V AC, 3A 30V DC, 3A
DC IN	DC 12V, 1A		
Address	1-15		
Environmental Condition	0°C-55°C, 5%-95% (Non-Condensing)		
Dimensions	180 (W) x 27 (H) x 183 (D) mm		

CHAPTER 2

Software Installation

All GV-LPR software applications and the drivers for the GV-Series capture cards are included in the GV-LPR CD provided within the system package. Please also refer to the images and videos within the GV-LPR CD for installation.

2.1 Install GV-LPR Application

Before installing GV-LPR, you should check if all the hardware components were installed properly. It is important that you complete the hardware installation (refer to Chapter 1) before installing software.

1. Insert the GV-LPR CD, select [My Computer], locate and double-click the CD/DVD Drive icon [GV-LPR V3.0].
2. Double-click the [Setup] folder, and then run [SETUP.exe].

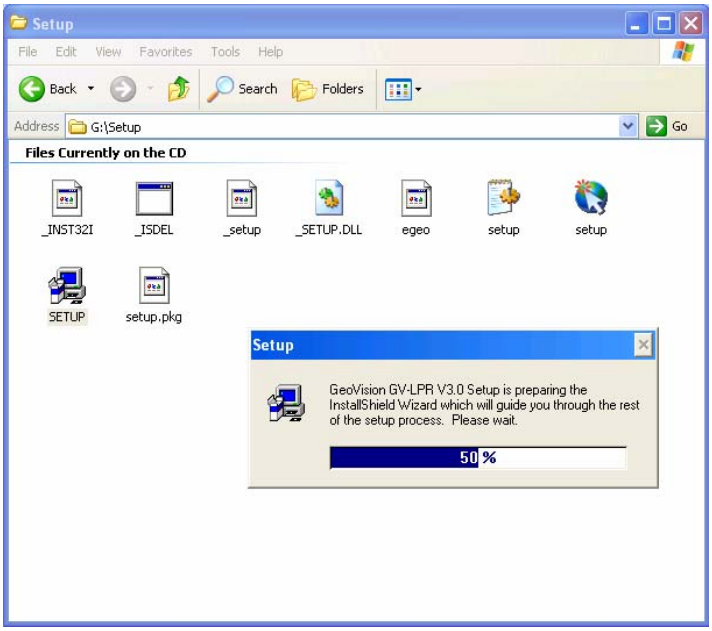


Figure 2-1

3. Click [Browse] if you wish to specify another destination directory otherwise click [Next] to proceed to the next step.

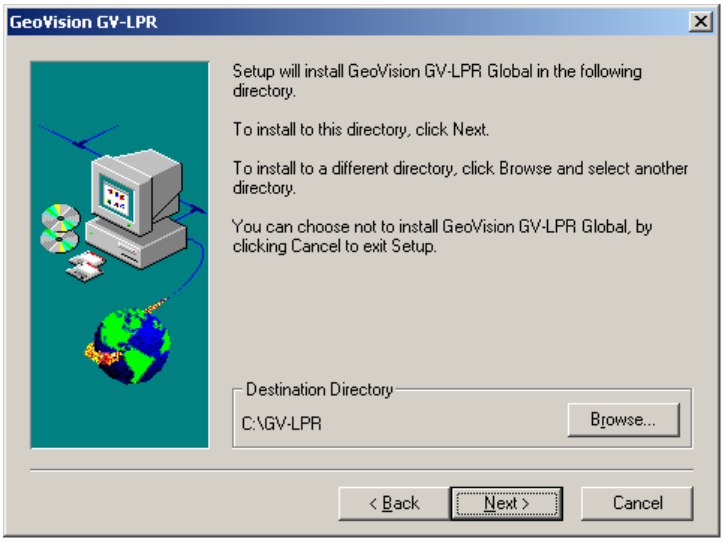


Figure 2-2

4. In the select program folder dialog box you may rename your GV-LPR folder in the empty text column under Program Folders. If you are not going to do any modification, simply click [Next] and the installation will start. Follow the rest of the instructions to complete the installation.

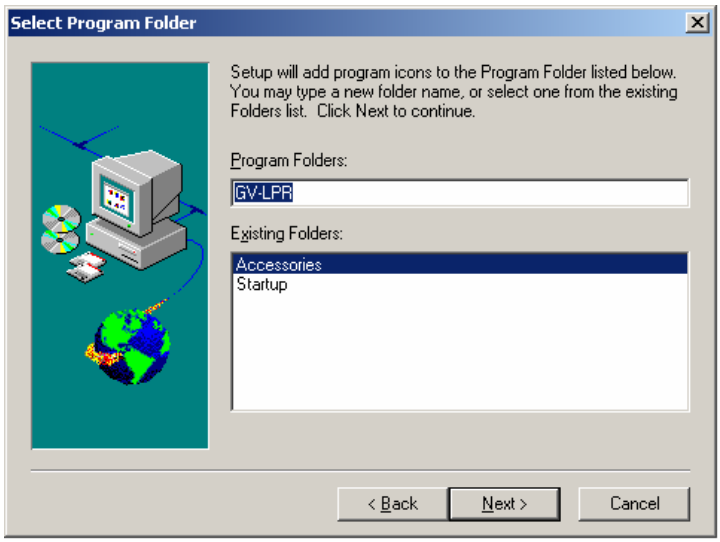


Figure 2-3

5. Select whether you want to add it to the Startup so that the GV-LPR automatically starts running when the PC is power on. It is suggested to select “Yes”.

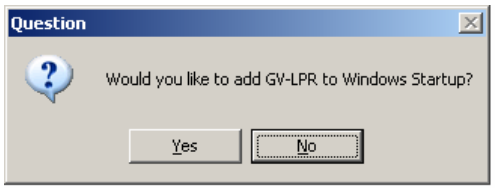


Figure 2-4

6. You may select to restart the computer immediately or later. It is recommended to restart the computer before running GV-LPR.

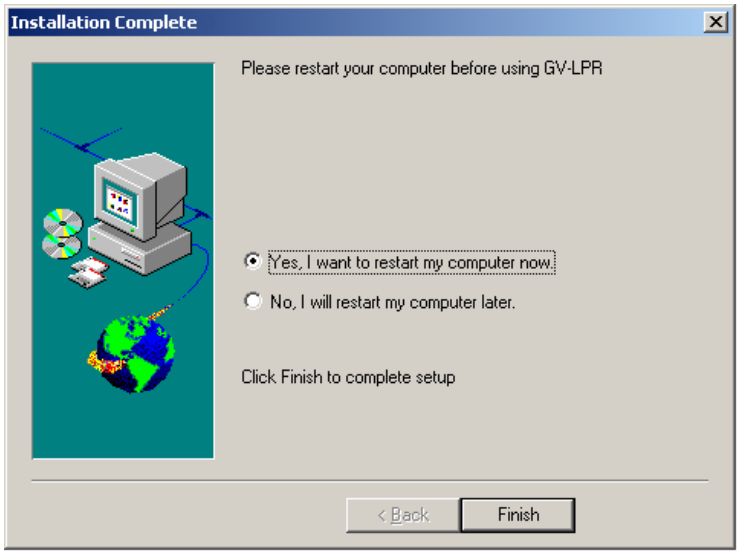


Figure 2-5

2.2 Install Microsoft Data Access Components (MDAC)

Since GV-LPR uses Microsoft Data Access Components (MDAC) version 2.7 or above, please check if your system is installed with MDAC before you run GV-LPR. The MDAC checker and installer are included in “Utility” folder of the GV-LPR CD.

Note: MDAC is only required to be installed with the operation system of Windows 2000.

2.2.1 Check the version of MDAC

1. Please select the folder of “Utility” and then “MdacChecker” from the GV-LPR CD.

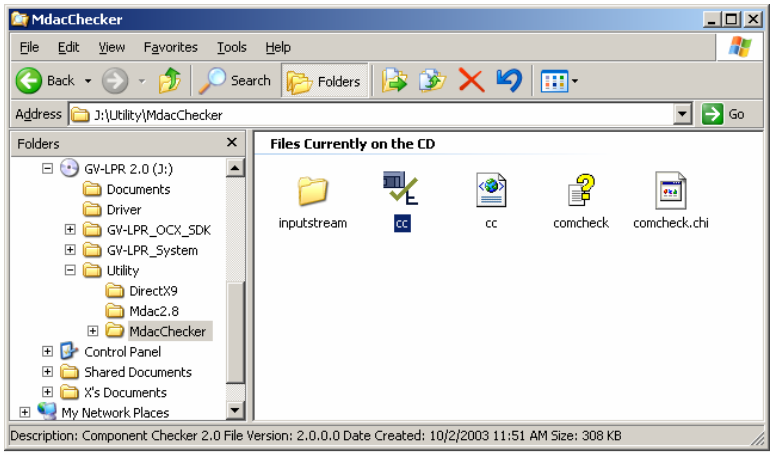


Figure 2-6

2. Run “cc.exe”.
3. Please select “Perform analysis of your machine and automatically determine the release version” and click “OK”.

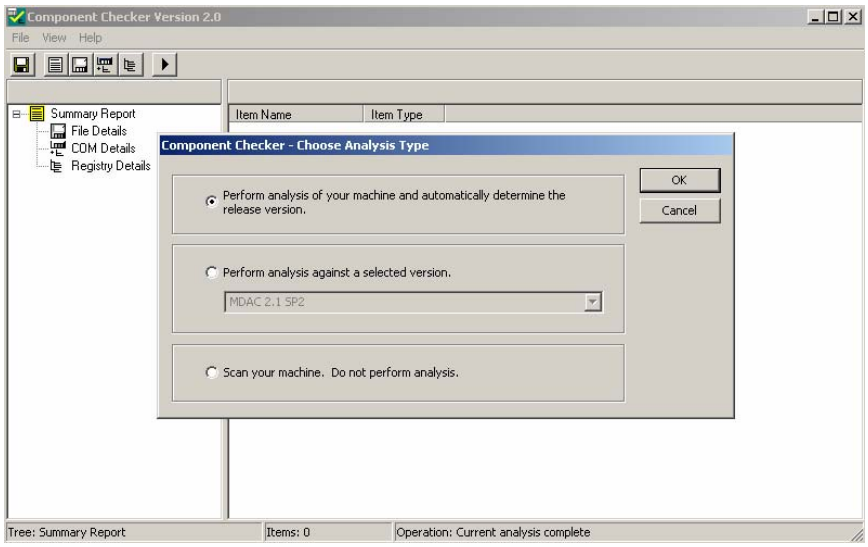


Figure 2-7

4. The program will automatically detect your MDAC version.

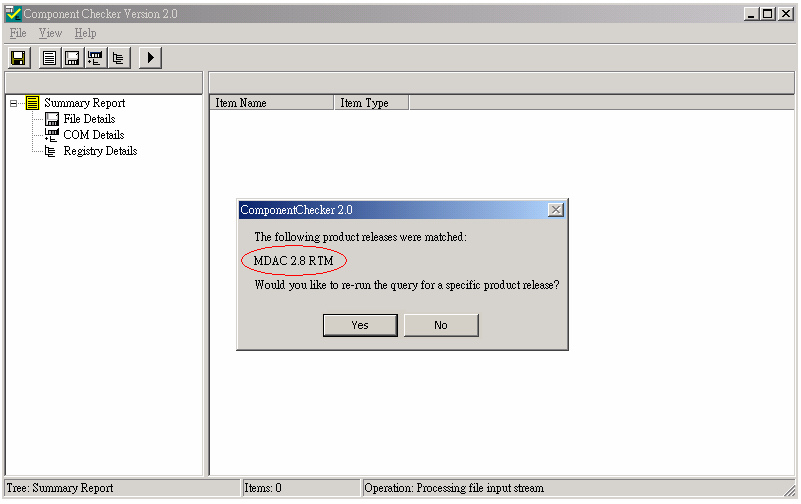


Figure 2-8

5. If the version is unknown, you may select “View” and then “File Detail” to view the version of MDAC.

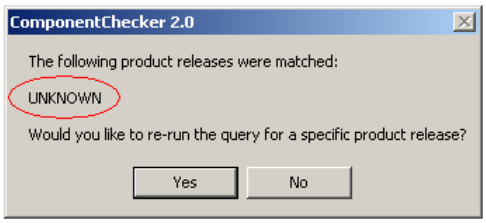


Figure 2-9

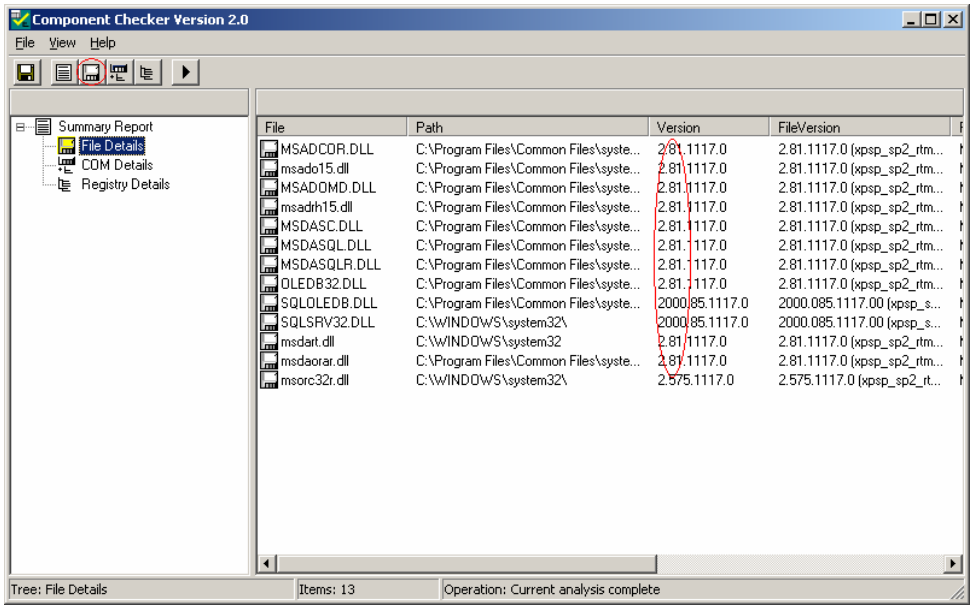


Figure 2-10

6. If the version is 2.7 or higher, you may skip the next procedure of installing MDAC. Otherwise, you should follow the instructions in 2.2.2 to install MDAC.

2.2.2 Install MDAC

1. Please select the folder of “Utility” and then “Mdac2.8” from the GV-LPR CD.

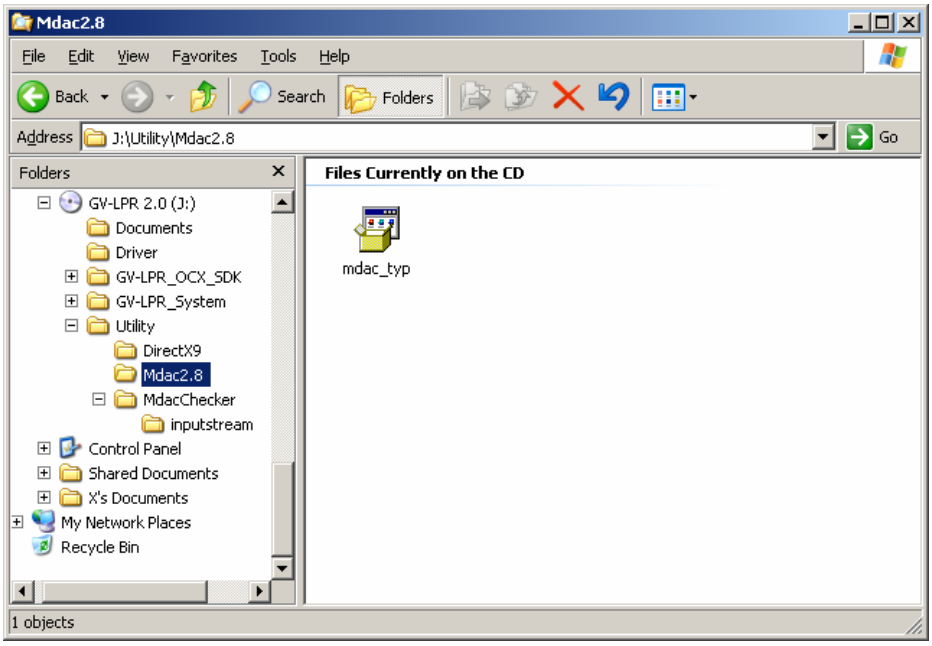


Figure 2-11

2. Run “mdac_typ.exe”
3. Please select “I accept all of the terms of the preceding license agreement” and click “Next”.

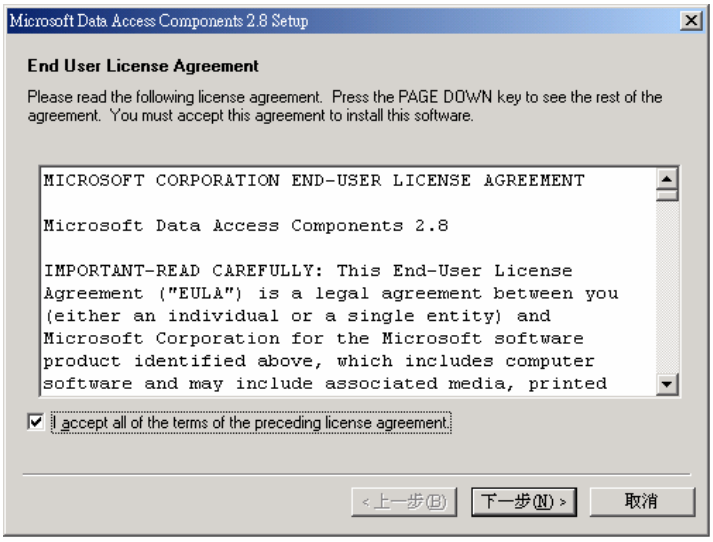


Figure 2-12

4. Click “Finish” to start installation.

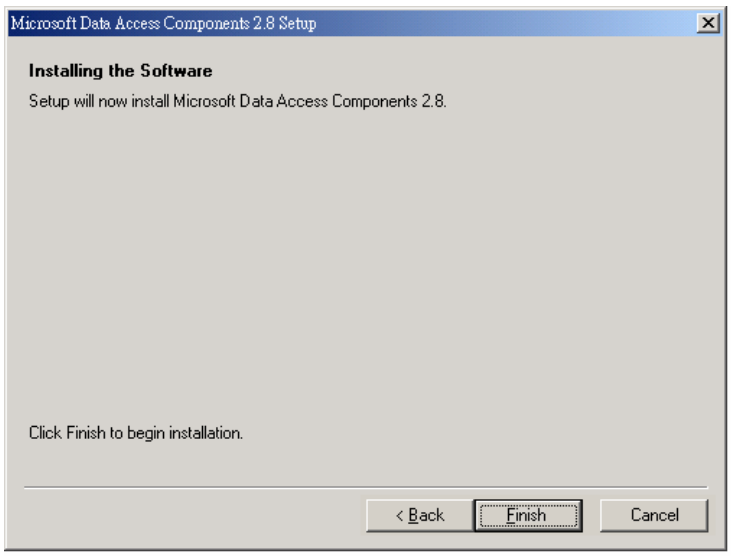


Figure 2-13

5. After the installation is complete, please click “Close” to close the dialog box and then restart Windows.

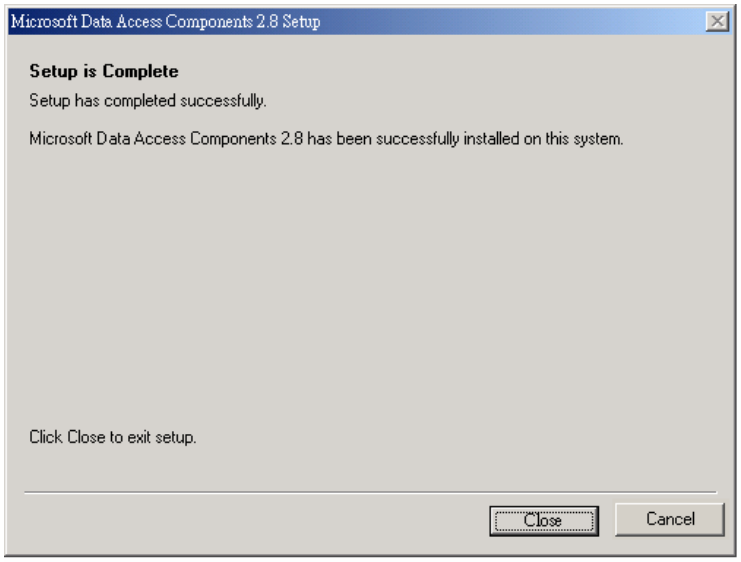


Figure 2-14

2.3 Run GV-LPR

1. If you have added GV-LPR to the startup of Windows, it will run after Windows starts up. Or, run the GV-LPR from the GV-LPR folder. You may create a shortcut on the desktop if needed.

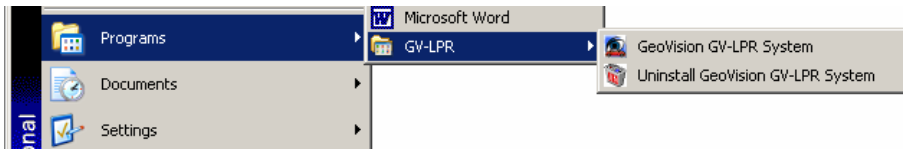


Figure 2-15

2. Be sure you have plugged in the USB dongle (refer to Chapter 1), or else the system cannot be run.
3. The first time you run the GV-LPR, the system will ask you to set up the password of Administrator. **DO NOT** forget the password you set up.

Figure 2-16

2.4 Uninstall GV-LPR Application

1. Select [Uninstall GeoVision GV-LPR System] in the GV-LPR folder.

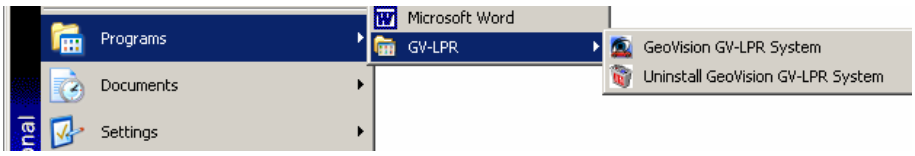


Figure 2-17

2. The uninstaller will prompt you to confirm before uninstall.

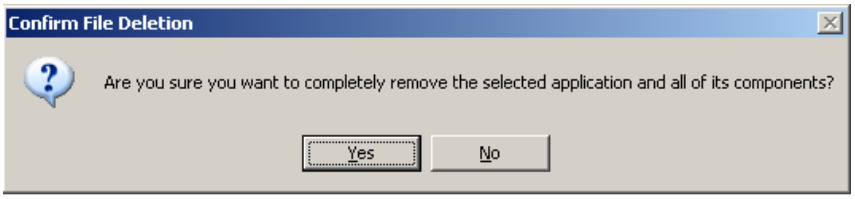


Figure 2-18

3. The uninstaller will then remove all related files from your hard disk.
4. Images and database created by GV-LPR will not be removed.

CHAPTER 3

System Configuration

GV-LPR is a Windows based GUI system software that is used for control, setup, and monitor the GV-LPR System. The detail functions will be explained from Chapter 3 to Chapter 8.

3.1 Main Screen Features

Figure 3-1

1. Camera Caption

This caption shows the camera name and can be modified. Counter can also be shown here just after the Camera Caption if it is enabled.

2. Recognition Window PIP

This is a Picture In Picture window, which is by default disabled. When enabled, by default this window shows the last recognized image. You may change it to show live video instead. Then the [Main Video Window] will be changed to show the recognized image.

3. Main Video Window

This window default shows live video of the recognition camera. If [Recognition Window PIP] is enabled, it may be set to show live video or recognized image.

4. Overview Camera PIP

This is a Picture In Picture window. It is default disabled. If an Overview Camera is setup for a lane, this window can be enabled to show the live video of the Overview Camera. An Overview Camera can be setup to capture the image of the driver or the overview of the car.

5. Recognition Status

The status of the recognition will be shown here as Registered, Visitors or Unrecognized.

6. Recognition Records

This window shows the recent recognition records up to 5000 records. You may show the detail and image of the related record by double clicking on the record.

7. Recognition Image

This window shows the last recognized image.

8. Recognition Result

This window shows the date, time, camera name and the result of the last recognition.

9. Registered image

You may set the image of the drivers or the overview image of the vehicles as Registered Image. The image will be shown when the registered car is being recognized. The function can be used when the security is very concerned of.

10. Start/Stop Recognition

You may select start or stop one or more lanes of recognition.

11. System Configure

You may setup the system by System Configure. Please refer to the detail in the next section.

12. Recognition Database / Registered Plates Database / Watermark

It is used for the management of the Recognition Database and Registered Plates Database.

For details about Recognition Database, please refer to Chapter 4. For details about Registered Plates Database, please refer to Chapter 5.

13. Notifications

I/O and Hotkey Notification. Please refer to Chapter 6 for details.

14. Network

You may select to build connection to GV-DSP LPR, other GV-LPRs or GV-LPR Center to allow remote control. Please refer to Chapter 7 for details.

15. View Window

You may select the live video of a single lane so that you can see it clearly.

16. View Window Layout

You may select to show 1, 4, 6, 8 or 9 windows to monitor the live video of the lanes.

17. Version/ Exit/ Minimize

You may show the version information, select to minimize or exit the GV-LPR.

18. Camera Selection

You may select which lane or lanes to be shown in the [Recognition Records].

3.2 System Configure

When the first time GV-LPR is run, you will be prompted to select the country for your installation. This setting will define the recognition engine to be used. You may change the setting afterwards.

Figure 3-2

Please read the details of System Configure before start using the GV-LPR System. Click the [System Configure] button to access the setup.

Figure 3-3

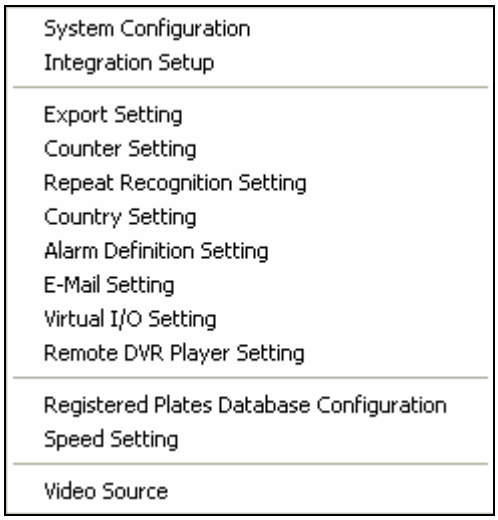


Figure 3-4

3.2.1 System Configuration

There are 3 kinds of setting: [General Setting], [Camera 1~8] and [I/O Device]:

3.2.1.1 General Setting

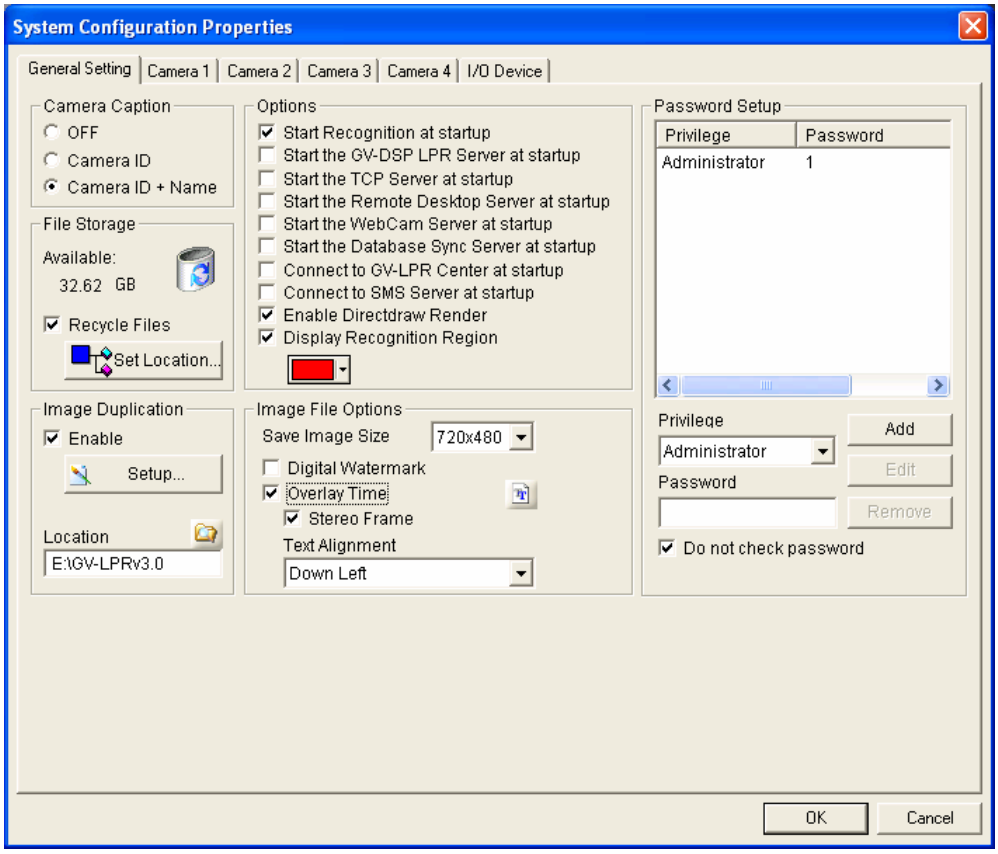


Figure 3-5

Camera Caption

You may set the Camera Caption, whether turn off the display by selecting [OFF], shows the [Camera ID] or shows the [Camera ID + Name] at the upper left corner of the Main Video Windows.

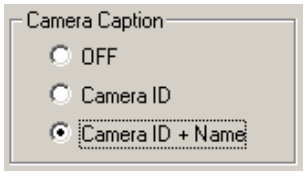


Figure 3-6

File Storage

[Available] displays the available free space of your hard drive. If the first drive hits 2GB then the system will automatically switch to the second hard drive for recording when there is more than one hard drive have been assigned for the File Storage.

If [Recycle Files] option is enabled then the system will start deleting the earliest image files to make space for the new image files when the system runs out of the free storage. If the [Recycle Files] option is not selected

then the system will simply stop saving when there is no free storage.

Click the [Set Location…] button. The [Location Setup] dialog box will appear. This dialog box displays the location path of your saved image files and its available free space. You can click on the folder icon to [Add] or [Delete] location path for saving image files.

Note: When integrated with GV-Series DVR, please **Do Not** set the folder of video storage path of GV-Series DVR to the same logical hard drive of GV-LPR File Storage. That will cause the GV-Series DVR to use up the hard drive.

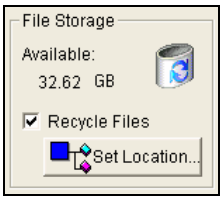


Figure 3-7

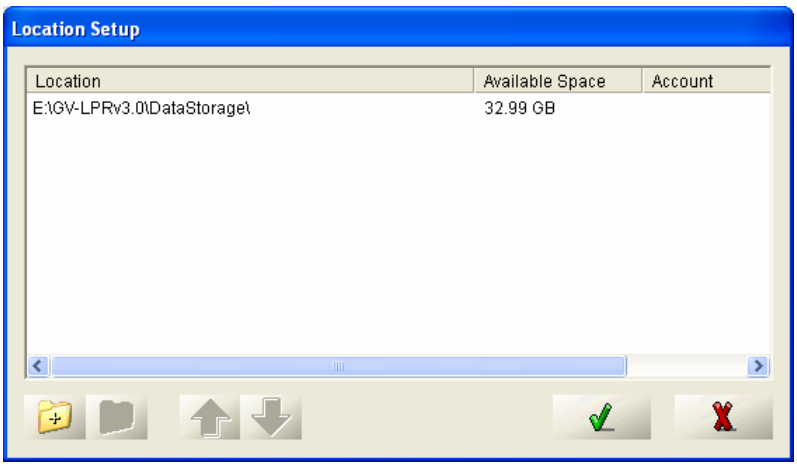


Figure 3-8

Image Duplication

If you need to duplicate the image file to other disk for backup or system integration, you may enable [Image Duplication] and set [Image Duplication Filename Setup] and [Location].

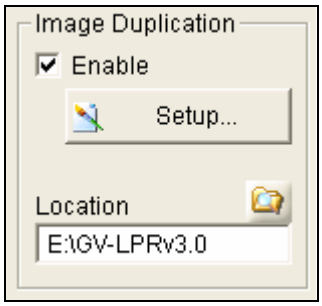


Figure 3-9

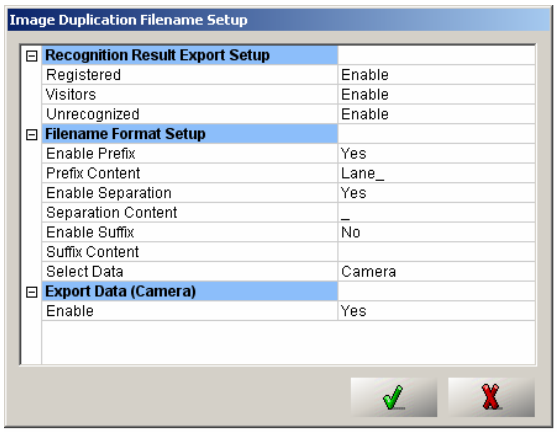


Figure 3-10

Options

It is advised to set the [Start Recognition At Startup] so that recognition starts when GV-LPR starts running. If [Display Recognition Region] is enabled, the recognized license plate region will be shown. If [Enable Directdraw Render] is enabled, better video quality can be provided by VGA card and its driver which supports Directdraw.

If you want to enable the server connections to start at GV-LPR startup, select [start the STANDALOME server at startup], [Start the TCP server at startup], [Start the REMOTE DESKTOP server at startup], [Start the WEB-CAM server at startup], [Start the database sync server at startup], [Connect to LPR Center at startup] and [Connect to SMS server at startup].

Note: Please disable the “Enable Directdraw Render” when you are using dual screen mode when integrated with GV-Series DVR because VGA does not support dual screen Directdraw.

Figure 3-11

Image Options

The capture image for recognition is 720 x 480 (NTSC) / 720 x 576 (PAL). You may save the image with the size selected in the [Save Image Size]. [Digital Watermark] can be enabled so that the saved images could able to be proved that it has not been modified. The [Overlay Time] can write the time in the saved image file. You may set the font, whether to add [Stereo Frame] and adjust the [Text Alignment].

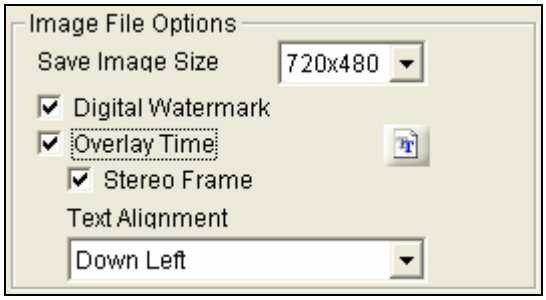


Figure 3-12

Password

There are 3 level of privilege for Password: Administrator, Power User and User. Administrator has highest privilege with all access right. Power User and User cannot do any system configuration. User cannot add registered license plate into the system but Power User can do it. You may [Add], [Edit] or [Remove] the password.

If you do not want to be asked to enter password when you click the buttons on the main screen and access menu options, enable [Do not check password].

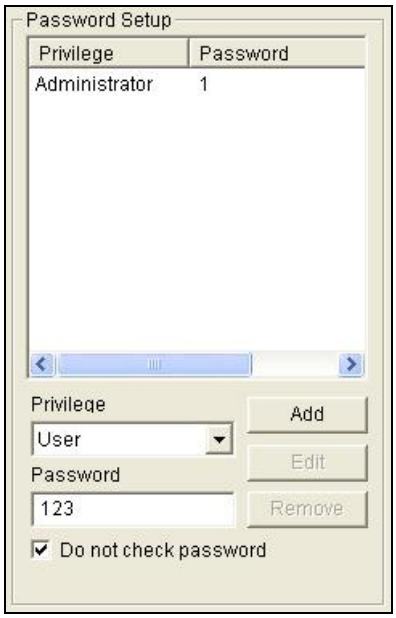


Figure 3-13

3.2.1.2 Camera 1 ~ 8

For 8 lanes product, the dialog will show settings for Camera 1 to Camera 8. For 1 or 2 lanes product, it will only show Camera 1 or Camera 1 and Camera 2 settings etc.

If you click this icon , the settings inside the rectangle region will be copied to all of the other cameras.

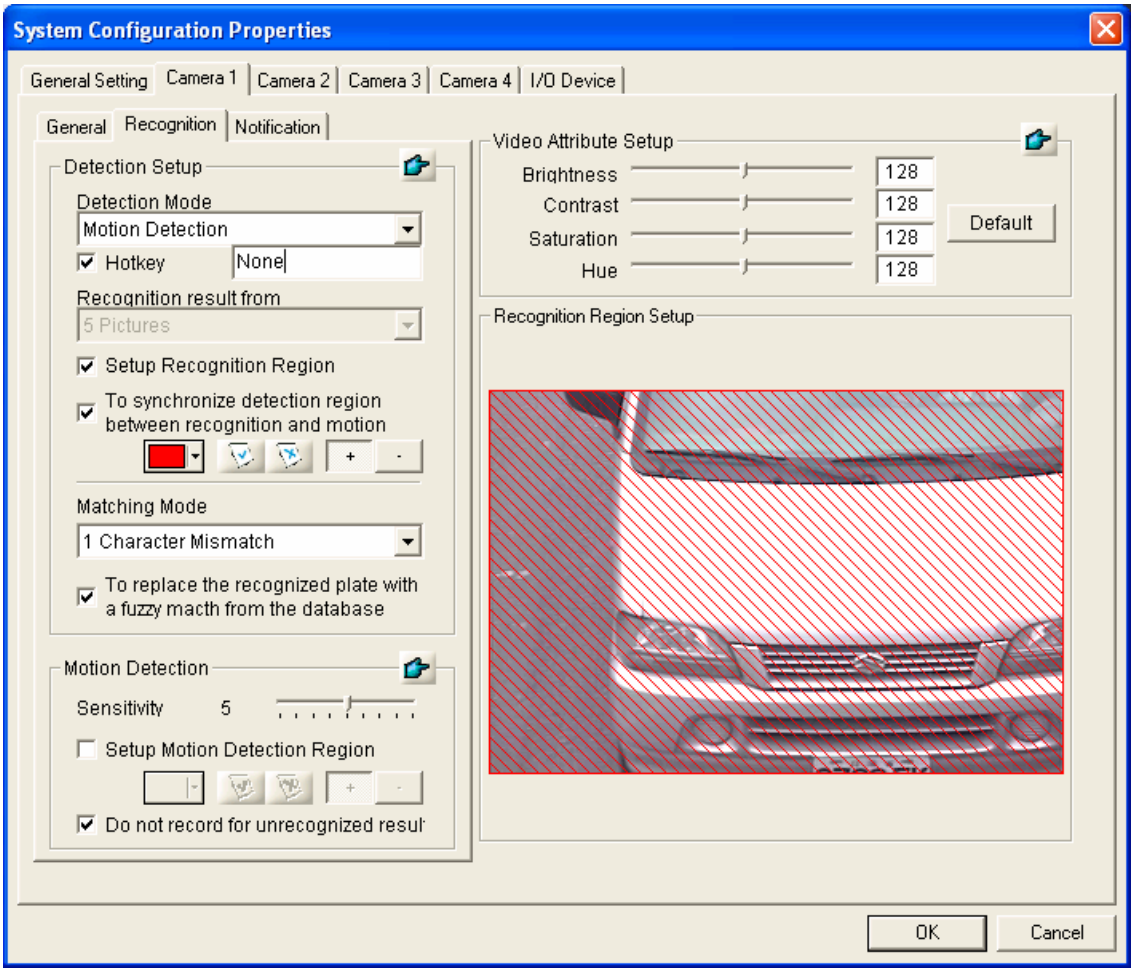


Figure 3-14

General

[Camera Name] You may set the Camera Name.

[Video Source] You may select the Video Source from Capture Card, AVI file recorded by GV-Series DVR. You may repeat playing the AVI file if needed. The resolution of video source should be 720 x 240, 720 x 480, 720 x 576, 720 x 288 or 640 x 480 depending on the capture card installed from GV-Series.

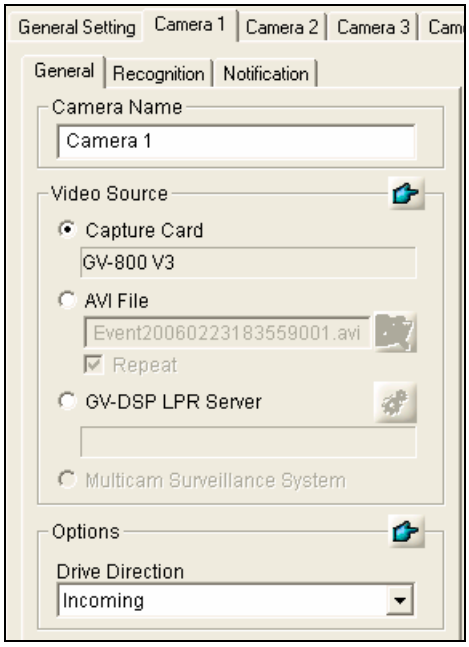


Figure 3-15

You may use the [Video Attribute Setup] to adjust Brightness, Contrast, Saturation and Hue. When GV-LPR is integrated with GV-Series DVR, the [Video Attribute Setup] in GV-LPR will be disabled. You may set them in GV-Series DVR.

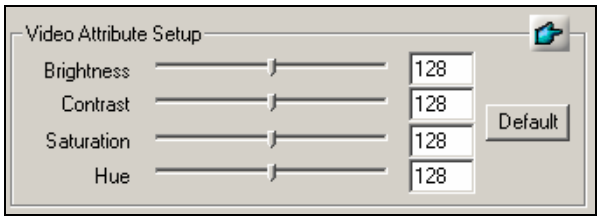


Figure 3-16

[Options]

You may set the [Drive Direction] to “Incoming” or “Outgoing.”

Figure 3-17

Recognition

[Detection Setup]

[Detection Mode] There are [I/O Detection] and [Motion Detection] options.

[I/O Detection] is normally used for car park or entrance.

[Motion Detection] is normally used on freeway recognition where I/O detection devices are not allowed to be installed.

[Hotkey] Set up the hotkey for the manual recognition. Move the cursor to the HotKey field, press the desired on key the keyboard. The keys from [F1] to [F12] or the combination of [Ctrl] and other keys can be used as HotKeys.

[Recognition Result From] There are 1 picture, 3 pictures and 5 pictures options to be selected. It is the number of images to be captured to be recognized for each trigger. It is used for [Manual Detection] and [I/O Detection] mode. The greater value provides more accuracy, and more CPU resource is needed.

[Setup Recognition Region] You may add or subtract the region where the license plate is to be recognized. License plates outside this region **will not** be recognized. To add or subtract the region, please drag your mouse in the [Recognition Region Setup] area and confirm with the left button on the mouse.

[To synchronize detection region between recognition and motion] You can set up the same detection region for both Recognition Region and Motion Detection Region.

[Matching Mode] You may select the tolerance of comparison while performing matching the recognized result of the license plate with the registered database. There are 4 types of modes: [All Characters Match], [1 Character Mismatch], [2 Characters Mismatch] and [3 Characters Mismatch].

[To replace the recognized plate with a fuzzy match from the database] If the recognized plate is similar to that stored in database, you can replace it with the database information.

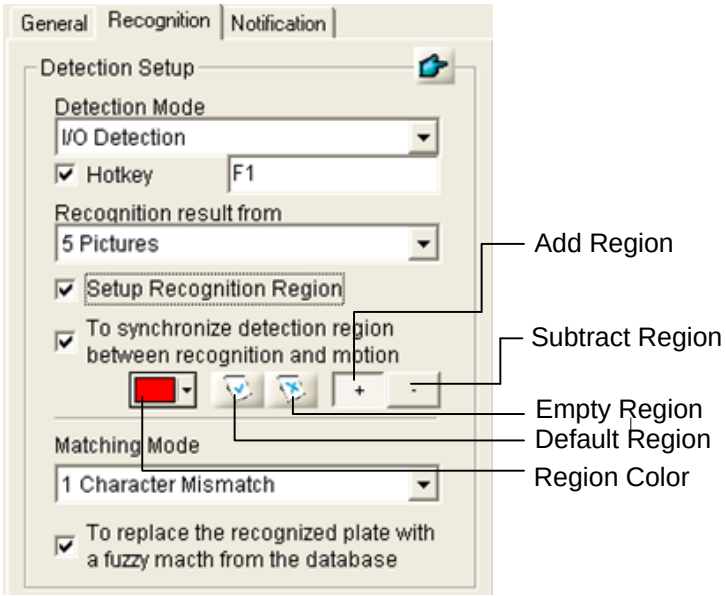


Figure 3-18

[Motion Detection]

The settings in the area are only available when [Detection Mode] is selected to be [Motion Detection]. The maximum lanes supported for [Motion Detection] mode is 4 lanes.

[Sensitivity] There are 9 levels of sensitivity can be selected.

[Setup Motion Detection Region] You may add or subtract the motion sensor regions. To add or subtract the region, please drag your mouse in the [Motion Detection Region Setup] area and confirm with left button on the mouse.

[Do not record for unrecognized result] This option is default enabled so that those recognition triggered by motion detection without license plate found can be eliminated.

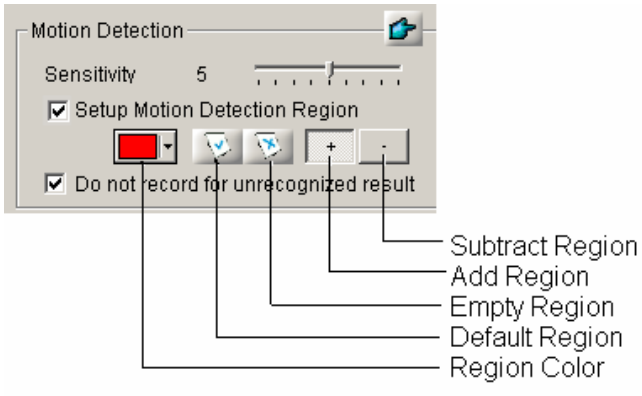


Figure 3-19

When [Motion Detection] mode is used, you should be **very careful** of the installation of the camera. Make sure that the size of license plate goes in and out of the camera view are nearly the same. Do not install so that it is a small license plate far away and becomes big when it comes nearer. Please refer to images below as the guideline.

Figure 3-20

Figure 3-21

Figure 3-22

Notification

[Recognition Window PIP]

You may enable the [Recognition Window PIP] so that the recognized image can be shown in the Picture In Picture form. By default this window shows the last recognized image. You may change it to show live video instead by changing the selection. Then the [Main Video Window] will be changed to show the recognized image.

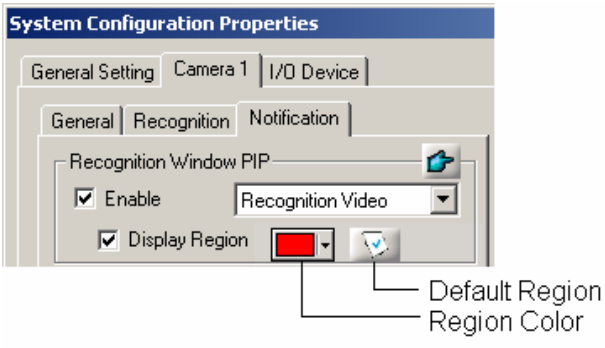


Figure 3-23

You may adjust the PIP window by enable the [Display Region] and then setup in the [Recognition Window PIP Display Region]. You may also reset it to default region by clicking the [Default Region] icon.

[Overview Camera PIP]

You may enable the [Overview Camera PIP] so that you can capture the image of the driver or the overview of the vehicle by installing another camera and shown in the Picture In Picture window. The image will be saved accompanied with the recognition image if you enable [Save Image as JPEG File]. You will see 2 images when you are querying the Recognition Record Database. You may set the image file compression quality in the [Quality]. Higher quality images require more storage spaces.

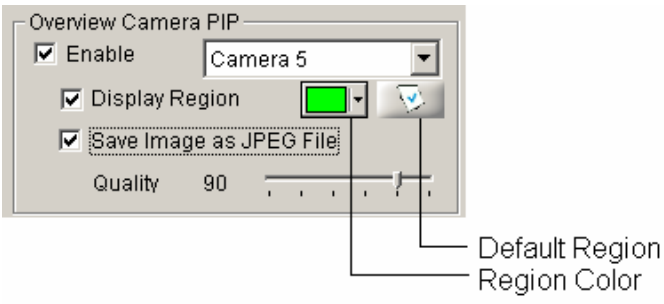


Figure 3-24

You may adjust the PIP window by enable the [Display Region] and then setup in the [Overview Camera PIP Display Region]. You may also reset it to default region by clicking the [Default Region] icon.

[Video Attribute Setup]

You may set the Brightness, Contrast, Saturation and Hue of the camera.

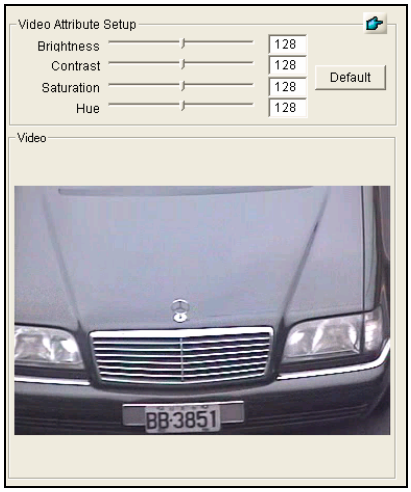


Figure 3-25

3.2.1.3 I/O Device

To use [I/O Detect] mode, you should set the [I/O Device]. Please refer to the video demonstration in the upper left corner of this dialog box. It shows how 2 infrared sensors trigger the recognition. 2 infrared sensors can prevent most of the trigger generated by people walk through. You can also adjust the distance of the 2 infrared to prevent bicycle or motorbike. Normally, it is at least 1.5 meter apart. Magnetic Loop Detector is the main sensor device to be used for I/O trigger. For Magnetic Loop Detector, 1 input is enough to trigger the system.

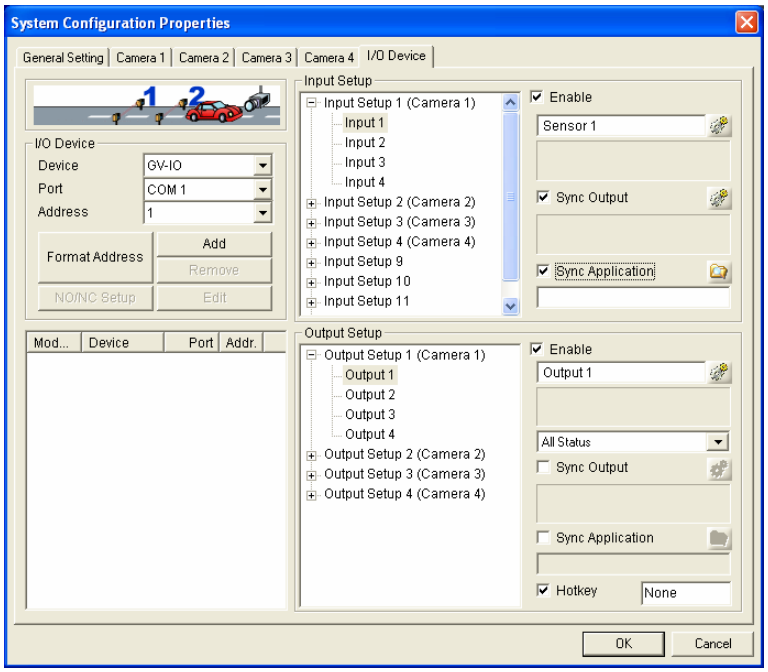


Figure 3-26

[I/O Device]

Before you can start using the I/O modules you have to setup the GV-LPR to recognize them first. You should have a GV-NET Card connected to the COM port of your computer or GV-COM module connected to the USB port of your computer. Please refer to Chapter 1. Select the device in the [Device] drop down menu, normally GV-IO, select COM port in [Port] and the module address from [Address], normally 1. Then click [Format Address] button. The [Add] button will be selectable if the system successfully found your module. Click the [Add] button and this module will appear in the list. You may remove or edit the device when you select the device and click [Remove] or [Edit] button.

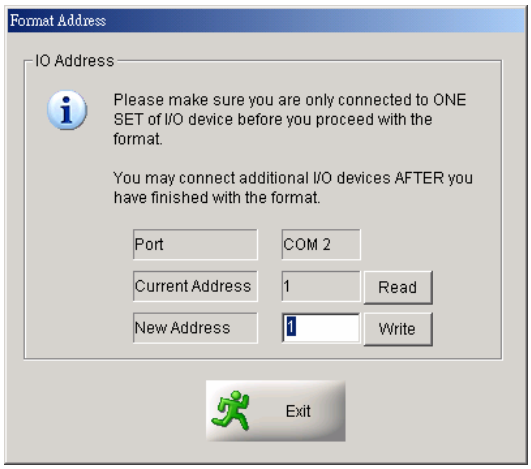


Figure 3-27

After adding the I/O device, you may setup the [Pin Setup] of each pin to Normal Open or Normal Close by clicking the [NO/NC Setup] button.

Figure 3-28

[Input Setup]

You can select the I/O device to set. Input Setup 1~8 are mainly for triggering recognition. Input Setup 9~12 can be used for auxiliary purpose if needed.

Input Setup 1 is for camera 1 and so on. There are maximum 4 inputs to trigger the recognition of a camera. If you are only going to set an input to trigger the recognition, you may just enable the input 1. If you are going to use two inputs to trigger the recognition, you should enable both input 1 and input 2, etc. When you set Input 1 and Input 2 it means that it will trigger recognition only when input 1 is triggered and then input 2 is also triggered before the trigger of input 1 is off. It will not trigger recognition when input 2 is triggered and then input 1 is also triggered. This can help when concerning with the drive direction.

[Sensor Name] You may set the name of the sensor in the [Sensor Name].

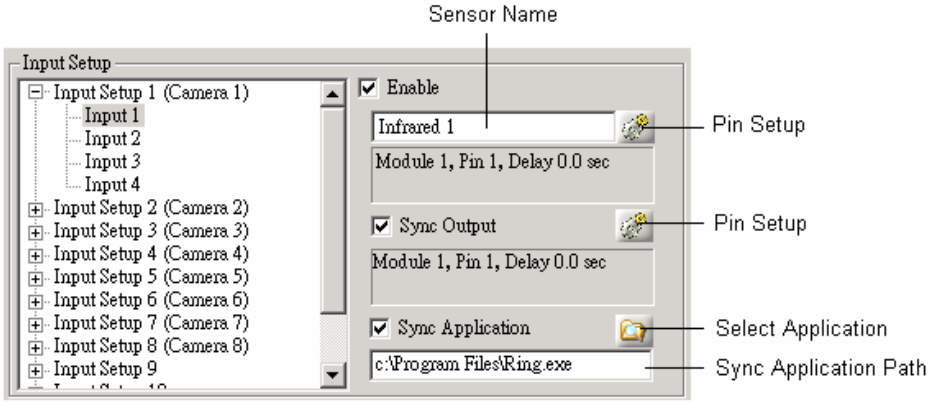


Figure 3-29

[Pin Setup] Remember to set the [Pin Setup] for the Input by clicking the [Pin Setup] button. You should set the I/O [Module] number and [Pin] number. You may set the [Delay before Trigger] of recognition if needed.

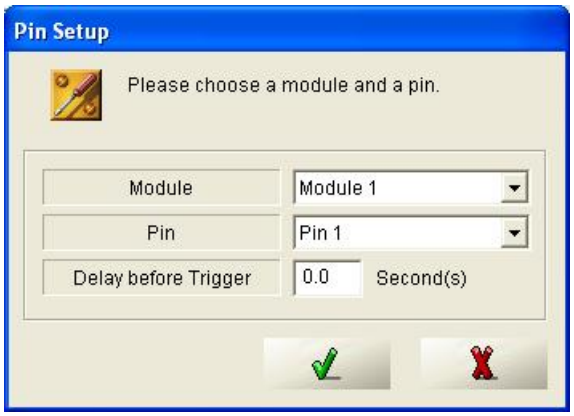


Figure 3-30

[Sync Output] If you need to synchronize an output to an input, for example, switch on a light when the first

infrared is triggered, you may enable the [Sync Output] and set the [Pin Setup] for it. You may set the [Delay before Trigger] if needed. The [Trigger Time] can be synchronized with the input or user-defined.

Figure 3-31

[Sync Application] You may enable it so that a program can be synchronized to run for integration.

[Select Application] You may select the Synchronized Application Path by clicking this button.

[Sync Application Path] The selected Sync Application Path will be shown.

[Output Setup]

Up to 8 outputs can be set according to the result of the recognition. Output Setup 1~ 8 are mainly for output triggering by recognition result. Other programs can be synchronized to run for integration. Hot Key can be set to trigger the outputs.

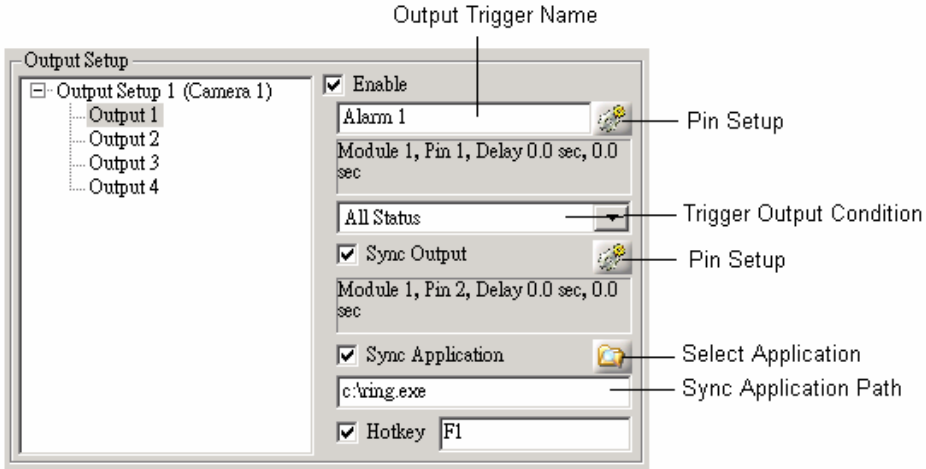


Figure 3-32

[Output Trigger Name] You may give a meaningful name to identify the trigger, for example, “Gate” or “Light”.

[Pin Setup] Remember to set the [Pin Setup] for the Output by clicking the [Pin Setup] button. You should set the Output [Module] number and [Pin] number. You may set the [Delay before Trigger] and [Trigger Time] if needed.

Figure 3-33

[Trigger Output Condition] You should select the kind of recognition result to trigger the output. A "Registered" result may trigger to open the gate. A "Visitors" or "Unrecognized" result may trigger an alarm if needed.

[Sync Output] If you need to synchronize an output to an input, such as switching on a light when the first infrared is triggered, you may enable the [Sync Output] and set the [Pin Setup] for it. You may set the [Delay before Trigger] if needed. The [Trigger Time] can be synchronized with the input or user defined.

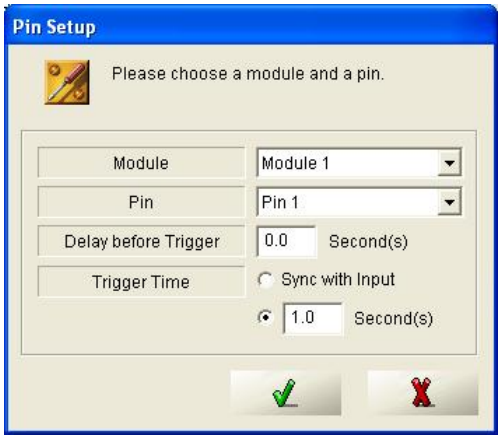


Figure 3-34

[Sync Application] You may enable it so that a program can be synchronized to run for integration.
[Select Application] You may select the Synchronized Application Path by clicking this button.
[Sync Application Path] The selected Sync Application Path will be shown.
[Hotkey] You may set the Hotkey so that when clicking the Hot Key, the output will be triggered. The Hotkey can be F1 ~ F8, Ctrl + (A ~ Z) or Ctrl + (0 ~ 9).

3.2.2 Integration Setup

GV-LPR can be integrated with GV-Series DVR (Version 8.0 or higher) by using the same capture card on the same PC. You may install 2 monitors, with the main monitor showing GV-Series DVR user interface and the second monitor showing GV-LPR user interface. The main purpose of the integration is that it could lower the installation cost and provides leading function of retrieving video by license plate number.

Retrieving video by using license plate number provides a very key feature for the integration of GV-LPR with GV-Series DVR. You may view video of any or all cameras before or after the vehicles being recognized. That means you can easily retrieve the video of suspicious drivers or their passengers about what they have brought into or out of the building or other behaviors.

Note: Please Do Not set the folder of video storage path of GV-Series DVR to the same logical hard drive of GV-LPR File Storage. That will cause the GV-Series DVR to use up the hard drive.

Run the GV-Series DVR before GV-LPR. It shares the Video and I/O with GV-LPR.

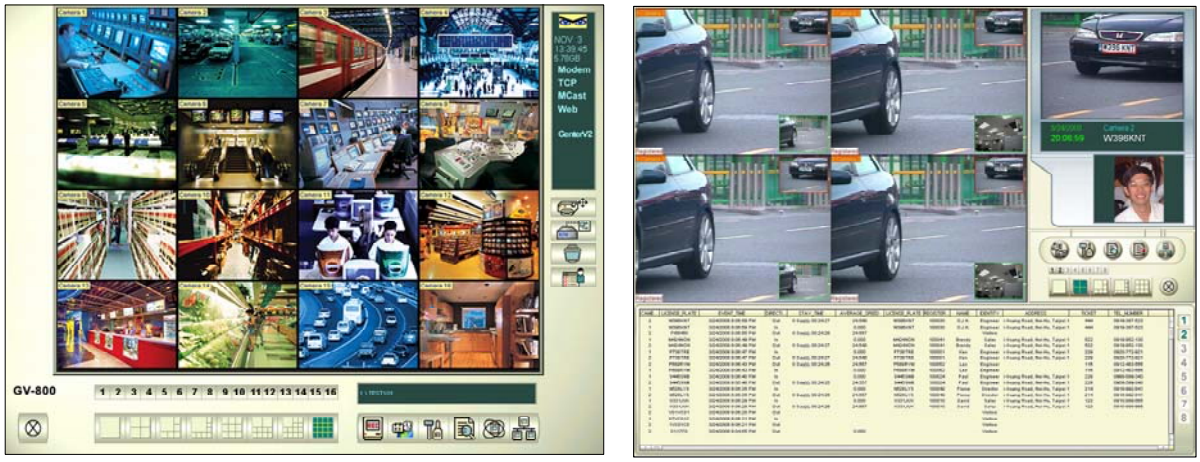


Figure 3-35

For the integration setup, please follow these steps:

1. Select the [Enable] option.
2. Select correct installed path of the GV-Series DVR for [DVR Path].
3. Match the camera of GV-LPR to GV-Series DVR by the selection in [Choose LPR Camera] and [Match to DVR camera]. This function let you select which camera of GV-Series DVR to share with the GV-LPR for recognition.
4. If I/O device is used for GV-LPR, please choose whether it is controlled by GV-LPR or controlled by GV-Series DVR by selecting [Controlled by LPR] or [Controlled by DVR] in [IO Device]. If DVR does not use the I/O device, it is better to set it to [Controlled by LPR].

5. Please choose in the [Video Browser] whether to use [Quick Search] or [ViewLog] of GV-Series DVR when searching function is selected. [Quick Search] provides single channel playback while [ViewLog] provides all cameras playback with more functions. If you do not run GV-Sereis DVR and GV-LPR on the same computer, you can select [ViewLog (Remote)] to access recording files remotely by building the connection on the Internet. For the details about establishing the connection, see *3.2.10 Remote DVR Player Setting*.

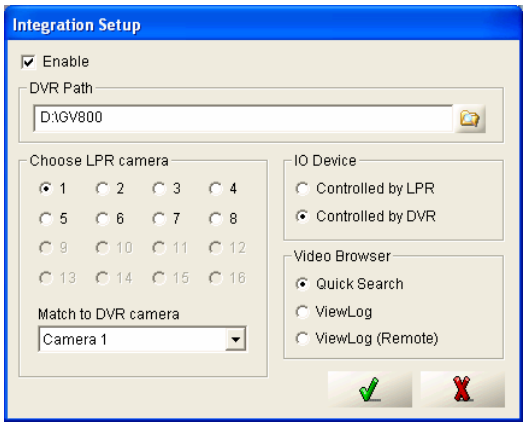


Figure 3-36

3.2.3 Export Setting

Export Setting enables you to output the recognition results for system integration. You may select [Export through RS232] or [Export to File] to export the recognition results.

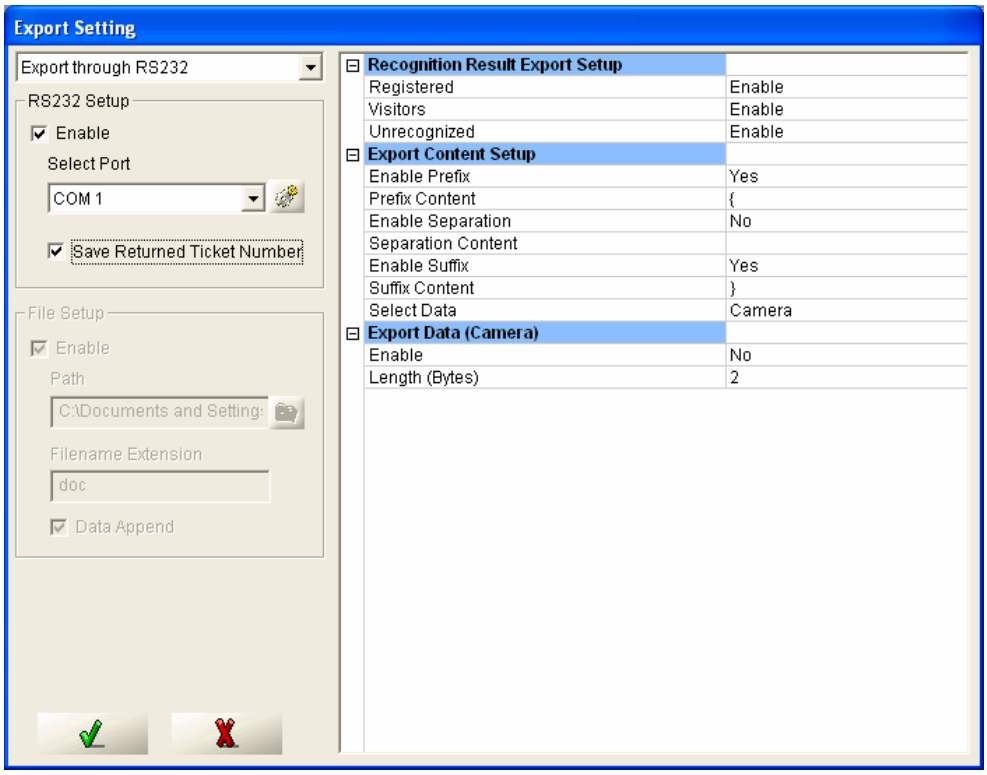


Figure 3-37

[Export through RS232]

Through RS232, the recognition results are transmitted and then displayed at the receiver's site. Follow these steps to set up:

1. First select [Export through RS232].

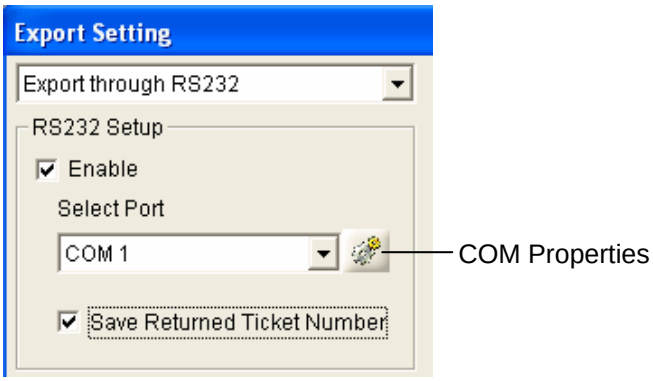


Figure 3-38

2. Enable the [Enable] in [RS232 Setup], select the COM port, and click the [COM Properties] button to set the communication properties of the COM port.

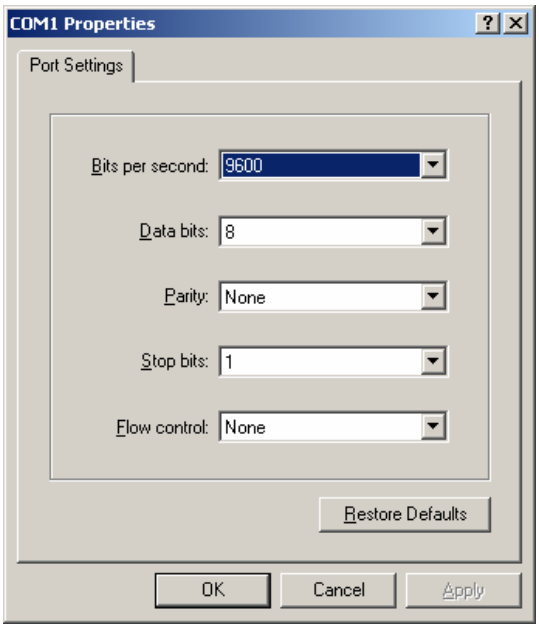


Figure 3-39

3. In [RS232 Setup], the [Save Returned Ticket Number] option can be integrated with Ticketing System. If this option is enabled, the Ticketing System should send the received data, including the Ticket Number, [Card ID] back to GV-LPR. The received [Card ID] data can be used to search for the recognition record.
4. In the right panel of the dialog box, you need to configure the content settings. In the [Recognition Result Export Setup], you may select all or some types of recognition results to export. To make a selection, click the desired type and use the drop-down list to select [Enable]. If you select [Unrecognized], the unrecognizable license plates are outputted as ******.

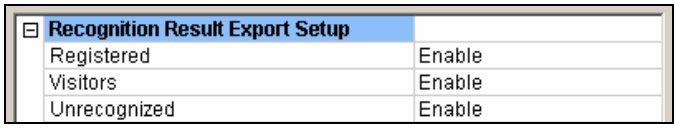


Figure 3-40

5. In the [Export Content Setup], you can decide the format of the exported data. For example, if you type "{" in [Prefix Content], there will be a "{" in the exported data. If you are not sure of the format you want to set, keep the default settings.

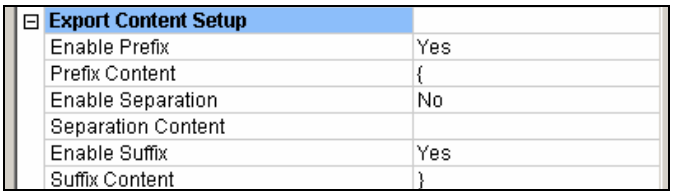


Figure 3-41

6. Note the options included in [Select Data]. You may output not only the information from [License Plate] but also information of [Camera], [Recognition time], [Stay time], [Drive Direction], [Host Name], [Recognition Confidence] and [Identify]. [Identify] equal to 0 means that is a [Registered], equal to 1 means [Visitors], and 2 means [Unrecognized]. Click each desired item to set up in detail. You can enable [Separation Content] (see Figure 3-41) to separate the information.

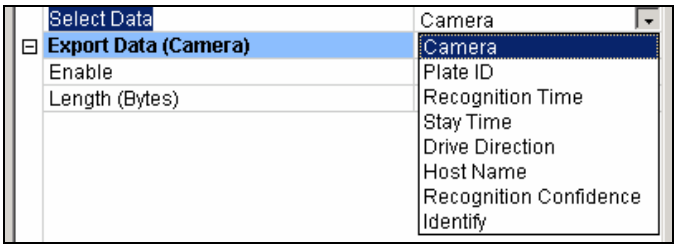


Figure 3-42

7. In [Export Data (Camera)] (see Figure 3-42), you must enable the [Enable] option and set the [Length (Bytes)] for the Data you are going to export.

[Export to File]

You can also export your recognition results to a **.txt** file. Follow these steps to set up:

1. First select [Export to File].

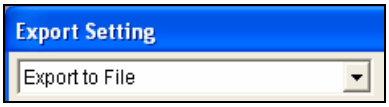


Figure 3-43

2. In the [File Setup field], select [Enable], click the [Select Location] button or manually type the location to set the path, and set the [Filename Extension].

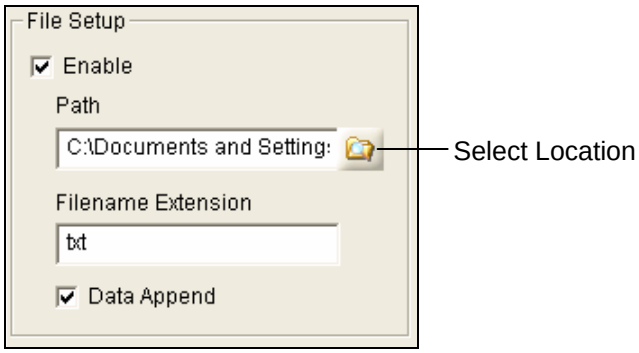


Figure 3-44

3. If you want the file to be updated to include the latest recognition result, select [Data Append]. Otherwise, the exported .txt file will only display the latest record of recognition result. The figure below is an example of an exported file with the [Data Append] option enabled.

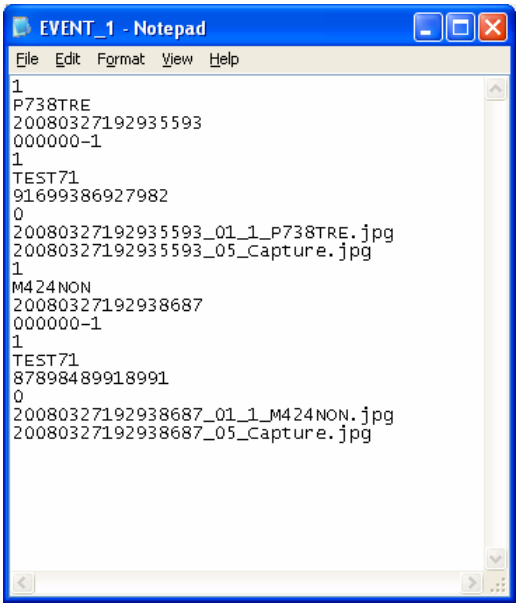


Figure 4-45

4. In the right panel of the dialog box, you need to configure the content settings. In [Recognition Result Export Setup], you may select all or some types of recognition results to export. To make a selection, click the desired type and use the drop-down list to select [Enable]. If you select [Unrecognized], the unrecognizable license plates are outputted as ******.

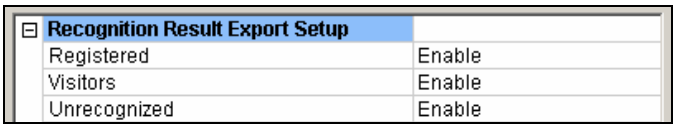


Figure 3-46

5. In the [Filename Format Setup], you can decide the format of the exported data. You may enable [Prefix Content] and [Separation Content] between Data and Suffix if needed. They take effect in the filename and data of the exported file.

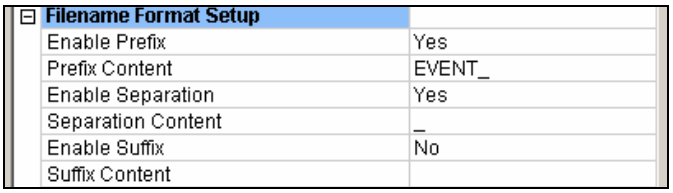


Figure 3-47

6. Note the options included in [Select Data].You may output not only the license plate number from [License Plate] but also [Camera], [Recognition time], [Stay time], [Drive Direction], [Host Name], [Recognition Confidence], [Identify], [Recognition Image Fullpath] and [Relation Image Fullpath]. [Identify] equal to 0 means that is a [Registered], equal to 1 means [Visitors], and 2 means [Unrecognized]. Click each desired item to set up in detail.You can enable [Separation Content] (see Figure 3-41) to separate the information.

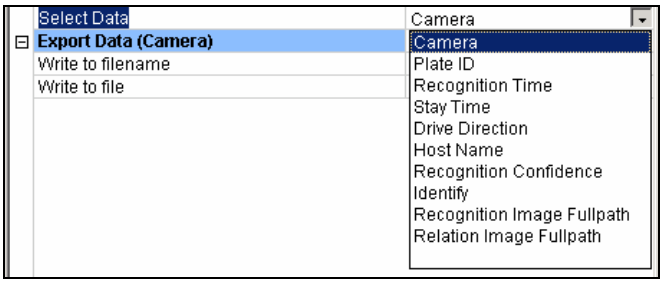


Figure 3-48

7. In the [Export Data (Camera)] field, if you want the Data to be in the filename, set the [Enable] to [Yes]. If you want the Data to be written to the exported file, set [Write to file] to [Yes].

Example: If you are going to export [License Plate] data and the filename is [Camera], then you may select:

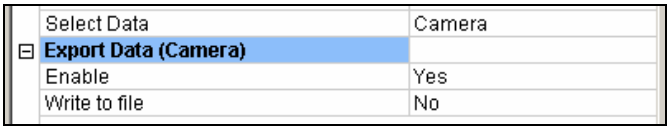


Figure 3-49

and

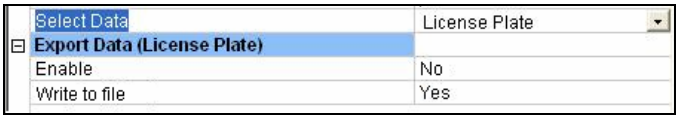


Figure 3-50

Then you may have a file named “EVENT_1.txt” generated with contents of “AB1234” when a vehicle with license plate number “AB1234” is recognized by Camera 1.

3.2.4 Counter Setting

You may use the counter to count the traffic flow or count the remaining empty unit of parking lots. The result can be shown on the Camera Caption and optionally output to file.

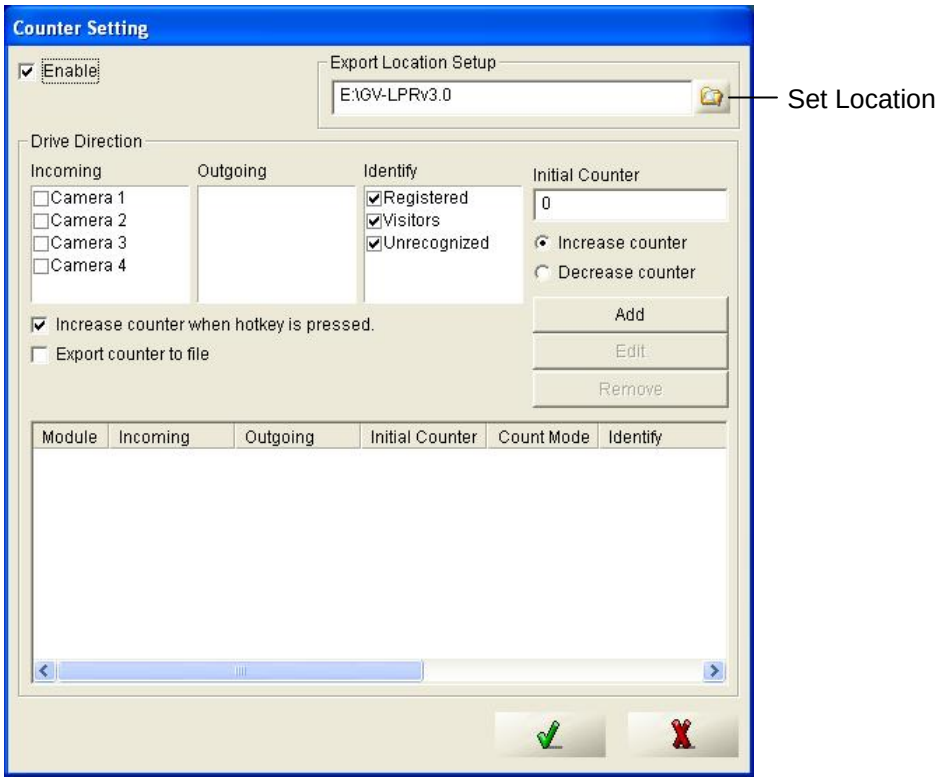


Figure 3-51

1. First, enable the [Enable] option. Then select the camera from [Incoming] and/or [Outgoing] sections. The [Drive Direction] of each camera decides whether it is placed in [Incoming] or [Outgoing]. More than one camera can be set for a group of count. To set the drive direction of each camera, select the desired Camera, click the [General] tab and make the selection in the Drive Direction field. For details, see *3.2.1.2 Camera 1 ~ 8*.

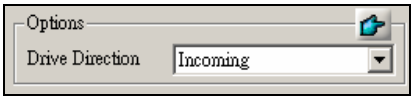


Figure 3-52

2. Select the [Identity] to count.
3. Set the [Initial Counter], and select [Increase counter] or [Decrease counter] to count the vehicles in increasing order or decreasing order. If [Increase counter] is selected, the [Incoming] increases and [Outgoing] decreases the counter. If [Decrease counter] is selected, the [Incoming] decreases the counter, and [Outgoing] increases the counter.
4. Select whether to enable [Increase counter when hotkey is pressed].
5. Select whether to enable [Export counter to file].

6. Click the [Add] button to add a new counter. Click [Edit] after you have modified the settings of a counter. You may manually input the path of [Export location Setup] or by clicking the [Set Location] button.

Note: If you are going to count the remaining unit of parking lot, you may set the [Initial Counter] to current empty unit and select [Decrease Counter] to keep the counter function correctly.

3.2.5 Repeat Recognition Setting

[Repeat Recognition] can only be enabled when the [I/O Detection] mode is applied. The system will repeat recognition until the vehicle leaves the I/O sensor or the recognition result is “Registered” or at least “Visitors”. This function will increase the recognition rate. For the system used for a car park for registered car, it is suggested to set to “Registered”. For the non-registered usage like public car park, it is suggested to set to “Registered” plus “Visitors”.

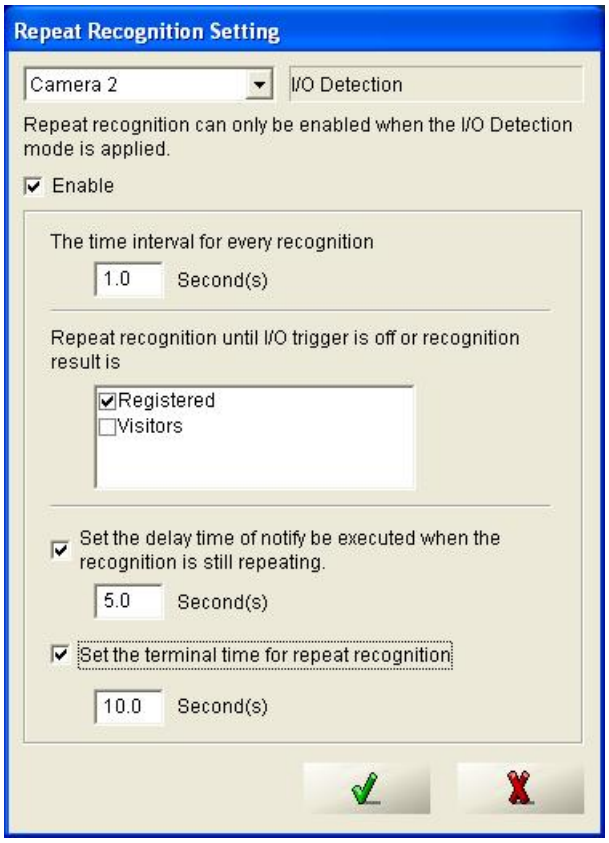


Figure 3-53

3.2.6 Country Setting

You have to select the country or region where you install the GV-LPR. The recognition engine for each country is different. Please make sure you select the correct country or region.

Figure 3-54

3.2.7 Alarm Definition Setting

You can set up alarms in terms of type, sound, notification methods and recognition types.

[General]

Click [General] in the left panel to access the general setting. In the [Alarm Sound Options], you can select [Play once] to play the alarm once or [Repeat] to repeat playing the alarm for the desired period of time. If you want to display the alert message on the LED sign when GV-LPR is started, select [Start Program At Startup].

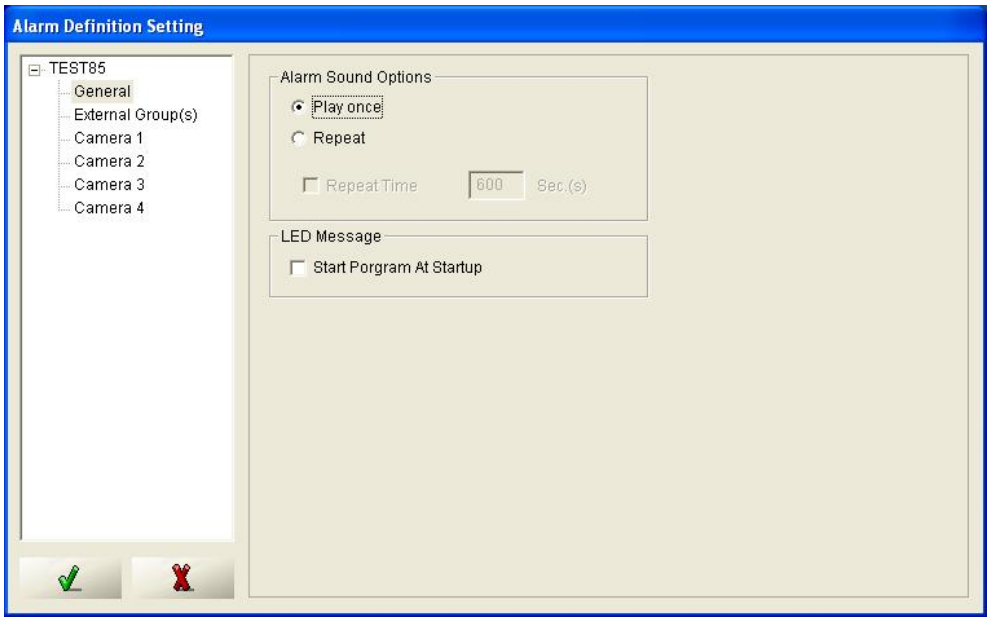


Figure 3-55

[External Group(s)]

You can set up different alarm settings by recognition results from connected cameras. The [External Group(s)] allows you to create the black and white lists at the same time to block or grant certain registered

users. Each registered record can be assigned to the user-defined groups. For details, refer to *5.1 Add Record*. Clicking [External Group(s)] in the left panel allows you to create different groups and set up alarm settings for each group.

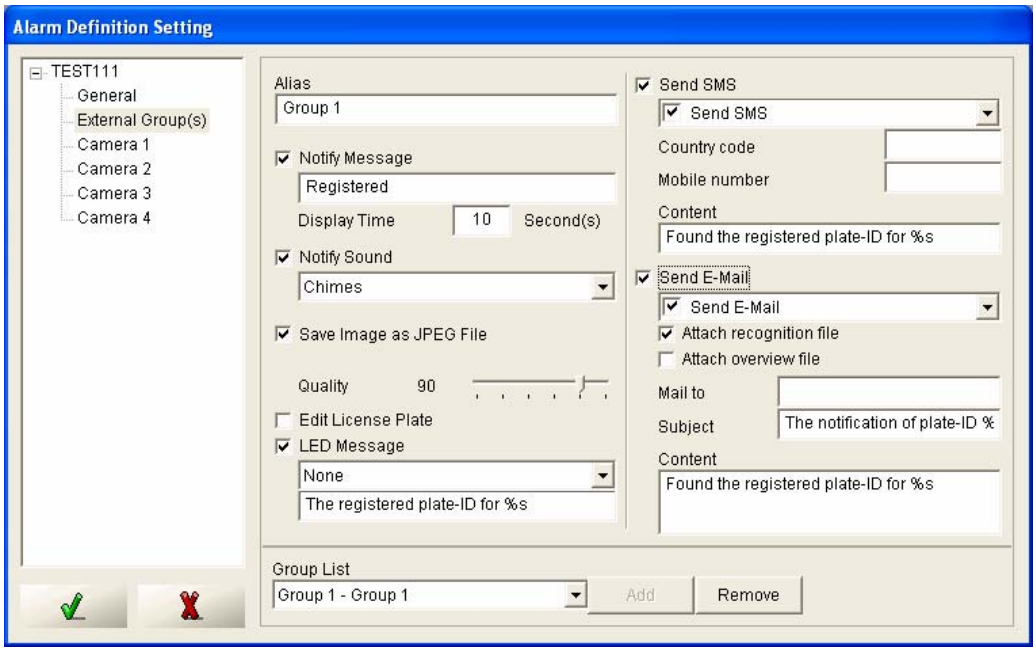


Figure 3-56

[Alias]: You can give a desired name to the group.

[Notify Message]: The input text will be shown on the Monitoring Window.

[Display Time]: Set the time of showing the Notify Message.

[Notify Sound]: Play the selected sound file if it is enabled. It is suggested that this is enabled for the Visitor, Unrecognizable and the vehicles in the black list so that the guards can be warned to take care of the event.

[Save Image as JPEG File]: Option whether to save the image file.

[Quality]: Higher quality images require more storage spaces.

[Edit License Plate]: Option whether to show dialog to modify license plate.

[LED Message]: Type the message to be displayed on the connected LED signs.

[Send SMS]: Send SMS messages when alert conditions occur. To send SMS messages to the recipients previously set up, select [Send SMS to register] from the drop-down list. To send SMS messages to a new number, select [Send SMS] and type the desired recipient's number. The wording "%s" in the [Content] field represents a plate number. In an SMS message, the actual plate number will be displayed.

[Send E-Mail]: Send alert messages via e-mail. To send e-mail messages to the recipient previously set up,

select [Send E-Mail to register] from the drop-down list. To send e-mail messages to a new recipient, select [Send E-Mail] and type the recipient's e-mail address. In both [Subject] and [Content] fields, the default text is about license plate number. You can also type other texts to meet your needs. The wording "%s" in the [Content] field represents a plate number. In an e-mail message, the actual plate number will be displayed.

[Group List]: When you finish the above settings for a group, and click [Add] to create a new group. To edit the settings of the existed group, use the drop-down list to select the desired one and change the settings. To delete a group, use the drop-down list to select the desired one and click [Remove].

[Cameras]

You can assign the cameras to different recognition types: Registered, Visitors or Unrecognized. Select the desired camera in the left panel, click the recognition type tab and make the configuration. For the details about each item, refer to *[Eternal Group(s)]* above.

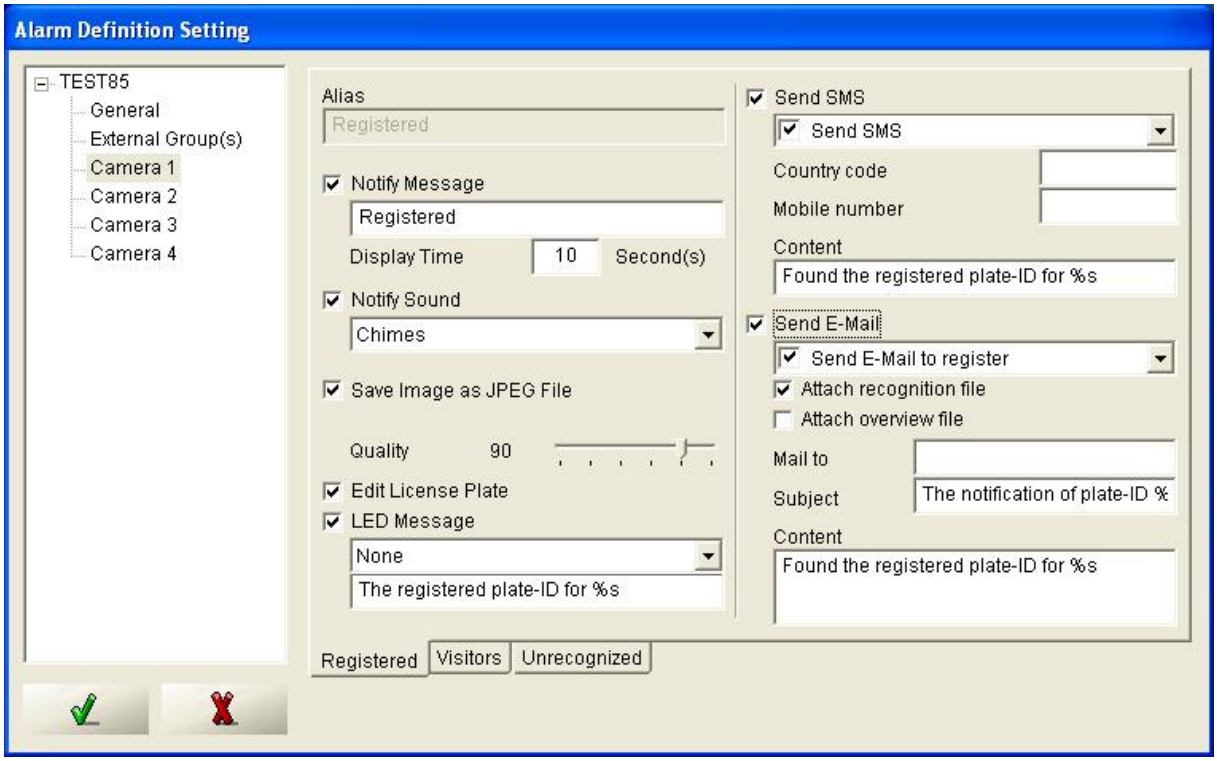


Figure 3-57

3.2.8 E-Mail Setting

You can set up an e-mail account to send alert messages.

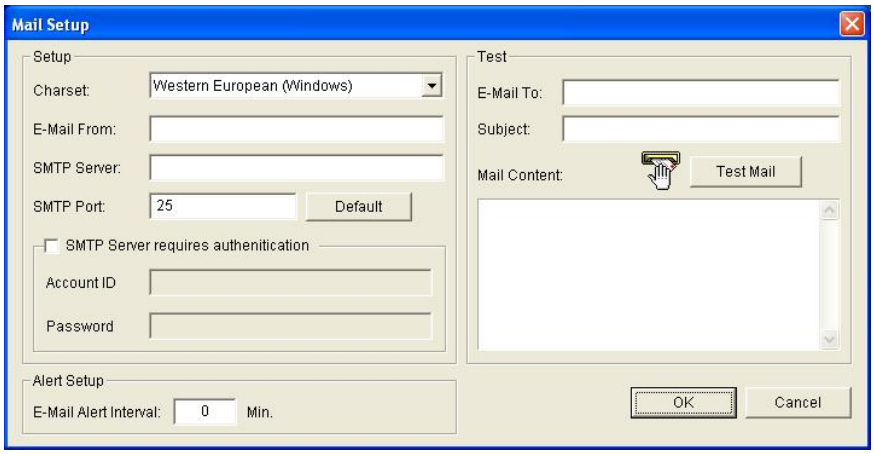


Figure 3-58

3.2.9 Virtual I/O Setting

With the connection to GV-DSP LPR, you can remotely set up and control the output devices.

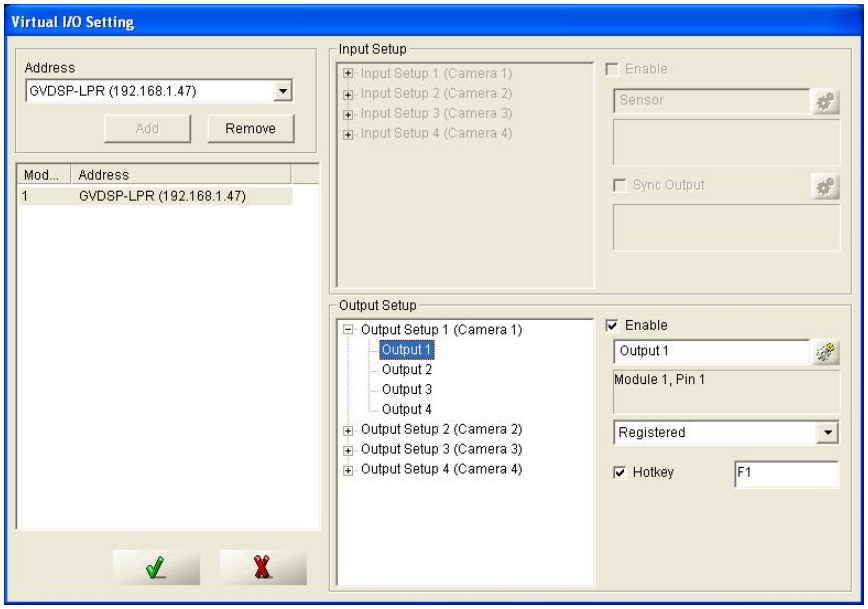


Figure 3-59

To set up the pin number for the selected output and its module, select [Enable] and click . Use the drop-down list to select the type of user to be notified of.

For the details about [Pin Setup], refer to [Pin Setup] in *3.2.1.3 I/O Device*.

3.2.10 Remote DVR Player Setting

You can connect to GV-Series DVR and then access the recording files for remote playback. For the details about accessing videos, refer to *4.2.3 View Recognition Video* and *4.2.4 View Overview Video*.

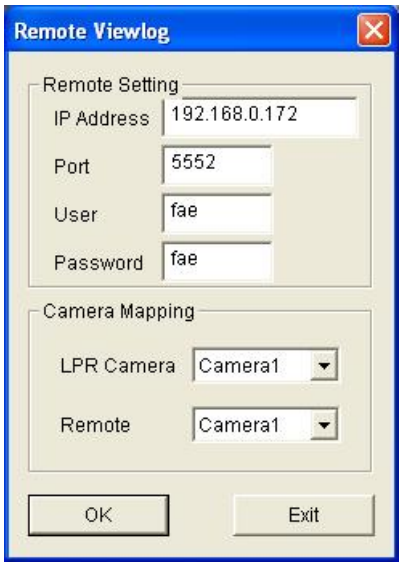


Figure 3-60

1. Before you start the connection, make sure the [Remote ViewLog Service] option is enabled at the GV-Series DVR site. For details, refer to Chapter 4 in *Multicam System User's Manual*.
2. Type the IP address, User's name and Password of the connected GV-Series DVR.
3. In the [Camera Mapping] field, select the camera at GV-LPR site to map with that at GV-Series DVR site.

3.2.11 Registered Plates Database

The GV-LPR supports the connection to a third-party database, such as Microsoft Access, through Microsoft ODBC interface. Therefore you can integrate your existed database with the GV-LPR database.

If you do not wish to make a connection between the GV-LPR Registered Plates Database and the external database, you can keep the default settings in this dialog box.

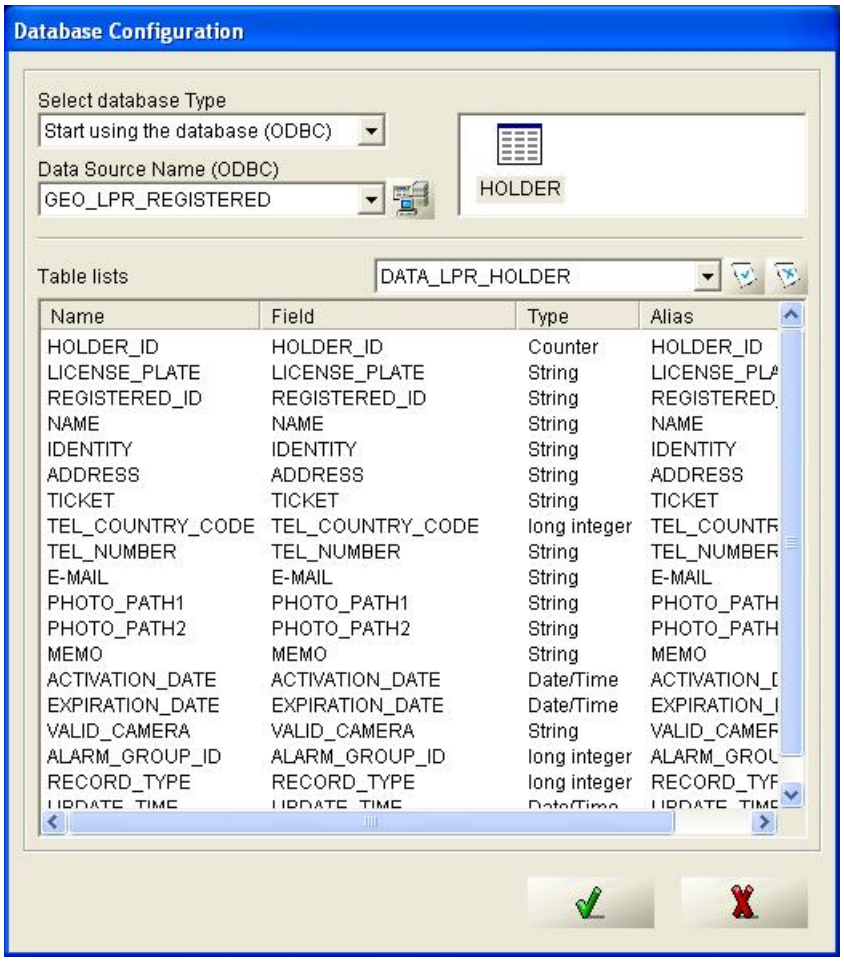

Database Configuration
Select database Type
Start using the database (ODBC)
Data Source Name (ODBC)
GEO_LPR_REGISTERED
HOLDER
Table lists
DATA_LPR_HOLDER
Name
Field
Type
Alias
HOLDER_ID HOLDER_ID Counter HOLDER_ID
LICENSE_PLATE LICENSE_PLATE String LICENSE_PLA
REGISTERED_ID REGISTERED_ID String REGISTERED
NAME NAME String NAME
IDENTITY IDENTITY String IDENTITY
ADDRESS ADDRESS String ADDRESS
TICKET TICKET String TICKET
TEL_COUNTRY_CODE TEL_COUNTRY_CODE long integer TEL_COUNTR
TEL_NUMBER TEL_NUMBER String TEL_NUMBER
E-MAIL E-MAIL String E-MAIL
PHOTO_PATH1 PHOTO_PATH1 String PHOTO_PATH
PHOTO_PATH2 PHOTO_PATH2 String PHOTO_PATH
MEMO MEMO String MEMO
ACTIVATION_DATE ACTIVATION_DATE Date/Time ACTIVATION_D
EXPIRATION_DATE EXPIRATION_DATE Date/Time EXPIRATION_I
VALID_CAMERA VALID_CAMERA String VALID_CAMER
ALARM_GROUP_ID ALARM_GROUP_ID long integer ALARM_GROU
RECORD_TYPE RECORD_TYPE long integer RECORD_TYP

Figure 3-61

Create a Microsoft ODBC Connection

To create an ODBC connection, follow these steps:

1. Click the button . This Select Data Source dialog box appears.

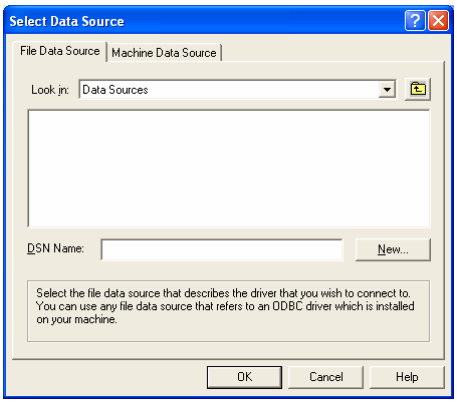


Figure 3-62

2. If the data source connection information is already installed on the computer, click the [Machine Data Source] tab, click [New] to create a new file data source, and then click [OK].

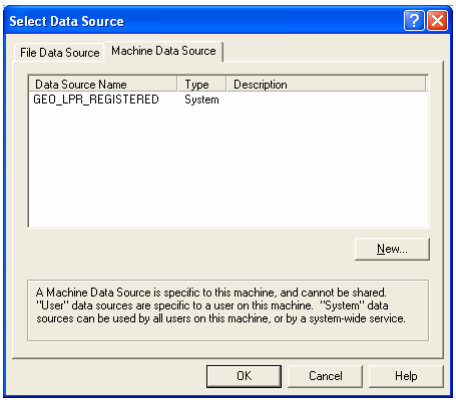


Figure 3-63

3. In the Create New Data Source dialog box, select [User Data Source] and click [Next].

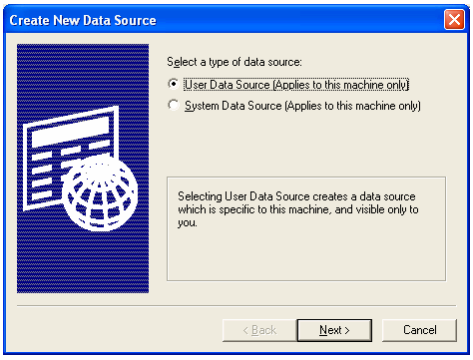


Figure 3-64

4. Select a type of driver to set up your data source and then click [Next].

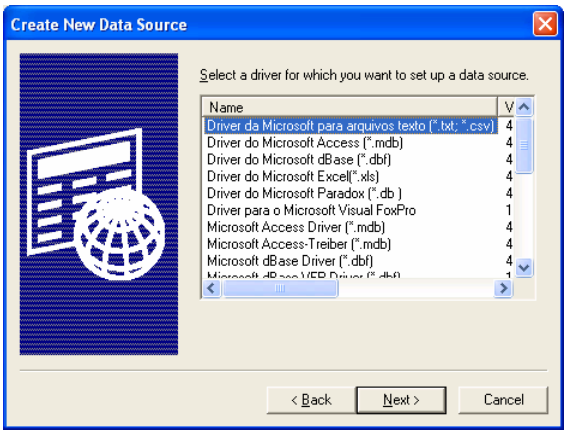


Figure 3-65

5. When you finish the configuration, click [Finish].

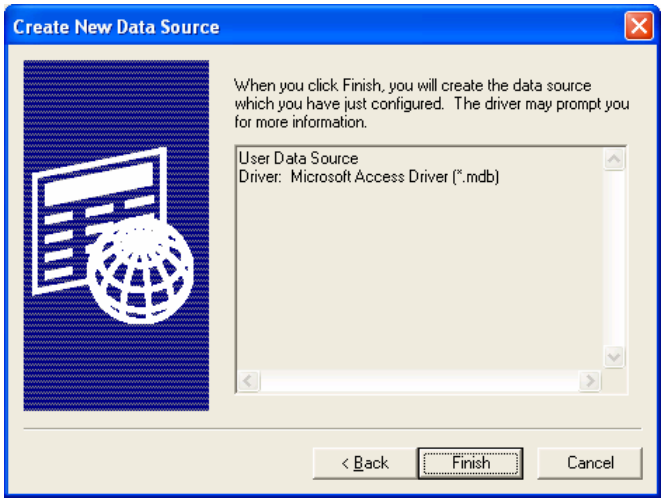


Figure 3-66

6. In the ODBC Microsoft Access Setup dialog box, name the source you created and continue the settings, and then click [OK].

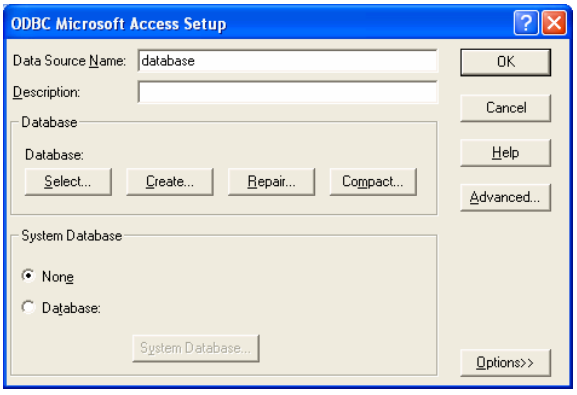


Figure 3-67

7. The data source you created is displayed on the [Machine Data Source] tab. Click [OK].

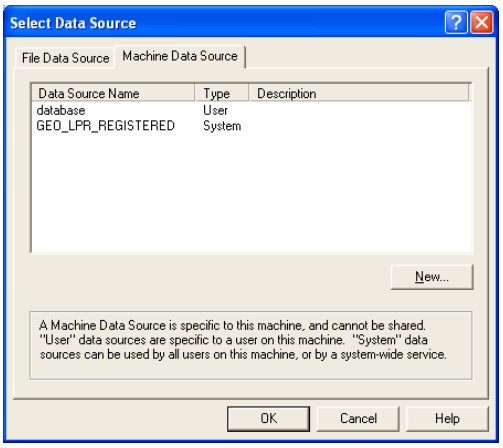


Figure 3-68

8. Type the Login name and Password to access the created data source, and then click [OK].

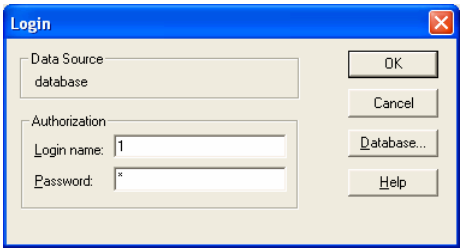


Figure 3-69

9. Select the desired database and click [OK] to start the connection.

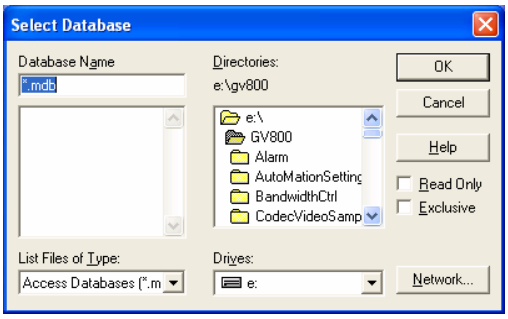


Figure 3-70

Integrate with the GV-LPR database

1. In the Database Configuration dialog box (see Figure 3-60), use the drop-down list beside [Table lists] to select your data source.
2. The [Name] fields indicate the GV-LPR database items, and [Field] fields indicate the items from your data source. To make the connection between these two databases, click each field to decide if the [Field] item needs to correspond to the [Name] item.
3. When you finish the settings, click the button to exit.

3.2.12 Speed Setting

You can calculate the average speed of vehicles by setting up two cameras.

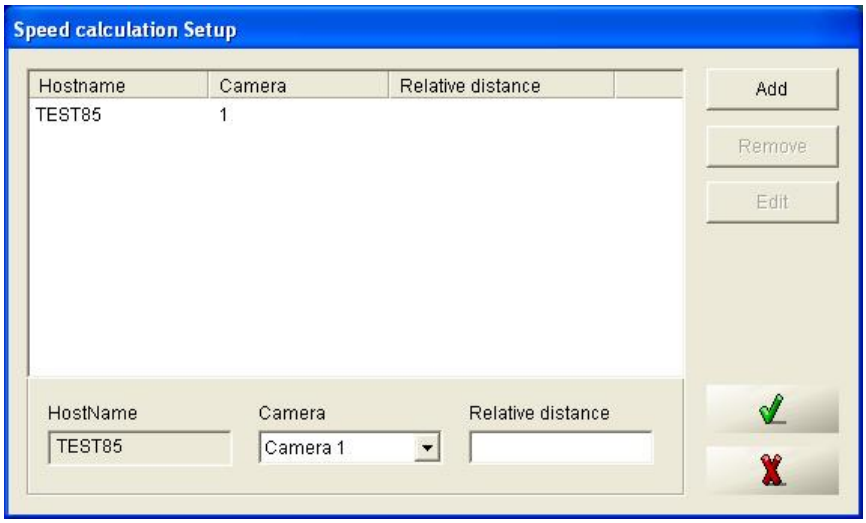


Figure 3-71

1. Select a camera, set the distance in [Relative distance], and then click [Add]. The unit can be set as kilometer or mile. Here is an example of setting the distance. If you want to indicate 10 miles or 10 kilometers, type “10” in the filed. If you want to indicate 0.1 mile or 0.1 kilometer, type “0.1” in the field.
2. Repeat Step 1 to set up another camera, and click when you finish the setting.
3. In the Recognition Records filed, you can see the average speed displayed. Note that average speed has a limit between 0 and 300. If the values you set in [Relative distance] do not comply with the limit, the average speed will display “0” in the field.

CAME...	LICENSE_PLATE	EVENT_TIME	DIRECTI...	STAY_TIME	AVERAGE_SPEED	LICENSE_PLATE	REGISTER...
2	W396KNT	3/24/2008 8:06:59 PM	Out	0 Day(s), 00:24:27	24.540	W396KNT	100030
1	W396KNT	3/24/2008 8:06:59 PM	In		0.000	W396KNT	100030
2	PI56450	3/24/2008 8:06:55 PM	Out	0 Day(s), 00:24:26	24.557		
1	M424NON	3/24/2008 8:06:49 PM	In		0.000	M424NON	100041
2	M424NON	3/24/2008 8:06:49 PM	Out	0 Day(s), 00:24:27	24.540	M424NON	100041
1	P738TRE	3/24/2008 8:06:47 PM	In		0.000	P738TRE	100001
2	P738TRE	3/24/2008 8:06:47 PM	Out	0 Day(s), 00:24:27	24.540	P738TRE	100001
2	P589RYM	3/24/2008 8:06:43 PM	Out	0 Day(s), 00:24:26	24.557	P589RYM	100052

Figure 3-72

3.2.13 Video Source

You may select the video standard to be [NTSC] or [PAL].

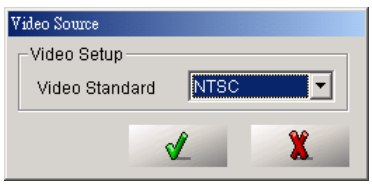


Figure 3-73

3.3 Start / Stop Recognition

Click the [Start / Stop Recognition] button to start or stop recognition. You may select one or more cameras to start or stop recognition.

Figure 3-74

3.4 Version / Minimize / Exit

Click the [Version / Minimize / Exit] button to show the version information, minimize or exit the program.

CHAPTER

4

Recognition Database

You can use [Recognition Records] or [Recognition Database] to view the recognition records. The database records the image, camera, recognized license plate number, time, direction, etc. A hard drive of 80G can record about 1 million records of data.

4.1 Recognition Records

You may view the latest recognition records from the [Recognition Records]. The number buttons at the right-hand side are the switches for you to select the records from which cameras to be shown.

CAME...	LICENSE_PLATE	EVENT_TIME	DIRECTI...	STAY_TIME	AVERAGE_SPEED	LICENSE_PLATE	REGISTER...	NAME	IDENTITY	ADDRESS	TICKET	TEL_NUMBER
2	W396KNT	3/24/2008 8:06:59 PM	Out	0 Day(s), 00:24:27	24.540	W396KNT	100030	O.J.H.	Engineer	i-Guang Road, Nei-Hu, Taipei 1	444	0919-387-523
1	W396KNT	3/24/2008 8:06:59 PM	In		0.000	W396KNT	100030	O.J.H.	Engineer	i-Guang Road, Nei-Hu, Taipei 1	444	0919-387-523
2	PI56450	3/24/2008 8:06:55 PM	Out	0 Day(s), 00:24:26	24.557				Visitors			
1	M424NON	3/24/2008 8:06:49 PM	In		0.000	M424NON	100041	Brendy	Sales	i-Guang Road, Nei-Hu, Taipei 1	522	0919-952-130
2	M424NON	3/24/2008 8:06:49 PM	Out	0 Day(s), 00:24:27	24.540	M424NON	100041	Brendy	Sales	i-Guang Road, Nei-Hu, Taipei 1	522	0919-952-130
1	P738TRE	3/24/2008 8:06:47 PM	In		0.000	P738TRE	100001	Ken	Engineer	i-Guang Road, Nei-Hu, Taipei 1	229	0920-772-921
2	P738TRE	3/24/2008 8:06:47 PM	Out	0 Day(s), 00:24:27	24.540	P738TRE	100001	Ken	Engineer	i-Guang Road, Nei-Hu, Taipei 1	229	0920-772-921
2	P589RYM	3/24/2008 8:06:43 PM	Out	0 Day(s), 00:24:26	24.557	P589RYM	100052	Leo	Engineer		115	0912-483-555
1	P589RYM	3/24/2008 8:06:43 PM	In		0.000	P589RYM	100052	Leo	Engineer		115	0912-483-555
1	S445SNB	3/24/2008 8:06:40 PM	In		0.000	S445SNB	100024	Paul	Engineer	i-Guang Road, Nei-Hu, Taipei 1	228	0968-589-343
2	S445SNB	3/24/2008 8:06:40 PM	Out	0 Day(s), 00:24:26	24.557	S445SNB	100024	Paul	Engineer	i-Guang Road, Nei-Hu, Taipei 1	228	0968-589-343
1	N528LYS	3/24/2008 8:06:35 PM	In		0.000	N528LYS	100040	Pierce	Director	i-Guang Road, Nei-Hu, Taipei 1	214	0918-992-841
2	N528LYS	3/24/2008 8:06:35 PM	Out	0 Day(s), 00:24:26	24.557	N528LYS	100040	Pierce	Director	i-Guang Road, Nei-Hu, Taipei 1	214	0918-992-841
1	G331JUK	3/24/2008 8:06:29 PM	In		0.000	G331JUK	100010	David	Sales	i-Guang Road, Nei-Hu, Taipei 1	123	0910-889-665
2	G331JUK	3/24/2008 8:06:29 PM	Out	0 Day(s), 00:24:26	24.557	G331JUK	100010	David	Sales	i-Guang Road, Nei-Hu, Taipei 1	123	0910-889-665
2	VD1VCD1	3/24/2008 8:06:28 PM	Out						Visitors			
1	D7VCD1C	3/24/2008 8:06:21 PM	In						Visitors			
2	1VC01CD	3/24/2008 8:06:21 PM	Out						Visitors			
2	D1X7FD	3/24/2008 8:04:55 PM	Out		0.000				Visitors			

1 2 3 4 5 6 7 8

Figure 4-1

Double-clicking any of the records will show the [Event View]. You can get more information from the [Event View], for example, the image of the vehicle or driver. You may click [Set Image as Registered Image] so that next time when the vehicle is recognized, the registered vehicle image is shown.

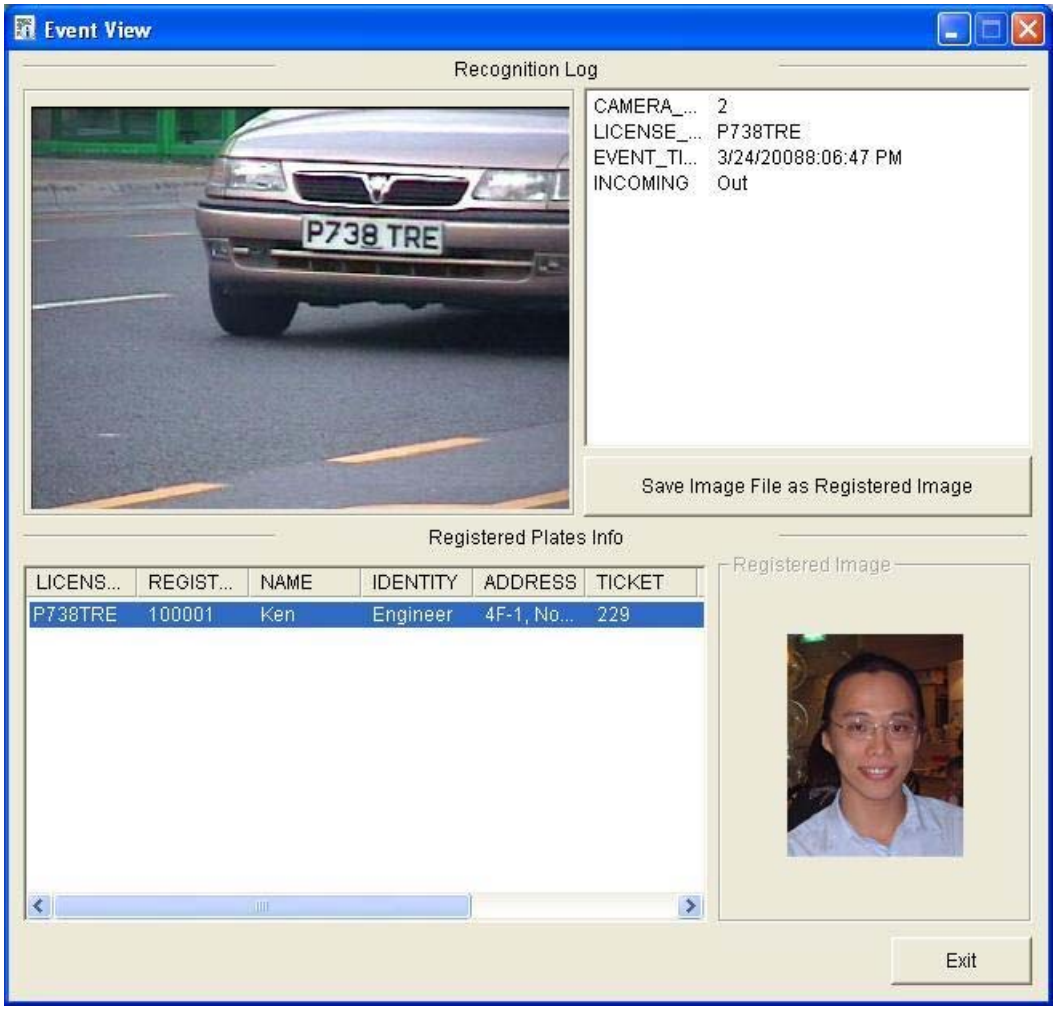


Figure 4-2

4.2 Recognition Database

You may click the [Recognition Database] button to view the recognition records. [Recognition Database] provides functions of [Query], [Open Database], [Delete Record], [Print] and [Print Preview]. Records being queried will be shown with detailed items and license plate image plus relation image if Overview Camera has been setup.

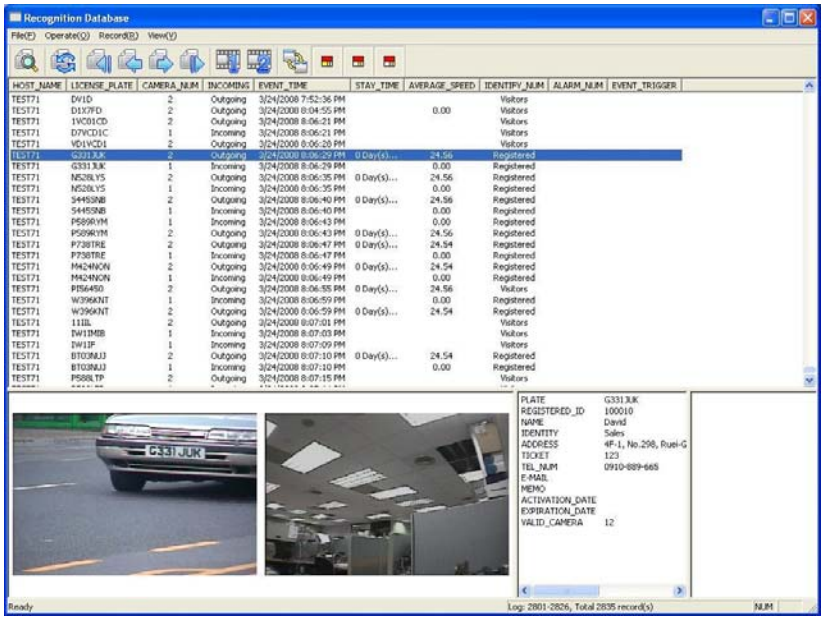


Figure 4-3

4.2.1 Query

You may query the records by selecting [Camera], [License Plate] and the recognition result status. License plate number can be searched in three kinds of modes: [Exact Match], [Partial Match] or [Head Match]. [Exact Match] mode is faster. You can also specify the direction of vehicle entries, event time, stay time and average speed to perform record query.

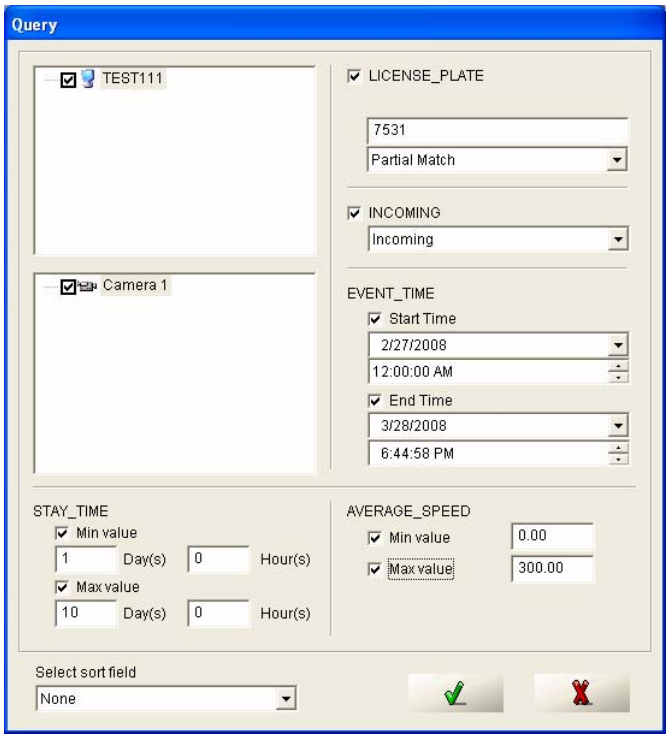


Figure 4-4

4.2.2 Export Recognition Records

1. Select the records to be exported.

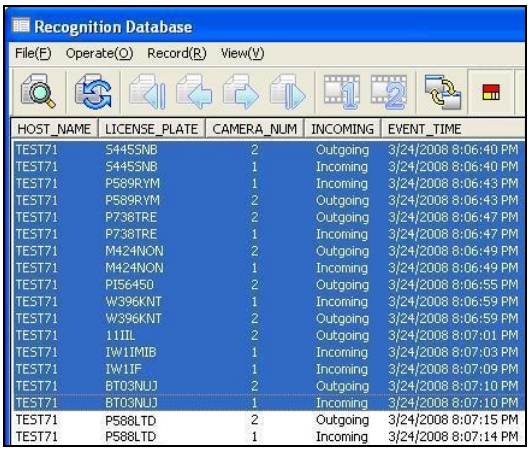


Figure 4-5

2. Click [File] on the menu bar, and select to export to [Microsoft Access] format or [HTML document] format.

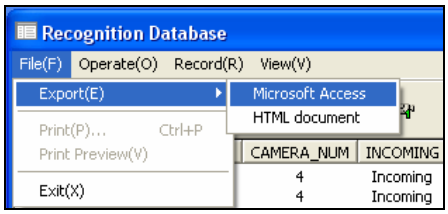


Figure 4-6

3. Select the path and input the file name.

4.2.3 View Recognition Video (to be used with GV-Series DVR integration)

You may click button to launch [Quick Search] or [ViewLog] of GV-Series DVR to watch the video recorded when the vehicles enter the recognition region. Features of [Quick Search] are listed below. For the features of [ViewLog], please refer to the *Multicam System User's Manual*.

Figure 4-7

No.	Name	Description
1	Monitoring Window	Displays video associated to the event.
2	Mode Switch	Click these buttons to enable or disable Transaction Window and to switch between 640x480 or 320x240 display.
3	ViewLog	Click to open ViewLog application.
4	Time Period	Use these buttons to search event within the specified time.
5	Playback Panel	Includes these buttons: Play, Pause, Previous 10 frames, Home, Next 10 frames and End.
6	Exit	Click to close Quick Search screen.

4.2.4 View Overview Video (to be used with GV-Series DVR integration)

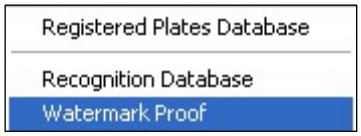
You may click button to launch [Quick Search] or [ViewLog] of GV-Series DVR to watch the video recorded by the Overview Camera when the vehicles enter the recognition region.

4.3 Watermark Proof

GV-LPR system offers a highly secure solution to protect digital images and video against unauthorized alteration or manipulation. To add watermark to recorded images, please refer to Chapter 3. This allows all recorded images be marked with permanent and inseparable image. Since the watermark is invisible to the

naked eye, the video stream must be enabled in a watermarking verification program. The Water Mark Proof program is able to verify video and image. In GV-LPR, we only use its image verification function.

1. To run the verification process, please click the [Recognition Database] button and select [Watermark Proof]



2. Select the file to be verified.
3. The verification result will be shown as below:

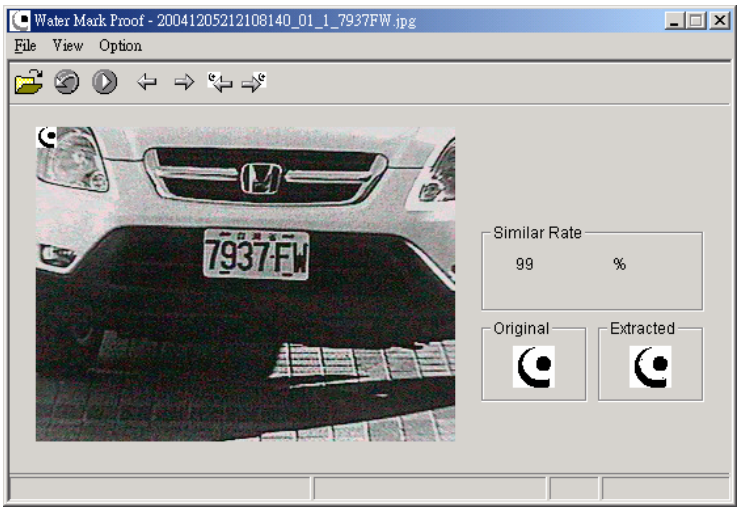


Figure 4-8

Overview of the toolbar:

Button	Name	Description
	Open File	Click and select a video or image file to be verified.
	First Frame	Go to the first frame of the file. (Only for Video file)
	Play	Play the file. (Only for Video file)
	Previous Frame	Go to the previous frame of the file. (Only for Video file)
	Next Frame	Go to the next frame of the file. (Only for Video file)
	Previous Watermarked Frame	Go to the previous frame that contains watermark. (Only for Video file)
	Next Watermarked Frame	Go to the next frame that contains watermark. (Only for Video file)

The Watermark Proof displays the verifying result as follows:

Similar Rate: If the image has not been tampered with, the Check sum displays a rate over 90%. Otherwise a rate lower then 90% will be treated as tampered.

Original vs. Extracted: The Extracted section should have the same icon displayed as the one in the Original section. If not it indicates the image may have been altered.

CHAPTER

5

Registered Plates Database

Registered Plates Database is designed for the matching of the recognition result. Match to open the gate or match to warn the police is a common application.

By clicking the [Recognition Database / Registered Plates Database / Watermark] button and then selecting [Registered Plates Database], you may add new, edit, query, delete or print the records of the registered vehicles. The records include ID, License Plate, Name, Identity, Ticket, Telephone number, Address, Memo, the image of the vehicle owner or the overview of the vehicle. The image will be shown when the vehicle is recognized.

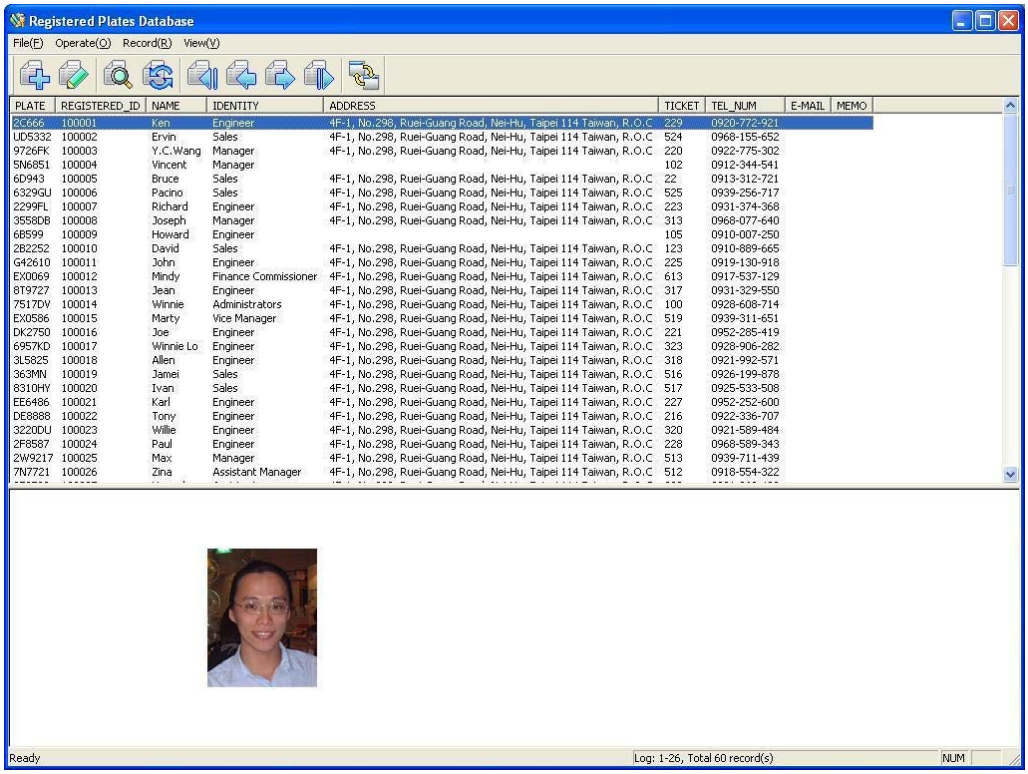


Figure 5-1

5.1 Add Record

You may add a new record by clicking the button . Then type each item of the record. You must input [PLATE] item in the record, but other items are optional. You may also add the image of the owner or the overview of the vehicle for the guards to double-check. If [ACTIVATION_DATE] is set, this record will be activated on the specified date. If it is not set, the record will be activated when it is added. If [EXPIRATION_DATE] is set, the record will expire on the specified date. If it is not set, the record will not expire.

The [VALID_CAMERA] item is used to select the cameras to determine the validity of the plate number in the database. For example, in a place where 8 cameras are set in 8 lanes, a vehicle is not permitted to enter or exit through lane 3. In the [VALID_CAMERA] field of this record, “1-2-4-5-6-7-8” should be set to indicate these cameras will recognize this vehicle as the registered. When camera 3 identifies this vehicle, it will be recognized as a visitor instead of a registered car. The default value of this field includes all cameras.

The [ALARM_GROUP_ID] item allows you to assign the registered record to a user-defined group which be used as a black list or a white list. For the details about setting a group, refer to [Eternal Group(s)] in *3.2.7 Alarm Definition Setting*.

Figure 5-2

5.2 Edit Record

You may edit a record by selecting a record and then click the [Edit] button .

5.3 Delete Record

You may delete a record by clicking [Record] and then selecting [Remove Record].

5.4 Perform Record Queries

It is also a good way to use Query to search the records you are looking for. First, click the [Query] button . Then, you can select and specify different criteria for query.

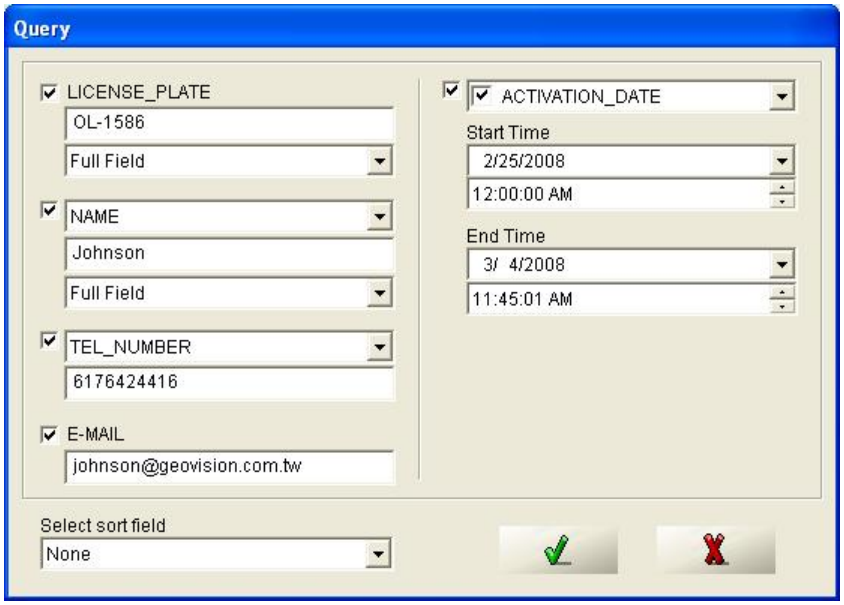


Figure 5-4

5.5 Go to Record

You may go to the first record by clicking icon.

You may go to the previous record by clicking icon.

You may go to the next record by clicking icon.

You may go to the last record by clicking icon.

5.6 Print

You may print the records by clicking [File] on the menu bar and selecting [Print].

5.7 Preview

You may preview before printing the records by clicking [File] on the menu bar and selecting [Print Review].

5.8 Display Extra Data

You may click the [Extra Data] button to display more detailed information about the selected record. Click it again to switch back to the previous page.

5.9 Select Type of Data for Display

You may click [View] on the menu bar and select [Show / Hide Field(s)] to specify the types of data you want to view on the screen.

Figure 5-5

CHAPTER 6

Notifications

Notifications provide I/O status and the Hotkey View so that you can get the status from the system. It helps you when you are going to check the I/O devices.

6.1 I/O Notifications

Click the [Notification] button and select [I/O Notification]

. Then you can view the current status of the I/O module. From the left side of the dialog box, you can get the Name, Port, Address of the I/O module and NO or NC setting of each pin. From the right side of the dialog box, you can get the current trigger status of the I/O pins. The example below shows that I/O input pin 1 (DI 1) is triggered.

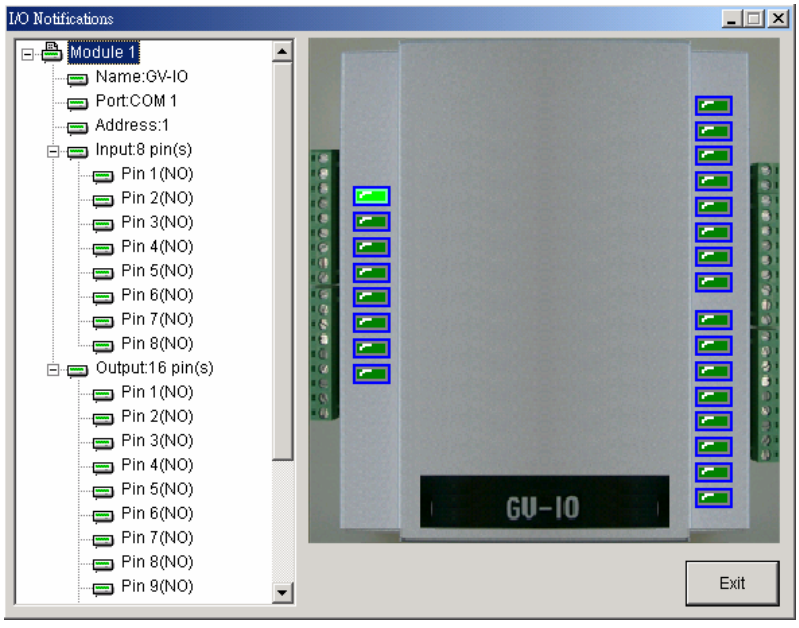


Figure 6-1

6.2 Hotkey View

Click the [Notification] button and select [Hotkey View]

. The left side of the dialog box shows the Hotkey you have set in [Output Setup] of [I/O Device] in [System Configuration]. The right side of the dialog box shows the description of the selected Hotkey.

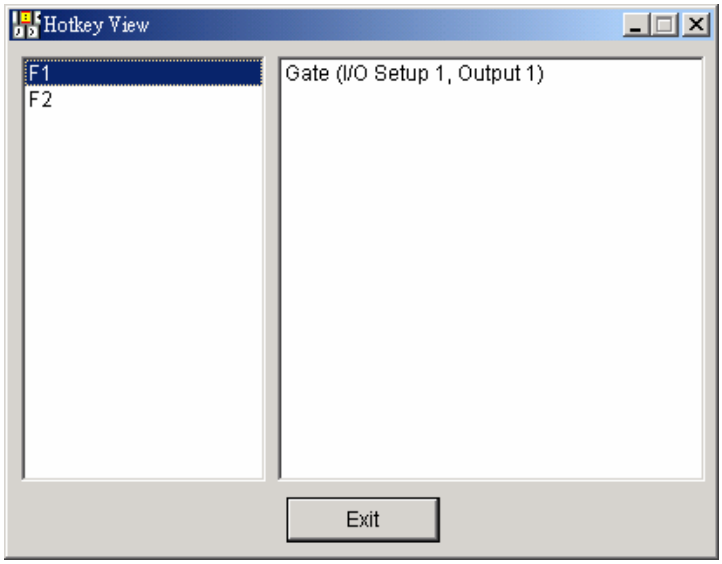


Figure 6-2

CHAPTER 7

Network

Via Internet, you can establish connection to GV-LPR Center, GV-DSP LPR and other GV-LPRs to allow their remote control and management over the GV-LPR.

7.1 GV-DSP LPR Server

You can connect to GV-DSP LPR or other GV-LPRs by enabling Standalone Server.

Click the [Network] button and select [Standalone Server]. The default port is 7550.

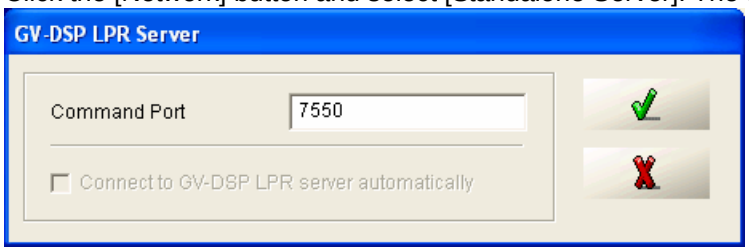


Figure 7-1

7.2 TCP Server

With the connection to the third-party devices and the use of SDK software, GV-LPR can be remotely triggered to start the recognition. For more information about the required SDK software, please contact your sales representative.

Click the [Network] button and select [TCP Server]. The default port is 4380.

Figure 7-2

7.3 Remote Desktop Server

Viewing the client desktop as a website view, the GV-LPR Center operator has a full control of the connected GV-LPR and its operating system.

1. Click the [Network] button and select [Remote Desktop Server].
2. In the Remote Desktop Server dialog box, you can grant different levels of privileges to different users by selecting [Enable password protection] and type of Privilege.

Figure 7-3

7.4 WebCam Server

You can allow the GV-LPR Center to access live view at the GV-LPR when the connection is established.

Click the [Network] icon and select [Webcam Server]. The default command port is 4550 and data port is 5550

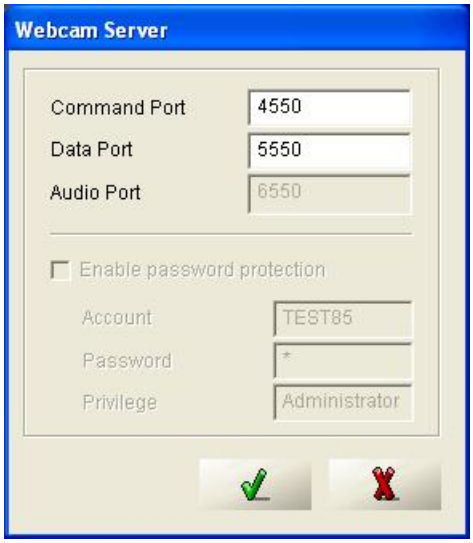


Figure 7-4

7.5 Database Sync Server

You can update the Registered Plate Databases of different GV-LPRs synchronously.

1. Click the [Network] button and select [Database Sync Server]. A message box pops up to display "*Do you want to ENABLE this process synchronously?*"

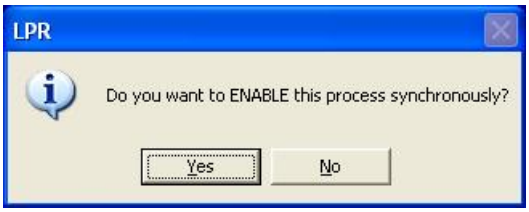


Figure 7-5

2. Click [Yes] to start. The Database Sync Server is started and then minimized to the notification area.

Figure 7-6

3. To change the default port value, right-click the icon in the notification area and then select [Server Setting].

7.6 Connect to GV-LPR Center

With the connection to the GV-LPR Center, you can transmit the data and images from GV-LPR to GV-LPR Center.

1. Click [Network] and select [Connect to LPR Center].
2. In the LPR Center Name and Address fields, type the name and IP address of the GV-LPR Center you wish to connect to. More than one GV-LPR Center can be connected, but only one connected GV-LPR Center can be set as Master Server.
3. In the Send Recognition Images field, select the types of recognition images to be sent to different LPR Centers. The types of recognition images include [All Status], [Registered], [Visitors] and [Unrecognized]. If you want to send Overview images, select [Send Overview Images].

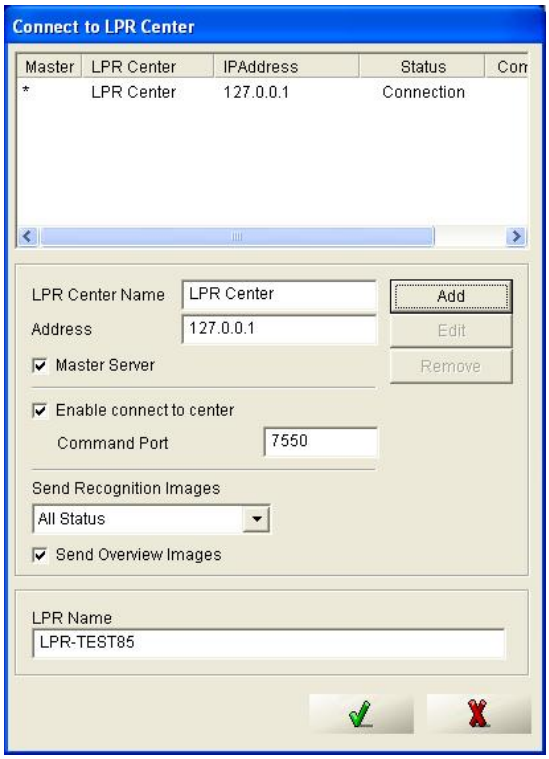


Figure 7-7

4. To allow the GV-LPR Center to view live images of the connected GV-DVR, it is necessary to start the WebCam Server at the GV-LPR site. For details, see *7.4 Web Cam Server.*

7.7 Connect to SMS Server

With the connection to SMS Server, you can send the alert messages when alarms are triggered. Before you start the connection, you must set up the SMS Server first. For details, refer to *Chapter 8 SMS Server* in this manual.

To start the connection, click the [Network] icon and select [Connect to SMS Server].

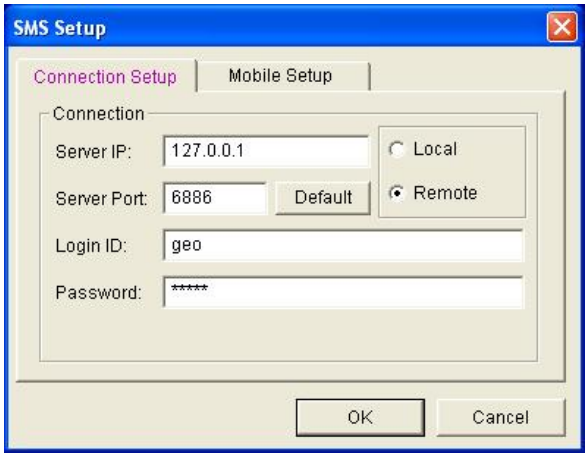


Figure 7-8

CHAPTER 8

Short Message Service

Via a GSM/GPRS modem, GV-System lets you send SMS (Short Message Service) messages when an alert condition happens. The modem can be installed at either a separate server, or the same computer/server equipped with GV-LPR. This chapter introduces how to manage a GSM/GPRS modem with the GV-developed SMS Server program, and how to configure the GV-LPR to send out SMS alerts.

8.1 Installing SMS Server

To install the SMS Server application, follow these steps:

1. Insert the GV-LPR CD to the PC connected to a GSM/GPRS modem. It will run automatically, and a window appears.
2. Select the [Utility].
3. Click [SMS], run [Setup.exe] and follow the on-screen instructions.

8.2 The SMS Server Window

Run the SMS Server program from the Start menu. The following window appears.

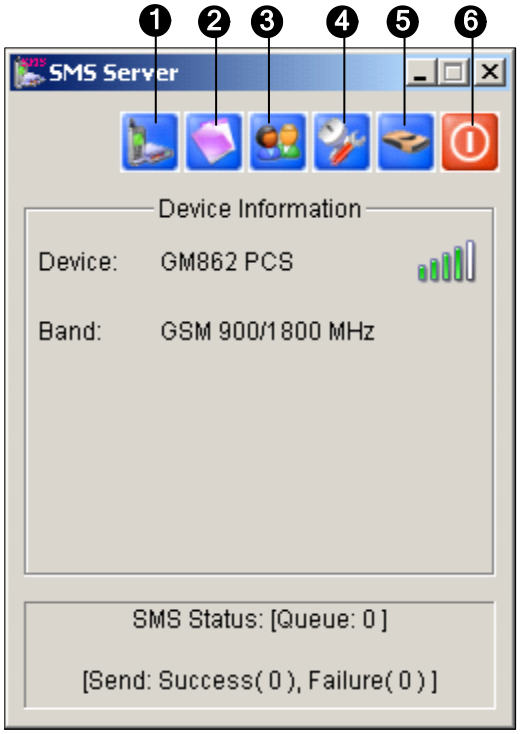


Figure 8-1

The controls in the SMS Server window:

No.	Name	Description
1	Start/Stop Service	Starts or stops the SMS Server.
2	SMS Log Setting	Sets up the SMS Log.
3	Account Setting	Creates and edits accounts.
4	Server Setting	Sets up the SMS Server.
5	Device Setting	Sets up the GSM/GPRS modem.
6	Exit	Logs out administrator, changes password or exits the SMS server.

8.3 SMS Server Setup

Before starting the SMS service, you must configure these three settings: (1) Device Settings, (2) Server Settings, and (3) Account Settings.

8.3.1 Device Settings

1. Click the **Device Setting** button (No. 5, Figure 8-1), and then select [GSM Module]. The following dialog box appears.

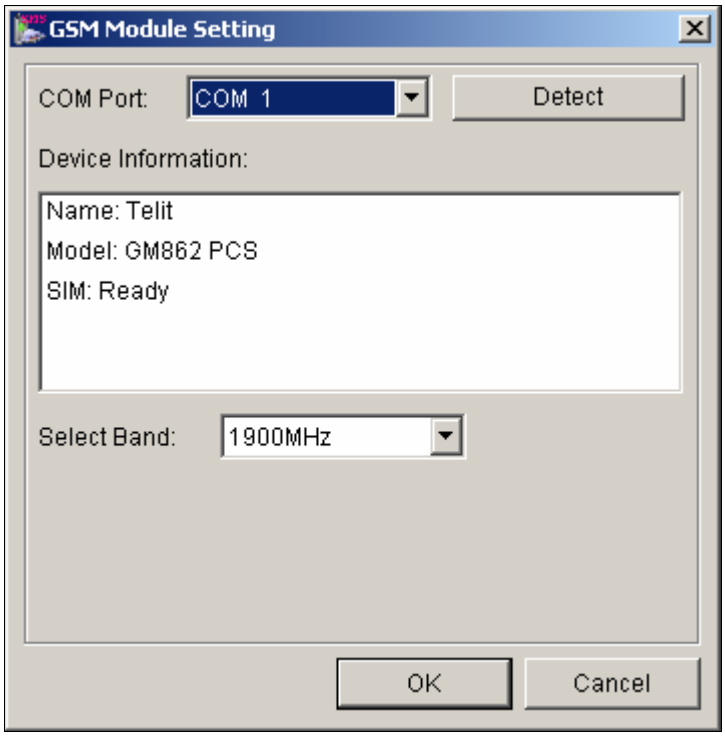


Figure 8-2

2. Select the [COM port] connecting to a GSM/GPRS modem.
3. Click the [Detect] button to detect the modem.
   - If the connection between the modem and the computer is established, the message will show in the Device Information field: *Name: (Manufacturer), Module: xxx, SIM Ready.*
   - If the connection fails, the display will be shown as: *No usable device in COM xxx.*
4. If you are using a tri-band modem, select **1900** or **1800 MHz** from the drop-down list of Select Band.
5. Click **OK** to apply above settings.

8.3.2 Server Settings

Click the **Server Setting** button (No. 4, Figure 8-1) to display the following Server Setting dialog box. There are three major tabs in the dialog box: (1) General, (2) Message Filter, and (3) Notify

[General]

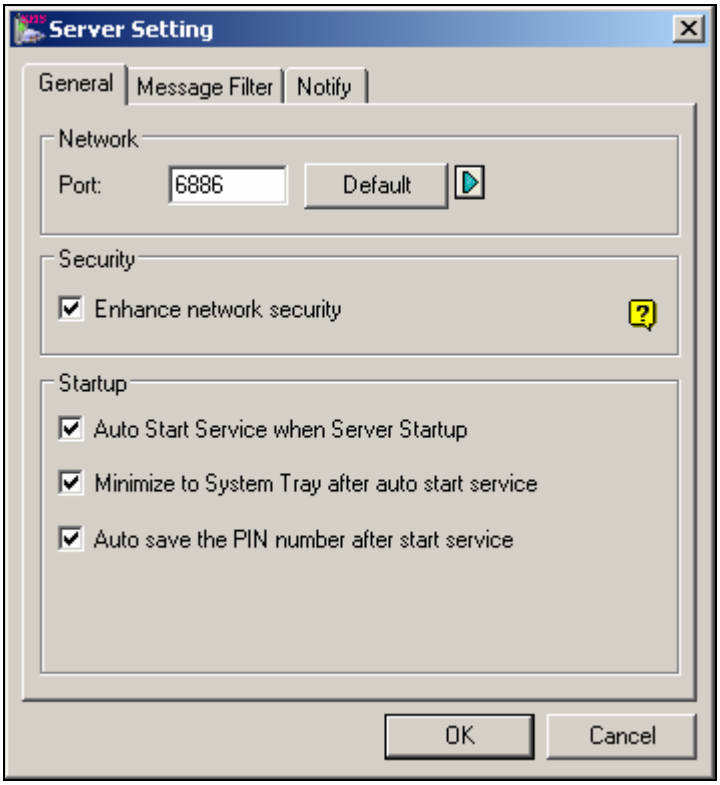


Figure 8-3

[Network] Define the port of the SMS Server, or leave it as default. To use UPnP for automatic port configuration to your router, click the [Arrow] button.

[Security] Enable to apply enhanced Internet security. Please notice when the feature is enabled, the subscribers using earlier version than 8.0 cannot access the SMS Server anymore.

[Startup]

- **Auto Start Service when Sever Startup:** Automatically starts SMS services when the program starts.
- **Minimize to System Tray when auto start service:** Minimizes the SMS Server window to system tray when it starts.
- **Auto save the PIN number after start service:** Automatically saves the PIN number when SMS services start.

[Message Filter]

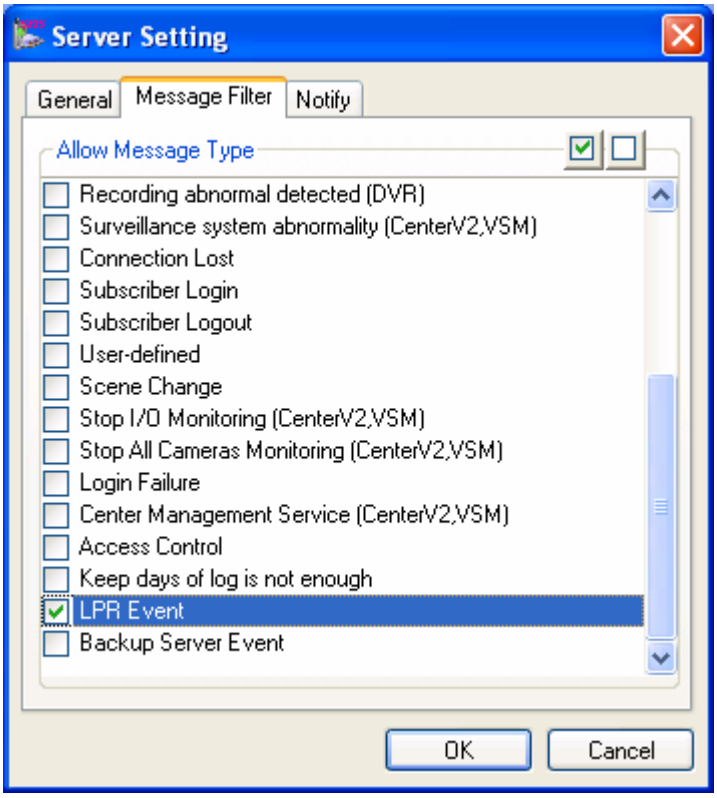


Figure 8-4

Select [LPR Event] to send SMS messages when alert conditions take place.

[Notify]

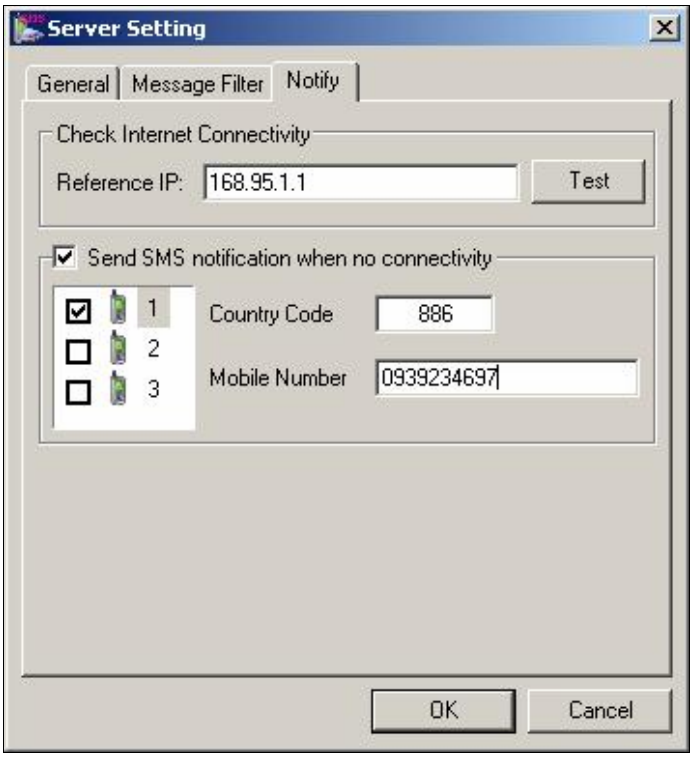


Figure 8-5

[Check Internet Connectivity] Assign any available IP address and click the [Test] button to know if your SMS Server can access Internet.

[Send SMS notification when no connectivity] Sends SMS notification to the three defined mobile numbers when the SMS Server cannot access Internet.

- **Mobile Icon:** Check the icon and define the number for the SMS notification. Up to three recipients can receive the SMS simultaneously.

8.3.3 Account Settings

Click the [Account Setting] button (No.3, Figure 8-1) to display the following window.

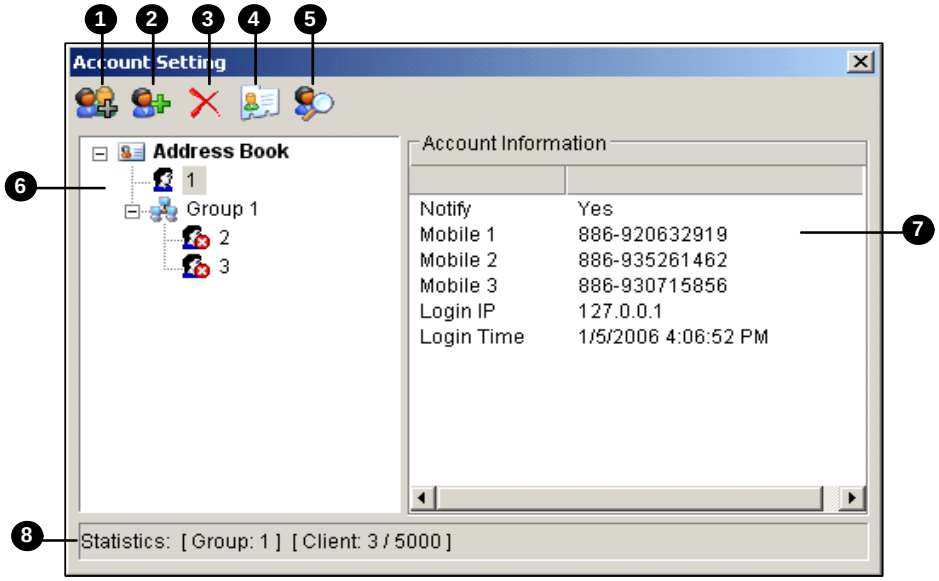


Figure 8-6 *Account Setting*

The controls in the Account Setting window:

No.	Name	Description
1	Add A Group	Creates a group.
2	Add A Client	Creates a client.
3	Delete A Group/Client	Deletes a created group or client.
4	View/Edit A Client	Highlight one client and click the button to view or edit its information.
5	Find A Client	Searches a client.
6	Address Book	Lists the created groups and clients.
7	Account Information	Displays the highlighted client's account information.
8	Statistics	Displays the number of created groups and clients. The SMS Server can serve up to 5000 clients at one time.

Creating a client:

1. Click the [Add A Client] button (No. 2, Figure 8-6). This dialog box appears.

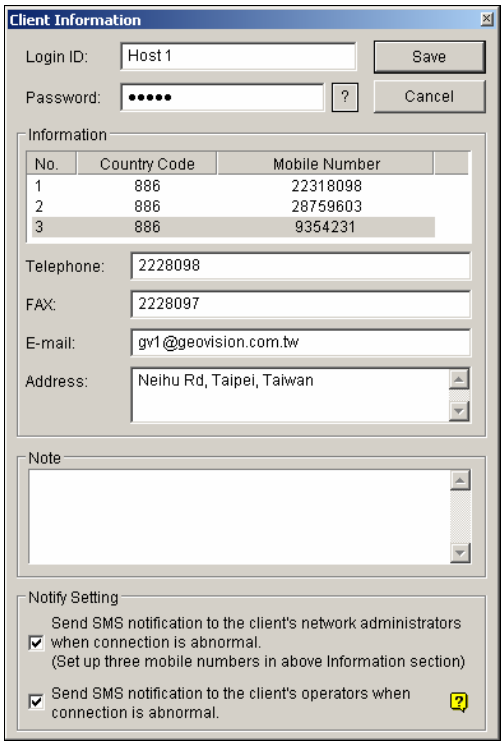


Figure 8-7

2. Type a login ID and password. They will be the ID and password for the client to log in the SMS Server (Figure 8-11).
3. In the Information section, type the client's related information.

   You can specify three mobile numbers of the client's network administrators for SMS notification.
4. In the Notify Setting section, you can send a SMS to the client in the case of:
   - Internet disconnection between the client and the SMS Server, or
   - Improper program shutdown in the client.

   The recipients can be:
   - The client's network administrators: define three mobile numbers in above Information section.
   - The client's operators: See *Setting Mobile Numbers*, later in this chapter. For the users of Dispatch Server and Vital Sign Monitor, refer to the *CMS User's Manual*. Clicking the [Question] mark can view the specified mobile numbers at the client site.
5. Click [Save] for above settings.

Disabling a client:

You can disable subscription services to an individual client when subscription expires.

In the Account Settings window (Figure 8-6), right-click the desired client and then select [Disable].

To restore the service, right-click the desired client and then select [Enable].

8.4 SMS Log

8.4.1 Setting SMS Log

Click the [SMS Log Setting] button in the SMS Server window (No. 2, Figure 8-1), and select [SMSLog Setting] to display the following dialog box.

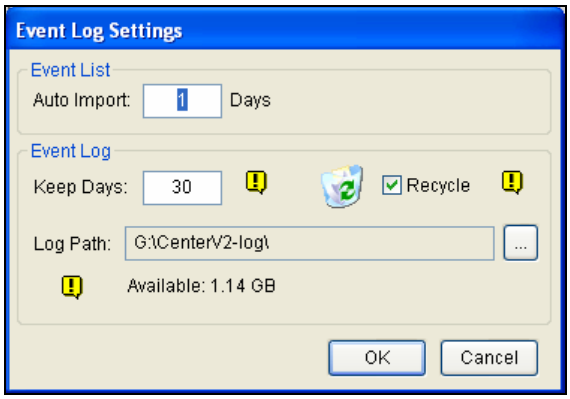


Figure 8-8

[Event List] Specify the number of days to be loaded when Event Log Browser is launched.

[Event Log]

- **Keep Days:** Enter the number of days to keep log files.
- **Recycle:** Delete the files of the oldest day when storage space is lower than 500MB.
- **Log Path:** Click the **[...]** button to assign a storage path.

8.4.2 Viewing SMS Log

Click the [SMS Log Setting] button in the SMS Server window (No. 2, Figure 8-1), and select [View SMSLog] to display the SMS Log Browser.

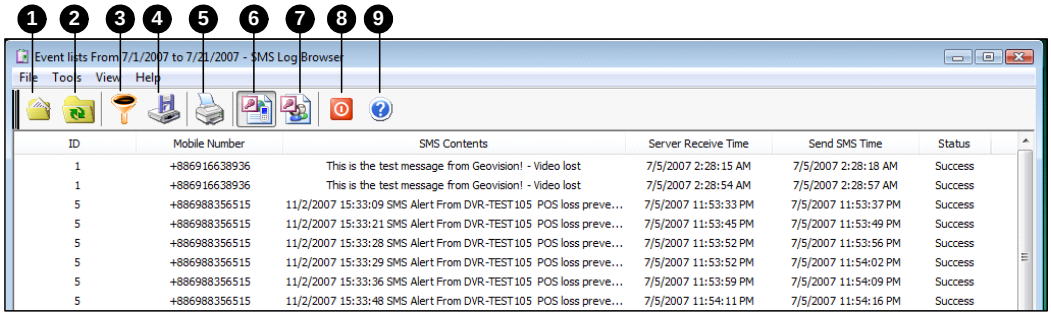


Figure 8-9

The buttons on the Event Log Browser:

No.	Name	Description
1	Open	Opens an event log.
2	Reload	Refreshes the event log manually
3	Filter	Defines the search criteria.
4	Backup	Exports the current event list and video files.
5	Print	Prints the current event list.
6	SMS Event Log	Displays the log of SMS server events.
7	System Event Log	Displays the log of SMS server activities.
8	Exit	Exits the browser.
9	About	Displays the application information of SMS Log Browser.

SMS Event Log

Clicking the [SMS Event Log] button (No. 6, Figure 8-9) on the toolbar, you can monitor senders (ID), mobile numbers, text messages, sent and failed SMS. **This can be beneficial as you may charge your clients by the amount of SMS messages they sent.**

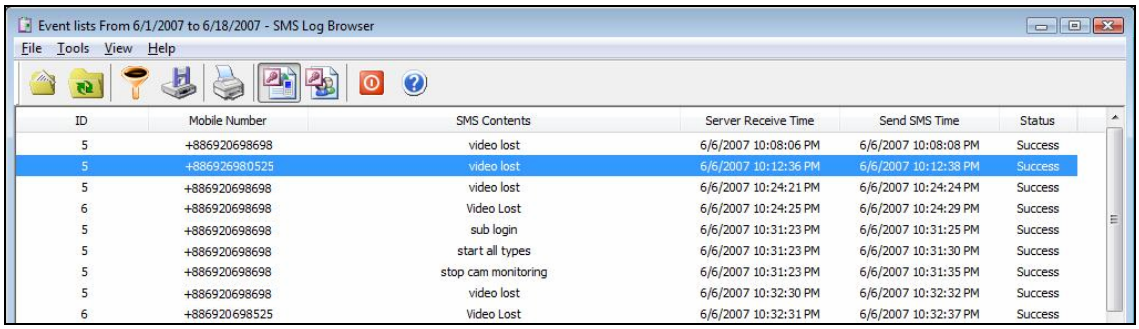


Figure 8-10

System Event Log

Clicking the [System Event Log] button (No. 7, Figure 8-9) on the toolbar, you can monitor the server activities, client login and logout, and connection problems.

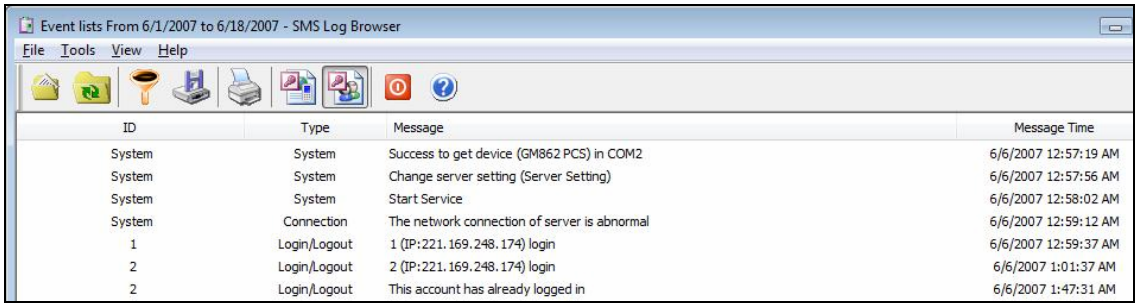


Figure 8-11

8.5 Password Security

To prevent unauthorized users from changing your settings, set up an administrator password. To apply the password security, follow these steps:

1. Click the [Exit] button (No. 6, Figure 8-1), and then select [Change Password] to set a password.
2. Click the [Exit] button, and select [Logout Administrator] to lock the SMS Server window.
3. When you want to log in, click the [Exit] button and select [Login as Administrator]. A valid password is required.

8.6 Connecting GV-LPR to SMS Server

To connect the GV-LPR to the SMS Server, follow these steps:

1. In GV-LPR main window, click the [Network] icon and then select [Connect to SMS Server]. This dialog box appears.

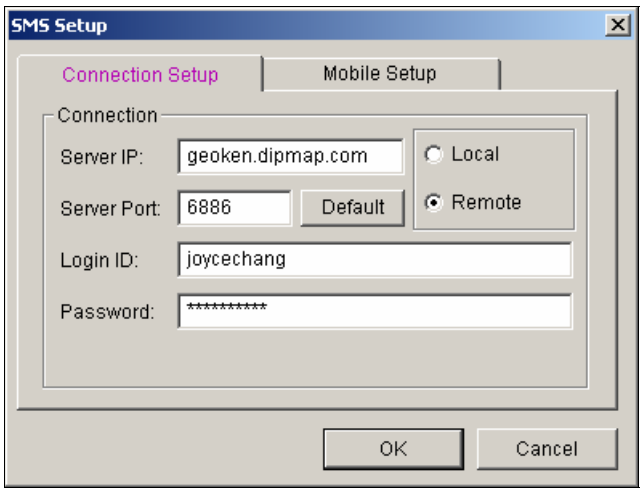


Figure 8-12

- **Server IP:** Enter the IP address of the SMS Server.
- **Server Port:** Enter the server port of the SMS Server, or keep it as default.
- **Login ID & Password:** Enter a valid ID and password registered in the SMS Server (Figure 8-7).
- **Local:** If the GSM/GPRS modem is installed at the same server with the GV-LPR, select this item.
- **Remote:** If the GSM/GPRS modem is installed at a separate server, select this item.

2. Click [OK] to apply above settings.

8.6.1 Setting Mobile Numbers

The GV-LPR allows you to configure three mobile phone numbers for the SMS service. When an alert condition happens, the SMS messages will be sent out to the three assigned mobile phones simultaneously.

1. In the SMS Setup dialog box, click the [Mobile Setup**]** tab in the upper of the window. This dialog box appears.

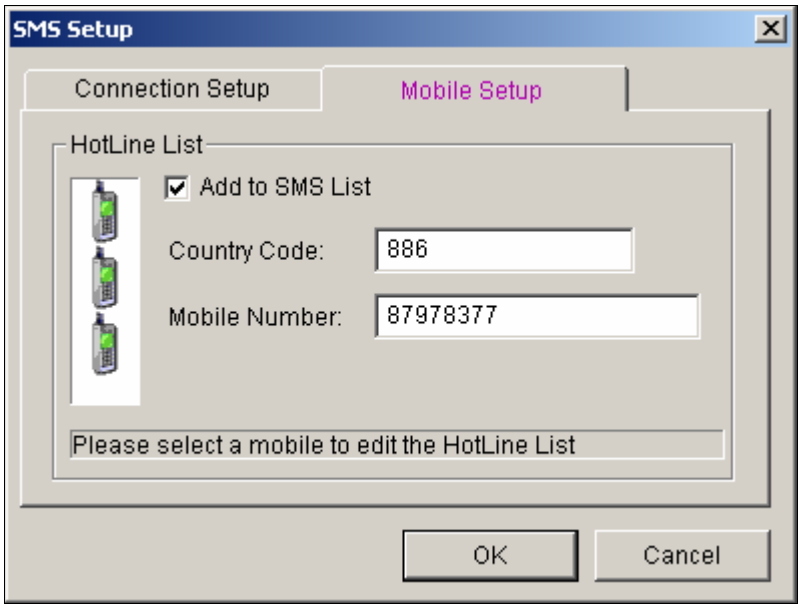


Figure 8-13

2. Click one mobile phone icon, and then check the [Add to SMS List] for the mobile phone setup.
3. Type Country Code and Mobile Number.
4. Click other mobile phone icons, and follow step 3 and 4 to set up the rest of two mobile phone numbers separately.
5. Click [OK] to apply above settings.