Architectural and Engineering Specifications

GeoVision License Plate Recognition

Software/Processors

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The document is written using industry standard formatting and language, and is designed for use by architects, consultants, and specifying engineers who are preparing bid specifications for security cameras, surveillance systems and access control systems.

The electronic version of these specifications may be copied into the appropriate sections of a complete bid specification by using the "cut and paste" method. They are written to highlight the features and specifications of GeoVision products. Specific models mentioned are only for clarity – these may be deleted after insertion into the complete specification.

The products mentioned in the documents are defined as below:

- ***GV-ASManager (V4.4.3.0):*** *LPR software*
- ***GV-DVR LPR (V4.4.3.0):*** *DVR / NVR software with LPR processor*
- ***GV-VMS LPR (V4.4.3.0):*** *VMS software with LPR processor*
- ***GV-DSP LPR V3:*** *an analog-to-IP video encoder with LPR processor*
- ***GV-DVR / NVR / VMS :*** *DVR / NVR / VMS software*

All specifications are subject to change. For more information on GeoVision products, please visit www.geovision.com.tw.

Contents

GV-ASManager Software: Overall Description

1. GV-ASManager (LPR software) shall be an LPR system capable of providing vehicle database to GV-DVR LPR / GV-VMS LPR / GV-DSP LPR V3 and receiving recognition results from the three LPR devices.
2. GV-ASManager (LPR software) shall be capable of connecting up to 255 GV-DVR LPR / GV-VMS LPR / GV-DSP LPR V3 through network.

3. PC running the GV-ASManager (LPR software) shall meet the following minimum requirements.

OS	32-bit	Windows 7 / 8 / 8.1 / 10 / Server 2008
	64-bit	Windows 7 / 8 / 8.1 / 10 / Server 2008 / Server 2012
CPU		Core 2 Duo E8400, 3.0 GHz
Memory		2 x 1 GB Dual Channels
Hard Disk		500 GB
VGA		AGP or PCI-Express, 1280 x 1024 , 32-bit color and support DirectX 10
DirectX		End-User Runtimes (November 2008)
Software		.NET Framework 3.5 SQL Server 2005 Express (optional)
Browser		Internet Explorer 7.0 or later

GV-DVR LPR / GV-VMS LPR Software: Overall Description

1. GV-DVR LPR shall be a GV-DVR / NVR software with LPR Plugin installed and an LPR dongle inserted.
2. GV-VMS LPR shall be a GV-VMS software with LPR Plugin installed and an LPR dongle inserted.
3. GV-DVR LPR / GV-VMS LPR shall capture the license plates of vehicles that appear in the camera view of the connected LPR camera.
4. GV-DVR LPR / GV-VMS LPR shall be able to trigger an output to grant access to a gate.

5. With the proper LPR dongle, GV-DVR LPR / GV-VMS LPR shall be capable of simultaneously processing multiple license plates captured in each LPR channel and in up to 8 LPR channels.
6. GV-DVR LPR / GV-VMS LPR shall be capable of saving the vehicle database downloaded from GV-ASManager (LPR software) and comparing the recognized license plates with the vehicle database even when disconnected from GV-ASManager (LPR software).
7. PC running the GV-DVR LPR or PC running GV-VMS LPR shall meet the following requirements.

GV-DVR LPR

Number of LPR Channels		1-4 Channels	5-8 Channels
OS		64-bit Windows 7 / 8 / 8.1 / 10 / Server 2008 / Server 2012	
CPU	1.3 MP	Core i5 2400, 3.1 GHz	Core i7 2600, 3.4 GHz
	2 MP	Core i7 4770, 3.4 GHz	Core i7 6700, 3.4 GHz
Memory		2 x 2 GB Dual Channels	
Hard Disk		500 GB	
VGA		AGP or PCI-Express, 1280 x 1024 , 32-bit color and support DirectX 10	
DirectX		End-User Runtimes (November 2008)	
Software		.NET Framework 3.5 SQL Server 2005 Express (optional)	
Browser		Internet Explorer 7.0 or later	
Note: The above system requirements were determined with a bit rate of 3 Mbits for 1-3 MP resolution and 2 MP resolution.			

GV-VMS LPR (for 32 CH)

Number of LPR Channels		1-4 Channels	5-8 Channels
OS		64-bit Windows 7 / 8 / 8.1 / 10 / Server 2008 R2 / Server 2012 R2	
CPU	1.3 MP	Core i7 3770, 3.4 GHz	Core i7 4700, 3.4 GHz
	2 MP		
Memory		2 x 2 GB Dual Channels	
Hard Disk		500 GB	
VGA		PCI-Express, 1280 x 1024 , 32-bit color and support DirectX 10	
DirectX		End-User Runtimes (November 2008)	
Software		.NET Framework 3.5 SQL Server 2005 Express (optional)	
Browser		Internet Explorer 7.0 or later	
Note: The above system requirements were determined with a bit rate of 3 Mbits for 1-3 MP resolution and 2 MP resolution.			

GV-VMS LPR (for 64 CH)

Number of LPR Channels		1-4 Channels	5-8 Channels
OS		64-bit Windows 7 / 8 / 8.1 / 10 / Server 2008 R2 / Server 2012 R2	
CPU	1.3 MP	Core i7 6770, 3.4 GHz (Only 2 Lanes)	N/A
	2 MP	Core i7 6700, 3.4 Ghz (Only 1 Lane)	
Memory		2 x 2 GB Dual Channels	
Hard Disk		500 GB	
VGA		PCI-Express, 1280 x 1024 , 32-bit color and support DirectX 10	
DirectX		End-User Runtimes (November 2008)	
Software		.NET Framework 3.5 SQL Server 2005 Express (optional)	
Browser		Internet Explorer 7.0 or later	
Note: The above system requirements were determined with a bit rate of 3 Mbits for 1-3 MP resolution and 2 MP resolution.			

GV-DSP LPR V3: Overall Description and Hardware Specifications

A. General Requirements

1. GV-DSP LPR V3 (a video encoder with LPR processor) shall be a Linux-based license plate recognition system that is able to convert one (1) analog camera signals into IP camera signals.
2. GV-DSP LPR V3 (a video encoder with LPR processor) shall be an LPR processor capable of processing license plates captured in 1 LPR channel.
3. GV-DSP LPR V3 shall be capable of identifying license plates in the images captured by the connected analog camera and recognizing the characters on the license plates.
4. GV-DSP LPR V3 (a video encoder with LPR processor) shall be capable of saving the vehicle database downloaded from GV-ASManager (LPR software) on the inserted memory card and comparing the recognized license plates with the vehicle database even when disconnected from GV-ASManager. When there is a match, GV-DSP LPR V3 (a video encoder with LPR processor) shall be able to trigger an output device (for example: opening a gate barrier).
5. Users shall be able to set a schedule to specify when to enable plate recognition.
6. The Web interface shall provide administrator and guest level settings. The administrator account shall have full access to all the functions, and the guest account shall only have access to camera live video and network status information.
7. The Web interface shall support 5 languages: English, German, Hebrew, Simplified Chinese, Traditional Chinese

B. Alarm and Notification Requirements

1. When motion events or sensor trigger occur, GV-DSP LPR V3 (a video encoder with LPR processor) shall be capable of sending alert to the connected GV-DVR / NVR software. The recognized license plate numbers shall be overlaid on the live view of the DVR / NVR software.
2. GV-DSP LPR V3 (a video encoder with LPR processor) shall be able to connect with up to two (2) Vital Sign Monitors (VSM) to send text notification to VSM when system events occur, such as Login In, Log Out or Video Lost.

C. Recording and Playback Requirements

1. GV-DSP LPR V3 (a video encoder with LPR processor) shall be capable of storing captured images and recognition results on an FTP server or an inserted micro-SD card.
2. Users shall be able to look up recognition results from the database stored in the inserted memory card.

D. Video Requirements

1. GV-DSP LPR V3 (a video encoder with LPR processor) shall support both NTSC and PAL video signals with the following resolutions:
   - NTSC: 720 x 480, 360 x 240
   - PAL: 720 x 576, 360 x 288
2. GV-DSP LPR V3 (a video encoder with LPR processor) shall support JPEG video compression.
3. GV-DSP LPR V3 (a video encoder with LPR processor) shall support the following frame rates:

Frame Rate	**D1**	**NTSC**	1, 3, 5
		PAL	1, 3, 5
	CIF	**NTSC**	1, 3, 5, 7, 10
		PAL	1, 3, 5, 8, 12

4. The following image settings shall be adjustable from the Web interface of the camera: brightness, contrast, saturation, hue.

E. Networking Requirements

1. Network interface shall be via an Ethernet (10/100 Base-T), RJ-45 connector.

2. A built-in Web server shall be incorporated that allows users to view the camera view using Microsoft Internet Explorer (version 7.0 or higher required) without the need for special viewer software.
3. GV-DSP LPR V3 (a video encoder with LPR processor) shall support the following network protocols: HTTP, TCP, UDP, DHCP, NTP, DDNS.
4. Users shall be able to configure port settings.
5. GV-DSP LPR V3 (a video encoder with LPR processor) shall be capable of IP filtering to restrict access to the camera by the specified IP addresses.
6. GV-DSP LPR V3 (a video encoder with LPR processor) shall support wireless connection when a wireless LAN USB adaptor is inserted.

F. Mechanical Requirements

1. GV-DSP LPR V3 (a video encoder with LPR processor) shall be equipped with interface for two (2) digital inputs and two (2) digital outputs.
2. GV-DSP LPR V3 (a video encoder with LPR processor) shall be equipped with one (1) USB port for UMTS function. An UMTS-compatible wireless device can be attached to the USB port to provide network access to the video encoder.
3. GV-DSP LPR V3 (a video encoder with LPR processor) shall be equipped with a TV-out port to display live view and recognition results on an external monitor.
4. GV-DSP LPR V3 (a video encoder with LPR processor) shall have a dimension of 123 x 106 x 25 mm / 4.84 x 4.17 x 0.98 in
5. GV-DSP LPR V3 (a video encoder with LPR processor) shall have a weight of 0.345 kg / 0.76 lb.

G. Power Requirements

1. GV-DSP LPR V3 (a video encoder with LPR processor) shall be capable of receiving power from DC 12V, 1A.

H. Environmental Requirements

1. The operating temperature shall be within -20°C ~ 55°C / -4°F ~ 131°F

I. System Requirements

1. PC for accessing the Web interface of GV-DSP LPR V3 (a video encoder with LPR processor) shall meet the following requirements.

OS	32-bit	Windows 7 / 8 / 8.1 / 10 / Server 2008
	64-bit	Windows 7 / 8 / 8.1 / 10 / Server 2008
Browser		Internet Explorer 7.0 to 10.x

GeoVision License Plate Recognition

Software/Processors

A. License Plate Recognition:

1. LPR channel:
   a. Each GV-DVR LPR / VMS LPR shall support up to eight (8) LPR lanes.
   b. Each GV-DSP LPR V3 (a video encoder with LPR processor) shall support one (1) LPR lane.
2. Recognition Camera:
   a. GV-DVR LPR / VMS LPR shall support using up to four (4) IP or analog cameras as recognition cameras for capturing license plates for each LPR lane. The resolution of the recognition camera shall be at least D1.
   b. GV-DSP LPR V3 shall support using one (1) analog camera as recognition cameras for capturing license plates.
3. Overview Camera: GV-DVR LPR / VMS LPR / GV-DSP LPR V3 shall support using up to six (6) cameras as overview cameras to capture the overall appearance of the vehicles.
4. Detection Mode: GV-DVR LPR / VMS LPR / GV-DSP LPR V3 shall be capable of starting license plate recognition upon motion detection or triggering of the connected input devices.
   a. Sensitivity adjustment for motion detection shall be available.
   b. Setting areas of motion detection shall be supported.
5. Matching Mode: GV-DVR LPR / VMS LPR / GV-DSP LPR V3 shall support the following matching modes when matching the recognized license plates with the plates in the vehicle database: All Characters Match, Allow 1 mismatched character, and Allow 2 mismatched characters.
6. Settings for the Recognition Engine shall be adjustable for better recognition accuracy.
7. GV-DVR LPR / VMS LPR / GV-DSP LPR V3 shall be capable of unlocking the LPR lane when recognized license plate matched a registered license plate.
8. LPR engines for the following countries shall be supported:

a. GV-DVR LPR / GV-VMS LPR: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Channel Islands, Chile, China, Columbia, Croatia, Cyprus, Czech, France, Germany, Global, Hong Kong, Hungary, India, Ireland, Israel, Italy, Malaysia, Mexico, New Zealand, Norway, Poland, Portugal, Qatar, Russia, Serbia, Slovakia, Slovenia, South Africa, Spain, Taiwan, Thailand, Turkey, UAE, UK, USA, Vietnam
b. GV-DSP LPR V3: Australia, Austria, Belgium, Brazil, Bulgaria, Chile, China, Columbia, Cyprus, Czech Republic, France, Germany, Guernsey, Hong Kong, Hungary, Ireland, Israel, Italy, Malaysia, Mexico, New Zealand, Norway, Poland, Portugal, Russia, South Africa, Spain, Taiwan, UK, USA

B. Vehicle Database: GV-ASManager (LPR software) shall be capable of managing up to 100,000 vehicles.

1. The system administrator shall be able to create vehicle profiles and assign the following information to the vehicle profile: a user account, license plate, vehicle brand, model, color and vehicle photo.
2. The system administrator shall be able set an activation and deactivation date for the vehicle. Vehicle access will only be granted if the vehicle is activated at the time.

C. User Database:

1. The system administrator shall be able to create user profiles and assign the following information to the user profile: name, cards, vehicles, photo, personal information, business information, fingerprint data and scanned identification card.
2. GV-ASManager (LPR software) shall be able to assign multiple vehicles to a user.
3. GV-ASManager (LPR software) shall support the conversion of OLE DB and Active Directory database.

D. LPR Device List: A list of LPR devices and GV-DVR LPR / GV-VMS LPR / GV-DSP LPR V3, shall be displayed in the main window of GV-ASManager (LPR software).

1. The LPR lanes shall be displayed under the associated LPR device.

2. In the LPR device list, the connection status of the LPR device shall be shown.
3. The system administrator shall be able to perform the following actions from the LPR Device List: Reconnect with the LPR device, renew settings on LPR device, access LPR setting page and unlock doors.

E. LPR Monitor Window: An LPR Monitor window shall be available to show LPR activities in real time.

F. GV-ASWeb: The Web-based interface shall allow remote accessing of data and settings on the GV-ASManager (LPR software) over the network using Internet Explorer version 7 or later. The following functions shall be available:

1. LPR List: Adding / deleting of LPR devices and setting up LPR channels in GV-ASManager (LPR software).
2. Vehicle List: Adding, searching, editing and deleting vehicles in GV-ASManager's (LPR software) vehicle database.
3. LPR Log: Looking up LPR activities, accessing snapshots of detected license plates and playing back recorded videos. LPR Log shall allow exporting of LPR data in the format of txt, html, xls, or html with a zipped file of captured images.

G. System Accounts: GV-ASManager (LPR software) shall require a valid system account to log in.

1. Privilege Levels: System accounts shall be available in three privilege levels: Supervisor, Power User, and User.
2. System accounts of Supervisor privilege shall be able to create additional accounts and specify access privileges for the accounts. Up to 1000 system accounts can be created.
3. GV-ASManager (LPR software) shall be capable of sending account password to the e-mail address specified for the account when the password is lost.
4. Data Group function shall be supported in which a group of functions can be assigned under a data group. Privilege to read, write, and execute functions under the data group can then be assigned to system accounts.

H. Alert Notification:

1. GV-ASManager (LPR software) shall be capable of sending alert notification upon the specified alert conditions. Alert conditions shall include:
   a. Plate Recognized: Registered Vehicle
   b. Plate Recognized: Registered Vehicle (Invalid Schedule)
   c. Plate Recognized: Unregistered Vehicle
   d. Plate Recognized: Unregistered Vehicle (Invalid Schedule)
   e. Plate not registered
   f. Recognized plate matched the a plate number or keyword on vehicle hotlist
2. Alert notification shall include the methods below.
   a. Invoking audio alarm.
   b. Sending e-mail and / or SMS message to the specified recipients.
   c. Starting recording for a set duration; only for GV-DVR LPR.
   d. Popping up associated live view.

I. Vehicle Hotlist:

1. The vehicle hotlist shall be a list of up to two millions stolen vehicles or other vehicles of interest for the purpose of locating stolen vehicles.
2. Vehicles shall be added to the hotlist in three ways: manually added, imported from the vehicle list, or import an external database using ASDBManager.exe.
3. When a captured license plate matches a license plate in the hotlist, the vehicle shall be highlighted in red in the LPR monitor window and an alert notification shall be triggered.

J. Parking Lots Management:

1. The system administrator shall be able to set LPR lanes as the entry or exit of a parking lot.
2. The system administrator shall be able to set a maximum parking capacity and a maximum stay time allowed for the parking lot.
3. Entry to the parking lot shall be defined when the maximum parking capacity is reached in the parking lot.
4. Vehicles that stay beyond the maximum stay time in the parking lot shall be highlighted as “Overstayed Vehicle” in Parking Lot Monitor.

5. The system administrator shall be able to set up shared space for multiple vehicles to share the same set of parking spaces.
6. GV-ASManager (LPR software) shall be capable of storing a list of vehicles that have entered and exited the parking lot, along with their snapshots and information.
7. GV-ASManager (LPR software) shall be capable of sending e-mail / SMS notifications, triggering recording, or popping up messages upon the specified parking lot activities.

K. GV-Access Mobile Application: The mobile application shall support connection with up to five (5) GV-ASManagers (LPR software) using iOS and Android mobile devices. The following functions shall be supported:

1. User shall be able to add GV-ASManager (LPR software) by entering a valid login account of GV-ASManager (LPR software). The LPR devices and lanes of the GV-ASManager shall be displayed in the LPR page.
2. The mobile application shall support accessing camera live view from GV-DVR LPR / VMS LPR that is mapped with an LPR lane.
3. The mobile application shall support opening an LPR lane remotely.