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Getting Started

Check Package Contents

- 1x Video Capture Card
- 1x GV-LPR Software Installation CD
- 1x GV-I/O Module Set
 - 1x GV-NET Module
 - 1x GV-I/O Module
 - 1x GV-RELAY Module

Requirements

System Requirements

Processor	Intel Pentium 800MHz or better
Operating System	Microsoft Windows 98, Windows 2000, or Windows XP
Memory	128MB supported (256MB or more recommended)
Hard Disk Storage	40GB or greater storage space
Graphic Accelerator	32MB NVIDIA GeForce2 or better

Surveillance Camera Requirements

Minimum Illumination	0.05 LUX
Minimum Resolution	480TVL
Auto Electronic Shutter	1/60 - 1/100,000 second
Auto White Balance	
Backlight Compensation	

Installations

Hardware Installation

Installing The Video Capture Card

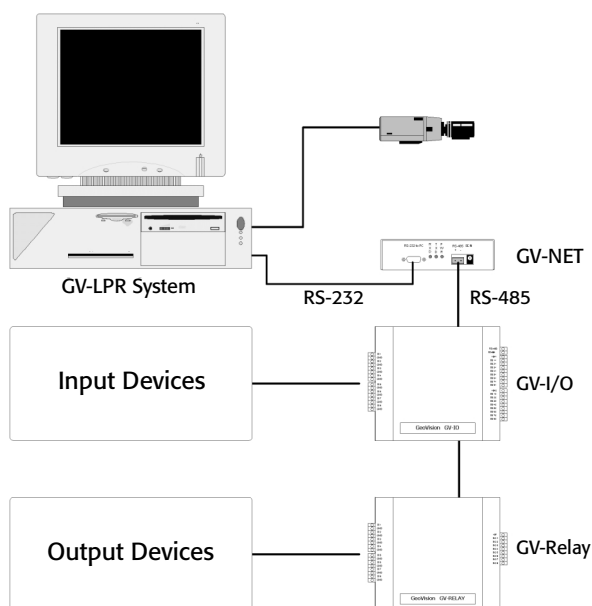
1. Turn off the PC for the installation.
2. Locate an available PCI bus expansion slot.
3. Pick up the card, which is still in its plastic sleeve, by grasping the edge bracket with one hand, and then remove the sleeve.
4. Position the card directly over the PCI slot and insert one end of the card in the slot first. Then firmly, but gently, press the bus connector on the bottom of the card down into the slot. Be sure the metal contacts on the bottom of the host adapter are securely seated in the slot.
5. Turn on the PC. Windows should automatically detect the video capture card.
6. Insert the software installation CD, then select the "Driver" folder in the CD directory to install the appropriate driver.
7. Go to Windows Device Manager to check whether the drivers were properly installed.

Note: Make sure to ground to an antistatic mat or other grounded source before installing the capture card.

Connecting I/O Module Set(s)

GV-LPR comes with a set of I/O modules. Each set comes with 1 GV-NET, 1 GV-I/O and 1 GV-RELAY. Each has its functions. Together, they can be set up and configured to connect various input and output devices; for examples, sensors, illuminations, gate controls, and etc.

GV-LPR Getting **Started**



GV-NET

A bridge between GV-I/O and the PC, connecting to GV-I/O via RS-485 and to PC via RS-232. Each GV-NET can connect up to 9 GV-I/O modules and 18 GV-RELAY modules.

GV-I/O

A digital input-output controller with 8 input points and 16 output points. Each GV-I/O can connect up to 2 GV-RELAY modules. Up to 8 input devices can be connected to a GV-I/O.

GV-RELAY

A relay output unit with 8-point relay outputs used as a circuit switch for sending on and off signals to controls, gates, lights and/or alarms. Up to 8 output devices can be connected to one GV-RELAY. Up to 2 GV-RELAY modules can be connected to 1 GV-I/O module.

Software Installation

Installing GV-LPR

Every GV-LPR system comes with an installation CD, which includes both the GV-LPR software application and Windows driver for the video capture card.

Note: Make sure the video capture card and its driver are properly installed before proceed with this installation.

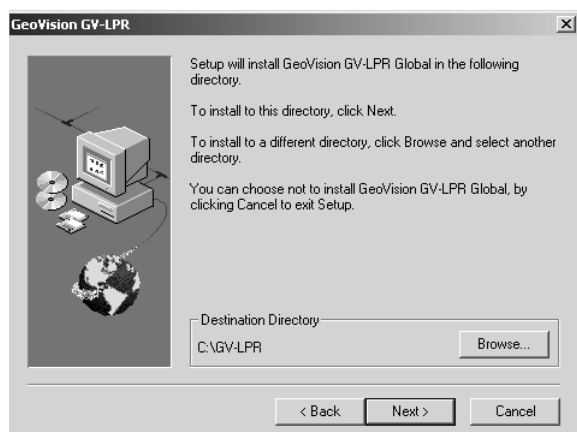
Follow these instructions to install GV-LPR software application onto the PC:

1. Insert GV-LPR Software Installation CD into a CD-ROM drive, and run the "Setup.exe" file, which can be found in the CD's root directory.

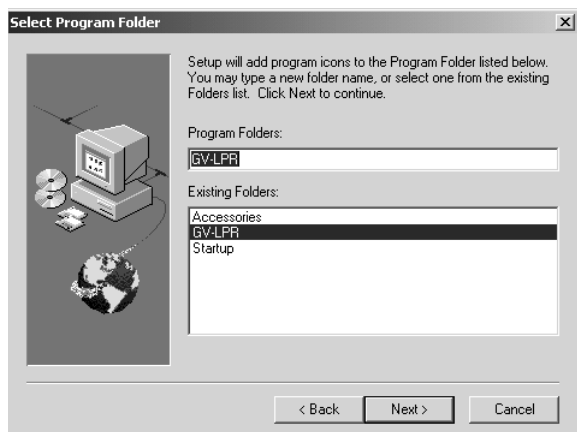


GV-LPR Getting **Started**

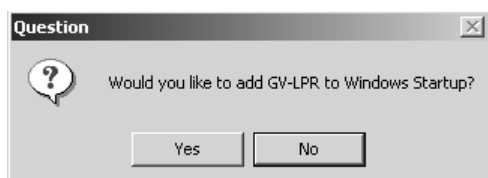
2. Select Browse to choose another location for the installation. Select Cance to end the installation.



3. The name of the GV-LPR folder could be altered when the Select Program Folder Dialog appears. Select Next to continue with the installation.



4. Select Yes to add GV-LPR into the Windows Startup Folder, which will automatically start GV-LPR after entering Windows OS. Select No, then GV-LPR will not be added into the Windows Startup Folder, and GV-LPR will not start automatically after entering Windows OS.



5. It is recommended to restart the computer before running GV-LPR software application.



Uninstall GV-LPR

1. Select the Uninstall icon from the GV-LPR folder to uninstall GV-LPR software.



2. The uninstaller will then remove all related files from your hard disk.

Note: The Uninstall icon may reside in another folder if the GV-LPR folder name was altered. Images and the database created by GV-LPR will not be removed, but remain on the hard disk drive.

GV-LPR Application Controls

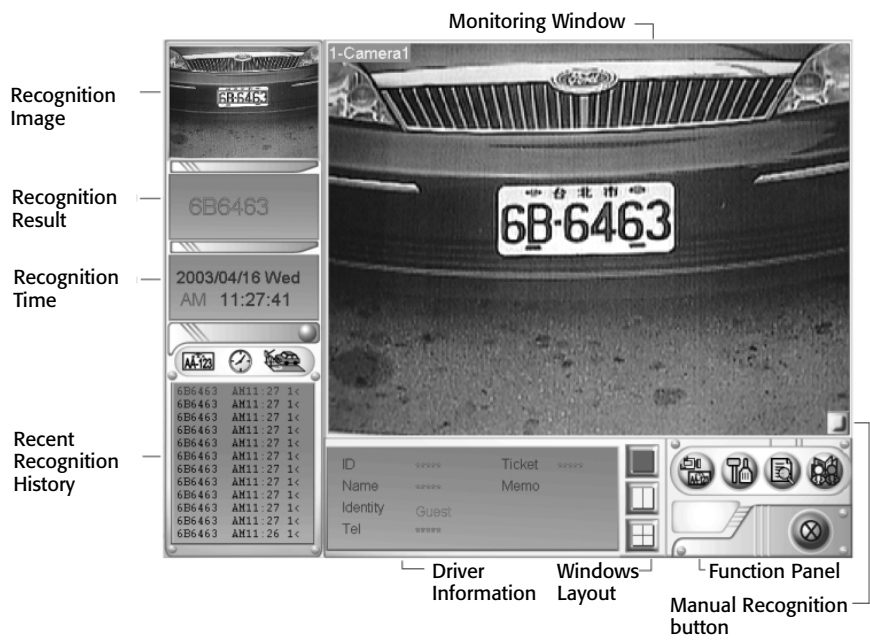
First Time Running GV-LPR

GV-LPR will ask for an administrative password when starting for the very first time. Make sure to create a password that could be remembered, but not so easy for other people to figure out; for examples, birthdays, company names or names of individuals, telephone number, and so on are not recommended.



Warning: Passwords are required for accessing and operating GV-LPR. Lost administrative passwords cannot be retrieved. It is very important not to forget password(s) for the administrator(s).

Main Graphic User Interface



Recognition Image Window

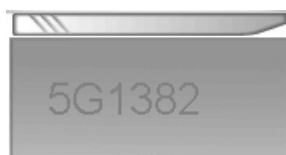
This window displays the last recognition image.



GV-LPR **Application Controls**

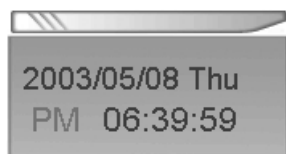
Recognition Result Window

This window displays the recognized license plate code displayed in the Recognition Image Window.



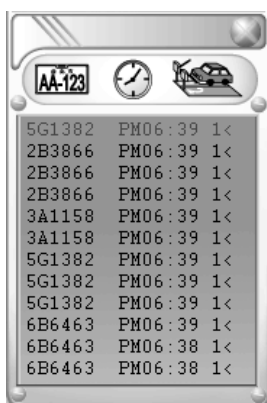
Recognition Date & Time Window

This window displays the date and time when the image of the Recognition Image Window was captured.



Recent History Windows

This window displays recent histories of the last 12 license plates the system conducted the recognition on, which include individual license plate code information, the time for each recognition, and the camera that conducted the recognition.



Monitoring Windows

These windows display live video feed from the surveillance cameras.



Camera ID & Name

This heading displays Camera ID, Camera Name or both the ID and the name.

Manual Recognition Button

This button allows users to conduct recognition manually with a click of a mouse.

GV-LPR **Application Controls**

Driver Information Window

ID	001	Ticket	
Name	Howard	Memo	
Identity	X-Vision		
Tel	87515377		

ID

This shows the identification information of a motor vehicle.

Name

This shows the name information of a motor vehicle or its driver.

Identity

This shows the title information of a motor vehicle or its driver.

Tel

This shows the telephone information of a motor vehicle or its driver.

Ticket

This shows the ticket information of a motor vehicle or its driver.

Memo

This shows any additional information of the motor vehicle or its driver.

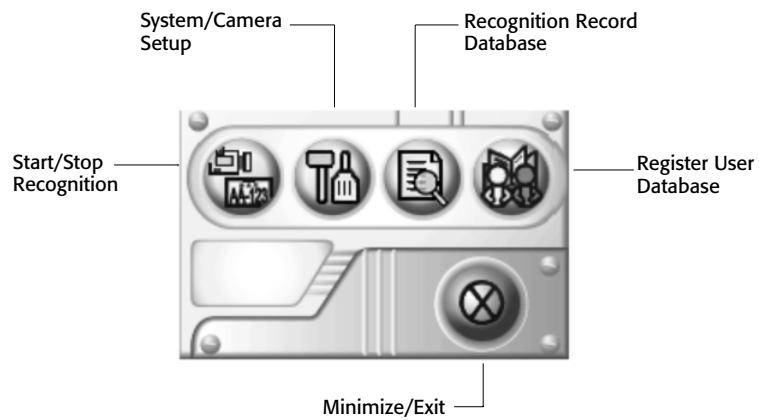
Monitoring Windows Layout



These three buttons decide the number of Monitoring Window(s) displayed. User may choose either to display one monitoring window, two monitoring windows, or four monitoring windows.

Function Panel

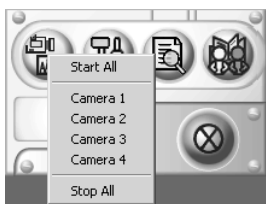
This panel allows users to start and stop the LPR, to view the Hot Keys List, to access and adjust System, Camera and Recognition Setups, to view and search the Recognition Database, to add, edit and search the Registered Plate Database, and to minimize User Interface or to exit program. More detailed descriptions of the functions will follow after this section.



GV-LPR **Application Controls**

Start / Stop LPR

Use this function to start and stop the LPR. Users can choose to start or stop LPR on all cameras, or to start or stop LPR on each camera individually.



Hot Keys & Setups



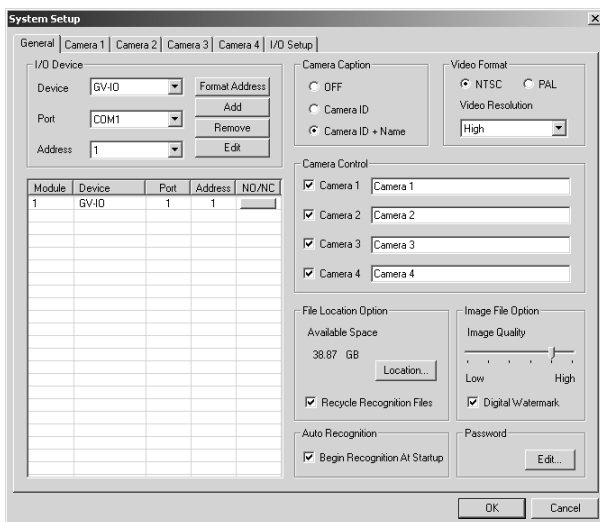
Hot Keys

Use this function to display the Hot Keys assigned to the I/O output setup in the I/O Setup.



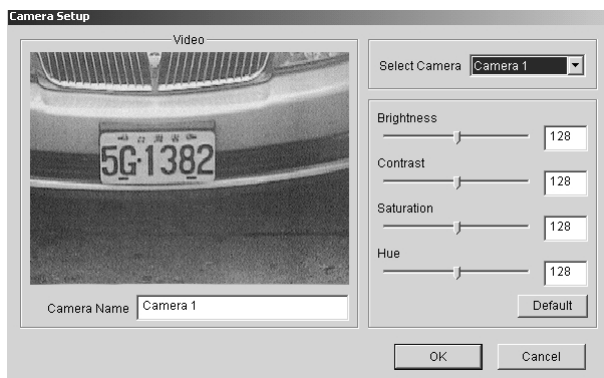
System Setup

Use this function to view and make changes to the system settings.



Camera Setup

Use this function to view and make changes to camera name and camera video setting.



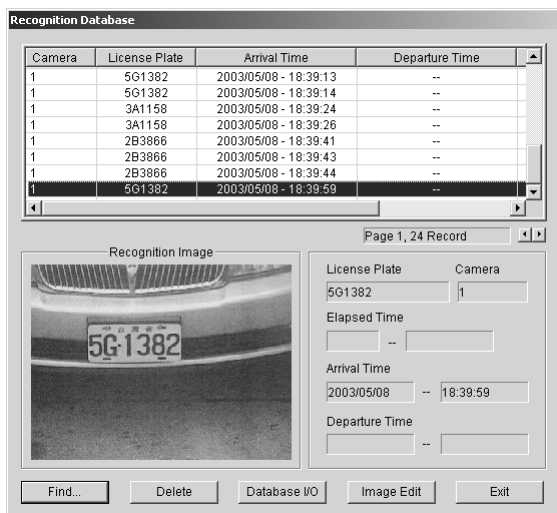
GV-LPR Application Controls

Recognition Setup

Use this function to optimize recognition performance.



Recognition Database



Find

Use this feature to list or find all data in the database.

The screenshot shows a 'Find' dialog box with the following elements:

- Select Source:** A dropdown menu currently showing 'All Cameras'.
- Search Mode:** Two radio buttons. 'All Records' is unselected, and 'Find Conditions' is selected.
- Find by Plate ID:** A checked checkbox. A dropdown menu is set to 'Recognize Success'. Below it is a text input field with the placeholder 'Enter Full or Part of Plate ID'.
- Find by Time:** A checked checkbox. A dropdown menu is set to 'Arrival Time'. Below it are two date/time fields: 'Start' and 'End', both set to '7/14/2003 3:21:37 PM'.
- Find by Other Field:** An unchecked checkbox. Below it is a dropdown menu and a text input field with the placeholder 'Enter Complete Conditions'.
- Buttons:** 'Find' and 'Cancel' buttons at the bottom.

Select Source

Use it to select the camera that captured the recognition image.

All Records

Choose it to show all records.

Find Conditions

Choose it to show specific records by defining conditions.

Find by Plate ID

Choose it to find specific records by searching for full or part of plate ID.

Find by Time

Choose it to find specific records by searching for arrival, departure or duration time.

Add / Edit

Use this feature to add or edit information on registered license plates.

Find

Use this feature to find information on registered license plates.

The screenshot shows a 'Find' dialog box with the following elements:

- Radio buttons: All Records, Find Conditions
- Checkboxes: Find by ID, Find by Plate ID
- Input fields: Two text boxes for entering search criteria.
- Labels: 'Enter Full or Part of ID' and 'Enter Full or Part of Plate ID'.
- Buttons: 'Find' and 'Cancel'.

All Records

Use it to show all records.

Find Conditions

Use it to show specific records by defining conditions.

Find by ID

Use it to find specific records by searching for full or part of ID.

Find by Plate ID

Choose it to find specific records by searching for full or part of plate ID.

GV-LPR Application Controls

Delete

Use this feature to delete information on registered license plates.

Print

Use this feature to print registered license plate information.

Exit

Use this feature to exit the Registered Plate Database.

Minimize / Exit



Version

Use this feature to view the version information of GV-LPR.

Minimize

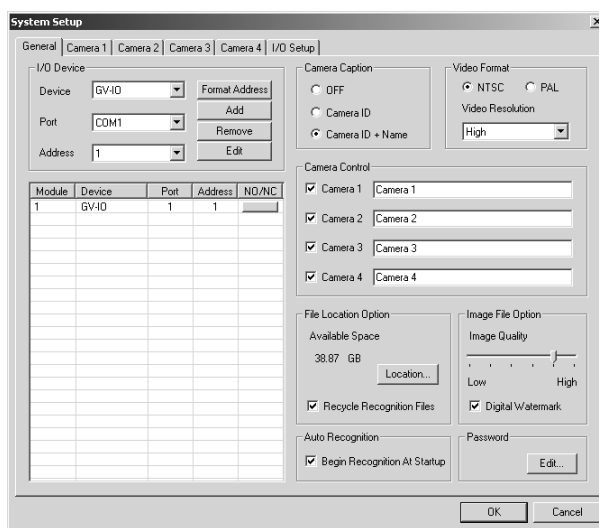
Use this feature to minimize GV-LPR.

Exit

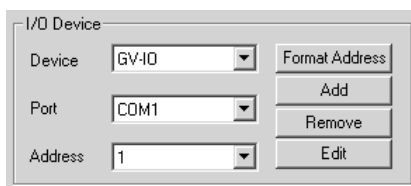
Use this feature to exit GV-LPR.

System Setup

General



I/O Device



Device

Use it to choose the I/O module set: PT-811 or GV-I/O.

Address

This shows the I/O address assigned to the I/O device.

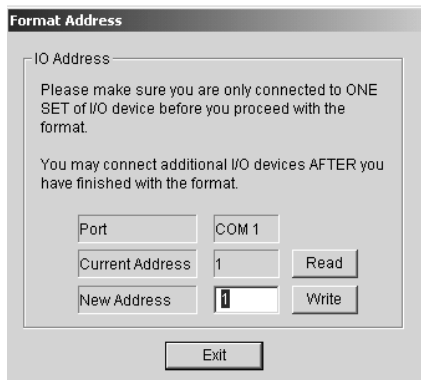
GV-LPR Application Controls

Port

Use it to choose the COM port to communicate with the I/O.

Format Address

Use it to format the address of the connected I/O hardware.



Note: Format only one GV-I/O module at a time.

Add

Use it to add I/O hardware.

Remove


Use it to remove I/O hardware.

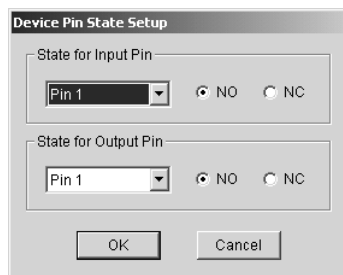
Modify

Use it to modify the setting of I/O hardware.

I/O Information

This shows the information on I/O hardware devices, for examples: the type of the I/O module set, device information, port information and address information. Click on the bar under NO/NC to get Device Pin State information. Device Pin State information shows the state of an I/O device, for examples: input/output pin, Normal Open or Normal Close status.

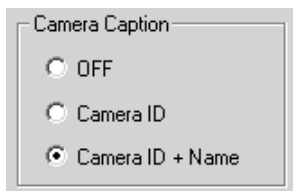
Module	Device	Port	Address	NO/NC
1	GV-IO	1	1	



The dialog box is titled "Device Pin State Setup". It contains two sections: "State for Input Pin" and "State for Output Pin". Each section has a dropdown menu set to "Pin 1" and two radio buttons labeled "NO" and "NC". At the bottom, there are "OK" and "Cancel" buttons.

Camera Caption

Use this feature to decide the heading displayed on the upper left-hand corner of the Monitoring Window. User may choose to not to show heading by having the caption set to OFF, to show only the Camera ID by selecting Camera ID, or to display both the name and ID by choosing Camera ID + Name.



The dialog box is titled "Camera Caption". It contains three radio buttons: "OFF", "Camera ID", and "Camera ID + Name". The "Camera ID + Name" option is selected.

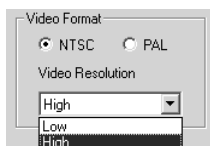
GV-LPR **Application Controls**

Video Format

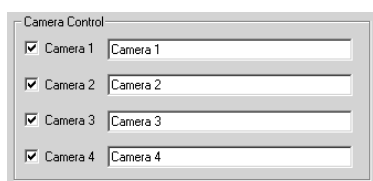
Use this feature to decide which video format to use: NTSC or PAL.

There are two image resolutions to choose from: High and Low.

High resolution guarantees higher recognition success rate while low resolution takes up less data storage space.



Camera Controls



Check box

This feature allows each camera to conduct recognition.

File Location Option

The available storage free space information can be found here.



Location

Click on the button to select a different location for storing image files.

Recycle

This feature will erase older image files when storage space runs out.

Image File Option

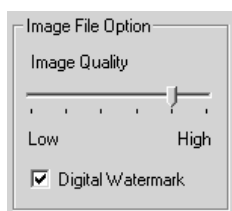


Image Quality

The higher the image quality, the more storage space is required. Choose the image quality accordingly.

Digital Watermark

Check the box to enable Digital Watermark feature.

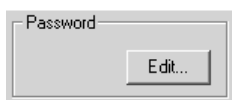
Auto Recognition



Begin Recognition At Startup

When enabled, GV-LPR will auto start after Windows finished its startup.

Password



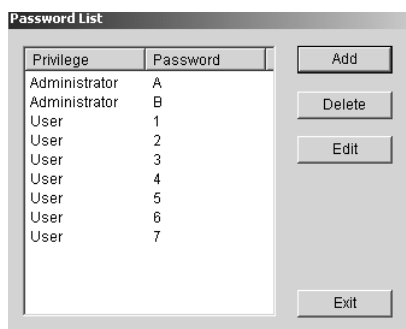
Edit

Use it to edit access privileges in GV-LPR.

GV-LPR **Application Controls**

Password List

This list shows GV-LPR users, their privileges as well as their passwords.



Privilege	Password
Administrator	A
Administrator	B
User	1
User	2
User	3
User	4
User	5
User	6
User	7

Privilege

There are two access privileges for GV-LPR:

1. Administrator
Has total access to information and system setups.
2. User
Can view and search for information, but cannot add, edit information and make any changes to system setups.

Password

Shows the passwords of every user.

Add

Use it to add users.

Delete

Use it to delete users.

Edit

Use it for editing user privilege and password.

Exit

Use it to close the Password List.

Camera 1, 2, 3, 4



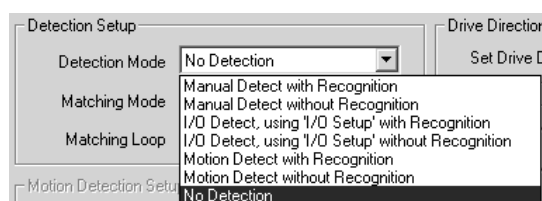
Detection Mode

GV-LPR has 7 detection modes to choose from:

1. Manual Detect with Recognition
 2. Manual Detect without Recognition
- Manual detection mode with or without recognition.

GV-LPR **Application Controls**

3. I/O Detect, using 'I/O Setup' with Recognition
4. I/O Detect, using 'I/O Setup' without Recognition
I/O triggered detection mode with or without recognition.
5. Motion Detect with Recognition
6. Motion Detect without Recognition
Motion triggered detection mode with or without recognition.
7. No Detection.
No auto detection.



Matching Mode

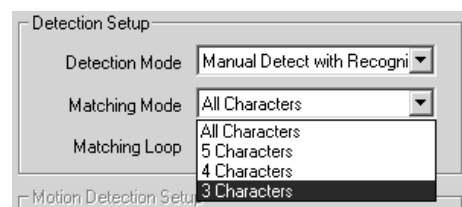
Note: Enabled only when the license recognition feature is activated.

All Characters - Every number and every letter must match the data in Registered plate Database.

5 Characters - Only 5 numbers and/or letters required to match to the data in registered database.

4 Characters - Only 4 numbers and/or letters required to match to the data in registered database.

3 Characters - Only 3 numbers and/or letters required to match to the data in registered database.



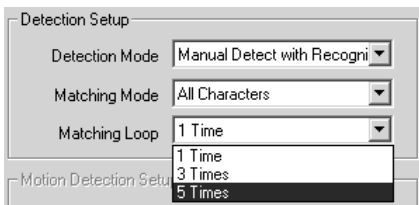
Matching Loop

Note: Enabled only when the license recognition feature is activated.

1 Time - Only one image will be captured for matching the data in Registered plate Database.

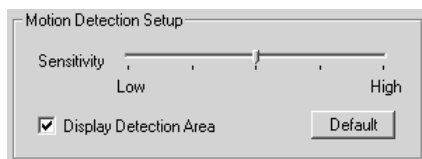
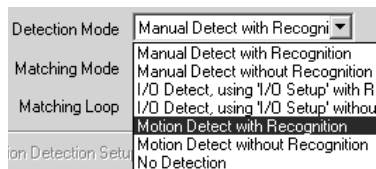
3 Times - Three images will be captured for matching the data in registered plate database.

5 Times - Five images will be captured for matching the data in registered plate database.



Motion Detection Setup

This feature is activated only when motion detection mode is selected. Use the Sensitivity setting to adjust the sensitivity of the motion detector.



GV-LPR **Application Controls**

Display Detection Area

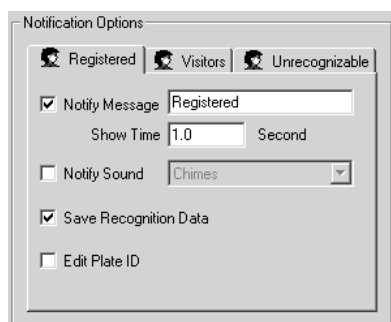
Use it to assign an area for motion detection.



Default

This setting will activate "Display Detection Area" and "Sensitivity" to the default value.

Notification Options



Registered

License plates that are listed in the Registered Plate Database.

Visitors

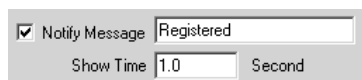
License plates that are not listed in the Registered Plate Database.

Unrecognizable

License plates uncognized by the system.

Notify Message

Use it to set the notification messages.



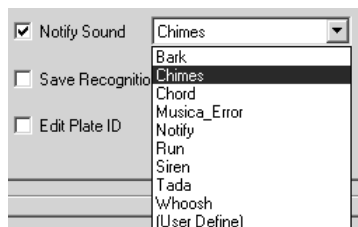
A screenshot of a control panel for 'Notify Message'. It features a checked checkbox labeled 'Notify Message' next to a text input field containing the word 'Registered'. Below this, there is a 'Show Time' label, a text input field with the value '1.0', and the word 'Second'.

Show Time

Use it to display the time for the notification.

Notify Sound

Check the box to enable. Select an effect for Notify Sound.



A screenshot of a control panel for 'Notify Sound'. It includes a checked checkbox labeled 'Notify Sound' next to a dropdown menu currently showing 'Chimes'. Below the dropdown is a list of sound effects: Bark, Chimes, Chord, Musica_Error, Notify, Run, Siren, Tada, Whoosh, and (User Define). To the left of the dropdown are two unchecked checkboxes labeled 'Save Recognition Data' and 'Edit Plate ID'.

Save Recognition Data

Check the box to save recognition data.



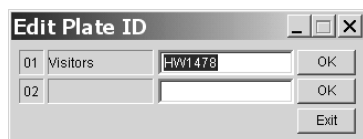
A screenshot of a control panel for 'Save Recognition Data'. It features a checked checkbox labeled 'Save Recognition Data'.

GV-LPR **Application Controls**

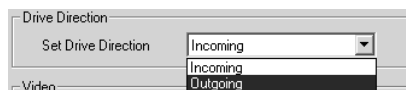
Edit Plate ID

Check the box to to edit license plate code after recognition.

Edit Plate ID



Drive Direction



Incoming

Select for motor vehicles that are arriving.

Outgoing

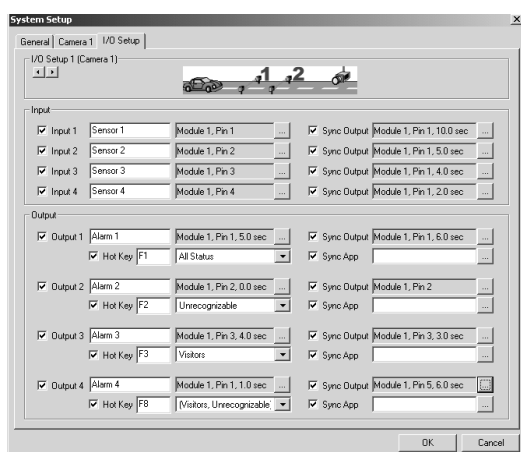
Select for motor vehicles that are departing.

Video

Use it to adjust the brightness, contrast, saturation and the hue of the video feed.

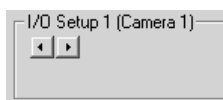


I/O Setup



I/O Setup 1-16

These setups need to be configured when using detection modes triggered by I/O hardware. I/O Setup 1 through 4 have direct relation with Camera 1 through 4 while I/O Setup 5 through 16 have no direct relation with Camera 1 through 4. Use the arrows buttons to select between the I/O Setups.



Input 1-4

Up to 4 input devices can be connected to one I/O Setup.

GV-LPR **Application Controls**

Input Name

Input			
<input checked="" type="checkbox"/>	Input 1	Sensor 1	Module 1, Pin 1
<input checked="" type="checkbox"/>	Input 2	Sensor 2	Module 1, Pin 2
<input checked="" type="checkbox"/>	Input 3	Sensor 3	Module 1, Pin 3
<input checked="" type="checkbox"/>	Input 4	Sensor 4	Module 1, Pin 4

Use it to assign a device name.

Input Location

<input checked="" type="checkbox"/>	Input 1	Sensor 1	Module 1, Pin 1
-------------------------------------	---------	----------	-----------------

Use it to assign the location for the input device.

Sync Output

Use it to send out an output signal to an assigned output device.

Sync Output Location

<input checked="" type="checkbox"/>	Sync Output	Module 1, Pin 1, 10.0 sec
-------------------------------------	-------------	---------------------------

Use it to assign the location for the output device.

Output 1-4

Up to 4 output devices can be connected to one I/O Setup.

Output			
<input checked="" type="checkbox"/>	Output 1	Alarm 1	Module 1, Pin 1, 5.0 sec
<input checked="" type="checkbox"/>		Hot Key F1	All Status
<input checked="" type="checkbox"/>	Output 2	Alarm 2	Module 1, Pin 2, 0.0 sec
<input checked="" type="checkbox"/>		Hot Key F2	Unrecognizable
<input checked="" type="checkbox"/>	Output 3	Alarm 3	Module 1, Pin 3, 4.0 sec
<input checked="" type="checkbox"/>		Hot Key F3	Visitors
<input checked="" type="checkbox"/>	Output 4	Alarm 4	Module 1, Pin 1, 1.0 sec
<input checked="" type="checkbox"/>		Hot Key F8	Visitors, Unrecognizable

Output Name

Use it to assign a device name.

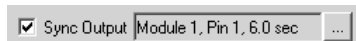
<input checked="" type="checkbox"/>	Output 1	Alarm 1	Module 1, Pin 1, 5.0 sec
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Output Location

Use it to assign the location for the output device.

Sync Output

Use it to send out an output signal to an assigned output device.



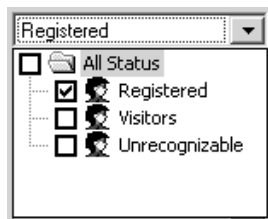
Hot Keys

Use it to assign a hot key for quick access to an output device.



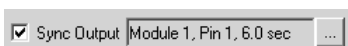
License Plates Types

Use it to assign the type of the license plates to trigger output device automatically.



Output Trigger

Assign the kind of the license plate that will trigger this output automatically.



Sync App

Use it to assign the software application that will be activated when a signal is sent to an output device.



GV-LPR **Application Controls**

Recognition Setup

The Recognition Setup can help improve recognition performance by giving the system a better sense of the length and width of the license plate.



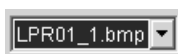
Follow these instructions to conduct Recognition Setup:

1. Select the camera to conduct the recognition setup on.



2. Select a previously captured image by using the "Image Task Bar," or use the [Open] button to choose an image.

Image Task Bar



Open



GV-LPR **Application Controls**

3. Point your mouse arrow sign to the upper left-hand corner of the license plate, left click and hold onto the click, and drag the arrow sign to the lower right-hand corner of the license plate, then release the left click.

Before



After



4. Click on the [Save] button to save the current setting.



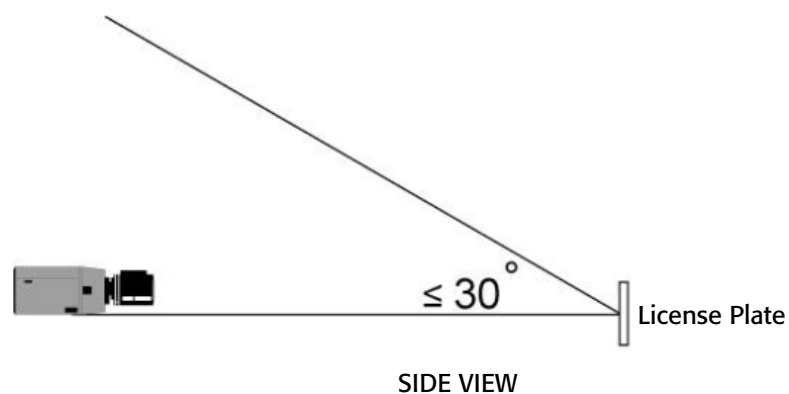
5. Click on [Evaluate] to see if the characters of the license plate can be recognized. Repeat the 3rd and the 4th steps if recognition fails.



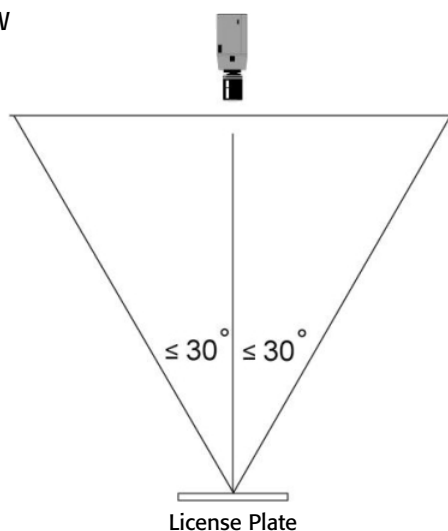
Installation Guidelines

A clear image of a clean, readable license plate is required for optimal recognition result. Follow these guidelines to achieve the highest recognition results:

1. Use surveillance cameras that have built-in auto white balance and backlight compensation features.
2. Use surveillance cameras that have at least 6 - 60mm focal range.
3. The camera angle from the surveillance camera to the license plate needs to be 30-degree or less. These two illustrations show the concept:



TOP VIEW



4. Use two sets of infrared detection sensor for I/O triggered recognition setup when not using loop detection sensor, with the first set sensing the front portion of the motor vehicle while the second set sensing the rear portion of the motor vehicle. This way, an image would be captured only when both sets of the sensors detected a motor vehicle.
5. Use illumination when inefficient lighting is provided to produce a clear image of the license plate. Illumination can be any source of light that can help bright up the license plate, which will greatly help improve the image of the captured image. Infra-Red (IR), which is invisible to the driver, is one example, while florescent light is another.
6. Make sure the width of the license plate takes up 1/5 to 1/3 of the width of the captured image.
7. It is best for motor vehicles to come to a full stop for the image capturing process. If motor vehicles cannot come to a full stop, then it should travel at the speed no greater than 12.5 miles-per-hour (20 kilometers-per-hour).
8. Use a more advanced surveillance camera designed to capture fast moving objects when using GV-LPR on other applications, for example, highway application.